DOpusSDK

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Contents

Chapter 1

DOpusSDK

1.1 Global table of contents

```
                          Directory Opus 5.5
       Software Development Kit 1.0
        (c) 1996 Jonathan Potter & GPSoftware 1996

The Opus SDK kit allows you to access the functions in the dopus5.library,
and create your own modules, applications or other programs that use the
power of Directory Opus.

The contents of the SDK is as follows :

  docs  - Documentation for the dopus5.library
  AGDocs  - Documentation in AmigaGuide format for the dopus5.library
  include - Include files
  lib - Linker files

                example
                 - Example source code including:-
  source  - Source to the modinit.o module

The include and linker files are all designed for use with a C compiler
(the example source code is set up to compile under SAS/C).



                dopus5.library AutoDocs Index

                Writing an Opus 5.5 Module

                Header files - structures

                Header files - typedefs and defines
               The dopus5.library contains many useful functions. For convenience ↩
                  , they
have been grouped into meaningful areas:


                AppIcon/AppWindow support
```

Please read the following :

1.2 Copyrights

Copyrights and Notices

--
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1.3 Contact and Support

Contact and Support

As well as the WWW pages located at

   http://www.livewire.com.au/gpsoft/

we maintain a number of mailing lists for Directory Opus users. These
are designed to provide general comment and limited support for
registered users of Opus 5.5.

A) General Mailing list: dopus5

  This is a mailing list for general discussion relating to
  general use and comments for Opus 5. To subscribe to this
  list, send mail to listserv@lss.com.au with :

    subscribe dopus5 <Your Name>

  in the message body. You will be automatically sent a brief
  welcome message, with instructions on how to post to the list.

B) Developer Mailing list: dopus5-dev

  There is a mailing list for the discussion of programming issues
  relating to Opus and the Opus SDK. To subscribe to this list,
  send mail to listserv@lss.com.au with :

    subscribe dopus5-dev <Your Name>

  in the message body. You will be automatically sent a brief welcome

```
  message, with instructions on how to post to the list.
```

1.4 Example files

```
The 'example' directory contains the following example source code:-

  module

    A basic module that adds one command to Opus
    and opens a requester. Shows a simple example of
    creating an Opus module.

  envoymodule

    A module that lets you set network
    information for files with Envoy. Shows an example of
    a simple user interface, using the Opus callback function
    and using a progress indicator.

  iconclock

    The source to the icon clock module. Shows
    how to write a module that is called on startup and remains
    resident. Also has an example of the new AppIcon
    features of Opus.

  viewfont

    The source to the ViewFont program. Shows how to
    create a more complex, resizeable user interface, and
    how to access menus.
```

1.5 Headers etc

Opus 5.5 Header files

dopus/appicon.h	dopus/args.h	dopus/bufferedio.h
dopus/clipboard.h	dopus/diskio.h	dopus/dopusbase.h
dopus/dos.h	dopus/drag.h	dopus/edithook.h
dopus/gui.h	dopus/icon.h	dopus/iff.h
dopus/images.h	dopus/ipc.h	dopus/layout.h
dopus/lists.h	dopus/locale.h	dopus/memory.h
dopus/misc.h	dopus/modules.h	dopus/notify.h
dopus/popup.h	dopus/progress.h	dopus/requesters.h
dopus/timer.h	pragmas/dopus_pragmas.h	

Opus 5.5 Structs/unions

_Att_List	_Att_Node	_DOpusAppMessage
_DragInfo	_GL_Object	_IPC
_ObjectList	addfile_packet	AppSnapshotMsg
command_packet	delfile_packet	DOpusLocale

```
DOpusScreenData  endentry_packet    function_entry
gpResize         ListLock           loadfile_packet
path_node        replacereq_packet  TimerHandle
```

1.6 TypeDefs etc

```
                                          Opus 5.5 Typedefs

Att_List         Att_Node          ConfigWindow
DiskHandle       DOpusAppMessage   DOpusNotify
DragInfo         DragInfoExtra     FuncArgs
GL_Object        ImageRemap        IPCData
IPCMessage       ListViewDraw      MenuData
ModuleFunction   ModuleInfo        NewConfigWindow
ObjectDef        ObjectList        OpenImageInfo
PopUpItem        PopUpMenu         TimerHandle
WindowData       WindowID

                          Opus 5.5 #defines


                 a-d

                 e-f

                 g-i

                 j-o

                 p-r

                 s-w
```

1.7 #defines (a-d)

```
                        Opus 5.5 #defines (a-d)

ADDNODEF_EXCLUSIVE        ADDNODEF_NUMSORT
ADDNODEF_PRI              ADDNODEF_SORT
APPSNAPF_CLOSE            APPSNAPF_HELP
APPSNAPF_INFO             APPSNAPF_MENU
APPSNAPF_UNSNAPSHOT       APPSNAPF_WINDOW_POS
AR_Buffer                 AR_BufLen
AR_Button                 AR_ButtonCode
AR_CheckMark              AR_CheckPtr
AR_Flags                  AR_History
AR_Message                AR_Requester
AR_Screen                 AR_Title
AR_Window                 AREA()
AREAFLAG_ERASE            AREAFLAG_ICON
AREAFLAG_LINE             AREAFLAG_NOFILL
```

```
AREAFLAG_OPTIM             AREAFLAG_RAISED
AREAFLAG_RECESSED          AREAFLAG_THIN
AREAFLAG_TITLE             BUTTONFLAG_CANCEL_BUTTON
BUTTONFLAG_OKAY_BUTTON     BUTTONFLAG_THIN_BORDERS
BUTTONFLAG_TOGGLE_SELECT   CAIF_BUSY
CAIF_LOCKED                CAIF_RENDER
CAIF_SELECT                CAIF_SET
CAIF_TITLE                 CAIF_UNBUSY
CFGDATA()                  COMMANDF_RESULT
DAE_Background             DAE_Close
DAE_Info                   DAE_Local
DAE_Locked                 DAE_Menu
DAE_MenuBase               DAE_SnapShot
DAE_ToggleMenu             DAE_ToggleMenuSel
DAPPF_ICON_DROP            DATA()
DFB_DefPath                DIA_FrontPen
DIA_Type                   DIR_BUTTON_KIND
DIR_GLASS_KIND             DLV_Check
DLV_DoubleClick            DLV_DragNotify
DLV_DrawLine               DLV_Flags
DLV_GetLine                DLV_Highlight
DLV_Labels                 DLV_Lines
DLV_MakeVisible            DLV_MultiSelect
DLV_NoScroller             DLV_Object
DLV_ReadOnly               DLV_RightJustify
DLV_ScrollDown             DLV_ScrollUp
DLV_ScrollWidth            DLV_Selected
DLV_SelectNext             DLV_SelectPrevious
DLV_ShowChecks             DLV_ShowFilenames
DLV_ShowSelected           DLV_TextAttr
DLV_Top                    DLV_TopJustify
DN_APP_ICON_LIST           DN_APP_MENU_LIST
DN_CLOSE_WORKBENCH         DN_DISKCHANGE
DN_DOS_ACTION              DN_OPEN_WORKBENCH
DN_OPUS_HIDE               DN_OPUS_QUIT
DN_OPUS_SHOW               DN_OPUS_START
DN_RESET_WORKBENCH         DN_REXX_UP
DN_WRITE_ICON              DNF_DOS_CLOSE
DNF_DOS_CREATE             DNF_DOS_CREATEDIR
DNF_DOS_DELETEFILE         DNF_DOS_RELABEL
DNF_DOS_RENAME             DNF_DOS_SETCOMMENT
DNF_DOS_SETFILEDATE        DNF_DOS_SETPROTECTION
DNF_ICON_CHANGED           DNF_ICON_REMOVED
DPG_Pen                    DPG_SelectNext
DPG_SelectPrevious         DRAGF_DONE_GELS
DRAGF_NO_LOCK              DRAGF_OPAQUE
DRAGF_TRANSPARENT          DRAGF_VALID
DRAWINFO()
```

1.8 #defines (e-f)

```
                        Opus 5.5 #defines (e-f)

EDITF_NO_SELECT_NEXT  EDITF_PATH_FILTER
EDITF_SECURE          EH_ChangeSigBit
```

```
EH_ChangeSigTask      EH_History
EXT_FUNC()            EXTCMD_ADD_FILE
EXTCMD_CHECK_ABORT    EXTCMD_DEL_FILE
EXTCMD_DO_CHANGES     EXTCMD_END_DEST
EXTCMD_END_ENTRY      EXTCMD_END_SOURCE
EXTCMD_ENTRY_COUNT    EXTCMD_FREE_SCREENDATA
EXTCMD_GET_DEST       EXTCMD_GET_ENTRY
EXTCMD_GET_HELP       EXTCMD_GET_PORT
EXTCMD_GET_SCREEN     EXTCMD_GET_SCREENDATA
EXTCMD_GET_SOURCE     EXTCMD_GET_WINDOW
EXTCMD_LOAD_FILE      EXTCMD_NEXT_SOURCE
EXTCMD_RELOAD_ENTRY   EXTCMD_REMOVE_ENTRY
EXTCMD_REPLACE_REQ    EXTCMD_SEND_COMMAND
EXTCMD_UNLOCK_SOURCE  FIELD_KIND
FILE_BUTTON_KIND      FILE_GLASS_KIND
FILEBUTFLAG_SAVE      FONT_BUTTON_KIND
FPOS_TEXT_OFFSET      FRAME_KIND
FUNCF_CAN_DO_ICONS    FUNCF_NEED_DEST
FUNCF_NEED_DIRS       FUNCF_NEED_ENTRIES
FUNCF_NEED_FILES      FUNCF_NEED_SOURCE
FUNCF_PRIVATE         FUNCF_SINGLE_DEST
FUNCF_SINGLE_SOURCE   FUNCF_WANT_DEST
FUNCF_WANT_ENTRIES    FUNCF_WANT_SOURCE
FUNCID_STARTUP
```

1.9 #defines (g-i)

```
                        Opus 5.5 #defines (g-i)

GAD_ID_ICONIFY          GADGET()
GADGET_NUMBER()         GADGET_SEL()
GADGET_SPECIAL()        GADGET_STRING()
GADNUMBER()             GADSEL()
GADSPECIAL()            GADSTRING()
GM_RESIZE               GTCustom_Bold
GTCustom_Borderless     GTCustom_CallBack
GTCustom_ChangeSigBit   GTCustom_ChangeSigTask
GTCustom_Control        GTCustom_CopyTags
GTCustom_FontPenCount   GTCustom_FontPens
GTCustom_FontPenTable   GTCustom_FrameFlags
GTCustom_History        GTCustom_Image
GTCustom_Integer        GTCustom_Justify
GTCustom_LayoutPos      GTCustom_LayoutRel
GTCustom_LocaleKey      GTCustom_LocaleLabels
GTCustom_MinMax         GTCustom_NoGhost
GTCustom_NoSelectNext   GTCustom_PathFilter
GTCustom_Secure         GTCustom_Style
GTCustom_TextAttr       GTCustom_TextPlacement
GTCustom_ThinBorders    HOOKTYPE_STANDARD
HOTKEY_KIND             ICONF_NO_BORDER
ICONF_NO_LABEL          ICONF_POSITION_OK
ID_AFS_MULTI            ID_AFS_PRO
ID_AFS_USER             ID_PFS_FLOPPY
ID_PFS_HARD             IDCMP_FUNC()
IFF_CLIP                IFF_CLIP_READ
```

```
IFF_CLIP_WRITE          IFF_READ
IFF_SAFE                IFF_WRITE
IM_ARROW_DOWN           IM_ARROW_UP
IM_BBOX                 IM_BORDER_BOX
IM_CHECK                IM_ClipBoundary
IM_CROSS                IM_Depth
IM_DRAWER               IM_Erase
IM_Height               IM_ICONIFY
IM_LOCK                 IM_Mask
IM_NoDrawInvalid        IM_NoIconRemap
IM_Rectangle            IM_State
IM_Width                IPCDATA()
IPCF_GETPATH            IPCM_STACK()
IPCSIG_HIDE             IPCSIG_QUIT
IPCSIG_SHOW             IRF_PRECISION_EXACT
IRF_PRECISION_GUI       IRF_PRECISION_ICON
IRF_REMAP_COL0          IS_GADTOOLS()
```

1.10 #defines (j-o)

```
                        Opus 5.5 #defines (j-o)

JUSTIFY_CENTER            JUSTIFY_LEFT
JUSTIFY_RIGHT             LAYOUTF_BOTTOM_ALIGN
LAYOUTF_LEFT_ALIGN        LAYOUTF_RIGHT_ALIGN
LAYOUTF_SAME_HEIGHT       LAYOUTF_SAME_WIDTH
LAYOUTF_TOP_ALIGN         LFF_ICON
LISTF_LOCK                LISTF_POOL
LISTVIEWFLAG_CURSOR_KEYS  lve_Flags
lve_Pen                   LVEF_SELECTED
LVEF_TEMP                 LVEF_USE_PEN
MENUFLAG_AUTO_MUTEX       MENUFLAG_COMM_SEQ
MENUFLAG_GET_SEQ()        MENUFLAG_MAKE_SEQ()
MENUFLAG_TEXT_STRING      MENUFLAG_USE_SEQ
MENUID()                  MODULEF_CALL_STARTUP
MODULEF_STARTUP_SYNC      MTYPE_APPSNAPSHOT
NM_BAR_LABEL              NM_NEXT
NT_DOPUS_NOTIFY           OBJECTF_HOTKEY
OBJECTF_INTEGER           OBJECTF_NO_SELECT_NEXT
OBJECTF_PATH_FILTER       OBJECTF_READ_ONLY
OBJECTF_SECURE            OBJECTFLAG_DRAWN
OBJLIST()                 OD_AREA
OD_END                    OD_GADGET
OD_IMAGE                  OD_SKIP
OD_TEXT                   OPEN_SHRUNK
OPEN_SHRUNK_HORIZ         OPEN_SHRUNK_VERT
OPEN_USED_DEFAULT         OPEN_USED_TOPAZ
OPUS_LISTVIEW_KIND
```

1.11 #defines (p-r)

Opus 5.5 #defines (p-r)

```
POPUP_BARLABEL          POPUP_HELPFLAG
POPUPF_CHECKED          POPUPF_CHECKIT
POPUPF_DISABLED         POPUPF_LOCALE
POPUPF_SUB              POPUPMF_ABOVE
POPUPMF_HELP            POPUPMF_REFRESH
POS_CENTER              POS_MOUSE_CENTER
POS_MOUSE_REL           POS_PROPORTION
POS_REL_RIGHT           POS_RIGHT_JUSTIFY
POS_SQUARE              POSFLAG_ADJUST_POS_X
POSFLAG_ADJUST_POS_Y    POSFLAG_ALIGN_POS_X
POSFLAG_ALIGN_POS_Y     PW_FileCount
PW_FileDone             PW_FileName
PW_FileNum              PW_FileSize
PW_Flags                PW_Info
PW_Screen               PW_SigBit
PW_SigTask              PW_Title
PW_Window               PWF_ABORT
PWF_FILENAME            PWF_FILESIZE
PWF_GRAPH               PWF_INFO
PWF_INVISIBLE           PWF_NOABORT
PWF_SWAP                RANGE_AFTER
RANGE_BETWEEN           RANGE_WEIRD
RECTHEIGHT()            RECTWIDTH()
REF_CALLBACK()          REMLISTF_FREEDATA
REMLISTF_SAVELIST       REPLACE_ABORT
REPLACE_LEAVE           REPLACE_REPLACE
REPLACEF_ALL            REPLY_NO_PORT
REPLY_NO_PORT_IPC
```

1.12 #defines (s-w)

Opus 5.5 #defines (s-w)

```
SCRI_LORES              SCROLL_HORIZ
SCROLL_NOIDCMP          SCROLL_VERT
SEARCH_NOCASE           SEARCH_ONLYWORDS
SEARCH_WILDCARD         SEMF_ATTEMPT
SEMF_EXCLUSIVE          SEMF_SHARED
SET_IPCDATA()           SET_WINDOW_ID()
SIZE_MAX_LESS           SIZE_MAXIMUM
SLF_DIR_FIELD           SRF_CENTJUST
SRF_CHECKMARK           SRF_HISTORY
SRF_LONGINT             SRF_MOUSE_POS
SRF_PATH_FILTER         SRF_RIGHTJUST
SRF_SECURE              TEXTFLAG_ADJUST_TEXT
TEXTFLAG_CENTER         TEXTFLAG_NO_USCORE
TEXTFLAG_RIGHT_JUSTIFY  TEXTFLAG_TEXT_STRING
TYPE_EXT()              VISINFO()
WINDOW_AUTO_KEYS        WINDOW_AUTO_REFRESH
WINDOW_BACKDROP         WINDOW_BUTTONS
WINDOW_FUNCTION         WINDOW_GROUP
WINDOW_ICONIFY          WINDOW_LAYOUT_ADJUST
```

```
WINDOW_LISTER           WINDOW_LISTER_ICONS
WINDOW_MAGIC            WINDOW_NO_ACTIVATE
WINDOW_NO_BORDER        WINDOW_NO_CLOSE
WINDOW_OBJECT_PARENT    WINDOW_POPUP_MENU
WINDOW_REQ_FILL         WINDOW_SCREEN_PARENT
WINDOW_SIMPLE           WINDOW_SIZE_BOTTOM
WINDOW_SIZE_RIGHT       WINDOW_START
WINDOW_TEXT_VIEWER      WINDOW_UNDEFINED
WINDOW_UNKNOWN          WINDOW_USER
WINDOW_VISITOR          WINFLAG()
WINMEMORY()             WINREQUESTER()
```

1.13 Module_Definition

```
                External_Module_Definition

PURPOSE

    1. Introduction

    Directory Opus 5 supports two types of "external modules". This document
    describes the main type, an AmigaDos library file. The other type, ARexx
    modules, are described in the main Opus 5 documentation.

    Library-based modules are located in the DOpus5:Modules/ directory, and
    are identified by the ".module" suffix. They are standard AmigaDos
    libraries, with two compulsory entry points. They main contain any other
    entry points you want, but the first two are required to work with Opus.

    The example code supplied with the SDK illustrates how to create an Opus
    module. While the supplied code is designed for SAS/C, it would be easy to
    adapt it to any other C compiler.


    2. Main module entry point

    The main entry point to the module is a function called Module_Entry().
    The prototype for this function is as follows:

      long Module_Entry(  register __a0 char *args,
        register __a1 struct Screen *screen,
        register __a2 IPCData *ipc,
        register __a3 IPCData *mainipc,
        register __d0 ULONG mod_id,
        register __d1 EXT_FUNC(callback)  );

    This function must be at offset -0x1e in the library, and take parameters
    in the specified registers.

    You should never call this function yourself; it is called by Opus when
    the user runs one of the commands in your module. The parameters to the
    Module_Entry() function are as follows:

  args     - null-terminated argument string, contains any arguments the
       user supplied for the command
```

```
screen   - main Opus screen pointer, you should open any requesters
     on this screen

ipc      - a pointer to your IPCData structure - Opus launches each
     module command as a new process

mainipc  - a pointer to the main IPCData structure for Opus

mod_id   - the ID code of the command selected by the user

callback - address of Opus callback function (see below)
```

3. Second module entry point

The second entry point is a function that the module uses to identify itself. When Opus starts up it scans the contents of the modules directory, and calls this function in each of the modules.

The standard modinit.o module startup code supplies this function for you. It is not recommended that you change it. If you need to supply your own function, the prototype is as follows :

```
APTR Module_Identify(  register __d0 long num  );
```

This function must be at offset -0x24 in the library. "num" is the command ID number that Opus is enquiring about. If "num" is equal to -1, you must return a pointer to the ModuleInfo structure for the module. If "num" is equal to a valid command ID code, you must return a pointer to a description string for that command. If "num" is an invalid value, you must return 0.

4. Module identification

The contents of the module are identified with a ModuleInfo structure. All fields of the ModuleInfo structure must be initialised. The meaning of the fields is as follows:

```
ver   - Module version number (for your own use)
name    - pointer to module name, including ".module" suffix
locale_name - name of locale catalog for the module. This is opened
      automatically by the standard modinit.o startup code,
      which you should use.
flags     - Module flags, see below
function_count  - The number of functions in this module
function  - The definition of the first function
```

Module flag values (for the "flags" field) are as follows:

```
MODULEF_CALL_STARTUP  - If this flag is specified, Opus will run
      your module automatically on startup, with
      the special "mod_id" value of FUNCID_STARTUP

MODULEF_STARTUP_SYNC  - If MODULEF_CALL_STARTUP is also specified,
      this flag causes Opus to wait for your
```

```
      module to return from the startup call before
      continuing

  The ModuleInfo structure contains room for only one function definition.
  If your module contains more than one function, the additional
  ModuleFunction structures MUST follow the ModuleInfo structure in memory.
  You must provide as many ModuleFunction structures are were specified
  in the "function_count" field of the ModuleInfo structure. For example,

    // Module definition, includes first function
    ModuleInfo
  module_info={
      1,      // Version
      "example.module",   // Module name
      "example.catalog",  // Catalog name
      0,      // Flags
      2,      // Number of functions
      {0,"Example1",MSG_EXAMPLE1_DESC,0,0}};

    // Second function definition follows immediately on
    ModuleFunction
  module_func_2={
       1,"Example2",MSG_EXAMPLE2_DESC,0,0};



  5. Function definitions

  The ModuleFunction structure is used to define each command that the
  module provides. The first function is defined with a ModuleFunction
  structure embedded in the ModuleInfo; additional commands must be
  defined after that. All fields of the ModuleFunction structure must
  be initialised, as follows:

id  - command ID code. This value is passed as the "mod_id"
      parameter to the Module_Entry() function

name      - name of the function. This is the actual command name
      that will be used to invoke this command

desc      - locale string ID for the function description. This is the
      ID of the string in the catalog for this module that is
      used to describe this command in the popup command list.

flags     - command flags, see below

template  - command template (in ReadArgs() format). This string is
      displayed in the popup argument list in Opus function
      editors, but is not actually parsed by Opus. You will
      need to use the
              ParseArgs()
               routine on the "args"
      parameter in the Module_Entry() function.

  ModuleFunction flags are as follows:

FUNCF_NEED_SOURCE    - set if your module requires a valid source
```

```
       directory - if one is not available, your
       command will not be launched

FUNCF_NEED_DEST      - set if your module requires a valid destination
          directory

FUNCF_NEED_FILES     - set if you need there to be selected files

FUNCF_NEED_DIRS      - set if you need selected directories

FUNCF_CAN_DO_ICONS   - set if you can operate on icons as well as
          normal files/directories

FUNCF_SINGLE_SOURCE  - set if you can only operate on a single source
          lister

FUNCF_SINGLE_DEST    - set if you can only operate on a single
          destination lister

FUNCF_WANT_DEST      - set if you want a destination directory, but
          don't require one

FUNCF_WANT_SOURCE    - set if you want a source directory, but don't
          require one

FUNCF_WANT_ENTRIES   - set in conjunction with FUNCF_NEED_FILES or
          FUNCF_NEED_DIRS, to specify that you want those
          items but don't require them

FUNCF_PRIVATE - the function is private, it won't show up in
          the popup command list
```

6. Standard startup code

It is highly recommended that you link with the standard module startup code (modinit.o) when creating modules. This code contains the Module_Identify() function, and automatically initialises several library bases which you may need. See the <dopus/modules.h> file for more information on this file.

7. Module callback function

The "callback" parameter to the Module_Entry() function provides the address of a callback function within Opus. This function allows you to access information that your module command may need. The callback function is defined as follows:

```
ULONG callback(     register __d0 ULONG command,
        register __a0 APTR handle,
        register __a1 APTR packet   );

command     - the callback command, see below for the list

handle      - the callback handle. You must pass the value of
        IPCDATA(ipc) for this parameter ("ipc" is the argument
```

```
        passed to the Module_Entry() function)

packet      - a command-specific packet

  Following is the list of callback commands. Each command takes a packet
  specific to it.


Command : EXTCMD_GET_SOURCE
Purpose : Returns the current source path
Packet  : char path[256]
Returns : struct path_node *path
Notes   : The packet is a pointer to a 256 character buffer, into
    which the current source path will be copied. The return
    value is a pointer to a path_node structure, which can be
    used with other callback commands. This structure is
    READ ONLY!

Command : EXTCMD_END_SOURCE
Purpose : Finishes and cleans up current source path
Packet  : Set to 0
Returns : <none>
Notes   : Call this command if you are aborting early and do not
    wish to process further source paths.

Command : EXTCMD_NEXT_SOURCE
Purpose : Gets the next source path
Packet  : char path[256]
Returns : struct path_node *path
Notes   : Call this command when you have finished with the first
    source path and want to move onto the next one. The
    return value is NULL if there are no more source paths.

Command : EXTCMD_UNLOCK_SOURCE
Purpose : Unlock source listers
Packet  : <none>
Returns : <none>
Notes   : When your module command is called, any source listers
    are locked automatically. Call this command when you want
    to unlock them (they are unlocked automatically when
    your module returns).

Command : EXTCMD_GET_DEST
Purpose : Returns the next destination path
Packet  : char path[256]
Returns : struct path_node *path
Notes   : The packet is a pointer to a 256 character buffer, into
    which the current destination path will be copied. The
    return value is a handle to the path, which can be used with
    other callback commands. Call this command repeatedly to
    move through the destination paths. When all the destination
    paths have been used, this command will return NULL. If you
    call this command again, it will will start again with the
    first destination path.

Command : EXTCMD_END_DEST
Purpose : Ends the current destination path
```

```
Packet  : FALSE to abort, TRUE to continue
Returns : <none>
Notes   : You must call this command when you have finished with one
    destination path, prior to calling EXTCMD_GET_DEST.

Command : EXTCMD_GET_ENTRY
Purpose : Get the next entry to work with
Packet  : <none>
Returns : struct function_entry {
      struct MinNode      node;   // Node
      char    *name;  // File name
      APTR    entry;  // Not used
      short        type;   // Type; <0 = file, >0 = dir
      short        flags;  // Not used
    };
Notes   : This returns a pointer to the next entry in the current
    source path. This structure is READ ONLY! Use the "name"
    field to get the entry name.

Command : EXTCMD_END_ENTRY
Purpose : Finish with specific entry
Packet  : struct endentry_packet {
      struct function_entry   *entry;     // Entry to end
      BOOL        deselect;   // TRUE for deselect
    };
Returns : <none>
Notes   : Call this command when you have finished working with one
    entry and wish to move on to the next. "entry" must be set
    to the pointer that was returned by EXTCMD_GET_ENTRY.
    Set "deselect" to TRUE to have the entry deselected in the
    lister.

Command : EXTCMD_RELOAD_ENTRY
Purpose : Marks an entry to be reloaded
Packet  : struct function_entry *entry;
Returns : <none>
Notes   : This command marks the specified entry to be reloaded.
    When the function finishes, the entry will be reloaded to
    update any changes that your module might have made to
    it.

Command : EXTCMD_REMOVE_ENTRY
Purpose : Marks an entry to be reloaded
Packet  : struct function_entry *entry;
Returns : <none>
Notes   : This command marks the specified entry to be removed.
    When the function finishes, the entry will be removed
    from the lister it is in.

Command : EXTCMD_ENTRY_COUNT
Purpose : Returns total count of entries
Packet  : <none>
Returns : long entry_count;
Notes   : Returns the number of selected entries for the function.

Command : EXTCMD_ADD_FILE
Purpose : Adds a file to a lister
```

```
Packet  : struct addfile_packet {
      char     *path;     // Path to add file to
      struct FileInfoBlock *fib;      // FileInfoBlock to add
      APTR     lister;    // Lister pointer
    };
Returns : <none>
Notes   : Allows you to add a file or directory to a lister. The path
    field points to the full path of the file to add. fib is an
    initialised FileInfoBlock which is used to create the file
    entry. The lister pointer is found in the path_node
    structure, which is obtained via a call to EXTCMD_GET_SOURCE
    or EXTCMD_GET_DEST. The display is not updated until you
    call EXTCMD_DO_CHANGES, or your function returns.

Command : EXTCMD_DEL_FILE
Purpose : Delete a file from a lister
Packet  : struct delfile_packet {
      char    *path;      // Path file is in
      char    *name;      // Filename to delete
      APTR    lister;     // Lister pointer
    };
Returns : <none>
Notes   : This removes the specified file from any listers it is
    current shown in. The file itself is not deleted, only the
    display of it in the lister. The display is not updated
    until you call EXTCMD_DO_CHANGES, or your function returns.

Command : EXTCMD_LOAD_FILE
Purpose : Load a new file in a lister
Packet  : struct loadfile_packet {
      char    *path;      // Path file is in
      char    *name;      // Name of file
      short   flags;      // Flags
      short   reload;     // Reload existing file
    };
Returns : <none>
Notes   : This command is similar to EXTCMD_ADD_FILE except that it
    Examines() the file and supplies the FileInfoBlock
    automatically. 'path' is the full path of the file and
    'name' is the file name. The only valid flag at this time
    is LFF_ICON, which indicates that the icon (.info) of the
    supplied file is to be loaded instead of the file itself.
    If 'reload' is set to TRUE, an existing file will be
    reloaded (ie the old entry in the lister will be removed).

Command : EXTCMD_DO_CHANGES
Purpose : Perform file changes in listers
Packet  : <none>
Returns : <none>
Notes   : This command causes any changes made to listers by the
    EXTCMD_ADD_FILE, EXTCMD_DEL_FILE and EXTCMD_LOAD_FILE
    commands to be displayed. If your function returns without
    calling this command, the changes are displayed
    automatically.

Command : EXTCMD_CHECK_ABORT
Purpose : Check abort status in lister
```

```
Packet  : <undefined>
Returns : BOOL
Notes   : This command returns TRUE if your 'function' has been
    aborted by the user. This could have occurred because the
    user pressed escape or clicked the close button on a lister,
    or quit the program.

Command : EXTCMD_GET_WINDOW
Purpose : Get a lister's window pointer
Packet  : struct path_node *path
Returns : struct Window *window
Notes   : Returns a pointer to the Window for the lister specified by
    the path_node structure. This is useful if you want to open
    a requester over a lister window.

Command : EXTCMD_GET_HELP
Purpose : Get help on a topic
Packet  : char *topic
Returns : <none>
Notes   : This command causes Opus to open the AmigaGuide help file and
    search for the named topic.

Command : EXTCMD_GET_PORT
Purpose : Get ARexx port name
Packet  : char name[40]
Returns : <none>
Notes   : This command copies the name of the Opus ARexx port into the
    supplied buffer.

Command : EXTCMD_GET_SCREEN
Purpose : Get public screen name
Packet  : char name[40]
Returns : <none>
Notes   : This command copies the name of the Opus public screen into
    the supplied buffer.

Command : EXTCMD_REPLACE_REQ
Purpose : Shows a "file exists - replace?" requester
Packet  : struct replacereq_packet {
      struct Window *window;   // Window to open over
      struct Screen *screen;   // Screen to open on
      IPCData       *ipc;      // Process IPC pointer
      struct FileInfoBlock *file1;    // First file information
      struct FileInfoBlock *file2;    // Second file information
      short   flags;     // Set to 0 for now
    };
Returns : Result of requester; REPLACE_ABORT for abort,
    REPLACE_LEAVE for skip or REPLACE_REPLACE for replace.
    If the REPLACEF_ALL flag is set, it indicates an "All"
    gadget (eg Skip All, Replace All)

Command : EXTCMD_GET_SCREENDATA
Purpose : Get information about the Opus display
Packet  : <none>
Returns : struct DOpusScreenData {
      struct Screen   *screen;  // Pointer to Opus screen
      struct DrawInfo *draw_info;     // DrawInfo structure
```

```
      USHORT    depth;    // Depth of screen
      USHORT    pen_alloc;      // Pen allocation flag
      USHORT    pen_array[16];  // User pen array
      USHORT    pen_count;      // Number of pens;
    };
Notes   : Returns a structure with useful information about the Opus
    screen. This structure is READ ONLY!
    Call EXTCMD_FREE_SCREENDATA to free it.

Command : EXTCMD_FREE_SCREENDATA
Purpose : Free a DOpusScreenData structure
Packet  : struct DOpusScreenData *
Returns : <none>
Notes   : Frees the result of an EXTCMD_GET_SCREENDATA call

Command : EXTCMD_SEND_COMMAND
Purpose : Send an ARexx command to DOpus
Packet  : struct command_packet {
      char    *command;       // Command to send
      ULONG   flags;    // Command flags
      char    *result;  // Result pointer
      ULONG   rc;      // Result code
    };
Returns : TRUE if the message was sent
Notes   : This command allows you to send an ARexx instruction
    directly to the Opus ARexx port. Set the COMMANDF_RESULT
    flag if you want a result string returned; if one is,
    the 'result' field of the packet will contain a pointer
    to it. You MUST call FreeVec() on this pointer when you
    have finished with the result.
```

1.14 AppXXX_routines

```
AppXXX routines


AllocAppMessage()

AppWindowData()

ChangeAppIcon()

CheckAppMessage()

FindAppWindow()

FreeAppMessage()

GetWBArgPath()
  ReplyAppMessage()

SetAppIconMenuState()

SetWBArg()
```

PURPOSE

The dopus5.library installs patches into the system when it loads to intercept calls to the workbench.library AddAppXXX() functions. This allows DOpus to show AppIcons, AppMenuItems, and support drag and drop onto AppWindows.

