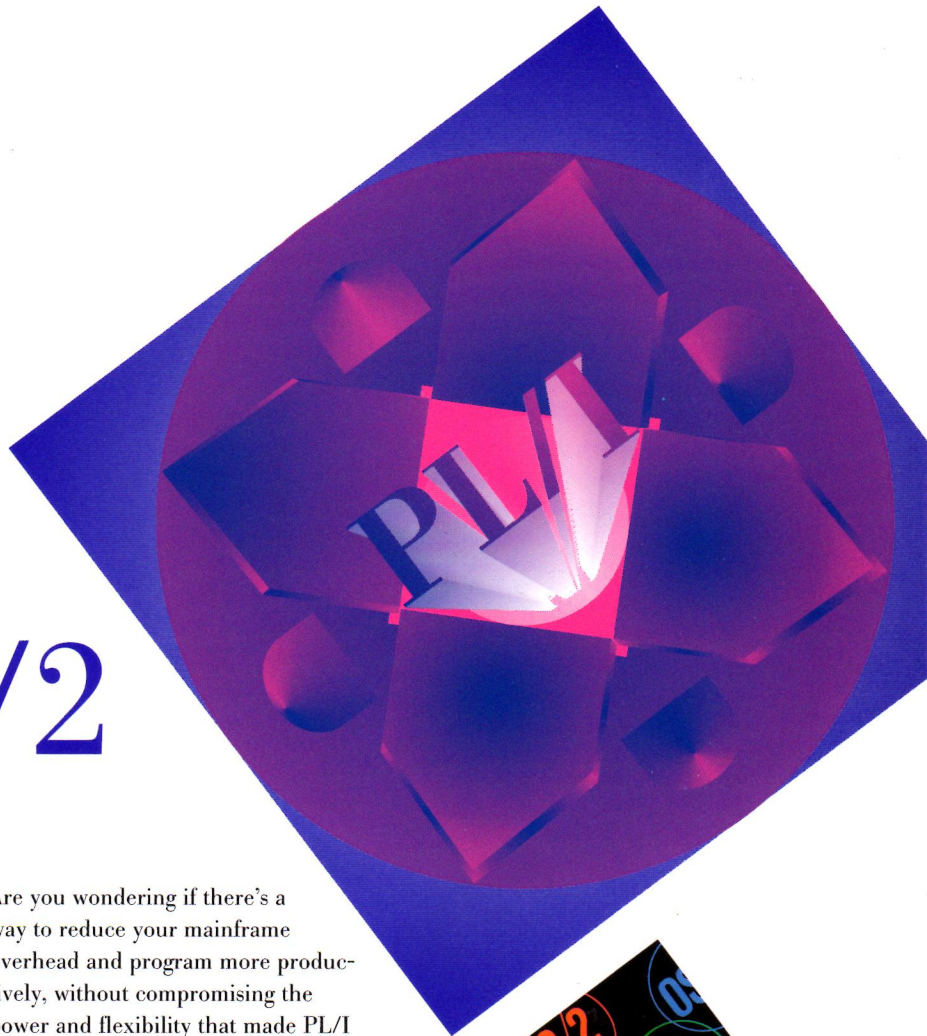*Shaping the Future by Enabling the Past*

IBM

PL/I for OS/2

Introducing Three New Products for Today's Programmer

PL/I is well known as a powerful, proven language that was designed with the programmer in mind.

Today's programmer is developing complex client/server applications. Today's programmer is expected to be more productive; to write more code in less time and to write better quality applications in the most cost effective environment.

IBM introduces three new members of the PL/I family that have been designed with today's programmer in mind: PL/I for OS/2 Professional Edition, PL/I for OS/2 Personal Edition and the PL/I for OS/2 Toolkit.

Get Client-Server Right with PL/I

If your company has a large inventory of PL/I applications, you are probably looking for a way to take advantage of new technologies while leveraging the investments you have already made.

Are you wondering if there's a way to reduce your mainframe overhead and program more productively, without compromising the power and flexibility that made PL/I an excellent investment over the years?

There is.

PL/I for OS/2 Professional Edition and the PL/I for OS/2 Toolkit can relieve your mainframe by letting you move your applications to a powerful development environment on the PC. The PL/I for OS/2 products provide a visual PM front-end for developing VSAM, DB2, CICS, and IMS Client Server/2 applications.

Continue to use your PL/I expertise while optimizing for the creation of database and transaction-driven applications that will execute on a mainframe, as client/server applications, or on a stand-alone PC.

Benefit from the Ease of Use and Performance of OS/2

OS/2 has many powerful features that make it an attractive environment for PL/I development. Here are just a few:
- Ease of use through an object-oriented iconic "drag and drop" interface which makes OS/2 easy to learn and use
- Performance that is predictable and consistent
- True multithreading that lets you perform multiple tasks simultaneously

– 32-bit addressability means you can tap the potential of today's advanced microprocessing technology

With these features, OS/2 can raise your computing capability to a whole new level by allowing you to work quickly, easily, and intuitively.

