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Java Day 1 and 2 Assignment

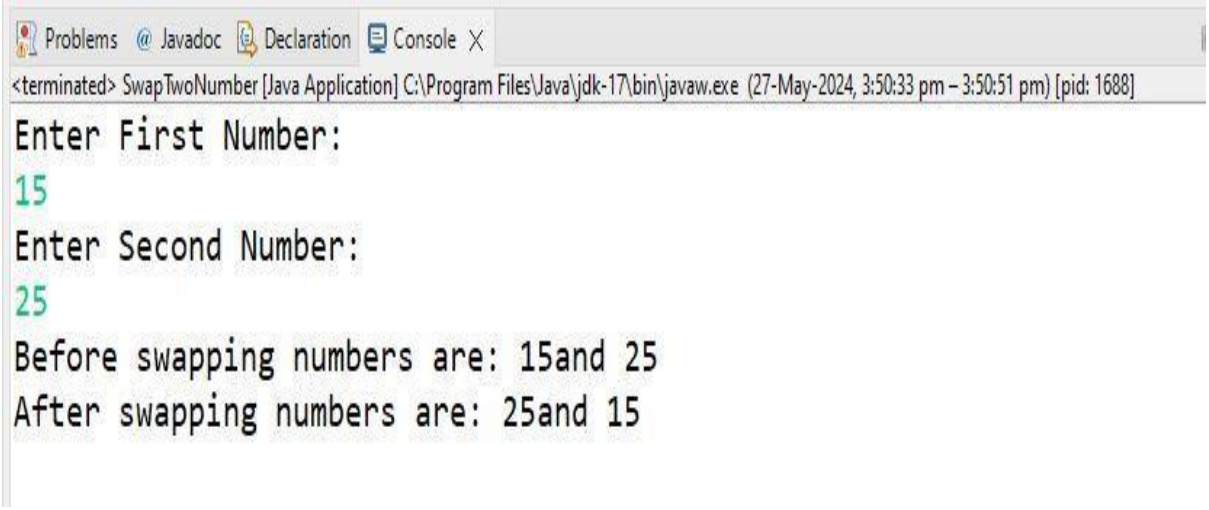
Task – 1:

Write a program that declares two integer variables, swaps their values without using a third variable, and prints the result.

CODE:

```
package com.assignmetns.day1and2;

import java.util.Scanner;

public class SwapTwoNumber {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		Scanner sc = new Scanner(System.in);

		// taking input from user
		System.out.println("Enter First Number: ");
		int firstNum = sc.nextInt();
		System.out.println("Enter Second Number:
");
		int secondNum = sc.nextInt();

		System.out.println("Before swapping numbers
are: " + firstNum + "and " + secondNum);
		// Swapping values of first and second
number
		firstNum = firstNum + secondNum;
		secondNum = firstNum - secondNum;
		firstNum = firstNum - secondNum;

		System.out.println("After swapping numbers
are: " + firstNum + "and " + secondNum);

	}

}
```

OUTPUT:



Task – 2:

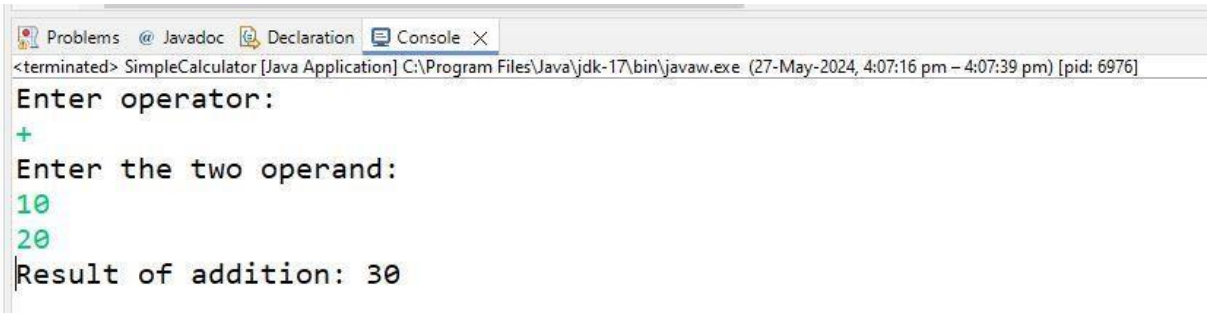
Create a program that simulates a simple calculator using command-line arguments to perform and print the result of addition, subtraction, multiplication, and division.

