Theme B2 - Revision Station

This document offers revision challenges for the following topics:

- variables
- input /output
- function design (with parameters/return statements)
- if statements
- for loops
- while loops
- boolean expressions with Logical operators (&& || !)
- counting
- Summing

1. The following code exists:

```java
static Scanner kbin = new Scanner(System.in);

public static void main(String[] args){

	boolean real;
	int x;
	double y;

	x = kbin.nextInt();
	y = kbin.nextInt();

	if(x+y>10){
		real = _____;
	}else{
		real = _____;
	}
}
```

a) How many global variables are there?

[1]

b) How many local variables are there?

[1]

c) What is the purpose of kbin.nextInt()?

[1]

d) The program has no syntax errors and will run. Explain one reason why the program may crash during **run-time**?

[1]

e) List the only values that can be assigned to the variable `real`:

[2]

2. The following code exists:

```java
public static void main(String[] args){

	//loop 1
	for(int i = 0; i<7; i++){
		//loop code
	}

	//loop 2
	for(int i = 0; i<7; i=i+2){
		//loop code
	}

	//loop 3
	for(int i = 7; i>=0; i--){
		//loop code
	}


}
```

a) How many times will loop 1 loop/iterate?

[1]

b) How many times will loop 2 loop/iterate?

[1]

c) How many times will loop 3 loop/iterate? [1]

3. The following code exists:

```java
public static void main(String[] args){

	evaluate("Hello", 5);
}
```

The `evaluate` function looks at the first parameter.
If it is the same as the word “Greetings!” it displays the word the same number of times as the second parameter.
Else, if it is the same as the word “Hello!” it displays the word 3 times.
Else it displays the word once.

Implement the `evaluate` function. [5]

```java

```

4. For each function call, state the returned value:

```java
public static void main(String[] args){

	boolean result;

	//function call 1
	result = mystery(1,2,3);

	//function call 2
	result = mystery(9,-2,3);

	//function call 3
	result = mystery(0,0,0);

}

public static boolean mystery(int a, int b, int c){

	return a>b || b>c && a>c;
}
```

i. Function call 1: [1]

ii Function call 2 [1]

iii Function call 3 [1]

5. The following code exists:

```java
public static void main(String[] args){
	int x, y, z;
	y=7;
	x = getVal(y);
	z = getVal(x);
	System.out.println(z);
}

public static int getVal(int a){

	if(a%3==2){
		return a%3;
	}else{
		return a;
	}
}
```

State the output of this program:

[1]

6. The following program exist

```java
static Scanner kbin = new Scanner(System.in);
public static void main(String[] args){

	int num = kbin.nextInt();
	int total = 0;

	while(num<10){
		total = total + num; //or total+=num;
		num = kbin.nextInt();
	}

	System.out.println(total);
}
```

The program designer intends to use the following set of input data to test the program:

13	6	3	7	14

where 13 is the first item to be input.

a) State the output of the program:

[1]

b) A new set of test data has been developed:

-2	6	2	17	-3

State the output of the program:

[1]