Java for Non Majors

Midterm 2 Study Guide

March 26, 2020

The test consists of

- 1. Multiple choice questions $15 \ge 2 = 30$ points
- 2. Given code, find the output $1 \ge 10$ points
- 3. Code writing questions $1 \ge 30 + 1 \ge 10 = 40$ points
- 4. Code debugging $1 \ge 20$ points
- 5. Short answer questions $3 \ge 5 = 15$ points

Test Instructions

- You need to download the test as a PDF file from the Assignment page of Canvas. This file will have the questions.
- You should enter your answers online through Canvas. You will find a link for Midterm 2 under the Quiz or Honorlock on the left menu. Here, you should input your responses against correct question number.
- You need to use Google Chrome and install a plug-in for online proctoring. Please sure that you have a laptop/desktop, a webcam, and microphone. More information can be found here. http://assessmenttestingsupport.bbsupport.happyfox.com/kb/article/1541-honorlock-resources-for-students/.

Topics to study

- Topics covered for the first midterm. These will not be the focus of the test, but you should be familiar with these topics.
 - Basic Java Syntax.
 - Data types, variables, and sequential execution.
 - I/O print statements and the Scanner class.
 - Selection statements (if else, switch) and loops (while, do while and for loops)
 - String
- The topics below we covered after the first midterm will be the main focus of this test.
- The multiple choice will test your familiarity with the Java language and syntax.
- There are two code writing questions, which will be heavily based on the homeworks and the in-class demos, with some modications. The code writing questions will test your knowledge of programming.

- Arrays
 - Declaring and creating an array
 - Initializing an array
 - Using an array in program
- Using java built-in libraries
 - The default imported package in java
 - Difference between static and non-static fields and methods.
 - Two ways to generate random numbers in Java
- Classes and Objects
 - Creating an object of a pre-existing class and using the available methods.
 - Access Modifiers public, private and protected.
 - Defining a class data attributes, constructors, accessor and mutator methods, instance methods.
 - Instantiating a class (creating an object), and using instance methods.
 - Difference between static and instance methods.
 - The "this" keyword.
 - Arrays of objects.
- Inheritance, Interfaces and Polymorphism
 - Concept of base (super) and derived (sub) classes.
 - The "super()" keyword.
 - Method overriding.
 - Abstract Classes
 - The concept of delayed or dynamic binding.
 - Casting classes
 - Interfaces
- Exceptions

Code Writing

Design a class "Book" with the data attributes title - String, author - String, yearPublished - integer and price - double. Write a parametrized constructor that initializes the attributes. Write accessor and mutator methods, and a print method that prints all of the attributes. In the main method, create a single object and give it values of your choice. Call the print method to print the values.

Sample Run:

The Book is: The Art of Computer Programming Donald Knuth 1968 178.04