CODE:

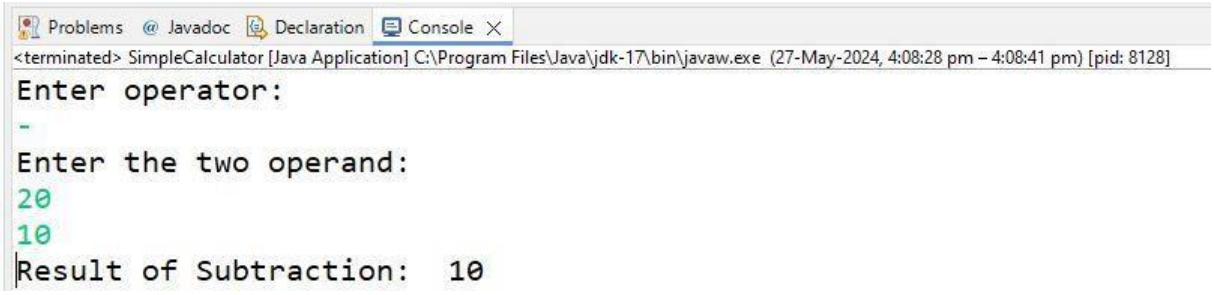
```
package com.assignmetns.day1and2;

import java.util.Scanner;

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

		// taking input from user for operator and two operand
		System.out.println("Enter operator: ");
		char operator = sc.next().charAt(0);

		System.out.println("Enter the two operand:  ");
		int num1 = sc.nextInt();
		int num2 = sc.nextInt();

		switch(operator){
		case '+':
			System.out.println("Result of addition: " + (num1 +
num2));
			break;
		case '-':
			System.out.println("Result of Subtraction:  " +
(num1 - num2));
			break;
		case '*':
			System.out.println("Result of Multiplication: " + (
num1 * num2));
			break;
		case '/':
			if(num2 == 0) {
				System.out.println("Denominator can not be
zero: please recheck!");
			}
			else {
				System.out.println("Result of Division: " +
(num1 / num2));

			}
			break;
		default:
			System.out.println("Wrong input please give correct
input");
		}


	}

}
```

OUTPUT:

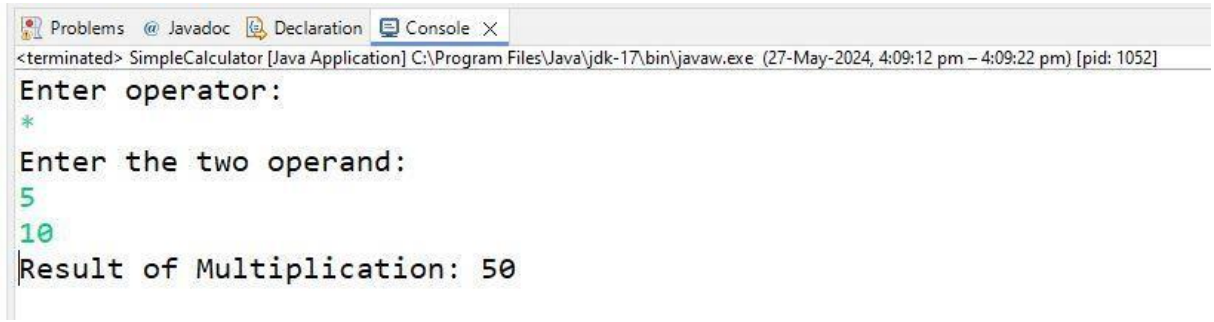
Addition:



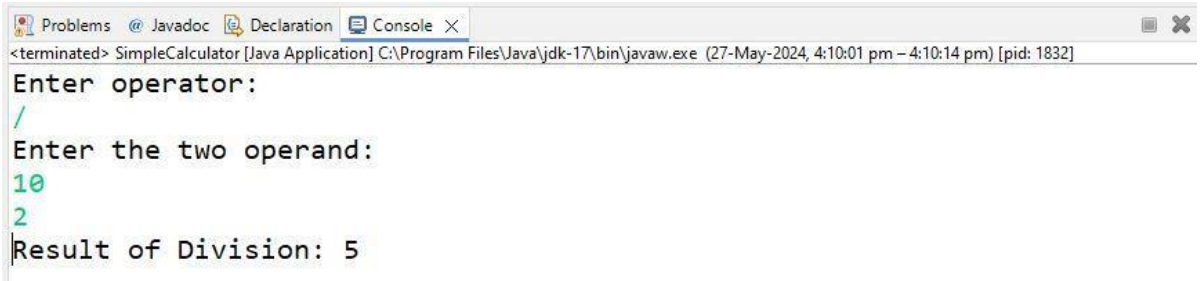
Subtraction:



Multiplication:



Division:



