IBM WorkFrame/2 S10G-4475-01

Introduction

Version 1.1

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Version 1.1

Note!

Before using this information and the product it supports, be sure to read the general information under “Notices” on page v.

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Contents

Notices v
Trademarks and Service Marks v

Introduction 1
Documentation 1

Installing the WorkFrame/2 Product 3
LAN Installation 3
Installation Procedure 4
Add User Utility 5
Add User Procedure 6
WFENV.CMD File 8

Getting Started 9
Customizing the Environment 9
Hints on Using Your Mouse 10
Basic Concepts 11
Projects 11
Language Profiles 11
Creating Projects 13

The WorkFrame/2 Development Cycle 15
Sample Files 17

WorkFrame/2 File Structure 19

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Introduction

The IBM* WorkFrame/2* (referred to in this document as WorkFrame/2) product offers a unique application development environment that you can easily tailor to your own personal needs.

In addition to providing a number of utilities, including make file and library creation, the WorkFrame/2 product allows you to integrate both 16- and 32-bit OS/2* tools. You can use language profiles to specify the compiler, linker, debugger, and make utility you want to use for each of your programs. You can also set compile, link, debug, and run options in advance and save them to use every time you create a program.

The WorkFrame/2 product takes full advantage of the OS/2 platform to create a customizable and user-friendly graphical interface that makes building applications simple and straightforward.

Although the WorkFrame/2 interface is designed to allow you to use any tools you choose, IBM also offers two additional products that integrate into the WorkFrame/2 environment.

The IBM Developer's Toolkit (10G3355, 10G4335, 10G3356) provides development tools such as a linker, a make utility, and other programming aids.

The IBM C/C++ Tools product (61G1176, 61G1426), a 32-bit SAA C and C++ compiler, debugger, browser, and execution analyzer. Includes a language profile and sample projects designed specifically for use with the WorkFrame/2 product.

Documentation

WorkFrame/2 documentation is provided online in two different forms. The central concepts, along with information on the command-line interface for the LIB and ADDTOOL utilities, are included in the online book DDE3WF.INF. To open this book, type

```
view DDE3WF.INF
```

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Documentation is also available in the form of context-sensitive help. You can ask for help on any menu choice, window, or field to discover how to use that particular item.

Additional Technical Information: While the WorkFrame/2 default profile DLL should be sufficient for most development needs, language vendors and developers creating options dialogs will want to create their own DLLs. If you will be creating your own language DLLs or tools that need to be more closely integrated with the WorkFrame/2 interface, you will need additional technical information about the WorkFrame/2 programming interfaces.
Please address requests for information about the WorkFrame/2 interfaces to:

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Installing the WorkFrame/2 Product

This section will guide you through the WorkFrame/2 installation program. Online help is available throughout the program for each option, field, and pushbutton. You can get help from the **Help** pull-down menu, or by making the field or pushbutton active and pressing F1. For general information about the currently active window, press F2.

The installation program creates the necessary subdirectories for you, updates your CONFIG.SYS file if you choose, and creates a folder for the WorkFrame/2 product on the Desktop.

The WorkFrame/2 package includes 2 diskettes. The WorkFrame/2 files require approximately 2.0 MB of disk space.

LAN Installation

You can install the WorkFrame/2 product on a local area network (LAN), either to serve as a base for other installations or to be shared by multiple users.

If you are installing the WorkFrame/2 files on a LAN server to be used as a base for future installations:

1. Insert the WorkFrame/2 diskette into drive A.
2. From an OS/2 window or full screen, change the current drive to drive A.
3. From the server machine, use xcopy to copy the WorkFrame/2 diskette to a target directory on the server. The command syntax is:

   xcopy a:\ . *target-directory* /s

   The WorkFrame/2 directory and file structure is copied to the server in the *target-directory* specified. The installation program is also copied to this directory.

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To then install the WorkFrame/2 product on a client machine, follow the normal installation procedure, beginning at step 3 on page 4.

If you will be sharing the WorkFrame/2 product across a LAN, follow the normal installation procedure using a target directory on the LAN. Each user sharing the files must then set up the WorkFrame/2 environment on the client machine with the Add User utility, described on page 5.

Installation Procedure

1. Insert the WorkFrame/2 diskette into drive A.
2. From an OS/2 window or full screen, change the current drive to drive A. If you are installing from a LAN, change to the *target-directory* on the server machine.
3. At the command prompt, type

   install

   and press Enter. If you have not disabled the logo display from the operating system, the IBM logo appears. Click on the **OK** button or press Enter to proceed.

