# Problem Solving Activities Day 1 – 24/06/2025

## 1. Input & Output Practice

**Problem Statement 1 :-**
Write a program that takes your name and age as input and prints a greeting like:
"Hello John, you are 20 years old."

- **Algorithm:**

1. Start
2. Take input for name -> **STRING**
3. Take input for age -> **INT**
4. Print the greeting message using both
5. End

- **Pseudocode:**

START
 INPUT name
 INPUT age
 PRINT "Hello " + name + ", you are " + age + " years old."
END

- **Java Program:**

NameAge.java

Share Run

```java
import java.util.Scanner;

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

        System.out.print("Enter your name: ");
        String name = sc.nextLine();

        System.out.print("Enter your age: ");
        int age = sc.nextInt();

        System.out.println("Hello " + name + ", you are " + age + " years old.");
    }
}
```

- Test Cases:

```
Output

Enter your name: Shrayanth S
Enter your age: 23
Hello Shrayanth S, you are 23 years old.

=== Code Execution Successful ===
```

```
Output

Enter your name: Ramith Surya
Enter your age: 31
Hello Ramith Surya, you are 31 years old.

=== Code Execution Successful ===
```

## 2. Type Conversion Challenge

**Problem Statement 2 :**
Take two numbers as input (strings), convert them to integers, and print their sum, difference, and product.

- Algorithm:
  1. Start
     2. Take two inputs as strings from the user.
     3. Remove any quotes and trim whitespaces.
     4. Convert the cleaned strings to integers using Integer.parseInt().
     5. Calculate sum, difference, and product.
     6. Print the results.
     7. If any input is invalid, catch the exception and print an error message.
     8. End

- **Pseudocode:**

START
 INPUT string1
 INPUT string2
 REMOVE quotes from string1 and string2
 CONVERT string1 and string2 to integers
 COMPUTE sum = num1 + num2
 COMPUTE difference = num1 - num2
 COMPUTE product = num1 * num2
 PRINT sum, difference, product
 IF conversion fails THEN
  PRINT error message
END

- **Java Program:**

TypeConversion.java

Share Run

```java
import java.util.Scanner;

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

        System.out.print("Enter first number: ");
        String str1 = sc.nextLine();

        System.out.print("Enter second number: ");
        String str2 = sc.nextLine();

        int num1 = Integer.parseInt(str1);
        int num2 = Integer.parseInt(str2);

        System.out.println("Sum: " + (num1 + num2));
        System.out.println("Difference: " + (num1 - num2));
        System.out.println("Product: " + (num1 * num2));
    }
}
```

- **Test Cases:**

Output

```
Enter first number (as string): "5"
Enter second number (as string): "4"
Sum: 9
Difference: 1
Product: 20

=== Code Execution Successful ===
```

Output

```
Enter first number (as string): "87"
Enter second number (as string): "447"
Sum: 534
Difference: -360
Product: 38889

=== Code Execution Successful ===
```

Output

```
Enter first number (as string): "hh1"
Enter second number (as string): "44"
ERROR!
Error: Please enter valid integer strings.

=== Code Execution Successful ===
```

## 3.Data Type Classification

**Problem Statement 3 :**

Identify the data type of the following inputs: "123", 123, 123.45, True, "Hello"

- **Algorithm:**

1. Define each value
2. Use appropriate functions to identify its data type
3. Print the data type

- **Pseudocode:**

START
 DEFINE values
 FOR each value:
  PRINT value + " is of type " + type
END

- **Java Program:**

DataTypeClassification.java

Share Run

```java
public class DataTypeClassification {
    public static void main(String[] args) {
        Object[] values = { "123", 123, 123.45, true, "Hello" };

        for (Object val : values) {
            System.out.println(val + " is of type " + val.getClass().getSimpleName
                ());
        }
    }
}
```

**Output:**

Output

```
123 is of type String
123 is of type Integer
123.45 is of type Double
true is of type Boolean
Hello is of type String
```

## 4. Temperature Converter

**Problem Statement 4:**

Write a program that converts Celsius to Fahrenheit using the formula: F = (C * 9/5) + 32

**Algorithm:**

1. Start
2. Input temperature in Celsius
3. Apply formula: Fahrenheit = (Celsius * 9/5) + 32
4. Print result
5. End

**Pseudocode:**

START
 INPUT celsius
 fahrenheit = (celsius * 9 / 5) + 32
 PRINT fahrenheit
END

**Java Program:**

TemperatureConverter.java

Share Run

```java
import java.util.Scanner;

public class TemperatureConverter {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter temperature in Celsius: ");
        double celsius = sc.nextDouble();

        double fahrenheit = (celsius * 9 / 5) + 32;
        System.out.println("Temperature in Fahrenheit: " + fahrenheit);
    }
}
```

**OUTPUT:**

Output

```
Enter temperature in Celsius: 36
Temperature in Fahrenheit: 96.8

=== Code Execution Successful ===
```

Output

```
Enter temperature in Celsius: 52.6
Temperature in Fahrenheit: 126.68

=== Code Execution Successful ===
```

# 5. Simple Calculator

**Problem Statement 5:**

Create a basic calculator that performs +, -, *, and / between two user-provided numbers.

