Java Programming Assignment 1

Instructions:

1. **Make sure you follow the problem statement correctly.**
2. **Write clear and concise code with proper indentation.**
3. **Test your programs with given test data to ensure correctness.**
4. **Comment your code to explain the logic or draw flowchart for understanding.**

1. Print 'Hello' and Your Name

Write a Java program to print 'Hello' on the screen and then print your name on a separate line.

Expected Output:

Hello

Alexandra Abramov

Ans-

```
public class HelloName {
    public static void main(String[] args) {
        System.out.println("Hello");
        System.out.println("Alexandra Abramov");
    }
}
```

```
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>javac HelloName.java

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>java HelloName.java
Hello
Alexandra Abramov
```

2. Sum of Two Numbers

Write a Java program to print the sum of two numbers.

Test Data: 74 + 36

Expected Output:

110

Ans-

```
public class SumTwoNumbers {
    public static void main(String[] args) {
        int num1 = 74;
        int num2 = 36;
        int sum = num1 + num2;
        System.out.println(sum);
    }
}
```

```
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>javac SumTwoNumbers.java

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>java SumTwoNumbers.java
110

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>
```

3. Divide Two Numbers

Write a Java program to divide two numbers and print the result on the screen.

Test Data: 50 / 3

Expected Output:

16

Ans-

```
public class DivideTwoNumbers {
    public static void main(String[] args) {
        int num1 = 50;
        int num2 = 3;

        int result = num1 / num2;

        System.out.println(result);
    }
}
```

```
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>javac DivideTwoNumbers.java

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>java DivideTwoNumbers.java
16

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>
```

4. Perform Arithmetic Operations

Write a Java program to print the result of the following operations.

Test Data:

a. -5 + 8 * 6
b. (55 + 9) % 9
c. 20 + -3 * 5 / 8
d. 5 + 15 / 3 * 2 - 8 % 3

Expected Output:

43

1

19

13

Ans-

```
public class ArithmeticOperations {
    public static void main(String[] args) {
        // a. -5 + 8 * 6
        System.out.println(-5 + 8 * 6); // 43

        // b. (55 + 9) % 9
        System.out.println((55 + 9) % 9); // 64 % 9 = 1

        // c. 20 + -3 * 5 / 8
        System.out.println(20 + -3 * 5 / 8); // 19

        // d. 5 + 15 / 3 * 2 - 8 % 3
        // 15 / 3 = 5, 5 * 2 = 10, 8 % 3 = 2, so 5 + 10 - 2 = 13
        System.out.println(5 + 15 / 3 * 2 - 8 % 3); // 13
    }
}
```

```
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>javac ArithmeticOperations.java

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>java ArithmeticOperations.java
43
1
19
13

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>
```

5. Multiply Two Numbers

Write a Java program that takes two numbers as input and displays the product of the two numbers.

Test Data:

- **Input first number: 25**
- **Input second number: 5**

Expected Output:

25 x 5 = 125

Ans

```
import java.util.Scanner;

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

        System.out.print("Input first number: ");
        int num1 = sc.nextInt();

        System.out.print("Input second number: ");
        int num2 = sc.nextInt();

        int product = num1 * num2;
        System.out.println(num1 + " x " + num2 + " = " + product);

    }
}
```

```
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>javac MultiplyTwoNumbers.java

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>java MultiplyTwoNumbers.java
Input first number: 25
Input second number: 5
25 x 5 = 125

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>
```

6. Basic Arithmetic Operations

Write a Java program to print the sum, multiplication, subtraction, division, and remainder of two numbers.

Test Data:

- **Input first number: 125**
- **Input second number: 24**

Expected Output:

125 + 24 = 149

125 - 24 = 101

125 x 24 = 3000

125 / 24 = 5

125 mod 24 = 5

Ans

```
import java.util.Scanner;

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

        System.out.print("Input first number: ");
        int num1 = sc.nextInt();

        System.out.print("Input second number: ");
        int num2 = sc.nextInt();

        // Addition
        int sum = num1 + num2;
        // Subtraction
        int difference = num1 - num2;
        // Multiplication
        int product = num1 * num2;
        // Division (integer division)
        int quotient = num1 / num2;
        // Remainder (modulus)
        int remainder = num1 % num2;

        // Print results
        System.out.println(num1 + " + " + num2 + " = " + sum);
        System.out.println(num1 + " - " + num2 + " = " + difference);
        System.out.println(num1 + " x " + num2 + " = " + product);
        System.out.println(num1 + " / " + num2 + " = " + quotient);
        System.out.println(num1 + " mod " + num2 + " = " + remainder);

    }
}
```

```
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>javac BasicArithmeticOperations.java

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>java BasicArithmeticOperations.java
Input first number: 125
Input second number: 24
125 + 24 = 149
125 - 24 = 101
125 x 24 = 3000
125 / 24 = 5
125 mod 24 = 5

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>
```

7. Multiplication Table

Write a Java program that takes a number as input and prints its multiplication table up to 10.

