

Example.Doc

COLLABORATORS

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Chapter 1

Example.Doc

1.1 Menu

```
          +-----+
| ACE v2.3 Examples |
+-----+
```

Introduction

FILES

MESSAGE WRITE

SGN

ABS

FIX

MID\$

SHARED

ADDRESS

FONT

MOD

SHL

ALLOC

FOR..NEXT

MOUSE

SHR

AND

FORWARD
 MOUSE ON
SHORTINT

ARG\$

FRE

MSGBOX

SINGLE

ARGCOUNT
 GADGET
NAME

SIZEOF

AREA
 GADGET CLOSE
NOT

SIN

AREAFILL

GADGET MOD

OCT\$

SLEEP

ASC
 GADGET ON
ON..GOTO/GOSUB

SLEEP FOR

ASSEM
 GADGET WAIT
OPEN
 SOUND

ATN

GOSUB..RETURN

OPTION

SPACE\$

BACK

GOTO

OR

SPC
BEEP
HANDLE
PAINT
SQR
BEVELBOX
HEADING
PALETTE
STICK
BIN\$
HEX\$
 PATTERN
STOP
BREAK
HOME
PEEKx
STR\$
CALL
IF
PENDOWN
STRIG
CASE
 IFF
PENUP
STRING
CHDIR
 IFF CLOSE
POINT
STRING\$
CHR\$
 IFF OPEN
POKEx

STRUCT
CINT
 IFF READ
POS

STYLE

CIRCLE

IMP

POTX

SUB . . END SUB

CLEAR ALLOC

INKEY\$

POTY

SWAP

CLNG

INPUTBOX

PRINT

SYSTEM

CLOSE

INPUTBOX\$

PRINT #

TAB

CLS

INPUT\$

PRINTS

TAN

COLOR

INPUT

PSET

TIME\$

CONST

INPUT #
PTAB

TIMER

COS

INSTR

RANDOMIZE
 TIMER ON

CSNG

INT

READ

TRANSLATE\$

CSRLIN

KILL

REM

TURN

CSTR

LEFT\$

REPEAT..UNTIL

TURNLEFT

DATA

LEN

RESTORE

TURNRIGHT

DATE\$

LET

RIGHT\$

UCASE\$

DAY
 LIBRARY
RND

VAL

```
DECLARE  
  
LINE  
  
SADD  
  
VARPTR  
  DEF FN  
LINE INPUT  
  
SAY  
  WAVE  
  
DEFxxx  
  
LOCATE  
  
SCREEN  
  
WHILE . . WEND  
  
DIM  
  
LOF  
  
SCREEN BACK  
  
WINDOW  
  
END  
  
LOG  
  
SCREEN CLOSE  
  
WINDOW CLOSE  
  
EOF  
  
LONGINT  
  
SCREEN FORWARD  
  
WINDOW ON  
  
ERR  
  
MENU  
  
SCROLL  
  
WINDOW OUTPUT  
  
ERROR  
  
MENU CLEAR
```

```
SERIAL
WRITE

EQV

MENU ON
  SERIAL CLOSE
XCOR

EXIT FOR

MENU WAIT
  SERIAL OPEN
YCOR

EXIT SUB

MESSAGE CLOSE
  SERIAL READ
XOR

EXP

MESSAGE OPEN
  SERIAL WRITE

EXTERNAL

MESSAGE READ

SETHEADING

FILEBOX$

MESSAGE WAIT

SETXY
```

1.2 Introduction

Sometimes it is helpful to see an actual example of a command or function in use, as opposed to simply reading about it in a manual or wading through large amounts of code.

This AmigaGuide document was created with the intention of providing a supplement to the existing ACE documentation.

Peter Zielinski suggested that something like this might be a good idea. I too had been toying with doing this kind of thing for some time. I approached John Stiwinter about it (who has converted all other ACE docs to AmigaGuide format) and he eagerly took the project on.

The creation and content of this guide was a joint effort by

John and I, with John doing much of the early work.

Most programs and code fragments in this guide are short, with only a few exceptions.

You may notice that some code is reused for a number of commands and also that the guide will sometimes link to a particular example program in the ACE distribution.

This first version of the example guide is just that: a first approximation to the intended product. Please report any bugs you find and give us constructive criticism as to how this guide can be improved.

David Benn

The examples contained in this document have been designed and written with the novice in mind, although some of the code snippets do touch on more advanced topics we hope that we have maintained an air of clarity in all of the examples.

Every effort has been made to ensure that all examples are bug free and work on a variety of platforms. All of the code snippets found in this document are considered to be in the public domain, so feel free to use anything you wish in your own programs.

Good luck and happy ACEing.

John Stiwinter

1.3 ABS

```
a = 20
b = -500
PRINT ABS(A);
PRINT ABS(B);
END
```

The following is displayed on the screen:

```
20  500
```

1.4 ADDRESS

```
ADDRESS myAddress, yourAddress
```

Declares two variables of type address. This is the same as declaring long integer variables but more descriptive when the data to be stored is memory location values.

1.5 ALLOC

```
MemLoc& = ALLOC(5000,5)
PRINT MemLoc&
END
```

MemLoc& holds the starting address of 5000 bytes of cleared public memory.

1.6 AND

```
a = 98
b = 243
c = a AND b
PRINT c
END
```

The number 98 is given as a result.

```
ie..
    98 = 01100010
    243 = 11110011
```

```
98 AND 243 = FTTFFFTF
            = 01100010
            = 98
```

Here's another example:

```
Truth = 1 < 2 AND 3 > 0
```

The variable "Truth" now holds the value -1 (ie. TRUE).

1.7 ARGCOUNT

```
FOR N=0 to ARGCOUNT
    PRINT ARG$(N)
NEXT
```

This code will display the command line arguments for the current program. Since ARG\$(0) is the name of the program, this will be displayed first. If there are no command line arguments, only the program name will be displayed.

