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.
  - Decision making: `if`, `if-else`, `else-if`, `switch`
  - Looping: `for`, `while`, `do-while`
  - Jumping: `break`, `continue`

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

Loop	Condition Check	Use Case
for	Beginning	When iterations are known
while	Beginning	When condition-based looping
do-while	End	Executes at least once

- ✓ What is the use of break and continue?
  - `break` → Stops the loop or switch
  - `continue` → Skips current iteration and moves to next

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:

Positive Number

```java
class PositiveNumber {
public static void main(String[] args) {
int n = 5;
if (n > 0) {
System.out.println("Positive Number");
}
}
}
```

```
Positive Number
```

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:

Even Number

```java
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");
}
}
```

```
Even Number
```

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:

B is largest

```
1   class LargestTwo {
2   public static void main(String[] args) {
3   int a = 10, b = 20;
4   if (a > b)
5   System.out.println("A is largest");
6   else
7   System.out.println("B is largest");
8   }
9   }
```

```
B is largest
```

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:

Grade B

```
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");
}
}
```

```
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:

Wednesday

```
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");
}
}
}
```

```
Wednesday
```

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:

1

2

3

4

5

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

```
1
2
3
4
5
```

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:

1

2

3

4

5

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

```
1
2
3
4
5
```

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:

1

2

3

4

5

```
1   class DoWhileLoop {
2   public static void main(String[] args) {
3   int i = 1;
4   do {
5   System.out.println(i);
6   i++;
7   } while (i <= 5);
8   }
9   }
```

```
1
2
3
4
5
```

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:

Sum = 15

```
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);
}
}
```

```
Sum = 15
```

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:

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

```
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));
}
}
}
```

```
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 only when a condition is true.
- ✓ Difference between if-else and else-if ladder.
  - **if-else**
  - Checks only two conditions
  - **else-if ladder**
  - Checks multiple conditions

- ✓ Why is switch statement used?
  - The switch statement is used to select one block of code among many options based on a variable's value.
- ✓ Difference between for, while, and do-while loops.

Loop	Condition Check	Use Case
for	Beginning	When iterations are known
while	Beginning	When condition-based looping
do-while	End	Executes at least once

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

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	