NJIT

New Jersey's Science &
Technology University

THE EDGE IN KNOWLEDGE

CS 280
Programming Language Concepts

Fall 2016

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Fall 2016 Office Hours: Tuesday 12-1, or by appointment

Ethical Conduct

- Cheating during in-class tests or take-home examinations or homework is illegal and immoral.
- Copying code from another person is cheating.
- Giving someone else your work to copy is cheating.
- The essential quality of the NJIT **University Code on Academic Integrity** is that each student shall demonstrate honesty and integrity in the completion of all assignments and in the participation of the learning process. Adherence to the University Code on Academic Integrity promotes the level of integrity required within the university and professional communities and assures students that their work is being judged fairly with the work of others. See http://www.njit.edu/academics/pdf/academic-integrity-code.pdf

Important Stuff

- About me
- What are the goals of the course? What are the rules?
- Syllabus review

CS 280 - Programming Language Concepts

Conceptual study of programming language syntax, semantics and implementation. Course covers language definition structure, data types and structures, control structures and data flow, run-time consideration, and interpretative languages.

Course Goals in English

- Understand the building blocks of programming languages.
- Learn about common features in programming languages and how different languages implement those features.
- See how you can learn one language easily given that you know another.
- **This should not be your first programming class**
- **You will spend a lot of time writing C++ programs**

Things I Expect You To Know

- Because of the prerequisites for this class, I expect that:
  - You have written programs before
  - You know what a variable is
  - You know how to use if/else statements, for/while loops, and functions
  - You know data structures such as stacks, lists, queues and trees
  - You know what I mean when I say “Constant time” or “order N”

The simple rules

- Late work is penalized one point per day or part of a day, and is not accepted after 5 days
- Failing to submit 2 programs results in an F for the class
- I don't give extra credit.
- Turn off your toys in class (phones especially).
- Don't "friend" me on Facebook (or connect to me on any social media)
- I expect you to behave professionally.
- Speak to me about any issues you have.

Coursework and Grades

Attendance	2%
Programs	40%
Midterm	25%
Final	33%

- There will be 4 programming projects
- There will be one common midterm exam
- There will be one comprehensive final exam
- Exams are closed book and notes.
- I will give you a reference sheets for exams.

- In my experience, performance is distributed along a bell curve. Grades will be as well.

Programming Projects

- We will use C++ 11
- You may use any compiler or platform/tools that you like, though I have some suggestions for you to try
- I will compile and test your programs on the NJIT Linux machines. No matter where you do your development, I suggest that you test on the Linux system before submission

Using NJIT Linux

- module load gcc/4.9.2
- The compiler is called g++
- Make sure you compile using the command line option –std=c++0x to activate C++11 features
- The NJIT system has command line tools
- You can use eclipse but you may find it slow if you dial in remotely

Using Your own Linux

- Download the latest gnu c++ compiler, or install it using whatever package management system you have on your machine
- Use the most recent version you can (4.9)
- The compiler is called g++
- Make sure you compile using the command line option –std=c++0x to activate C++11 features

Using a Macintosh

- The clang compiler and Xcode are excellent tools
- There may be a checkbox in preferences somewhere to activate C++ 11 features; make sure that you check it

Using Windows - VS

- Visual Studio is available for free download for students
- Be aware that there are several non-portable windows-only things that will prevent your code from working on Linux
- If your code works on VS but does not work on Linux, then it is “not portable” and from the perspective of the course, does not work

Using Windows – Not VS

- Windows users can get the GNU C++ compiler for free from mingw.org
- You can use the command line or you can use it with an IDE

IDEs

- There are many IDEs available
  - Xcode comes with Macs
  - Visual Studio is an IDE
  - Eclipse is a free download
  - Other possibilities: codeblox, qt, jEdit

- Pick one

Testing, Submitting, Grading

- The source for your programs will be compiled by me and tested by me on the NJIT Linux systems
- I will give you instructions and test procedures to compile and test your program on the NJIT systems

Submitting Programming Projects

- All programming projects must be submitted electronically via Moodle
  - Put SOURCE CODE ONLY into a SINGLE zip file
  - Upload the zip file into Moodle.
  - You can resubmit as often as you like; the last file you upload is what will be graded
  - Do not wait until the last minute
  - Late submissions are penalized
- A printout of your project DOES NOT NEED TO BE SUBMITTED

Grading Programming Projects

- I will make sample input and output files available on the course website
- I will compile and run your programs on linux to test them
- I will make a test script available for you to use on linux
- Your program must compile and run on linux

- If I review samples of student programs in lecture I will anonymize your code

- Programming projects will be graded on a scale of zero to 10

- Each day or part of a day that you are late reduces your grade by 1 point. You can not submit more than 5 days late

- If your program does not compile, your grade will be a 1

- Partial answers or incorrect output will reduce your grade

More Notes on Programming for CS280

- I highly recommend the use of Eclipse and the GNU C++ compiler or its equivalent
  - Remember, while you are welcome to use any machine to do development and testing, your program still has to compile and run on NJIT linux
- You must **avoid** unique things from your platform that might make your program fail on NJIT linux:
  - Conio.h
  - Stdafx things (if you are using Visual Studio)
  - QT classes (if you are using Qt Creator)
  - Experimental features

About Linux and AFS

- Everyone has an AFS account and an AFS file share. If you are a transfer student, get a UCID; that's your key to accessing AFS.
  1. You can ssh to afsN.njit.edu (where N is 1 to a pretty decently sized number) to get command line access to a Linux system that uses your AFS share as your home directory
  2. You can use an ftp client, or the file transfer command in your ssh client, to transfer files from your machine to AFS.
  3. You can also use MobaXterm
  4. You can download an AFS client and use it to mount your AFS share on your machine
  5. If you are working remotely, you will need to have a VPN connection up and running first, THEN you can run the AFS client over the VPN

Do this as soon as you can

- Connect to AFS immediately. Make sure that you can do it.
- Try to make “hello world” work in your environment, then upload it and try it on AFS

Important Points That Bear Repeating

- You have to submit ONE ZIP FILE with ALL OF YOUR SOURCE in it.
- You have to upload on time. What you upload is what I grade.
- Your program must compile on AFS and run against the test cases I give you.
- If I tell you to write a C++ program, WRITE A C++ PROGRAM!

There's A Lot Of Programming In This Class

- Yes, there is.
- It's 40% of your grade.
- That's why "Programming" is in the title of the course.
- Because the only way to learn about programming languages is to write programs.

One Last Piece Of Advice

- Don’t put things off.
- Especially, don’t put off the initial startup work. Get your development environment working. Do the “hello world” exercise.

Some Old Programmer Advice

- The only way to learn to program is to program
- Get started as soon as you can
- The answer to the question “what will it do if I try this?” is probably “Try it out, then tell me”
- Think first, then code
- Code a little. Test a little.
- Everything Is Everything Else

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