1.8 AREAFILL

```
'Start at a location of 50 pixels across and 50 pixels down.
'move across 250 pixels from our last position.
'move down 100 pixels.
'now move back 250 pixels (to the left side of the screen).
'and finally, move up 100 pixels to complete the shape.
'fill the area with the current output color.

AREA (50,50)
AREA STEP (250,0)
AREA STEP (0,100)
AREA STEP (-250,0)
AREA STEP (0,-100)
AREAFILL
END
```

This will draw a filled square.

1.9 ASC

```
letter$="Hello"
a=ASC("A")
PRINT a, ASC(letter$)
END

65      72
```

will be printed to the screen.

1.10 ASSEM

```
ASSEM
  addq #4,sp
END ASSEM
```

This has the effect of directly inserting the assembly code "addq #4,sp" into the assembly target file produced by ACE.

1.11 ATN

```
INPUT "ENTER a number: ",a
b = ATN(a)
PRINT "The Arc tangent of"a"is"b
END
```

The output will look like this:

```
Enter a number: 24
The Arc tangent of 24 is 1.5291538
```

1.12 BACK

```
{*
** The following program demonstrates typical usage of
** ACE's Turtle Graphics commands.
*}

SUB shape_a
  COLOR 2
  PENDOWN
  FORWARD 60
  TURNLEFT 30
  FORWARD 60
  TURNLEFT 150
  FORWARD 60
  TURNLEFT 30
  FORWARD 60
  TURNLEFT 150
END SUB

SUB shape_b
  COLOR 3
  PENDOWN
  BACK 30
  TURNRIGHT 30
  BACK 30
  TURNRIGHT 150
  BACK 30
  TURNRIGHT 30
  BACK 30
  TURNRIGHT 150
END SUB

SCREEN 1,640,200,3,2
WINDOW 1,,(0,0)-(640,200),32,1
x=320 : y=100
FOR t = 1 TO 100
  CIRCLE (320,100),1,3
  LINE (x-int(t*3.2),y-t)-(x+int(t*3.2),y+t),1,BF
NEXT t
PENUP
SETXY x,y
FOR t = 0 to 360 STEP 15
  TURN t
  shape_a
NEXT t
PENUP
FOR t = 0 to 360 STEP 5
  TURN t
  shape_b
NEXT t
```

```
WHILE INKEY$="":WEND
WINDOW CLOSE 1
SCREEN CLOSE 1
END
```

1.13 BEEP

```
FOR t = 1 to 3
    BEEP
    SLEEP FOR .5
NEXT t
PRINT "Do I have your attention?"
END
```

This program will beep 3 times and print a message on the screen.

1.14 BEVELBOX

```
DEFNG a-z
WINDOW 1, "ACE Clock v1", (220,75)-(324,111),2
MENU 1,0,1, "Project"
MENU 1,1,1, "About..."
MENU 1,2,1, "Quit", "Q"
ON MENU gosub handle_menu : MENU ON
BEVELBOX (5,3)-(90,19),2
finished = 0
WHILE not finished
    LOCATE 2,3:PRINT TIME$;
    SLEEP FOR .1
WEND
WINDOW CLOSE 1
STOP
handle_menu:
    x = MENU(0):y=MENU(1)
    IF x = 1 AND y = 1 THEN result = MsgBox("by David Benn", "Continue")
    IF x = 1 AND y = 2 THEN finished = -1
RETURN
END
```

This program creates a digital clock which can be moved around with the mouse and exited with Amiga-Q or via the Project menu.

The main display area is a recessed bevel-box.

1.15 BIN\$

```
INPUT "Enter a number: "a
PRINT a"equals "BIN$(a) " binary."
END
```

This will produce the following:

```
Enter a number: 65
65 equals 1000001 binary.
```

1.16 CALL

```
SUB doub(n)
  PRINT n*2
END SUB
```

```
CALL doub(3)
END
```

This code displays:

```
6
```

1.17 CASE

```
CONST default = -1
x=3
CASE
  x=1      : PRINT "one"
  x=2      : PRINT "two"
  default  : PRINT "default"
END CASE
END
```

Since x is equal to neither 1 nor 2 here, and the final statement evaluates to true, "default" is printed.

1.18 CHDIR

```
CHDIR "RAM:"
FILES
END
```

This will display all the files in the RAM disk.

1.19 CHR\$

```
INPUT "Enter a number between 64 and 123: ",a
b$ = CHR$(a)
PRINT "The character of ASCII value"a"is "b$
END
```

The output will look like this:

```
Enter a number between 64 and 123: 65
The character of ASCII value 65 is A
```

1.20 CINT

```
a = 28.75
b = 101.50
c = -23.875
PRINT CINT (a)
PRINT CINT (b)
PRINT CINT (c)
END
```

This program will print:

```
29
102
-24
```

1.21 CIRCLE

```
CIRCLE (320,100),75
END
```

This program will draw a circle at the center of the screen (assuming a high-resolution screen) with a radius of 75 pixels.

1.22 CLEAR ALLOC

```
PRINT "Free: ";FRE(-1)

REPEAT
  addr& = ALLOC(100000);
  IF addr& <> 0 THEN PRINT " ** OK **"; ELSE PRINT " ** NOT OK **";
  PRINT TAB(15);"Free: ";FRE(-1);
  PRINT TAB(30);"Lgst CHIP: ";FRE(2);
  PRINT TAB(50);"Lgst FAST: ";FRE(3)
UNTIL addr& = 0

PRINT "Deallocating memory..."
CLEAR ALLOC
PRINT "Free: ";FRE(-1)
END
```

This program allocates memory in 100,000 byte chunks until memory is either exhausted or too fragmented for ALLOC to return a valid address (non-zero value). CLEAR ALLOC is then invoked to free all

memory allocated via ALLOC.