   A dialog box appears with the installation options. The READ.ME file is displayed in the main installation window. Read this file for the latest information about the WorkFrame/2 product.
4. Specify the drive and directory where you want the WorkFrame/2 to be installed, and whether you want the program to update your CONFIG.SYS file. The IBM-supplied defaults specify IBMWF on your boot drive as the target installation directory, and do not update your CONFIG.SYS file.

   Notes

   If you change the target directory, substitute your directory name wherever C:\IBMWF appears in this document.

   If you do not have the installation program modify your CONFIG.SYS file, you **must** add the DLL subdirectory to your LIBPATH statement. For the full path of this subdirectory, see “WorkFrame/2 File Structure” on page 19.

Commands to set the other environment variables are included in the WFENV.CMD file that is created by the installation program.

5. When you have set your options, click on **OK** or press Enter. The program prompts you for the proper diskettes during the installation. A window shows you the status of the installation program, including which files are being installed and the percentage of the total bytes that has been installed.
6. When the installation is complete, a message box appears. Click on **OK** to return to the main installation window, then select **Close** from the system menu to end the installation program.
7. Reboot your system if you or the program modified your CONFIG.SYS file.

Backup Files: Before it modifies your CONFIG.SYS file, the installation program first creates a backup copy with the name CONFIG.BAK. If this file already exists, a dialog box appears. You can overwrite the existing backup file, or type a new file name. Then click on **OK** or press Enter.

If you do not want to create a backup file, click on **Cancel** to close the dialog box and continue with the installation.

If you reinstall the WorkFrame/2 product, the program also backs up the files WFENV.CMD and IBMWF.INI to the files WFENV.BAK and IBMWF.BAK.

Add User Utility

The Add User utility is an interactive program that creates the necessary WorkFrame/2 environment for users who are sharing the WorkFrame/2 product from a LAN server.

You can also use the Add User utility if you are using multiple boot drives and want to invoke the WorkFrame/2 product from a boot drive other than the one you installed the files on. To do this, the WorkFrame/2 files must be on a partition that is accessible by the other boot drives.

You do not need to choose all the options the first time you use the program. You can use this utility again at any time to update or change your WorkFrame/2 environment.

Online help is available throughout the program for each option, field, and pushbutton.

Add User Procedure

1. From the client machine, access the IBMWF\BIN directory on the LAN server (or on the drive where it was installed, if you are using multiple boot drives).
2. From the IBMWF\BIN directory, type

   adduser

   and press Enter. If you have not disabled the logo display from the operating system, the IBM logo appears. Click on the **OK** button or press Enter to proceed. A dialog box appears displaying the Add User options.
3. Specify the source drive and directory for the WorkFrame/2 files, and the target drive and directory to be used on the client machine, and select the options you want.

   The IBM-supplied defaults copy the WorkFrame/2 language profiles, project control files, and bitmaps from the source path indicated on the LAN to the IBMWF directory on the boot drive of the client machine. They also create a user profile (IBMWF.INI) that saves information about how you customize the WorkFrame/2 interface, a command file to start the WorkFrame/2 product, and a WorkFrame/2 folder on the Desktop.

   If you do not select any of the options, the Add User utility will only update your OS2.INI file to point to the WorkFrame/2 installation directory.

   Notes:

   If you are using the WorkFrame/2 product from a LAN server, you must have at least a user profile (IBMWF.INI file) to start the WorkFrame/2 product, and the language profiles to perform any actions (such as compile and link).

If you are running the WorkFrame/2 product from multiple boot drives, you need only update your OS2.INI file.

If you do not have the program modify your CONFIG.SYS file, you **must** add the DLL subdirectory to your LIBPATH statement. For the full path of the DLL subdirectory, see "WorkFrame/2 File Structure" on page 19.

4. When you have chosen the options that you want, click on **OK**. A window appears and shows you the status of the Add User program, including which files are being copied or created and the percentage of the total bytes that have been copied (if applicable).
5. When the environment has been successfully established, a message box appears. Click on **OK** to return to the main installation window, and then select **Close** from the system menu to end the Add User program.
6. Reboot your system if you or the program modified your CONFIG.SYS file.

Backup Files: Like the installation program, before it modifies your CONFIG.SYS file, the Add User program first creates a backup copy with the name CONFIG.BAK. If this file already exists, a dialog box appears. You can overwrite the existing file, or type a new file name. Then click on **OK** or press Enter.

