

No Guts, No Glory

SuperComputer Workshop

Objective

This session begins with a discussion of what separates a desktop computer from a supercomputer, what supercomputers are used for and how they work, and ends with a hands-on exercise where the students get to be a supercomputer to solve a problem. The aim of this workshop is to build students' comfort and familiarity with supercomputing concepts.

Materials

- slide deck on supercomputers
- jigsaw puzzle (number of pieces dependent upon class size, we aim for 3-4 students per group solving 2-3 sections of the puzzle with each puzzle section having 10-12 pieces)
- posterboard (one per complete, tiled image)
- images printed out to tile across multiple pages (we use 16 tiles per image)

Preparation

Days before the Workshop

- Review the slides and prepare for talk
- Solve the jigsaw puzzle, record how long it takes you to complete the puzzle.
- Break off a section at a time
 - flip that section over
 - label each piece in the section with a letter, and the total number of pieces in that section.
 - e.g. K21 would mean the pieces belong to section K and there are 21 total pieces in the section
 - to make it more challenging, rotate each piece before you write the number and letter, this will prevent students from knowing the correct orientation of a piece just by its label
- Repeat the previous step until you have labelled all the puzzle pieces
- Mixup all the pieces
- For each grouping of students (will vary depending upon your class size and puzzle size) create a baggie of pieces, put about the same number of pieces in each baggie.



Procedures

- Give the supercomputing talk
- Provide the instructions for the exercise (also part of the slides)
 - Explain the numbering and lettering scheme
 - Each one of them is a computer, one person in each group is the network interface
 - Show them their “program” (in slide deck)
 - Do not show them the picture of the puzzle from the lid (they are mindless computers solving a specific problem, they don’t know what the “big picture” is)
- Let the students know how long it took you as an individual to solve the puzzle
- Pass out the baggies
- Start a timer when the students begin
- As each section is solved, either the teacher can bring it to the front or the “network interface” student can bring it to the front
- Stop the timer when the whole puzzle is solved

Discussion Questions

1. What problems did you run into? e.g. One group of computers sitting idle, contention for resources (i.e. puzzle pieces), network contention (multiple people asking around for the same pieces), etc.
2. Can you think of ways to solve these problems?