The FRE(n) function is used to indicate how much memory is free at each stage of the program run.

1.23 CLNG

```
a = 13.75
b = 12.50
PRINT CLNG(a*b)
END
```

The program responds with 172 as opposed to 171.875

1.24 CLS

```
FOR t = 1 to 10
    PRINT "Hello!"
NEXT t

CLS

END
```

CLS simply clears the screen after 10 "hello world" strings are displayed.

1.25 COLOR

```
PRINT "Hello World!"
COLOR 3,0
PRINT "I've changed my color!"
COLOR 1,0
PRINT "Good-bye..."
END
```

Changes foreground color which affects PRINT output in this case.

1.26 CONST

```
CONST true = -1&
```

This creates a named constant which can then be used instead of a numeric literal, making for more easily readable and maintainable programs.

Note that such named constants take on the data type of the value on the right-hand-side of the "=" symbol.

1.27 COS

```
a = 25
PRINT "The cosine of 200 is" COS(200)
PRINT "The cosine of" a "is" COS(a)
END
```

The following is displayed:

```
The cosine of 200 is 0.48718513
The cosine of 25 is 0.99120286
```

1.28 CSNG

```
a% = 12
PRINT "It still looks the same: ";CSNG(a%)
```

This converts the short integer variable's contents (12) into single-precision floating point format internally, and displays the following:

```
It still looks the same: 12
```

1.29 CSRLIN

```
WINDOW 1,, (0,0)-(640,200)
PRINT
row = CSRLIN
LOCATE 12,1
PRINT "Hello World!"
LOCATE row,1
PRINT "Back again."
WHILE INKEY$="":SLEEP:WEND
WINDOW CLOSE 1
END
```

This program creates a new window, moves the print position down one line, stores the current print row, changes the print position to row 12, column 1, displays a string, then finally moves the print position back to the location (row,1), displays another string and awaits a keypress before closing the window.

1.30 DATA

```
dt$ = DATE$
  a = DAY
  FOR t = 1 to 7
    READ n,d$
    IF n = a then day$ = d$
  NEXT t
PRINT "Today is ";day$;" (";dt$;)"
END

DATA 0,Sunday,1,Monday,2,Tuesday,3,Wednesday,4,Thursday
DATA 5,Friday,6,Saturday
```

The weekday and date are displayed by this code.

1.31 DATE\$

```
PRINT "The date is " DATE$
END
```

This will display the date.

1.32 DAY

```
dt$ = DATE$
  a = DAY
  FOR t = 1 to 7
    READ n,d$
    IF n = a then day$ = d$
  NEXT t
PRINT "Today is ";day$;" (";dt$;)"
END

DATA 0,Sunday,1,Monday,2,Tuesday,3,Wednesday,4,Thursday
DATA 5,Friday,6,Saturday
```

The weekday and date are displayed by this code.

1.33 DECLARE

```
DECLARE FUNCTION Delay(ticks&) LIBRARY
DECLARE STRUCT DateStamp ds
DECLARE SUB mySub(n)
DECLARE FUNCTION Forbid() EXTERNAL
```

These lines declare a shared library function, create

a static structure variable, declare a forward reference to a subprogram and declare an external function.

1.34 DEFxxx

```
DEFBNG a-z
```

This directive tells the compiler to treat all variable/subprogram/function identifiers which start with a letter, as long integers until otherwise notified or unless overridden by an explicit variable declaration, a trailing qualifier character or another DEFxxx command.

1.35 DIM

```
DIM myNumbers%(100)
DIM LONGINT myOtherNumbers(50,10)
DIM myNames$(50) SIZE 40
```

These lines of code declare an array of 100 short integers, a 2D array (50 x 10 table) of long integers and an array of 50 strings, each 40 characters in length.

1.36 END

```
PRINT "Hello World!"
END
```

In this case, END simply appears to mark the end of an ACE program, but whenever this command is encountered, program execution ceases.

1.37 ERR

```
OPEN "I",#1,"myNonExistentFile"
PRINT ERR
END
```

Running this code displays:

```
205
```

which is the AmigaDOS error code for "Object Not Found".

1.38 ERROR

```
ON ERROR goto abort_program
ERROR ON
OPEN "I", #1, "myNonExistentFile"
WHILE NOT EOF(1)
    PRINT INPUT$(1,1);
WEND
CLOSE #1
PRINT
STOP

abort_program:
    PRINT "*** Quitting with error code";ERR
END
```

Assuming that the file "myNonExistentFile" doesn't exist, this program will trap an error after the OPEN command causing the program to exit with a message indicating the error code. If the file did exist, it would be displayed a character at a time.

1.39 EQV

```
CONST true = -1&, false = 0&
PRINT true EQV true
PRINT true EQV false
PRINT false EQV true
PRINT false EQV false
END
```

The output of this program is:

```
-1
0
0
-1
```

1.40 EXIT FOR

```
FOR i=1 to 1000
    PRINT i,i^2
    IF MOUSE(0) THEN EXIT FOR
NEXT
END
```

This program prints values from 1 to 1000 and their squares. If the left mouse button is pressed, the FOR loop will be exited.

1.41 EXIT SUB

```
SUB choice(n)
  IF n<10 then choice=1:EXIT SUB
  IF n<20 then choice=2:EXIT SUB
  choice=3
END SUB
```

This subprogram tests for values of n of less than 10 or less than 20 and sets choice to 1 or 2 accordingly, then immediately exits from the subprogram, passing control back to the caller. If n is not less than 10 or 20, choice is set to 30 before the subprogram ends.