**Algorithm:**

1. Start
   2. Input two numbers and operator
   3. Perform operation based on operator
   4. Print result
   5. End

**Pseudocode:**

```
START
  INPUT num1, operator, num2
  SWITCH(operator)
    CASE '+': result = num1 + num2
    CASE '-': result = num1 - num2
    CASE '*': result = num1 * num2
    CASE '/': result = num1 / num2
  PRINT result
END
```

**Program:**

SimpleCalculator.java

```java
import java.util.Scanner;

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

        System.out.print("Enter first number: ");
        double num1 = sc.nextDouble();

        System.out.print("Enter an operator (+, -, *, /): ");
        char operator = sc.next().charAt(0);

        System.out.print("Enter second number: ");
        double num2 = sc.nextDouble();

        double result;

        switch (operator) {
            case '+':
                result = num1 + num2;
                break;
            case '-':
                result = num1 - num2;
                break;
            case '*':
                result = num1 * num2;
                break;
            case '/':
                if (num2 != 0)
                    result = num1 / num2;
                else {
                    System.out.println("Cannot divide by zero.");
                    return;
                }
                break;
            default:
                System.out.println("Invalid operator!");
                return;
        }

        System.out.println("Result: " + result);
    }
}
```

OUTPUT:

Output

```
Enter first number: 10
Enter an operator (+, -, *, /): +
Enter second number: 5
Result: 15.0

=== Code Execution Successful ===
```

Output

```
Enter first number: 6
Enter an operator (+, -, *, /): -
Enter second number: 2
Result: 4.0

=== Code Execution Successful ===
```

Output

```
Enter first number: 8
Enter an operator (+, -, *, /): *
Enter second number: 5
Result: 40.0

=== Code Execution Successful ===
```

Output

```
Enter first number: 10
Enter an operator (+, -, *, /): /
Enter second number: 2
Result: 5.0

=== Code Execution Successful ===
```

## 6. Even or Odd Checker

**Problem Statement:**
Accept a number from the user and print whether it is even or odd using if-else.

**Algorithm:**

1. Start
2. Input a number
3. Check if number % 2 == 0
4. If true, print "Even", else print "Odd"
5. End

**Pseudocode:**

```
START
 INPUT number
 IF number % 2 == 0 THEN
  PRINT "Even"
 ELSE
  PRINT "Odd"
END
```

**Java Program:**

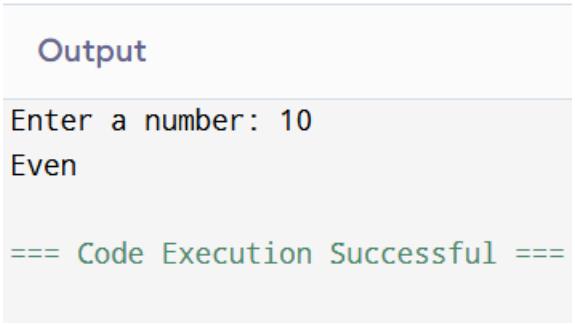
Programiz Online Java Compiler

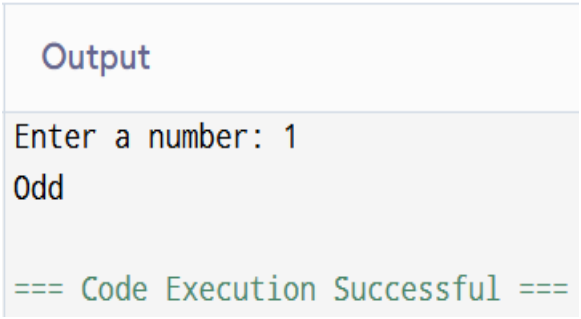
EvenOddChecker.java — Share — Run

```java
import java.util.Scanner;

public class EvenOddChecker {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = sc.nextInt();

        if (num % 2 == 0) {
            System.out.println("Even");
        } else {
            System.out.println("Odd");
        }
    }
}
```




## 7. Grade Calculator

**Problem Statement:**

Based on marks (0–100), print grade using the scale:
A: 90+, B: 80–89, C: 70–79, D: 60–69, F: <60

**Algorithm:**

1. Start
2. Input marks
3. Use if-else to determine grade:
   - If marks >= 90 -> A
   - Else if marks >= 80 -> B
   - Else if marks >= 70 -> C
   - Else if marks >= 60 -> D
   - Else -> F
4. Print grade
5. End