If you do not want to create a backup file, click on **Cancel** to close the dialog box and continue with the Add User program.

If you run the Add User program again, the program also backs up the files WFENV.CMD and IBMWF.INI to the files WFENV.BAK and IBMWF.BAK.

WFENV.CMD File

The installation and Add User programs both create a command file, WFENV.CMD. This file contains commands to set the necessary environment variables for the WorkFrame/2 product and also invokes the WorkFrame/2 product.

If you use the installation or Add User defaults, WFENV.CMD contains the following statements:

```
SET PATH=C:\IBMWF\BIN;%PATH%
SET HELP=C:\IBMWF\HELP;%HELP%
SET BOOKSHELF=C:\IBMWF\HELP;%BOOKSHELF%
START WF.EXE
```

If the installation or Add User program updated your CONFIG.SYS file, or if you change the environment variables yourself to reflect the statements in WFENV.CMD, you can invoke the WorkFrame/2 product using either WFENV.CMD or WF.EXE.

Getting Started

To start the WorkFrame/2 product, type

```
wfenv
```

on an OS/2 command line from the BIN directory under the target installation directory, or open the WorkFrame/2 folder on the Desktop and click on the WorkFrame/2 program icon.

The WorkFrame/2 main window appears, with a menu bar and two smaller windows.

Customizing the Environment

You can change the WorkFrame/2 appearance to fit your own needs. Using your mouse (or your keyboard), you can change the size, shape, and position of the main title and menu bar and the background. (See “Hints on Using Your Mouse” on page 10 for more information.) You can also move the smaller windows to different positions.

Use the **Configure** pull-down menu to further customize your environment. You can specify the editor you want to use, the tools you want in your tools list, and the sessions you want included in the Switch List, which works like the OS/2 Windows list. You can also change the WorkFrame/2 background to a color or a bitmap, as well as set the colors and fonts for the different listboxes.

The **Preferences** option of this pull-down lets you turn on or off the WorkFrame/2 sound and animation features, and specify how you want tools and monitor windows to appear. A monitor window appears when you perform an action or invoke a tool, and shows all messages, return codes, and other information generated by that action. You can also specify that the window positions be saved every time you end the WorkFrame/2 session.

If you want to set the window positions to always come up the same way, regardless of where they were the last time you ended your session, use the **Save Settings** option from the **File** pull-down. This

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option also allows you to save your profile. The settings you save are kept until you explicitly reset them.

Hints on Using Your Mouse

The WorkFrame/2 interface offers some features that are ideal for mouse users. In most windows, you can *double-click* on an item to perform actions. For example, double-click

On a source file to invoke the editor.
On an executable to run the program.
On an object file within the LIB utility window to show details of the object module.

You can use *dragging* to copy and delete files, or to copy the characteristics of a project or tool to another project or tool. For example, you can delete a file by dragging it to the Delete icon. To do this:

1. Open a project list window from the **Project Control** window, and the Deletion window from the **File** pull-down menu.
2. Highlight the file or files you want to delete from the project window.
3. Point to the file with the mouse and press mouse button 2. The pointer changes to an icon resembling a sheet or sheets of paper.
4. While holding down the button, move the mouse icon to the Deletion window. Notice that in areas to which the file cannot be dragged, the icon changes in appearance to a prohibitory symbol.
5. When the icon is over the Deletion window, release the button.

You can also change the size of a window by dragging its borders, or move the window by dragging the title bar.

Basic Concepts

There are a few basic WorkFrame/2 concepts that you should understand before you begin working with the product.

Projects

Instead of working with individual files and directories, the WorkFrame/2 product uses *projects*. A project consists of a collection of related files within a directory and the attributes associated with those files. These attributes include a set of options for compiling, linking, making, debugging, and running your program, as well as a language profile. You only need to specify these attributes once for a project, although you can change them, and they are shared by all the individual files in that project. For more information on projects, see “Creating Projects” on page 13.

Language Profiles

Each project you develop must have an associated *language profile*. The language profile defines a number of things, including:

- The compiler, linker, debugger, and make utility to be used with your project.
- The files (DLLs) that provide options for the above tools.
- The default argument string used when invoking the make and debug tools.
- The include and library search paths.

Use the **Language Profile Management** option from the **Tools** pull-down to create and modify your language profiles. The WorkFrame/2 product provides a default language profile that you can modify for use with most compilers, or use as a prototype to create your own profile. The IBM C/C++ Tools product also provides its own language profile.

