CMSC131 Object-Oriented Programming I (Topics)

- Intro to Computer Systems
- Programming Basics: Variables, Operators, Expressions, Statements, Methods
- Java Text Input/Output
- Conditionals
- Loops
- Principles of Object Oriented Programming
- Basics of Program Design
- Testing and Debugging
- Java Memory Map
- Arrays and Java ArrayLists
- Java interfaces
- Inheritance Overview
- Recursion
CMSC131 Object-Oriented Programming I (Grading)

- Projects (26%)
- Quizzes, Exercises, Lab Work (16%)
- Semester exams (30%)
- Final Exam (28%)
CMSC131 Object-Oriented Programming I (Projects)

- Proj #1 – Hello World
- Proj #2 – Money Id Program (conditionals)
- Proj #3 – Flags (Nested loops, static methods)
- Proj #4 – Name Class (Class basics)
- Proj #5 – Photo Processing (Classes)
- Proj #6 – Poker (One-dimensional arrays)
- Proj #7 – Marquee (Two-dimensional arrays)
- Proj #8 – Media Rental Manager (Interfaces, Design)
CMSC131 Object-Oriented Programming I (Tools/Support)

- Submit Server – Public/Release/Secret Tests
- Gradescope
- Piazza
CMSC132 Object-Oriented Programming I (Topics)

- Object-oriented software development
  - Software life cycle
  - Requirements & specifications
  - Designing objects & classes
  - Testing & code coverage
  - Programming paradigms
  - Design patterns

- Algorithms & data structures
  - Asymptotic efficiency
  - Lists, stacks, queues
  - Trees, heaps
  - Sets, maps, graphs
  - Recursion
CMSC132 Object-Oriented Programming I (Topics)

- Programming skills
  - Inheritance in Java
  - Java collection framework
  - Threads, synchronization
  - Exceptions
CMSC132 Object-Oriented Programming I (Grading and Tools)

- Similar to cmsc131
CMSC132 Object-Oriented Programming I (Projects)

- Proj #1 – Blackjack (Reviewing interfaces, one-dim arrays)
- Proj #2 – Web Page Generator (Classes extending classes)
- Proj #3 – Clear Cell Game (Abstract classes)
- Proj #4 – Interest Table (Anonymous Classes, Lambda)
- Proj #5 – Linked Lists (Also covers Generics)
- Proj #6 – Online Test (Design)
- Proj #7 – Polymorphic BST
- Proj #8 – Orders Processor (Threads)
- Proj #9 – Graphs (BFS, DFS, Dijkstrases)
CMSC133 Object-Oriented Programming I Beyond Fundamentals

- 2-Credits class for students with prior Java programming knowledge
  - Conditionals
  - Loops
  - Classes
    - Constructors
    - Get / set methods
    - Equals
    - Private, public
  - Exceptions
- Skips first 7 weeks of cmsc131
CMSC216 Introduction to Computer Systems (Topics)

- Unix Memory Model
- Moving from Java to C
- Pointers and dynamic data structures in C
- I/O, standard libraries
- Testing
- Assembly Language
- Process control
- Systems programming
- Program measurement and optimization
- Multithreaded programming with pthreads
- Libraries and linking
CMSC216 Introduction to Computer Systems (Grading and Tools)

- Grading – Similar to cmsc131/cmsc132
- Tools
  - Linux environment provided by the school
  - gcc compiler
  - Emacs / vi editor
  - valgrind
CMSC216 Introduction to Computer Systems (Projects)

- Grades Calculator – Functions and one-dimensional arrays
- Document Manager – Structures and arrays of strings
- User Interface – File I/O and parsing
- Calendar – Dynamic Memory Allocation, Function Pointers
- Assembly – Relying on AVR assembly (using gcc and simulator for development)
  - palindrome, fibonacci, reverse prefix sum
- Shell – Practice with process manipulation (fork, exec, pipes)
- Several exercises (to cover fundamentals)
- Two Exercises based on Circuit Playground
  - https://learn.adafruit.com/introducing-circuit-playground/overview
Representative Class Web Sites