1.42 EXP

```
a = 2
PRINT EXP(a)
PRINT EXP(25)
END
```

The following will be displayed on the screen:

```
7.3890571
7.2004902E+10
```

1.43 EXTERNAL

```
EXTERNAL FUNCTION Delay
Delay(50&)
END
```

or

```
DECLARE FUNCTION Delay(ticks&) EXTERNAL
Delay(50&)
END
```

This code delays execution by 1 second (50 ticks) by calling the dos.library function Delay(). This has the same effect as declaring it as a shared library function except that the ami.lib C-style function is called and ACEbmaps:dos.bmap is not required.

The following code declares an external reference to a variable in ami.lib:

```
EXTERNAL LONGINT RangeSeed
```

1.44 FILEBOX\$

```
myFileName$ = FILEBOX$("Select a file")
END
```

This code displays a file requester (ASL or ARP) with the title string "Select a file" and assigns the fully qualified path of the selected file to the string variable myFileName\$.

1.45 FILES

```
FILES TO "ram:myFiles","df0:"
END
```

This creates a list of all files and directories on df0: and stores them in a file called "myFiles" in the RAM: disk.

1.46 FIX

```
PRINT 12.25
PRINT FIX(12.25)
END
```

This displays:

```
12.25
12
```

1.47 FONT

```
OPTION w+
WINDOW 1, "Font", (0,0)-(200,100), 31
FONT "opal", 9
LOCATE 1,1
WHILE -1
    PRINT " Hello World!"
WEND
END
```

This program opens a window, sets the text font to 9-point opal and prints "Hello World!" until the close gadget is clicked at which time the window is closed and the program exits.

1.48 FOR..NEXT

```
FOR t = 0 to 20 STEP 2
    PRINT t;
NEXT t
END
```

This program will display the following on the screen:

```
0 2 4 6 8 10 12 14 16 18 20
```

1.49 FRE

```
PRINT FRE(-1);
PRINT " Bytes of chip & fast memory are available."
END
```

1.50 GADGET MOD

```
WINDOW 1, "Slider", (0,0)-(100,145),10
GADGET 1,ON,50,(35,15)-(60,115),POTY
FOR n=1 to 50
    GADGET MOD 1,n
    SLEEP FOR .25
NEXT
GADGET 1,OFF
GADGET WAIT 0
GADGET CLOSE 1
WINDOW CLOSE 1
END
```

This program opens a window, renders a vertical slider gadget, moves the knob through all 50 levels, deactivates the slider, waits for any gadget to be pressed (window close gadget is the only one left) and cleans up before exiting.

1.51 GOSUB..RETURN

```
INPUT "Enter a number: ",a
INPUT "Enter another number: ",b
GOSUB Multiply
PRINT c
STOP

Multiply:
    c = a*b
    RETURN
END
```

1.52 GOTO

```
ON BREAK GOTO quit
BREAK ON
```

```
DEFBNG a-z
x=0
myLoop:
    PRINT x
    ++x
GOTO myLoop
```

```
quit:
END
```

This is an infinite loop which will PRINT positive integers starting from 0.

CTRL-C will break this loop however.

1.53 HANDLE

```
CONST NULL=0&
DECLARE FUNCTION xRead LIBRARY
OPEN "I", #1, "myFile"
myHandle& = HANDLE(1)
IF myHandle& <> NULL THEN
    buffer& = ALLOC(LOF(1)+1,5) '..cleared public memory!
    IF buffer& <> NULL THEN CALL xRead(myHandle&,buffer&,LOF(1))
    PRINT CSTR(buffer&)
END IF
CLOSE #1
END
```

This program opens "myFile", obtains its AmigaDOS file handle, allocates a buffer for the file's contents, reads the whole file into memory, then displays it as a string. If the file is a not a text file, the display will be fairly weird.

1.54 HEADING

```
SETHEADING 10
TURNRIGHT 20
PRINT HEADING
END
```

This code will display:

```
30
```

which indicates the current turtle heading.

1.55 HEX\$

```
INPUT "Enter a number: ",a
PRINT "The Hex of"a"is " HEX$(a)
END
```

Displays the hexadecimal equivalent of the variable 'a'.

1.56 HOME

```
HOME
```

This command moves the turtle back to the top left corner of the current window. If the turtle's pen is down, a line will be drawn from the current pen position to the home location.

1.57 IF

```
INPUT "Enter a word: "a$
IF a$ = "Hello" THEN
    PRINT "Hello to you!"
ELSE
    PRINT "I don't understand."
END IF
END
```

Demonstrates selection using a block IF..THEN..ELSE statement.

1.58 IMP

```
DEFBNG a-z
CONST true=-1
CONST false=0

SUB show.imp$(p,q)
    pq=p IMP q
    CASE
        pq      : show.imp$="T"
        NOT pq  : show.imp$="F"
    END CASE
END SUB

CLS
PRINT "-----"
PRINT "p    q    | p -> q"
PRINT "-----"
PRINT "T    T    |      ";show.imp$(true,true)
```

```

PRINT "T   F   |   ";show.imp$(true,false)
PRINT "F   T   |   ";show.imp$(false,true)
PRINT "F   F   |   ";show.imp$(false,false)
PRINT "-----"

```

```
END
```

This program displays the following:

```

-----
p   q   |   p -> q
-----
T   T   |   T
T   F   |   F
F   T   |   T
F   F   |   T
-----

```

1.59 INKEY\$

```

WHILE UCASE$(INKEY$) <> "Q"
  SLEEP
WEND

```

This code loops until the "Q" key is pressed. The SLEEP command puts the program to sleep between system events (such as Intuition timer events, key presses and so on).

1.60 INPUTBOX

```

MyNumber& = INPUTBOX("OK for Default","Enter a Number","100",50,50)
PRINT MyNumber&
END

```

This program opens an input requester and returns a number which is then printed.

1.61 INPUTBOX\$

```

MyWord$ = INPUTBOX$("OK for Default","Enter a Word","Hello",50,50)
PRINT MyWord$
END

```

This program opens an input requester and returns a string which is then printed.

