CS 1400 Review Questions

Introduction

Question 1 What does a compiler do?
a) Translates machine instructions to higher level languages
b) Translates programs written in a high-level language into machine code
c) Translates user programs to Java Programs
d) None of the above

Answer: B

Question 2 Consider the following Java Program:

```java
public class VendingMachine {
        public static void main(String[] args) {
                System.out.println("Please insert 25c");
        }
}
```

By what name would you save this program on your hard disk?

Answer: VendingMachine.java

Question 3 Is Java a:
a) functional language
b) procedural language
c) object-oriented language
d) logic language

Answer: C)

Question 4 What does a Java compiler do?
a) translates a Java (text) source file into bytecode
b) translates a Java (text) source file into machine-language
c) translates a bytecode into Java (text) source file
d) translates machine-language into Java (text) source file

Answer: A)

Question 5 What is the program that translates Java bytecode instructions into machine-language instructions?
a) Java compiler
b) Java virtual machine (JVM).
c) Java operating system.
d) Java interpreter

Answer: B) and D)

Question 6 True or False? Java bytecode is a form of instructions that the JVM executes?
a) True
b) False

Answer: A)

Question 7 Since Java is a case-sensitive, which statement is correct?
a) "Total" and "total" are different identifiers
b) "Total" and "total" are the same identifiers

Answer: A)

CS 1400 Review Questions

Data Types

Question 1 Give the output of the following program:

```
public class Example {
        public static void main(String[] args) {
                int y = 2, z = 1;
                z = y * 2;
                System.out.print(y + z);
        }
}
```
a) 4
b) 5
c) 6
d) 7

Answer: C)

This is because y is 2, and 2*2 is stored in z. Now, z=4, and y is the same value (2). Therefore, 4+2 = 6.

Question 2 Consider the following program:

```
public class Example {
        public static void main(String[] args) {
                String str = new String("Cal Poly Pomona");
                char ch1 = str.toLowerCase().toUpperCase().charAt(0);
                char ch2 = str.toUpperCase().charAt(4);
                char ch3 = str.toUpperCase().charAt(str.length() - 1);
                System.out.println("character 1 is: " + ch1);
                System.out.println("character 2 is: " + ch2);
                System.out.println("character 3 is: " + ch3);
        }
}
```

What will be the output?

character 1 is: C

character 2 is: P

character 3 is: A

Question 3 Consider the following program:

```
public class Example {
        public static void main(String[] args) {
                int num1 = 4, num2 = 5;
                System.out.println("4" + "5");
                System.out.println(num1 + num2);
                System.out.println("num1" + "num2");
                System.out.println(4+5);
        }
}
```
What will be the output?

Question 4 Which of the following invokes the method length() of the object str and stores the result in val of type int?
a) int val = str.length();
b) int val = length.str();
c) int val = length().str;
d) int val = length(str);

Question 5 Evaluate each of the following expressions.

```
String s = "Programming is Fun";
String t = "Workshop is cool";
a) System.out.println(s.charAt(0) + String.valueOf(s.charAt(15)).toLowerCase());
b) System.out.println(String.valueOf(t.charAt(5)).toUpperCase() + t.charAt(9));
```

Question 6 Evaluate each of the following expressions.

```
int j = 11;
int k = 3;
String s = "Ford Rivers";

a) j / k
b) j % k
c) s.length()
d) s.charAt(3)
```

Question 7 True or False? The type char is a primitive data type.
a) True
b) False

Question 8 True or False? The type String is a primitive data type.
c)   True
d)   False

Answer: False

Question 9   Complete the Java program below that asks the user for the radius of a circle and finds the area of the circle according to the formula $A = \pi r^2$.

```
import java.util.Scanner;
public class Circle {
        public static void main(String[] args) {
                final double PI = 3.14159;

                Scanner scan = new Scanner(System.in);
                // printing a prompt message to get the radius from the user
                // -->
                // getting the radius;
                // -->
                // calculating the area;
                // -->
                // printing the area with a meaningful message;
                // -->
        }
}
```

