Study guide for CS163/CS164 first midterm exam

By now, you should be able to interpret or write a Java program that uses any of the items shown below.

1) Java programs
   a. Writing a class with main method
   b. Importing packages
   c. Declaring and initializing variables
   d. Assignment statements
   e. Numeric, character, and string literals

2) Data types (and size in bits)
   a. byte (8), short (16), int (32), long (64)
   b. float (32), double (64)
   c. boolean, char (16), String

3) Expressions
   a. Primitive operators: *, /, +, -, %, ++, --
   b. Integer versus floating point math
   c. Relational operators: ==, !=, <, <=, >, >=
   d. Boolean operators: &&, ||, ^, !
   e. Order of operations, parentheses
   f. Mixed types and type casting

4) String functions
   a. length, charAt, indexOf, substring
   b. String concatenation: concat, +
   c. String comparison: equals (== doesn’t work!)

5) Writing to the console
   a. Using System.out.print/println/printf
      ✓ Differences between them
      ✓ Formatters: %f, %d, %c, %s
      ✓ Special Characters: ‘\n’, ‘\t’
   b. Combining literals and variables

6) Reading from the console
   a. Declaring and use a Scanner
   b. Reading strings that are single tokens: next
   c. Reading strings that are lines of text: nextLine
   d. Reading integers and doubles: nextInt, nextDouble

7) Conditionals
   a. if, if-else, and else statements
   b. switch statements

8) Wrapper Classes
   a. Integer: parseInt()
   b. Double: parseDouble()
   c. Character: isUpperCase(), isDigit(), isLetter()

9) Math
   a. Math constants: PI
   b. Math methods:
      ■ sqrt()
      ■ sin(), cos()
      ■ pow(), exp(), log()
      ■ min(), max()
      ■ round(), floor(), ceil()

Concepts you should be familiar with:

1. Bytecode – what is it, how is it used
2. Components of a computer
3. Operating Systems – what are they and what are they responsible for
4. What is an API? JDK? IDE? – what are they used for
5. Be able to evaluate Boolean expressions