

# Helix Systems' Documentation

The following manuals are available to registered users of the NIH Helix systems. Contact the CIT Technical Assistance and Support Center (TASC), Building 12A, Room 1011, telephone (301) 594-6248. This document can be found at <http://helix.nih.gov/documents/pdf/mandocs.pdf>. It is also available in html format at <http://helix.nih.gov/documents/mandocs.html>.

## Introductory Information

**NIH Helix Systems New User Information** - A special supplement specifically for NIH Helix systems users

**Learning the UNIX Operating System** - Explains logging in and out, many basic commands, and frequently performed tasks. Other topics that are covered include sending and receiving mail, the UNIX file system, manipulating directories, and window systems (especially X/Motif).

**Student Guide to Unix** - Teaches the basics of Unix such as getting started, which programs and features to use immediately and how to use Unix effectively (i.e. the

shell, e-mail, redirection and filter tools, and files and directories).

**INTERFACE** - News journal of the CIT Computer Center Branch. INTERFACE articles include the most up-to-date documentation available for the NIH Helix systems.

**Introduction to Unix Pine** - general description on the use of *pine*, the email client, for novice users. This document can also be found at <http://helix.nih.gov/documents/pine>.

## Editors

**Learning the Vi Editor** - Describes novice level commands and advanced features of the standard UNIX vi display editor. Includes a quick "Vi Reference" card.

**LaTeX User's Guide and Reference Manual** - tutorial on and a description of **LaTeX**, a document preparation system.

**GNU Emacs Manual** - The user's guide to GNU Emacs, an advanced, self-documenting, customizable, extensible display text editor.

## Applications for Scientists

**Genetic Computer Group (GCG) Documentation Kit** - describe the Genetics Computer Group Sequence Analysis Software Package. This package contains programs and software tools for performing such tasks as sequence editing, fragment assembly, mapping, comparison, database searching, multiple sequence analysis, pattern recognition, RNA secondary structure analysis, protein analysis, and graphic display.

*GCG User Release Notes* describes new programs, program changes and enhancements, bug fixes and how to report bugs to the GCG.

*GCG User's Guide* provides information about the package's commands and concepts.

*GCG SeqLab Quick Reference*, *GCG SeqLab Guide* provides information about how to use *SeqLab*, a new feature that combines the best of the WPI and GDE interfaces.

*GCG Program Manual* describes each program (A-Z) in detail.

**The New S Language** - Contains three introductory chapters for users at all levels, a tutorial chapter to get beginners started quickly, and later chapters covering topics for more advanced users. Other topics include analytical displays, organization, data, and writing functions. Case studies and examples of using S for a variety of tasks are included. This manual is available while supplies last.

### Convex AVS Documentation Kit -

*Using Convex-AVS to Visualize Data* describes using the Convex version of the Application Visualization System. It is both a user's guide and programmer's manual that includes information about subsystem tools and how to create custom modules and networks.

*The ConvexAVS Standard and Module Reference* contains information specific to modules and their inputs, outputs, and parameters.

*Animating AVS Data Visualizations* describes how to generate and record animation sequences with the AVS Animation Application. It is intended to be used in conjunction with the primary AVS documentation.

**MATLAB Documentation Set** - MATLAB is a high-performance language for technical computing; an interactive system whose basic data element is an array that does not require dimensioning. It integrates computation, visualization and programming in an easy-to-use environment where problems and solutions expressed in familiar mathematical notation. The following manuals are included:

*MATLAB Signal Processing Toolbox* - builds on top of matlab using the numerical environment

*MATLAB Partial Differential Equations (PDE) Toolbox*

*MATLAB Wavelet Toolbox*

*MATLAB Optimization Toolbox* - consists of functions that perform minimization (or maximization) on general functions

*MATLAB Frequency Domain System Identification Toolbox*

*MATLAB Higher-Order Spectral Analysis Toolbox*

*MATLAB Image Processing Toolbox*

*MATLAB Neural Network Toolbox*

*MATLAB Statistics Toolbox*

*MATLAB System Identification Toolbox*

**MATLAB Documentation** - includes the following manuals:

*MATLAB Release Notes*

*MATLAB New Features*

*MATLAB User's Guide*

*MATLAB Reference Guide*

*MATLAB External Interface Guide*

*MATLAB Building a Graphical User Interface*

*MATLAB Quick Reference*

**Mathematica** - A complete introduction to Mathematica. It is divided into several sections including a "Tour of Mathematica" which contains sample sessions illustrating features of Mathematica; Part 1, which is a tutorial treatment of the features of Mathematica; Part 2, which is an exposition of the structure and principles of Mathematica; and Part 3, which is a more complete discussion of the mathematical capabilities of Mathematica.