The emulation is transparent as far as a third-party application is concerned, but it is possible to access additional features that DOpus provides (especially for AppIcons). Obviously these are only available through DOpus, and not through Workbench.

Using tags with the AddAppIcon() function, it is possible to control the DOpus-only features of AppIcons. Workbench ignores these tags, and so if Workbench is running as well it will just see the plain AppIcon itself.

The tags are as follows :

DAE_Local

This tag causes the icon to only be added to DOpus. If Workbench is running as well, it will not see this icon. Supplying this tag is probably a good idea if your AppIcon depends on some of the other DOpus-specific functions.

DAE_Snapshot

Indicates that this icon can support the Snapshot function. If this tag is specified, the Snapshot item in the icon popup menu will be enabled, and the Snapshot item in the main Icon menu will work. Use of this tag generates AppSnapshotMsgs, see below for more information.

DAE_Close

Turns the 'Open' item in the icon popup menu into a 'Close' item. APPSNAPF_CLOSE will be set in the AppSnapshotMsg that is generated.

DAE_Info

Indicates that this icon can support the Information function. This is similar in operation to the DAE_Snapshot tag. The APPSNAPF_INFO flag will be set in the AppSnapshotMsg.

DAE_Menu

This tag can be used several times for one icon. It allows you to specify additional entries for the icon popup menu. ti_Data points to a string that is displayed for the menu item. The order these tags are supplied specifies the order they are displayed, and also controls the ID that is returned in AppSnapshotMsgs.

DAE_ToggleMenu

Similar to DAE_Menu, this allows you to specify a menu item for

the icon popup menu. The only difference is that the menu item
is a toggle-select item (analagous to CHECKIT for Intuition menus).

DAE_ToggleMenuSel

The same as DAE_ToggleMenu, but specifies that the item is to be
selected by default (analagous to CHECKED for Intuition menus).

DAE_MenuBase

This tag allows you to specify a base ID for menu IDs that
are generated via the DAE_Menu, DAE_ToggleMenu and DAE_ToggleMenuSel
tags. Menu IDs usually start at 0 for the first menu and increase
from there. If you specify the DAE_MenuBase tag, the menu IDs will
start from your supplied value.

DAE_Background

This allows you to specify a pen to use to render the background
colour of the icon. If not supplied, the default is pen 0.

DAE_Locked

This tag specifies that the icon position is to be locked.
That is, the user will be unable to reposition the icon from the
initial coordinates. This flag can be changed later using the

```
ChangeAppIcon()
 function.
```

Using the new tags can cause special messages to be sent to your
message port. These are an extension of the normal AppMessages,
and can be identified by an am_Type of MTYPE_APPSNAPSHOT.

The events you will get special messages for are :

Snapshot

If the DAE_Snapshot tag was specified and the user snapshots your
icon, you will receive a message containing the icon position
(AppSnapshotMsg->position_x and AppSnapshotMsg->position_y).
It is your responsibility to save these values, and use them
when adding the AppIcon in the future.

If the APPSNAPF_WINDOW_POS flag is set in the AppSnapshotMsg->flags
field, the position in AppSnapshotMsg->window_pos is also valid.

Un-Snapshot

If the DAE_Snapshot tag was specified and the user unsnapshots
your icon, you will receive a message with the APPSNAPF_UNSNAPSHOT
flag set.

Close

If DAE_Close was specified, and the user selects the Close item

```
in the icon popup menu, you will receive a message with the
APPSNAPF_CLOSE flag set.

Information

You will receive a message with the APPSNAPF_INFO flag set if you
specified the DAE_Info tag, and the user selects Information on your
icon.

Menu

If menus were added with the DAE_Menu tags, you will receive a
message with the APPSNAPF_MENU flag set when the user selects one
of your menu items. The AppSnapshotMsg->id field contains the
item ID. If the user pressed the help key on one of the items,
the APPSNAPF_HELP flag will also be set.

  Directory Opus also sends additional information to AppWindows. If you
  receive an AppMessage of type MTYPE_APPWINDOW, you should check to see
  if it is an Opus message using the
              CheckAppMessage()
               function. If so,
  the message is a DOpusAppMessage, which contains additional information.
  The extra fields are :

da_DropPos

This field contains an array of Point structures. Each structure
gives the offset from the origin of each file in the message.
This allows you to maintain the relative positions of all icons
dropped in a multiple-file operation.

da_DragOffset

This Point structure gives you the offset of the primary icon
from the mouse pointer. That is, if the user clicked on the primary
icon in the top-left corner, this offset would be 0,0. If they
picked up the icon from the bottom-right corner, it might be 32,18.

da_Flags

The only flag supported so far is DAPPF_ICON_DROP. This indicates
that the files dropped were in fact icons (ie from an icon mode
lister).

  The da_DropPos and da_DragOffset fields enable you to calculate the
  exact position that the user dropped the files on. Normal AppMessages
  only provide the position of the mouse pointer, which is useless if you
  want to maintain the relative and correct positions of the icons.
```

1.15 AllocAppMessage()

```
                    NAME
AllocAppMessage - allocate a DOpusAppMessage
```

```
  SYNOPSIS
AllocAppMessage(memory, port, count)
      A0     A1     D0

DOpusAppMessage *AllocAppMessage(APTR, struct MsgPort *, short);

  FUNCTION
This function allows you to create a DOpusAppMessage (an extended
AppMessage) easily.

  INPUTS
memory - memory handle or NULL (see memory.doc)
port - address of reply port
count - number of arguments

  RESULT
Allocates a DOpusAppMessage, including space for count arguments
(both da_Msg.am_ArgList and da_DropPos will be initialised).

  NOTES
Unless you actually want to send an AppMessage to a DOpus window
with relative icon positions, you don't really need this function.
It does provide a convenient way to allocate an AppMessage, though,
and there's no reason you can't use DOpusAppMessages totally in
place of AppMessages if you want to.

  SEE ALSO

              FreeAppMessage()
              ,
              SetWBArg()
```

1.16 AppWindowData()

```
                  NAME
AppWindowData - extract data from an AppWindow

  SYNOPSIS
AppWindowData(appwindow, idptr, userdataptr)
     A0 A1       A2

struct MsgPort *AppWindowData(APTR, ULONG *, ULONG *);

  FUNCTION
This function returns the ID, Userdata and Message port associated
with the specified AppWindow. These are the parameters that are
supplied in the call to AddAppWindow.

  INPUTS
appwindow - AppWindow handle
idptr - pointer to ULONG to contain the ID
userdataptr - pointer to ULONG to contain the Userdata
```

```
  RESULT
The AppWindow ID and Userdata are stored in the variables supplied,
and the address of the AppWindow's message port is returned.

  SEE ALSO

             FindAppWindow()
             , workbench.library/AddAppWindow()
```

1.17 ChangeAppIcon()

```
                  NAME
ChangeAppIcon - make changes to an AppIcon

  SYNOPSIS
ChangeAppIcon(icon, render, select, label, flags)
         A0     A1      A2      A3     D0

void ChangeAppIcon
     (APTR, struct Image *, struct Image *, char *,
      ULONG);

  FUNCTION
This function allows you to make changes to an AppIcon that
was previously added to DOpus. It has no effect on the icon
on Workbench, so you should use the DAE_Local tag when adding
the icon if your program depends on this function.

You are able to change both frames of the icon's image and the
icon's label. You can also lock or unlock the icon's position,
and make it busy.

  INPUTS
icon - icon to act on, as returned by AddAppIcon()
render - new main image for the icon
select - new select image for the icon
label - new label for the icon
flags - control flags. The available flags are :

  CAIF_RENDER - change the main image
  CAIF_SELECT - change the select image
  CAIF_TITLE  - change the label
  CAIF_LOCKED - change the 'locked' flag
  CAIF_SET  - use with CAIF_LOCKED
  CAIF_BUSY - make icon busy
  CAIF_UNBUSY - make icon unbusy

  NOTES
To lock an icon, pass CAIF_LOCKED|CAIF_SET. To unlock it, pass
CAIF_LOCKED by itself. The render, select and label parameters are
ignored unless their corresponding flags are set. You can specify
any combination of these flags at once. To reduce the visible
effects, you should make as many changes with the one call as
possible.
```

```
  SEE ALSO

              SetAppIconMenuState()
              , workbench.library/AddAppIcon
```

1.18 CheckAppMessage()

```
                    NAME
CheckAppMessage - check if an AppMessage is from DOpus

  SYNOPSIS
CheckAppMessage(msg)
     A0

BOOL CheckAppMessage(DOpusAppMessage *);

  FUNCTION
This function allows you to discover whether an AppMessage is
actually an extended DOpusAppMessage.

  INPUTS
msg - AppMessage to test

  RESULT
Returns TRUE if the message is a DOpusAppMessage.

  NOTES
You MUST only pass AppMessages (or DOpusAppMessages) to this
function. Passing other types of messages (eg IntuiMessages)
results in undefined behaviour.

  SEE ALSO

              AllocAppMessage()
```

1.19 FindAppWindow()

```
                    NAME
FindAppWindow - test to see if a window is an AppWindow

  SYNOPSIS
FindAppWindow(window)
    A0

APTR FindAppWindow(struct Window *);

  FUNCTION
This routine allows you to discover whether a Window is in fact
an AppWindow.
```

```
  INPUTS
window - pointer to the window to test

  RESULT
Returns the AppWindow handle if it is an AppWindow, or NULL if not.

  NOTES
You should only use the returned value within a Forbid()/Permit(),
as the window in question could disappear at any time. Also note that
the system patches are not installed until the dopus5.library is
loaded. Any AppWindows added to the system before the patches are
installed are undetectable.

  SEE ALSO

             AppWindowData()
             , workbench.library/AddAppWindow()
```

1.20 FreeAppMessage()

```
                  NAME
FreeAppMessage - frees a DOpusAppMessage

  SYNOPSIS
FreeAppMessage(msg)
    A0

void FreeAppMessage(DOpusAppMessage *);

  FUNCTION
This function frees the supplied DOpusAppMessage. It is only
designed for messages allocated with
             AllocAppMessage
             .

  INPUTS
msg - message to free

  NOTES
You should not use this routine for AppMessages you receive
(ie are sent by another process). You should ReplyMsg() those
messages as normal. This function is used to free DOpusAppMessages
that YOU create, usually when they are replied to by another
task.

  SEE ALSO

             AllocAppMessage()
```

1.21 GetWBArgPath()

```
  NAME
GetWBArgPath - extract pathname from WBArg

  SYNOPSIS
GetWBArgPath(wbarg, buffer, size)
        A0      A1     D0

BOOL GetWBArgPath(struct WBArg *, char *, long);

  FUNCTION
This function is provided as a convenient method of extracting
the pathname of a file/directory from a WBArg structure (usually
within an AppMessage).

  INPUTS
wbarg - pointer to the WBArg structure
buffer - buffer to write pathname to
size - size of buffer

  RESULT
The full path and name of the object referred to by the WBArg
structure is copied to the supplied buffer. This routine returns
TRUE if it was successful.
```

1.22 ReplyAppMessage()

```
                  NAME
ReplyAppMessage - reply to an AppMessage

  SYNOPSIS
ReplyAppMessage(msg)
     A0

void ReplyAppMessage(DOpusAppMessage *);

  FUNCTION
This function is the best way to reply to a DOpusAppMessage. Its
operation is quite straightforward - if the message has a reply
port set, it calls ReplyMsg() as normal. Otherwise, it calls

              FreeAppMessage
              . This allows messages to be sent with no reply
needed. Directory Opus will never send an AppMessage without a
reply port, but you might want to use this routine among your
own processes.

  INPUTS
msg - message to reply to

  RESULT
The message is replied or freed.
```

```
  SEE ALSO

              FreeAppMessage()
```

1.23 SetAppIconMenuState()

```
                    NAME
SetAppIconMenuState - change the state of an icon popup menu

  SYNOPSIS
SetAppIconMenuState(icon, item, state)
         A0    D0     D1

long SetAppIconMenuState(APTR, long, long);

  FUNCTION
This allows you to set the state of a toggle-select menu item in
the icon popup menu of AppIcons. These menu items would have been
added with the DAE_ToggleMenu and DAE_ToggleMenuSel tags.

  INPUTS
icon - icon to act on, as returned by AddAppIcon()
item - number of item to change (in the order they were added)
state - new state for the item (TRUE=selected)

  RESULT
Returns the old selection state of the item.

  NOTES
This routine uses 0 as a base ID for the menu items, even if you
specified a new base with DAE_MenuBase.

  SEE ALSO

              ChangeAppIcon()
              , workbench.library/AddAppIcon
```

1.24 SetWBArg()

```
  NAME
SetWBArg - fill out a WBArg entry in a DOpusAppMessage

  SYNOPSIS
SetWBArg(msg, item, lock, name, memory)
    A0   D0    D1    A1     A2

BOOL SetWBArg(DOpusAppMessage *, short, BPTR, char *, APTR);
```

```
  FUNCTION
This routine makes it easy to initialise the WBArg structures
in an AppMessage (or a DOpusAppMessage).

  INPUTS
msg - AppMessage to initialise
item - item to initialise (starting at 0)
lock - lock on parent directory
name - name of file
memory - memory handle or NULL

  RESULT
The specified WBArg in the AppMessage is initialised with the
lock and name specified. This routine returns TRUE if it was
successful.

  NOTES
'lock' is the lock of the item's parent directory in the case of
files, or on the item itself in the case of directories. For files,
'name' is the name of the file. 'name' is null for directories.
The lock and name you supply are both copied, so they do not need
to remain valid once this call is complete.
```

1.25 Arg_Routines

```
              Argument Routines


              ParseArgs()

              DisposeArgs()
```

1.26 ParseArgs()

```
                   NAME
ParseArgs - easier interface to ReadArgs()

  SYNOPSIS
ParseArgs(template, args)
       A0      A1

FuncArgs *ParseArgs(char *, char *);

  FUNCTION
This routine makes it much more straightforward to use ReadArgs() to
parse an argument string. Using ReadArgs to parse a string requires
you to allocate and initialise a RDArgs structure and argument
array structure, and also requires the argument string to have a
newline character. This function automates this process for you.

  INPUTS
```

```
template - pointer to ReadArgs template string
args - pointer to argument string (need not have a newline)

  RESULT
If successful, this function returns a FuncArgs structure. This
structure has several fields, but the useful ones are :

    FA_Arguments

    This is the argument array you should use. It is an array
    of long *, each member of which points to the argument result
    for the corresponding template entry. If you need to modify
    any of the values in this array you can, as it is just a copy
    of the real array.

    FA_Count

    This contains the number of arguments in the template. Opus
    counts the arguments in the template and initialises the
    argument array accordingly.

The strings supplied to this function are not needed once the
function has returned.

  NOTES
You should use this routine when parsing arguments supplied to
your Opus modules.

  SEE ALSO

              DisposeArgs()
              , dos.library/ReadArgs()
```

1.27 DisposeArgs()

```
                  NAME
DisposeArgs - free a FuncArgs structure

  SYNOPSIS
DisposeArgs(funcargs)
         A0

void DisposeArgs(FuncArgs *);

  FUNCTION
This function frees the FuncArgs structure returned by
              ParseArgs()
              .

  INPUTS
funcargs - pointer to FuncArgs structure to free

  RESULT
The structure is free. Once you have freed it, none of the arguments
```

```
  remain valid, so you should make local copies of anything you need
  to refer to.

    SEE ALSO

                ParseArgs()
                , dos.library/ReadArgs()
```

1.28 BOOPSI_gadgets

```
                BOOPSI Gadgets

CLASSES


                dopusbuttongclass

                dopuscheckgclass

                dopusframeclass

                dopusiclass

                dopuslistviewgclass

                dopuspalettegclass

                dopusstrgclass

                dopusviewgclass
                PURPOSE
```

The dopus5.library makes several BOOPSI gadgets available globally. These gadgets can be accessed globally without even opening the dopus5.library, although it is a good idea to open it to make sure the library is present in the system.

The gadgets are all sub-classes of standard BOOPSI gadgets, and so take all the standard tags (GA_Left, GA_Top, etc..). Often they are based heavily on GadTools gadgets and will support equivalent GadTools tags. They also have their own set of tags, which is described below.

1.29 dopusbuttongclass

```
dopusbuttongclass
```

The dopusbuttongclass provides a standard pushbutton gadget. It is similar to a standard buttongclass gadget, but provides some additional functionality. This is via the following tags:

GTCustom_TextAttr (struct TextAttr *) (I) - used to specify a font for the gadget label. (default is the window font).

GTCustom_ThinBorders (BOOL) (I) - if set to TRUE, the gadget will be rendered with single-pixel borders (default FALSE).

GTCustom_Borderless (BOOL) (I) - if set to TRUE, the gadget will be rendered with no border (default FALSE).

GTCustom_Bold (BOOL) (I) - is set to TRUE, the gadget label will be rendered in bold (default FALSE).

GTCustom_Style (ULONG) (I) - use this tag to control the text style of the gadget label. Valid flags are FSF_BOLD and FSF_ITALIC (default FSF_NORMAL).

GTCustom_NoGhost (BOOL) (I) - if set to TRUE, the gadget imagery will not 'ghost' when the gadget is disabled (default FALSE).

GTCustom_TextPlacement (WORD) (I) - Lets you select the position of the label relative to the gadget. Valid values are:

PLACETEXT_IN (default)
PLACETEXT_LEFT
PLACETEXT_RIGHT
PLACETEXT_ABOVE

1.30 dopuscheckgclass

dopuscheckgclass

The dopuscheckgclass provides a replacement for GadTools checkbox gadgets. As a BOOPSI class, it allows you to have a checkbox without using GadTools. This class uses the same basic code as the dopusbuttongclass, and as such supports the same tags. The class also supports the GTCB_Checked flag (defined in libraries/gadtools.h) to set or get the current state of the gadget.

1.31 dopusframeclass

dopusframeclass

The dopusframeclass is a BOOPSI class for a frame gadget. A frame gadget does not respond to user input; its only purpose is to draw a frame (usually around some other gadgets). This class uses the same basic code as the dopusbuttongclass, and as such supports the same tags. The class also supports the GTCustom_FrameFlags tag, to specify flags for the frame. Currently, the only defined flag is AREAFLAG_RECESSED, which causes the frame to be drawn as recessed.

1.32 dopusiclass

dopusiclass

This class allows you to access several predefined images. The image you receive is controlled by the following tags:

DIA_Type

This sets the image type. Current valid types are:

IM_ARROW_UP - an up arrow
IM_ARROW_DOWN - a down arrow
IM_CHECK - a check mark
IM_DRAWER - a "folder" image
IM_BBOX - a filled box with a border
IM_BORDER_BOX - a filled box
IM_ICONIFY - an iconify gadget image
IM_LOCK - a lock gadget image

DIA_FrontPen

This sets the front pen for the image. Currently, only the IM_CHECK image supports this tag.

This class is a sub-class of imageclass, and so supports the standard IM_Width, IM_Height, etc, tags. Images are scaled to the supplied sizes.

1.33 dopuslistviewgclass

dopuslistviewgclass

This boopsi gadget is a replacement for the gadtools LISTVIEW_KIND gadgets. It has been designed to "drop-in" as easily as possible, and uses many of the same tags as the gadtools equivalent. It is however much more flexibile than the gadtools gadget.

The gadget duplicates most of the tags provided by gadtools' listview gadget. It also offers some powerful additions not available under gadtools. These include :

- Current selection indicated by highlight bar, checkmark or text colour
- Multiple-selection of items with checkmarks
- Items can be rendered in different colours
- Simple text formatting in the lister
- Scroller can be optionally removed
- Supports drag notification
- Automatic double-click notification
- Supports resizing via OM_SET

It also does not suffer from the gadtools problem of resizing itself to an

integral multiple of the item height (ie, the size you specify is the size you get). It is controlled by the following tags:

DLV_Top (WORD) (ISG) - Top item visible in the listview. This value will be made reasonable if out-of-range (defaults to 0).

DLV_MakeVisible (WORD) (IS) - Number of an item that should be forced within the visible area of the listview by doing minimal scrolling. This tag overrides DLV_Top.

DLV_Labels (struct List * or Att_List *) (ISG) - List of nodes whose ln_Name fields are to be displayed in the listview. Calling SetGadgetAttrs() and specifying 0 will remove the current list. Specifying ~0 will remove the list but will not disturb the display, allowing you to make changes to the contents and selection status.

DLV_ReadOnly (BOOL) (I) - If TRUE, then listview is read-only (defaults to FALSE).

DLV_ScrollWidth (UWORD) (I) - Width of scroll bar for listview. Must be greater than zero (defaults to 16).

DLV_ShowSelected (void) (I) - Specify this tag to have the currently selected item displayed with a highlight bar (or another method). Note that this tag does not support the automatic copying to a string gadget that gadtools does. You should specify ti_Data as 0 for future compatibility.

DLV_Selected (UWORD) (ISG) - Ordinal number of currently selected item, or ~0 to have no current selection (defaults to ~0).

DLV_TextAttr (struct TextAttr *) (I) - Allows you to specify a font to use in the lister. Must have previously been opened.

DLV_MultiSelect (BOOL) (I) - If TRUE, the listview allows multiple-selection of items (see below for details).

DLV_Check (BOOL) (I) - If TRUE, and DLV_ShowSelected is TRUE, the current selection will be indicated with a checkmark. Note that this tag has no meaning in conjunction with DLV_MultiSelect.

DLV_ShowChecks (ULONG) (I) - If set to something other than zero, checkmarks will be shown for selected items (see below for details), but the user will not be able to alter their state.

If set to 1, selected items will be rendered in the highlight pen colour. If set to 2, they will be rendered in the normal text colour.

DLV_Highlight (BOOL) (I) - If TRUE, and DLV_ShowSelected is TRUE, the current selection will be displayed in a different colour.

DLV_NoScroller (BOOL) (I) - If TRUE, the lister will not have a scroller attached. The gadget will still support scrolling by "dragging" the selection highlight.

DLV_TopJustify (BOOL) (I) - If TRUE, items displayed in the lister will

```
      be aligned to the top of the gadget, rather than being centered
      vertically.

  DLV_Flags (ULONG) (I) - Allows you to specify layout flags for the lister.
      Currently the only flags supported are :

        PLACETEXT_ABOVE - display title above gadget (default)
        PLACETEXT_LEFT  - display title at top-left of gadget

  DLV_RightJustify (BOOL) (I) - If TRUE, items displayed in the lister
      will be aligned to the right of the gadget, rather than to the
      left.

  DLV_ShowFilenames (BOOL) (I) - If TRUE, items in the lister are taken to
      be pathnames to files, and only the filename component (ie the
      result of a FilePart() call) is displayed. This allows you to keep
      the full pathname in ln_Name but only display the filename.

  DLV_DragNotify (ULONG) (I) - If this is set to something other than zero,
      the gadget will notify you when the user tries to drag an item
      out of it. See the section on DragNotify below.

  DLV_ScrollUp (void) (S) - Use this tag with SetGadgetAttrs() to make the
      lister scroll up one line.

  DLV_ScrollDown (void) (S) - Use this tag with SetGadgetAttrs() to make the
      lister scroll down one line.

  DLV_SelectPrevious (void) (S) - Use this tag with SetGadgetAttrs() to make
      the previous entry become selected.

  DLV_SelectNext (void) (S) - Use this tag with SetGadgetAttrs() to make
      the next entry become selected.

  DLV_Lines (void) (G) - returns number of visible lines displayed in lister.

  DLV_Object (void) (G) - returns the address of the Object * structure.

  DLV_GetLine (void) (G) - this allows you to get the line number in the
      lister from window-relative mouse coordinates. StoragePtr should be
      initialised to the mouse coordinates ((x<<16)|y).

  DLV_DrawLine (void) (G) - this allows you to render a line of the listview
      into your own RastPort. See the section on DragNotify below
      for more information.

    The gadget is a subclass of gadgetclass and as such supports the
    standard gadgetclass tags (including GA_Disabled). The title of
    the gadget can be specified with GA_Text (GA_IntuiText and
    GA_LabelImage are not supported).


MULTIPLE SELECTION

    The dopuslistviewgclass gadget supports multiple-selection of items.
    This feature is enabled by passing {DLV_MultiSelect,TRUE} on creation.
    The ln_Type field of each of the node structures is used to
```

indicate whether an item is selected or not. For convenience, this field has been renamed lve_Flags.

To see whether an item is selected, test the LVEF_SELECTED flag in the lve_Flags field. Similarly, you can set an item's selection status by changing the value of this flag.

CUSTOM PEN COLOURS

You can specify the individual pen colours of each of the items in the list. The ln_Pri field of each of the node structures is used for this purpose. For convenience, this field has been renamed lve_Pen.

To specify that an item is to be rendered in other than the default pen colour, set lve_Pen to the appropriate value and set the LVEF_USE_PEN flag in the lve_Flags field.

TEXT FORMATTING

The gadget supports simple text-formatting for item display. This allows you to have columns and right-justified text in the lister.

If the text for an entry (ln_Name) contains a \t (tab character), the text following that character will be right-justified in the lister.

You can specify column positions using the \a (alert) character. The character immediately following the \a provides the position for the start of the next column. This is specified in character spaces. You should be aware that characters in proportional fonts are often wider than the nominal width of the font.