Answer:
```
import java.util.Scanner;
public class Circle {
        public static void main(String[] args) {
                final double PI = 3.14159;

                Scanner scan = new Scanner(System.in);
                System.out.println("Enter radius: ");
                double radius = scan.nextDouble ();
                double area = PI * radius * radius ;
                System.out.println("The area is: " + area );
        }
}
```

Question 10 Complete the Java program below that prompts the user to enter 2 integers. Print the smaller of the 2 integers.
```
import java.util.Scanner;
public class Smaller {
                public static void main(String[] args) {

                        // -->

        }
}
```

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```
import java.util.Scanner;
public class Smaller {
        public static void main(String[] args) {
                Scanner scan = new Scanner(System.in);
                System.out.println("Enter 2 integers:");
                int a = scan. nextInt();
                int b = scan. nextInt();
                System.out.println("The smaller integer is " + Math.min(a, b));
        }
}
```

Question 11 Write the output of the following program:

```
public class Question {
        public static void main(String[] args) {
                String str = "hello";
                System.out.println("pizza".length());
                System.out.println(str.charAt(1));
                System.out.println(str.equals("hello"));
                System.out.println("pizza".toUpperCase());
                System.out.println(Math.pow(2, 4));
                double num4 = Math.sqrt(16);
                System.out.println(num4);
        }
}
```

Question 12 Write the output of the following program:

```
public class Question {
        public static void main(String[] args) {
                String s1 = new String("Trump, Donald");
                String s2 = new String("Obama, Barack");
                System.out.println(s1.charAt(2));
                System.out.println(s1.charAt(s1.length() - 1));
                System.out.println(s1.toUpperCase() + s2.toUpperCase());
        }
}
```

Question 13 What value is contained in the integer variable length after the following statements are executed?

```
length = 5;
length += 3;
length = length * 2;
```

Question 14 What is the result of 2/4 when evaluated in Java?

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CS 1400 Review Questions

Decision - Control Structures

Question 1 What is the output of the following code?

```
int depth = 8;
if (depth >= 8) {
        System.out.print("Danger: ");
        System.out.print("deep water. ");
}
System.out.println("No swimming allowed.");
```
Answer: Danger: deep water. No swimming allowed.

Question 2 What is the output of the following code?

```
int depth = 12;
int temp = 42;
System.out.print("The water is ");
if (depth >= 8)
        System.out.print("deep ");
if (temp <= 50 && depth <= 12)
        System.out.print("cold ");
System.out.println("wet.");
```
Answer: The water is deep cold wet.

Question 3 Consider the following code:

```
String str1 = "Java is fun";

String str2 = new String("Java is fun");

if ( /* */ )
        System.out.println("str1 and str2 are the same");
else
        System.out.println("str1 and str2 are different");
```
Fill in the missing condition to check if str1 and str2 have the same content.
Answer: str1.equals(str2)

Question 4 If k holds a value of the type int, then the value of the expression:

```
k <= 10 || k > 10
```

a) must be true
b) must be false
c) could be either true or false
d) is a value of type int

Answer: A)

Question 5 Complete the Java program below that asks for 3 different integers and prints the median value of the three integers.

```java
import java.util.Scanner;
public class ThreeIntegers {
        public static void main(String[] args) { Scanner
                scan = new Scanner(System.in);

                int num1 = scan.nextInt();
                int num2 = scan.nextInt();
                int num3 = scan.nextInt();
                int result = 0;

                if (/* */)
                    result = num1;
                else if ( /* */)
                    result = num1;
                else if (/* */)
                    result = num2;
                else if (/* */)
                    result = num2;
                else
                    result = num3;

                System.out.println("The median of " + num1 + ", " + num2 +",
                        and " + num3 + " is " + result);
        }
}
```

```
if (num1 > num2 && num1 < num3)
   result = num1;
else if (num1 < num2 && num1 > num3)
   result = num1;
else if (num2 > num1 && num2 < num3)
   result = num2;
else if (num2 < num1 && num2 > num3)
   result = num2;
else
   result = num3;
```

Question 6 Evaluate the following expressions assuming that x = -2 and y = 3.

a) x <= y
b) (x < 0) || (y < 0)
c) (x <= y) && (x < 0)
d) ((x + y) > 0) && !(y > 0)

Question 7 Write the output of the following code:

