Introduction to Computer Science
Test I Review

Chapters covered: 1 – 6

Chapter 1:
- What is an algorithm? How does an algorithm and a program differ?
- Why are computers binary machines? What is ASCII and how does it illustrate the concept of encoding information?

Chapter 2
- What is a class? What is an object? How is an object related to a class?
- What are the math operators in Java? Pay particular attention to the % operator.
- How do you declare a variable in Java?
- Know the following basic types and how to use them.
  - double
  - float
  - int
  - long
  - short
  - byte
  - char
  - String
  - boolean
- How do you print a value from Java?
- Know how to determine the type of an arithmetic operation in Java.
- What is the difference in a String and a char variable?
- How does what a variable of a primitive Java type (int, double, boolean, …) store differ from what an object variable stores?
- What does the new operator do?

Chapter 3
- What is a program?
- What is the syntax for a basic Java program with a main method?
- What is a method? Know how to use methods and how to define methods?
- What does it mean to say that a method has a return type other than void?
- What is a parameter? What is a formal parameter? What is an actual parameter? How do they differ?

Chapter 4
- What is a pixel?
- What is an array? How do you declare and use a one dimensional array in Java?
- How do you declare and use a two dimensional array in Java?
- Know how we represent color in a picture? Include the color models of RGB, HSV, and CMYK.
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Test 1 Review

- What is 24 bit color? What is 32 bit color?
- Know how to manipulate pictures in Java.
- Know how to write and use for-each loops, while loops, and for loops.
- Know how to re-write one type of loop as one of the other. For example, how to rewrite a for-each loop as for loop.
- Study the image manipulation algorithms in chapter 4.

Chapter 5
- Know how to use nested loops to manipulate an image pixel by pixel.
- Know the algorithm for copying a picture.
- Know how to return a value from a method.
- Know the algorithm to scale an image down by a half or up by a factor of 2.

Chapter 6 (first material)
- Know how to write an if statement in Java.
- Know how to write a nested if statement in Java.
- Be able to use nested if statements to solve problems.