# Study guide for CS160 final exam

**You should be able to interpret or write Java code that uses any of the items shown below. The study guide for the programming quiz is identical.**

1) Java Programs
   a. Writing a **class** with a **main** method
   b. Declaring, initializing, and assigning variables
   c. Assignment statements
   d. Numeric, character, and string literals
2) Data types
   a. **int, double, boolean, char, String**
3) String functions
   a. **length, charAt, indexOf,** concatenation (+)
   b. **toUpperCase, toLowerCase**
   c. **equals,** and know why == doesn't work!
4) Expressions
   a. Primitive operators (**\*, /, +, -. %, ++, --**)
   b. Order of operations, parentheses
   c. Mixed types and type casting
5) Control Statements
   a. **if**, **if-else**, and **else** statements
   b. **switch** statements
   c. **while, do while, for**
6) Write to the console
   a. Using **System.out.print/println**
   b. Combining literals and variables
   c. Formatted output using **DecimalFormat**
7) Read from the console
   a. Declaring and using a **Scanner** object
   b. **nextLine**, **next**, **nextInt**, **nextDouble**
   c. **hasNextLine**, **hasNext**, **hasNextInt**, **hasNextDouble**

8) Wrapper Classes
   a. **Character.isLetter, Character.isDigit**
   b. **Integer.parseInt, Double.parseDouble**
9) Arrays
   a. Declaring, allocating, initializing arrays
   b. Array indexing, array access, **length**
   c. Arrays as method parameters and return values
   d. 2-Dimensional arrays
10) File Input/Output
   a. Creating and using **File** objects
   b. Using a **Scanner** and to read a file
   c. Using a **PrintWriter** to write a file
11) Exceptions
   a. Using a **try**/**catch** block to handle exceptions
12) Methods
   a. Defining and calling methods
   b. Argument values and types
   c. Return values and types, including **void**
   d. Pass by reference vs. pass by value
13) Classes
   a. **static** versus non-static data and methods
   b. **public** versus **private** data and methods
   c. Instantiating an **object** from a class, constructors
14) Binary Operators
   a. Binary literals (0b10010011)
   b. Bitwise operators (&, |, ^, ~, <<, >>)