Test Data:

- **Input a number: 8**

Expected Output:

8 x 1 = 8

8 x 2 = 16

8 x 3 = 24

8 x 4 = 32

8 x 5 = 40

8 x 6 = 48

8 x 7 = 56

8 x 8 = 64

8 x 9 = 72

8 x 10 = 80

Ans-

```
import java.util.Scanner;

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

        System.out.print("Input a number: ");
        int number = scanner.nextInt();

        for (int i = 1; i <= 10; i++) {
            System.out.println(number + " x " + i + " = " + (number * i));
        }

    }
}
```

```
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>javac MultiplicationTable.java

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>java MultiplicationTable.java
Input a number: 8
8 x 1 = 8
8 x 2 = 16
8 x 3 = 24
8 x 4 = 32
8 x 5 = 40
8 x 6 = 48
8 x 7 = 56
8 x 8 = 64
8 x 9 = 72
8 x 10 = 80

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>
```

8. Swap Two Numbers

Write a Java program to swap the values of two variables without using a third variable.

Test Data:

- **Input first number: 10**
- **Input second number: 20**

Expected Output:

Before swapping:

First number: 10

Second number: 20

After swapping:

First number: 20

Second number: 10

Ans-

```
public class SwapNumbers {
    public static void main(String[] args) {
        int first = 10, second = 20;

        System.out.println("Before swapping:");
        System.out.println("First number: " + first);
        System.out.println("Second number: " + second);

        // Swapping without a third variable
        first = first + second;
        second = first - second;
        first = first - second;

        System.out.println("\nAfter swapping:");
        System.out.println("First number: " + first);
        System.out.println("Second number: " + second);
    }
}
```

```
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>javac SwapNumbers.java

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>java SwapNumbers.java
Before swapping:
First number: 10
Second number: 20

After swapping:
First number: 20
Second number: 10

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>
```

9. Calculate the Area of a Circle

Write a Java program that calculates the area of a circle.

Test Data:

- **Input the radius: 7**

Formula: Area = π * radius²

Expected Output:

Area of the circle: 153.93804

Ans-

```
public class CircleArea {
    public static void main(String[] args) {
        double radius = 7;
        double area = 3.14* radius * radius; // Area formula: π * r^2

        System.out.printf("Area of the circle: %.2f", area);
    }
}
```

```
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>javac CircleArea.java

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>java CircleArea.java
Area of the circle: 153.86
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>
```

10. Check If a Number Is Even or Odd

Write a Java program that checks if a number is even or odd.

Test Data:

- **Input a number: 15**

Expected Output:

The number 15 is Odd.

Ans-

```
public class EvenOddCheck {
    public static void main(String[] args) {
        int number = 15;

        if (number % 2 == 0) {
            System.out.println("The number " + number + " is Even.");
        } else {
            System.out.println("The number " + number + " is Odd.");
        }
    }
}
```

```
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>javac EvenOddCheck.java
l
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>java EvenOddCheck.java
The number 15 is Odd.

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>
```

11. Find the Largest of Three Numbers

Write a Java program that takes three numbers as input and finds the largest of the three.

Test Data:

- **Input first number: 12**
- **Input second number: 45**
- **Input third number: 22**

Expected Output:

The largest number is 45.

Ans-

```
public class EvenOddCheck {
    public static void main(String[] args) {
        int number = 15;

        if (number % 2 == 0) {
            System.out.println("The number " + number + " is Even.");
        } else {
            System.out.println("The number " + number + " is Odd.");
        }
    }
}
```

```
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>javac EvenOddCheck.java

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>java EvenOddCheck
The number 15 is Odd.

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>
```

12. Reverse a Number

Write a Java program that takes a number as input and prints the reverse of that number.

Test Data:

- **Input number: 12345**

Expected Output:

The reverse of 12345 is 54321.

Ans-

```
public class ReverseNumber {
    public static void main(String[] args) {
        int n = 12345;
        int temp = n;
        int rev = 0, rem;


        while (temp != 0) {

            rem = temp % 10;

            rev = rev * 10 + rem;

            temp = temp / 10;
        }

        System.out.println("The reverse of " + n + " is " + rev);
    }
}
```

```
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>javac ReverseNumber.java

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>java ReverseNumber.java
The reverse of 12345 is 54321

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>
```

13. Calculate the Average of Three Numbers

Write a Java program to calculate the average of three numbers.

Test Data:

- **Input first number: 20**
- **Input second number: 40**
- **Input third number: 60**

Expected Output:

The average is: 40.0

Ans-

```
public class AverageOfThreeNumbers {
    public static void main(String[] args) {
        int num1 = 20;
        int num2 = 40;
        int num3 = 60;

        double average = (num1 + num2 + num3) / 3.0;

        System.out.println("The average is: " + average);
    }
}
```

```
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>javac AverageOfThreeNumbers.java

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>java AverageOfThreeNumbers.java
The average is: 40.0

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>
```

14. Print the Fibonacci Series

Write a Java program to print the Fibonacci series up to the 10th number.