To create your own language profile, highlight the Default language profile in the **Language Profile Management** window, then click on **New**. The **New Language Profile** window appears, with the values

for the Default language profile indicated. You **must** change the following fields:

File name
The name to give the file containing the language profile. The file name must be unique. It will be given the extension .PRF and placed in the WorkFrame/2 installation directory.

Language name
The name used for the language profile in lists, headings, and messages. This name should also be unique.

Language compiler and Language debugger
The commands that invoke your compiler and debugger, respectively. The default names provided do not refer to valid existing products.

Language eyecatcher
The name used to internally identify the language. The name must be unique.

Depending on the tools you are using, you may also need to change:

Language extension
The extension your source files will have. This depends on the language compiler you are using. The default is .C for a C compiler.

Language linker and Language maker
The commands that invoke your linker and maker, respectively. The default names provided refer to the LINK386 linker and NMAKE utility (available in the IBM Developer's Toolkit). If you do not have these two utilities, you must also change these commands.

Once you have made your changes, click on the **OK** button to create your language profile. The profile will then appear in the **Language Profile Management** window.

Creating Projects

To begin actual development using the WorkFrame/2 product, the first thing you must do is create a project. Use the **Project Control** option from the **File** pull-down to display the **Project Control** window. This window lists the existing projects, and allows you to display, change, or delete them, or create new projects.

You can create two types of projects: *base* and *composite*. A base project is generally used to group the set of files used to build an executable module or DLL. A composite project is simply a collection of other base and/or composite projects that allow you to build more complex applications involving multiple executable modules or DLLs.

For example, you might have a base project to build an executable module, and two others that build DLLs. You might then create a composite project containing these three base projects. The composite project would use the modules created by the base projects to create another executable module or DLL.

When you create a base or composite project, you must first specify:

A project description
: The name used for the project in headings, messages, and list boxes. The project description must be unique.

A project file name
: The name for the project control file. The file extension .PRJ is appended to the name.

When you create a base project, you also specify a number of attributes that are associated with the project until you specifically change the project itself. These attributes include:

A project directory
: The directory where the project files reside. A project can have only one directory. However, the same directory can be used for multiple projects.

A target file

The file that you plan to create with the project, usually an executable file or dynamic link library (DLL).

A make file

The name of the make file used to create the target file. If the file does not exist, you can later create it using the WorkFrame/2 Make File Creation utility.

A language profile

The name of an available language profile. See "Language Profiles" on page 11 for more information on language profiles.

A set of options

The compile, link, debug, make, and run options to be used when creating the target file. If you use certain options regularly, you can set them here and save them with the project, so that they are always used. You can also set or reset them later from the **Options** pull-down. The pull-down allows you to save the new options with the project, or to use them only for the current WorkFrame/2 session.

When you create a composite project, you specify the individual base or composite projects to be used, called *subprojects*. You also indicate which of these subprojects will contain the final program to be debugged and run.

One of the WorkFrame/2 features is that you can create several projects with the same project directory and target file, and vary other attributes to tailor each project to a different stage of the program's development. For example, you can associate a different set of options to each project to create a debugging version, a test version, and a finished version of the same program.

The WorkFrame/2 Development Cycle

This section presents an overview of how you use the WorkFrame/2 to develop an application.

Notes

Before you begin creating applications, you should first decide how your existing files and directories will map into WorkFrame/2 projects, both base and composite.

To perform the steps outlined in this section, you must have a compiler, linker, debugger, and make utility installed and in a directory specified in the PATH variable of your CONFIG.SYS file. You must also have a language profile that specifies each of these tools.

1. The first step is to create a project. If the Project Control window is not already displayed, select **Project Control** from the **File** pull-down. Click on **New** from the Project Control window, and specify the attributes you want to associate with the project. For more information, see "Creating Projects" on page 13.
2. When you have specified the project attributes, click on **OK** in the Create window. The new project name appears in the Project Control window. Then click on **Cancel** to close the New Project window.
3. To *open* or display your new project, select the project name and then click on **Open**, or double-click on the project name. If the project is a base project, a window appears with a list of the project files. If the project is a composite project, the window contains a list of the subprojects that make up the composite project. The following steps assume the project is a base project.
4. If your project already contains some files, you can proceed to step 5 on page 16. If you want to create a new source file, click on **New** from the project window. You are prompted for a file name, and the editor is then invoked automatically. Once you have saved and closed your file, click on **Refresh** to refresh the

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project window (the window is not automatically refreshed after every action is completed).