**Pseudocode:**

```
START
  INPUT marks
  IF marks >= 90 THEN PRINT "A"
  ELSE IF marks >= 80 THEN PRINT "B"
  ELSE IF marks >= 70 THEN PRINT "C"
  ELSE IF marks >= 60 THEN PRINT "D"
  ELSE PRINT "F"
END
```

**Java Program:**

GradeCalculator.java

Share Run

```java
import java.util.Scanner;

public class GradeCalculator {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter marks (0-100): ");
        int marks = sc.nextInt();

        if (marks >= 90) {
            System.out.println("Grade: A");
        } else if (marks >= 80) {
            System.out.println("Grade: B");
        } else if (marks >= 70) {
            System.out.println("Grade: C");
        } else if (marks >= 60) {
            System.out.println("Grade: D");
        } else {
            System.out.println("Grade: F");
        }
    }
}
```

**OUTPUT :**

Output

```
Enter marks (0-100): 84
Grade: B

=== Code Execution Successful ===
```

Output

```
Enter marks (0-100): 40
Grade: F

=== Code Execution Successful ===
```

Output

```
Enter marks (0-100): 65
Grade: D

=== Code Execution Successful ===
```

## 8. Number Comparison - Comparator

**Problem Statement:**

Accept two numbers and print which is greater, or if they are equal.

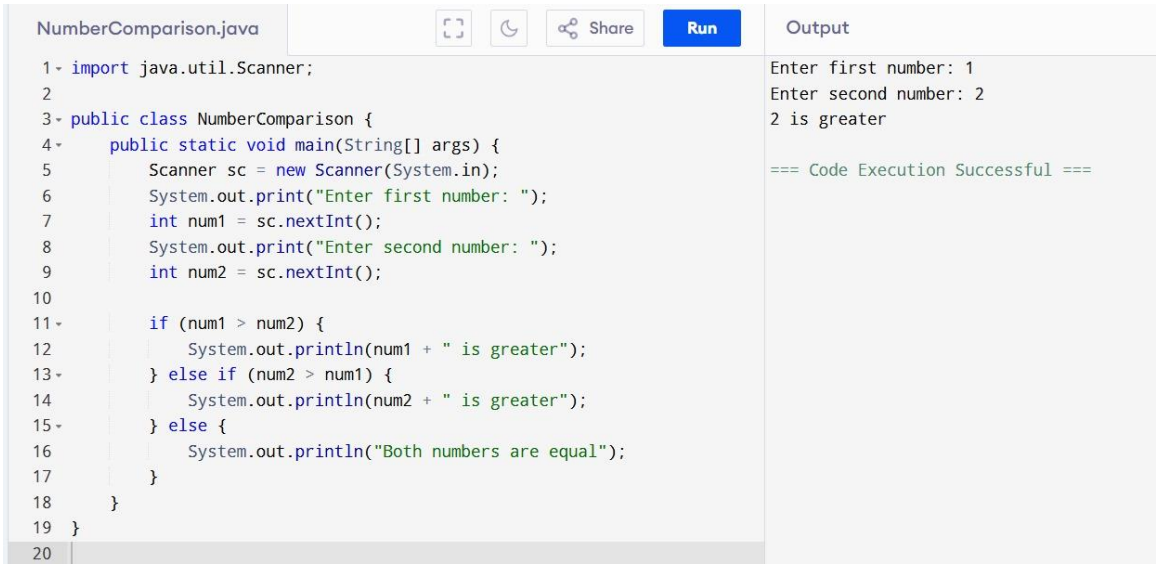
**Algorithm:**

1. Start
2. Accept two integers as input
3. Compare the two numbers
4. Print the result
5. End

**Pseudocode:**

```
START
INPUT num1, num2
IF num1 > num2 THEN
   PRINT "num1 is greater"
ELSE IF num2 > num1 THEN
   PRINT "num2 is greater"
ELSE
   PRINT "Both are equal"
END
```

**Java Program:**



## 9. Countdown Timer - Countdown

**Problem Statement:**
Using a while loop, print numbers from 10 down to 1.

**Algorithm:**
1. Start
2. Set counter = 10
3. While counter ≥ 1
   - Print counter
   - Decrease counter by 1
4. End

**Pseudocode:**
START
SET i = 10
WHILE i ≥ 1 DO
  PRINT i
  i = i - 1
END WHILE
END

**Java Program:**


## 10. Multiplication Table Generator - Multiplier

**Problem Statement:**
Accept a number from the user and print its multiplication table up to 10 using a for loop.

**Algorithm:**
1. Start
2. Accept a number from the user
3. Loop from 1 to 10
4. Multiply the number with loop variable

5. Print the result
6. End

**Pseudocode:**

START
INPUT number
FOR i = 1 TO 10 DO
  result = number * i
  PRINT result
END FOR
END

**Java Program:**