1.62 INPUT

```
INPUT "What is your name";a$
PRINT "Hello "a$
END
```

1.63 INSTR

```
a$ = "The quick brown fox jumped over the lazy dog"
b = INSTR(a$, "z")
PRINT b
END
```

This will display 39 on the screen, since the letter 'z' is the 39th character in the sentence.

1.64 INT

```
a = 25.5
PRINT a
PRINT INT(a)
END
```

The following is displayed on the screen:

```
25.5
25
```

1.65 LEFT\$

```
a$ = "Hello"
PRINT LEFT$(a$,2)
END
```

The following is displayed on the screen:

```
He
```

1.66 LEN

```
a$ = "The quick brown fox jumped over the lazy dog"
PRINT LEN(a$)
END
```

This program will return a value of 44 since there are 44 characters in the line.

1.67 LET

```
LET a = 10
PRINT a
END
```

Assigns a value of 10 to the variable 'a' and then prints the contents of that variable.

1.68 LINE

```
LINE (100,25)-(250,75),3,b
LINE (100,25)-(250,75),1,b
LINE (50,50)-(200,100),3,bf
LINE (50,50)-(200,100),1,b
LINE (100,25)-(50,50),1,
LINE (250,25)-(200,50),1,
LINE (250,75)-(200,100),1,
END
```

This will produce a 3-D cube with a solid front, in the current output window.

1.69 LINE INPUT

```
OPEN "I",#1,"a_text_file"
WHILE NOT EOF(1)
  LINE INPUT #1,x$
  PRINT x$
WEND
CLOSE #1
END
```

This program displays a text file, one line at a time.

1.70 LOG

```
FOR i=1 to 5
  PRINT LOG(i)
NEXT
END
```

This program displays the natural logarithms of the numbers 1 to 5, ie:

```
0
0.69314721
1.0986123
1.3862943
1.6094378
```

1.71 LONGINT

```
LONGINT n

SUB LONGINT max(LONGINT n, LONGINT m)
  IF n > m THEN max=n else max=m
END SUB

PRINT max(1,2)
END
```

This declares a long integer variable called `n` as well as a subprogram with a long integer return type and two long integer parameters. The program displays:

```
2
```

1.72 MESSAGE CLOSE

See the programs and ReadMe files in ACE:prgs/ACEports.

1.73 MESSAGE OPEN

See the programs and ReadMe files in ACE:prgs/ACEports.

1.74 MESSAGE READ

See the programs and ReadMe files in ACE:prgs/ACEports.

1.75 MESSAGE WAIT

See the programs and ReadMe files in ACE:prgs/ACEports.

1.76 MESSAGE WRITE

See the programs and ReadMe files in ACE:prgs/ACEports.

1.77 MID\$

```
a$ = "The quick brown fox jumped over the lazy dog"
FOR t = 1 to LEN(a$)
    PRINT MID$(a$,t,1)
NEXT t
END
```

This will print out each letter in the sentence on a new line.

1.78 MOD

```
a = 22
b = 7
PRINT a/b
PRINT a MOD b
END
```

Displays the single-precision quotient and the integer remainder of the division of 22 by 7.

1.79 MOUSE

```
WINDOW 1,, (0,0)-(640,200)
WHILE NOT MOUSE(0):SLEEP:WEND
PENUP:SETXY MOUSE(1),MOUSE(2)
WHILE MOUSE(0)
    LINE STEP (MOUSE(1),MOUSE(2))
WEND
WHILE INKEY$="":SLEEP:WEND
WINDOW CLOSE 1
END
```

This program opens a window, waits for the left mouse button to be pressed and while pressed draws a line from the last to the current X,Y mouse coordinates.

After this, the program awaits a keypress. When it receives one, the window is closed and the program ends.

1.80 MSGBOX

```
f$ = FILEBOX("Delete which file?")
okay = MSGBOX("Really Delete "+f$+"?", "Ok", "Cancel")
IF okay THEN KILL f$
END
```

This rather powerful three lines of code generates a file

requester, asks whether the selected file should be deleted via a message requester and then deletes it if the user clicks the "Ok" button.

1.81 NAME

```
NAME "a_file" AS "the_file"
```

This command renames a file called "a_file" to "the_file".

1.82 NOT

```
truth = 1 > 3  
PRINT NOT truth  
END
```

This code results in the following output:

```
-1
```

Because 1 is not greater than 3, truth holds the value 0 and NOT 0 = -1 (ie. true).

1.83 OCT\$

```
a&=123456  
PRINT OCT$(a&)  
END
```

Displays the octal equivalent of the value of the variable a&.

1.84 ON..GOTO/GOSUB

```
INPUT "Enter 1, 2 or 3 ",choice  
ON choice GOTO one, two, three  
PRINT "Out of range!"  
STOP  
  
one:  
  PRINT 1 : STOP  
two:  
  PRINT 2 : STOP  
three:  
  PRINT 3  
END
```

This code asks for the entry of a value (1, 2 or 3) and jumps to a label according the number entered or prints an error message.

1.85 OPEN

```
a$ = "Hello There!"
b = 256
c$ = "Good-bye."
OPEN "O", #1, "My_File"
PRINT #1, a$, b, c$
WRITE #1, a$, b, c$
CLOSE 1
END
```

The following will be written to My_File:

```
Hello There!           256           Good-bye.
"Hello There!", 256, "Good-bye."
```

Notice the different formats for PRINT # and WRITE #.

1.86 OPTION

```
OPTION 1+
a$ = "Hello There!"
b = 256
c$ = "Goodbye."
OPEN "O", #1, "My_File"
PRINT #1, a$, b, c$
OPTION 1-
WRITE #1, a$, b, c$
CLOSE 1
END
```

This causes source code to be listed during compilation between the two OPTION directives.

