# Implementing Java Control Statements and Loops

Assigment – 1 | SEM – 2

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BATCH: 1

1. Given an integer, n, perform the following conditional actions:

· If n is odd, print Weird

· If n is even and in the inclusive range of 2 to 5, print Not Weird

· If n is even and in the inclusive range of 6 to 20, print Weird

· If n is even and greater than 20, print Not Weird

CODE

```
import java.util.*;

public class Weird
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        if (n % 2 == 1 || (n >= 6 && n <= 20))
        {
            System.out.println("Weird");
        }
        else
        {
            System.out.println("Not Weird");
        }
    }
}
```

OUTPUT

```
C:\Users\ayush\Desktop\JAVA_assignment>java Weird
4
Not Weird

C:\Users\ayush\Desktop\JAVA_assignment>javac Weird.java

C:\Users\ayush\Desktop\JAVA_assignment>java Weird
19
Weird
```

2. WAP to find largest of 3 numbers using nested if else and nested ternary operator.

CODE – Nested if-else

```
import java.util.*;

public class LargestNumber {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter 3 numbers:");
        int num1 = sc.nextInt();
        int num2 = sc.nextInt();
        int num3 = sc.nextInt();

        if (num1 >= num2) {
            if (num1 >= num3)
                System.out.println(num1 + " is the largest number.");
            else
                System.out.println(num3 + " is the largest number.");
        } else {
            if (num2 >= num3)
                System.out.println(num2 + " is the largest number.");
            else
                System.out.println(num3 + " is the largest number.");
        }
    }
}
```

OUTPUT

```
C:\Users\ayush\Desktop\JAVA_assignment>javac LargestNumber.java

C:\Users\ayush\Desktop\JAVA_assignment>java LargestNumber
Enter 3 numbers:
10 20 30
30 is the largest number.
```

CODE – using Ternary Operator

```
import java.util.*;

public class LargestNumber {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter 3 numbers:");
        int num1 = sc.nextInt();
        int num2 = sc.nextInt();
        int num3 = sc.nextInt();

        int largest = (num1 > num2) ? ((num1 > num3) ? num1 : num3) : ((num2 > num3) ? num2 : num3);

        System.out.println(largest + " is the largest number.");
    }
}
```

OUTPUT

```
C:\Users\ayush\Desktop\JAVA_assignment>javac LargestNumber.java

C:\Users\ayush\Desktop\JAVA_assignment>java LargestNumber
Enter 3 numbers:
10 20 30
30 is the largest number.
```

3. Write a Java program that reads a positive integer from command line and count the number of digits the number (less than ten billion) has.

CODE

```java
import java.util.*;

public class CountDigits {
    public static void main(String[] args) {
        long n = Long.parseLong(args[0]);
        int count = 0;
        while (n > 0) {
            n /= 10;
            count++;
        }
        System.out.println("The number has " + count + " digits.");
    }
}
```

OUTPUT

```
C:\Users\ayush\Desktop\JAVA_assignment>javac CountDigits.java

C:\Users\ayush\Desktop\JAVA_assignment>java CountDigits 1234567890
The number has 10 digits.
```

4. Write a menu driven program using switch case to perform mathematical operations.

CODE

```
import java.util.*;
public class MathOperations {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int choice;
        double num1, num2, result;
        while (true) {
            System.out.println("MENU:");
            System.out.println("1. Addition");
            System.out.println("2. Subtraction");
            System.out.println("3. Multiplication");
            System.out.println("4. Division");
            System.out.println("5. Exit");
            System.out.print("Enter your choice: ");
            choice = sc.nextInt();
            if (choice == 5) {
                System.out.println("Exiting...");
                break;
            }
            System.out.print("Enter first number: ");
            num1 = sc.nextDouble();
            System.out.print("Enter second number: ");
            num2 = sc.nextDouble();
            switch (choice) {
                case 1:
                    result = num1 + num2;
                    System.out.println("Result: " + result);
                    break;
                case 2:
                    result = num1 - num2;
                    System.out.println("Result: " + result);
                    break;
                case 3:
                    result = num1 * num2;
                    System.out.println("Result: " + result);
                    break;
                case 4:
                    if (num2 == 0) {
                        System.out.println("Error: division by zero");
                    } else {
                        result = num1 / num2;
                        System.out.println("Result: " + result);
                    }
                    break;
                default:
                    System.out.println("Invalid choice!");
            }
            System.out.println();
        }
    }
}
```

