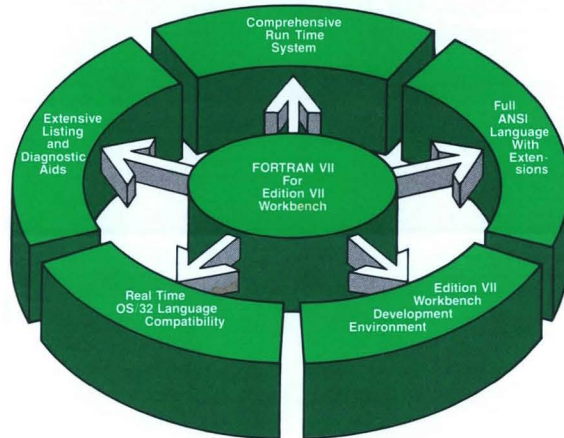


FORTRAN VII

For Edition VII Workbench

Product Overview



Perkin-Elmer's FORTRAN VII for Edition VII Workbench is a complete implementation of the ANSI-77 FORTRAN standard language for UNIX* environments. It provides users with an industry-standard FORTRAN compiler for easy and efficient porting of existing FORTRAN applications to UNIX environments from other operating environments. Additionally, FORTRAN VII provides a suitable base for new application development in UNIX environments.

FORTRAN VII for Edition VII Workbench accepts the identical source language as Perkin-Elmer's industry-leading optimizing FORTRAN VII which runs under Perkin-Elmer's proprietary operating system, OS/32. Applications can be developed and module-tested under Edition VII Workbench, using all the software program development tools, and then recompiled and optimized under OS/32.

Features

- Full ANSI-77 Language with Extensions
- Edition VII Workbench Development Environment
- Language Compatibility with Real-time O/S
- Extensive Listings and Diagnostic Aids
- Comprehensive Run-time System

Language

The ANSI-77 Full Language Standard (X3.9-1978) is a powerful programming tool. The standard contains a number of features offering the user the highest levels of productivity, including—

- IF-THEN-ELSE Statements
- Symbolic Constants
- CHARACTER Data Types
- Powerful Auxiliary I/O Statements: OPEN, CLOSE, INQUIRE

FORTRAN VII for Edition VII Workbench is a part of Perkin-Elmer's FORTRAN VII D Compiler. It provides a number of extensions to the standard which allow cost-effective portability of FORTRAN programs from other environments. FORTRAN VII also takes advantage of and makes optimal use of Perkin-Elmer's powerful 32-bit architecture.

Extensions to the language standard include:

- The IMPLICIT NONE Construct
- Include Files
- Extended 36 Character Names with Underscore
- Special Relation Symbols (<, >, =, etc.)
- Lowercase Source Input
- Namelist I/O
- Type and Accept Statements

The data types provided by FORTRAN VII are REAL, DOUBLE PRECISION, COMPLEX, COMPLEX*16, INTEGER*4, INTEGER*2, LOGICAL, LOGICAL*1, CHARACTER, HOLLERITH constants and HEXADECIMAL constants.

Development Environment

FORTRAN VII operates under the Edition VII Workbench operating system, which is a standard version of the UNIX Time Sharing System, Seventh Edition, enhanced by the Source Code Control System and Berkeley features. Users can now take full advantage of a wide array of standard software development tools, including:

- The Source Code Control System, which manages files and provides a project audit trail

- Powerful text formatting and phototypesetting tools for program documentation
- The Berkeley vi screen editor for efficient program and documentation editing
- A hierarchical file system, which allows project members to organize their work and to share files
- Flexible electronic mail for on-line communication between project members

Program Execution

Application programs compiled by FORTRAN VII can execute either under Edition VII or under OS/32.

FORTRAN VII for Edition VII Workbench implements the same source language as the FORTRAN VII compiler for OS/32. FORTRAN

applications can be developed under Edition VII, using all of the software development tools, then quickly and efficiently recompiled under the OS/32 FORTRAN VII compiler for execution in the OS/32 environment.

Program Execution (continued)

Utilizing OS/32 allows the user to function in multiple operating environments. Its underlying real-time core includes:

- Extensive Task Trapping Facilities
- High-performance I/O
- Flexible Intertask Communications, Control, and Data Sharing
- Comprehensive Timer Facilities
- Support for Multi-processing

The FORTRAN VII compiler for Perkin-Elmer's OS/32 operating system provides the highest levels of optimization in the industry today. With

universal optimization, all inefficiencies of inter-module interfaces and subroutine calls are eliminated.

The OS/32 FORTRAN VII compiler is equipped with a set of performance monitoring tools allowing the fine-tuning of a program's performance. Therefore, programs that are developed in a UNIX environment can take full advantage of optimization features in the OS/32 environment... improving development while enhancing performance.

Listings and Diagnostic Aids

The FORTRAN VII compiler operating in a UNIX environment provides an extensive set of listings and other diagnostic aids to shorten the development cycle. The compiler listings include:

- A program listing with embedded error messages
- A cross-reference listing containing:
 - Type, definition and uses of all program variables
 - All definitions and references to procedures
 - References to all labels and the type of statement at the label

The compiler performs extensive program error checking and allows compile-time detection of subtle errors, such as variables that are never initialized, labels that are not referenced, and transfers into Do-loops. The compiler provides user-controllable run-time tracing of variables and executable statements, checking of array subscripts, and validation of run-time library arguments. Additionally, the compiler provides a conditional compilation facility to allow insertion of debugging code.

Run-Time Library

The comprehensive FORTRAN VII run-time library gives exemplary run-time support to FORTRAN VII programs.

The **mathematical functions** employ modern numerical techniques and take full advantage of the power and flexibility of 32-bit processors. Without sacrificing performance, the accuracy is better than six decimal digits for the REAL functions and better than 13 decimal digits for DOUBLE PRECISION.

The **language extensions** provide FORTRAN VII programmers with access to data types and operations not available in the language itself. These include such ISA logical facilities as:

- Logical Operations on Bit Strings
- Logical Shift Operations on Integers

- Manipulation of Individual Bits
- Byte Processing
- Queuing and Pushdown Operations on Perkin-Elmer Circular List Structures

The **input/output system** supports FORTRAN READ, WRITE, PRINT, TYPE, and ACCEPT statements for performing formatted, unformatted, binary, list-directed, and NAMELIST I/O. The compiler pre-translates FORMAT statements to ensure maximum run-time efficiency and to reduce run-time memory requirements. The compiler also supports ANSI-FORTRAN 77 internal files, which provide storage-to-storage data manipulations as well as the ENCODE and DECODE statements, which are part of the **de facto** industry-standard FORTRAN.

System Requirements

The FORTRAN VII compiler for Edition VII Workbench requires 123KB of memory over and above the operating system.

Minimum Software Requirement

- Edition VII Workbench Revision 2.2.1.1 or higher

Minimum Hardware Requirement

- A Perkin-Elmer 32-bit processor with console and any Edition VII supported disk drive

Product Number

- S50-401 FORTRAN VII for Edition VII Workbench (Group I, II, and III Systems)

Related Documentation

- 48-017 FORTRAN VII Reference Manual
- 48-010 FORTRAN VII User Guide
- 48-025 Perkin-Elmer System Mathematical Library Reference Manual

Worldwide Sales Offices

U.S.A Offices

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The information contained herein is intended to be a general description and is subject to change with product enhancement.

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