

COSC 6374 Parallel Computation

Recap for the Quiz

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Organizational Details to the Quiz

- Date:
 - Nov. 30 2011, 1pm-2.30pm
- Topics:
 - discussed on the next pages
- You can have **4** 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

- Parallel Computer Architectures
- Introduction to MPI (I-IV)
- Parallel Measures
 - except for debugging
- Dense Matrix Operations
- Performance Modeling
- Parallel I/O (I-III)
- MPI Derived Datatypes
- POSIX threads
- OpenMP
- Homework 1-3



Lectures not included in the Quiz

- PDEs
 - although concept of ghost-cells is relevant
- Performance Analysis
- Scientific Data Libraries
- UPC
- Data Parallel Approaches
- Performance Oriented Software Development



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, i.e. Cart_create and friends



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.

