

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.

1.Decision-making statements

- ☐ if
- ☐ if-else
- ☐ else-if
- ☐ switch

2.Looping statements

- ☐ for
- ☐ while
- ☐ do-while

3.Jump 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 ends
Minimum execution	May not execute	May not execute	Executes at least once
Best used when	Number of iterations is known	Iterations not known	Loop must run at least once

- ✓ What is the use of break and continue?

Break:

Used to **terminate the loop or switch statement** immediately.

Continue:

Used to **skip the current iteration** and move to 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:

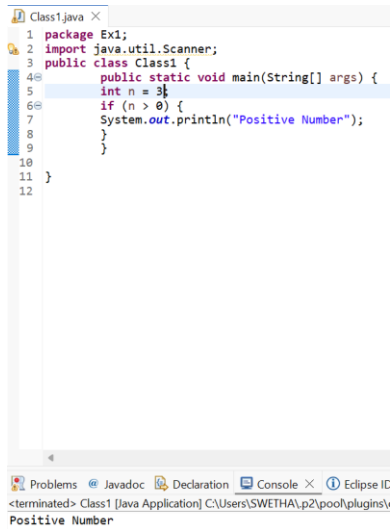
Program 1: Check Whether a Number is Positive

```
class PositiveNumber {  
    public static void main(String[] args) {  
        int n = 5;  
        if (n > 0) {
```

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

Output:

Positive Number



```
1 package Ex1;  
2 import java.util.Scanner;  
3 public class Class1 {  
4     public static void main(String[] args) {  
5         int n = 3;  
6         if (n > 0) {  
7             System.out.println("Positive Number");  
8         }  
9     }  
10 }  
11 }  
12 }
```

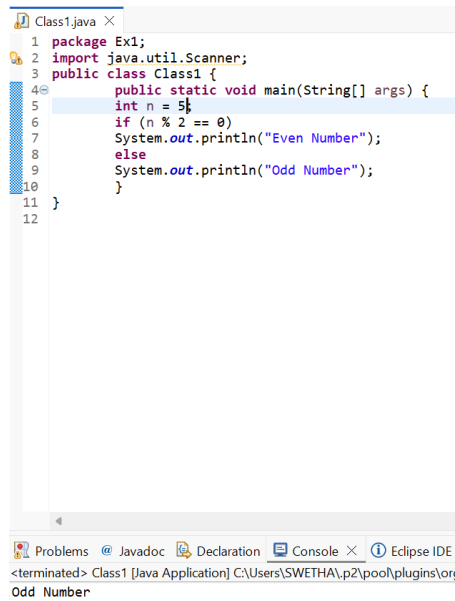
Problems Javadoc Declaration Console × Eclipse IDE
<terminated> Class1 [Java Application] C:\Users\SWETHA\p2\pool\plugins\y
Positive Number

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:

Odd Number



```
1 package Ex1;
2 import java.util.Scanner;
3 public class Class1 {
4     public static void main(String[] args) {
5         int n = 5;
6         if (n % 2 == 0)
7             System.out.println("Even Number");
8         else
9             System.out.println("Odd Number");
10    }
11 }
12
```

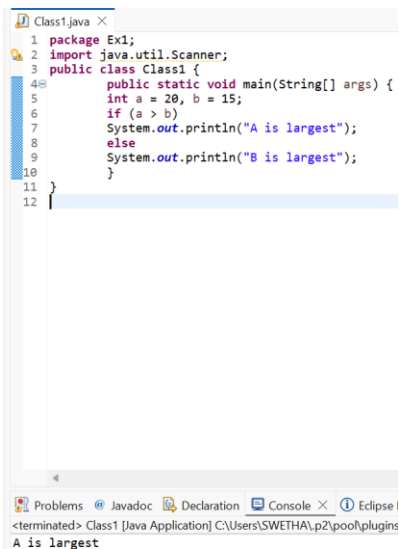
Problems Javadoc Declaration Console Eclipse IDE
<terminated> Class1 [Java Application] C:\Users\SWETHA\p2\pool\plugins\or
Odd Number

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:

A is largest



```
1 package Ex1;
2 import java.util.Scanner;
3 public class Class1 {
4     public static void main(String[] args) {
5         int a = 20, b = 15;
6         if (a > b)
7             System.out.println("A is largest");
8         else
9             System.out.println("B is largest");
10    }
11 }
12
```

