Experiment Number : 03 **Date:**

Control Statements in Java

Aim:

To understand and implement decision-making and looping control statements in Java.

PRE LAB EXERCISE

QUESTIONS

- ✓ List different control statements in Java.

Control statements control the **flow of execution** of a program. They are classified into:

a) Selection (Decision) Statements
If, if–else, else–if ladder, switch
b) Iteration (Looping) Statements
for, while, do–while
c) Jump (Branching) Statements
Break, continue, return

- ✓ Difference between for, while, and do-while loops.

Feature	for loop	while loop	do-while loop
Condition check	Before loop starts	Before loop starts	After loop executes
Executes at least once	❌ No	❌ No	✅ Yes
Best used when	Number of iterations known	Iterations unknown	Loop must run at least once
Example use	Printing 1 to 10	Reading input until condition	Menu-driven programs

- ✓ What is the use of break and continue?
- ✓ `break`: Immediately terminates the loop or switch statement and transfers control outside it.
  `continue`: Skips the current iteration of a loop and continues with the next iteration.

IN LAB EXERCISE

Objective:

To implement if-else and looping statements.

INPUT STATEMENT:

SCANNER CLASS

- ✓ The Scanner class in Java is used to read input from the user through the keyboard. It is available in the package java.util.
- ✓ The Scanner object reads different types of input such as integer, float, double, and string and stores them in variables.
- ✓ To use the Scanner class, it must be imported before using it in the program.

SYNTAX:

- ✓ Scanner sc = new Scanner(System.in);

Commonly Used Scanner Methods:

- ✓ nextInt() – reads an integer value
- ✓ nextFloat() – reads a float value
- ✓ nextDouble() – reads a double value
- ✓ next() – reads a single word
- ✓ nextLine() – reads a complete line of text
- ✓

PROGRAMS:

Program 1: Check Whether a Number is Positive

```
class PositiveNumber {

public static void main(String[] args) {

int n = 5;

if (n > 0) {

System.out.println("Positive Number");

}

}

}
```

Output:

```
PS C:\PRITHI\java files> javac positivenum.java
PS C:\PRITHI\java files> java positivenum.java
Enter n:32
n is positive.
```

Program 2: Check Whether a Number is Even or Odd

```
class EvenOdd {
public static void main(String[] args) {
int n = 6;
if (n % 2 == 0)
System.out.println("Even Number");
else
System.out.println("Odd Number");
}
}
```

Output:

```
PS C:\PRITHI\java files> java evenodd.java
Enter a: 65
a is odd
```

Program 3: Find Largest of Two Numbers

```
class LargestTwo {
public static void main(String[] args) {
int a = 10, b = 20;
if (a > b)
System.out.println("A is largest");
else
System.out.println("B is largest");
}
```

}

Output:

```
PS C:\PRITHI\java files> javac largesttwo.java
PS C:\PRITHI\java files> java largesttwo.java
Enter a: 7
Enter b: 67
b is greater
```

Program 4: Grade Calculation

```
class Grade {
public static void main(String[] args) {
int marks = 75;
if (marks >= 90)
System.out.println("Grade A");
else if (marks >= 75)
System.out.println("Grade B");
else if (marks >= 50)
System.out.println("Grade C");
else
System.out.println("Fail");
}
}
```

Output:

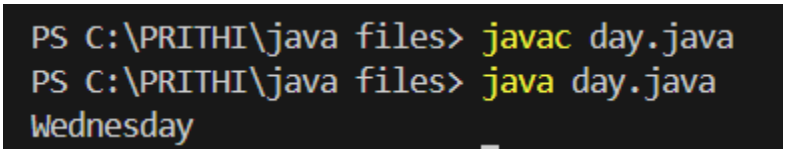
```
PS C:\PRITHI\java files> javac grade.java
PS C:\PRITHI\java files> java grade.java
Grade B
```

Program 5: Day of the Week

```
class DaySwitch {
public static void main(String[] args) {
int day = 3;
```

```
switch (day) {
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;
default: System.out.println("Invalid Day");
}
}
}
```

