Unit 1.1 Test Review

Computer Science Applications

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To prepare you for the AP Exam, our unit tests will be in the format of multiple choice questions and free response questions.

The questions will come from ones that are similar to or the same as the ones below.

The FRQ for this exam will be the same or similar to the two we have done in class or it will be to make a class with a constructor and various instance variables.

You will get 4 scores of 1-4 on the exam. I'll explain in class how this will be done.

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I. Main Components Java File

1. Fields are also known as:

a) Empirical Variables
b) Static Variables
c) Instance Variables
d) Private Variables

2. Which of the following statements is true?

a) Constructors determine how instance variables are instantiated in objects.
b) Methods are initialized by constructors, fields are used to instantiate objects.
c) Methods and fields are both established through the use of constructors.
d) Instance variables and Constructors are both established through the use of methods.

II. Primitive and Common Object Variable Types

1. Johnny wants to obtain the average of a list of numbers. He wants the average to be precise to at least one decimal place. What are some possible ways he can obtain such an average?

// total = sum of elements in list (Integer)
// n = number of elements in list

I) *average = total / n*
II) *average = (double) total / n*
III) *average = (1.0 * total) / n*

a) II only
b) I and III
c) II and III
d) I, II, and III

III. Public and Private Instance Variables

1. What is the main advantage of having a private instance variable instead of a public one?

a) You can have multiple different variables with the same name in different classes
b) Private variables are only viewable by the class
c) Public variables can be altered, while private variables cannot
d) Private variables isolate pieces of code to run separately

IV. Multiple Constructors in Same Class

1. What is the advantage of having multiple constructors for a class?

a) It allows you to create objects with a variety of parameter combinations
b) It allows you to construct multiple objects
c) It allows you to initialize identical instance variables to objects
d) It allows you to construct multiple classes

2. With the following constructors, which lines of code assigns a song with price = 0.99 and title = "Goodbye", and another song with price = 1.29, rating = 7, and title = "Hello"?

```
public Song(String title, double price) {
        this.title = title;
        this.price = price;
}
public Song(int rating, String title, double price) {
        this.title = title;
        this.price = price;
        this.rating = rating;
}
```

a) Song song1 = new Song("Goodbye", 0.99); Song song2 = new Song("Hello", 1.29, 7);
b) Song song1 = new Song1("Goodbye", 0.99); Song song2 = new Song2("Hello", 1.29, 7);
c) Song song1 = new Song(0.99, "Goodbye"); Song song2 = new Song(1.29, 7, "Hello");
d) Song song1 = new Song(7, "Hello", 1.29); Song song2 = new Song("Goodbye", 0.99);

V. Static and Instance Variables

1. What is meant by a static variable?

a) a variable that doesn't change
b) a variable found in a static method
c) a variable that applies to only one object within a class
d) a variable that applies to the collection of objects in a class

VI. Getters and Setters

1. With which of the following could you print out the name of the object reference by car1?

a) car1
b) car1.setName()
c) using an accessor method
d) Car.getName()

VII. Equals() Method VS == Conditional

1. Which of the following will evaluate to true when executed?

```
String str2 = "Statement";
String str3 = new String("Statement");
String str4 = new String("statement");
```

a) str2.equals(str3)
b) str2 == str3
c) str3 == str4
d) str2.equals(str4);

2. Which of the following will evaluate to true when executed?

```
String str7 = "Hello";
String str8 = new String("hello");
String str9 = "Hello";
str7 = "hello";
```

a) str7 == "Hello"
b) str7.equals(str8)
c) str9 == str7
d) str7 == str8

VIII. String length() Method

1. How would you find out how many characters were in the String variable *name*?

```
name.length();
```

IX. String indexOf() Method

1. Write a conditional statement using the indexOf method to determine whether or not there is a colon in a String variable *text*, and if there is then everything after the first colon in *text* should be printed out.

```
if (text.indexOf(":")  >= 0) {
        int pos = text.indexOf(":") + 1;
        System.out.println(text.substring(pos));
}
```

X. String compareTo() Method

1. Evaluate b.compareTo(a)

String a = “bread”
String b = “beard”