1.87 OR

```
CONST true = -1&, false = 0&
PRINT true OR true
PRINT true OR false
PRINT false OR true
PRINT false OR false
END
```

The output of this program is:

```
-1
```

```
-1
-1
0
```

1.88 PAINT

```
CIRCLE (320,100),30
PAINT (320,100)
```

This code paints a circle using the current foreground color.

1.89 PALETTE

```
SCREEN 1,640,200,3,2
WINDOW 1,,(0,0)-(640,200),32,1
PALETTE 0,0,0,0 '..black (bgnd)
PALETTE 1,1,1,1 '..white (fgnd)
PALETTE 2,1,0,0 '..red
PALETTE 3,0,1,0 '..green
PALETTE 4,0,0,1 '..blue
FOR i=1 TO 4
  COLOR i
  PRINT "Hello World"
NEXT
WHILE INKEY$="":SLEEP:WEND
WINDOW CLOSE 1
SCREEN CLOSE 1
END
```

This program opens a hi-resolution screen, then opens a window, redefines the first 5 colors in the palette for the screen, displays "Hello World" in 4 colors before awaiting a key press and closing the window and screen.

1.90 PENDOWN

```
DEFINT a-z
SCREEN 1,640,200,3,2
WINDOW 1,,(0,0)-(640,200),32,1
RANDOMIZE TIMER
LOCATE 23,31
PRINT "Press 'Q' to quit.";
PENUP
SETXY 320,100
WHILE UCASE$(INKEY$)<>"Q"
  c = INT(RND(0)*3)+1
  COLOR c
  PENDOWN
```

```

    FOR t = 0 TO 359 STEP 15
        SETHEADING t
        FOR r = 1 to 4
            FORWARD 30
            TURNRIGHT 90
        NEXT r
    NEXT t
WEND
WINDOW CLOSE 1
SCREEN CLOSE 1
END

```

This will display a design with changing colors on the screen.

1.91 POINT

```

DEFINT a-z
CLS

IF ARGCOUNT<>1 THEN
    PRINT "usage: ";arg$(0);" string"
    STOP
END IF

PRINT ARG$(1)

FOR j=0 TO 7
    LOCATE 2+j,1
    FOR k=0 TO (LEN(ARG$(1))*8)-1
        IF POINT(k+5,j+11) = 0 THEN
            PRINT " ";
        ELSE
            PRINT "@";
        END IF
    NEXT
    PRINT
NEXT

```

This program prints a string in large format by reading each pixel of each letter.

1.92 POKEx

```

SUB usage
    PRINT "usage: ";ARG$(0);" on | off"
    STOP
END SUB
IF ARGCOUNT<>1 THEN CALL usage
CMD$ = UCASE$(ARG$(1))
CONST reg = &Hbfe001
IF CMD$ = "ON" THEN
    POKE reg,peek(reg) AND 253

```

```
ELSE
    IF CMD$ = "OFF" THEN
        POKE reg,PEEK(reg) OR 2
    ELSE
        usage
    END IF
END IF
```

This code will turn the power LED on or off.

1.93 POS

```
WINDOW 1,, (0,0)-(640,200)
CLS
PRINT "          ";
row = CSRLIN
column = POS
LOCATE 12,1
PRINT "Hello World!"
LOCATE row,column
PRINT "Back again."
WHILE INKEY$="":SLEEP:WEND
WINDOW CLOSE 1
END
```

This program clears the current window, prints some spaces, stores the current print position, changes the print position to row 12, column 1, displays a string, then finally moves the print position back to the location (row,column) and displays another string.

1.94 POTX

```
PRINT POTX(2)
END
```

Returns the raw resistance value of whatever is currently connected to the POTX line of the game port.

1.95 POTY

```
PRINT POTY(2)
END
```

Returns the raw resistance value of whatever is currently connected to the POTY line of the game port.

1.96 PRINT

```
PRINT "This is an example of the PRINT command."  
PRINT "This", "is", "with", "commas."  
PRINT "This"; "is"; "with"; "semicolons."  
PRINT  
PRINT "^^^ This is a null line ^^"  
PRINT "This is the end."  
END
```

Shows typical usage of the PRINT statement.

1.97 PRINTS

Now redundant since version 2.0 of ACE but it is a faster way of printing to a user-defined screen or window. The usage is the same as for PRINT.

See

PRINT

1.98 PSET

```
WINDOW 1,, (0,0)-(640,200)  
FOR i=1 to 500  
  PSET (RND*640,RND*200)  
NEXT  
WHILE INKEY$="":SLEEP:WEND  
WINDOW CLOSE 1  
END
```

This program plots 500 randomly positioned pixels in the current output window.

1.99 REM

```
  REM This is a single-line comment  
' So is this  
END
```

1.100 REPEAT..UNTIL

```
REPEAT  
  SLEEP  
UNTIL INKEY$=CHR$(27)  
END
```

This code loops until the Escape key is pressed.

1.101 RESTORE

```
REPEAT
  RESTORE
  FOR i=1 to 3
    READ colr$
    PRINT colr$
  NEXT
UNTIL INKEY$=CHR$(27)

DATA red,green,blue
END
```

This repeatedly displays the 3 strings "red", "green", "blue" by restoring the data pointer to the start of the DATA for the program.

1.102 RIGHT\$

```
a$ = "Hello"
PRINT RIGHT$(a$,2)
END
```

The following is displayed on the screen:

```
lo
```

1.103 RND

```
RANDOMIZE TIMER

FOR t = 1 to 10
  dice1 = INT(RND*6)+1
  dice2 = INT(RND*6)+1
  PRINT dice1, dice2
NEXT t
END
```

This program simulates 2 dice.

It first seeds ACE's random number generator with the number of seconds past midnight. Doing so ensures that the random sequence generated by RND differs each time a program is run.