OUTPUT

```
C:\Users\ayush\Desktop\JAVA_assignment>javac MathOperations.java

C:\Users\ayush\Desktop\JAVA_assignment>java MathOperations
MENU:
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Exit
Enter your choice: 1
Enter first number: 10
Enter second number: 5
Result: 15.0
```

```
MENU:
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Exit
Enter your choice: 2
Enter first number: 10
Enter second number: 5
Result: 5.0
```

```
MENU:
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Exit
Enter your choice: 2
Enter first number: 10
Enter second number: 5
Result: 5.0
```

```
MENU:
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Exit
Enter your choice: 4
Enter first number: 10
Enter second number: 5
Result: 2.0
```

```
MENU:
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Exit
Enter your choice: 5
Exiting...
```

5. WAP to find grade of student from input marks using if else ladder and switch case.

CODE

```java
import java.util.*;
public class GradeCalculator {

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter marks: ");
        int marks = sc.nextInt();
        System.out.print("Grade using if-else ladder: ");
        if (marks >= 90) {
            System.out.println("A+");
        } else if (marks >= 80) {
            System.out.println("A");
        } else if (marks >= 70) {
            System.out.println("B");
        } else if (marks >= 60) {
            System.out.println("C");
        } else if (marks >= 50) {
            System.out.println("D");
        } else {
            System.out.println("F");
        }

        System.out.print("Grade using switch case: ");
        int grade = marks / 10;
        switch (grade) {
            case 10:
            case 9:
                System.out.println("A+");
                break;
            case 8:
                System.out.println("A");
                break;
            case 7:
                System.out.println("B");
                break;
            case 6:
                System.out.println("C");
                break;
            case 5:
                System.out.println("D");
                break;
            default:
                System.out.println("F");
                break;
        }
    }
}
```

OUTPUT

```
C:\Users\ayush\Desktop\JAVA_assignment>javac GradeCalculator.java

C:\Users\ayush\Desktop\JAVA_assignment>java GradeCalculator
Enter marks: 95
Grade using if-else ladder: A+
Grade using switch case: A+
```

6. WAP to print the sum of following series 1+1/2^2+1/3^2+1/4^2……+1/n^2

CODE

```
import java.util.*;

public class SeriesSum {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the value of n: ");
        int n = sc.nextInt();

        double sum = 0.0;
        for (int i = 1; i <= n; i++) {
            sum += 1.0 / (i * i);
        }

        System.out.println("Sum of the series: " + sum);
    }
}
```

OUTPUT

```
C:\Users\ayush\Desktop\JAVA_assignment>javac SeriesSum.java

C:\Users\ayush\Desktop\JAVA_assignment>java SeriesSum
Enter the value of n: 5
Sum of the series: 1.4636111111111112
```

7. WAP to display the following patterns:

```
1
2 1
1 2 3
4 3 2 1
1 2 3 4 5
6 5 4 3 2 1
1 2 3 4 5 6 7
```

CODE

```
import java.util.*;

public class Pattern1 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();

        for (int i = 1; i <= n; i++) {
            for (int j = i; j >= 1; j--) {
                System.out.print(j + " ");
            }
            for (int j = 2; j <= i; j++) {
                System.out.print(j + " ");
            }
            System.out.println();
        }
    }
}
```

OUTPUT

```
C:\Users\ayush\Desktop\JAVA_assignment>javac Pattern1.java

C:\Users\ayush\Desktop\JAVA_assignment>java Pattern1
7
1
2 1 2
3 2 1 2 3
4 3 2 1 2 3 4
5 4 3 2 1 2 3 4 5
6 5 4 3 2 1 2 3 4 5 6
7 6 5 4 3 2 1 2 3 4 5 6 7
```

A
CB
FED
JIHG

CODE

```
import java.util.*;
public class Pattern2
{
	public static void main(String[] args)
	{
		int i,j,k,c=65,l=65;

		Scanner sc=new Scanner(System.in);
			System.out.println("Enter number of rows:");
		k=sc.nextInt();		for(i=1;i<=k;i++)
		{
			for(j=1;j<=k-i;j++)
			{
				System.out.print("  ");

			}
			for(j=1;j<=i;j++)
			{
				System.out.print((char)(c)+" ");
				c--;

			}
			l=l+i+1;
			c=l;
			System.out.println();
		}
	}
}
```

OUTPUT

```
C:\Users\ayush\Desktop\JAVA_assignment>javac Pattern2.java

C:\Users\ayush\Desktop\JAVA_assignment>java Pattern2
Enter number of rows:
4
      A
    C B
  F E D
J I H G
```