Result: -13

XI. String isEmpty() Method

1. In which of the following is the "isEmpty" method used correctly?

a) System.out.println("is this string empty? = " + str.isEmpty());
b) System.out.println("is this string empty? = " + isEmpty(str));
c) System.out.println("is this string empty? = " + str.isEmpty(1,5));
d) None of the above

2. What is the output when the main is run?

```
public static void main(String[] args) {
        String str = "  ";
        System.out.println(str.isEmpty());
}
```

a) True
b) No output
c) False
d) None of the above

3. What is the output of the following statement?

```
String str = null;
System.out.println(str.isEmpty());
```

a) true
b) false
c) null
d) None of the above

XII. Math.random() Method

1. Which code generates a random number between 2 and 200?

a) 2 + (int)(Math.random() * ((200 - 2) + 2))
b) 2 + (int)(Math.random() * (200 - 2))
c) 1 + (int)(Math.random() * (2))
d) None of the above

2. What values of x would satisfy this if statement?

```
int x = (3 + (int)(Math.random() * (5)));
if (x == 4 || x != 5 && x != 6) {
        // Do something here
}
```

a) x = [3,4,7]
b) x = [1,3,4]
c) x = [3,4,8]
d) None of the above

XIII. Void Method Return Type

1. What does it mean when a class has a void in its header?

a) it doesn't return false
b) it doesn't return true
c) it doesn't return anything
d) it doesn't return any type of Strings

2. When should you use void?

a) In the header, for the class
b) When you initialize instance variables
c) When you use an accessor
d) When you use a mutator

3. Which one of these method return types are correct?

a) String
b) any pre-defined class
c) Int
d) all of the above
e) a & b
f) a & c

XIV. Method Calls

1. Which of the following would not result in an error when placed after the comment?

```
public class MethodParams {
	public static void printParams(int a, double b, String c) {
		System.out.println(a);
		System.out.println(b);
		System.out.println(c);
	}

	public static void printParams(String a, double b, int c) {
		System.out.println(a);
		System.out.println(b);
		System.out.println(c);
	}

	public static void main (String[] args) {
		// Insert Code Here
	}
}
```

I) printParams("test", 5, 5);
II) printParams(int 5, double 5.5, String "test");
III) printParams(5, 5.5, "test");

a) II
b) III
c) I and III
d) II and III

2. Which of the following would result in "Hello" being printed out when placed after the comment?

```
public class MethodCallee {
	public String printHello() {
		return "Hello";
	}
}

public class MethodCaller {
	public static void main (String[] args) {
		MethodCallee test = new MethodCallee();
		// Insert Code Here
	}
}
```

I) *System.out.println(printHello());*
II) *System.out.println(test.printHello());*
III) *System.out.println(MethodCallee.printHello());*

a) I
b) II
c) II and III
d) None of the above

3. Which of the following would result in "Hello" being printed out when placed after the comment?

```
public class MethodCalls {
	public String printHello() {
		return "Hello";
	}

	public static void main (String[] args) {
		// Insert Code Here
	}
}
```

I) System.out.println(printHello());
II) System.out.println(MethodCalls.printHello());
III) System.out.println(this.printHello());

a) I
b) I and II
c) II and III
d) None of the above

XV. Static Methods VS Instance Methods

1. Calling a method on a class is called a _____ and calling a method on an object is called a _____

a) Non-static, static
b) Static, Non-static
c) Static, Static
d) Non-static, Non-static

2. To call a method on a class, you could use:

a) ClassName.methodName(variable1, variable2);
b) ClassName objectName = new methodName();
c) methodName(variable1, variable2) = new ClassName()
d) All of the above
e) None of the above, you have to call methods on objects, not classes.

XVI. Complex Conditionals

No practice questions. Review short circuiting.

XVII. DeMorgan's Law

1. Which of these conditionals is the negation of the following conditional:

(!(a && b))

a) (a || b)
b) (a && b)
c) (!(a || b))
d) ((!a || !b))

2. Which of these conditionals is the negation of the following conditional:

(!(x < 3 || y > 2))

a) (x >= 3 && y <= 2)
b) (x > 3 && y < 2)
c) (x >= 3 || y <= 2)
d) (x == 3 || y == 2)

XVIII. Tracing a Method with While Loops

No practice questions. Review tracing using Magpie labs.