For example, if the following items were supplied to the gadget :

```
Bloggs\a\xa Fred\a\x1a 1-Sep-65\tPaid
Hall\a\xa Jane\a\x1a 9-Aug-68\tNot paid
Hubbard\a\xa Bill\a\x1a 7-Mar-18\tPaid
```

The display you would see would be something like this :

```
Bloggs    Fred     1-Sep-65    Paid
Hall      Jane     9-Aug-68      Not paid
Hubbard   Bill     7-Mar-18    Paid
```

DRAG NOTIFICATION

To enable drag notification, pass {DLV_DragNotify,1} on creation. You will then be sent an extended taglist via the IDCMP_IDCMPUPDATE message when the user attempts to drag an item out of the list. If you pass {DLV_DragNotify,2} the user will only be able to drag out of the list sideways; dragging up or down will scroll the list as usual.

```
    The tags you are sent on an attempted drag are as follows :

   Tag    Data

   GA_ID    gadget ID
   GA_Left
   GA_Top   window-relative item coordinates
   GA_Width
   GA_Height  size of the item as displayed
   GA_RelRight
   GA_RelBottom offset mouse position in item
   DLV_Top  top item number
   DLV_DragNotify ordinal number of item dragged

    To see if an IDCMP_IDCMPUDPATE message is from a drag, just test
    for the presence of the DLV_DragNotify tag in the taglist.

    Once you get a drag notification, the actual dragging of the item
    is your responsibility. The easiest way is using the drag routines
    provided by the dopus5.library. Create a DragInfo large enough for the
    item (GA_Width and GA_Height in the taglist). There are two ways to get
    the image for the bitmap.

    The first way is to use the GA_Left and GA_Top coordinates in the
    taglist and just ClipBlit() from your window into the drag rastport.
    This is the easiest way, but will also copy the checkmark if there is
    one, and you may not want that.

    The second way is to use the DLV_DrawLine tag with the GetAttr()
    call, and have the listview render the item into your bitmap for you.

    To do this, you need to initialise a ListViewDraw structure :

   lvdraw.rp    RastPort to render into
   lvdraw.drawinfo  DrawInfo for the screen
   lvdraw.node    List node to render
   lvdraw.line    Set to 0
   lvdraw.box.Left  Set to 0
   lvdraw.box.Top   Set to 0
   lvdraw.box.Width Width of BitMap
   lvdraw.box.Height  Height of BitMap

    Then you pass the address of the ListViewDraw structure as the
    StoragePtr for the GetAttr call. Eg,

   ULONG *ptr=(ULONG)&lvdraw;
   Object *obj=GetTagData(DLV_Object,0,tags);

   GetAttr(DLV_DrawLine,obj,&ptr);

    The GA_RelRight and GA_RelBottom tags are used to indicate where
    in the item the user clicked. When you display the drag image on
    the screen, you should offset its position by these values.


DOUBLE-CLICK NOTIFICATION
```

```
    If you get an IDCMP_IDCMPUPDATE message from the gadget, and the
    DLV_DragNotify tag is not set, it is a normal selection message.
    An additional tag is sent in this situation; DLV_DoubleClick.
    The ti_Data field is a boolean indicating whether the selection
    is a double-click or a normal single click.

    The tags now sent for this message are :

  Tag    Data

  GA_ID   Gadget ID
  DLV_Selected  Ordinal number of selection
  DLV_DoubleClick BOOL


RESIZING

    To resize the gadget, pass the new coordinates via GA_Left, GA_Top,
    GA_Width and GA_Height in a SetGadgetAttrs() call. You will then need
    to refresh the display yourself, usually by clearing the window and
    calling RefreshGList(). You may also need to call RefreshWindowFrame(),
    if the window has been resized smaller, as the gadget may have
    overwritten the window border before it was resized.
```

1.34 dopuspalettegclass

```
dopuspalettegclass

    The dopuspalettegclass provides a replacement for GadTools PALETTE_KIND
    gadgets. As a BOOPSI class, it allows you to have a palette gadget without
    using GadTools. This class supports the following tags:

  GTCustom_TextAttr (struct TextAttr *) (I) - used to specify a font for
      the gadget label. (default is the window font).

  GTCustom_ThinBorders (BOOL) (I) - if set to TRUE, the gadget will be
      rendered with single-pixel borders (default FALSE).

  GTPA_Color (UBYTE) (ISG) - the currently selected colour of the palette.
      This number is a pen number, and not the ordinal colour number within
      the palette gadget itself (default 1).

  GTPA_Depth (UWORD) (IS) - Number of bitplanes in the palette (default 1).

  GTPA_ColorTable (UBYTE *) (IS) - Pointer to a table of pen numbers
      indicating which colours should be used and edited by the palette
      gadget. This array must contain as many entries as there are colours
      displayed in the palette gadget. The array provided with this tag
      must remain valid for the life of the gadget, or until a new table
      is provided. (default is NULL, which causes a 1-to-1 mapping of pen
      numbers).

  GTPA_NumColors (UWORD) (IS) - Number of colours to display in the palette
      gadget. This overrides GTPA_Depth and allows numbers which aren't
      powers of 2. (defaults to 2)
```

```
DPG_Pen (UWORD) (ISG) - the currently selected colour of the palette.
    This is similar to GTPA_Color but referes to the ordinal colour
    number and not the pen number itself.

DPG_SelectNext (void) (S) - use this tag with SetGadgetAttrs() to cause
    the next colour in the gadget to be selected.

DPG_SelectPrevious (void) (S) - use this tag with SetGadgetAttrs() to
    cause the previous colour in the gadget to be selected.
```

1.35 dopusstrgclass

```
              dopusstrgclass

  This dopusstrgclass provides a replacement for GadTools STRING_KIND
  gadgets. It is basically a standard string gadget with an automatic
  border, but also supports additional features. This class is based
  on the dopusbuttongclass, and as such supports all the tags of that
  class. It is also a subclass of strgclass and supports the standard
  string gadget tags of that class (with some important changes, listed
  below). The control tags supported by this class are as follows:

STRINGA_Buffer (char *) (I) - Specify the main buffer for the gadget.
    If this is not supplied, a buffer will be allocated automatically
    (this does not suffer from the maximum 128 bytes limitation of the
    standard BOOPSI string gadget class).

STRINGA_UndoBuffer (char *) (I) - Specify the undo buffer for the
    gadget. Again, one will be allocated automatically if you do not
    supply one.

STRINGA_WorkBuffer (char *) (I) - Specify the work buffer for the
    gadget. This will also be automatically allocated if you do not
    supply it.

STRINGA_MaxChars (long) (I) - Specify the maximum length of the string
    editable by this gadget. If buffers are allocated automatically,
    they will be this size. GTST_MaxChars and GTIN_MaxChars are also
    synonyms for this tag. (defaults to 40).

STRINGA_Font (struct TextFont *) (I) - Specify the font to use for this
    gadget.

GTCustom_ChangeSigTask (struct Task *) (I) - Specify a task that is to
    be signalled whenever the contents of this gadget change.
    (defaults to NULL).

GTCustom_ChangeSigBit (BYTE) (I) - Specify the signal bit that is used
    to signal a task whenever the contents of this gadget change.
    (defaults to 0).

STRINGA_TextVal (char *) (IS) - Set the contents of the string gadget.
    The supplied string is copied to the buffer. GTST_String, GTTX_Text,
    GTIN_Number and GTNM_Number are valid synonyms for this tag.
```

```
    To use the dopus5.library edit hook with a string gadget, you should
    call
                GetEditHook()
                 and pass the results with the STRINGA_EditHook tag.
```

1.36 dopusviewgclass

```
dopusviewgclass

    This class provides a simple view gadget, similar to GadTools TEXT_KIND
    and NUMBER_KIND gadgets. It is a subclass of dopusbuttongclass, and so
    supports all the tags of that class. To set the contents of the view
    gadget, use the GTTX_Text or GTNM_Number tags (a view gadget can be
    used to display either text or a number interchangeably).
```

1.37 BuflO_Routines

```
                Buffered I/O Routines


                CloseBuf()

                ExamineBuf()

                FHFromBuf()

                FlushBuf()

                OpenBuf()

                ReadBuf()

                SeekBuf()

                WriteBuf()
```

1.38 CloseBuf()

```
                     NAME
  CloseBuf - close a buffered file

    SYNOPSIS
  CloseBuf(file)
      A0

  void CloseBuf(APTR);
```

```
  FUNCTION
Closes a file opened with
              OpenBuf()
              .

  INPUTS
file - file to close

  RESULT
Any write data in the buffer is written to disk and the
file is closed.

  SEE ALSO

              OpenBuf()
```

1.39 ExamineBuf()

```
                  NAME
ExamineBuf - Examine an open file

  SYNOPSIS
ExamineBuf(file, fib)
      A0    A1

long ExamineBuf(APTR, struct FileInfoBlock *);

  FUNCTION
This function calls ExamineFH() on the underlying DOS file handle.

  INPUTS
file - file to examine
fib - FileInfoBlock structure, must be longword aligned

  RESULT
Returns DOSTRUE if successful. The FileInfoBlock will contain
information about the open file.

  BUGS
If the file is open for writing, the file size reported by this
function may not be accurate.

  SEE ALSO

              OpenBuf()
              , dos.library/ExamineFH()
```

1.40 FHFromBuf()

```
                    NAME
FHFromBuf - get DOS file handle

  SYNOPSIS
FHFromBuf(file)
     A0

BPTR FHFromBuf(APTR);

  FUNCTION
This function returns the underlying DOS file handle for a
buffered IO handle.

  INPUTS
file - buffered IO file handle

  RESULT
Returns the file handle.

  SEE ALSO

              OpenBuf()
```

1.41 FlushBuf()

```
                    NAME
FlushBuf - flush file buffer

  SYNOPSIS
FlushBuf(file)
    A0

void FlushBuf(APTR);

  FUNCTION
This function flushes the buffer of a buffered IO file. If there
is any write data in the buffer, it is written to disk.

  INPUTS
file - file handle to flush

  RESULT
The buffer is flushed.

  NOTES
In practice, you never need to call this function.

  SEE ALSO

              OpenBuf()
              ,
              WriteBuf()
              ,
```

```
               ReadBuf()
```

1.42 OpenBuf()

```
                    NAME
OpenBuf - open a file for buffered I/O

  SYNOPSIS
OpenBuf(name, mode, bufsize)
   A0    D0     D1

APTR OpenBuf(char *, long, long);

  FUNCTION
This function opens a file for use with the buffered I/O routines.

  INPUTS
name - name of the file to open
mode - mode to use
bufsize - size of the buffer to use

  RESULT
Returns a buffered file handle if successful, or NULL. This is
not a standard DOS file handle, and can only be used with the
other buffered IO functions.

  SEE ALSO

              CloseBuf()
              , dos.library/Open()
```

1.43 ReadBuf()

```
                    NAME
ReadBuf - read data from a buffered file

  SYNOPSIS
ReadBuf(file, buffer, size)
   A0     A1     D0

long ReadBuf(APTR, char *, long);

  FUNCTION
This function reads data from a buffered IO file.

  INPUTS
file - buffered IO file handle
buffer - buffer to place data in
size - size to read
```

```
  RESULT
This function returns the size of the data actually read,
or -1 if an error occurred.

  SEE ALSO

              OpenBuf()
              , dos.library/Read()
```

1.44 SeekBuf()

```
                    NAME
SeekBuf - seek within a buffered IO file

  SYNOPSIS
SeekBuf(file, offset, mode)
   A0     D0     D1

long SeekBuf(APTR, long, long);

  FUNCTION
This function sets the read/write position for a buffered IO file.
If the seek takes the position outside of the current buffer, the
buffer will be flushed and re-read automatically.

  INPUTS
file - file to seek within
offset - offset to seek
mode - type of seet (OFFSET_BEGINNING, OFFSET_CURRENT, OFFSET_END)

  RESULT
Returns the previous file position.

  SEE ALSO

              OpenBuf()
              , dos.library/Seek()
```

1.45 WriteBuf()

```
                    NAME
WriteBuf - write data to a buffered IO file

  SYNOPSIS
WriteBuf(file, data, size)
    A0    A1    D0

long WriteBuf(APTR, char *, long);

  FUNCTION
```

```
Writes data to a file opened for buffered IO.

  INPUTS
file - file handle
data - data to write
size - size to write (-1 works for a null-terminated string)

  RESULT
Returns the number of bytes written, or -1 for an error.

  SEE ALSO

              OpenBuf()
              , dos.library/Write()
```

1.46 Clipboard_Routines

```
              Clipboard Routines


              CloseClipBoard()

              OpenClipBoard()

              ReadClipString()

              WriteClipString()
```

1.47 CloseClipBoard()

```
                  NAME
CloseClipBoard - close a clipboard handle

  SYNOPSIS
CloseClipBoard(handle)
     A0

void CloseClipBoard(APTR);

  FUNCTION
Closes a handle to the clipboard opened with
              OpenClipBoard()
              .

  INPUTS
handle - clipboard handle

  RESULT
The clipboard unit is closed.
```

```
  SEE ALSO

              OpenClipBoard()
```

1.48 OpenClipBoard()

```
                    NAME
OpenClipBoard - open clipboard for easy access

  SYNOPSIS
OpenClipBoard(unit)
         D0

APTR OpenClipBoard(ULONG);

  FUNCTION
This function opens a specified unit of the clipboard.device. Used
with the other clipboard functions, it provides an easy method to
manipulate text strings with the clipboard.

  INPUTS
unit - unit number to open (usually 0)

  RESULT
Returns clipboard handle.

  SEE ALSO

              CloseClipBoard()
```

1.49 ReadClipString()

```
                    NAME
ReadClipString - read a text string from the clipboard

  SYNOPSIS
ReadClipString(handle, buffer, size)
     A0      A1     D0

long ReadClipString(APTR, char *, long);

  FUNCTION
This function reads a string of text from the clipboard handle.

  INPUTS
handle - clipboard handle
buffer - buffer to store string
size - size of buffer

  RESULT
```

```
Returns the length of the string. If there was no valid FTXT string
in the clipboard, it returns 0.

  SEE ALSO

              OpenClipBoard()
              ,
              WriteClipString()
```

1.50 WriteClipString()

```
                    NAME
WriteClipString - write a text string to the clipboard

  SYNOPSIS
WriteClipString(handle, buffer, size)
      A0      A1     D0

BOOL WriteClipString(APTR, char *, long);

  FUNCTION
This function writes a string of text to the clipboard handle.

  INPUTS
handle - clipboard handle
buffer - buffer containing string
size - length of string

  RESULT
Returns TRUE if it succeeded, FALSE otherwise. The string is stored
in standard FTXT format, readable by
              ReadClipString()
               and most
other programs that access the clipboard.

  SEE ALSO

              OpenClipBoard()
              ,
              ReadClipString()
```

1.51 DiskIO_Routines

```
              Disk I/O Routines


              OpenDisk()

              CloseDisk()
```

1.52 OpenDisk()

```
                    NAME
OpenDisk - open a disk for direct I/O

  SYNOPSIS
OpenDisk(disk, port)
    A0    A1

DiskHandle *OpenDisk(char *, struct MsgPort *);

  FUNCTION
This routine makes it easy to access the underlying device for
direct I/O. It allows you to open any filesystem (that supports
direct I/O) with just the device name.

  INPUTS
disk - name of disk to open, eg DF0:, HD1:
port - message port to use, or NULL

  RESULT
If this function succeeds, it returns a DiskHandle structure,
which contains all the information you need to access the device
directly. The structure fields are :

    dh_Port
  If you did not supply a message port to use, one is
  created automatically and its address is stored here. Usually
  you will want a port created for you, but if you are working
  with multiple devices at once you might want them all to share
  the same message port.

    dh_IO
  This is a pointer to an IOExtTD structure, which you can use
  to perform I/O on the device.

    dh_Startup
  A pointer to the FileSysStartupMsg of the device.

    dh_Geo
  A pointer to the DosEnvec structure of the device.

    dh_Device
  Full device name (without a colon)

    dh_Info/dh_Result
  If dh_Result is TRUE, dh_Info is valid, and contains current
  information about the disk.

    dh_Root/dh_BlockSize
  These give the block number of the disk's root block, and
  the block size.

  SEE ALSO

              CloseDisk()
```

```
               , trackdisk.doc
```

1.53 CloseDisk()

```
                    NAME
CloseDisk - close a DiskHandle structure

  SYNOPSIS
CloseDisk(handle)
      A0

void CloseDisk(DiskHandle *);

  FUNCTION
This function cleans up and closes a DiskHandle structure opened
with the
               OpenDisk()
                routine.

  INPUTS
handle - DiskHandle to close

  SEE ALSO

               OpenDisk()
```

1.54 DOS_Routines

```
               DOS Routines


               DateFromStrings()

               DeviceFromHandler()

               DeviceFromLock()

               DevNameFromLock()

               FreeDosPathList()

               GetDosPathList()

               GetFileVersion()

               LaunchCLI()

               LaunchWB()

               ParseDateStrings()
```

```
              SearchFile()

              SetEnv()
```

1.55 DateFromStrings()

```
                   NAME
DateFromStrings - convert date and time strings to a datestamp

  SYNOPSIS
DateFromStrings(date, time, ds)
     A0    A1   A2

BOOL DateFromStrings(char *, char *, struct DateStamp *);

  FUNCTION
This routine takes a date string and a time string and converts them
to a DOS DateStamp. The DOS StrToDate() routine is used to perform
this conversion, so it is sensitive to the current locale. If the
time string contains an 'a' or a 'p' to signify am or pm, it
is automatically converted to 24 hour time for the DOS call.

  INPUTS
date - date string to convert
time - time string to convert
ds - DateStamp to store result

  RESULT
Returns TRUE if successful.

  SEE ALSO

              ParseDateStrings()
              , dos.library/StrToDate()
```

1.56 DeviceFromHandler()

```
                   NAME
DeviceFromHandler - returns device name from handler

  SYNOPSIS
DeviceFromHandler(handler, buffer)
        A0       A1

struct DosList *DeviceFromHandler(struct MsgPort *, char *);

  FUNCTION
This function takes a pointer to a filesystem's handler
(message port) and returns the associated device name.
```

```
  INPUTS
handler - pointer to handler message port
buffer - buffer to store device name (must be >=34 bytes)

  RESULT
If the port supplied is a valid filesystem handler, the
name of the device is stored in the supplied buffer, and
a pointer to the DosList entry for that device is returned.

  SEE ALSO

              DeviceFromLock()
              ,
              DevNameFromLock()
```

1.57 DeviceFromLock()

```
                  NAME
DeviceFromLock - returns device name from a filelock

  SYNOPSIS
DeviceFromLock(lock, buffer)
    A0     A1

struct DosList *DeviceFromLock(BPTR, char *);

  FUNCTION
This function takes a filelock and returns the name of the
device that lock resides on.

  INPUTS
lock - pointer to lock
buffer - buffer to store device name (must be >=34 bytes)

  RESULT
The name of the device is stored in the supplied buffer, and
a pointer to the DosList entry for that device is returned.

  SEE ALSO

              DeviceFromHandler()
              ,
              DevNameFromLock()
```

1.58 DevNameFromLock()

```
                  NAME
DevNameFromLock - return the full pathname of a file
```

```
  SYNOPSIS
DevNameFromLock(lock, buffer, size)
     D1     D2     D3

BOOL DevNameFromLock(BPTR, char *, long);

  FUNCTION
Returns a fully qualified path for the lock. The only difference
between this function and the equivalent DOS library routine is
that the device name of the disk is returned, rather than the
volume name.

For example, if the NameFromLock() routine returned :

    Workbench:S/startup-sequence

The DevNameFromLock() routine would return :

    DH0:S/startup-sequence

  INPUTS
lock - filelock to obtain the path for
buffer - buffer to store path
size - size of buffer

  RESULT
This function returns TRUE if it succeeds.

  SEE ALSO

              DeviceFromLock()
              , dos.library/NameFromLock()
```

1.59 FreeDosPathList()

```
                  NAME
FreeDosPathList - free a DOS path list

  SYNOPSIS
FreeDosPathList(list)
     A0

void FreeDosPathList(BPTR);

  FUNCTION
This function frees a standard DOS path list, by unlocking each
lock and FreeVec()ing each entry.

  INPUTS
list - pointer to head of list

  RESULT
The list is freed.
```

```
  SEE ALSO

              GetDosPathList()
```

1.60 GetDosPathList()

```
                   NAME
GetDosPathList - get a copy of a DOS path list

  SYNOPSIS
GetDosPathList(list)
    A0

BPTR GetDosPathList(BPTR);

  FUNCTION
This routine has two uses. The first is to copy an existing DOS
path list that you supply. The second is to attempt to find and copy
the system path list.

  INPUTS
list - path list to copy or NULL

  RESULT
If you supply a path list, it will be copied and the address of the
first entry of the new list will be returned.

If you pass NULL, this routine attempts to find a system path list to
copy. The Amiga has no definitive path list, so the only way to
obtain one is to copy it from another process. This routine looks for
the following processes (in order) : Workbench, Initial CLI, Shell
Process, New_WShell and Background CLI. If one of these processes is
found and it has a valid path list, that list is copied and returned
to you.

  NOTES
If Workbench is not running, Opus creates a dummy task called
'Workbench', purely to provide a path list for programs that use this
method.

  SEE ALSO

              FreeDosPathList()
```

1.61 GetFileVersion()

```
  NAME
GetFileVersion - get a file's version information
```

```
  SYNOPSIS
GetFileVersion(name, verptr, revptr, date, progress)
    A0     D0      D1     A1      A2

BOOL GetFileVersion(char *, short *, short *,
        struct DateStamp *, APTR);

  FUNCTION
This routine examines the given file and returns the file's version
number and revision, and creation date if available. It looks primarily
for a $VER string, but also understands the format of libraries,
devices, etc, and can extract the version from the Romtag structure in
the file. You can also supply a Progress handle if you want to use a
progress indicator while looking for the version information.

  INPUTS
name - full pathname of file to examine
verptr - pointer to short to receive the version number
revptr - pointer to short to receive the revision number
date - pointer to DateStamp structure (NULL if no date needed)
progress - pointer to progress indicator (or NULL)

  RESULT
Returns TRUE if a valid version number was found (this does not
necessarily mean that a date was found too).
```

1.62 LaunchCLI()

```
                  NAME
LaunchCLI - launch a program as a CLI process

  SYNOPSIS
LaunchCLI(name, screen, curdir, input, output, wait)
     A0     A1      D0      D1     D2     D3

BOOL LaunchCLI(char *, struct Screen *, BPTR, BPTR, BPTR, short);

  FUNCTION
This routine makes it easy to launch a program as a CLI process. The
launched process will have a full path list and copy of local
environment variables. You can have the process launched synchronously,
which means this function would not return until the process quit.
The stack size is fixed to 4096 bytes.

  INPUTS
name - name of the program to launch, including any arguments
screen - a screen for errors to appear on (or NULL for default)
curdir - lock for current directory, or NULL for default
input - file handle for standard input, or NULL
output - file handle for standard output, or NULL
wait - set to TRUE if you want to wait for the process to return

  RESULT
Returns TRUE if the process was launched successfully. If the
'wait' parameter was set to TRUE, will not return until the child
```

```
process does.

  NOTES
This function will search the current path list for your program
if you do not specify the full path.

  SEE ALSO

             LaunchWB
             , dos.library/SystemTagList
```

1.63 LaunchWB()

```
                  NAME
LaunchWB - launch a program as a Workbench process

  SYNOPSIS
LaunchWB(name, screen, wait)
     A0     A1    D0

BOOL LaunchWB(char *, struct Screen *, short);

  FUNCTION
This routine makes it easy to launch a program as a Workbench process.
Workbench processes expect to receive a startup message from the
launching process, and ordinarily the launching process must wait
until this message is replied to. Using this function relieves you
of this - you can launch the process and then forget about it.
The launched process will have a full path list and copy of local
environment variables.

  INPUTS
name - name of the program to launch, including any arguments
screen - a screen for errors to appear on (or NULL for default)
wait - set to TRUE if you want to wait for the process to return

  RESULT
Returns TRUE if the process was launched successfully. If the
'wait' parameter was set to TRUE, will not return until the child
process does. Otherwise, it will return immediately and you do not
need to wait for a reply to the startup message.

  NOTES
This function will search the current path list for your program
if you do not specify the full path.

  SEE ALSO

             LaunchCLI
             , dos.library/SystemTagList
```

1.64 ParseDateStrings()

```
                    NAME
ParseDateStrings - parse a date/time string into separate buffers

  SYNOPSIS
ParseDateStrings(string, date, time, rangeptr)
       A0     A1    A2      A3

char *ParseDateStrings(char *, char *, char *, long *);

  FUNCTION
This function takes a date/time string (eg "8-12-95 10:34:18") and
splits the date and time elements into separate buffers. It also
supports the use of the '>' character to indicate ranges. For
example, "10-jan-94 > 15-jun-95" would indicate any date between
those dates.

  INPUTS
string - combined date/time string. This routine is smart enough
   to handle it if the time comes before the date, or
   vice versa, and it also deals reasonably well with
   different types of date inputs.
date - buffer to receive the date component (>=22 bytes)
time - buffer to receive the time component (>=22 bytes)
rangeptr - long pointer to receive the range code (or NULL)

  RESULT
The return from this function is a pointer to the end of the
parsed part of the input string. If the range returns RANGE_BETWEEN
(to signify a range between two dates), you will need to call
ParseDateStrings() again on the remainder of the string to get the
next date and time.

  SEE ALSO

              DateFromStrings()
```

1.65 SearchFile()

```
  NAME
SearchFile - search a file or buffer for a text string

  SYNOPSIS
SearchFile(file, text, flags, buffer, bufsize)
      A0    A1     D0     A2      D1

long SearchFile(APTR, UBYTE *, ULONG, UBYTE *, ULONG);

  FUNCTION
This routine searches a file, either on disk or in memory, for
a specified text string. It supports hex or decimal ascii values,
```

```
and limited wildcard searching. To search for a hex string,
the supplied search string should begin with a $ and then consist
of two-character hex codes. When searching for plain text, a
decimal ascii value can be specified with a \ character (eg \127).
A literal \ is given as \\. A question mark (?) is used as a
single wildcard character in both hex and text searches.

  INPUTS
file - buffered IO file handle
text - text string to search for
flags - Combination of the following flags :

     SEARCH_NOCASE     - not case sensitive
     SEARCH_WILDCARD   - support ? as a wildcard character
     SEARCH_ONLYWORDS  - only match whole words

buffer - memory buffer to search if no file specified
bufsize - size of memory buffer

  RESULT
If the supplied string is found, the offset within the file/buffer
of the first instance is returned. If no match is found or an error
occurs, -1 is returned.
```

1.66 SetEnv()

```
  NAME
SetEnv - set a global environment variable

  SYNOPSIS
SetEnv(name, string, permanent)
  A0     A1 D0

void SetEnv(char *, char *, BOOL);

  FUNCTION
This routine sets the named environment variable to the supplied
string value, and optionally saves it permanently.

  INPUTS
name - name of the variable to set
string - text string to set the variable to (must be null-terminated)
permanent - set to TRUE if you want the variable saved

  RESULT
The environment variable will be created if it does not exist. Any
sub-directories that are needed will also be created. For example,
if you set the variable "foo/bar/baz", the directories "env:foo"
and "env:foo/bar" would be automatically created if they did not
exist. If you set the 'permanent' flag to TRUE, the variable
will also be created in the ENVARC: directory.

  SEE ALSO
```

dos.library/GetVar

1.67 Drag_Routines

Drag Routines

FreeDragInfo()

GetDragImage()

GetDragInfo()

GetDragMask()

HideDragImage()

ShowDragImage()

StampDragImage()
PURPOSE

No, this isn't a new form of software-based caberet act. The drag routines in the dopus5.library make it easy for you to implement your own drag and drop system.

The DragInfo structure is the key of this system. Calling the

GetDragInfo()
function will create one of these structures, and you use it in all subsequent calls.

The important fields of the DragInfo structure are :

flags You can set flags to modify the behavior of dragged images.

DRAGF_OPAQUE indicates that the drag image should be opaque; that is, colour 0 does not allow the background to show through.

DRAGF_NO_LOCK indicates that the drag routines should not lock the screen layers themselves.

DRAGF_TRANSPARENT indicates that the drag image should be transparent. Used in conjunction with DRAGF_OPAQUE, it allows you to create irregular shaped images.

drag_rp This is a RastPort that you can use to draw into the drag image.

The other fields of the DragInfo structure can be used by you, but normally they should be left alone.

