Intermediate Programming
601.220
Section 03
Introduction
Department of Computer Science
Johns Hopkins University

Course Overview
Week 1

http://www.dsn.jhu.edu/courses/cs220/
cs220-help@dsn.jhu.edu
Course Information

- **Lecture:**
  - Section 03 Tuesday, Thursday 3pm – 4:15pm MD 310

- **Tutorial:**
  - Section 03 Friday 3pm – 4:15pm MD 310

- **Instructors:** Yair Amir and Amy Babay
  - Office hours Yair: Malone 209 Tuesday 5pm – 6pm
  - Office hours Amy: Malone 209 Thursday 1pm – 2pm

- **Course Assistants (during projects):**
  - Billy Carrington: Malone 122 Monday 6pm-7pm
  - Ryenne Dietrick: Malone 122 Sunday (time TBD)
  - Suyi Liu: Malone 122 Friday 4:30pm – 5:30pm
  - Eric Tsai: Malone 122 Wednesday 2:30pm – 3:30pm

- **E-mail contact to all of us:** cs220-help@dsn.jhu.edu

- **Course mailing list:** www.dsn.jhu.edu/mailman/listinfo/cs220-2017

Course Books


- **C++ How to Program,** Deitel & Deitel, Prentice Hall. Editions: 5th, 6th … 10th – several versions are available online for Hopkins students.
  (this book will only be needed just before the middle of October).
Grading Policy

- 4 credit course.
- Projects – 4*12% = 48%
- Mid-term – 15%
- Final Project – 25%
- Attendance – 12%

- 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++.
Need to get an account on the ugrad machines!

Tentative Plan

- Introduction, C - getting started. Sep 1
- C - program structure, scope, pointers, structures, memory management. Sep 5 – Sep 14
  - Project 1 (Sep 14)
- C – basic development environment, example Sep 15 – Sep 21
  - Project 2 (Sep 22)
- C – I/O / standard library. Sep 22 – Sep 28
- C - probabilistic data structure. Sep 29 – Oct 3
  - Project 3 (Sep 29)
- C - Project design. Oct 5 – Oct 6
  - Dry Run – Oct 10, Mid Term – Oct 12
Tentative Plan

- C++ - getting started. Oct 13 – Oct 17
- C++ - Classes – constructors / destructors
  - Project 4 (Oct 24)
- C++ - Overloading. Oct 26 – Oct 27
- C++ - Templates. Week of Nov 7.
  - Final Project (Nov 10)
- Intro to STL. Nov 30 – Dec 1.
- Course summary. Dec 8.
  - Final project presentations – all will be done by Dec 19

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 Malone 207 or e-mail cs220-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 Yair

• Joined Hopkins 22 years ago
• Director of the Distributed Systems and Networks lab
  – www.dsn.jhu.edu
• Became department chair 2 years ago
• First decade: taught high level courses:
  – Distributed systems, advanced distributed systems and networks, operating systems
• Fall 05, Spring 06, Fall 07, built a “new” Intermediate Programming course
  – Liked it! Asked to teach it again Fall 11, Spring 12 (twice)
  – Liked it even better – Fall 13, Spring 14 (three times but with Amy)
  – Continued to like it – Fall 15 (twice), still liking it 😊
• Enjoy inventing algorithms and software tools that enable the scalability, availability and security of the Internet infrastructure and other distributed systems:
A little about Amy

- Started as an undergrad at Hopkins in 2008
- Interests/Major evolved over time
  - Undeclared ➔ Classics (minor) ➔ Cognitive Science (BA) ➔ Computer Science (MSE, PhD in progress)
- Took Intermediate Programming in Fall 2011
  - Liked it! CA in the spring + more CS classes
  - Liked those too – decided to stay for a Masters
    - Worked on high performance group communication and on consistency in big-data applications
- Currently 4th year PhD Student in the Distributed Systems and Networks (DSN) lab
  - Working on:
    - A new generation of Internet protocols (PhD research)
    - Dependable infrastructure – particularly intrusion-tolerant control systems for the power grid (just for fun 😊)

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:
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 were lacking:
  – In the past, many students got to 300-400 level courses lacking strong programming foundation
  – This limited their ability to extract the full benefit of these top-notch courses
• So, we wanted to develop these skills early
• Higher expectations early => better tools to get to the right side of the curve later

• This is why we teach this course this way