Lecture 1: Course Overview

CS178: Programming Parallel and Distributed Systems

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I. What this course is all about

A. What types of programs have you been writing

B. What types of programs are used today

1. What is .Net and what are web services

2. What is client-server computing

3. What is the hoopla about Grid Computing

4. What is a supercomputer and how do I use it

C. The techniques for writing modern systems

1. Multiple threads

a) Getting them to work

b) Getting performance out of them

2. Client-server computing

3. Web-based computing

a) Web front ends

b) Web back ends

4. Parallel computation

a) Harnessing the power of lots of machines

b) Network of workstations

c) Parallel machines

II. What the course will teach

A. Learning techniques

1. How to use threads

2. How to do client-server computing

3. How to do web-based computing

4. MPI for parallel computation

B. Learning algorithms and structures

1. **Less emphasis (there is cs176)**
2. **Making effective use of techniques requires these**

C. Tricks of the trade

1. **You don't understand it until you've done it**
2. **Relating my and others experiences**
3. **Getting your own experiences**

D. When you get out

1. **You should know when to use these techniques**
2. **You should be able to design and code for them**
3. **You should feel confident using them**

III. Requirements

A. Readings and Lectures

1. **Three text books**
   a) For distributed programming
   b) For MPI
   c) For parallel programming
2. **Lectures will come from the books and be bolstered by my experiences in these areas**
   a) I will draw material from other sources as well
   b) You are responsible for understanding the text

B. Programming

1. **There will be 6 programming assignments**
   a) Starting with the simple (learning Java)
   b) Then multiple threaded programming
   c) Then client-server (some sort of game)
   d) Then web-based (probably the same game)
   e) Then a simple MPI example on a cluster (C++)
   f) Then a more complex MPI example on the SP

C. Exams

1. **Midterm and final to cover text and non-programming material**

2. **Also will cover some programming techniques**
3. **Also will cover design for these types of systems**

IV. Homework for next Tuesday

A. Read Chapter 1 of Andrews

B. Read Chapter 1 of Pacheco