PL/I takes advantage of these innovative features in OS/2. The PL/I for OS/2 products include header files that let you develop OS/2 Presentation Manager applications; a visual tool that generates PL/I code as you 'paint' Presentation Manager applications, and PL/I supports OS/2's multi-threading capability to further improve performance.

Together, PL/I and OS/2 provide you with a powerful, reliable application development solution that increases your choices and multiplies your opportunity to get bigger and better benefits from your PL/I code and from your system.

Access DB2 with PL/I for OS/2

If you depend on data stored in a DB2 database across multiple platforms, you probably want to access it from your PL/I applications, whether they are running on MVS or OS/2.

You can.

PL/I for OS/2 Professional Edition includes a preprocessor that supports DB2/2 and lets you imbed SQL statements in your PL/I programs. If you have a distributed database connected by DDCS/2, you can access data stored in other DB2 products, from PL/I applications on OS/2.

You can now access DB2 data on multiple platforms from PL/I products on multiple platforms. PL/I's database solution lets you build new client/server applications or extend the life of your existing mainframe PL/I applications.

The choices are yours.

Develop CICS Applications in a Client/Server Environment

CICS is the transaction management solution of choice for many businesses. If your company uses CICS for online transaction processing, you can take advantage of the client/server support provided by both CICS OS/2 and PL/I for OS/2 Professional Edition.

PL/I for OS/2 Professional Edition includes a CICS preprocessor that lets you develop CICS applications on OS/2. CICS OS/2 and PL/I for OS/2 Professional Edition provide powerful facilities for improving your productivity in the development and debugging of new applications. PL/I for OS/2 is a valuable tool for development of CICS applications for running on CICS/VSE and CICS/ESA systems.

The transaction management solution provided by CICS OS/2 and PL/I for OS/2 Professional Edition lets you build new client/server applications or extend the life of existing mainframe applications.

Access IMS Data with PL/I for OS/2

If you have IMS data or transactions on a mainframe, you can now access them from applications written in a more productive environment.

Using PL/I for OS/2 Professional Edition and IMS Client Server/2, you can develop client/server applications that call IMS data or invoke IMS transactions that are running on a mainframe. By combining these two products, you can access your mainframe IMS data and transactions from a more flexible environment, while preserving data integrity.

Developing and maintaining applications that access mainframe IMS can be very easy with PL/I. You can develop graphics-based applications with PL/I for OS/2 Professional Edition. This simplifies the process by letting you paint an application, therefore automating the application development process. Did you have any idea IMS applications could be *this* easy to write?
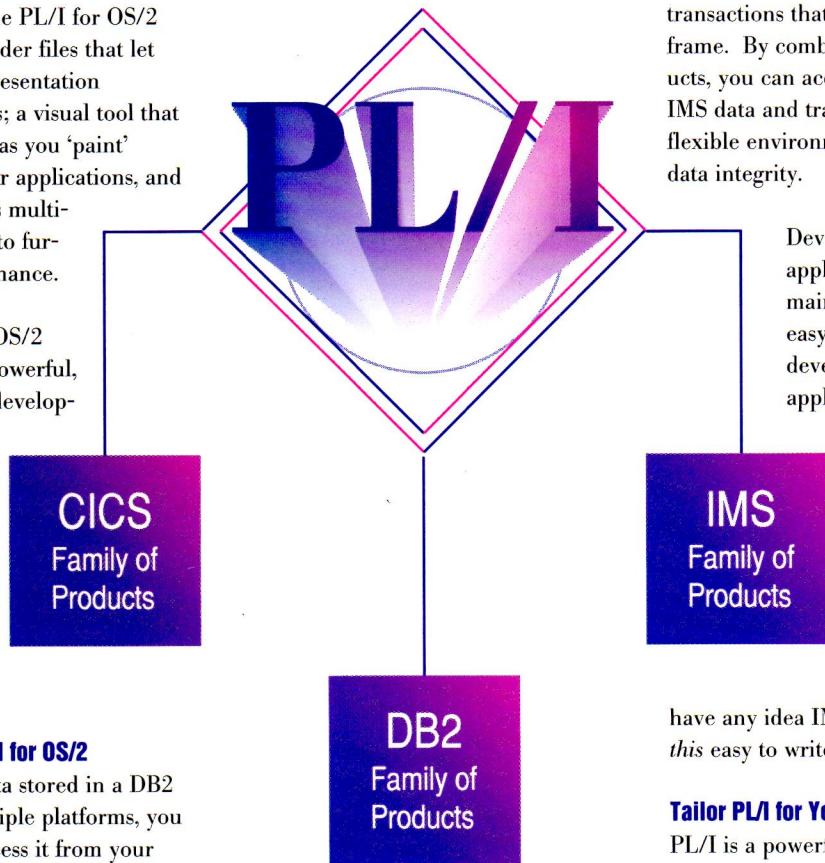
Tailor PL/I for Your Organization

