Tutorial 3

Loop Control Statement (for, while, do-while) and Type Casting

Section A: Self-Test

1. What are the three part of a for loop control?

(initialization ; condition ; increment/decrement)

2. If a variable is declared in a for loop control, can it be used after the loop exits?

No

3. What is a 'while' loop?

If the condition is true, the statement is executed.
Then the condition is evaluated again, and if it is still true, the statement is executed again.
The statement is executed repeatedly until the condition becomes false.

4. What is a 'sentinel while' loop?

A sentinel loop continues to process data until reaching a special value that signals the end.
The special value is called the sentinel.

5. What is a 'do-while' loop?

Do-while loop will execute the code block once, before checking if the condition is true,
then it will repeat the loop as long as the condition is true

6. Fill in the blank with suitable command to print the output below.

Output : 9.78

9

```
public class Cast1 {

	public static void main(String[] args) {
		double myDouble = 9.78;
		//declare a variable that hold int value
		int myInt ;

		//add a command to cast double to int
		MyInt = (int) MyDouble ;

		System.out.println(myDouble);
		System.out.println(myInt);
	}
}
```

7. Fill in the blank with suitable command.

```
public class Cast2 {

	public static void main(String[] args) {

		// Assign character '9' to char variable
		char customerRating = '9';

		//parse customerRating to String value, print the string value
		String StrcustomerRating = Character.toString(customerRating);

		System.out.println("customerRating value as String : "+ StrcustomerRating);

		//parse StrcustomerRating to int value, print the int value
		int customerRatings = Integer.parseInt(StrcustomerRating);

		System.out.println("customerRating value as integer : "+customerRatings);

		//compare the int value to print the respond towards the customerRating
		if ( customerRating>=7 ) { //rating greater or equal to 7

			System.out.println("Congratulations! Our customer is very happy with our
			services.");

		}else if (customerRating>= 5) { //rating greater or equal to 5

			System.out.println("Good , Our customer is satisfied with our services.");

		}else if (customerRating>=0) //rating greater or equal to 0

			System.out.println("Well, you really need to work hard to make our customers
			happy with our services.");

		}else { //other than the above conditions

			System.out.println("Please enter valid ratings value.");
		}
	}
}
```

Section B: Hand Tracing

1. What is the output of the following code segments?

```
int j;
int tCase = 5;
for (int i = 0; i < tCase; i++) {
   j = i * i;
   System.out.print(j + " ");
}
```

0 1 4 9 16

2. What is the output of the following code segments?

```
int x = 1;
int value = 0;
while(x <= 10) {
   value = x * 4;
   System.out.print(value + " ");
   x++;
}
```

4 8 12 16 20 24 28 32 36 40

3. What is the output of the following code segments?

```
int i = 0;
int sum = 0;
do {
      sum += i * 2;
      System.out.print(sum + " ");
      i++;
} while (i < 10);
System.out.println();
```

0 2 6 12 20 30 42 56 72 90

4. Suppose the input is 4, 7, 12, 1, -1. What is the output of the following code segments?

```
int j = sc.nextInt();
while(j != -1) {
      System.out.print(j + " ");
      j = sc.nextInt();
}
System.out.println();
```

```
4
7
12
1
```

4 7 12 1

5. Rewrite the code segment below using `for` loop.

```
k = 15;
while (k > 0) {
      System.out.print(k + " ");
      k -= 3;
}
```

```
int k;
k = 15;
for ( k = 15 ; k > 0 ; k-=3)
 {
    System.out.print(k + " ");

 }
```

6. Rewrite the code segment below using `while` loop.

```
int j;
int tCase = 5;
for (int i = 0; i < tCase; i++) {
   j = i * i;
   System.out.print(j + " ");
}
```

```
int j;
int tCase = 5;
int i = 0;

while (i < tCase)
{
    j = i * i;
    System.out.print(j + " ");

     i++;

}
```

Section C: Write Code Segments

1. Write code segments that reads 10 positive integers and count the numbers that are larger than 10. For example, if the input is `13,19,9,32,70,5,42,2,33,62` then the output will be 7.

Method 1 : using for

```
        Scanner sc = new Scanner(System.in);

        int i,j;
        int a = 0;

        for (i = 0 ; i < 10; i++)
        {
            // j : user Input
            j = sc.nextInt();

            if (j>10)
            {
              //a adalah increament jika j>10
              a = a + 1;
            }

        }

        System.out.print(a);
```

Problems @ Javadoc Declaration Console

```
<terminated> Section_c_1 [Java Application] C:\Users\Tie\.p2
13 19 9 32 70 5 42 2 33 62
7
```

Method 2 : using while

```
        Scanner sc = new Scanner(System.in);

        int i,j;
        int a = 0;

        i = 0;
        while (i<10)
        {
            // j : user Input
            j = sc.nextInt();

            if (j>10)
            {
                //a adalah increament jika j>10
                a = a + 1;
            }

            i++;
        }


        System.out.print(a);
```

Problems @ Javadoc Declaration Console

```
<terminated> Section_c_1 [Java Application] C:\Users\Tie\.p2\pool\plugins\
13 19 9 32 70 5 42 2 33 62
7
```