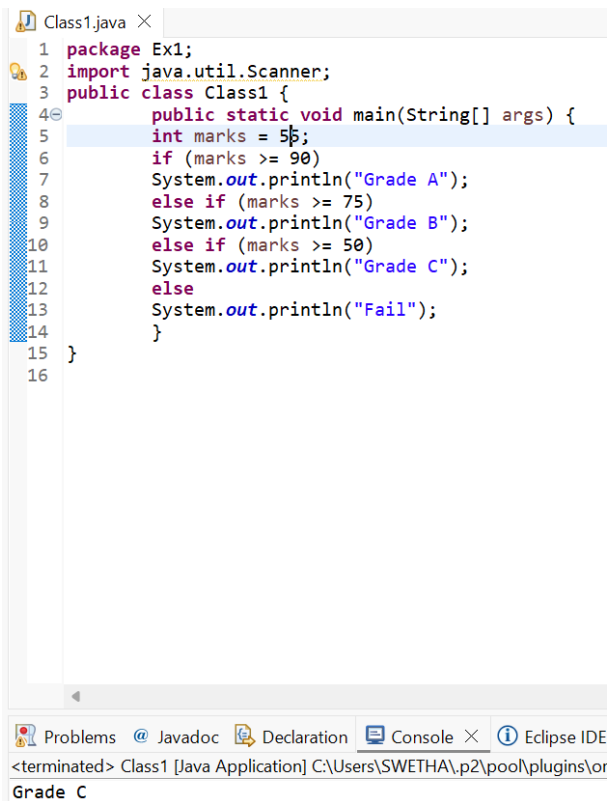
Problems Javadoc Declaration Console Eclipse |
<terminated> Class1 [Java Application] C:\Users\SWETHA\p2\pool\plugins
A is largest

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 C



```
1 package Ex1;
2 import java.util.Scanner;
3 public class Class1 {
4     public static void main(String[] args) {
5         int marks = 55;
6         if (marks >= 90)
7             System.out.println("Grade A");
8         else if (marks >= 75)
9             System.out.println("Grade B");
10        else if (marks >= 50)
11            System.out.println("Grade C");
12        else
13            System.out.println("Fail");
14        }
15    }
16 }
```

<terminated> Class1 [Java Application] C:\Users\SWETHA\.p2\pool\plugins\or
Grade C

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:

Thursday

```
Class1.java ×
1 package Ex1;
2 import java.util.Scanner;
3 public class Class1 {
4     public static void main(String[] args) {
5         int day = 4;
6         switch (day) {
7             case 1: System.out.println("Monday"); break;
8             case 2: System.out.println("Tuesday"); break;
9             case 3: System.out.println("Wednesday"); break;
10            case 4: System.out.println("Thursday"); break;
11            case 5: System.out.println("Friday"); break;
12            default: System.out.println("Invalid Day");
13        }
14    }
15 }
16
```

Problems Javadoc Declaration Console × Eclipse IDE for Java
<terminated> Class1 [Java Application] C:\Users\SWETHA\p2\pool\plugins\org.eclipse

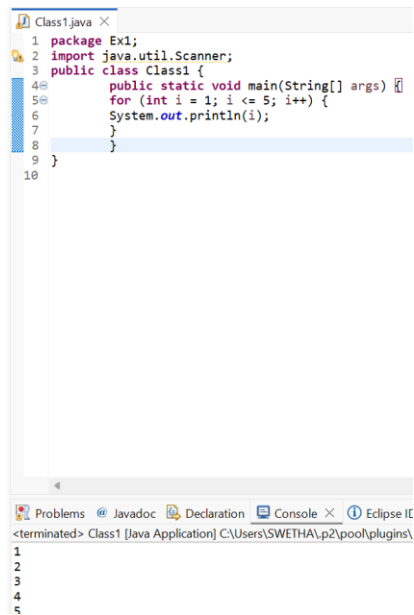
Thursday

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



```
1 package Ex1;
2 import java.util.Scanner;
3 public class Class1 {
4     public static void main(String[] args) {
5         for (int i = 1; i <= 5; i++) {
6             System.out.println(i);
7         }
8     }
9 }
10
```