PL/I is a powerful language that affords programmers a lot of flexibility. You can, for example, alter the severity of compiler messages or suppress them completely. When debugging your program, you can get a listing of diagnostic messages that identify errors in the source program. Your program listing can also include an attribute and cross reference table which tells you not only in which lines a variable is referenced, but also in which lines it is altered.

Improve Productivity Using WorkFrame/2

PL/I for OS/2 provides a cost effective visual desktop development and test environment. PL/I for OS/2 with WorkFrame/2, a GUI project manager, makes application development simpler and more straight-forward. Using PL/I for OS/2 and Workframe/2 you can, for example, set compiler and other options and link them to a specific program or

CICS
Family of
Products

DB2
Family of
Products

IMS
Family of
Products

project for repeated use. Using WorkFrame/2, you can also identify and locate error messages and edit your source code without ever leaving your work session.

Debug PL/I Applications Interactively

With PL/I for OS/2's powerful GUI debug facility, you can set change, entry, or statement breakpoints. Other debugging features include the ability to trap conditions and monitor changes in variables during execution of your program.

Benefit from New PL/I Language Features

The following is a list of some new language enhancements in the PL/I for OS/2 products:

— Strongly typed enumerations, typed structures and unions, and user-defined types make it easier for you to identify potential problems at compile time.

— PL/I's various storage classes including automatic, static, controlled, defined, and based—increase the flexibility of the language.

— A choice of linkages and parameter-passing mechanisms lets you call C, C++, and REXX applications from within your PL/I applications.

— The new PACKAGE statement allows you to group related declarations and procedures that share name scope.

— A state-of-the-art macro facility is now available in PL/I for OS/2.

— With restricted expressions and named constants, you can create parameters in your source code so that when one item changes, all related items automatically adjust.

Mainframe Compatibility

PL/I for OS/2 Professional Edition supports EBCDIC character data and hexadecimal float data. It also provides SAA language level checking and other features that improve compatibility with mainframe PL/I.

The PL/I That's Right for You

PL/I for OS/2 comes in two varieties... a Personal Edition and a Professional Edition. Both editions include a full 32-bit compiler, run-time and graphical debugging facility.

PL/I for OS/2 Personal Edition was designed for small software development companies, consultants and students. The Personal Edition supports new PL/I application development on stand-alone PCs or small LANs.

PL/I for OS/2 Professional Edition includes all of the features of the Personal Edition, additional function that enhances compatibility with the mainframe compiler, and support for DB2/2 and CICS OS/2. PL/I for OS/2

Professional Edition was designed for programmers who develop or maintain mainframe PL/I applications and are looking for a reliable client/server solution.

The *PL/I for OS/2 Toolkit* consists of additional tools, including a graphical prototyping tool and a code generator that can help you develop graphical user interfaces.

The PL/I for OS/2 Toolkit helps you streamline the programming process, offering a complete development environment for PL/I for OS/2 PM applications.

Installation Information

PL/I for OS/2 is available on 3.5" diskettes and includes an automated installation program. Generated object programs run under IBM OS/2 Version 2.0 (or later).