1.104 SADD

```
a$ = "Hello"
FOR t = 0 to 5
```

```

        PRINT CHR$(PEEK(SADD(a$)+t));
NEXT t
PRINT
END

```

Prints the word "Hello" by peeking the values stored at successive addresses in a string.

1.105 SAY

```

SAY TRANSLATE$("Amiga computers love ACE!")
a$ = "AHMIY3GAH KUMPYUW3TERZ LAH4V EY4S."
SAY a$
END

```

Demonstrates the SAY command using translated text and phonemes.

1.106 SCREEN FORWARD

```

LIBRARY "intuition.library"

DECLARE FUNCTION ActivateWindow(ADDRESS wdw) LIBRARY

SCREEN 1,640,200,2,2
WINDOW 1,"First", (0,10)-(640,100),6,1
MENU 1,0,1,"Project"
MENU 1,1,1,"Show Second","S"
MENU 1,2,1,"Make Rearmost","M"
MENU 1,3,1,"Quit","Q"

SCREEN 2,640,200,2,2
WINDOW 2,"Second", (0,110)-(640,200),6,2
MENU 1,0,1,"Project"
MENU 1,1,1,"Show First","S"
MENU 1,2,1,"Make Rearmost","M"
MENU 1,3,1,"Quit","Q"

{*
** Use either menu event trapping or menu waiting
** code (ie. comment one block out and use the other).
*}

' ** Event trapping code begins

ON MENU GOSUB menu_handler
MENU ON

WHILE -1
    SLEEP
WEND

```

```

' ** Event trapping code ends

' ** Event waiting code begins

'WHILE -1
'  MENU WAIT
'  GOSUB menu_handler
'WEND

' ** Event waiting code ends

END

menu_handler:
  the_menu = MENU(0)
  the_item = MENU(1)

  IF the_menu = 1 THEN
    IF the_item = 1 THEN
      IF WINDOW(1) = 1 THEN id = 2 ELSE id = 1
      SCREEN FORWARD id
      WINDOW OUTPUT id
      ActivateWindow(WINDOW(7))
    END IF

    IF the_item = 2 THEN
      id = WINDOW(1)
      SCREEN BACK id
      SLEEP FOR 1
      SCREEN FORWARD id
    END IF

    IF the_item = 3 THEN quit
  END IF
RETURN

quit:
  MENU CLEAR
  WINDOW CLOSE 1
  SCREEN CLOSE 1
  MENU CLEAR
  WINDOW CLOSE 2
  SCREEN CLOSE 2
STOP

```

This program opens two screens with one window each.

Each window has a Project menu with three items. The first item allows whichever of the two screens is rearmost to be brought to the front. The second item is used to momentarily make the current screen rearmost. The third item closes both screens and windows and ends the program.

This program also demonstrates menu event trapping vs menu

waiting.

1.107 SCROLL

```
SCREEN 1,320,200,2,1
PALETTE 0,0,0,0      '..black
PALETTE 2,1,.2,.2    '..red

'..draw 4 rows of 8 boxes
FOR row=0 TO 3
  FOR column=0 TO 7
    LINE (column*30,row*20)-(column*30+20,row*20+12),2,BF
  NEXT
NEXT

inc=-1 : column=-1
FOR row=0 TO 11
  column = column-SGN(column)
  inc = -SGN(inc)

  '..move boxes vertically
  SCROLL (column,row*10)-(column+230,row*10+82),0,10
  FOR column=0-80*(inc=-1) TO 80+80*(inc=-1) STEP inc

    '..move them horizontally
    SCROLL (column,row*10)-(column+230,row*10+82),inc,0
  NEXT
  BEEP
NEXT
WHILE INKEY$="":WEND
SCREEN CLOSE 1
```

1.108 SGN

```
IF ARGCount<>1 THEN STOP
n = VAL(ARG$(1))
PRINT SGN(n)
END
```

This code displays the sign of the first command line argument, treated as a number.

1.109 SHARED

```
SINGLE n

SUB test
  SHARED n
  PRINT n
END SUB
```

```
IF ARGCOUNT<>1 THEN STOP
n = VAL(ARG$(1))
test
END
```

A single-precision floating point variable is declared and then shared with the subprogram "test".

1.110 SHL

```
a = 128
PRINT SHL (a,4)
END
```

This is the equivalent of multiplying 128 by 2 four times, or multiplying 128 by 16.

1.111 SHR

```
a = 128
PRINT SHR (a,4)
END
```

This is the equivalent of dividing 128 by 2 four times, or dividing 128 by 16.

1.112 SHORTINT

```
SHORTINT n

SUB SHORTINT max(SHORTINT n, SHORTINT m)
  IF n > m THEN max=n else max=m
END SUB

PRINT max(1,2)
END
```

This declares a short integer variable called n as well as a subprogram with a short integer return type and two short integer parameters. The program displays:

2

1.113 SINGLE

```
SINGLE n

SUB SINGLE max(SINGLE n, SINGLE m)
  IF n > m THEN max=n else max=m
END SUB

PRINT max(1,2)
END
```

This declares a single-precision variable called n as well as a subprogram with a single-precision return type and two single-precision parameters. The program displays:

```
2
```

1.114 SIZEOF

```
n%=5
STRUCT theStruct
  LONGINT a
  STRING b SIZE 100
END STRUCT
DECLARE STRUCT theStruct myStruct
PRINT SIZEOF(LONGINT)
PRINT SIZEOF(n%)
PRINT SIZEOF(myStruct)
END
```

This code produces the following output:

```
4
2
104
```

1.115 SIN

```
FOR i=1 to 5
  PRINT SIN(i)
NEXT
END
```

This program displays the sines of the numbers 1 to 5, ie:

```
0.84147111
0.9092975
0.14112005
-0.75680259
-0.95892433
```

1.116 SLEEP FOR

```
PRINT "Goodnight, I am going to sleep now."
SLEEP FOR 10
PRINT "Hello, I'm awake now!"
END
```

This program displays a message, sleeps for 10 seconds, then displays another message.