5. Select the file or files in the base project window that you want to perform actions on. Then use the **Actions** pull-down to create your target file. You can select **Build** or **Make** to create the file in one step, or use **Compile** and **Link** to compile and link separately. A monitor window displays the messages and results of the action.

   Note: The invocation of the **Make** action requires a make file. If a make file does not exist for the project and you want to create one, select **Make File Creation** from the **Tools** pull-down. You can specify the actions you want the make file to perform, and the compile and link options you want used. If you do not specify any options here, the make file utility uses the options associated with the project.

6. Run your application by selecting **Run** from the **Actions** pull-down, or by double-clicking on the executable file in the project window.

7. Use **Debug** from the **Actions** pull-down to invoke the debugger and debug your target file.

   Note: If your compiler or linker has options to generate debug information, you must set them on to be able to debug your program.

8. If the application is a tool, you can then use the **Configure** pull-down to add it to the WorkFrame/2 **Tools** list, where you can access it from a pull-down menu. You can also drag the project from the **Project Control** window to the **Tools** list.

9. When the tool or application is no longer needed, you can delete it from the **Tools** list, and then delete the project itself from the **Project Control** window.

Sample Files

In the PRJ directory are two subdirectories of sample files (see “WorkFrame/2 File Structure” on page 19). You can use these files to create and develop projects as described in “The WorkFrame/2 Development Cycle” on page 15.

The first sample, PMSPY, is a 32-bit SAA C application that lets you look at messages being received by a Presentation Manager* application. To build the project, you need a C compiler and linker, with a language profile that specifies these tools. The executable module is also included. If you cannot build the project yourself, you can still use the **Add Tools** pull-down to add the program to your tools list.

The second sample, SAMPDLL, is a 16-bit C application designed to demonstrate the WorkFrame/2 programming interfaces used to create options DLLs for a language. The language DLL enables a programming language to work more closely with the WorkFrame/2 product. The sample is based on the WorkFrame/2 default profile DLL (DDE3DEFL.DLL). You can modify the source files of this sample to create your own options DLLs.

WorkFrame/2 File Structure

The subdirectory IBMWF (or the target directory you specified) is created automatically by the installation program and contains all other WorkFrame/2 subdirectories and files.

The WorkFrame/2 file structure is as follows:

```
——IBMWF
    ├———BIN
    │    ├———ADDTOOL.EXE
    │    ├———ADDUSER.EXE
    │    ├———LIB.EXE
    │    ├———WF.EXE
    │    └———WFENV.EXE
    ├———DDE3DEFL.PRF
    ├———DLL
    │    ├———DDE3DEFL.DLL
    │    ├———DDE3LIBT.DLL
    │    ├———DDE3LINK.DLL
    │    ├———DDE3MAKE.DLL
    │    ├———DDE3OPTS.DLL
    │    ├———DDE3PROF.DLL
    │    ├———DDE3RUN.DLL
    │    └———DDE3THNK.DLL
    ├———HELP
    │    ├———ADDUSER.HLP
    │    ├———DDE3CPRC.HLP
    │    ├———DDE3DEFL.HLP
    │    ├———DDE3LINK.HLP
    │    ├———DDE3PROF.HLP
    │    ├———DDE3RUN.HLP
    │    ├———DDE3WF.HLP
    │    └———DDE3WF.INF
    ├———IBMSDATA.INI
    ├———IBMWF.INI
    ├———PRJ
    │    ├———SAMPDLL
    │    └———PMSPY
    ├———READ.ME
    ├———SHRED1.BMP
    ├———SHRED2.BMP
    ├———SHRED3.BMP
    ├———SHRED4.BMP
    └———SHRED5.BMP
```

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Notes:

1. The SAMPDLL and PMSPY directories contain a number of files you can use to create the SAMPDLL and PMSPY projects, respectively.
2. If you install the IBM C/C++ Tools product at a later time, that installation program will add a number of files to the file structure shown.

Readers' Comments

IBM WorkFrame/2
Introduction

Version 1.1

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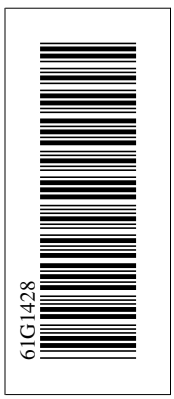
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