Beyond MPI-1.X questions

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What is this?

- This is the question sheet.
- It has all the questions and homework on it that you will need to answer to pass this class
- It also has the rules I use
- A few hints

Report and Question sheet

- The written report I need has 3 parts
- (1) A short essay (3 pages)
  - and no copying from web pages...
  - (except for pictures/graphs when acknowledged)
- (2) A question and short answer sheet from the class
  - One right sentence is one point normally
- (3) A write up of your practical work

Questions from class

- Think back to MPI-1
  - What is a communicator in 'C' (1)
  - What is a communicator in 'Fortran' (2)
  - Does it depend on the implementation ? (1)
  - How could I write a program in both 'C' and 'Fortran' and have them pass communicators? (2)
  - Did MPI-2 fix this? (1)

Questions from class

- Process control under MPI-1
  - How do you add more nodes to an already running MPI-1 application ?? (1)
  - How would we handle a node failure ?? (1)
  - How could we couple two or more applications ?? (2)
- Language Issues
  - Why is C/C++ to Fortran wrappers not supported?? (1)

Questions from class

- MPI-2: Process Management
  - Is the MPI_Comm_spawn and Intercommunicator functionality enough to allow for a full dynamic process model with efficient communications ? (2)
  - Can the two children groups create a direct connection using an MPI communicator create / merge call of some kind? (2)

Questions from class

- MPI-2: Process Management
  - What kind of operations/types of computing is the MPI Server/client (connect/accept) model good for? (2)
- MPI-2: Single sided communications
  - Why do you normally need two parties for a message passing operation? And what does it have to do with... memory management / protection? (2)

Questions from class

- MPI-1: Collectives
  - For a pipeline, sequential, binary and binomial tree: What are the properties of these topologies? Number of steps required to complete an operations (maximum latency) How many concurrent operations? (8)

Longer Questions for the report

- These questions should make up the 3 page report (I.e. a paragraph or two on each question + a few pictures)
  - What features in MPI-2 are most useful to real applications
  - Which ones do you expect vendors to implement and why

Longer Questions for the report

- Compare the Bulk Synchronous Processing (BSP) model to the window operations in MPI-2 single sided operations
- On a multisite MPI application, how would you perform a broadcast? Or an All2All ?Does MAGPIE by Thilo Keilmann do it a better way?
- Compare the method you will use (or have used) in exercise 5 to handle distributed group communications to Magpie.

Rules

- Report and show questions handed in next week (18th)
- Practical work, two weeks to complete
  - Remember I may hand out more next week also with a two week deadline
  - So be ready next week with question about it if you haven't already done it
  - I won't help at 2am the night before....