

COMP 248 - Tutorial #2 - SOLUTION

Java Fundamentals

Question 1: What is the **type** of the values 0, 0.0, '0' and "0"?

0: int 0.0: double '0': char "0": String

Question 2: Which of the following are **legal identifiers**?

Greetings - legal
g - legal
void - illegal – reserved word
1001dalmatians - illegal – starts with a digit
Hello, world - illegal – has a comma
<greeting> - illegal – starts with <

Question 3: Given the following **declarations**, what is result is stored in each of the listed assignment statements?

```
int iResult, num1 = 25, num2 = 40, num3 = 17, num4 = 5;
double fResult, val1 = 17.0, val2 = 12.78;
iResult = num1 / num4; // 5
fResult = num1 / num4; // 5.0
iResult = num3 / num4; // 3
fResult = num3 / num4; // 3.0
fResult = val1 / num4; // 3.4
fResult = val1 / val2; // 1.3302034428794993
iResult = num1 / num2; // 0
iResult= num3 % num4; // 2
iResult= num2 % num3; // 6
iResult= num3 % num2; // 17
iResult= num2 % num4; // 0
```

Question 4: Strings

A- What is the output of:

```
String s1, s2, s3;  
s1 = "Quest for the holy Grail";  
s2 = s1.toLowerCase();  
s3 = s1 + " " + s2;  
System.out.println(s3.replace('h', 'z'));  
  
Quest for tze zoly Grail quest for tze zoly grail
```

B- What is the **length** of the string "mississippi"? What is the **index** of the last character?

```
Length: 11  
Index last character: 10
```

C- Assume the String variable s contains the value "Agent".
What is the effect of the assignment `s = s + s.length()` ?
What about `s += s.length()` ;

```
Both result in s = "Agent5"
```

D- Assume the following declaration: `String name = "Your Name Here";`
What is the value of each of the following expressions?

```
name.substring(9) ;           //" Here"  
name.substring(1,6);         //"our N"  
name.substring(1, name.length()-1); //"our Name Her"  
name.length();               //14  
name.indexOf('r');           //3  
name.indexOf('n');           //-1
```

Question 5: Console Input/Output

A- What is the output of:

```
System.out.println("result: 3+4");           // result: 3+4  
System.out.println("result: " + 3+4);        // result: 34  
System.out.println("result: " + 3+"4");      // result: 34  
System.out.println("result: " + (3+4));      // result: 7
```

B- Write a statement to display on the console the message:

"The file is in c:\Temp\theFile.txt"

```
System.out.println("\nThe file is in c:\\Temp\\theFile.txt\\");
```

C- Suppose that the variable `in` is a `Scanner` object that reads from `System.in`, and your program calls: `String name = in.next();`
What is the value of `name` if the user enters John Q. Public?

```
name = "John"
```

Question 6: Try to predict the output of the following program. Then run it to make sure your answers are right.

```
/**
 * Question.java
 */
public class Question
{
    public static final String sentence = "I hate programming.";
    public static void main (String[] args)
    {
        int position = sentence.indexOf("hate");
        String firstPart = sentence.substring(0, position);
        String afterHate = sentence.substring(position + 4);
        String newString = firstPart + "love" + afterHate;
        System.out.println("The line of text to be changed is:");
        System.out.println(sentence);
        System.out.println("I have rephrased the line to read:");
        System.out.println(newString);
    } // end of main ()
} // Question
```

Answer:

```
The line of text to be changed is:
I hate programming.
I have rephrased the line to read:
I love programming.
```

Question 7: The following Java program contains several syntax errors. Identify and correct them. Then try to compile the program to make sure your answers are right.

```
/* Purpose: This program calculates the final price of a
purchase including a 15% sales tax */
import java.util.Scanner;
public class Price
{
    public static void main (String[] args)
    {
        Scanner keyboard = new Scanner(System.in);
        final double TAX_RATE = 0.15;
        int quantity;
        double subtotal, tax, totalCost, unitPrice;
        System.out.print ("Enter the quantity: ");
        quantity = keyboard.nextInt();
        System.out.print ("Enter the unit price: ");
        unitPrice = keyboard.nextDouble();
        subtotal = quantity * unitPrice;
        tax = subtotal * TAX_RATE;
        totalCost = subtotal + tax;
        // Print output */
        System.out.println ("Subtotal: " + subtotal);
        System.out.println ("Tax: " + tax);
        System.out.println ("Total: " + totalCost);
    }
}
```