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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.
Answer: Control statements in Java are used to control the flow of execution of a program. They are:

1. **Decision-making statements**
   o if
   o if-else
   o switch
2. **Looping statements**
   o for
   o while
   o do-while
3. **Jump statements**
   o break
   o continue
   o return

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

Loop	Condition Check	Executes at least once	Usage
for	Before loop	No	When number of iterations is known
while	Before loop	No	When number of iterations is unknown
do-while	After loop	Yes	When loop must run at least once

✓ What is the use of break and continue?
Answer: Break is used to terminate the loop immediately and transfer control outside the loop.
Continue is used to skip the current iteration and continue with the next iteration of the loop.

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
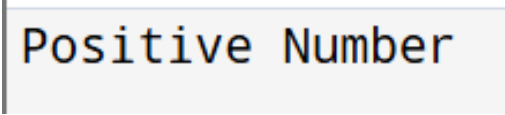✓ nextLine() – reads a complete line of text

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");

}
```

```
}
}
```

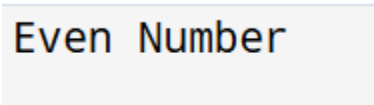**Output:**

```
Positive Number
```

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
```

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
```

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");
}
}
```
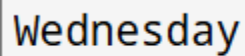
Output:

```
Grade B
```

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;
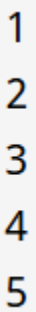
default: System.out.println("Invalid Day");

}

}

}

Output:

```
Wednesday
```

Program 6: Print Numbers from 1 to 5

class ForLoop {

public static void main(String[] args) {

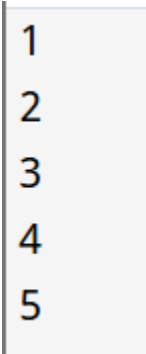for (int i = 1; i <= 5; i++) {

System.out.println(i);

}

}

}

Output:

```
1
2
3
4
5
```

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
```

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
```

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
```

Program 10: Multiplication Table of a Number

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
```

POST LAB EXERCISE

✓ What is the use of if statement?
Answer: The if statement is used to execute a block of code only when a given condition is true.

✓ Difference between if-else and else-if ladder.
Answer: 1.If-else checks one condition and executes either the if block or the else block.
2.Else-if ladder is used to check multiple conditions one by one and execute the block whose condition is true.

✓ Why is switch statement used?
Answer: The switch statement is used to select and execute one block of code from multiple choices based on the value of an expression.

✓ Difference between for, while, and do-while loops.
Answer:
1.For loop is used when the number of iterations is known.
2.While loop is used when the number of iterations is not known.
3.Do-while loop executes the loop body at least once because the condition is checked after execution.

✓ Which loop executes at least once?
Answer: The do-while loop executes at least once.

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		

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