1.117 SPACE\$

```
PRINT "Hello World"
PRINT "Hello ";
PRINT SPACE$(10);
PRINT "World"
END
```

The following is displayed:

```
Hello World
Hello      World
```

1.118 SPC

```
FOR t = 1 TO 10
    PRINT SPC(t) "\"
NEXT t
END
```

Draws a diagonal line using the backslash character.

1.119 SQR

```
FOR i=1 to 5
    PRINT SQR(i)
NEXT
END
```

This program displays the square roots of the numbers 1 to 5, ie:

```
1
1.4142135
1.7320507
2
2.236068
```


1.120 STICK

```
WHILE INKEY$=""
  IF STICK(2) OR STICK(3) <> 0 THEN
    PRINT "x direction is" STICK(2)
    PRINT "y direction is" STICK(3)
  END IF
  IF STRIG(3) = -1 THEN PRINT "FIRE!!!"
WEND
END
```

1.121 STR\$

```
PRINT STR$(65)
END
```

Prints the number 65 as a string.

1.122 STRING

```
STRING myStringVar
STRING myShortStringVar SIZE 10
```

These two lines of code create a 1K string variable and a 10 byte string variable.

1.123 STRING\$

```
PRINT STRING$(5, "A")
PRINT STRING$(5, 65)
END
```

Prints the following:

```
AAAAA
AAAAA
```

1.124 STRUCT

```
STRUCT date_stamp
  LONGINT ds_Days
  LONGINT ds_Minutes
  LONGINT ds_Ticks
END STRUCT
```

```
DECLARE STRUCT date_stamp stamp
DECLARE FUNCTION DateStamp LIBRARY
```

```
DateStamp(stamp)
PRINT stamp->ds_Days
PRINT stamp->ds_Minutes
PRINT stamp->ds_Ticks
END
```

This code defines a datestamp structure, declares a variable of the new data type, calls the dos.library DateStamp() function filling the structure's fields, which are then all displayed.

1.125 STYLE

```
PRINT "Hello ";
STYLE 6
PRINT "World!"
STYLE 0
END
```

This code will print "Hello World!" with "World!" bold and italicised. The text style will then be reset to plain.

1.126 SWAP

```
a$="1"
b$="2"
FOR t = 1 to 5
    SWAP a$,b$
    PRINT a$,b$
NEXT t
END
```

The following is displayed:

```
1      2
2      1
1      2
2      1
1      2
```

1.127 SYSTEM

```
SYSTEM "list > ram:myfiles"
PRINT SYSTEM
SYSTEM 5
END
```

This code invokes the AmigaDOS "list" command, redirecting the output to a file in the RAM: disk, displays the version

number of the operating system (eg. 37, 39) and sets the return value for the program to 5 (WARN).

1.128 TAB

```
PRINT "Hello World!"
PRINT TAB(10) "Hello World!"
END
```

The output is:

```
Hello World!
        Hello World!
```

1.129 TAN

```
FOR i=1 to 5
  PRINT TAN(i)
NEXT
END
```

This program displays the tangents of the numbers 1 to 5, ie:

```
  1.5574079
 -2.18504
 -0.14254658
  1.1578214
 -3.3805146
```

1.130 TIME\$

```
PRINT "The time is " TIME$
END
```

This will display the system time in hours, minutes and seconds.

1.131 VAL

```
a$="12345"
PRINT VAL(a$)
END
```

This displays:

```
12345
```

1.132 VARPTR

```
a$ = "Hello"
FOR t = 0 to 5
    PRINT CHR$(PEEK(VARPTR(a$)+t));
NEXT t
PRINT
END
```

Prints the word "Hello" by peeking the values stored at successive addresses in a string.

1.133 WINDOW ON

```
CONST havingfun = -1&

WINDOW 1,, (0,0)-(640,200),8

ON WINDOW GOTO quit
WINDOW ON

WHILE havingfun
    FOR i=1 TO 640
        COLOR RND*3+1
        PRINT PTAB(i);"Hello World!"
    NEXT
    CLS
WEND

quit:
WINDOW CLOSE 1
END
```

This program opens a window and displays multi-coloured "Hello World" strings until the window close gadget is clicked.

1.134 WINDOW OUTPUT

```
WINDOW 1,"Window A", (0,0)-(100,50)
WINDOW 2,"Window B", (500,100)-(620,200)
WINDOW OUTPUT 1
PRINT "I am now the current output window."
WHILE INKEY$="":SLEEP:WEND
WINDOW CLOSE 1
WINDOW CLOSE 2
END
```

This program opens two windows, changes the current output window to be the first, prints a message in that window and awaits a keypress before closing the windows and ending.

1.135 XCOR

```
SCREEN 1,640,200,3,2
WINDOW 1,,(0,0)-(640,200),32,1
RANDOMIZE TIMER
PENUP
SETXY 320,100
WHILE INKEY$=""
  c = INT(RND(0)*3)+1
  COLOR c
  PENDOWN
  FOR t = 1 to 4
    FORWARD 10
    TURNRIGHT 90
  NEXT t
  PENUP
  a=XCOR : b=YCOR
  LOCATE 1,1
  COLOR 1
  PRINT "My position is: "a,b
  x = INT(RND(0)*630)+1
  y = INT(RND(0)*190)+1
  SETXY x,y
  SLEEP FOR .4
WEND
WINDOW CLOSE 1
SCREEN CLOSE 1
END
```

1.136 XOR

```
CONST true = -1&, false = 0&
PRINT true XOR true
PRINT true XOR false
PRINT false XOR true
PRINT false XOR false
END
```

The output of this program is:

```
0
-1
-1
0
```