

COSC 6374 Parallel Computation

Recap for the Quiz

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Spring 2009



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Organizational Details to the Quiz

- Date:
 - April 30 2009, 1pm-2.30pm
- Topics:
 - discussed on the next pages
- You can have **3** pages of handwritten cheat-sheets:
 - you can write on both sides of each sheet
 - any pages containing non-handwritten items will be removed during the quiz and student will get 0% for that quiz
 - you have to write it yourself, not copy/xerox it from somebody else. Pages that have been xeroxed from somebody else will be treated as non-handwritten.



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Overview of relevant lectures

- Introduction to MPI (I-IV)
- Dense Matrix Operations
- Laplace Equation
- Performance Modeling (I) + (II)
- Parallel I/O (I-III)
- Homework 1
- Homework 2



- Not included are:
 - Parallel Architectures
 - Debugging + Performance Analysis
 - although Speedup/Scaleup are relevant
 - Scientific Data Libraries
 - OpenMP
 - Parallel Design Patterns (I-III)
 - One sided communication
 - Performance Oriented Software Design



Introduction to MPI (I-IV)

- Basics of MPI: entire lecture, especially
 - rank of a process, size of communicator
 - message envelope and data description for point-to-point operations
 - Asynchronous Communication: entire lecture, especially
 - message matching rules, non-overtaking rule,
 - Collective Communication: entire lecture, especially
 - Bcast, Reduce, Allreduce, Gather, Scatter and Allgather
 - Process Grouping: entire lecture, especially
 - concept of process groups and communicators
- `Comm_split`, `Comm_create`, Process topologies



Introduction to MPI (I-IV)

- Derived Data Types
 - `Type_struct`, `Type_contiguous`, `Type_vector`, `Type_indexed`, `Type_subarray`
 - do not worry about upper/lower bound and resizing a data type.
- In the quiz, if you have to deal with an MPI function, I will provide you the C prototype of the function. No need to put them on the cheat-sheet.