#### **S-Plus Documentation Kit** -

*Read Me First Release Notes* describes new S-PLUS features, for the experienced S-PLUS user.

*A Gentle Introduction to S-PLUS* takes the user, step-by-step, through some of the most common S-PLUS tasks.

*A Crash Course in S-PLUS* introduces the experienced user to the basics of running S-PLUS including the major topics of data, graphics, statistics, and programming.

*S-PLUS User's Manual* provides a complete introduction to the principal features of S-PLUS

*S-PLUS Guide to Statistical and Mathematical Analysis* covers topics including estimation and hypothesis testing, regression and smoothing, analysis of variance, multivariate techniques, time series analysis, survival analysis, quality control charts, and mathematical computing.

*S-PLUS Reference Manual* describes in detail the built-in S-PLUS functions, describing syntax, allowed arguments, return values, and side effects of each.

*S-PLUS Programmer's Manual* is a comprehensive guide to the S-PLUS programming language. It includes details on writing and debugging custom S-PLUS functions, interfacing S-PLUS with C and FORTRAN code, and defining data classes.

*S-PLUS Installation and Maintenance Manual* provides information on how to install, update, customize and maintain S-PLUS on a system.

**C-Kermit User's Guide** - C-Kermit is a communication software program written in C for UNIX, VAX/MS and some other operating systems. This is a technical supplement to the NIH Kermit Manual. The main part of this document concentrates on the general features of C-Kermit while sections specific to certain systems, e.g. Unix, appear at the end.

**IDL Set** - software for data analysis, visualization and application development. IDL's features include: advanced image processing, interactive 2D and 3D graphics, object-oriented programming, insightful volume visualization, a high-level programming language, integrated mathematics and statistics, flexible I/O, a cross-platform GUI toolkit and versatile program linking tools. This set includes the following manuals:

*IDL HandiGuide Quick Reference*

*Using IDL Insight*

*Objects and Object Graphics*

*Building IDL Applications*

*Using IDL*

## Manuals for Programmers

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### **IRIS POWER C Set --**

The *IRIS POWER C User's Guide* details options to use to customize output, explains directives that give additional information that PCA cannot determine and offers examples of PCA transformations of ordinary C code into explicit parallel syntax.

The *C Programming Language* (Kernighan and Ritchie) describes C as defined by the ANSI standard. It contains a tutorial in Chap. 1 and then discusses various aspects of C in more detail in the later chapters. It also describes the standard library and contains a language reference manual.

A *POWER C Quick Reference Card* is included.

**MIPSpro POWER Fortran 90 Programmer's Guide** -- presents features of Fortran 90 that can automatically prepare existing programs to execute in parallel on multiprocessor systems and describes unique features, especially the ability to automatically analyze and modify a program for parallel execution.

**HCR/Pascal User Reference Manual** - a reference manual for using the HCR/Pascal compiler.

**Pascal User Manual and Report** -- the definitive Pascal reference revised for the ISO Pascal Standard. Updates include:

- use of the Niklaus EBNF syntactic notation
- expanded user manual with improved program examples
- appendix summarizing changes from previous editions which were necessitated by the ISO Standard.

**Silicon Graphics' C++ Programmer's Guide** -- The *C++ Programmer's Guide* describes the C++ environment and the issue of *cfront* compatibility, the language supported by the compilers, how templates are used and the C and C++ *pragmas* available with the compilers.

## Programming Libraries

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**IMSL Documentation Kit** - Describes the International Mathematical and Statistical Libraries, a collection of three coordinated libraries of FORTRAN subroutines. A detailed description, with examples, is given for each library routine.

*MATH/LIBRARY* documents the applied mathematics routines,

*STAT/LIBRARY* documents the statistical analysis routines, and

*SFUN/LIBRARY* documents several "pure" mathematical functions.