The usual process of dragging an image is :

```
1.
              GetDragInfo()
                2. Either render into di->drag_rp or call
              GetDragImage()
                3. Call
              GetDragMask()
               if you rendered directly
4. If you set DRAGF_NO_LOCK, LockLayers()
5. Multiple calls to
              ShowDragImage()
               to make the image visible
   and move it around (in response to mouse movements)
6.
              FreeDragInfo()
               to remove the image
7. If DRAGF_NO_LOCK was set, UnlockLayers()

  The Amiga OS has a bug which can cause a deadlock if another task attempts
  to call LockLayers() while you have them locked. If you are dragging over
  the entire screen rather than an individual window, you will need to take
  additional steps to prevent this deadlock.

  You need to set up a timer event, roughly every half second or so (the
  dopus5.library timer routines are ideal for this purpose). You also need
  to have the IDCMP_INTUITICKS flag set for your window. You then must
  keep a count of the number of IDCMP_INTUITICKS messages received. Every
  time your periodic timer event comes around, you must examine this count
  to see if it has changed. As INTUITICKS are sent roughly every 10th of
  a second, one or more should have been received between each of your
  timer events. If no INTUITICKS were received, it's a fair bet that
  Intuition has deadlocked itself, and you should immediately call
  UnlockLayers() (or
              HideDragImage()
              ) to unfreeze the system.
```

1.68 FreeDragInfo()

```
                    NAME
FreeDragInfo - frees a DragInfo structure

  SYNOPSIS
FreeDragInfo(drag)
        A0

void FreeDragInfo(DragInfo *);

  FUNCTION
This function removes a drag image from the display if it is still
visible, and frees the DragInfo structure.

  INPUTS
drag - structure to free

  SEE ALSO
```

```
               GetDragInfo()
```

1.69 GetDragImage()

```
                    NAME
GetDragImage - pick up on-screen imagery to drag

  SYNOPSIS
GetDragImage(drag, x, y)
        A0  D0 D1

void GetDragImage(DragInfo *, long, long);

  FUNCTION
This routine copies on-screen image data into the rastport of the
specified DragInfo structure. If the drag image is visible when this
routine is called, it is cleared before the data is copied.

  INPUTS
drag - DragInfo structure
x - x-position on screen
y - y-position on screen

  RESULT
The image data is copied from the Bitmap of the Window that was
specified when the drag image was created. This routine calls

               GetDragMask()
                automatically.

  SEE ALSO

               GetDragInfo()
```

1.70 GetDragInfo()

```
                    NAME
GetDragInfo - create a DragInfo structure

  SYNOPSIS
GetDragInfo(window, rastport, width, height, need_gels)
        A0       A1       D0     D1       D2

DragInfo *GetDragInfo(struct Window *, struct RastPort *,
          long, long, long);

  FUNCTION
Creates a DragInfo structure that is used to implement drag and drop.
Drags are inherently attached to a particular RastPort (usually either
```

```
a screen's or a window's). The drag system is implemented using BOBs,
which require a GelsInfo structure to be attached to the destination
RastPort. This routine can do this for you if you desire.

  INPUTS
window - Window to attach BOB to (or NULL if rastport is supplied)
rastport - RastPort to attach BOB to (if not a window)
width - width of drag image
height - height of drag image
need_gels - set to TRUE if you would like this routine to allocate
      and initialise a GelsInfo automatically

  RESULT
If successful, a DragInfo structure is returned. Nothing is displayed
on-screen; you must create the image and display it using the other
library calls. Once you have the DragInfo structure, you can
initialise the 'flags' field as described in the introduction.

  SEE ALSO

              FreeDragInfo()
```

1.71 GetDragMask()

```
                  NAME
GetDragMask - build mask for drag image

  SYNOPSIS
GetDragMask(drag)
       A0

void GetDragMask(DragInfo *);

  FUNCTION
Once you have created the image you want to drag, you must call
this function. This builds the shadow mask used to drag the image,
and is necessary for the image to be displayed correctly.

  INPUTS
drag - DragInfo structure to build mask for

  SEE ALSO

              GetDragInfo()
```

1.72 HideDragImage()

```
                  NAME
HideDragImage - remove a drag image from the display
```

```
  SYNOPSIS
HideDragImage(drag)
         A0

void HideDragImage(DragInfo *);

  FUNCTION
This routine removes a visible drag image from the display.

  INPUTS
drag - DragInfo structure

  SEE ALSO

              ShowDragImage()
```

1.73 ShowDragImage()

```
                  NAME
ShowDragImage - display a drag image

  SYNOPSIS
ShowDragImage(drag, x, y)
         A0  D0 D1

void ShowDragImage(DragInfo *, long, long);

  FUNCTION
This routine displays a drag image at a given location. The image is
displayed in the RastPort that was supplied to the
              GetDragInfo()
               call.
If the image was not already displayed, it is added to the display.
If it was, it is removed from its current position and redisplayed in
the new location. This is the main call used to move an image around
the screen.

  INPUTS
drag - DragInfo structure to display
x - x position in rastport
y - y position in rastport

  SEE ALSO

              GetDragInfo()
              ,
              HideDragImage()
```

1.74 StampDragImage()

```
                    NAME
StampDragImage - stamp drag image onto the screen

  SYNOPSIS
StampDragImage(drag, x, y)
    A0  D0 D1

void StampDragImage(DragInfo *, long, long);

  FUNCTION
This routine stamps the drag image onto the bitmap at the given
location. Using this function would allow you to "paint" with the
drag image.

  INPUTS
drag - DragInfo structure
x - x position to stamp image at
y - y position to stamp image at

  RESULT
The image is drawn into the RastPort that was supplied in the

              GetDragInfo()
               call.

  SEE ALSO

              GetDragInfo()
              ,
              ShowDragImage()
```

1.75 Edit_Hook

```
              Edit Hook


              FreeEditHook()

              GetEditHook()

              GetSecureString()
              PURPOSE

  The dopus5.library provides an edit hook which you can attach to string
  gadgets, to take advantage of some additional features. The features
  provided by the edit hook include :

- Enhanced cursor movement using alt and shift
- History using up/down cursor
- Clipboard support (copy, cut and paste)
- Optional filtering of path characters
- Secure option where string is not displayed
- Return automatically activates the next string gadget
```

```
- Key press notification

  To use the edit hook in your gadgets, you must obtain a Hook structure
  with the
              GetEditHook()
               function. Once you have finished with it, you
  must free this with
              FreeEditHook()
              .
```

1.76 FreeEditHook()

```
                    NAME
FreeEditHook - free a Hook created with
              GetEditHook()
                    SYNOPSIS
FreeEditHook(hook)
        A0

void FreeEditHook(struct Hook *);

  FUNCTION
This routine frees a Hook that you obtained via a call to

              GetEditHook()
              .

  INPUTS
hook - hook to free

  SEE ALSO

              GetEditHook()
```

1.77 GetEditHook()

```
                    NAME
GetEditHook - get a Hook pointer to access the edit hook

  SYNOPSIS
GetEditHook(type, flags, tags)
       D0     D1    A0

struct Hook *GetEditHook(ULONG, ULONG, struct TagItem *);

struct Hook *GetEditHookTags(ULONG, ULONG, Tag, ...);

  FUNCTION
This routine returns a Hook structure that you can use to give
the additional capabilities to your string gadgets.
```

```
  INPUTS
type - type of Hook (only HOOKTYPE_STANDARD is valid so far)
flags - a combination of the following flags :

  EDITF_NO_SELECT_NEXT - stops the return key from
  automatically activating the next (or previous, with shift)
  string gadget.

  EDITF_PATH_FILTER - filters path characters out of the
  string (/ and :)

  EDITF_SECURE - secure password field, doesn't display the
  characters that are typed. If this flag is specified, the
  gadget's StringInfo->MaxChars value must be twice what
  it would ordinarily be. The gadget's StringInfo->Buffer
  must be this size plus an additional two bytes, eg
  (max_len*2)+2.

tags - the following tags are supported by the edit hook :

       EH_History - supplies a pointer to an Att_List structure
       which contains the history list for this gadget. Each entry
       in the list is the name of a node, with the most recent node
       at the end of the list. The Att_List should be created using
       Semaphore locking.

       EH_ChangeSigTask - allows you to specify a task that is to be
       signalled whenever the contents of the string gadget are
       changed by the user. This allows you to have a display
       dynamically updated as the user types.

       EH_ChangeSigBit - the signal bit used to signal your task.
       This is the bit number, not a mask.

  RESULT
Returns a pointer to a Hook structure which you can use for your
gadget. It is not a good idea to share hooks between gadgets
(although unless you are using the EH_History facility it should
not really be a problem).

  SEE ALSO

              FreeEditHook()
              ,
              GetSecureString()
              ,
              Att_NewList()
```

1.78 GetSecureString()

```
                    NAME
GetSecureString - retrieve the real string from a secure field
```

```
  SYNOPSIS
GetSecureString(gadget)
      A0

char *GetSecureString(struct Gadget *);

  FUNCTION
The secure feature of the edit hook is implemented using a buffer for
the gadget that is twice as large plus 2 bytes as it would
ordinarily be. This is because the first half of the buffer is filled
with * characters as the user types. The real text is stored in the
second half of the buffer.

  INPUTS
gadget - secure string gadget

  RESULT
Returns a pointer to the real text for the gadget. The text is
properly null-terminated.

  SEE ALSO

              GetEditHook()
```

1.79 GUI_Routines

```
              GUI Routines


              ActivateStrGad()

              AddScrollBars()

              BOOPSIFree()

              DisposeBitMap()

              DrawBox()

              DrawFieldBox()

              FindBOOPSIGadget()

              GetPalette32()

              LoadPalette32()

              NewBitMap()

              ScreenInfo()

              FindPubScreen()

              SetBusyPointer()
```

1.80 ActivateStrGad()

```
  NAME
ActivateStrGad - Activate a string gadget.

  SYNOPSIS
ActivateStrGad(gadget, window)
     A0      A1

void ActivateStrGad(struct Gadget *, struct Window *);

  FUNCTION
This function activates a string gadget in a window. The difference
between this and the standard ActivateGadget() call is that the
cursor will be positioned at the end of the string.

  INPUTS
gadget - string gadget you wish to activate
window - window the gadget is in

  SEE ALSO
intuition.library/ActivateGadget()
```

1.81 AddScrollBars()

```
                  NAME
AddScrollBars - Add BOOPSI scrollers to a window

  SYNOPSIS
AddScrollBars(window, list, drawinfo, flags)
    A0     A1      A2       D0

struct Gadget *AddScrollBars(struct Window *, struct List *,
           struct DrawInfo *, short);

  FUNCTION
This function adds BOOPSI scrollers (proportional gadget and two
arrows) to a window. It can add scrollers either horizontally,
vertically or both.

  INPUTS
window - window to add scrollers to. The window must have a border
for the side(s) you wish to add scrollers to. For example, if you
add a horizontal scroller, the window must have a bottom border
(ie the WFLG_SIZEBBOTTOM flag is set).

list - this must point to an initialise List structure. The
gadgets created by this routine will be added to this List, which
can later be freed by
```

```
              BOOPSIFree()
              .

drawinfo - pointer to the screen's DrawInfo structure

flags - the type of scrollers you want :

  SCROLL_VERT     - vertical scroller
  SCROLL_HORIZ    - horizontal scroller
  SCROLL_NOIDCMP  - this flag signified that the scrollers
        are only to return the normal
        IDCMP_GADGETUP, IDCMP_GADGETDOWN and
        IDCMP_MOUSEMOVE messages. If not
        specified, the gadgets also generate
        IDCMP_IDCMPUPDATE messages.

  RESULT
This routine returns 0 if it fails. If it succeeds, it returns a
pointer to the last gadget created. This pointer is not particularly
useful; it just signifies success. To actually add the gadgets to the
window, call AddGList() on the first gadget in the supplied List
structure, and then RefreshGList().

The gadgets created by this function have pre-defined IDs. If you
use this routine you should make sure that your own gadgets do not
conflict with these IDs. See the "dopus/gui.h" file for the ID values.

  SEE ALSO

              FindBOOPSIGadget()
              ,
              BOOPSIFree()
              ,
intuition.library/GetScreenDrawInfo(), intuition.library/AddGList(),
intuition.library/RefreshGList()
```

1.82 BOOPSIFree()

```
                  NAME
BOOPSIFree - free a list of BOOPSI gadgets

  SYNOPSIS
BOOPSIFree(list)
      A0

void BOOPSIFree(struct List *);

  FUNCTION
This routine iterates through a list of BOOPSI gadgets, calling
DisposeObject on each one in turn. It then reinitialises the list.

  INPUTS
list - List of gadgets to free
```

```
  SEE ALSO

              AddScrollBars()
              , intuition.library/DisposeObject()
```

1.83 DisposeBitMap()

```
                  NAME
DisposeBitMap - free a bitmap created with
              NewBitMap()
                  SYNOPSIS
DisposeBitMap(bm)
        A0

void DisposeBitMap(struct BitMap *);

  FUNCTION
This routine frees a bitmap and the associated bitplanes that was
allocated with the
              NewBitMap()
               function. Under OS39 it simply passes
the bitmap through to the graphics.library FreeBitMap() call. Under
OS37 it frees the bitmap and bitplanes manually.

  INPUTS
bm - BitMap to free

  RESULT
The BitMap is freed.

  SEE ALSO

              NewBitMap()
              , graphics.library/FreeBitMap()
```

1.84 DrawBox()

```
  NAME
DrawBox - draw a 3D box

  SYNOPSIS
DrawBox(rp, rect, info, recessed)
  A0   A1    A2      D0

void DrawBox(struct RastPort *, struct Rectangle *,
       struct DrawInfo *, BOOL);

  FUNCTION
This routine draws a single-pixel 3D box, using the current pen
```

```
settings in the DrawInfo you supply.

  INPUTS
rp - RastPort to draw into
rect - Rectangle to draw
info - Screen's DrawInfo
recessed - set to TRUE if you want a recessed box

  SEE ALSO
intuition.library/GetScreenDrawInfo()
```

1.85 DrawFieldBox()

```
  NAME
DrawFieldBox - draw a 3D field box

  SYNOPSIS
DrawFieldBox(rp, rect, info)
       A0   A1    A2

void DrawFieldBox(struct RastPort *, struct Rectangle *,
      struct DrawInfo *);

  FUNCTION
Draws a 3D field box (eg the path field in DOpus listers).

  INPUTS
rp - RastPort to draw into
rect - Rectangle to draw
info - Screen's DrawInfo

  SEE ALSO
intuition.library/GetScreenDrawInfo()
```

1.86 FindBOOPSIGadget()

```
                  NAME
FindBOOPSIGadget - find a gadget by ID in a BOOPSI list

  SYNOPSIS
FindBOOPSIGadget(list, id)
      A0   D0

struct Gadget *FindBOOPSIGadget(struct List *, USHORT);

  FUNCTION
This routine iterates through the supplied list of gadgets looking
for one with the supplied ID. If found, it returns it.
This routine can be used to find a specific gadget in the List
created by
              AddScrollBars()
```

```
              . eg,

    vert_scroll=FindBOOPSIGadget(&list,GAD_VERT_SCROLLER);

  INPUTS
list - List of BOOPSI gadgets
id - ID to look for

  RESULT
If the gadget is found, it is returned, otherwise NULL.

  SEE ALSO

              AddScrollBars()
```

1.87 GetPalette32()

```
                  NAME
GetPalette32 - get a 32 bit palette from a ViewPort

  SYNOPSIS
GetPalette32(vp, palette, count, first)
       A0    A1       D0     D1

void GetPalette32(struct ViewPort *, ULONG, USHORT, short);

  FUNCTION
This routine copies the palette from the supplied ViewPort into
the supplied buffer. Under OS39 it is identical in operation to
the graphics.library GetRGB32() function. The advantage of using
this function is that it also works under OS37. Under OS37, the
4 bit colour values are extended to full 32 bit.

  INPUTS
vp - ViewPort to load colours from
palette - array of ULONGs to store palette (3 per pen)
count - number of pen values to copy
first - first pen to copy

  RESULT
The palette values are stored in the supplied array.

  SEE ALSO

              LoadPalette32()
              , graphics.library/GetRGB32()
```

1.88 LoadPalette32()

```
                    NAME
LoadPalette32 - load a 32 bit palette in a ViewPort

  SYNOPSIS
LoadPalette32(vp, palette)
        A0     A1

void LoadPalette32(struct ViewPort *, ULONG *);

  FUNCTION
This routine loads a 32 bit palette into a ViewPort. It is
identical in operation to the graphics.library LoadRGB32()
function, except that it also works under OS37.

  INPUTS
vp - ViewPort to load palette
palette - Palette to load (in LoadRGB32() format)

  RESULT
The palette is loaded.

  SEE ALSO

              GetPalette32
              , graphics.library/LoadRGB32()
```

1.89 NewBitMap()

```
                    NAME
NewBitMap - allocate a bitmap and bitplanes

  SYNOPSIS
NewBitMap(sizex, sizey, depth, flags, friend)
     D0      D1     D2     D3      A0

struct BitMap *NewBitMap(ULONG, ULONG, ULONG, ULONG, struct BitMap *);

  FUNCTION
This routine allocates a BitMap and the bitplanes for it. It is
identical in operation to the graphics.library AllocBitMap() call,
except that it works under OS37. Under OS37 the bitmap and planes
are allocated manually, and the friend parameter is ignored.

Under OS39, if a friend bitmap is supplied and that friend is not
a standard BitMap (ie BMF_STANDARD is not set), the new bitmap will
be allocated with the BMF_MINPLANES flag. This makes CyberGfx allocate
a fast chunky bitmap.

  INPUTS
sizex - width of bitmap
sizey - height of bitmap
depth - number of bitplanes
flags - bitmap flags
```

```
friend - friend bitmap

  RESULT
Returns the BitMap if successful, otherwise NULL.

  SEE ALSO

              DisposeBitMap()
              , graphics.library/AllocBitMap()
```

1.90 ScreenInfo()

```
  NAME
ScreenInfo - return information about a screen

  SYNOPSIS
ScreenInfo(screen)
       A0

ULONG ScreenInfo(struct Screen *);

  FUNCTION
This routine is designed to return simple information about a screen.

  INPUTS
screen - Screen to obtain information about.

  RESULT
Currently, the only flag defined for the result is SCRI_LORES, which
indicates that the screen is low resolution, or does not have a 1:1
pixel ratio.
```

1.91 FindPubScreen()

```
  NAME
FindPubScreen - find (and lock) a public screen

  SYNOPSIS
FindPubScreen(screen, lock)
    A0     D0

struct PubScreenNode *FindPubScreen(struct Screen *, BOOL);

  FUNCTION
This function takes the address of a Screen, and searches for it in
the system Public Screen list. If it is found, the address of the
PubScreenNode is returned.

  INPUTS
```

```
screen - Screen to search for
lock - Set to TRUE if you want the screen to be locked on return

  RESULT
Returns the PubScreenNode of the screen if found, otherwise NULL.
If 'lock' is set to TRUE, the public screen will be locked for you
and you should call UnlockPubScreen() on it when you are finished.

  SEE ALSO
intuition.library/LockPubScreen()
```

1.92 SetBusyPointer()

```
  NAME
SetBusyPointer - set busy pointer in a window

  SYNOPSIS
SetBusyPointer(window)
     A0

void SetBusyPointer(struct Window *);

  FUNCTION
This function sets the mouse pointer in the supplied window to
the busy pointer. Under OS39 it uses the system-defined busy
pointer. Under OS37 it uses a standard watch image.

  INPUTS
window - Window to set busy pointer for

  RESULT
The busy pointer is set in the supplied window. You should call
ClearPointer() when you have finished.

  SEE ALSO
intuition.library/SetWindowPointer, intuition.library/ClearPointer
```

1.93 FreeCachedDiskObject()

```
                  NAME
FreeCachedDiskObject - free a cached icon

  SYNOPSIS
FreeCachedDiskObject(icon)
          A0

void FreeCachedDiskObject(struct DiskObject *);

  FUNCTION
This function frees a cached icon obtained via a call to
```

```
               GetCachedDiskObject()
                or a similar function.

  INPUTS
icon - icon to free

  RESULT
The usage count of the cached icon is decremented. When the usage
count reaches zero, the icon is flushed from the cache.

  NOTES
You can pass a normal, uncached icon to this routine, in which case
it just passes the call through to FreeDiskObject().

  SEE ALSO

               GetCachedDiskObject()
               , icon.library/FreeDiskObject()
```

1.94 GetCachedDefDiskObject()

```
                   NAME
GetCachedDefDiskObject - GetDefDiskObject() with image caching

  SYNOPSIS
GetCachedDefDiskObject(type)
      D0

struct DiskObject *GetCachedDefDiskObject(long);

  FUNCTION
This routine returns one of a number of default icons. The main
advantage this has over the icon.library GetDefDiskObject() call is
that the image data of the icons is cached. This can save a huge
amount of chip memory if multiple copies of the same icon are
required (compare the chip memory used when you open a large drawer
in Workbench with the same drawer in Opus).

  INPUTS
type - type of icon to create

  RESULT
Returns a pointer to the icon or NULL for failure.

  SEE ALSO

               FreeCachedDiskObject()
               , icon.library/GetDefDiskObject()
```

1.95 GetCachedDiskObject()

```
                    NAME
GetCachedDiskObject - get an icon from disk with image caching

  SYNOPSIS
GetCachedDiskObject(name)
         A0

struct DiskObject *GetCachedDiskObject(char *);

  FUNCTION
This routine loads an icon from disk, and caches the image data. If
the same icon is loaded again, the cached image data is used instead
of loading a new copy. This can save valuable chip memory, especially as
the cache is system wide.

  INPUTS
name - name of icon to load (without the .info suffix)

  RESULT
Returns a pointer to the icon if successful, otherwise NULL.

  NOTES
You should not use this routine if you want to modify the image data.
Only the image data is cached, however, so you can modify any of the
other fields of the icon.

Also, this routine is slightly slower than a normal call to
GetDiskObject(), and while the icon is loading requires slightly more
memory (the whole icon is loaded, then if the image is found in the
cache the new copy is discarded).

  SEE ALSO

              FreeCachedDiskObject()
              , icon.library/GetDiskObject
```

1.96 GetCachedDiskObjectNew()

```
                    NAME
GetCachedDiskObjectNew - get icon with default fallback

  SYNOPSIS
GetCachedDiskObjectNew(name)
      A0

struct DiskObject *GetCachedDiskObjectNew(char *);

  FUNCTION
This routine attempts to load the icon in the same way as the

              GetCachedDiskObject()
               routine. If no icon is found for the supplied
filename, the object in question is examined, and a default icon is
```

```
returned. This routine will return WBPROJECT, WBDRAWER, WBTOOL or
WBDISK icons, depending on the name passed in.

  INPUTS
name - name of object to load icon for (no .info suffix)

  RESULT
Returns a pointer to the icon if successful, otherwise NULL.

  SEE ALSO

              GetCachedDiskObject()
              ,
              FreeCachedDiskObject()
              ,
icon.library/GetDiskObjectNew()
```

1.97 GetIconFlags()

```
                  NAME
GetIconFlags - get special Opus icon flags

  SYNOPSIS
GetIconFlags(icon)
        A0

ULONG GetIconFlags(struct DiskObject *);

  FUNCTION
Opus stores additional information in icons to control some of the
enhanced features. This routine returns the special flags set for the
icon you supply.

  INPUTS
icon - icon to retrieve flags for

  RESULT
Returns ULONG containing the flags set. Current flags in use are :

    ICONF_POSITION_OK   - an Opus-specific position is available
    ICONF_NO_BORDER     - icon has no border
    ICONF_NO_LABEL      - icon has no label

  SEE ALSO

              SetIconFlags()
              ,
              GetIconPosition()
```

1.98 GetIconPosition()

```
                    NAME
GetIconPosition - get Opus-specific icon position

  SYNOPSIS
GetIconPosition(icon, xptr, yptr)
     A0    A1    A2

void GetIconPosition(struct DiskObject *, short *, short *);

  FUNCTION
Opus keeps a separate record from Workbench of icon positions. This
function allows you to retrieve the Opus-specific position of the
icon (the normal Workbench position is in do_CurrentX/do_CurrentY).

  INPUTS
icon - icon to retrieve position for
xptr - pointer to short to receive x position
yptr - pointer to short to receive y position

  RESULT
Stores the position in the two variables provided.

  NOTES
You should call
              GetIconFlags()
               first to check that an Opus-specific
position is available for this icon.

  SEE ALSO

              SetIconPosition()
              ,
              GetIconFlags()
```

1.99 SetIconFlags()

```
                    NAME
SetIconFlags - set Opus flags in an icon

  SYNOPSIS
SetIconFlags(icon, flags);
        A0     D0

void SetIconFlags(struct DiskObject *, ULONG);

  FUNCTION
This routine allows you to set the special Opus flags in an icon.

  INPUTS
icon - icon to set flags for
flags - new flags for the icon

  RESULT
```

```
The flags in the icon are set. See
              GetIconFlags()
               for a description
of the available flags.

  SEE ALSO

              GetIconFlags()
```

1.100 SetIconPosition()

```
                   NAME
SetIconPosition - set Opus position for an icon

  SYNOPSIS
SetIconPosition(icon, x, y)
     A0  D0 D1

void SetIconPosition(struct DiskObject *, short, short);

  FUNCTION
This routine allows you to set the Opus-specific position for an
icon.

  INPUTS
icon - icon to set position for
x - new x position of icon
y - new y position of icon

  RESULT
The position is set in the icon.

  NOTES
You should also call
              SetIconFlags()
               on the icon to set the
ICONF_POSITION_OK flag.

  SEE ALSO

              GetIconPosition()
              ,
              SetIconFlags()
```

1.101 CopyFileIcon()

```
  NAME
CopyFileIcon - copy icon from one file to another
```

```
  SYNOPSIS
CopyFileIcon(source, dest)
     A0     A1

void CopyFileIcon(char *, char *);

  FUNCTION
This routine copies the icon from the specified source object to a
new icon for the destination object.

  INPUTS
source - source icon (without .info)
dest - destination icon (without .info)

  RESULT
The icon is copied. If an icon already exists for the source, it is
NOT overwritten. No error code is available for this function.

  NOTES
If the specified source file has no icon, a default icon is created.
```

1.102 IFF_Routines

```
              IFF Routines


              IFFChunkID()

              IFFChunkRemain()

              IFFChunkSize()

              IFFClose()

              IFFFailure()

              IFFGetForm()

              IFFNextChunk()

              IFFOpen()

              IFFPopChunk()

              IFFPushChunk()

              IFFReadChunkBytes()

              IFFWriteChunkBytes()

              IFFWriteChunk()
```

1.103 IFFChunkID()

```
                    NAME
IFFChunkID - get current chunk ID

  SYNOPSIS
IFFChunkID(handle)
       A0

ULONG IFFChunkID(APTR);

  FUNCTION
Returns the four-byte ID of the current chunk.

  INPUTS
handle - IFF handle

  RESULT
Returns chunk ID.

  SEE ALSO

              IFFOpen()
              , IFFGetFORM(),
              IFFNextChunk()
```

1.104 IFFChunkRemain()

```
                    NAME
IFFChunkRemain - return size of remaining data

  SYNOPSIS
IFFChunkRemain(handle)
     A0

long IFFChunkRemain(APTR);

  FUNCTION
Returns the amout of data left to be read in the current chunk.

  INPUTS
handle - IFF handle

  RESULT
Returns size of data or 0 if no data left.

  SEE ALSO

              IFFOpen()
              ,
              IFFNextChunk()
              ,
              IFFChunkSize()
```

```
              ,
              IFFReadChunkBytes()
```

1.105 IFFChunkSize()

```
                    NAME
IFFChunkSize - size of current chunk

  SYNOPSIS
IFFChunkSize(handle)
         A0

long IFFChunkSize(APTR);

  FUNCTION
Obtain the amount of data in the current chunk.

  INPUTS
handle - IFF handle

  RESULT
Returns the total number of bytes of data in the current chunk
(excluding the chunk header). If there is no valid current chunk,
returns -1.

  SEE ALSO

              IFFOpen()
              ,
              IFFNextChunk()
              ,
              IFFChunkRemain()
              ,
              IFFReadChunkBytes()
```

1.106 IFFClose()

```
                    NAME
IFFClose - close an IFF file

  SYNOPSIS
IFFClose(handle)
     A0

void IFFClose(APTR);

  FUNCTION
Closes an IFF file.

  INPUTS
```

```
handle - file to close

  RESULT
The file is closed.

  SEE ALSO

              IFFOpen()
```

1.107 IFFFailure()

```
                    NAME
IFFFailure - indicate failure to "safe" file routine

  SYNOPSIS
IFFFailure(handle)
       A0

void IFFFailure(APTR)

  FUNCTION
The
              IFFOpen()
               routine has a "safe" mode, where an existing IFF file
is renamed rather than being over-written. If you create a file in
this safe mode, and then subsequent IFF operations fail (with the
result that the whole operation fails), you should call this routine.
Then, when you call
              IFFClose()
              , the pre-existing file will be
renamed back to what it was instead of being deleted.

  INPUTS
handle - IFF handle

  RESULT
The 'failure' flag is set, and the "safe" file will be restored.

  SEE ALSO

              IFFOpen()
              ,
              IFFClose()
```

1.108 IFFGetForm()

```
                    NAME
IFFGetForm - get current FORM ID

  SYNOPSIS
```

```
IFFGetForm(handle)
       A0

ULONG IFFGetForm(APTR);

  FUNCTION
This routine returns the four-byte FORM ID of the file.

  INPUTS
handle - IFF handle

  RESULT
Returns the FORM ID, or 0 if no valid FORM.

  SEE ALSO

              IFFOpen()
              ,
              IFFChunkID()
```

1.109 IFFNextChunk()

```
                  NAME
IFFNextChunk - skip to the next chunk

  SYNOPSIS
IFFNextChunk(handle, chunkid)
         A0       D0

ULONG IFFNextChunk(APTR, ULONG);

  FUNCTION
This is the main work-horse of the IFF routines. This function will
scan through the IFF file from the current position looking for the
next chunk. You can optionally specify a chunk to look for.

  INPUTS
handle - IFF handle
chunkid - ID of chunk to look for, or 0 for next chunk

  RESULT
Returns ID of the new chunk, or 0 for error or end-of-file.

  NOTES
The IFF routines do not handle LISTs, CATs or other complicated IFF
structures. This routine will handle multiple FORMs within the one
file, which allows it to read ANIMs.

  SEE ALSO

              IFFOpen()
              ,
              IFFReadChunkBytes()
```

