



1
Vidyavardhini's College of Engineering and Technology
Department of Artificial Intelligence & Data Science

Experiment No.1
Basic programming constructs like branching and looping
Date of Performance:
Date of Submission:



Vidyavardhini's College of Engineering and Technology

Department of Artificial Intelligence & Data Science

Aim :- To apply programming constructs of decision making and looping.

Objective :- To apply basic programming constructs like Branching and Looping for solving arithmetic problems like calculating factorial of a no entered by user at command prompt .

Theory :-

Programming constructs are basic building blocks that can be used to control computer programs. Most programs are built out of a fairly standard set of programming constructs. For example, to write a useful program, we need to be able to store values in variables, test these values against a condition, or loop through a set of instructions a certain number of times. Some of the basic program constructs include decision making and looping.

Decision Making in programming is similar to decision making in real life. In programming also we face some situations where we want a certain block of code to be executed when some condition is fulfilled. A programming language uses control statements to control the flow of execution of program based on certain conditions. These are used to cause the flow of execution to advance and branch based on changes to the state of a program.

- if
- if-else
- nested-if
- if-else-if
- switch-case
- break, continue

These statements allow you to control the flow of your program's execution based upon conditions known only during run time.

A loop is a programming structure that repeats a sequence of instructions until a specific condition is met. Programmers use loops to cycle through values, add sums of numbers, repeat functions, and many other things. ... Two of the most common types of loops are the while loop and the for loop. The different ways of looping in programming languages are



- while
- do-while
- for loop
- Some languages have modified for loops for more convenience eg :- Modified for loop in java.

For and while loop is entry-controlled loops. Do-while is an exit-controlled loop.

Code: -

1} while loop

```
class Whileloop
```

```
{
```

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

```
    {
```

```
        int a=4;
```

```
        while(a%2==0)
```

```
        {
```

```
            System.out.println("\n Number is even");
```

```
            break;
```

```
        }
```

```
    } }
```



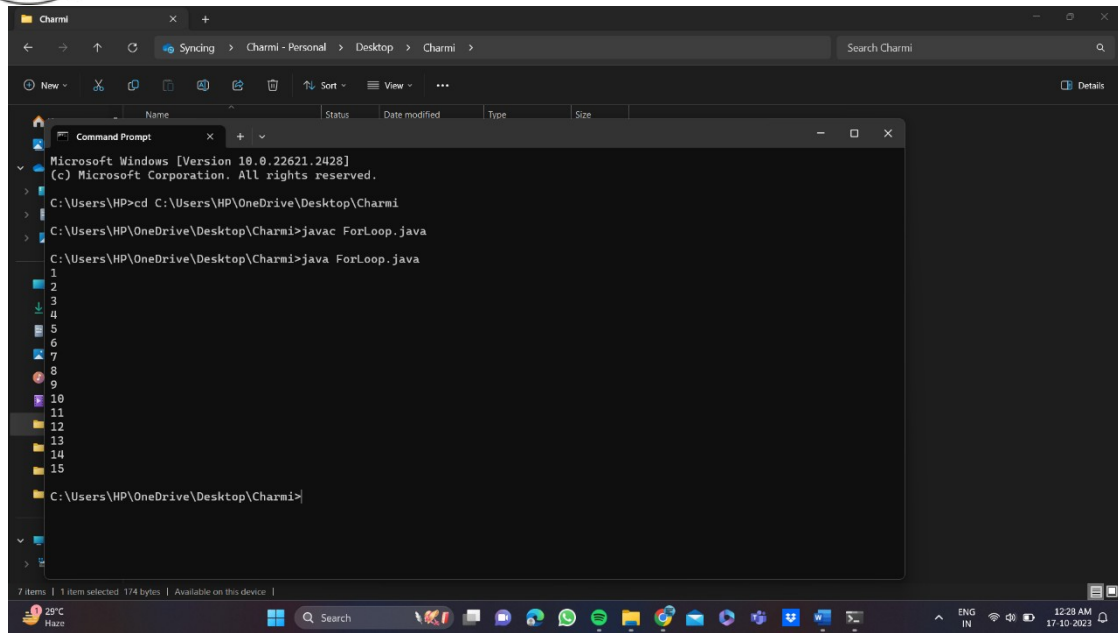
```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\HP>cd C:\Users\HP\OneDrive\Desktop\Charmi
C:\Users\HP\OneDrive\Desktop\Charmi>javac WhileLoop.java
C:\Users\HP\OneDrive\Desktop\Charmi>java WhileLoop.java
Number is even
C:\Users\HP\OneDrive\Desktop\Charmi>
```

2} for loop

class Forloop

```
{
    public static void main(String args[])
    {
        int x;
        for(x=1;x<=10;x++)
        {
            System.out.println(x);
        }
    }
}
```



