



**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:



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**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 a 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



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- 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)FOR LOOP:

**code:**

```
class for_program
{
public static void main(String args[])
{
    int i;
    int n=24;
    for(i=1; i<=n;i++)
    {
        System.out.println(" "+i);
    }
}
```

**OUTPUT:**

```
C:\Users\Sharvari A Bhondekar\OneDrive\Desktop\JAVA PROGRAMS\Exp 1>javac for_program.java
C:\Users\Sharvari A Bhondekar\OneDrive\Desktop\JAVA PROGRAMS\Exp 1>java for_program.java
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
```



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### 2)WHILE LOOP:

#### code:

```
class while_program
{
public static void main(String args[])
{
int i=0;
while (i<11)
{
System.out.println(+i);
i++;
}
}
}
```

#### OUTPUT:

```
C:\Users\Sharvari A Bhondekar\OneDrive\Desktop\JAVA PROGRAMS\Exp 1>javac while_program.java
C:\Users\Sharvari A Bhondekar\OneDrive\Desktop\JAVA PROGRAMS\Exp 1>java while_program.java
0
1
2
3
4
5
6
7
8
9
10
```

### 3)DO WHILE LOOP

#### code:

```
class Dowhile_program
{
public static void main(String args[])
{
int i=1;
```



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```
do
{
System.out.println(i);
i++;
}while(i<10);
}
}
```

### OUTPUT:

```
C:\Users\Sharvari A Bhondekar\OneDrive\Desktop\JAVA PROGRAMS\Exp 1>javac Dowhile_program.java
C:\Users\Sharvari A Bhondekar\OneDrive\Desktop\JAVA PROGRAMS\Exp 1>java Dowhile_program.java
1
2
3
4
5
6
7
8
9
```

### 4)IF

#### code:

```
class If_program
{
public static void main(String args[])
{
int a=5;
int b=3;
if(a>b)
{
System.out.println("a is greater");
}
}
}
```

### OUTPUT:

```
C:\Users\Sharvari A Bhondekar\OneDrive\Desktop\JAVA PROGRAMS\Exp 1>javac if_program.java
C:\Users\Sharvari A Bhondekar\OneDrive\Desktop\JAVA PROGRAMS\Exp 1>java if_program.java
a is greater
```

### 5)IF-ELSE

#### code:



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```
class if_else
{
public static void main(String args[])
{
int a=1;
int b=3;
if(a>b)
{
System.out.println("a is greater");
}
else
{
System.out.println("b is greater");
}
}
}
```

### OUTPUT:

```
C:\Users\Sharvari A Bhondekar\OneDrive\Desktop\JAVA PROGRAMS\Exp 1>javac if_else.java
C:\Users\Sharvari A Bhondekar\OneDrive\Desktop\JAVA PROGRAMS\Exp 1>java if_else.java
b is greater
```

### 6)IF-ELSE LADDER

#### code:

```
class Ladder
{
public static void main(String args[])
{
int a=5;
int b=6;
int c=7;
if(a>b && a>c)
{
System.out.println("a is greatest");
}
else if(b>a && b>c)
{System.out.println("b is greatest");
}
else{
System.out.println("c is greatest");}
}
}
```

### OUTPUT:

```
C:\Users\Sharvari A Bhondekar\OneDrive\Desktop\JAVA PROGRAMS\Exp 1>javac Ladder.java
C:\Users\Sharvari A Bhondekar\OneDrive\Desktop\JAVA PROGRAMS\Exp 1>java Ladder.java
c is greatest
```



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### 7)SWITCH

#### code:

```
class Switch
{
public static void main(String args[])
{
int ch=4;
switch (ch)
{
case 1:
System.out.println("Monday");
break ;
case 2:
System.out.println("Tuesday");
break;
case 3:
System.out.println("Wednesday");
break;
case 4:
System.out.println("Thursday");
break;
case 5:
System.out.println("Friday");
break;
case 6:
System.out.println("Saturday");
break;
case 7:
System.out.println("Sunday");
break;
}
}
}
```

#### OUTPUT:

```
C:\Users\Sharvari A Bhondekar\OneDrive\Desktop\JAVA PROGRAMS\Exp 1>javac Switch.java
C:\Users\Sharvari A Bhondekar\OneDrive\Desktop\JAVA PROGRAMS\Exp 1>java Switch.java
Thursday
```

### 8)CONTINUE

#### code:

```
class Continue
{
public static void main(String args[])
{
int a=5;
int i;
```



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```
for(i=0;i<a;i++)
{
if(i%2==0)
{
continue;
}
else{
System.out.print(+i+ " is odd number");
}
}
}
}
```

### OUTPUT:

```
C:\Users\Sharvari A Bhondekar\OneDrive\Desktop\JAVA PROGRAMS\Exp 1>javac Continue.java
C:\Users\Sharvari A Bhondekar\OneDrive\Desktop\JAVA PROGRAMS\Exp 1>java Continue.java
1 is odd number3 is odd number
```

### Conclusion:

Comment on how branching and looping are useful in solving problems.

**Branching** enables decision-making in programs by executing different code paths based on conditions, making it useful for handling various scenarios.

**Looping** automates repetitive tasks, allowing efficient processing of data or operations without code duplication.

**Combined**, branching and looping enhance problem-solving by enabling dynamic decision-making and efficient iteration in complex tasks.