1.110 IFFOpen()

```
                    NAME
IFFOpen - open an IFF file

  SYNOPSIS
IFFOpen(name, mode, form)
   A0    D0    D1

APTR IFFOpen(char *, USHORT, ULONG);

  FUNCTION
This routine opens either a disk-based file or the clipboard for
IFF reading/writing. This and the other IFF routines in the
dopus5.library are far simpler (and seem to be less buggy) than the
iffparse.library functions. These routines were specifically designed
to make the reading and writing of "normal" IFF files as easy as
possible. They use the buffered IO routines for high performance.
They do not support LISTs, CATs or other complicated IFF structures.

  INPUTS
name - Filename or clipboard unit to open.
mode - Mode to open in :

     IFF_READ       - open for reading
     IFF_WRITE      - open for writing
     IFF_CLIP_READ  - open clipboard for reading
     IFF_CLIP_WRITE - open clipboard for writing

       This flag can be set in conjunction with IFF_WRITE :

     IFF_SAFE       - backup existing file

form - If this is not 0, it specifies an IFF FORM. If you open
       the file for reading, it will be tested against this FORM and
       the open will fail if the FORM does not match. If you open
       for writing, this specifies the FORM of the file to be
       created.

  RESULT
If successful, returns an IFF handle which you use in all subsequent
calls to the IFF routines. Returns 0 on failure, and IoErr() is set
to the reason for the failure.

  NOTES
To use the clipboard, you must specify either IFF_CLIP_READ or
IFF_CLIP_WRITE. The clipboard unit you want is passed as the name
parameter. For example, to open clipboard unit 3 to write an ILBM,

    handle = IFFOpen( (char *)3, IFF_CLIP_WRITE, ID_ILBM );

If you specify IFF_WRITE|IFF_SAFE, and the file you are creating
already exists, it will be renamed to a temporary filename. When
```

```
               IFFClose()
                is called, the temporary file will be deleted. If you
call
               IFFFailure()
                because of a failure at some stage, it sets a flag
which causes the old file to be restored.

  SEE ALSO

               IFFClose()
               ,
               IFFFailure()
```

1.111 IFFPopChunk()

```
                    NAME
IFFPopChunk - flush the chunk cache

  SYNOPSIS
IFFPopChunk(handle)
        A0

long IFFPopChunk(APTR);

  FUNCTION
This function flushes the current chunk write cache and writes the
chunk to disk.

  INPUTS
handle - IFF handle

  RESULT
The current chunk is written to disk. Returns TRUE if successful.

  SEE ALSO

               IFFOpen()
               ,
               IFFPushChunk()
               ,
               IFFWriteChunkBytes()
```

1.112 IFFPushChunk()

```
                    NAME
IFFPushChunk - start writing a chunk

  SYNOPSIS
IFFPushChunk(handle, id)
```

```
          A0    D0

long IFFPushChunk(APTR, ULONG);

  FUNCTION
This routine initialises a new chunk to be written to the file.
It is similar in concept to the PushChunk() routine in
iffparse.library, but does not support nesting of chunks. Therefore,
you should always call
              IFFPopChunk()
               before you call IFFPushChunk()
again.

  INPUTS
handle - IFF handle
id - ID of chunk to write

  RESULT
The chunk is initialised for writing. The usual procedure is :

    1. IFFPushChunk()
    2. One or more calls to
              IFFWriteChunkBytes()
                    3.
              IFFPopChunk()
                  SEE ALSO

              IFFOpen()
              ,
              IFFWriteChunkBytes()
              ,
              IFFPopChunk()
```

1.113 IFFReadChunkBytes()

```
                  NAME
IFFReadChunkBytes - read data from a chunk

  SYNOPSIS
IFFReadChunkBytes(handle, buffer, size)
        A0      A1     D0

long IFFReadChunkBytes(APTR, APTR, long);

  FUNCTION
This routine reads data from the current position in the current
chunk.

  INPUTS
handle - IFF handle
buffer - buffer to store data
size - amount of data to read

  RESULT
```

```
Returns the amount of data read or -1 for failure. Will not read
past the end of a chunk.

  SEE ALSO

              IFFOpen()
              ,
              IFFNextChunk()
              ,
              IFFChunkSize()
```

1.114 IFFWriteChunkBytes()

```
                    NAME
IFFWriteChunkBytes - write data in a chunk

  SYNOPSIS
IFFWriteChunkBytes(handle, data, size)
         A0     A1    D0

long IFFWriteChunkBytes(APTR, APTR, long);

  FUNCTION
This routine writes data to a chunk that was initialised with
PushChunk(). The data is generally cached and not written to the disk
until PopChunk() is called, resulting in higher performance.

  INPUTS
handle - IFF handle
data - data to write
size - amount of data

  RESULT
Returns TRUE if successful.

  SEE ALSO

              IFFOpen()
              ,
              IFFPushChunk()
              ,
              IFFPopChunk()
```

1.115 IFFWriteChunk()

```
                    NAME
IFFWriteChunk - write a chunk straight out

  SYNOPSIS
IFFWriteChunk(handle, data, id, size)
```

```
    A0     A1   D0   D1

long IFFWriteChunk(APTR, APTR, ULONG, ULONG);

  FUNCTION
If you have a single structure or piece of data you wish to write
as a chunk, this routine is simpler than the PushChunk()/PopChunk()
method.

  INPUTS
handle - IFF handle
data - data to write
id - ID of chunk
size - size of data

  RESULT
If successful, the chunk is written straight to the file. Returns
FALSE on failure.

  SEE ALSO

             IFFOpen()
             ,
             IFFPushChunk()
             ,
             IFFPopChunk()
             ,
             IFFWriteChunkBytes()
```

1.116 Image_Routines

```
             Image Routines


             CloseImage()

             CopyImage()

             FreeImageRemap()

             FreeRemapImage()

             GetImageAttrs()

             GetImagePalette()

             OpenImage()

             RemapImage()

             RenderImage()
```

1.117 CloseImage()

```
                    NAME
CloseImage - close an image

  SYNOPSIS
CloseImage(image)
       A0

void CloseImage(APTR);

  FUNCTION
Closes an image that was opened with
              OpenImage()
              . The usage count
of the image is decremented. When the count reaches 0 the image is
flushed from memory.

  INPUTS
image - image to close

  SEE ALSO

              OpenImage()
```

1.118 CopyImage()

```
                    NAME
CopyImage - copy an opened image

  SYNOPSIS
CopyImage(image)
      A0

APTR CopyImage(APTR);

  FUNCTION
Returns another pointer to the supplied image.

  INPUTS
image - image to copy

  RESULT
Returns a new pointer to the image.

  SEE ALSO

              OpenImage()
```

1.119 FreeImageRemap()

```
                    NAME
FreeImageRemap - free pens used to remap images

  SYNOPSIS
FreeImageRemap(remap)
     A0

void FreeImageRemap(ImageRemap *);

  FUNCTION
Frees all the pens allocated with the supplied ImageRemap structure.
You should call this function after you have called
              FreeRemapImage()
                or
              CloseImage()
               on the individual images.

  INPUTS
remap - ImageRemap structure to free

  SEE ALSO

              RemapImage()
```

1.120 FreeRemapImage()

```
                    NAME
FreeRemapImage - free a remapped image

  SYNOPSIS
FreeRemapImage(image, remap)
    A0     A1

void FreeRemapImage(APTR, ImageRemap *);

  FUNCTION
This function frees the remapped bitplanes allocated for an image
via the
              RemapImage()
               call.

  INPUTS
image - image to free remap bitplanes for
remap - ImageRemap structure

  RESULT
The remapped bitplanes are freed. This routine does not free any pens
that were allocated - these are released when you call
              FreeImageRemap()
              .
Note that the image itself is not freed, only the remapped version of
```

```
it.

  SEE ALSO

              RemapImage()
              ,
              FreeImageRemap()
```

1.121 GetImageAttrs()

```
                    NAME
GetImageAttrs - get information about an image

  SYNOPSIS
GetImageAttrs(image, tags)
         A0     A1

void GetImageAttrs(APTR, struct TagItem *);

  FUNCTION
This routine allows you to retrieve information about an image opened
with
              OpenImage()
              .

  INPUTS
image - image to investigate
tags - control tags. The following tags are valid :

       IM_Width      - width of image
       IM_Height      - height of image
       IM_Depth      - number of bitplanes
       IM_State      - 1 if the image has two frames, 0 if not

  RESULT
The requested information is stored in the ti_Data field of each of
the Tags passed in.

  SEE ALSO

              OpenImage()
```

1.122 GetImagePalette()

```
                    NAME
GetImagePalette - get pointer to image palette

  SYNOPSIS
GetImagePalette(image)
     A0
```

```
ULONG *GetImagePalette(APTR);

  FUNCTION
This allows you to retrieve a pointer to the palette of the image.

  INPUTS
image - image you want the palette for

  RESULT
If the image has associated palette information (eg a brush), a
pointer to a longword palette table is returned. This palette table
is in LoadRGB32() format. If the image has no associated palette,
this routine returns NULL.

  SEE ALSO

              OpenImage()
              , graphics.library/LoadRGB32()
```

1.123 OpenImage()

```
                   NAME
OpenImage - read an image off disk

  SYNOPSIS
OpenImage(name, info)
     A0    A1

APTR OpenImage(char *, OpenImageInfo *);

  FUNCTION
The primary purpose of this function is to read an image from a file
on disk. This routine supports ILBM brushes and pictures, animbrushes
and Amiga icons.

This routine is also used to create an image handle to bitmap data
that you supply. This image handle can then be used with the image
remapping functions.

This function caches images based on their full pathname. If two
copies of the same file are loaded, the first copy will be used to
save memory.

  INPUTS
name - name of image to load, or NULL if you are supplying a bitmap
info - if 'name' is NULL, this must point to an initialised
       OpenImageInfo structure:

      oi_ImageData - must point to the image data. This data
      does not need to be in chip memory.

      oi_Palette - must point to a palette for the image, in
      LoadRGB32() format.
```

```
      oi_Width - width of the image

      oi_Height - height of the image

      oi_Depth - number of image bitplanes

  RESULT
Returns an image handle if it succeeds. This handle is used in
subsequent calls to the image routines. This routine returns NULL if
it fails.

  SEE ALSO

             CloseImage()
             , graphics.library/LoadRGB32()
```

1.124 RemapImage()

```
                  NAME
RemapImage - remap an image

  SYNOPSIS
RemapImage(image, screen, remap)
      A0      A1      A2

BOOL RemapImage(APTR, struct Screen *, ImageRemap *);

  FUNCTION
This function remaps an image to the colours of the specified screen.
It will allocate pens from the screen if necessary (and possible).

  INPUTS
image - image to remap (from
             OpenImage()
             )
remap - ImageRemap structure. This structure must be initialised for
  the first call to RemapImage(). All fields must be set to
  NULL.

  For the first and subsequent calls to this function, the
  ir_Flags field can be set with the following values :

      IRF_REMAP_COL0      - remap colour 0 in the image
      IRF_PRECISION_EXACT - use best precision when pen matching
      IRF_PRECISION_ICON  - lower precision
      IRF_PRECISION_GUI   - lowest precision

  You can use the one ImageRemap structure to remap multiple
  images, but only for the one screen. The ir_Flags field can be
  changed for every call to this function, but none of the
  other fields may be changed.

  RESULT
```

```
This image returns TRUE if it was able to remap the image. Once the
image has been remapped, any call to
               RenderImage()
                to display it will
show the remapped version. Call
               FreeRemapImage()
                to free the remap
and return to the original image.

  SEE ALSO

               OpenImage()
               ,
               RenderImage()
               ,
               FreeRemapImage()
               ,
               FreeImageRemap()
```

1.125 RenderImage()

```
                    NAME
RenderImage - display an image

  SYNOPSIS
RenderImage(rp, image, left, top, tags)
      A0    A1    D0   D1    A2

short RenderImage(struct RastPort *, APTR, USHORT, USHORT,
      struct TagItem *);

  FUNCTION
This routine is used to render an image to a RastPort.

  INPUTS
rp - RastPort to render to
image - image to render
left - x position to render to
top - y position to render to
tags - control tags. The following tags are available :

    IM_State - 0 or 1 (default 0)

  This tag controls which frame of the image is shown.
  Defaults to frame 0, but for two-frame images (eg icons or
  animbrushes) you can set this to 1.

    IM_Rectangle - struct Rectangle * (default not supplied)

  This specifies a rectangle to display the image within. If
  you supply this tag, the image will be centered within this
  area. Use of this tag overrides the 'left' and 'top'
  parameters.
```

```
    IM_ClipBoundary - integer (default 2)

  This is used with the IM_Rectangle tag. If IM_Rectangle is
  specified, the image is clipped to the boundaries of the
  rectangle. The default operation is to leave a two pixel
  margin around the image (to allow room for a border). Using
  the IM_ClipBoundary tag you can adjust this margin (set to 0
  if you want no margin).

    IM_Mask - TRUE or FALSE (default FALSE)

  If you set this tag to TRUE, the image will be masked when
  it is rendered. This has the effect of making colour 0
  transparent, and the existing background will show through
  the image.

    IM_Erase - integer (default not supplied)

  This tag allows you to specify a pen value that is used to
  erase the background before the image is rendered. By
  default the background is not cleared.

    IM_NoDrawInvalid (default not supplied)

  If you specify this tag, and also specify 1 for IM_State,
  then the call to RenderImage() will fail if the image has
  no secondary image. If this tag is not specified and you
  try to draw the second frame of an image that doesn't have
  one, it falls back to drawing the first frame.

    IM_NoIconRemap - TRUE or FALSE (default FALSE)

  By default, an icon that is drawn with RenderImage() is
  "remapped". This is not a true colour remapping, but the
  third bitplane of an eight colour icon is shifted to the
  top bitplane of the display. This makes most normal eight
  colour icons work properly on screens of more than eight
  colours. However, it can cause problems with NewIcons
  icons. Specify TRUE with this tag to disable this remapping.

  RESULT
The image is rendered. If you specified IM_NoDrawInvalid and you
tried to draw an image that didn't exist, this routine returns FALSE.
Otherwise it returns TRUE.

  NOTES
If the image has been remapped with
              RemapImage()
              , the remapped image
will be automatically drawn by this routine.

  SEE ALSO

              OpenImage()
              ,
              RemapImage()
```

1.126 IPC_Routines

```
               IPC Routines


               IPC_Command()

               IPC_FindProc()

               IPC_Flush()

               IPC_Free()

               IPC_Launch()

               IPC_ListCommand()

               IPC_ProcStartup()

               IPC_Reply()
```

1.127 IPC_Command()

```
                    NAME
IPC_Command - send a command to an IPC process

  SYNOPSIS
IPC_Command(ipc, command, flags, data, data_free, reply)
       A0    D0      D1     A1      A2       A3

ULONG IPC_Command(IPCData *, ULONG, ULONG, APTR, APTR,
      struct MsgPort *);

  FUNCTION
Sends a command to an IPC process. Can be used from a non-IPC
process but this is not recommended.

  INPUTS
ipc - IPC process to send command to

command - command code (application-specific)

flags - command flags (application-specific)

data - command data (application-specific)

data_free - additional data. The data specified here will be
      automatically freed with FreeVec() when the message
      is replied to, so you MUST allocate it with
```

```
      AllocVec().

reply - reply port. You can either specify a message port for
  the reply, or use one of these special values :

      REPLY_NO_PORT     - use default port for reply
      REPLY_NO_PORT_IPC - specify this if the message is sent
        from a non-IPC process

  If you don't want a reply to this message (ie you want it
  to be sent asynchronously), specify NULL for this value.

  RESULT
The command will be sent to the specified process. If the command
was not sent asynchronously, the destination process' result code
is returned.

  NOTES
There are several reserved command codes. You are free to use these
for your own applications, or use your own codes. These are listed
in <dopus/ipc.h>.

  SEE ALSO

             IPC_Launch()
             ,
             IPC_Reply()
```

1.128 IPC_FindProc()

```
                  NAME
IPC_FindProc - find an IPC process by name

  SYNOPSIS
IPC_FindProc(list, name, activate, data)
        A0    A1      D0      D1

IPCData *IPC_FindProc(struct ListLock *, char *, BOOL, ULONG);

  FUNCTION
This routine searches the supplied list for a named IPC process.
Optionally, it can send this process an IPC_ACTIVATE message with
user-specified data.

  INPUTS
list - ListLock to search. This routine locks this list in shared
       mode, and will block until the list is available.

name - name to search for (case sensitive)

activate - specify TRUE if you want an IPC_ACTIVATE message to be sent
     automatically.

data - if 'activate' is TRUE, this value will be passed in the data
```

```
        field of the IPC_ACTIVATE command.

  RESULT
If the process is found, its IPCData pointer is returned. To ensure
that this pointer remains valid you should Forbid(), or lock the
list yourself (in shared mode!).

  SEE ALSO

              IPC_Launch()
              ,
              IPC_Command()
```

1.129 IPC_Flush()

```
                    NAME
IPC_Flush - flush an IPC command port

  SYNOPSIS
IPC_Flush(ipc)
     A0

void IPC_Flush(IPCData *);

  FUNCTION
This routine searches the command port for any messages and replies
to them with an IPC_ABORT.

  INPUTS
ipc - IPCData of the process

  RESULT
The port is emptied.

  NOTES
In practice you rarely need this function.

  SEE ALSO

              IPC_Free()
```

1.130 IPC_Free()

```
                    NAME
IPC_Free - free an IPC process

  SYNOPSIS
IPC_Free(ipc)
    A0
```

```
void IPC_Free(IPCData *);

  FUNCTION
This routine frees all the memory associated with an IPC process
entry. It does NOT remove the process itself from the system. It is
designed to be called by a process on itself, as the last step before
exiting.

  INPUTS
ipc - IPCData to free

  RESULT
The IPCData handle is freed. If the process was a member of a list,
it is removed from that list. Any commands still in its message port
are replied to with IPC_ABORT.

  SEE ALSO

              IPC_Launch()
```

1.131 IPC_Launch()

```
                  NAME
IPC_Launch - launch a new process

  SYNOPSIS
IPC_Launch(list, ipcptr, name, entry, stack, data, doslib)
      A0     A1     A2     D0    D1     D2     A3

long IPC_Launch(struct ListLock *, IPCData **, char *,
    ULONG, ULONG, ULONG, struct Library *);

  FUNCTION
The IPC routines in the dopus5.library provide an easy and efficient
way to implement multi-threading in your application. Using the
IPC_Launch functions creates an IPCData, which is a handle to a
process. Using this handle you can easily send command between
multiple processes.

The important fields in the IPCData structure are as follows :

    proc   - pointer to the Process structure
    command_port - port to listen to for commands
    userdata   - user-specified data
    memory   - a memory pool you can use

All Opus 5 modules are launched as IPC processes, and are passed
a pointer to their IPCData structures. They are also passed the
address of the main Directory Opus IPCData structure, which allows
them to send direct commands to Opus.

If you are writing a standalone application and wish to use the IPC
routines, your main thread will need to create an IPCData structure
manually. It must be initialised as follows :
```

```
    proc   - pointer to your main Process
    command_port - pointer to a message port
    list   - NULL
    reply_port   - pointer to a DIFFERENT message port

IPC processes can automatically be added to a list. There is no
need for you to keep track of a process once it has been launched,
except that your main process can't exit while a child is still
running (as the code would be freed).

  INPUTS
list - pointer to an initialise ListLock structure if you want this
       process to be automatically added to a list (can be NULL).

ipcptr - pointer to a pointer to IPCData. If the process is launched
   successfully, the new IPCData handle will be stored in this
   address (can be NULL).

name - name for the new process.

entry - pointer to code for the new process.

stack - stack size for the new process. You can also set the
  IPCF_GETPATH flag in the stack variable, to have the new
  process automatically inherit the system path list.

data - data that is automatically passed to the new process

doslib - you must supply a pointer to the DOS library

  RESULT
This routine returns 0 if the child process failed to launch.
However, if the child process was actually launched, but failed
to initialise because of lack of memory, or a failure in your
user-defined initialisation code (see
              IPC_ProcStartup
              ), the
return value will still indicate success.

A better way to test failure is to specify a variable for the 'ipcptr'
parameter. If this is NULL after this call, the process failed to
start.

  SEE ALSO

              IPC_ProcStartup()
              ,
              IPC_Command()
              ,
              IPC_Free
```

1.132 IPC_ListCommand()

```
                    NAME
IPC_ListCommand - send a command to a list of processes

  SYNOPSIS
IPC_ListCommand(list, command, flags, data, wait)
     A0      D0      D1    D2    D3

void IPC_ListCommand(struct ListLock *, ULONG, ULONG, ULONG, BOOL);

  FUNCTION
Sends the same command to every process on the supplied list.
Optionally waits for a reply from every process.

  INPUTS
list - list of processes
command - command ID to send
flags - command flags
data - command data
wait - specify TRUE if you want to wait for replies

  RESULT
The command is sent to every process on the list. If 'wait' is
TRUE, does not return until every process has replied.

  SEE ALSO

              IPC_Launch()
              ,
              IPC_Command()
```

1.133 IPC_ProcStartup()

```
                    NAME
IPC_ProcStartup - startup code for an IPC process

  SYNOPSIS
IPC_ProcStartup(data, code)
     A0    A1

IPCData *IPC_ProcStartup(ULONG *, ULONG *);

  FUNCTION
Your IPC process should call this routine as the very first
instruction. It receives the startup message from the parent process,
and lets you retrieve your own IPCData handle.

  INPUTS
data - pointer to a variable to receive a pointer to the data that
       was passed to
              IPC_Launch
              .

code - address of a user-supplied initialisation routine to call. If
```

```
       you provide this, your routine is called from this function.
       The prototype of this routine is as follows :

      ULONG __asm code(register __a0 IPCData *ipc,
           register __a1 APTR data)

       Your intialisation routine receives a pointer to the IPCData
       handle of the new process, and a pointer to the data passed
       to
              IPC_Launch
              . This routine can do pretty much anything, but
       you should keep it as simple as possible (there should
       certainly be no IPC functions called from within it).
       Your routine should return FALSE for failure and TRUE for
       success. If it returns FALSE, the IPC_ProcStartup() call will
       return NULL, and the new process should then quit.

  RESULT
Returns a pointer to your new IPCData handle. The 'data' value that
was passed to
              IPC_Launch()
               is stored in the supplied variable.
If this routine returns NULL, it means an error occurred (either in
the intialisation of the new process, or in your own initialisation
code). In this case, you should exit immediately.

  SEE ALSO

              IPC_Launch()
```

1.134 IPC_Reply()

```
                  NAME
IPC_Reply - reply to an IPC message

  SYNOPSIS
IPC_Reply(msg)
     A0

void IPC_Reply(IPCMessage *);

  FUNCTION
Call this routine to reply to IPCMessages you receive at your
command port (do not call ReplyMsg())

  INPUTS
msg - message to reply

  RESULT
The message is replied. It is possible to pass a return code back
to the sending task (providing the message was sent synchronously).
To do this, set the 'command' field of the message to the value.
This will then be the return from the
              IPC_Command()
```

```
                function for the
other process.

  SEE ALSO

             IPC_Launch()
             ,
             IPC_Command()
```

1.135 Layout_Routines

```
             Layout Routines


             AddObjectList()

             AddWindowMenus()

             BoundsCheckGadget()

             BuildMenuStrip()

             CheckObjectArea()

             ClearWindowBusy()

             CloseConfigWindow()

             DisableObject()

             DisplayObject()

             EndRefreshConfigWindow()

             FindMenuItem()

             FreeObjectList()

             FreeWindowMenus()

             GetGadgetValue()

             GetObject()

             GetObjectRect()

             GetWindowAppPort()

             GetWindowID()

             GetWindowMsg()

             LayoutResize()
```

```
               OpenConfigWindow()

               ReplyWindowMsg()

               SetConfigWindowLimits()

               SetGadgetChoices()

               SetGadgetValue()

               SetWindowBusy()

               SetWindowID()

               StartRefreshConfigWindow()
               PURPOSE
```

1. The dopus5.library provides font-sensitive layout routines to make it easy to create and use a user interface for your application or module. The layout code is not as straightforward, or indeed as powerful, as MUI or some of the other GUI engines available, and so you might want to consider using one of those instead of the DOpus routines.

The normal procedure in creating an interface is :

```
1. Define a list of "objects" (gadgets, text, etc)
2. Define a window
3. Call
               OpenConfigWindow()
                to open the window
4. Call
               AddObjectList()
                to add the objects
5. Call
               SetGadgetValue()
                to initialise gadgets
6. Message loop with
               GetWindowMsg()
                 7. Call
               GetGadgetValue()
                to get gadget final values
8. Call
               CloseConfigWindow()
                to close the window
```

2. The list of objects is defined as an array of ObjectDef structures. You call

```
               AddObjectList()
                to add a list of objects to a window; indeed, you
```

can make multiple calls to this function to add multiple lists. Each ObjectDef structure is defined as follows:

```
od_Type

This field indicates the type of object. Current values are :
```

```
    OD_GADGET       - a gadget
    OD_TEXT  - a text string
    OD_AREA  - a rectangular area
    OD_IMAGE  - an image

Two control values are also used:

    OD_SKIP  - skip this entry
    OD_END    - ends an ObjectDef array


od_ObjectKind

If od_Type is set to OD_GADGET, this field describes the type of
gadget. Valid types are:

    BUTTON_KIND  - standard push button
    STRING_KIND  - a string gadget
    INTEGER_KIND  - an integer gadget
    HOTKEY_KIND  - a hotkey field
    CHECKBOX_KIND       - a checkbox gadget
    OPUS_LISTVIEW_KIND  - an Opus listview gadget
    PALETTE_KIND  - a palette gadget (pen selection)
    FILE_BUTTON_KIND    - a button that opens a file requester
    DIR_BUTTON_KIND     - a button that opens a directory requester
    FONT_BUTTON_KIND    - a button that opens a font requester
        (only works under v38 ASL)
    FRAME_KIND    - a frame (rectangular area)
    FIELD_KIND    - a readonly string gadget
    NUMBER_KIND  - a number display
    TEXT_KIND    - a text display

The above gadgets are all implemented by the dopus5.library. Many are
similar to their GadTools equivalents. Any GadTools gadget that is not
replaced by the above types is also available. Currently, these are:

    LISTVIEW_KIND       - standard GadTools listview
    MX_KIND      - radio buttons gadget
    CYCLE_KIND    - cycle gadget
    SCROLLER_KIND       - scroller gadget
    SLIDER_KIND  - slider gadget

If od_Type is OD_AREA or OD_TEXT, the od_ObjectKind field is used to
specify the pen used for text rendering. This is not a literal pen
number but is a DrawInfo pen index (eg TEXTPEN).


od_CharDims

This field structure is used to define the character position of the
object. All objects (and windows, for that matter) have two sets of
positioning information - character and fine. The character position
is used to specify the size and position in "font units" - this value
is scaled for the current font and so allows the display to be
font-sensitive. A "font unit" is the average width of the font for
a horizontal coordinate, and the height of the font for a vertical
coordinate. The "Left" and "Top" fields of the IBox structure control
```

the position of the object, and the "Width" and "Height" fields control the size.

There are some magic values for object positioning and sizing. The positioning values are:

    POS_CENTER   - use this in the "Left" or "Top" field to have
        the object positioned in the center of the
        window.

    POS_RIGHT_JUSTIFY   - position relative to the right/bottom border

POS_CENTER is an absolute value. POS_RIGHT_JUSTIFY is more of a flag, used in conjunction with another value. For example, POS_RIGHT_JUSTIFY by itself would position an object hard up against the right border. POS_RIGHT_JUSTIFY-2 would position an object at a two 'font unit' margin from the border.