2. Write code segments that reads 10 positive integers and output the sum and average of the numbers. For example, if the input is `13 19 9 32 70 5 42 2 33 62,` then the output will be `287.0` and `28.7`.

```
        Scanner sc = new Scanner(System.in);

        int i,j;
        double a = 0.0;
        double avg;

        for (i = 0 ; i < 10; i++)
        {
            // j : user Input
            j = sc.nextInt();

            a = a + j;
            // sum of user input

        }

        avg = (double) a/10;

        System.out.print(a + " and " + avg);
```

Problems @ Javadoc Declaration Console

```
<terminated> SumAndAverage [Java Application] C:\Users\Tie\.p2\pool\plu
13 19 9 32 70 5 42 2 33 62
287.0 and 28.7
```

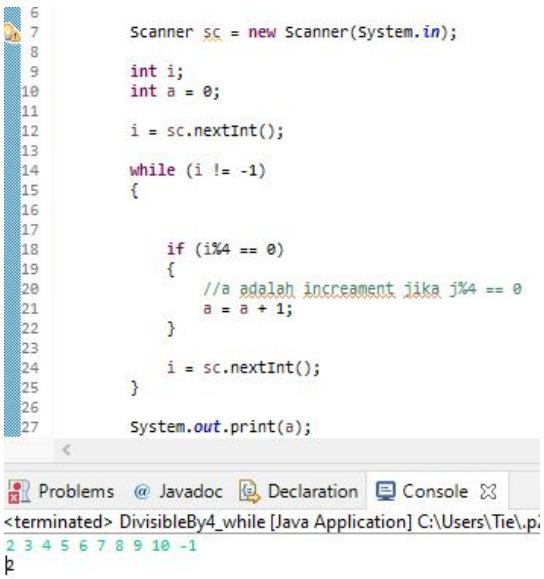
using while :

```
        Scanner sc = new Scanner(System.in);

        int i = 0;
        int j;
        double a = 0.0;
        double avg;

        while ( i < 10 )
        {
            // j : user Input
            j = sc.nextInt();

            a = a + j;
            // sum of user input

            i++;
        }

        avg = (double) a/10;

        System.out.print(a + " and " + avg);
```

Problems @ Javadoc Declaration Console

```
<terminated> SumAndAvg_while [Java Application] C:\Users\Tie
13 19 9 32 70 5 42 2 33 62
287.0 and 28.7
```

3. Write code segments to reads an unspecified number of integers that ends with -1, and determines how many are divisible by 4. For example, if the input is `2,3,4,5,6,7,8,9,10,-1` then the output will be 2.



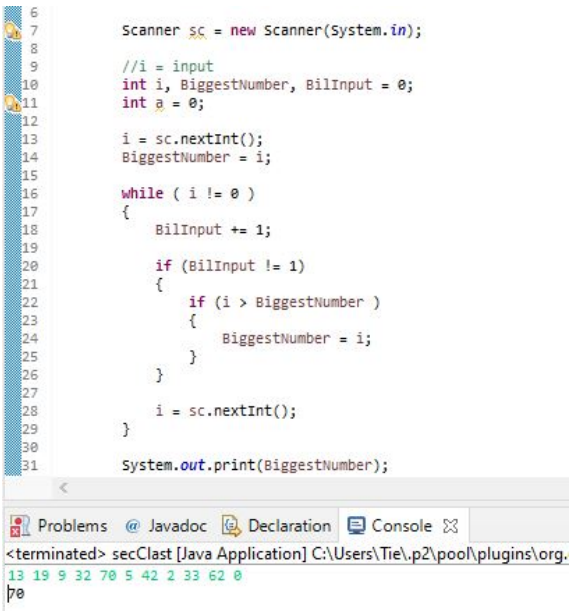
```
        Scanner sc = new Scanner(System.in);

        int i;
        int a = 0;

        i = sc.nextInt();

        while (i != -1)
        {


            if (i%4 == 0)
            {
                //a adalah increament jika j%4 == 0
                a = a + 1;
            }

            i = sc.nextInt();
        }

        System.out.print(a);
```

Problems @ Javadoc Declaration Console

<terminated> DivisibleBy4_while [Java Application] C:\Users\Tie\.p

```
2 3 4 5 6 7 8 9 10 -1
2
```

4. Write code segments to reads an unspecified number of integers that ends with 0, and output the maximum value. For example, if the input is `13 19 9 32 70 5 42 2 33 62,0` then the output will be `70`.



```
        Scanner sc = new Scanner(System.in);

        //i = input
        int i, BiggestNumber, BilInput = 0;
        int a = 0;

        i = sc.nextInt();
        BiggestNumber = i;

        while ( i != 0 )
        {
            BilInput += 1;

            if (BilInput != 1)
            {
                if (i > BiggestNumber )
                {
                    BiggestNumber = i;
                }
            }

            i = sc.nextInt();
        }

        System.out.print(BiggestNumber);
```

Problems @ Javadoc Declaration Console

<terminated> secClast [Java Application] C:\Users\Tie\.p2\pool\plugins\org.

```
13 19 9 32 70 5 42 2 33 62 0
70
```