3} dowhile loop

class Dowhileloop

{

public static void main(String arg[])

{

int a=0;

do

{

if(a%20==0)

{

System.out.println(a);

} a++;



```
} while(a<=100);  
  
}  
  
}
```

```
Microsoft Windows [Version 10.0.22621.2428]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\HP>cd C:\Users\HP\OneDrive\Desktop\Charmi  
  
C:\Users\HP\OneDrive\Desktop\Charmi>javac Dowhileloop.java  
  
C:\Users\HP\OneDrive\Desktop\Charmi>java Dowhileloop.java  
0  
20  
40  
60  
80  
100  
  
C:\Users\HP\OneDrive\Desktop\Charmi>
```

4}if else

```
public class IfElseExample {  
  
    public static void main(String[] args) {  
  
        int number=10;  
  
        if(number%2==0){  
  
            System.out.println("Even number");  
  
        }else{  
  
            System.out.println("Odd number");  
  
        }  
  
    }  
  
}
```



```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\HP>cd C:\Users\HP\OneDrive\Desktop\Charmi
C:\Users\HP\OneDrive\Desktop\Charmi>javac IfElseExample.java
C:\Users\HP\OneDrive\Desktop\Charmi>java IfElseExample.java
Even number
C:\Users\HP\OneDrive\Desktop\Charmi>
```

5} Ladder if else

```
class SecJavaProgram
```

```
{
```

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

```
    {
```

```
        int a=90;
```

```
        if(a>=90)
```

```
        {
```

```
            System.out.println("grade A");
```

```
        }
```

```
        else if(a>=80)
```

```
        {
```

```
            System.out.println("grade B");
```

```
        }
```

```
        else if(a>=70)
```

```
        {
```

```
            System.out.println("grade c");
```

```
        }
```



```
else if(a<70)
```

```
{
```

```
System.out.println("grade F");
```

```
}
```

```
}}
```

A screenshot of a Windows Command Prompt window. The window title is "Charmi". The text inside shows the following commands and output:

```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\HP>cd C:\Users\HP\OneDrive\Desktop\Charmi
C:\Users\HP\OneDrive\Desktop\Charmi>javac SecJavaProgram.java
C:\Users\HP\OneDrive\Desktop\Charmi>java SecJavaProgram.java
grade A
C:\Users\HP\OneDrive\Desktop\Charmi>
```

The window also shows a taskbar at the bottom with various application icons and a system tray on the right displaying the date and time as 12:38 AM on 17-10-2023.

6} nested if else

```
public class PositiveNegativeExample {
```

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




Vidyavardhini's College of Engineering and Technology

Department of Artificial Intelligence & Data Science

```
int number=15;

if(number>0){

System.out.println("POSITIVE");

}else if(number<0){

System.out.println("NEGATIVE");

}else{

System.out.println("ZERO");

}

}}
```

A screenshot of a Windows Command Prompt window. The window title is 'Command Prompt'. The text inside shows the following commands and output:

```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\HP>cd C:\Users\HP\OneDrive\Desktop\Charmi
C:\Users\HP\OneDrive\Desktop\Charmi>javac PositiveNegativeExample.java
C:\Users\HP\OneDrive\Desktop\Charmi>java PositiveNegativeExample.java
POSITIVE
C:\Users\HP\OneDrive\Desktop\Charmi>
```

The background of the Command Prompt is dark. The taskbar at the bottom shows the system clock as 12:35 AM on 17-10-2023, and the temperature as 29°C.



7} switch

```
class SwitchProgram
```

```
{
```

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

```
    {
```

```
        int a = 1 ;
```

```
        switch(a)
```

```
        {
```

```
            case 1 :
```

```
                System.out.println("\n Monday");
```

```
                break;
```

```
            case 2 :
```

```
                System.out.println("\n Tuesday");
```

```
                break;
```

```
            case 3 :
```

```
                System.out.println("\n Wednesday");
```

```
                break;
```

```
            case 4 :
```

```
                System.out.println("\n Thursday");
```

```
                break;
```

```
            case 5 :
```

```
                System.out.println("\n Friday");
```

```
                break;
```

```
            case 6 :
```

```
                System.out.println("\n Saturday");
```

```
                break;
```

```
            case 7 :
```



Vidyavardhini's College of Engineering and Technology

Department of Artificial Intelligence & Data Science

```
System.out.println("\n Sunday");
```

```
break;
```

```
default :
```

```
System.out.println("\n Not Valid");
```

```
}
```

```
}}
```

```
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.

C:\Users\HP>cd C:\Users\HP\OneDrive\Desktop\Charmi
C:\Users\HP\OneDrive\Desktop\Charmi>javac SwitchProgram.java
C:\Users\HP\OneDrive\Desktop\Charmi>java SwitchProgram.java
Monday
C:\Users\HP\OneDrive\Desktop\Charmi>
```