The magic values for sizes are:

    SIZE_MAXIMUM - the object will be the maximum possible size
        in this direction

    SIZE_MAX_LESS   - maximum possible size minus an amount

For example, od_CharDims might be defined as:

    {POS_CENTER,POS_RIGHT_JUSTIFY-1,SIZE_MAX_LESS-4,2}

This would create an object that was centered in the display, and as wide as possible with a two space gap on either side. The object would be one space from the bottom border, and be two spaces high.

od_FineDims

This field structure is used to define the fine position and size of the object. The fine position is given as an absolute pixel value, and allows you to make adjustments for GUI components that do not scale with the font (eg, borders are always 1 or 2 pixels high, irrespective of the font size). You can also make fine adjustments through this field when the od_CharDims field uses the POS_ and SIZE_ values.

od_GadgetText

This is the locale string ID for the gadget label, or text or area string. It must be a valid ID in the locale specified in the NewConfigWindow structure. If the TEXTFLAG_TEXT_STRING flag is set for this object, the od_GadgetText field is a pointer to an actual text string.

od_Flags

The object flags are heavily object dependent. For standard GadTools gadgets, the standard GadTools flags apply. Some GadTools flags are

```
also applicable to Opus gadgets:

    PLACETEXT_LEFT
    PLACETEXT_RIGHT
    PLACETEXT_ABOVE (only works for some gadgets)
    PLACETEXT_IN    (only works for some gadgets)

General purpose Opus flags are:

    TEXTFLAG_TEXT_STRING - this flag is used with all the object
    types, and indicates that the od_GadgetText field of the ObjectDef
    structure points to a literal text string and not a locale ID.

    TEXTFLAG_NO_USCORE - if you specify this flag, an underscore
    character in the string will be treated literally. Otherwise,
    the underscore is used to specify a character to be underscored,
    indicating a keyboard equivalent.

Flags for BUTTON_KIND gadgets:

    BUTTONFLAG_OKAY_BUTTON - indicates that this button is an "ok"
    button. The 'enter' key will automatically be used as a key
    equivalent for this button. The label for this button is
    automatically rendered in bold.

    BUTTONFLAG_CANCEL_BUTTON - indicates that this button is a
    "cancel" button. The 'escape' key will automatically be used as a
    key equivalent for this button.

    BUTTONFLAG_TOGGLE_SELECT - specifies that you want a toggle-select
    button (one that can be turned on or off).

    BUTTONFLAG_THIN_BORDERS - specifies that you want 'thin' borders
    for the button. Thin borders are one pixel wide on all sides,
    whereas normal borders are two pixels wide on the left and right,
    and one pixel wide at the top and bottom. This flag can also
    be used with CHECKBOX_KIND, FRAME_KIND, NUMBER_KIND, TEXT_KIND,
    PALETTE_KIND, FILE_BUTTON_KIND, DIR_BUTTON_KIND and
    FONT_BUTTON_KIND gadgets.

Flags for OPUS_LISTVIEW_KIND gadgets:

    LISTVIEWFLAG_CURSOR_KEYS - specifies that the cursor keys can
    be used to scroll up and down in this listview.

Flags for FILE_BUTTON_KIND gadgets:

    FILEBUTFLAG_SAVE - specifies that the file requester is to be
    opened in save mode.

Flags for OD_TEXT objects:

    TEXTFLAG_RIGHT_JUSTIFY - right justify the text
    TEXTFLAG_CENTER - center the text

Flags for OD_AREA objects:
```

```
    AREAFLAG_RAISED - a raised rectangle
    AREAFLAG_RECESSED - a recessed rectangle
    AREAFLAG_THIN - draw rectangle with thin borders
    AREAFLAG_ICON - draw an icon drop box
    AREAFLAG_ERASE - erase the interior of the rectangle
    AREAFLAG_LINE - draw a separator line
    AREAFLAG_OPTIM - optimised refreshing when updating
    AREAFLAG_TITLE - draw a group box with a title
    AREAFLAG_NOFILL - don't fill interior


od_ID

This is the ID of the object. If the object is a gadget, it will
also set the gadget ID.


od_TagList

Object-specific taglist. For GadTools gadgets, all the standard
GadTools flags apply.

    GTCustom_LocaleLabels - (USHORT *)

    Used with : MX_KIND, CYCLE_KIND

    This tag points to an array of locale IDs. It allows you to
    specify the text contents of the gadgets using locale. The array
    must be terminated with a 0 value. You can use this instead of
    the GTCY_Labels or GTMX_Labels tags.


    GTCustom_Image - (struct Image *)

    Used with : BUTTON_KIND

    Points to an Image structure that defines an image to be displayed
    within the button.


    GTCustom_CallBack - (void __asm (*)(register __a1 struct TagItem *,
          register __a2 struct Window *))

    Used with : All types

    This tag allows you to specify the address of a callback function
    that is called when the object is added to the window via

              AddObjectList()
              . The callback function is passed both the window
    pointer and a pointer to the tag. The function can modify both the
    ti_Tag and ti_Data values of the tag, and when it returns the
    Tag will be re-evaluated with the new contents.


    GTCustom_LayoutRel - USHORT
```

```
  Used with : All types

  Lets you position objects relative to another. The ti_Data field
  contains the ID of an object that *has previously been added*
  (eg is before this one in the ObjectDef array). The new object
  will be positioned relative to the specified object; from the
  new object's point of view, coordinate 0,0 is the top-left
  corner of the relative object. You can use POS_CENTER and the
  other magic position values with this tag. For example, to
  position an object in the center of another one, you would
  use the GTCustom_LayoutRel tag, and set char_dims.Left and
  char_dims.Top for the new object to POS_CENTER.

  If the window is resizeable, you must supply the GTCustom_CopyTags
  tag as well.


  GTCustom_LayoutPos - USHORT

  Used with : All types

  Lets you position objects based on the position of another object.
  The ti_Data field contains the ID of an object that must have been
  previously added. This tag is used in conjunction with the
  following object flags:

POSFLAG_ADJUST_POS_X    - X-position is relative to X-position
        of other object

POSFLAG_ADJUST_POS_Y    - Y-position is relative to Y-position
        of other object

POSFLAG_ALIGN_X  - Align X-position with other object

POSFLAG_ALIGN_Y  - Align Y-position with other object

  If the window is resizeable, you must supply the GTCustom_CopyTags
  tag when you supply this tag.


  GTCustom_Control - USHORT

  Used with : CHECKBOX_KIND, FILE_BUTTON_KIND, DIR_BUTTON_KIND,
  FONT_BUTTON_KIND

  Specifies another gadget that this gadget controls. The ti_Data
  field contains the ID of the other gadget. For CHECKBOX_KIND
  gadgets, the other gadget will be disabled when the checkbox
  is deselected, and enabled when it is selected. For the other
  types of gadget, the other gadget MUST be a STRING_KIND, into
  which will go the pathname that was selected by the file requester.

  For FONT_BUTTON_KIND gadgets, the font name is copied into the
  STRING_KIND gadget specified with this tag, and the font size is
  copied into an INTEGER_KIND gadget with the control ID + 1.
```

GTCustom_TextAttr - struct TextAttr *

Used with : All gadgets

Lets you specify the font that will be used for a specific gadget.

GTCustom_MinMax - ULONG

Used with : SLIDER_KIND, INTEGER_KIND, SCROLLER_KIND

Allows you to specify the minimum and maximum values of a gadget. The ULONG contains the maximum value in the upper 16 bits and the minimum value in the lower 16 bits. For SLIDER_KIND and SCROLLER_KIND, you can also use the GadTools equivalent tags.

GTCustom_ThinBorders - BOOL

Used with : BUTTON_KIND, CHECKBOX_KIND, FRAME_KIND, NUMBER_KIND, TEXT_KIND, PALETTE_KIND, FILE_BUTTON_KIND, DIR_BUTTON_KIND and FONT_BUTTON_KIND

This tag can be used instead of the BUTTONFLAG_THIN_BORDERS flag. This tag also allows you to control thin borders when accessing the Opus BOOPSI gadgets directly.

GTCustom_Borderless - BOOL

Used with : BUTTON_KIND, CHECKBOX_KIND, FRAME_KIND, NUMBER_KIND, TEXT_KIND, PALETTE_KIND, FILE_BUTTON_KIND, DIR_BUTTON_KIND and FONT_BUTTON_KIND

If set to TRUE, this causes the gadget to be rendered without a border.

GTCustom_LocaleKey - ULONG

Used with : All gadgets

This tag takes a locale ID, and uses the corresponding string to set the key equivalent for this gadget. The string is searched for the first underscore character, and the character immediately after the underscore is used as the key equivalent.

GTCustom_NoSelectNext - BOOL

Used with : STRING_KIND, INTEGER_KIND

Ordinarily, pressing return in a string field causes the cursor to move to the next field automatically. If you specify TRUE for this tag, pressing return will simply deactivate the current field.

GTCustom_PathFilter - BOOL

Used with : STRING_KIND

If you specify TRUE for this tag, the string field will
automatically filter the / and : path characters out.

GTCustom_Secure - BOOL

Used with : STRING_KIND

If you specify TRUE for this tag, the string field will operate
in secure "password" mode.

GTCustom_History - Att_List *

Used with : STRING_KIND, INTEGER_KIND

Lets you specify a history list for the gadget. See the docs
for the EH_History tag under
          GetEditHook()
           for more information.

GTCustom_CopyTags - BOOL

Used with : All types

If you specify TRUE for this tag, the supplied tag list will be
copied when the object is created. You need to specify this tag
in conjunction with other tags, depending on the situation.

GTCustom_FontPens - ULONG *

Used with : FONT_BUTTON_KIND

The ti_Data field must point to a ULONG that will be used to
store the front pen, back pen and draw mode result from the
font requester. The data is stored with FgPen in the lowest
byte, BgPen in the second byte and DrawMode in the third
byte. The most significant byte is not used. You must supply
the GTCustom_CopyTags tag if you use this tag.

GTCustom_FontPenCount - short

Used with : FONT_BUTTON_KIND (only under ASL v39.9)

This allows you to specify the number of pens displayed in the
font requester. It is used in conjunction with the
GTCustom_FontPenTable tag, and the GTCustom_CopyTags tag must
also be supplied.

GTCustom_FontPenTable - UBYTE *

Used with : FONT_BUTTON_KIND (only under ASL v39.9)

This is used with GTCustom_FontPenCount. The ti_Data field points to a UBYTE array of pen numbers to display in the font requester. You must also specify the GTCustom_CopyTags tag.

GTCustom_Bold - BOOL

Used with : BUTTON_KIND, CHECKBOX_KIND, FRAME_KIND, NUMBER_KIND, TEXT_KIND, PALETTE_KIND, FILE_BUTTON_KIND, DIR_BUTTON_KIND and FONT_BUTTON_KIND

If set to TRUE, this tag causes the label for the button to be rendered in bold. Use GTCustom_Style for greater control.

GTCustom_NoGhost - BOOL

Used with : BUTTON_KIND, CHECKBOX_KIND, FRAME_KIND, NUMBER_KIND, TEXT_KIND, PALETTE_KIND, FILE_BUTTON_KIND, DIR_BUTTON_KIND and FONT_BUTTON_KIND

If set to TRUE, when the button is disabled its image will not be ghosted.

GTCustom_Style - ULONG

Used with : BUTTON_KIND, CHECKBOX_KIND, FRAME_KIND, NUMBER_KIND, TEXT_KIND, PALETTE_KIND, FILE_BUTTON_KIND, DIR_BUTTON_KIND and FONT_BUTTON_KIND

This tag allows you to control the text style used to render the button label. Valid flags for the style are FSF_BOLD and FSF_ITALIC.

GTCustom_FrameFlags - ULONG

Used with : FRAME_KIND

This tag lets you specify the type of frame rendered for the frame gadget. Currently the only value valid is AREAFLAG_RECESSED, to specify a recessed frame.

GTCustom_ChangeSigTask - struct Task *

Used with : STRING_KIND, INTEGER_KIND

This tag lets you specify a Task that is to be signalled whenever the contents of the string gadget change.

GTCustom_ChangeSigBit - short

Used with : STRING_KIND, INTEGER_KIND

This tag lets you specify the bit that a task is signalled with whenever the contents of the string gadget change.

GTCustom_Justify - short

Used with : TEXT_KIND, NUMBER_KIND

This tag lets you specify the justification of the text displayed in the gadget. Valid values are JUSTIFY_CENTER (the default), JUSTIFY_LEFT and JUSTIFY_RIGHT.

In addition to these tags, OPUS_LISTVIEW_KIND gadgets (via the Opus BOOPSI listview class) supports several additional tags. See the section on the listview class for information on these.

The last member in an array of ObjectDef structures must have a od_Type of OD_END set.

3. The layout routines can only add gadgets to a special sort of window; one that has been created with the

```
OpenConfigWindow()
```

call. Two structures are needed to open one of these windows. The first, a ConfigWindow structure, specifies the position and size of the new window. It has cw_CharDims and cw_FineDims fields, analagous to the fields in ObjectDef structures.

The second is a NewConfigWindow structure. This is initialised as follows:

nw_Parent

This field points to the parent of the Window. The parent can be either another window (the default) or a screen (if the WINDOWF_SCREEN_PARENT flag is set).

nw_Dims

This points to the ConfigWindow structure used to define the size of the new window.

nw_Title

This points to a title string for the new window.

nw_Locale

This points to a valid DOpusLocale structure for the window. All ObjectDefs that use a locale ID will obtain their strings via this

```
structure.


nw_Port

Allows you to specify a message port to use; you should set this to
NULL.


nw_Flags

Control flags. Valid values are:

    WINDOW_SCREEN_PARENT    - nw_Parent points to a Screen
    WINDOW_NO_CLOSE  - no close gadget on the window
    WINDOW_NO_BORDER  - borderless window
    WINDOW_SIMPLE    - simplerefresh window
    WINDOW_AUTO_REFRESH     - use with WINDOW_SIMPLE
    WINDOW_AUTO_KEYS  - handle keypresses automatically
    WINDOW_REQ_FILL  - backfill the window with stipple pattern
    WINDOW_NO_ACTIVATE      - don't activate the window on open
    WINDOW_VISITOR    - open as a visitor window
    WINDOW_SIZE_RIGHT       - size gadget in right border
    WINDOW_SIZE_BOTTOM      - size gadget in bottom border
    WINDOW_ICONIFY    - iconify gadget in title bar


nw_Font

Allows you to specify a font to use for the window. If NULL, the
current screen font will be used.
```

1.136 AddObjectList()

```
                  NAME
AddObjectList - add a list of objects to a window

  SYNOPSIS
AddObjectList(window, objects)
    A0       A1

ObjectList *AddObjectList(struct Window *, ObjectDef *);

  FUNCTION
This function adds a list of objects to a window. The window must have
previously been opened with the
              OpenConfigWindow()
               call.

  INPUTS
window - window to add the objects to
objects - array of objects to add

  RESULT
```

```
Returns a pointer to the list of created objects, or NULL for failure.

  NOTES
You can add multiple object lists to a window with multiple calls to
AddObjectList(). These lists are chained together, and as long as
you pass the address of the FIRST object list to any functions that
search an object list, all chained lists will be searched
automatically.

  SEE ALSO

              OpenConfigWindow()
              ,
              SetGadgetValue()
```

1.137 AddWindowMenus()

```
                    NAME
AddWindowMenus - add menus to a window

  SYNOPSIS
AddWindowMenus(window, menus)
     A0     A1

void AddWindowMenus(struct Window *, MenuData *);

  FUNCTION
This function makes it easy to add menus to a window opened via

              OpenConfigWindow()
              . Even if you don't use the
              AddObjectList()
               routine
to add gadgets to the window, you can still use this call to add
menus.

AddWindowMenus() takes an array of MenuData structures, and constructs
and initialises the Intuition Menu structures automatically. The
MenuData structures are initialised as follows:

    md_Type     - entry type; NM_TITLE, NM_ITEM or NM_SUB. The array
      must be terminated by an NM_END item.

    md_ID       - the ID value for the menu item.

    md_Name     - the name of the menu item. This can either be a
      locale ID, or, if the MENUFLAG_TEXT_STRING flag is
      set, a pointer to a real string.

    md_Flags    - control flags.

The md_Flags field supports the standard Intuition and GadTools menu
flags as well as several custom flags:
```

```
    MENUFLAG_TEXT_STRING - md_Name is a real string
    MENUFLAG_COMM_SEQ    - the menu will be given a command sequence
         (Right-Amiga + a key)
    MENUFLAG_AUTO_MUTEX  - automatic mutual exclusion

If MENUFLAG_COMM_SEQ is specified, the key used for the command
sequence is normally the first character of the menu name. However,
you can specify a character to use instead of this, by setting the
MENUFLAG_USE_SEQ flag, and using the MENUFLAG_MAKE_SEQ() macro.
For example, to specify a command sequence of Right Amiga and A, you
would use :

    MENUFLAG_COMM_SEQ|MENUFLAG_USE_SEQ|MENUFLAG_MAKE_SEQ('A')

The automatic mutual exclusion works on all items at the current
level that have the CHECKIT flag set.

  INPUTS
window - window to add menus to
menus - array of MenuData structures, terminated with NM_END

  RESULT
The menus are added to the window. You can check if this operation
failed (through lack of memory) by examining the window->MenuStrip
pointer; if NULL, the window has no menus.

  SEE ALSO

             FindMenuItem()
             ,
             FreeWindowMenus()
```

1.138 BoundsCheckGadget()

```
  NAME
BoundsCheckGadget - bounds check an integer gadget

  SYNOPSIS
BoundsCheckGadget(list, id, min, max)
       A0   D0   D1   D2

long BoundsCheckGadget(ObjectList *, ULONG, long, long);

  FUNCTION
This routine tests the value of an integer gadget against the supplied
minimum and maximum, adjusts and refreshes it if it is invalid, and
returns the new value.

  INPUTS
list - ObjectList containing the gadget
id - gadget ID
min - minimum value
max - maximum value
```

```
  RESULT
Returns the new value of the gadget.
```

1.139 BuildMenuStrip()

```
                   NAME
BuildMenuStrip - build a MenuStrip easily

  SYNOPSIS
BuildMenuStrip(menus, locale)
     A0     A1

struct Menu *BuildMenuStrip(MenuData *, struct DOpusLocale *);

  FUNCTION
This routine takes the supplied MenuData array, and returns an
initialised menu strip. This menu strip can then be layed out
using the LayoutMenus() function in gadtools.library, and added
to any window.

  INPUTS
menus - array of MenuData structures
locale - locale to use for text strings

  RESULT
Returns a pointer to the head of the menu strip.

  NOTES
The menus returned by this function can be used on any window. If
your window was opened with
               OpenConfigWindow()
               , you should use the

               AddWindowMenus()
                function instead of this one.

The returned menu strip can be freed with a call to FreeMenus() in
gadtools.library.

See the instructions for
               AddWindowMenus()
                for information about
initialising the MenuData structures.

  SEE ALSO

               AddWindowMenus()
               , gadtools.library/LayoutMenusA(),
gadtools.library/FreeMenus()
```

1.140 CheckObjectArea()

```
  NAME
CheckObjectArea - check if a point is within an object's area

  SYNOPSIS
CheckObjectArea(object, x, y)
      A0   D0 D1

BOOL CheckObjectArea(GL_Object *, long, long);

  FUNCTION
This routine tests if the coordinate is within the "select" area of
the object.

  INPUTS
object - object to test
x - x coordinate
y - y coordinate

  RESULT
Returns TRUE if the point falls within the object.
```

1.141 ClearWindowBusy()

```
                  NAME
ClearWindowBusy - make a window unbusy

  SYNOPSIS
ClearWindowBusy(window)
      A0

void ClearWindowBusy(struct Window *);

  FUNCTION
This routine undoes the effect of a
              SetWindowBusy()
               call. The mouse
pointer of the window is returned to normal, and input is unblocked.

  INPUTS
window - the window in question

  SEE ALSO

              SetWindowBusy()
```

1.142 CloseConfigWindow()

```
                    NAME
CloseConfigWindow - close a window

  SYNOPSIS
CloseConfigWindow(window)
         A0

void CloseConfigWindow(struct Window *);

  FUNCTION
This function closes a window that was opened with a call to

               OpenConfigWindow()
               . All memory associated with the window, including
object lists, menus and memory allocated from the window's memory
pool is freed by this call.

  INPUTS
window - window to close. MUST have been opened with
               OpenConfigWindow()
                   RESULT
The window is closed.

  SEE ALSO

               OpenConfigWindow()
```

1.143 DisableObject()

```
  NAME
DisableObject - disable/enable an object

  SYNOPSIS
DisableObject(list, id, state)
          A0   D0    D1

void DisableObject(ObjectList *, ULONG, BOOL);

  FUNCTION
This routine disables or enables an object. Currently, only gadgets
support being disabled.

  INPUTS
list - ObjectList containing object
id - object ID
state - TRUE for disable, FALSE for enable

  RESULT
The object is disabled or enabled.
```

1.144 DisplayObject()

```
  NAME
DisplayObject - redisplay an object

  SYNOPSIS
DisplayObject(window, object, fpen, bpen, text)
    A0      A1     D0    D1    A2

void DisplayObject(struct Window *, GL_Object *, long, long, char *);

  FUNCTION
This routine lets you change and refresh an object. Currently, it is
only used for OD_TEXT and OD_AREA objects.

  INPUTS
window - window containing the object
object - object to display
fpen - new foreground pen, -1 for no change
bpen - new background pen, -1 for no change
text - new text

  RESULT
The display is refreshed immediately.
```

1.145 EndRefreshConfigWindow()

```
                  NAME
EndRefreshConfigWindow - finish refreshing a config window

  SYNOPSIS
EndRefreshConfigWindow(window)
       A0

void EndRefreshConfigWindow(struct Window *);

  FUNCTION
This is analagous to calling GT_EndRefresh(window,TRUE) on the
window. It finishes and cleans up the refresh process begun with

              StartRefreshConfigWindow()
              .

  INPUTS
window - window to end refresh of

  NOTES
If you are using a smart refresh window, or have set the
WINDOW_AUTO_REFRESH flag, you will not need to call this function.

  SEE ALSO

              StartRefreshConfigWindow()
```

```
               , gadtools.library/GT_EndRefresh()
```

1.146 FindMenuItem()

```
                    NAME
FindMenuItem - find a menu item by ID

  SYNOPSIS
FindMenuItem(menu, id)
        A0   D0

struct MenuItem *FindMenuItem(struct Menu *, USHORT);

  FUNCTION
Traverses the menu list from the supplied pointer, searching for
a menu with the given ID. This ID is extracted using the
GTMENUITEM_USERDATA() macro. If you constructed the menu item
with
               AddWindowMenus()
                or
               BuildMenuStrip()
               , the ID was supplied
in the md_ID field of the MenuData structure.

  INPUTS
menu - Menu to start search
id - ID to search for

  RESULT
Returns a pointer to the MenuItem or NULL if not found.

  SEE ALSO

               AddWindowMenus()
               ,
               BuildMenuStrip()
```

1.147 FreeObjectList()

```
                    NAME
FreeObjectList - free a list of objects

  SYNOPSIS
FreeObjectList(list)
    A0

void FreeObjectList(ObjectList *);

  FUNCTION
This routine frees the supplied list of objects. If there are any
```

```
gadgets in the list, they are automatically removed from the window
before being freed.

Ordinarily you do not need to call this function; any existing objects
are freed automatically when you close the window with

              CloseConfigWindow()
              . However, this function together with

              AddObjectList()
               allows you to add and remove objects (gadgets) from
the window dynamically. This is something that is not possible under
GadTools.

  INPUTS
list - object list to free

  RESULT
The list is delinked and all its objects are freed. If you are freeing
just one list from a window, you will need to refresh the display
after you have freed the objects.

  SEE ALSO

              AddObjectList()
              ,
              CloseConfigWindow()
```

1.148 FreeWindowMenus()

```
                  NAME
FreeWindowMenus - free menus from a window

  SYNOPSIS
FreeWindowMenus(window)
      A0

void FreeWindowMenus(struct Window *);

  FUNCTION
Frees the menus that were attached with a call to
              AddWindowMenus()
              .
Normally you do not need to call this function, as menus are
automatically freed when you close the window with
              CloseConfigWindow()
              .

  INPUTS
window - window to free menus for

  RESULT
The menus are removed from the window and freed.
```

```
  SEE ALSO

              AddWindowMenus()
```

1.149 GetGadgetValue()

```
                    NAME
GetGadgetValue - get the value of a gadget

  SYNOPSIS
GetGadgetValue(list, id)
    A0   A1

long GetGadgetValue(ObjectList *, USHORT);

  FUNCTION
This returns the current value of the gadget, specified by gadget ID.
The supplied list is searched for the gadget.

  INPUTS
list - ObjectList containing the gadget
id - gadget ID

  RESULT
Returns the current value of the gadget. The contents of the return
value are dependant on the type of gadget:

    BUTTON_KIND     - if the BUTTONFLAG_TOGGLE_SELECT flag was set,
          returns TRUE or FALSE to indicate the state of
          the gadget.

    MX_KIND
    CYCLE_KIND
    OPUS_LISTVIEW_KIND
    LISTVIEW_KIND
    SLIDER_KIND
    SCROLLER_KIND
    PALETTE_KIND    - returns the current selection or value

    CHECKBOX_KIND   - returns TRUE or FALSE to indicate the state
          of the gadget.

    INTEGER_KIND    - returns the integer value of the gadget

    STRING_KIND     - returns a pointer to the string contents. This
          pointer is READ ONLY!

  SEE ALSO

              SetGadgetValue()
```

1.150 GetObject()

```
                    NAME
GetObject - get an object by ID from a list

  SYNOPSIS
GetObject(list, id)
     A0   D0

GL_Object *GetObject(ObjectList *, ULONG);

  FUNCTION
Searches the supplied object list (and any chained lists) for the
object with the given ID value.

  INPUTS
list - ObjectList to search
id - ID to search for

  RESULT
Returns a pointer to the object or NULL if not found.

SEE ALSo

              AddObjectList()
```

1.151 GetObjectRect()

```
  NAME
GetObjectRect - get an object's rectangle

  SYNOPSIS
GetObjectRect(list, id, rect)
         A0   D0   A1

BOOL GetObjectRect(ObjectList *, ULONG, struct Rectangle *);

  FUNCTION
Searches for the object, and if found, copies the coordinates of the
object's display rectangle into the supplied structure.

  INPUTS
list - ObjectList containing the object
id - ID of the object
rect - Rectangle structure for result

  RESULT
Returns FALSE if the object could not be found.
```

1.152 GetWindowAppPort()

```
                    NAME
GetWindowAppPort - get a window's application port

  SYNOPSIS
GetWindowAppPort(window)
       A0

struct MsgPort *GetWindowAppPort(struct Window *);

  FUNCTION
If a window has registered itself with a call to
              SetWindowID()
              , this
function will return the address of its application message port.

  INPUTS
window - window in question

  RESULT
Returns a pointer to the message port, or NULL if the window wasn't
registered.

  SEE ALSO

              SetWindowID()
              ,
              GetWindowID()
```

1.153 GetWindowID()

```
                    NAME
GetWindowID - get a window's ID code

  SYNOPSIS
GetWindowID(window)
        A0

ULONG GetWindowID(struct Window *);

  FUNCTION
If a window has been registered with
              SetWindowID()
              , this function
returns the ID code.

  INPUTS
window - window in question

  RESULT
Returns the ID code of the window if it is registered. Returns
WINDOW_UNKNOWN if not registered. Returns WINDOW_UNDEFINED if the
```

```
Window is registered, but does not have an ID or application port.

  SEE ALSO

              SetWindowID()
              ,
              GetWindowAppPort()
```

1.154 GetWindowMsg()

```
                    NAME
GetWindowMsg - get IntuiMessage for a window

  SYNOPSIS
GetWindowMsg(port)
        A0

struct IntuiMessage *GetWindowMsg(struct MsgPort *);

  FUNCTION
This routine is analagous to the GT_GetIMsg call under GadTools.
It searches the supplied port for an IntuiMessage, performs
pre-processing on the message and returns the result to you.
It is highly recommended that you use this instead of a normal call
to GetMsg() when using the layout routines. In particular, auto
refreshing of simplerefresh windows, resizing, key equivalents and
proper gadget processing will all be affected if you do not call
this function.

  INPUTS
port - port to search for messages (window->UserPort)

  RESULT
Returns a pointer to the message, or NULL if there was none. You
must call
              ReplyWindowMsg()
               to reply to messages from this function.

  SEE ALSO

              ReplyWindowMsg()
```

1.155 LayoutResize()

```
                    NAME
LayoutResize - resize a window

  SYNOPSIS
LayoutResize(window)
         A0
```

```
void LayoutResize(struct Window *);

  FUNCTION
This routine is called to handle refreshing of a window when it is
resized by the user. If you call
              GetWindowMsg()
               in your event loop,
this is called automatically for you.

  INPUTS
window - window that has been resized

  RESULT
All objects in the window are resized (if they were defined with
proportional or relative sizes) and refreshed.
```

1.156 OpenConfigWindow()

```
                   NAME
OpenConfigWindow - open a window

  SYNOPSIS
OpenConfigWindow(newwin)
       A0

struct Window *OpenConfigWindow(NewConfigWindow *);

  FUNCTION
This routine opens the window defined by the suppled NewConfigWindow
structure.

  INPUTS
newwin - initialised NewConfigWindow structure

  RESULT
Returns a pointer to the Window. This is a normal Intuition window
in most respects, but its UserData field points to a structure of
additional information. You MUST NOT modify the UserData field of
such a window.

  SEE ALSO

              AddObjectList()
              ,
              CloseConfigWindow()
```

1.157 ReplyWindowMsg()

```
                    NAME
ReplyWindowMsg - reply to a message

  SYNOPSIS
ReplyWindowMsg(msg)
    A0

void ReplyWindowMsg(struct IntuiMessage *);

  FUNCTION
Call this function to reply to a message you received via

              GetWindowMsg()
              .

  INPUTS
msg - message to reply to

  SEE ALSO

              GetWindowMsg()
```

1.158 SetConfigWindowLimits()

```
                    NAME
SetConfigWindowLimits - set size limits for a window

  SYNOPSIS
SetConfigWindowLimits(window, min, max)
      A0     A1   A2

void SetConfigWindowLimits(struct Window *, ConfigWindow *,
              ConfigWindow *);

  FUNCTION
Sets the sizing limits of the supplied window. The minimum and
maximum dimensions are specified with two ConfigWindow structures.

  INPUTS
window - window to set limits for
min - minimum dimensions
max - maximum dimensions

  SEE ALSO

              OpenConfigWindow()
```

1.159 SetGadgetChoices()

```
  NAME
SetGadgetChoices - set the "choices" for a gadget

  SYNOPSIS
SetGadgetChoices(list, id, choices)
      A0   D0     A1

void SetGadgetChoices(ObjectList *, ULONG, APTR);

  FUNCTION
This routine sets the choices for a gadget. It operates differently for
different types of gadgets:

    SCROLLER_KIND

    Sets the maximum value of the gadget, and adjusts the current value
    if it exceeds this limit.

    SLIDER_KIND

    Sets the minimum (lower 16 bits)  and maximum (upper 16 bits)
    values of the gadget, and adjusts the current value if it exceeds
    either of these limits.

    LISTVIEW_KIND/OPUS_LISTVIEW_KIND

    Sets the list contents pointer. This is either a struct List * or
    an Att_List *. If you set the value to NULL, the current list
    will be detached from the gadget and the list will be cleared.
    If you set the value to -1, the list will be detached but the
    gadget display will not be cleared.

    CYCLE_KIND

    Sets the cycle gadget contents. This points to a char * array, or
    NULL if you want the gadget to be empty. The array must be
    null-terminated.

  INPUTS
list - ObjectList containing the gadget
id - gadget ID
choices - new choices for the gadget

  RESULT
The display is updated immediately, if appropriate.
```

1.160 SetGadgetValue()

```
                  NAME
SetGadgetValue - set the value of a gadget

  SYNOPSIS
SetGadgetValue(list, id, value)
```

```
    A0   D0    D1

void SetGadgetValue(ObjectList *, USHORT, ULONG);

  FUNCTION
Sets the value of a gadget. See the instructions for
              GetGadgetValue()
                for a list of the gadgets a value can be set for. Note that in ↩
                   the
case of a STRING_KIND gadget, the string that you supply is copied,
and does not need to remain valid once you have set it.

  INPUTS
list - ObjectList containing the gadget
id - gadget ID
value - new value for the gadget

  RESULT
The display is updated immediately.

  SEE ALSO

              GetGadgetValue()
```