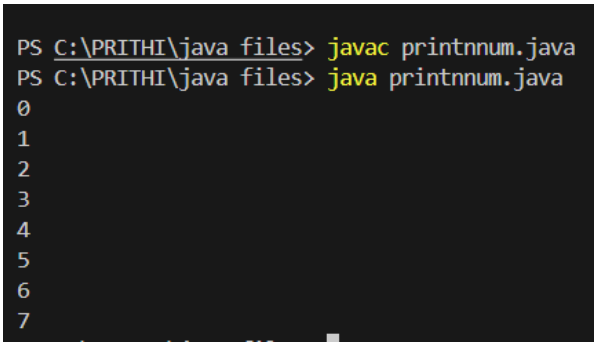
Output:



Program 6: Print Numbers from 1 to 5

```
class ForLoop {
public static void main(String[] args) {
for (int i = 1; i <= 5; i++) {
System.out.println(i);
}
}
}
```

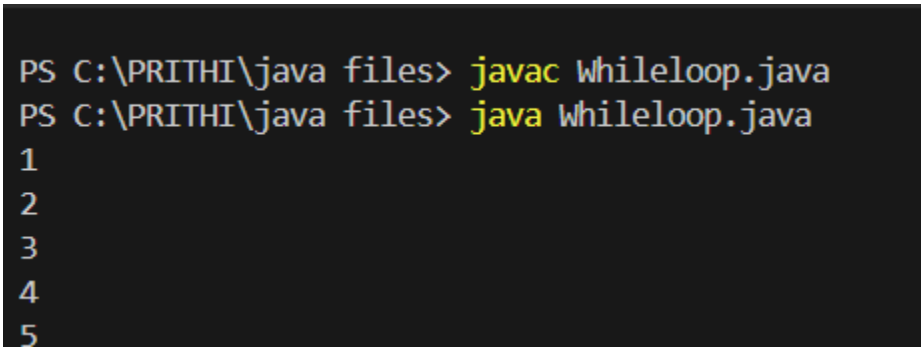
Output:



Program 7: Print Numbers from 1 to 5

```
class WhileLoop {
public static void main(String[] args) {
int i = 1;
while (i <= 5) {
System.out.println(i);
i++;
}
}
}
```

Output:



Program 8: Print Numbers from 1 to 5

```
class DoWhileLoop {
public static void main(String[] args) {
int i = 1;
do {
System.out.println(i);
i++;
} while (i <= 5);
}
}
```

Output:

```
PS C:\PRITHI\java files> javac dowhileloop.java
PS C:\PRITHI\java files> java dowhileloop.java
1
2
3
4
5
6
7
8
```

Program 9: Sum of First 5 Natural Numbers

```
class SumNumbers {
public static void main(String[] args) {
int sum = 0;
for (int i = 1; i <= 5; i++) {
sum = sum + i;
}
System.out.println("Sum = " + sum);
}
}
```

Output:

```
PS C:\PRITHI\java files> javac sumnatural.java
PS C:\PRITHI\java files> java sumnatural.java
Sum: 21
```

Program 10: Multiplication Table of a Number

```
class MultiplicationTable {
public static void main(String[] args) {
int n = 5;
for (int i = 1; i <= 10; i++) {
System.out.println(n + " x " + i + " = " + (n * i));
}
```

}

}

Output:

```
PS C:\PRITHI\java files> javac multiplicationtable.java
PS C:\PRITHI\java files> java multiplicationtable.java
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50
```

POST LAB EXERCISE

- ✓ What is the use of if statement?
  The if statement is used to **execute a block of code when a condition is true**.
- ✓ Difference between if-else and else-if ladder.

if-else	**else-if ladder**
Checks **only two conditions**	Checks **multiple conditions**
Has one if and one else	Has one if and many else if
Used for simple decisions	Used for multiple choices

- ✓ Why is switch statement used?
  The switch statement is used to **select one block of code from many options** based on a single value, making the code **cleaner and easier to read**.

- ✓ Difference between for, while, and do-while loops.

Loop	Condition Check	Use
for	Before loop	When number of iterations is known
while	Before loop	When iterations are not fixed
do-while	After loop	Executes at least once

- ✓ Which loop executes at least once?
  The **do-while loop** executes at least once because the condition is checked **after** the loop body.

Result:

Thus the different control statements were executed successfully with expected output.

ASSESSMENT

Description	Max Marks	Marks Awarded
Pre Lab Exercise	**5**	
In Lab Exercise	**10**	
Post Lab Exercise	**5**	
Viva	**10**	
Total	**30**	
Faculty Signature		