FARICHA AULIA

JOBSHEET 7

Experiment 1

1. Pay attention to the for loop flowchart below! The flowchart above is used to calculate the factorial value, then we will make the program based on flowchart above!

2. Add Scanner library, Scanner declaration, and create numeric variable to hold data inputted via keyboard

```
In [32]: // Type the program code, below (below this sentence)
java.util.Scanner;
fact = new Scanner (System.in);
```

3. Make a declaration and initialization of factorial variables according to the flowchart above

```
In [15]: // Type the program code, below (below this sentence)
int number, factorial=1;
```

4. Add a loop structure to calculate the factorial result of an inputted value using for

```
In [2]: // Type the program code, below (below this sentence)
Scanner input =  new Scanner (System.in);
int number, factorial=1;
System.out.println("=====PROGRAM FOR CALCULATE FACTORIAL VALUE WITH FOR=====");
System.out.println("Enter a number : ");
number = input.nextInt();
int i;
for(i=1;i<=number;i++)
{
factorial=factorial*i;
}
System.out.println("The factorial value of that number is = " + factorial);
```

```
=====PROGRAM FOR CALCULATE FACTORIAL VALUE WITH FOR=====
Enter a number :
8
The factorial value of that number is = 40320
```

5. Change the value of the factorial variable as before. Then use the while loop structure to calculate the factorial result of an input value

```
In [6]: // Type the program code, below (below this sentence)
factorial=1;
System.out.println("=====PROGRAM FOR CALCULATE FACTORIAL VALUE WITH FOR=====");
System.out.println("Enter a number : ");
number = input.nextInt();
int i=1;
while(i<=number){
    factorial*=i;
    i++;
}
System.out.println("The factorial value of that number is = " + factorial);
```

```
=====PROGRAM FOR CALCULATE FACTORIAL VALUE WITH FOR=====
Enter a number :
6
The factorial value of that number is = 720
```

Explain : “while” can only be used by 1 exp. So remove the “i++”

6. Return the factorial variable value again as before. Use a do-while loop structure to calculate the factorial of an input

In [13]:
```
// Type the program code, below (below this sentence)
factorial=1;
System.out.println("=====PROGRAM FOR CALCULATE FACTORIAL VALUE WITH FOR=====");
System.out.println("Enter a number : ");
number = input.nextInt();
int i=1;
do{
    factorial*=i;
    i++;
}while(i<=number);
System.out.println("The factorial value of that number is = " + factorial);
```

```
=====PROGRAM FOR CALCULATE FACTORIAL VALUE WITH FOR=====
Enter a number :
9
The factorial value of that number is = 362880
```

Explain : “do-while”

In the “do” using {}

in the “while” instead of using { but using ;

Question

1. In the above program, what is the use of the following lines?

   `factorial*=i`

In [1]:
```
// Type your answer here
System.out.println("function of the line to perform the calculation process. same as factorial = factorial*i ");
```

```
function of the line to perform the calculation process. same as factorial = factorial*i
```

---

2. Modify the program above in the selection structure section, so that the results are as follows:

In [5]:
```
// Type the program code, below (below this sentence)
import java.util.Scanner;
Scanner input = new Scanner(System.in);
int number, i=1, factorial =1;
System.out.println("=====PROGRAM FOR CALCULATE FACTORIAL VALUE WITH DO-WHILE=====");
System.out.println("Enter a number : ");
number = input.nextInt();
System.out.print(number+ " factorial = ");
for(int i=1; i<=number; i++){
    factorial*=i;
    System.out.print(i);
    if(i==number){
        break;
    }else {
        System.out.print("x");
    }
}
System.out.print(" = " + factorial);
```

```
=====PROGRAM FOR CALCULATE FACTORIAL VALUE WITH DO-WHILE=====
Enter a number :
10
10 factorial = 1x2x3x4x5x6x7x8x9x10 = 3628800
```

Experiment 2

1. Make a loop using for using the break keyword

In [1]:
```
// Type the program code, below (below this sentence)
Scanner input = new Scanner(System.in);
int number, total;
System.out.println("PROGRAM FOR LOOPING WITH BREAK===");
for(total=0; true;){
    System.out.print("Enter a number");
    number = input.nextInt();
    total+=number;
    if(total>50) break;
}
System.out.println("The number of numbers that have been entered :" +total);
```

```
PROGRAM FOR LOOPING WITH BREAK===
Enter a number30
Enter a number24
The number of numbers that have been entered :54
```

2. Make the same loop with the while loop structure

In [2]:
```
// Type the program code, below (below this sentence)
int number, total;
System.out.println("PROGRAM FOR LOOPING WITH BREAK===");
total=0;
while(true){
    System.out.print("Enter a number");
    number = input.nextInt();
    total+=number;
    if(total>50) break;
}
System.out.println("The number of numbers that have been entered :" +total);
```

```
PROGRAM FOR LOOPING WITH BREAK===
Enter a number28
Enter a number52
The number of numbers that have been entered :80
```

3. Write the above loop in a do-while structure

In [3]:
```
// Type the program code, below (below this sentence)
int number, total;
System.out.println("PROGRAM FOR LOOPING WITH BREAK===");
total=0;
do{
    System.out.print("Enter a number");
    number = input.nextInt();
    total+=number;
    if(total>50) break;
}
while(true);
System.out.println("The number of numbers that have been entered :" +total);
```

```
PROGRAM FOR LOOPING WITH BREAK===
Enter a number4
Enter a number8
Enter a number16
Enter a number30
The number of numbers that have been entered :58
```

