Java for Non Majors

Sample Midterm Questions

February 22, 2016

The test consists of

1. 15 multiple choice questions - 30 points
2. 4 "find the output" questions - 20 points
3. 2 code writing questions - 30 points
4. 1 code debugging question - 15 points
5. 4 short answer questions - 20 points

General details:

- You will have an opportunity to earn 15 extra credit points.
- Please try and attempt all questions. You get points for trying.
- The multiple choice questions are the hardest questions on the test.
- Anything from the homeworks / quizzes / in class examples / slides is fair game.
- Code debugging is mostly syntax based (missing brackets, semicolons, etc.)
- The code writing questions will be heavily based on the class examples and the homeworks, with some modifications.
- The multiple choice and the debugging questions will test your familiarity with the Java language and syntax. The code writing questions will test your knowledge of programming.
- Making me laugh might gain you points (depends on the quality of the joke).

Topics to study

- Basic Java Syntax
  - Writing a basic java class stub: naming classes and writing the main method.
  - Simple statements - syntax.
  - Comments.
  - Reserved words, literals and escape sequences.
  - Style guidelines.
- Data types, variables, and sequential execution.
  - Naming, declaring and initializing variables.
  - Primitive data types.

  - Type Conversions - implicit and explicit.
  - Arithmetic Operators and operator precedence.

- I/O - print statements and the Scanner class.
  - print, println and printf statements.
  - Declaring a new Scanner.
  - Using the Scanner class to read data of different kinds.

- Basic String class methods
  - Declaring and initializing a String.
  - Testing for string equality, and comparing strings.
  - Extracting individual characters from strings.

- Selection statements and loops
  - Relational and logical operators.
  - Writing simple, multiple and nested if statements.
  - switch - case statements.
  - while, do-while and for loops
  - break and continue statements.

- Writing static methods in Java.
  - Writing simple methods.
  - Passing arguments and returning values.
  - Scope of local variables.

- Studying the topics listed above will be enough to pass the test. To get a 100, you would be required to study everything on the notes.

- You don't need to study from outside sources. The test is made entirely from the notes, quizzes and assignments.

Sample Questions

1. Which of the following is NOT a Java reserved word?
   (a) public
   (b) static
   (c) void
   (d) main

2. Evaluate the following expression. x = 5, y = 15, z = 3 (All integers)
   `x * 4 + y / 2 % z`
   (a) 21
   (b) 2
   (c) 2.5
   (d) None of the above

3. A Java variable can begin with

   (a) A letter
   (b) underscore
   (c) '$' sign
   (d) All of the above

4. Write a program to calculate the sum of all the multiples of 3 between 1 and 200.

   Sample Run:
   `The sum is :  6633`

5. Write a program to print a rectangle comprised of the $ symbol. Read in the length and width as user input and then print the rectangle.

   Sample Run:
   ```
   Enter the length of the rectangle:  5
   Enter the width of the rectangle:  3
   $ $ $ $ $
   $ $ $ $ $
   $ $ $ $ $
   ```

6. Figure out the output generated by the following code snippet:

   ```
   int score = 83;
   char grade;

   if (score >= 90)
      grade = 'A';
   else if (score >= 80)
      grade = 'B';
   else if (score >= 70)
      grade = 'C';
   else if (score >= 60)
      grade = 'D';
   else grade = 'F';

   System.out.println("\nStudent grade = " + grade);
   ```

7. What are some advantages of Java over C++?