IBM WorkFrame/2 Version 2.1 is included with the PL/I for OS/2 package and requires OS/2 Version 2.1 if you choose to install it.

```
┌─────────────────────────────────────┐
│ ◯│ Monitor Window          □│□ │
│ File   Actions   Windows            │
│ /* HANOI */ alpha                  ▲ │
│ abcdefghijklmnopqrstuvwxyz          │
│ /* HANOI */ moves                   │
│               4                     │
│ /* HANOI */ n                       │
│               3                     │
│                                     │
│                                    ▼ │
│ ◀                                 ▶ │
└─────────────────────────────────────┘
```

```
┌─────────────────────────────────────────┐
│ ◯│ LOG Window                    □│□ │
│ File   Actions   Windows                 │
│ /* tops */                              ▲ │
│ TOPS(1) =              4                 │
│ TOPS(2) =              2                 │
│ TOPS(3) =              3                 │
│ /* addr(nx) */                           │
│ 0070CF74   01003320 20202020 20202020 030000 │
│ 0070CF84   04000000 02000000 03000000 000000 │
│ 0070CF94   47037511 08C07900 0C000300 000000 ▼ │
│ ◀                                      ▶ │
└─────────────────────────────────────────┘
```

```
┌──────────────────────────────────────────────────┐
│ ◯│ OS/2 PL1TEST - C:\TPLI\towers.pll      □│□ │
│ File  Options  Debug  Breakpoints  Windows  Help  │
│ 00119                                            ▲ │
│ 00120      call display_Towers;                   │
│ 00121                                             │
│ 00122      if rings > 1 then                      │
│ 00123        call Hanoi( rings-1, using, from, to );│
│ 00124      else;                                  │
│ 00125                                             │
│ 00126    end Hanoi;                               │
│ 00127                                             │
│ 00128                                             │
│ 00129    /*************************************/  │
│ 00130    /* Show the configuration of the 3 towers.  */ │
│ 00131    /*************************************/  │
│ 00132    display_Towers: proc;                    │
│ 00133                                             │
│ 00134      dcl jx           fixed bin(31);        │
│ 00135                                             │
│ 00136      put 'skip list( '' );                  │
│ 00137                                             │
│ 00138      do jx = 1 to hbound(tower,2);          │
│ 00139        put skip list(    ' ' || tower(1,jx) │
│ 00140                       || ' ' || tower(2,jx) │
│ 00141                       || ' ' || tower(3,jx) );│
│ 00142      end;                                   │
│ 00143                                            ▼ │
└──────────────────────────────────────────────────┘
```
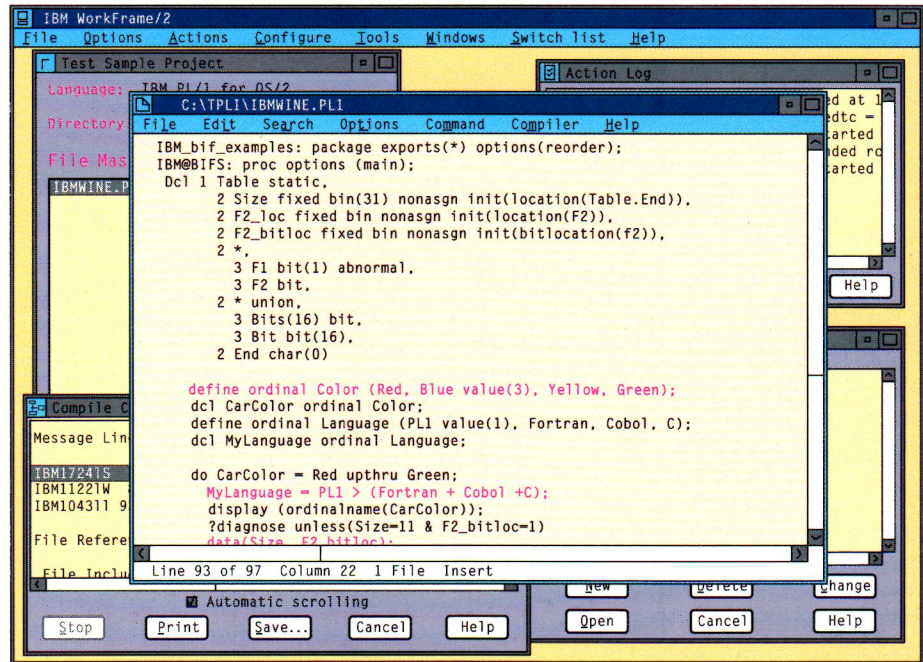
Order PL/I for OS/2 Today

To order PL/I for OS/2, contact an IBM representative. Or, from the following countries, please call the corresponding number:

Austria	0222 21145 2500
France	05 03 03 03
Germany	0130 4567
Italy	167 018001
Netherlands	030 384040
Switzerland	01 436 62 33
United Kingdom	0705 564414
United States	1-800-IBM-CALL

Please ask for part number 10H7848 (Professional Edition) or 10H7819 (Personal Edition).

The Toolkit (part number 1322966) is a priced option for either the PL/I for OS/2 Personal Edition or PL/I for OS/2 Professional Edition.

From anywhere, at anytime, you can send your questions to the PL/I development team. Our fax number is 1 408-463-4820.

Features of PL/I for OS/2 Personal Edition

— Rich implementation of the PL/I language
— WorkFrame/2 support
— PL/I Interactive Test Facility (PLITEST)
— Interlanguage communication
— Macro facility
— PM programming

Features of PL/I for OS/2 Professional Edition

— All features of PL/I for OS/2 Personal Edition
— Support for EBCDIC character and hexadecimal float data
— SAA language level checking
— Support for DB2/2, including an SQL preprocessor
— Support for CICS OS/2, including a CICS preprocessor
— Support for IMS Client Server/2

Features of PL/I for OS/2 Toolkit

— PM–GUIDE/2, a visual PL/I tool to build Presentation Manager applications

— A programming aid designed to help you convert C header files to PL/I header files

— OS/2 Developer's Toolkit