About This Manual

Objectives of This Manual

This manual describes the C* programming interface to the Connection Machine Scientific Software Library (CMSSL).

This manual describes CMSSL software for the Connection Machine supercomputer, model CM-5.

Intended Audience

Anyone writing C* programs that use the CMSSL software on the CM-5 should read this document.

Revision Information

This is a new manual.

Organization of This Manual

This manual has six chapters:

Chapter 1 Introduction to CMSSL for CM Fortran
Describes the contents of CMSSL. Discusses the data types supported and explains how to perform CMSSL operations on multiple independent data sets concurrently.

Chapter 2 Using the CMSSL C* Interface
Explains how to include CMSSL routine definitions in C* code, and how to compile, link, and execute C* programs that call CMSSL routines. Discusses restrictions and performance guidelines.

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Chapter 3 Dense Matrix Operations
Describes the inner product, 2-norm, outer product, matrix vector multiplication, vector matrix multiplication, matrix multiplication, and infinity norm routines.

Chapter 4 Fast Fourier Transforms
Describes the simple and detailed complex-to-complex FFT routines; the real-to-complex and complex-to-real FFT routines; and type conversion utilities for the real-to-complex and complex-to-real FFTs.

Chapter 5 Random Number Generators
Describes the Fast and VP random number generators.

Chapter 6 Communication Primitives
Describes the matrix transpose routine; the sparse gather and scatter, sparse vector gather and scatter, and block gather and scatter utilities; partitioning of an unstructured mesh and reordering of mappings; the partitioned gather and scatter utilities; and the vector move (extract and deposit) routines.

Related Documents

For more detailed information about C*, consult the latest versions of the books listed below.

- *Getting Started in C**

  Offers a brief introduction to using the C* language.

- *C* Programming Guide*

  Offers a more detailed, task-oriented introduction to all the major features of the C* language. Also addresses the use of **`allocate_detailed_shape`**, and describes memory layout on the CM-5.

- *C* User's Guide*

  Includes complete descriptions of how to compile, link, and execute C* code.

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- *CM-5 C* Performance Guide*

  Provides information to help you inprove the performance of your CM-5 C* programs.

Notation Conventions

The table below displays the notation conventions used in this manual.

Convention	Meaning
bold typewriter	UNIX and CMOST commands, command options, and file names. Also used for parameter names occurring in text or syntax lines.
`typewriter`	Code examples and code fragments.
`%` **bold typewriter** `regular typewriter`	In interactive examples, user input is shown in **bold typewriter** and system output is shown in `regular typewriter` font.
boldface sans serif	C* language elements, such as function and subroutine names and constants, when they occur in text or syntax lines.
bold italics	Used to distinguish single instances of data cells from the parallel variables in which they are embedded; for example, the matrix ***A*** is embedded in the parallel variable **A**.

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