Unit 1 Programming Fundamentals Quiz

Name:

KNOWLEDGE [17 / 24]: (If there is an error in the code you will need to explain what the error is and how you would fix it).

1. Trace through the following segment of code. [3 marks] 2.5

```
for (int c=-5; c>-11; c = c–2) {
        for (int count = 3; count<= 25; count = count * 2) {
                System.out.println(c);
                System.out.println(count);
        }
}
```

MEMORY	OUTPUT	Mark
c=-5,-7,-9 Count = 3,6,12,24 Missing the values for c = -11 and count = 48	-5 3 -5 6 -5 12 -5 24 -7 2 -7 6 -7 12 -7 24 -9 3 -9 6 -9 12 -9 24	2.5 /3 Comments:

2. For the following method headers, **i) public static void sample (int x, int y)**
ii) public static void sample (string x, float y)

State which of the following calls are valid or invalid.
If the call is valid, state which *sample* is called (i or ii).
If the call is invalid, state why it is invalid. (5 marks) 4

sample (3, 2); 1

- This call is valid for i)
- This call is invlalid for (ii)
- The call is invalid for ii) because the method cannot take a value of the type int as it is asking for a string.

sample (“Hello”, 2.6); 1

- This call is invalid for both methods
- This call is invalid for i) because it can take the int data types only not doubles
- This call is invalid for ii) because it cannot take a double as its second value for float y.
- Int oder to to make this call valid for ii) call such as sample (“Hello”, **(float)**2.6)

Sample (3, 2); S should not be capitalized so it will not run. (0)

- This call is valid for i) because it the type of int
- This call is invalid for ii) because the first datatype of the method cannot take an int data type instead it can only take a String datatype.

sample (‘3’, 2.5); 1

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- This call is invalid for both methods
- It is invalid for both methods because '3' is a data type of char and both of our methods do not take the data type of char.

sample (2.0, 'Hey'); 1

- This call is invalid for both methods.
- This call is invalid because 'Hey' is a value of char due to the single quotations, whereas both of our methods do not accept the data type char.

3. Given the code:
   Scanner myObj = new Scanner(System.in);
   String x = myObj.nextLine();

   Assume that at least two characters will be entered. Use String methods to solve this problem. [/ 6] 3.5

Determine:	Provide the code here:	Mark
The middle character or characters in the String.	x.charAt(x.length()/2)); What if the length of x is an even number? You would have two middle characters.	1 /2
Move the first character to the end of the String.	Int length = x.length(); String lastValue = x.charAt(x.length); ← should have minus 1 String y = x substring(0,length-1); ← should be 1 String final = lastVaue + y; ← should be y + lastValue	0.5 /1

Find if the letter r exists in the String. If not, output that it does not exist.	Char letter ='o';
	Char temp ='o';
	Int count = x.length()-1;
	While (count>0 && temp!='r'){ should be >=
	Temp = x.charAt(count};
	Count--;
	}
	If (temp!='r'){
	System.out.println("r does not exist}; ← should be inside of the while loops
		0.5 /1

Find out if the letter M exists starting from the second letter in the String.	Char letter ='o';
	Char temp ='o';
	Int count = x.length()-1;
	While (count+1>0 && temp!='m'){
	Temp = x.charAt(count}; Temp only stores the current character being looked at.
	Count--;
	}
	If (temp!='m'){
	System.out.println("r does not exist};
		0.5 /1

Print only the characters starting from the third character (includes the third character). Use ONLY one string method to do this.	System.out.println(x.substring(3,x.length()); ← should be 2 but you were close because a string's index starts at 0.	1/1

3. For the following method, use comments to indicate the scope of the variables x, y, a, b, c, d, e. Indicate where they start and where they end. (6 marks) 4 Did not mention x and y (-1). Where does c begin and end?

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```
public static void temp (int x, int y){
        int a;                          //a starts here
        for (int c=0; c<10; c++){
                int b;                  // b starts here
                for (int d=9; c>4; c--) {
                        int e;          //e starts here
                }                       e ends here
        }                               b ends here
        int d;                          a ends here d starts here
                                        d ends here
}
```

4. For a sequence that starts at -5 and decreases by 3 each term, find the value of the 180th term and print it out to the screen. (4 marks) 3

```
Write your code here:
Int value =0;
For (int x=5; y=0; y<=180; y++; x=x-3){ ← should be negative 5. Use commas instead of the red parts.  Otherwise everything is fine.
Value = value+x; ← don't need to add.
}
System.out.println(value); ← this should print out x.
```

APPLICATION 12 / 18 (Do not worry about importing libraries. Minor syntax errors will not count against you as you do not have access to eclipse)

1. Write a program that will find and output the arithmetic series for each of the numbers in the following *String x = "23515887963268543488 55";.* Make sure you use String methods to solve for this. (5 marks) 5

```
Int value =0;
Int num =0;
For (int y =0; y<x.length(); y++){
value = Integer.parseInt(x.substring(y,y+1};
Sum = sum +value
}
System.out.println(sum);
```

2. You are creating a program that will read in the marks (from 0 to 100) of a set of students.

A text file called "g:\markset.txt" holds rows of marks. One row per student. Each row will represent a set of four marks separated by a comma.

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For example:
9,54,76,100
….

In the example above: Mark 1 is 9%, Mark 2 is 54%, Mark 3 is 76% and Mark 4 is 100%.

a) Write a method called *CalcAvg* that will receive a string that represents a student's set of marks. This method will determine and return the average. If there is any invalid response in the set (e.g. invalid marks, too many marks, not enough marks, or if one or more of the values is not an integer) return a -1. Remember to use Integer.parseInt(); to convert from a String to an integer. Do not worry about importing any libraries. There is sample code at the bottom of this document to help check for a non-integer result. 5 / 8

Missing:

1 - returning -1 in the catch block
1- if the string doesn't have 3 commas and four numbers, make sure the -1 is
Returned
1- keeping track of the number of marks. What if there are more marks or less than 4 marks in total?

```
Public static void CalcAvg (string x){
Int mark =0;
Int count=0;
Int sum=0;
If (x.length-4>=12 && x.length>0) not clear. There should be 3 commas and 8 numbers. 11 in total.
{
While (count>x.length){
Mark = Integer.parseInt(x.substring(count,",");
Sum = mark+sum;
count ++
}
}
Int average = sum/4;
System.out.println ("The average of this student is " + average);

}
```

In your main program….

b) Read in all marks in the markset.txt file and calculate and output the class average of marks for all students. In addition, output the highest overall average. 2 / 5

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Code: (starter code) → Please do you best to indent your code to make it easily readable

Missing:

1- making sure you are not adding up the -1 returns from calcAvg
1 - finding the average
1 - keeping track of the highest average

```
String x;

        try {
                FileReader fr=new FileReader("g:\markset.txt");
                BufferedReader br=new BufferedReader (fr);
                Int markSum=0;
                 studentCount=0;
                while ((x = br.readLine()) != null) {
                        CalcAvg (x);
                       markSum = calcAvg(x) + markSum;
                        studentCount++;
                }
                br.close();
                 Int totalAverage = markSum/studentCount;

        } catch (IOException e) {


        }
```

Sample Code: (to help catch errors when converting from a String to an Int)

Use the try catch block:

```
try   {

      // code goes here:

      }

        // handling the exception by using Exception class

      catch(Exception e)

      {

      }
```