

Intermediate Programming

600.120

Introduction

Department of Computer Science
Johns Hopkins University

Who is taking the course?

- Lets go around the class, stating (at least)
 - Name
 - What major, minor, double major, etc.
 - What year in the degree
 - What level of programming language knowledge you have – Java, C, C++, other?
- Kindly write this in the computer we circulate
 - Please include an e-mail, preferably a Hopkins e-mail that you regularly check ☺

Course Overview

Week 1

<http://www.dsn.jhu.edu/courses/cs120/>

cs120-help@dsn.jhu.edu

Course Information

- Lecture : Monday, Tuesday, Wednesday 2pm - 3pm Shaffer 301.
 - Tutorials:
 - Thursday 12pm / Friday 1pm Shaffer 1.
 - At times we will use 1 on 1 meetings instead.
 - Instructor: Yair Amir 410-516-4803.
 - Office hours: NEB-316/313 Monday 3pm – 4pm
 - TA : Osama Khan 410-516-5126
 - Office hours: NEB-217 Wednesday 3pm – 4pm
 - Special help: NEB-313 (just drop by any time)
 - Raluca Musaloiu-Elefteri, John Lane
 - E-mail contact to all of us: cs120-help@dsn.jhu.edu
 - Course mailing list: www.dsn.jhu.edu/mailman/listinfo/cs120-2007
- E-mail is best. Next - come to office or lab. Then – call.**



Course Books

- The C Programming Language, second edition, Kernighan & Ritchie, Prentice Hall. ISBN 0-13-110362-8
- C++ How to Program, fifth edition, Deitel & Deitel, Prentice Hall. ISBN 0-13-185757-6
(this book will only be needed just before the middle of October).

Grading Policy

- 4 credit course.
- Mid-term – 10% - 20%
- Final – 20%
- Project and assignments – 60% - 50%
- Attendance – 10%
- Ethics code: standard CS code www.cs.jhu.edu
- Zero tolerance for ethics problems.
 - We invest a lot and expect a lot in return.

Programming language: C and C++.

Testing environment: the undergrad lab ugrad1-20.

Need to get an account!

Shaffer 301

Tentative Plan



- Introduction, C - getting started. *Week of Sep 10*
- C - program structure, scope / pointers , structures. *Week of Sep 17*
 - **Project 1.**
- C - memory management, basic development environment. *Week of Sep 24*
 - **Project 2.**
- C – memory management / I/O / standard library. *Week of Oct 1*
- C - probabilistic data structure. *Week of Oct 8*
 - **Project 3.**
- C - Project design. *Week of Oct 16*
 - **Mid Term – Oct 17? Oct 18/19?**

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Fall 07 / Week 1

7

Shaffer 301

Tentative Plan



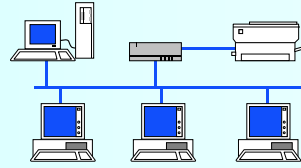
- C++ - getting started. *Week of Oct 22*
- C++ - Classes – constructors / destructors *Week of Oct 29.*
 - **Project 4**
- C++ - Overloading. *Week of Nov 5.*
- C++ - Inheritance, polymorphism. *Week of Nov 12.*
- A bit on research (thanksgiving). *Week of Nov 19.*
- C++ - Templates. *Week of Nov 26*
 - **Final Project.**
- C++ - project design. *Week of Dec 3*
- C++ - Summary. *Dec 10*
 - **Final Exam ?**

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Fall 07 / Week 1

8

One on One One on Two One on Four



- Presenting and discussing design - scheduled.
- Solving problems - mostly unscheduled:
 - When stuck on implementation – try for 15 minutes.
 - Contact us immediately after that – come to NEB-313 or e-mail cs120-help@dsn.jhu.edu.
 - **NEVER WASTE MORE THAN 15 minutes on a technical problem.**
- Run ideas / designs by us – mostly unscheduled
 - **Make a habit to consult with us at least once for every project, preferably long before submission deadline.**

A little about me

- Joined Hopkins 12 years ago.
- Director of the Distributed Systems and Networks lab
 - www.dsn.jhu.edu.
- Mostly taught high level undergraduate and graduate courses:
 - Distributed Systems, Advanced Distributed Systems and networks, Operating Systems.
- Fall 05, Spring 06 built the “new” Intermediate Programming course.
 - Liked it! Asked to teach it again...
- Enjoy inventing generic practical software toolkits that improve the scalability, availability and robustness of the Internet infrastructure and distributed systems:
 - www.spread.org, www.spines.org, www.smesh.org

Personal Point of View: Where High Tech is Going

- The world has changed:
 - Infrastructure is cheap => low entry price.
 - A networked world => most software can be done anywhere.
 - Result: Global competition.
- Two paths to win:
 - To be the **cheapest among equals**.
 - This is not likely to happen here.
 - To provide **value nobody else has**.
 - Combination of leading-edge knowledge and strong skills.
- Anything in between will be **squeezed**.
- Exponential curve of quality/reward:
 - Exponential curve is great on the right side.
 - ... and deadly otherwise.



Getting to the Right side of the Curve

- A combination of Leading-edge Knowledge and strong skills.
- We have excellent infrastructure for building leading edge knowledge.
 - **Leading research groups**.
- But skills are lacking:
 - Many students get to 300-400 level courses lacking **strong** programming foundation.
 - This limits their ability to extract the full benefit of these top-notch courses.
- So, we need to develop these skills early.
- Higher expectations early => better tools to get to the right side of the curve later.
- **This is why I am here, and that should be an important reason for you to be here, too!**