1.161 SetWindowBusy()

```
                  NAME
SetWindowBusy - make a window busy

  SYNOPSIS
SetWindowBusy(window)
    A0

void SetWindowBusy(struct Window *);

  FUNCTION
Makes the supplied window busy. The mouse pointer is changed to the
system busy pointer, and all gadget input to the window is blocked.
You must call
              ClearWindowBusy()
               to reverse this state.

  INPUTS
window - window to make busy

  RESULT
The window goes busy.

  NOTES
You can only call this routine on a window opened with

              OpenConfigWindow()
              .
```

```
SEE ALSo

              OpenConfigWindow()
              ,
              ClearWindowBusy()
```

1.162 SetWindowID()

```
                   NAME
SetWindowID - register a window's ID

  SYNOPSIS
SetWindowID(window, idptr, id, port)
        A0      A1   D0   A2

void SetWindowID(struct Window *, WindowID *, ULONG, struct MsgPort *);

  FUNCTION
This routine "registers" a window, giving it an ID value and
associating a message port with it.

This is invaluable in a drag and drop situation, when you want to
determine whether a particular window supports a particular type of
drop operation.

The function takes a pointer to a WindowID structure, which is stored
in the UserData field of the Window. You therefore lose the use of the
UserData field, but you can easily recover it by embedding a WindowID
structure in a larger structure.

It also takes an ID value, and a pointer to a message port. These
values are retrievable with the
              GetWindowID()
               and
              GetWindowAppPort()
                calls.

All windows opened with
              OpenConfigWindow()
               have an ID associated
with them automatically; by default, the ID is set to WINDOW_UNDEFINED.
If you wish to change it, you can use the SET_WINDOW_ID() macro.

  INPUTS
window - window to register
idptr  - pointer to WindowID structure. This MUST remain valid for the
   life of the window
id     - ID value for the window. You should set the WINDOW_USER bit
   of any IDs you define.
port   - pointer to message port. This does not actually have to be
   a message port; it can be any 32 bit value.

  RESULT
The window association is made.
```

```
  SEE ALSO

              GetWindowID()
              ,
              GetWindowAppPort()
```

1.163 StartRefreshConfigWindow()

```
                   NAME
StartRefreshConfigWindow - begin refreshing a window

  SYNOPSIS
StartRefreshConfigWindow(window, finish)
         A0      D0

void StartRefreshConfigWindow(struct Window *, long);

  FUNCTION
This routine begins refresh of a simplerefresh window that was
opened with
              OpenConfigWindow()
              . If you specify the WINDOW_AUTO_REFRESH
flag, you will never need to call this function.

  INPUTS
window - window to begin refreshing
finish - if set to TRUE, the refresh is ended by this function too. Use
   this if you don't want to do any rendering of your own for
   the refresh (but if that's the case, why not just use
   WINDOW_AUTO_REFRESH?)

  RESULT
Refreshing is started (and optionally finished). All the objects in
the window will be refreshed.

  SEE ALSO

              EndRefreshConfigWindow()
              , intuition.library/BeginRefresh()
```

1.164 List_Routines

```
              List Routines


              AddSorted()

              Att_ChangeNodeName()
```

Att_FindNode()

Att_FindNodeData()

Att_FindNodeNumber()

Att_NewList()

Att_NewNode()

Att_NodeCount()

Att_NodeDataNumber()

Att_NodeName()

Att_NodeNumber()

Att_PosNode()

Att_RemList()

Att_RemNode()

FindNameI()

GetSemaphore()

InitListLock()

IsListLockEmpty()

LockAttList()

SwapListNodes()

UnlockAttList()

1.165 AddSorted()

```
  NAME
AddSorted - add a node to a list in alphabetical order

  SYNOPSIS
AddSorted(list, node)
     A0    A1

void AddSorted(struct List *, struct Node *);

  FUNCTION
This function adds a Node to a List, in alphabetical order based on
ln_Name.
```

```
  INPUTS
list - List to add Node to
node - Node to add

  RESULT
The node is inserted in the list in its alphabetical position.
ALL the nodes in the list must have a valid ln_Name, or this routine
will cause enforcer hits.

  NOTES
This routine uses a simple insertion sort based on strcmpi(). As such,
it is neither terrible efficient, or locale-sensitive.

  SEE ALSO
exec.library/Insert()
```

1.166 Att_ChangeNodeName()

```
                  NAME
Att_ChangeNodeName - change the name of a node

  SYNOPSIS
Att_ChangeNodeName(node, name)
        A0    A1

void Att_ChangeNodeName(Att_Node *, char *);

  FUNCTION
Frees the old name of the node and copies the new name.

  INPUTS
node - Att_Node to change name for
name - new name of the node

  RESULT
The new name is copied and installed.

  SEE ALSO

             Att_NewNode()
```

1.167 Att_FindNode()

```
                  NAME
Att_FindNode - find a node by number

  SYNOPSIS
Att_FindNode(list, number)
        A0     D0

Att_Node *Att_FindNode(Att_List *, long);
```

```
  FUNCTION
This routine finds the specified node in the list and returns a
pointer to it.

  INPUTS
list - list to search
number - cardinal number of the node to find

  RESULT
Returns the specified Att_Node or NULL if not found.

  NOTES
This routine can also work on normal Lists with proper type-casting.

  SEE ALSO

              Att_NewNode()
              ,
              Att_NodeName()
```

1.168 Att_FindNodeData()

```
                   NAME
Att_FindNodeData - find a node by its data

  SYNOPSIS
Att_FindNodeData(list, data)
      A0    D0

Att_Node *Att_FindNodeData(Att_List *, ULONG);

  FUNCTION
This function searches the list for a node with data that matches
the supplied ULONG value (the data is specified with the
              Att_NewNode()
                function).

  INPUTS
list - list to search
data - data to look for

  RESULT
Returns the Att_Node if found, otherwise NULL.

  SEE ALSO

              Att_NewNode()
```

1.169 Att_FindNodeNumber()

```
                    NAME
Att_FindNodeNumber - find cardinal number of a node

  SYNOPSIS
Att_FindNodeNumber(list, node)
         A0    A1

long Att_FindNodeNumber(Att_List *, Att_Node *);

  FUNCTION
This routine searches the list for the specified node, and returns
the offset from the beginning of the list.

  INPUTS
list - list to search
node - node to look for

  RESULT
Returns the cardinal number of the node or -1 if not found.

  NOTES
This routine can also work on normal Lists with proper type-casting.

  SEE ALSO

               Att_NewNode()
```

1.170 Att_NewList()

```
                    NAME
Att_NewList - create a new list

  SYNOPSIS
Att_NewList(flags)
        D0

Att_List *Att_NewList(ULONG);

  FUNCTION
Creates a new Att_List structure, which you use in conjunction with
Att_Nodes. These functions provide a convenient way of dynamically
allocating members of lists and performing searches and sorts on them.

  INPUTS
flags - control flags. Currently valid values are :

       LISTF_LOCK  - list is to be shared and requires locking
       LISTF_POOL  - use memory pooling for nodes and names

  If you specify LISTF_LOCK, a semaphore will be initialised for
  this list. Any of the list management functions in the
  dopus5.library will lock the semaphore before accessing the
  list.
```

```
  If you specify LISTF_POOL, a small memory pool will be used
  to allocate list nodes and node names, which can result in
  greater speed and less memory fragmentation.

  RESULT
Returns pointer to an Att_List structure or NULL for failure.

  SEE ALSO

             Att_RemList()
             , exec.library/NewList()
```

1.171 Att_NewNode()

```
                  NAME
Att_NewNode - add a new node to a list

  SYNOPSIS
Att_NewNode(list, name, data, flags)
       A0    A1    D0    D1

Att_Node *Att_NewNode(Att_List *, char *, ULONG, ULONG);

  FUNCTION
This routine allocates a new node and adds it to the specified list.
It can also allocate and copy a name for the node, and store
user-defined data with it. The new node can be added to the list
sorted in several ways.

  INPUTS
list - list to add node to
name - name for the node (will be copied)
data - user-defined data for the node
flags - control flags. Currently valid flags are:

      ADDNODEF_SORT       - sort names alphabetically

      ADDNODEF_EXCLUSIVE  - name must be exclusive; if a node
          already exists with this name, the
          call will fail. Only works in
          conjunction with ADDNODEF_SORT.

      ADDNODEF_NUMSORT    - the node name is taken to be an
          ascii string containing a number,
          and the sort is based on numerical
          order rather than ascii order (so
          that 10 would come after 1 rather
          than before).

      ADDNODEF_PRI  - sort is based on priority. If you
          specify this flag, the 'data'
          parameter is taken to be the node's
          priority.
```

```
    If no sorting flags are specified, the node is added to the
    end of the list.

    RESULT
  If successful, the new Att_Node is returned.

    SEE ALSO

                Att_NewList()
                ,
                Att_RemNode()
```

1.172 Att_NodeCount()

```
                    NAME
  Att_NodeCount - count the nodes in a list

    SYNOPSIS
  Att_NodeCount(list)
           A0

  long Att_NodeCount(Att_List *);

    FUNCTION
  Returns the number of nodes in the list.

    INPUTS
  list - list to count

    NOTES
  This routine can also work on normal Lists with proper type-casting.

    SEE ALSO

                Att_NewNode()
```

1.173 Att_NodeDataNumber()

```
                    NAME
  Att_NodeDataNumber - find cardinal number of a node

    SYNOPSIS
  Att_NodeDataNumber(list, data)
          A0    D0

  long Att_NodeDataNumber(Att_List *, ULONG);

    FUNCTION
  This routine is similar to
```

```
              Att_FindNodeNumber()
              , except that it takes
a ULONG value and searches the list for a node with that value as
it's 'data' (the data specified in the call to
              Att_NewNode
              ).

  INPUTS
list - list to search
data - node data to look for

  RESULT
Returns the Att_Node if found, or NULL.

  SEE ALSO

              Att_NewNode()
              ,
              Att_FindNodeNumber()
```

1.174 Att_NodeName()

```
                   NAME
Att_NodeName - find a node name by number

  SYNOPSIS
Att_NodeName(list, number)
        A0     D0

char *Att_NodeName(Att_List *, long);

  FUNCTION
This routine is similar to
              Att_FindNode()
               except that it returns
a pointer to the node's name rather than the node itself.

  INPUTS
list - list to search
number - cardinal number of the node to find

  RESULT
Returns a pointer to the node's name, or NULL if not found.

  NOTES
This routine can also work on normal Lists with proper type-casting.

  SEE ALSO

              Att_NewNode()
              ,
              Att_FindNode()
```

1.175 Att_NodeNumber()

```
                    NAME
Att_NodeNumber - find cardinal number of node by name

  SYNOPSIS
Att_NodeNumber(list, name)
    A0    A1

long Att_NodeNumber(Att_List *, char *);

  FUNCTION
This routine is similar to
              Att_FindNodeNumber()
              , except that you
specify a name to search for rather than a node pointer.

  INPUTS
list - list to search
name - name of node to search for

  RESULT
Returns the cardinal number of the node or -1 if not found.

  NOTES
This routine can also work on normal Lists with proper type-casting.
The search is not case-sensitive.

  SEE ALSO

              Att_NewNode()
              ,
              Att_FindNodeNumber()
```

1.176 Att_PosNode()

```
                    NAME
Att_PosNode - reposition an Att_Node in an Att_List

  SYNOPSIS
Att_PosNode(list, node, before)
       A0    A1    A2

void Att_PosNode(Att_List *, Att_Node *, Att_Node *);

  FUNCTION
This routine removes an Att_Node from its current position and
re-inserts it in the list in a new position.

  INPUTS
list - Att_List containing node
node - Att_Node to reposition
before - Att_Node to re-insert the node before
```

```
  RESULT
The node is inserted in the list before the supplied node.

  SEE ALSO

              Att_NewNode()
```

1.177 Att_RemList()

```
                   NAME
Att_RemList - free an entire Att_List

  SYNOPSIS
Att_RemList(list, flags)
       A0     D0

void Att_RemList(Att_List *, long);

  FUNCTION
This function releases all the memory used by an Att_List, including
freeing all of the Att_Nodes attached to it.

  INPUTS
list - Att_List to free
flags - control flags. Current flag values are :

      REMLISTF_FREEDATA  - If you specify this flag, the data
         pointers of each of the nodes will
         be automatically freed with FreeVec().
         Therefore, if you use this feature,
         the data you supply to
              Att_NewNode()
                        MUST have been allocated with
         AllocVec().

      REMLISTF_SAVELIST  - If you specify this flag, only the
         nodes of the list will be freed. The
         Att_List itself will be reinitialised,
         ready for use.

  RESULT
The list nodes and optionally the list itself is freed.

  SEE ALSO

              Att_NewList()
              ,
              Att_NewNode()
              ,
              Att_RemNode()
```

1.178 Att_RemNode()

```
                    NAME
Att_RemNode - remove a node from a list

  SYNOPSIS
Att_RemNode(node)
       A0

void Att_RemNode(Att_Node *);

  FUNCTION
This function removes the specified node from its list, and frees
the name copy and node structure.

  INPUTS
node - node to free

  RESULT
The node is removed and freed. The node data is NOT freed by this
routine.

  SEE ALSO

              Att_NewNode()
              ,
              Att_RemList()
```

1.179 FindNameI()

```
  NAME
FindNameI - find a node by name

  SYNOPSIS
FindNameI(list, name)
     A0    A1

struct Node *FindNameI(struct List *, char *);

  FUNCTION
This routine is similar to the exec.library/FindName routine, except
that the comparison used in FindNameI() is not case-sensitive.

  INPUTS
list - list to search
name - name to search for

  RESULT
Returns pointer to the node if found, otherwise NULL.

  SEE ALSO
exec.library/FindName()
```

1.180 GetSemaphore()

```
  NAME
GetSemaphore - lock a semaphore

  SYNOPSIS
GetSemaphore(semaphore, flags, unused)
    A0       D0      A1

long GetSemaphore(struct SignalSemaphore *, long, APTR);

  FUNCTION
This routine locks or attempts to lock the given Semaphore. This
routine fixes some bugs that the exec.library Semaphore routines
have under some versions of the OS.

  INPUTS
semaphore - Semaphore to lock
flags - control flags. Valid flags are :

      SEMF_SHARED     - lock in shared mode
      SEMF_EXCLUSIVE  - lock in exclusive mode
      SEMF_ATTEMPT    - only attempt to lock

unused - must be NULL

  RESULT
Returns TRUE if the Semaphore was successfully locked. If SEMF_ATTEMPT
is not specified, this routine will block until the Semaphore is
available, and will always return TRUE.

  NOTES
To unlock a Semaphore locked with this function, use the standard
exec.library ReleaseSemaphore() call.

  SEE ALSO
exec.library/ObtainSemaphore(), exec.library/ObtainSemaphoreShared(),
exec.library/AttemptSemaphore(), exec.library/AttemptSemaphoreShared(),
exec.library/ReleaseSemaphore()
```

1.181 InitListLock()

```
  NAME
InitListLock - initialise a list/lock pair

  SYNOPSIS
InitListLock(ll, unused)
       A0     A1

void InitListLock(struct ListLock *, APTR);

  FUNCTION
```

```
A ListLock is a convenient structure that ties a List to a Semaphore.
This routine initialises both with the one call.

  INPUTS
ll - ListLock to initialised
unused - must be NULL

  RESULT
The List and the Semaphore in the ListLock are initialised.

  SEE ALSO
exec.library/NewList(), exec.library/InitSemaphore()
```

1.182 IsListLockEmpty()

```
                  NAME
IsListLockEmpty - see if a list is empty

  SYNOPSIS
IsListLockEmpty(ll)
    A0

BOOL IsListLockEmpty(struct ListLock *);

  FUNCTION
This routine is equivalent to the IsListEmpty() macro, except that
it locks the list in shared mode before accessing it.

  INPUTS
ll - ListLock to test

  RESULT
Returns TRUE if the list is empty.

  SEE ALSO

             InitListLock()
             , exec.library/IsListEmpty()
```

1.183 LockAttList()

```
                  NAME
LockAttList - lock an Att_List

  SYNOPSIS
LockAttList(list, exclusive)
       A0      D0

void LockAttList(Att_List *, BOOL);

  FUNCTION
```

```
If an Att_List was created with the LISTF_LOCK flag, this routine can
be used to lock the list.

  INPUTS
list - Att_List to lock
exclusive - set to TRUE if you want exclusive access

  RESULT
This routine will block until the list can be locked, and then return.
You must call
              UnlockAttList()
               to unlock the list when you have
finished with it.

  SEE ALSO

              Att_NewList()
              ,
              UnlockAttList()
```

1.184 SwapListNodes()

```
  NAME
SwapListNodes - swap two nodes in a list around

  SYNOPSIS
SwapListNodes(list, node1, node2);
         A0     A1     A2

void SwapListNodes(struct List *, struct Node *, struct Node *);

  FUNCTION
This routine exchanges the positions of two nodes in a list.

  INPUTS
list - List containing the nodes
node1 - first node to swap
node2 - second node to swap

  RESULT
The nodes' positions will be exchanged.
```

1.185 UnlockAttList()

```
                  NAME
UnlockAttList - unlock an Att_List

  SYNOPSIS
UnlockAttList(list)
         A0
```

```
void UnlockAttList(Att_List *);

  FUNCTION
This routine unlocks an Att_List that was locked with
              LockAttList()
              .

  INPUTS
list - list to unlock

  RESULT
The list is unlocked. Calls to
              LockAttList()
               are nested, so you must
unlock the list as many times as you locked it.

  SEE ALSO

              LockAttList()
```

1.186 Locale_Routines

```
              Locale Routines


              DOpusGetString()
```

1.187 DOpusGetString()

```
  NAME
DOpusGetString - get a text string from the locale table

  SYNOPSIS
DOpusGetString(locale, id)
     A0    D0

STRPTR DOpusGetString(struct DOpusLocale *, long);

  FUNCTION
This routine searches the string table referenced by the supplied
DOpusLocale structure for the string matching the supplied ID,
and returns a pointer to it.

The DOpusLocale structure must be initialised in the following way :

    li_LocaleBase   - locale.library base address, or NULL
    li_Catalog      - OpenCatalog() result, or NULL
    li_BuiltIn      - default string table
```

```
    li_Locale       - current system locale or NULL

If there is no external catalog file, or locale.library is not
available, all fields except li_BuiltIn must be initialised to
NULL. li_BuiltIn MUST point to a table of default strings. This
table is in the CatComp block format. The easiest way to initialise
this pointer is to have a separate source module to a) include
the string table, and b) initialise the pointer. For example,

    #define CATCOMP_BLOCK
    #include "strings.h"

    void init_locale_ptr(struct DOpusLocale *locale)
    {
  locale->li_BuiltIn=(char *)CatCompBlock;
    }

  INPUTS
locale - pointer to initialised DOpusLocale structure.
id - string ID to return.

  RESULT
Returns a pointer to the requested string. If there is no catalog,
or the given string is not in the supplied catalog, the default
string is returned. This pointer is READ-ONLY!

You MUST NOT pass invalid string IDs to this routine.

  SEE ALSO
locale.library/OpenLocale(), locale.library/OpenCatalog(),
locale.library/GetLocaleStr()
```

1.188 Memory_Routines

```
Memory Routines


AllocMemH()

ClearMemHandle()

FreeMemH()

FreeMemHandle()

NewMemHandle()
```

1.189 AllocMemH()

```
                    NAME
AllocMemH - allocate memory using pooling routines
```

```
  SYNOPSIS
AllocMemH(handle, size)
      A0     D0

void *AllocMemH(APTR, ULONG);

  FUNCTION
This function allows you to allocate a chunk of memory. The type of
memory allocated was specified when the memory handle was created.
The size of the allocation is tracked automatically (similar to
AllocVec).

You can actually use this function with a NULL memory handle - in this
case, the function performs much like AllocVec(). This disadvantage
to this is that you are unable to specify the type of memory you need
(the default is MEMF_ANY|MEMF_CLEAR). Memory allocated in this way can
obviously not be tracked, and you must
              FreeMemH()
               each allocation
individually.

  INPUTS
handle - memory handle (from
              NewMemHandle()
              )
size - the amount of memory to allocate

  RESULT
Returns a pointer to the memory block for you to use, or NULL if
the request could not be satisfied.

  SEE ALSO

              NewMemHandle()
              ,
              FreeMemH()
```

1.190 ClearMemHandle()

```
                   NAME
ClearMemHandle - free all memory allocated via a handle

  SYNOPSIS
ClearMemHandle(handle)
     A0

void ClearMemHandle(APTR);

  FUNCTION
This function frees all memory that has been allocated with

              AllocMemH()
               via the specified handle. The memory handle itself
```

```
remains intact.

  INPUTS
handle - memory handle (from
              NewMemHandle()
              )

  SEE ALSO

              NewMemHandle()
              ,
              AllocMemH()
              ,
              FreeMemHandle()
```

1.191 FreeMemH()

```
                  NAME
FreeMemH - free memory allocated with
              AllocMemH()
                  SYNOPSIS
FreeMemH(memory)
     A0

void FreeMemH(APTR);

  FUNCTION
This function frees an individual memory chunk that was allocated
using
              AllocMemH()
              .

  INPUTS
memory - memory address returned from
              AllocMemH()
                  SEE ALSO

              NewMemHandle()
              ,
              AllocMemH()
```

1.192 FreeMemHandle()

```
                  NAME
FreeMemHandle - free a memory handle completely

  SYNOPSIS
FreeMemHandle(handle)
    A0
```

```
void FreeMemHandle(APTR);

  FUNCTION
This function frees all memory that was allocated using the specified
handle, and then frees the handle itself.

  INPUTS
handle - memory handle from
              NewMemHandle()
                  SEE ALSO

              NewMemHandle()
              ,
              ClearMemHandle()
```

1.193 NewMemHandle()

```
                  NAME
NewMemHandle - allocate a new memory handle

  SYNOPSIS
NewMemHandle(puddle_size, thresh_size, type)
     D0     D1       D2

APTR NewMemHandle(ULONG, ULONG, ULONG);

  FUNCTION
This function allocates a new memory handle, to enable easy access to
memory pooling and tracking functions.

If you wish to use the OS memory pooling routines, specify a puddle
and a threshhold size for the memory pool. If you do not specify
these, the memory handle will use ordinary memory allocations and
keep track of these via a linked list. A linked list will also be
used if the creation of a memory pool fails for any reason.

You must specify the type of memory you want when you create the
handle. All memory allocated with this handle will be of the requested
type (ie you can not mix fast and chip memory within the same handle).
The normal MEMF_ flags are used for this, with the following notes:

  - If MEMF_CLEAR is specified, the
              AllocMemH()
               routine clears the
    memory itself (as the OS pooling routines do not support this).

  - If MEMF_PUBLIC is specified, it indicates that you want the memory
    handle to be shareable between tasks, and the allocation routines
    will use semaphore locking when accessing the handle.

The dopus5.library is linked with the standalone memory pool routines,
and therefore these routines work under OS37 as well as OS39.

  INPUTS
```

```
puddle_size - size of puddles to use for pooling, or 0 for no pools
thresh_size - allocation threshhold size for pooling
type - type of memory to allocate

  RESULT
Returns a memory handle for use with the other memory functions, or
NULL for failure.

  SEE ALSO

              AllocMemH()
              ,
              ClearMemHandle()
              ,
              FreeMemH()
              ,
              FreeMemHandle()
              ,
exec.library/AllocPooled(), exec.library/FreePooled(),
exec.library/CreatePool(), exec.library/DeletePool()
```

1.194 Misc_Routines

```
              Miscellaneous Routines


              Atoh()

              BtoCStr()

              BuildKeyString()

              BytesToString()

              ConvertRawKey()

              DivideToString()

              DivideU()

              Itoa()

              ItoaU()

              QualValid()

              Random()

              StrCombine()

              StrConcat()

              Seed()
```

1.195 Atoh()

```
  NAME
Atoh - convert a hex ascii string to a long

  SYNOPSIS
Atoh(string, len)
       A0     D0

long Atoh(char *, long);

  FUNCTION
Converts an ascii representation of a hex value to a long value.

  INPUTS
string - string to convert
len - length of string to convert, or -1 for the whole string

  RESULT
Returns the long value equivalent to the ascii string.
```

1.196 BtoCStr()

```
  NAME
BtoCStr - convert a BCPL string to a C string

  SYNOPSIS
BtoCStr(bstr, cstr, length)
   A0    A1     D0

void BtoCStr(BSTR, char *, long);

  FUNCTION
Converts the supplied BSTR to a null-terminated C string.

  INPUTS
bstr - BCPL pointer to BSTR to convert
cstr - buffer to store converted string in
length - size of buffer

  RESULT
The string is converted. BSTRs are limited to 255 characters.
```

1.197 BuildKeyString()

```
  NAME
BuildKeyString - build a commodities key code string

  SYNOPSIS
BuildKeyString(code, qual, qual_mask, qual_same, buffer)
    D0    D1      D2   D3 A0

void BuildKeyString(USHORT, USHORT, USHORT, USHORT, char *);

  FUNCTION
Takes the supplied key code and qualifier and converts them to an
ASCII string that is compatible with Commodities.

  INPUTS
code - key code
qual - key qualifier
qual_mask - mask of the qualifiers to care about
qual_same - which qualifiers are equivalent

  RESULT
The string is stored in the supplied buffer. String lenghts can
vary but for safety this buffer should be at least 80 bytes.

  SEE ALSO
commodities.library/ParseIX()
```

1.198 BytesToString()

```
  NAME
BytesToString - build a string representation of a byte size

  SYNOPSIS
BytesToString(bytes, buffer, places, separator)
         D0      A0      D1       D2

void BytesToString(ULONG, char *, short, char);

  FUNCTION
This routine takes a long value and creates a string to represent
that value as an expression of size. Some examples are :

   102       ->    102b
   5804      ->    5K
   1829382   ->    1.8M

  INPUTS
bytes - byte value
buffer - buffer to store result
places - number of decimal places. This must be set to 1 currently.
separator - column separator (eg a comma could produce "1,193")

  RESULT
```

```
The string is stored in the buffer. The buffer should be at least
16 bytes long.
```

1.199 ConvertRawKey()

```
  NAME
ConvertRawKey - convert a key from the raw key code

  SYNOPSIS
ConvertRawKey(code, qual, keybuf)
         D0    D1     A0

BOOL ConvertRawKey(USHORT, USHORT, char *);

  FUNCTION
Takes the supplied code and qualifier and returns the equivalent
key in the current key map. This function provides a convenient path
to the console.device's RawKeyConvert() routine.

  INPUTS
code - key code
qual - key qualifier
keybuf - buffer to store key

  RESULT
The key is stored in the supplied buffer. Most keys only require
a single byte but in case one is larger the buffer should be at
least 8 bytes in size.

  SEE ALSO
console.device/RawKeyConvert()
```

1.200 DivideToString()

```
  NAME
DivideToString - divide two numbers, store the result as ASCII

  SYNOPSIS
DivideToString(buffer, numerator, denominator, places, separator)
     A0       D0    D1   D2 D3

void DivideToString(char *, ULONG, ULONG, short, char);

  FUNCTION
This routine divides the numerator by the denominator, and stores
the result with one decimal place precision as an ASCII string.

  INPUTS
string - buffer to store result
numerator - number to divide
```

```
denominator - number to divide by
places - decimal places, must be set to 1 for now
separator - columns separator (eg a comma might produce "1,103")

  RESULT
The division is performed and the result stored in the buffer.
```

1.201 DivideU()

```
  NAME
DivideU - 32bit unsigned division with remainder

  SYNOPSIS
DivideU(numerator, denominator, remainptr, utillib)
     D0    D1   A0  A1

ULONG DivideU(ULONG, ULONG, ULONG *, struct Library *);

  FUNCTION
This routine calls the utility.library UDivMod32() routine, and
returns the result. Any remainder is stored in the supplied
variable.

  INPUTS
numerator - number to divide
denominator - number to divide by
remainptr - pointer to ULONG to store the remainder
utillib - pointer to UtilityBase

  RESULT
Returns the integer result. The remainder is stored in the supplied
variable.

  SEE ALSO
utility.library/UDivMod32()
```

1.202 Itoa()

```
                  NAME
Itoa - converts signed integer to a string

  SYNOPSIS
Itoa(num, string, separator)
      D0     A0       D1

void Itoa(long, char *, char);

  FUNCTION
This routine takes the supplied signed number and converts it to
an ASCII string.
```

```
  INPUTS
num - number to convert
string - string to store result
separator - column separator character, or 0 for no separator.

  RESULT
The string is stored in the supplied buffer.

  SEE ALSO

             ItoaU()
```

1.203 ItoaU()

```
                  NAME
ItoaU - converts unsigned integer to a string

  SYNOPSIS
ItoaU(num, string, separator)
       D0     A0       D1

void ItoaU(long, char *, char);

  FUNCTION
This routine takes the supplied unsigned number and converts it to
an ASCII string.

  INPUTS
num - number to convert
string - string to store result
separator - column separator character, or 0 for no separator.

  RESULT
The string is stored in the supplied buffer.

  SEE ALSO

             Itoa()
```

1.204 QualValid()

```
  NAME
QualValid - mask out invalid qualifiers

  SYNOPSIS
QualValid(qual)
     D0

USHORT QualValid(USHORT);
```

```
  FUNCTION
Masks out invalid qualifiers from the supplied value and returns
the result.

  INPUTS
qual - qualifier mask

  RESULT
The return value is the new qualifier mask. Only the following
qualifiers are considered "valid" for operations within Opus :

    IEQUALIFIER_LCOMMAND, IEQUALIFIER_RCOMMAND,
    IEQUALIFIER_LSHIFT, IEQUALIFIER_RSHIFT,
    IEQUALIFIER_LALT, IEQUALIFIER_RALT,
    IEQUALIFIER_CONTROL, IEQUALIFIER_NUMERICPAD
```

