EXPERIMENT 3

// Basics Concepts of Programming in Java

Data Types in Java

I. Primitive Data Types -

Broad Data Type	Specific Data Types	Purpose
Integer	byte, short, int, long	To store signed whole numbers.
Floating-Point Number	float, double	To store signed numbers with fractional precision.
Character	char	To store any character from the Java's character set. ● It can hold only one character at a time.
Boolean	boolean	To store values like true/false.

II. Non-Primitive Data Types -

Data Type	Purpose
Array	To store a collection of homogeneous elements at contiguous memory locations.
String	To store a collection of characters.
Class	To create objects as per the specifications given by the user.

etc.

Variable

Declaration -

datatype *identifier (=value);*

Example - int a; or int a=10;

➔ Multiple variables of same data type can also be declared simultaneously as a comma-separated list.

Example -

int a, b=0, c;

Operators in Java

I. Arithmetic Operators -

Operator	Purpose
+	Addition (also unary plus)
-	Subtraction (also unary minus)
*	Multiplication
/	Division
%	Modulus

II. Assignment Operator -

Operator	Purpose
=	To assign a value to an entity.

III. Compound Assignment Operators -

Operator	Purpose
+=	Addition Assignment
-=	Subtraction Assignment
*=	Multiplication Assignment
/=	Division Assignment
%=	Modulus Assignment

IV. Increment Operator -

Operator	Purpose
++	Increment by 1

V. Decrement Operator -

Operator	Purpose
--	Decrement by 1

VI. Relational Operators -

Operator	Purpose
<	Less than
>	Greater than
==	Equal to
<=	Less than or equal to
>=	Greater than or equal to
!=	Not equal to

VII. Logical Operators -

Operator	Purpose
&&	Logical AND
||	Logical OR
!	Logical NOT

Decision Constructs in Java

I. **if** statement -

Syntax:

```
if (condition)
{
        statement1;
}
```

II. **if-else** statement -

Syntax:

```
if (condition)
{
        statement1;
}
else
{
        statement2;
}
```

III. **if-else-if-else** ladder -

Syntax:

```
if (condition)
{
        statement;
}
else if (condition)
{
        statement;
}
else if (condition)
{
        statement;
}
- - -
- - -
else
{
        statement;
}
```

IV. **switch** statement -

Syntax:

```
switch (expression)
{
        case value1:
        {
                statement;
                break;
        }
        case value2:
        {
                statement;
                break;
        }
        - - -
        - - -
        default:
        {
                statement;
        }                                }
```

V. **nested constructs -** one decision construct created in another.

Iterative Statements in Java

I. **for** loop -

Syntax:

```
for (initialization; condition; change_in_loopcounter)
{
        body of loop
}
```

II. **while** loop -

Syntax:

```
while (condition)
{
        body of loop
}
```

III. **do-while** loop -

Syntax:

```
do
{
        body of loop
}
while (condition);
```

Pointers in Java?

- Java does not support or allow pointers that can be accessed or modified by the programmer. This is because doing so would allow Java programs to breach the firewall between the Java execution environment and the host computer as a pointer can be given any address in memory, even addresses that might be outside the Java run-time system.

PROGRAM 2

// To print the given pattern -

```
* * * * *
*       *
*       *
* * * * *
```

// Source Code

```
class Pattern
{
   public static void main(String args[])
   {
      int i,j;

      for(i=1; i<=4; i++)
      {
         for(j=1; j<=5; j++)
         {
            if(i==1 || i==4 || j==1 || j==5)
            {
               System.out.print("* ");
            }
            else
            {
               System.out.print("  ");
            }
         }
         System.out.println();
      }
   }
}
```

Output -

```
* * * * *
*       *
*       *
* * * * *
```