

# Programming Midterm Study Guide

## Format

3 sections:

- 1) Multiple choice / short answer
- 2) Reading / analyzing code
- 3) Coding

## Topics

- Number Systems
  - Binary / Hexadecimal / Base 10
  - Conversions between all three
- Hardware
  - Types of memory (RAM, USB, etc...)
    - Characteristics of each (portability, speed, etc...)
  - Storage
    - Bit / byte / nibble
    - Meaning of 32 bit / 64 bit
- Algorithms
  - Be able to create a logical series of steps to solve a problem
  - WILL NOT ask for a written algorithm - but you have to write code to logically solve problems
- Linux
  - Basic commands to organize, view, and manipulate files
- Conditionals
  - If - else if - else statements
  - Relational operators (==, !=, &&, ||)
    - Know how to interpret them and use them in code
  - Truth Tables
    - Know how to solve various truth statements as True or False
- Modulus Division
  - Use % operator to solve problems
  - Interpret code using the % operator
  - Create code with the % operator

- Data Representation
  - Primitive data types - double, float, int, char
    - Know relative sizes and characteristics of each
  - Upcasting / Downcasting
    - Know logic behind both
    - Know when each are applicable and allowable
    - Interpret code using upcasting and downcasting
- ASCII
  - Use a ASCII table to interpret and create code
- Loops
  - While Loop
    - Know nested and infinite while loops
    - Be able to analyze and fix while loops
    - Be able to create while loops to solve problems in code
  - For Loop
    - Know the structure of a for loop
    - Be able to analyze and fix for loops
    - Be able to create for loops to solve problems in code
  - Break / continue
    - Interpret code using break / continue
- Functions
  - Interpret and use functions in code
  - Know the three parts of a function:
    - 1) Declaration
    - 2) Invocation
    - 3) Definition
  - Input
    - Know how to properly pass parameters to functions
    - Know the memory usage involved in passing parameters (example: variables values are copied from one variable into another, not passed directly)
  - Output
    - Interpret and use return statements within code
  - Function Comments
    - Use functions comments IN ALL CODE