Question

1. Explain the function of the program code that has been made in the experiment above!

In [2]:
```
// Type your answer here
System.out.println("To stop counting if the number is above 50 (out of loop)");
```

```
To stop counting if the number is above 50 (out of loop)
```

2. Explain the function of the following code!

```
for(total=0;true;){
```

In [3]:
```
// Type your answer here
System.out.println("scan the first condition, to proceed to the next expression");
```

```
scan the first condition, to proceed to the next expression
```

Experiment 3

1. Create a looping program using the for loop structure as below

In [1]:
```
// Type the program code, below (below this sentence)
Scanner input = new Scanner (System.in);
int number, total,count;
double avg;
count = 0;
System.out.println("PROGRAM DO-WHILE LOOPING WITH CONTINUE");
for(int i = 0; i<5; i++){
    System.out.print("Enter a number");
    number = input.nextInt();
    if(total>50) continue;
    total+=number;
    count++;
}
System.out.println("The sum of numbers that are less than 50 :" +total);
avg = (double)total/count;
System.out.print("Average less than 50 :" +avg);
```

```
PROGRAM DO-WHILE LOOPING WITH CONTINUE
Enter a number6
Enter a number9
Enter a number23
Enter a number11
Enter a number3
The sum of numbers that are less than 50 :52
Average less than 50 :10.4
```

2. Run the program. Observe what happens!
   Continue the process of the data in the first condition, by providing conditions for the second condition

Question

1. Explain the difference between experiment 2 and experiment 3

   In experiment 2, if the data has a number above 50, the system will stop and the results will print. In experiment 3 only counted with numbers below 50

2. Explain what is the function of the following program code command?
   Conditions of numbers more than 50 must be met before they can be added up and continue calculating the average after the amount in the previous condition.

Task

1. Write a program that asks the user to input an integer N (N > 0). The program then returns the sum of the first N positive even numbers (an even number 0). Example: • If the user enters N = 10, the program will count the number of positive numbers in the range 1-10 and then display the sum of positive numbers between 1-10, namely:

In [2]:
```
// Type the program code, below (below this sentence)
Scanner input = new Scanner (System.in);
double avg;
int number, evenNumber, totalEven=0;
int i=0;
System.out.print("Enter a number :");
number = input.nextInt();
evenNumber = number/2;
System.out.printf("The even numbers from 1-%d is %d \n", number, evenNumber);
System.out.print("Even number on the range : ");
do{
i++;
if(i%2==0){
    totalEven +=i;
if(i==number){
    System.out.print(i);
}else{
    System.out.print(i+ ",");
}
}else{
continue;
}
}
while(i<number);
avg = (double) totalEven/evenNumber;
System.out.printf("\n even total %d \n average %.1f", totalEven, avg);
```

```
Enter a number :32
The even numbers from 1-32 is 16
Even number on the range : 2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32
 even total 272
 average 17.0
```

2. Write a program to display the number 1 to the user input number sequentially and skip multiples of 5. As shown below

In [4]:
```
// Type the program code, below (below this sentence)
import java.util.Scanner;
Scanner sc = new Scanner(System.in);
int x;
System.out.print("Input Number :");
x = sc.nextInt();
for(x=1; x<=19; x++) {
if (x%5==0) continue;
System.out.println(x);
}
```

```
Input Number :1
1
2
3
4
6
7
8
9
11
12
13
14
16
17
18
19
```

3. Write a program that displays the Fibonacci number series as follows. Where the number on the right is the sum of the two previous numbers

In [2]:
```
// Type the program code, below (below this sentence)
int count = 12, num1 = 0, num2 = 1;
        System.out.print("Fibonacci Series of "+count+" numbers:");

        int i=1;
        while(i<=count)
        {
            System.out.print(num1+" ");
            int sumOfPrevTwo = num1 + num2;
            num1 = num2;
            num2 = sumOfPrevTwo;
            i++;
        }
```

```
Fibonacci Series of 12 numbers:0 1 1 2 3 5 8 13 21 34 55 89
```

Line	Program

1-29	import java.util.Scanner;
	public class TASKJS7{
	public static void main(String []args){
	//Task 1
	Scanner input = new Scanner (System.in);
	double avg;
	int number, evenNumber, totalEven=0;
	int i=0;
	System.out.print("Enter a number :");
	number = input.nextInt();
	evenNumber = number/2;
	System.out.printf("The even numbers from 1-%d is %d \n", number, evenNumber);
	System.out.print("Even number on the range : ");
	do{
	i++;
	if(i%2==0){
	totalEven +=i;
	if(i==number){
	System.out.print(i);
	}else{
	System.out.print(i+ ",");
	}
	}else{
	continue;
	}
	}
	while(i<number);
	avg = (double) totalEven/evenNumber;
	System.out.printf("\n Even Total %d \n Average %.1f", totalEven, avg);

30-38	//Task 2
	Scanner sc = new Scanner(System.in);
	int x;
	System.out.print("Input Number :");
	x = sc.nextInt();
	for(x=1; x<=19; x++) {
	if (x%5==0) continue;
	System.out.println(x);
	}

38-52	//Task 3
	int count = 12, num1 = 0, num2 = 1;
	System.out.print("Fibonacci Series of "+count+" numbers:");
	int i=1;
	while(i<=count)
	{
	System.out.print(num1+" ");
	int sumOfPrevTwo = num1 + num2;

	num1 = num2;
	num2 = sumOfPrevTwo;
	i++;
	}
	}
	}