# Study guide for first CS160 midterm exam

**By now, you should be able to interpret or write a Java program that uses any of the items shown below. In addition you should know the function of basic computer components (processor, main memory, auxiliary memory, I/O devices) and be able to differentiate source code and byte code and discuss the roles of the Java compiler and virtual machine.**

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) Writing to the console
    a. Using **System.out.print**
    b. Using **System.out.println**
    c. Difference between them
    d. Combining literals and variables
    e. Formatted output using **DecimalFormat**
3) 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: **nextInt**
    e. Reading doubles: **nextDouble**
4) String functions
    a. String length: **length**
    b. Character indexing: **charAt**
    c. Character search: **indexOf**
    d. String concatenation: **concat**, +
    e. String comparison: **equals** (and know why == doesn't work!)
5) Data types (and size in bits)
    a. Public versus private
    b. **byte, short, int, long**
    c. **float, double**
    d. **boolean,**
    e. **char**
    f. **String**
6) Expressions
    a. Primitive operators (*, /, +, -. **%**, ++, --)
    b. Boolean operators (&&, ||, ^, !)
    c. Order of operations, parentheses
    d. Mixed types and type casting
7) Conditionals
    a. **if**, **if-else**, and **else** statements
    b. **switch** statements
8) Loops (and when to use each)
    a. **while**
    b. **do while**
    c. **for**
9) Classes
    a. Defining a **class**
    b. Instantiating an object from a class
10) Methods
    a. Defining and calling a method
    b. Return values and types, including **void**
    c. Argument values and types