1.205 Random()

```
                  NAME
Random - generate a psuedo-random number

  SYNOPSIS
Random(limit)
  D0

long Random(long);

  FUNCTION
Returns a psuedo-random number between 0 and 'limit' inclusive.

  INPUTS
limit - upper limit of number

  RESULT
Returns random number.

  SEE ALSO

             Seed()
```

1.206 StrCombine()

```
                  NAME
StrCombine - combine two strings into one buffer

  SYNOPSIS
StrCombine(buffer, first, second, size)
       A0      A1     A2     D0

BOOL StrCombine(char *, char *, char *, long);
```

```
  FUNCTION
Combines the two supplied strings into the one buffer.

  INPUTS
buffer - buffer to store result
first - first string
second - second string
size - size of buffer

  RESULT
Returns TRUE if both strings fitted in the buffer, or FALSE
if they had to be truncated.

  SEE ALSO

              StrConcat()
```

1.207 StrConcat()

```
                  NAME
StrConcat - concatenate two strings

  SYNOPSIS
StrConcat(first, second, size)
      A0     A1     D0

BOOL StrConcat(char *, char *, long);

  FUNCTION
Joins the second string to the end of the first string.

  INPUTS
first - first string
second - string to join
size - size of first buffer

  RESULT
The second string is joined to the end of the first string.
This function returns TRUE if the second string fitted in the
buffer, or FALSE if it had to be truncated.

  SEE ALSO

              StrCombine()
```

1.208 Seed()

```
                  NAME
Seed - seed the random number generator
```

```
  SYNOPSIS
Seed(seed)
      D0

void Seed(long);

  FUNCTION
Seeds the random number generator.

  INPUTS
seed - value to seed generator with

  SEE ALSO

             Random()
```

1.209 Notify_Routines

```
             Notify Routines


             AddNotifyRequest()

             RemoveNotifyRequest()

             ReplyFreeMsg()

             SetNotifyRequest()
```

1.210 AddNotifyRequest()

```
                  NAME
AddNotifyRequest - add a request to Opus's notify chain

  SYNOPSIS
AddNotifyRequest(type, userdata, port)
      D0      D1      A0

APTR AddNotifyRequest(ULONG, ULONG, struct MsgPort *);

  FUNCTION
Opus keeps track of several different system events, and this routine
allows you to request notification on them.

The events currently available for notification:

    DN_WRITE_ICON      - an icon is written to disk
    DN_APP_ICON_LIST   - an AppIcon is added or removed
    DN_APP_MENU_LIST   - an AppMenuItem is added or removed
```

```
    DN_CLOSE_WORKBENCH - CloseWorkbench() has been called
    DN_OPEN_WORKBENCH  - OpenWorkbench() has been called
    DN_RESET_WORKBENCH - the workbench screen has been closed and
       re-opened
    DN_DISKCHANGE      - a disk has been inserted or removed
    DN_DOS_ACTION      - a DOS event has occurred. In Opus 5.5,
       these messages are only available if the
       dopus/DOSPatch environment variable is set.
    DN_REXX_UP   - the ARexx process has been started.

Several Opus events are also available for notification:

    DN_OPUS_START      - Opus has started
    DN_OPUS_QUIT       - Opus has quit
    DN_OPUS_HIDE       - Opus has been hidden
    DN_OPUS_SHOW       - Opus has been revealed

When an event occurs that you have requested notification for, a
DOpusNotify message is sent to your message port. The message
structure is defined as follows:

    dn_Msg      - Exec message header

    dn_Type     - Event type

    dn_UserData - the userdata you supplied to AddNotifyRequest()

    dn_Data     - data specific to the type of event

    dn_Flags    - flags specific to the type of event

    dn_Fib      - a FileInfoBlock for some types of event

    dn_Name     - pathname specific to the type of event


The event-specific fields are used in the following way:

    DN_WRITE_ICON
    -------------
  dn_Data  - NULL
  dn_Flags - if DNF_ICON_REMOVED is set, icon was deleted
  dn_Fib   - NULL
  dn_Name  - full pathname of icon

    DN_APP_ICON_LIST
    ----------------
  dn_Data  - pointer to the AppIcon added or removed
  dn_Flags - if DNF_ICON_REMOVED is set, icon was removed
       if DNF_ICON_CHANGED is set, the icon image
       was changed
  dn_Fib   - NULL
  dn_Name  - NULL

    DN_APP_MENU_LIST
    ----------------
  dn_Data  - pointer to the AppMenuItem added or removed
```

```
  dn_Flags - if DNF_ICON_REMOVED is set, item was removed
  dn_Fib   - NULL
  dn_Name  - NULL

    DN_DISKCHANGE
    -------------
  dn_Data  - disk units the change occurred in (bits 0-3
       represent units 0-3)
  dn_Flags - which units have disks in them (bits 0-3
       represent units 0-3)
  dn_Fib   - NULL
  dn_Name  - NULL

    DN_DOS_ACTION
    -------------
  dn_Data  - NULL
  dn_Flags - which DOS action occurred (see <dopus/notify.h>)
  dn_Fib   - FileInfoBlock with file information. This is
       supplied for all actions except Delete.
  dn_Name  - full pathname of file involved

  INPUTS
type - type of events you want to be notified of. One request can
       ask for multiple events. See <dopus/notify.h> for the full
       list.

userdata - a user-defined data field that is passed in any notify
     messages.

port - message port to send notification messages to.

  NOTES
Most notification messages are sent "reply free", meaning you must
use the
              ReplyFreeMsg()
               call to reply to them. Otherwise, the
message memory will be lost.

  RESULT
Returns a notify handle which you use to remove the request.

  SEE ALSO

              RemoveNotifyRequest()
              ,
              SetNotifyRequest()
```

1.211 RemoveNotifyRequest()

```
                  NAME
RemoveNotifyRequest - remove a notification request

  SYNOPSIS
RemoveNotifyRequest(request)
```

```
          A0

void RemoveNotifyRequest(APTR);

  FUNCTION
Removes a notify request that was added with
              AddNotifyRequest()
              .

  INPUTS
request - request to remove

  RESULT
The request is removed. You will receive no more notifications for
that request. Once you have removed the request you should check
your message port for outstanding messages and reply to them.

  SEE ALSO

              AddNotifyRequest()
```

1.212 ReplyFreeMsg()

```
                  NAME
ReplyFreeMsg - reply or free a message

  SYNOPSIS
ReplyFreeMsg(msg)
        A0

void ReplyFreeMsg(struct Message *);

  FUNCTION
If the message has a valid ReplyPort, this function simply passes it
through to ReplyMsg(). If the message has no reply port set, this
function calls FreeVec() on the message to free it.

  INPUTS
msg - message to reply or free

  NOTES
Most Opus notification messages are sent "reply free", meaning you
MUST use this function to reply to them or the memory will be lost.

  SEE ALSO

              AddNotifyRequest()
```

1.213 SetNotifyRequest()

```
                    NAME
SetNotifyRequest - change notification events

  SYNOPSIS
SetNotifyRequest(request, new_type, mask)
       A0 D0      D1

void SetNotifyRequest(APTR, ULONG, ULONG);

  FUNCTION
This routine changes the type of events that an existing notification
request is interested in.

  INPUTS
request - notification request to change
new_type - the new event flags to receive notification about
mask - mask of event flags to change (any events not specified in the
       mask field will not be modified)

  SEE ALSO

              AddNotifyRequest()
```

1.214 Popup_Routines

```
              Popup Menu Routines


              DoPopUpMenu()

              GetPopUpItem()
```

1.215 DoPopUpMenu()

```
                    NAME
DoPopUpMenu - display a popup menu

  SYNOPSIS
DoPopUpMenu(window, menu, itemptr, button)
        A0     A1      A2      D0

USHORT DoPopUpMenu(struct Window *, PopUpMenu *, PopUpItem **, USHORT);

  FUNCTION
This routine displays a popup menu. The PopUpMenu structure must be
initialised as follows:

    item_list - a list of the menu items
```

```
    locale    - a pointer to an initialised DOpusLocale structure

    flags     - menu flags. Currently supported flags are:

        POPUPMF_HELP    - menu supports help via the user
              pressing the help key

        POPUPMF_REFRESH - the callback function supplied
              should be used to refresh the
              parent window

        POPUPMF_ABOVE   - the popup menu should open
              above the parent window, instead
              of over the current mouse
              position

    callback  - pointer to your refresh callback function, or NULL
```

The callback function is a function that you define to handle the situation when the parent window needs to be refreshed. If the parent window is simplerefresh, you should provide this function. The function has the following prototype:

```
    void __asm refresh_callback(    register __d0 ULONG type,
            register __a0 struct Window *window,
            register __a1 ULONG userdata )
```

The routine will be called whenever the parent window needs to be refreshed. 'type' is the IDCMP message type; usually IDCMP_REFRESHWINDOW. 'window' is a pointer to the parent window, and 'userdata' is the userdata field of the PopUpMenu structure.

The 'item_list' parameter is a MinList containing the items of the popup menu. Each node on this list is a PopUpItem structure, which is defined as follows :

```
    item_name - pointer to item name

    id  - item ID

    flags     - item flags. Currently supported flags are:

        POPUPF_LOCALE   - signifies that 'item_name' is
              not a pointer to a string, but
              is a locale ID representing a
              string in the supplied locale.

        POPUPF_CHECKIT  - item can be checked, much like
              CHECKIT in Intuition menus

        POPUPF_CHECKED  - item starts out checked, much
              like CHECKED in Intuition menus

        POPUPF_SUB      - item has sub-items

        POPUPF_DISABLED - item is disabled
```

```
    data      - unless POPUPF_SUB is set, this is a userdata field
    that can be set to anything. If POPUPF_SUB is set, this
    field must point to an initialised MinList containing
    the PopUpItem structures for the sub-menu. You can
    have up to four levels of sub-menus.

Set 'item_name' to the special value POPUP_BARLABEL to produce a
separator bar in the menu.

  INPUTS
window  - Parent window to open menu over
menu    - PopUpMenu to open
itemptr - Pointer to location to receive a pointer to the selected
    item
button  - The code of the mouse button pressed to generate this menu.
    This is used to control which mouse button release will
    remove the menu (eg, if you pass SELECTDOWN for the 'button'
    value, the menu will be removed on a SELECTUP event)

  RESULT
Returns -1 if no item was selected. If an item was selected,
the item ID is returned, and the address of the PopUpItem structure
is stored in 'itemptr'. If the user pressed the help key over an item
and the POPUPMF_HELP flag is set, the POPUP_HELPFLAG flag will be
set in the returned item ID.

  SEE ALSO

              GetPopUpItem()
```

1.216 GetPopUpItem()

```
                  NAME
GetPopUpItem - find a PopUpItem by ID

  SYNOPSIS
GetPopUpItem(menu, id)
        A0   D0

PopUpItem *GetPopUpItem(PopUpMenu *, USHORT);

  FUNCTION
This searches the supplied menu for a PopUpItem with the specified ID,
and returns a pointer to it.

  INPUTS
menu - PopUpMenu to search
id   - ID to search for

  RESULT
Returns a pointer to the PopUpItem if found, or else NULL. This routine
supports one level of sub-menus, and will not find an item that is
more than one sub-menu deep.
```

```
  NOTES
This routine is useful in allowing you to find an item to set the state
of the POPUPF_CHECKED and POPUPF_DISABLED flags.

  SEE ALSO

             DoPopUpMenu()
```

1.217 Progress_Routines

```
             Progress Indicator Routines


             CheckProgressAbort()

             CloseProgressWindow()

             GetProgressWindow()

             HideProgressWindow()

             OpenProgressWindow()

             SetProgressWindow()

             ShowProgressWindow()
```

1.218 CheckProgressAbort()

```
                   NAME
CheckProgressAbort - check for abort in progress window

  SYNOPSIS
CheckProgressAbort(handle)
         A0

BOOL CheckProgressAbort(APTR);

  FUNCTION
Allows you to check the state of the abort flag in the specified
progress window.

  INPUTS
handle - progress window handle

  RESULT
Returns TRUE if the Abort button has been clicked.

  SEE ALSO
```

```
               OpenProgressWindow()
```

1.219 CloseProgressWindow()

```
                    NAME
CloseProgressWindow - close a progress window

  SYNOPSIS
CloseProgressWindow(handle)
          A0

void CloseProgressWindow(APTR);

  FUNCTION
Closes the specified progress window.

  INPUTS
handle - progress window to close

  SEE ALSO

               OpenProgressWindow()
```

1.220 GetProgressWindow()

```
                    NAME
GetProgressWindow - get progress window information

  SYNOPSIS
GetProgressWindow(handle, tags)
        A0     A1

void GetProgressWindow(APTR, struct TagItem *);

void GetProgressWindowTags(APTR, Tag, ...);

  FUNCTION
Returns information about the progress window. Currently available
information is :

    PW_Window      - returns Window pointer

  INPUTS
handle - progress window handle
tags   - inquiry tags

  RESULT
The result of each tag query is stored in the ti_Data field of the
TagItem.
```

```
  SEE ALSO

              OpenProgressWindow()
              ,
              SetProgressWindow()
```

1.221 HideProgressWindow()

```
                    NAME
HideProgressWindow - hide a progress window

  SYNOPSIS
HideProgressWindow(handle)
         A0

void HideProgressWindow(APTR);

  FUNCTION
Removes the specified progress window from the display. The progress
window is still operative; it can still be updated and even closed
while it is hidden.

  INPUTS
handle - progress window handle

  SEE ALSO

              OpenProgressWindow()
              ,
              ShowProgressWindow()
```

1.222 OpenProgressWindow()

```
                    NAME
OpenProgressWindow - open a progress window display

  SYNOPSIS
OpenProgressWindow(tags)
        A0

APTR OpenProgressWindow(struct TagItem *);

APTR OpenProgressWindowTags(Tag, ...);

  FUNCTION
Opens a progress window that your application can use to display the
progression of some operation. The progress window can have a filename
display, file counter and progress guage.

  INPUTS
```

```
tags - control tags. Control tags are:

    PW_Screen    - screen to open on. The progress window will
       appear centered in the screen. Use of this tag
       overrides PW_Window.

    PW_Window    - window to open over. The progress window will
       appear centered over the supplied window.

    PW_Title     - title for the progress window

    PW_SigTask   - task to signal when the abort gadget is pressed.

    PW_SigBit    - bit to signal task with (signal bit, not mask)

    PW_FileName  - initial filename for display

    PW_FileSize  - initial file size

    PW_FileCount - initial file count

    PW_Flags     - control flags

The control flags for the PW_Flags tag are :

    PWF_FILENAME  - specify if you want a filename display
    PWF_FILESIZE  - specify if you want a file size display (1)
    PWF_INFO      - specify if you want an information line
    PWF_GRAPH     - specify if you want a bar graph display (1)
    PWF_NOABORT   - specify if you don't want an Abort button (2)
    PWF_INVISIBLE - if you want the progress window to open in 'hidden'
        mode (ie you need to call
              ShowProgressWindow()
               to
        make it visible)
    PWF_ABORT     - specify if you do want an Abort button (2)

1. Ordinarily, the file size is displayed as a "xxxxxx bytes" string in
   the top-right of the progress window, and the bar graph is used to
   represent "x out of y files". If, however, you specify both
   PWF_FILESIZE and PWF_GRAPH, the meanings of these displays is
   automatically swapped around. The current file progress (eg bytes
   copied) is displayed in the bar graph, and the current operation
   progress (eg files copied) is displayed in text in the top-right
   corner.

2. If you specify a signal task with the pw_SigTask flag, the
   progress window will automatically get an Abort button. You can use
   the PWF_NOABORT flag to stop this happening.

   If you do not specify the pw_SigTask flag, you can use the PWF_ABORT
   flag to add an Abort button without signalling (you will need to
   call
              CheckProgressAbort()
               to detect an abort).

  RESULT
```

```
Returns a handle to the newly created progress window, or NULL for
failure.

  SEE ALSO

              SetProgressWindow()
              ,
              CloseProgressWindow()
```

1.223 SetProgressWindow()

```
                   NAME
SetProgressWindow - update progress window information

  SYNOPSIS
SetProgressWindow(handle, tags)
        A0     A1

void SetProgressWindow(APTR, struct TagItem *);

void SetProgressWindowTags(APTR, Tag, ...);

  FUNCTION
This is the routine you use to update the information displayed in
a progress window.

  INPUTS
handle - progress window handle
tags   - control tags. Valid tags are :

    PW_Title       - change the window title

    PW_FileName    - change the displayed filename

    PW_FileSize    - change the total size of the current file

    PW_FileDone    - change the "done" size of the current file
         (eg, if the file size was 12800 and you had
         copied half of it, the done size would be
         6400).

    PW_Info - change the information field display

    PW_FileCount   - change the total number of files

    PW_FileNum     - change the number of files processed (eg,
         if the total file count was 84 and you had
         processed a quarter of them, the current
         file number would be 21).

  RESULT
The changes are displayed immediately. If the progress window is
currently hidden, the changes are still effective and will be
visible when the progress window is revealed.
```

```
  SEE ALSO

              OpenProgressWindow()
```

1.224 ShowProgressWindow()

```
                   NAME
ShowProgressWindow - reveal a hidden progress window

  SYNOPSIS
ShowProgressWindow(handle, screen, window)
         A0      A1      A2

void ShowProgressWindow(APTR, struct Screen *, struct Window *);

  FUNCTION
Reveals a progress window that was hidden with
              HideProgressWindow()
              .

  INPUTS
handle - progress window handle
screen - new parent screen (if no window supplied)
window - new owner window (if no screen supplied)

  RESULT
The progress window is revealed. If possible, it will be displayed
at the same position on the screen as it was when it was hidden.

  SEE ALSO

              OpenProgressWindow()
              ,
              HideProgressWindow()
```

1.225 Requester_Routines

```
              Requester Routines


              AsyncRequest()

              OpenStatusWindow()

              SelectionList()

              SetStatusText()
```

1.226 AsyncRequest()

```
                  NAME
AsyncRequest - display a requester

  SYNOPSIS
AsyncRequest(ipc, type, window, callback, data, tags)
        A0   D0     A1       A2      A3    D1

long AsyncRequest(IPCData *, long, struct Window *,
      REF_CALLBACK, APTR, struct TagItem *);

long AsyncRequestTags(IPCData *, long, struct Window *,
          REF_CALLBACK, APTR, Tag, ...);

  FUNCTION
Displays requesters of different types. The name of this function
is slightly misleading, as the routine itself is not asynchronous.
However, the requester is launched by a separate process, which makes
it possible for you to provide a callback function that can handle
refreshing of a window while the requester is displayed. There are
currently two types of requesters defined:


REQTYPE_FILE

This opens an ASL file requester. The FileRequester itself is defined
by you; this routine simples opens it with a separate process,
providing asynchronicity. The only value tag for this requester type
is AR_Requester, with which you specify the address of a file
requester structure obtained via AllocAslRequest().


REQTYPE_SIMPLE

This displays a simple text requester to the user. There are several
control tags for this requester type which give you great control
over the appearance of the requester :

    AR_Window (struct Window *)

    Use this to specify a parent window for the requester. The
    requester will appear centered over this window (overrides
    AR_Screen)

    AR_Screen (struct Screen *)

    Use this to specify a parent screen for the requester. The
    requester will appear centered in the screen.

    AR_Title (char *)

    The requester title. This is displayed in the title bar of the
    requester window. If not specified, this value defaults to
    "Directory Opus Request".
```

```
    AR_Message (char *)

    The requester message. This is the text displayed in the main
    body of the requester. Use a \n character to represent a linefeed.

    AR_Button (char *)

    This tag allows you to define a button for the requester. You
    can use this tag multiple times.

    AR_ButtonCode (long)

    Specifies the ID code for the previous AR_Button tag. By default,
    buttons are numbered 1, 2, 3, ... in the order they appear in the
    tag list. This tag allows you to change the ID codes, and
    therefore the result code from the AsyncRequest() function.

    AR_Buffer (char *)

    If you want a string gadget to be displayed in the requester,
    specify this tag with a pointer to a string buffer.

    AR_BufLen (long)

    If a buffer was specified with AR_Buffer, you must also supply
    this tag to set the size of the buffer.

    AR_History (Att_List *)

    Points to an Att_List which contains the history list for this
    gadget. If supplied, the user will be able to press the cursor
    up and down keys to access the history. See the docs on

              GetEditHook()
               for more information.

    AR_CheckMark (char *)

    If you want a check mark gadget to appear in the requester,
    specify this as a pointer to the text for the gadget.

    AR_CheckPtr (short *)

    If you specify the AR_CheckMark tag, you must also supply this
    tag. ti_Data is a pointer to a short variable which will receive
    the state of the checkmark gadget when the requester is closed.

    AR_Flags (ULONG)

    Control flags.

The control flags for the AR_Flags tag are :

    SRF_LONGINT     - the string gadget is an integer field
    SRF_CENTJUST    - center-justify the string gadget
    SRF_RIGHTJUST   - right-justify the string gadget
    SRF_PATH_FILTER - filter path characters from string field
```

```
    SRF_SECURE      - set for secure password field
    SRF_HISTORY     - set if supplying the AR_History tag
    SRF_CHECKMARK   - set if supplying the AR_CheckMark tag
    SRF_MOUSE_POS   - center requester over mouse pointer
```

The callback function is a function that you define to handle the situation when the parent window needs to be refreshed. If the parent window is simplerefresh, you should provide this function. The function has the following prototype:

```
    void __asm refresh_callback(    register __d0 ULONG type,
            register __a0 struct Window *window,
            register __a1 ULONG data )
```

The routine will be called whenever the parent window needs to be refreshed. 'type' is the IDCMP message type; usually IDCMP_REFRESHWINDOW. 'window' is a pointer to the parent window, and 'data' is the data value passed to the AsyncRequest() function.

```
  INPUTS
ipc      - your process' IPCData pointer
type     - type of requester to display
window   - parent window for requester
callback - your callback function
data     - data that is passed to the callback
tags     - control tags
```

```
  RESULT
```
Returns the result from the requester. Returns 0 if the requester could not be displayed.

```
  NOTES
```
For a REQTYPE_SIMPLE requester, the default gadget IDs are (from left to right), 1, 2, 3 ... 0. The right-most gadget is defined as 0 to act as a "cancel" gadget. Therefore, in a simple "Ok", "Cancel" requester, "Ok" returns 1 (or TRUE) and "Cancel" returns 0 (or FALSE).

```
  SEE ALSO
asl.library/AllocAslRequest(),
              GetEditHook()
```

1.227 OpenStatusWindow()

```
                  NAME
OpenStatusWindow - open a status window

  SYNOPSIS
OpenStatusWindow(title, text, screen, flags, unused)
       A0    A1      A2     D0     D1

struct Window *OpenStatusWindow(char *, char *, struct Screen *,
        ULONG, long);
```

```
  FUNCTION
A status window is kind of like a "dumb" progress window; it has
the ability to display a single line of text.

  INPUTS
title  - status window title
text   - initial text to display
screen - screen to open on
flags  - set to 0
unused - set to 0

  RESULT
Returns a pointer to the new window. To close the status window,
call
              CloseConfigWindow()
               on it.

  SEE ALSO

              SetStatusText()
              ,
              CloseConfigWindow()
```

1.228 SelectionList()

```
                  NAME
SelectionList - display a list in a requester

  SYNOPSIS
SelectionList(  list, window, screen,
    title, initialsel, flags,
    buffer, okay_txt, cancel_txt )

short SelectionList(    Att_List *, struct Window *, struct Screen *,
      char *, short, ULONG,
      char *, char *, char * );

  FUNCTION
This routine displays a requester containing a listview gadget,
prompting the user to select an item from the list. The requester
can optionally have a directory field, which allows the user to open
an ASL file requester to locate a directory that is not in the list.

  INPUTS
list       - Att_List to display (the name of each node is displayed)
window     - parent window
screen     - screen to open on if no window specified
title      - title of requester
initialsel - initially selected item, or -1 for no selection
flags      - control flags. Specify SLF_DIR_FIELD to get a directory
       field
buffer     - If SLF_DIR_FIELD is specified, this must point to a
       buffer (256 bytes or greater) to contain the path name
       chosen by the user
```

```
okay_txt   - text for the "Ok" gadget
cancel_txt - text for the "Cancel" gadget

  RESULT
Returns the number of the selected item in the list, or -1 if the
user made no selection. If a directory field was specified with
SLF_DIR_FIELD, and -1 is returned, you should check the supplied
buffer to see if it is empty. If not, the user selected a path
manually.

  SEE ALSO

              Att_NewList()
```

1.229 SetStatusText()

```
                  NAME
SetStatusText - change text in a status window

  SYNOPSIS
SetStatusText(window, text)
    A0     A1

void SetStatusText(struct Window *, char *);

  FUNCTION
Changes the text displayed in the supplied status window.

  INPUTS
window - status window
text   - new text to display

  RESULT
The text is displayed immediately. Do NOT call this function on a
window other than one returned by the
              OpenStatusWindow()
               call.

  SEE ALSO

              OpenStatusWindow()
```

1.230 Timer_Routines

```
              Timer Routines


              AllocTimer()

              CheckTimer()
```

```
               FreeTimer()

               GetTimerBase()

               StartTimer()

               StopTimer()

               TimerActive()
```

1.231 AllocTimer()

```
                    NAME
AllocTimer - allocate a timer handle

  SYNOPSIS
AllocTimer(unit, port)
      D0    A0

TimerHandle *AllocTimer(ULONG, struct MsgPort *);

  FUNCTION
This function allocates a timer handle to enable easy use of the
timer.device. You can supply a message port for it to use,
or have it create one for you. If you do not supply a message port,
the "port" field of the returned TimerHandle structure contains
the address of the port that was created for you.

  INPUTS
unit - the timer.device unit you wish to use (eg UNIT_VBLANK)
port - message port to use (or NULL to have one created)

  RESULT
Returns a TimerHandle to use with the other functions.

  SEE ALSO

               FreeTimer()
               ,
               StartTimer()
```

1.232 CheckTimer()

```
                    NAME
CheckTimer - see if a timer request has completed

  SYNOPSIS
CheckTimer(handle)
       A0
```

```
BOOL CheckTimer(TimerHandle *);

  FUNCTION
This function allows you to discover if a timer request you have
started has completed.

  INPUTS
handle - timer handle

  RESULT
Returns TRUE if the request is complete, or FALSE if it has not
completed or is invalid.

  SEE ALSO

              StartTimer()
              ,
              StopTimer()
```

1.233 FreeTimer()

```
                  NAME
FreeTimer - free a timer handle

  SYNOPSIS
FreeTimer(handle)
      A0

void FreeTimer(TimerHandle *);

  FUNCTION
This function frees a timer handle created with
              AllocTimer()
              . Any
outstanding request is aborted automatically. If you supplied your
own message port to the
              AllocTimer()
               function, you are responsible
for deleting the port yourself.

  INPUTS
handle - timer handle

  SEE ALSO

              AllocTimer()
```

1.234 GetTimerBase()

```
  NAME
GetTimerBase - get a pointer to the timer.device library base

  SYNOPSIS
GetTimerBase()

struct Library *GetTimerBase(void);

  FUNCTION
This function returns a pointer to the library base of the
timer.device. The library base pointer is needed if you want to call
any of the library functions of the timer.device. This routine saves
you having to open the timer.device to get this base pointer.

  INPUTS
none

  RESULT
Returns struct Library * pointer. You must NOT call CloseLibrary() on
this pointer.
```

1.235 StartTimer()

```
                  NAME
StartTimer - send a timer request

  SYNOPSIS
StartTimer(handle, seconds, micros)
       A0       D0      D1

void StartTimer(TimerHandle *, ULONG, ULONG);

  FUNCTION
This function starts a timer request for a given period of time.
Your code should wait on "handle->port" for a signal indicating a
completed request. You can call
              CheckTimer()
               at any time to see if
the request has been completed.

  INPUTS
handle - timer handle
seconds - number of seconds for the request
micros - number of microseconds (0-999999)

  NOTES
You can call this routine with a request already pending; the first
request will automatically be aborted.

  SEE ALSO

              AllocTimer()
              ,
```

```
               StopTimer()
               ,
               CheckTimer()
```

1.236 StopTimer()

```
                    NAME
StopTimer - stop a timer request in progress

  SYNOPSIS
StopTimer(handle)
      A0

void StopTimer(TimerHandle *);

  FUNCTION
This function aborts a timer request that was previously started
with
               StartTimer()
               . If the request has already completed, this
function simply does the cleanup.

  INPUTS
handle - timer handle

  SEE ALSO

               AllocTimer()
               ,
               StartTimer()
               ,
               CheckTimer()
```

1.237 TimerActive()

```
                    NAME
TimerActive - check if a timer request is pending

  SYNOPSIS
TimerActive(handle)
        A0

BOOL TimerActive(TimerHandle *);

  FUNCTION
If you lose track of (or can't be bothered keeping track of)
whether or not you have a pending timer request, this function
allows you to find out.

This function is actually not really necessary. All the timer
```

```
  functions are robust enough to cope with multiple requests
  (a
                StartTimer()
                 with an already-pending request), or a
                StopTimer()
                  when a request is already complete (or was never sent), or any  ↩
                      of
  the other "error" conditions that the timer.device is usually
  sensitive to.

    INPUTS
  handle - timer handle

    RESULT
  Returns TRUE if there is a request pending.

    SEE ALSO

                AllocTimer()
```

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