Expected Output:

0 1 1 2 3 5 8 13 21 34

Ans-

```
public class FibonacciSeries {
    public static void main(String[] args) {
        int n1 = 0, n2 = 1;
        int count = 10;  // We want the first 10 Fibonacci numbers

        System.out.print(n1 + " " + n2 + " ");

        // Starting from 3rd term (since we already printed the first two)
        for(int i = 3; i <= count; i++){
            int n3 = n1 + n2;
            System.out.print(n3 + " ");
            n1 = n2;
            n2 = n3;
        }
    }
}
```

```
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>javac FibonacciSeries.java

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>java FibonacciSeries.java
0 1 1 2 3 5 8 13 21 34
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>
```

15. Find the Factorial of a Number

Write a Java program to find the factorial of a number.

Test Data:

- **Input a number: 5**

Expected Output:

Factorial of 5 is 120.

Ans-

```
public class Factorial {
    public static void main(String[] args) {
        int num = 5;
        int fact = 1;

        for (int i = 1; i <= num; i++) {
            fact = fact * i;
        }

        System.out.println("Factorial of " + num + " is " + fact);
    }
}
```

```
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>javac Factorial.java

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>java Factorial.java
Factorial of 5 is 120

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>
```

16. Check Whether a Number Is Prime

Write a Java program to check whether a number is prime or not.

Test Data:

- **Input number: 17**

Expected Output:

The number 17 is Prime.

Ans-

```
import java.util.Scanner;

public class PrimeNumber {

	public static void main(String[] args) {

		Scanner sc=new Scanner(System.in);
		System.out.println("Enter the number");
		int n=sc.nextInt();

		int temp=0;

		for (int i=2; i<=n-1;i++) {
			if (n%i==0) {
				temp=temp+1;
			}

		}
		if (temp==0) {
			System.out.println("Number is Prime");
		}
		else {
			System.out.println("Number is not prime'");
		}
	}
}
```

```
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>javac PrimeNumber.java

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>java PrimeNumber.java
Enter the number
17
Number is Prime

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>
```

17. Print the First N Natural Numbers

Write a Java program to print the first N natural numbers, where N is provided by the user.

Test Data:

- **Input a number: 6**

Expected Output:

1 2 3 4 5 6

Ans-

```
public class PrintFirstNNaturalNumbers {
    public static void main(String[] args) {
        int n = 6;

        System.out.print("The first " + n + " natural numbers are: ");

        for (int i = 1; i <= n; i++) {
            System.out.print(i + " ");
        }
    }
}
```

```
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>javac PrintFirstNNaturalNumbers.java

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>java PrintFirstNNaturalNumbers.java
The first 6 natural numbers are: 1 2 3 4 5 6
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>
```

18. Convert Celsius to Fahrenheit

Write a Java program to convert a temperature from Celsius to Fahrenheit.

Test Data:

- **Input temperature in Celsius: 25**

Formula: Fahrenheit = (Celsius * 9/5) + 32

Expected Output:

25°C is equal to 77.0°F

Ans-

```
public class CelsiusToFahrenheit {
    public static void main(String[] args) {
        double celsius = 25;
        double fahrenheit = (celsius * 9.0 / 5.0) + 32;

        System.out.println(celsius + "°C is equal to " + fahrenheit + "°F");
    }
}
```

```
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>javac CelsiusToFahrenheit.java

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>java CelsiusToFahrenheit.java
25.0°C is equal to 77.0°F

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>
```

19. Calculate the Power of a Number

Write a Java program that calculates the power of a number. Take two numbers as input: the base and the exponent, and compute the result of base raised to the power of exponent.

Test Data:

- **Input base number: 3**
- **Input exponent number: 4**

Ans-

```
public class PowerOfNumber {
    public static void main(String[] args) {
        int base = 3;
        int exponent = 4;
        long result = 1; // Use long to handle larger results

        for (int i = 1; i <= exponent; i++) {
            result *= base;  // Multiply result by the base in each iteration
        }

        System.out.println(base + " raised to the power of " + exponent + " is: " + result);
    }
}
```

```
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>javac PowerOfNumber.java

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>java PowerOfNumber.java
3 raised to the power of 4 is: 81

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>
```

20. Count the Number of Digits in a Number

Write a Java program that counts the number of digits in a given number.

Test Data:

- **Input number: 123456**

Expected Output:

The number 123456 has 6 digits.

Ans-

```
public class CountDigits {
    public static void main(String[] args) {
        int n = 123456;
        int count = 0;
        int temp = n;

        while (temp != 0) {
            temp = temp / 10;
            count++;

        }

        System.out.println("The number " + n + " has " + count + " digits.");
    }
}
```

```
D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>javac CountDigits.java

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>java CountDigits.java
The number 123456 has 6 digits.

D:\Dac\Java\Day1\JavaProgramming Assignment1\Program>
```