```java
int grade = 45;
if (grade >= 70)
    System.out.println("passing");
if (grade < 70)
    System.out.println("dubious");
if ( grade < 60)
    System.out.println("failing");
```

Answers:
dubious
failing

Question 8 Write the output of the following code:

```java
String option = "A";
if (option.equals("A"))
    System.out.println("addRecord");
if (option.compareTo("A") == 0)
    System.out.println("deleteRecord");
```

Answers:
addRecord
deleteRecord

Question 9 Write the output of the following code:

```java
double x = -1.5;
if (x < -1.0)
        System.out.println("true");
else
        System.out.println("false");
        System.out.println("after if...else");
```

Answer:
true
after if...else

Question 10 Write the output of the following code:

```java
int j  =  8;
double x = -1.5;
if ( x >= j)
        System.out.println("x is high");
else
        System.out.println("x is low");
```

Answer:
x is low

Question 11 Write the output of the following code:

```java
double x = -1.5;
if ( x <= 0.0) {
        if ( x < 0.0)
                System.out.println("neg");
        else
                System.out.println("zero");
}
else
        System.out.println("pos");
```

Answer: neg

3

Question 12 Write code that ensures that an int variable called number is an odd integer.

```
if ((number % 2) == 0)
    number++;
// number at this point will be guaranteed to be odd
```

CS 1400 Review Questions

Loops - Control Structures

Question 1 What are the 3 kinds of loops in Java?

Answer: for, while, do-while

Question 2 Write a loop that reads in int values until the user enters 0 and prints out how many values entered are greater than 10.

Answer:

```
Scanner scan = new Scanner(System.in);
int input = scan.nextInt();
int numGreater10 = 0;
while (input != 0) {
        if (input > 10)
                numGreater10++;
        input = scan.nextInt();
}
System.out.print("There are " + numGreater10 + " numbers larger than 10.");
```

Question 3 Write a loop that will print out every other letter in a String str. For example, if the String was "Hello There", then "HloTee" will be printed.

Answer:

```
for (int j = 0; j < str.length(); j += 2) {
        System.out.print(str.charAt(j));
}
```

Question 4 What is the output of the following loop? How many times does the loop execute?

```
int n = 79;
for ( int j = 0; j <= n; j ++) {
        System.out.println("Hello");
}
```

a) Hello (0 times)
b) Hello (81 times).
c) Hello (80 times).
d) Hello (79 times)

Answer: C)

Question 5 What is the output of the following loop? How many times does the loop execute?

```
int j = 1;
int n = 5;
while (j <= n) {
        System.out.println ("Hello");
        n--;
}
```

a) Hello (5 times)
b) Hello (4 times)
c) Hello (6 times)
d) Hello (0 times)

Answer: A)

Question 6 What is the output of the following loop? How many times does the loop execute?

```
int n =  5;
for (int j = 1; j <= n; j += 3) {
        System.out.print ("Hello ");
        int k = j;
        while (k < n) {
                System.out.println ("Good Morning");
                k++;
        }
        j--;
}
```

Answer:

Hello Good Morning
Good Morning
Good Morning
Good Morning
Hello Good Morning
Good Morning
Hello

Question 7 What is the output of the following loop? How many times does the loop execute?

```
int j =  1;
while ( j <= 11) {
        System.out.println ("Hello");
        j = j + 3;
}
```

a) Hello (5 times)
b) Hello (4 times)
c) Hello (6 times)
d) Hello (0 times)

Answer: B)

Question 8 What is the output of the following code?

```
String name = "Richard M. Nixon";
boolean startWord = true;
for (int i = 0; i < name.length(); i++) {
        if (startWord)
                System.out.println(name.charAt(i));
        if (name.charAt(i) == ' ')
                startWord = true;
        else
                startWord = false;
}
```

Answer:

R
M
N

Question 9 What is the output of the following code?

```
int n = 1 , i = 1;
while ( i < 7) {
        n = n * i;
        i += 2;
}
System.out.print(n);
```

Answer: 15