Problems Javadoc Declaration Console Eclipse IDE
<terminated> Class1 [Java Application] C:\Users\SWETHA\AppData\Local\Temp\plugins\

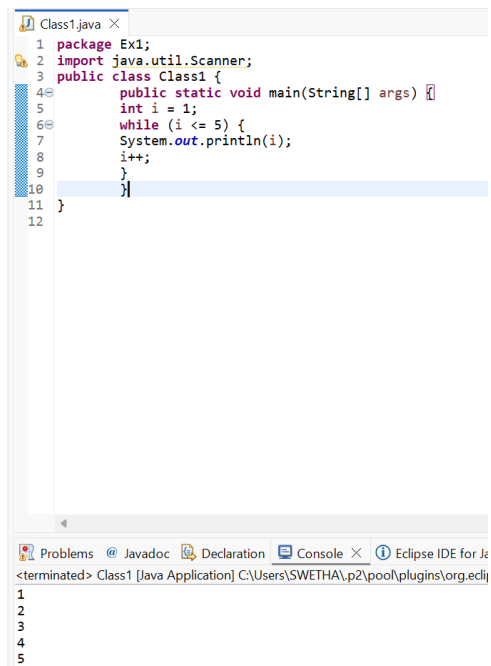
```
1
2
3
4
5
```

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
```



```
1 package Ex1;
2 import java.util.Scanner;
3 public class Class1 {
4     public static void main(String[] args) {
5         int i = 1;
6         while (i <= 5) {
7             System.out.println(i);
8             i++;
9         }
10    }
11 }
12
```

The screenshot shows the Eclipse IDE interface. The top editor window displays the Java code for 'Class1.java'. The code uses a while loop to print numbers from 1 to 5. The bottom console window shows the output of the program, which is the numbers 1 through 5, each on a new line.

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
```

```
Class1.java ×
1 package Ex1;
2 import java.util.Scanner;
3 public class Class1 {
4     public static void main(String[] args) {
5         int i = 1;
6         do {
7             System.out.println(i);
8             i++;
9         } while (i <= 5);
10    }
11 }
12
```

Problems Javadoc Declaration Console × Eclipse IDE for Java Develo
<terminated> Class1 [Java Application] C:\Users\SWETHA\p2\pool\plugins\org.eclipse.justi.oj
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

```
Class1.java ×
1 package Ex1;
2 import java.util.Scanner;
3 public class Class1 {
4     public static void main(String[] args) {
5         int sum = 0;
6         for (int i = 1; i <= 5; i++) {
7             sum = sum + i;
8         }
9         System.out.println("Sum = " + sum);
10    }
11 }
12
```


Problems Javadoc Declaration Console × Eclipse IDE for
<terminated> Class1 [Java Application] C:\Users\SWETHA\p2\pool\plugins\org.e
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



The screenshot shows an IDE with two panels. The top panel displays the Java code for the multiplication table program. The code is as follows:

```
1 package Ex1;  
2 import java.util.Scanner;  
3 public class Class1 {  
4     public static void main(String[] args) {  
5         int n = 5;  
6         for (int i = 1; i <= 10; i++) {  
7             System.out.println(n + " x " + i + " = " + (n * i));  
8         }  
9     }  
10 }  
11
```

The bottom panel shows the output of the program, which is a multiplication table for the number 5:

```
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
```

POST LAB EXERCISE

- ✓ What is the use of if statement?

The **if statement** is used to **test a condition** and execute a block of code **only if the condition is true**.

- ✓ Difference between if-else and else-if ladder.

if-else

Checks **one condition**

Has only two blocks

Used for simple decisions

Example: pass or fail

else-if ladder

Checks **multiple conditions**

Has multiple conditions

Used for multiple choices

Example: grade system

- ✓ Why is switch statement used?

The **switch statement** is used to **select one block of code from many options** based on the value of a variable or expression.

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

Feature	for	while	do-while
Condition check	Before loop	Before loop	After loop
Minimum execution	Zero times	Zero times	At least once
Best used when	Iterations known	Iterations unknown	Must run once

- ✓ Which loop executes at least once?

The **do-while loop** executes **at least once** because the condition is checked **after** executing 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		