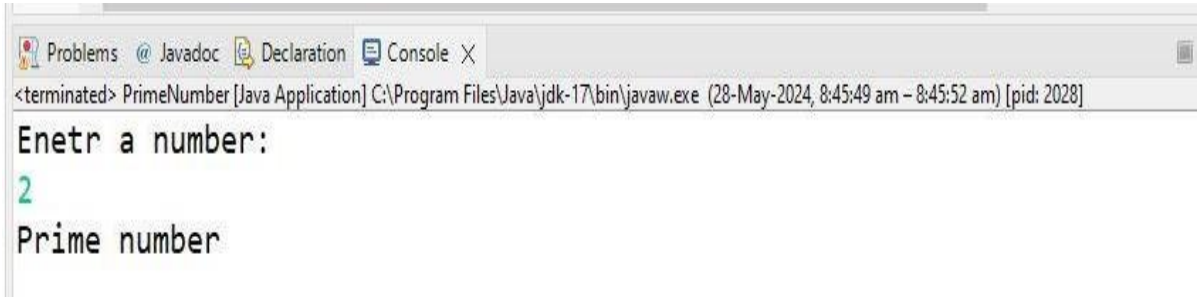
Task – 3:

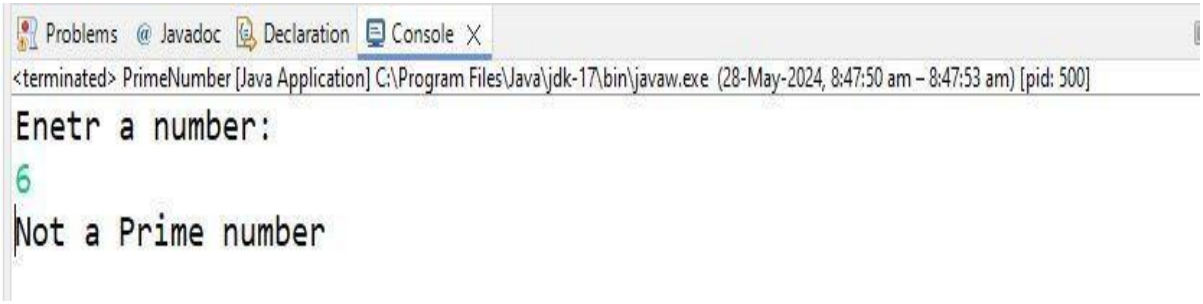
Write a Java program that reads an integer and prints whether it is a prime number using a for loop and if statements.

CODE:

```
package com.assignmetns.day1and2;

import java.util.Scanner;

public class PrimeNumber {

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

		// asking user to Enter a number
		System.out.println("Enetr a number:");
		int num = sc.nextInt();

		for(int i=2;i<=num/2;i++) {
			if(num%i == 0) {
				System.out.println("Not a Prime
number");
				return;
			}
		}
		System.out.println("Prime number");
	}


}
```

OUTPUT:





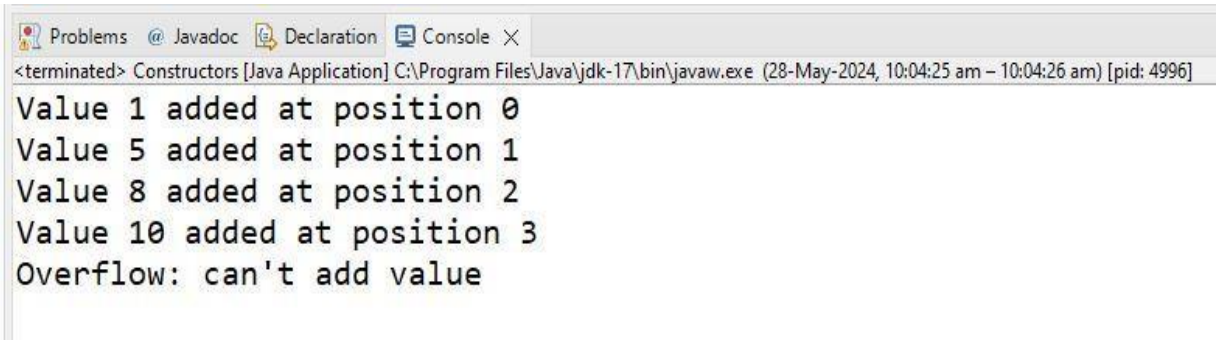
Task – 4:

Implement a Matrix class that has a constructor which initializes the dimensions of a matrix and a method to fill the matrix with values.

CODE:

```java
package com.assignmetns.day1and2;

public class Constructors {
	public static class Matrix{
		int[] mat;
		private int idx = 0;
		// constructor to initialize the dimension of
matrix
		Matrix(int n){
			this.mat = new int[n];
		}

		// Methods to assign value
		public void setMatrixValue(int val) {
			if(this.idx < mat.length) {
				mat[this.idx] = val;
				System.out.println("Value "+val+" added
at position "+this.idx);
				this.idx++;
			}
			else
				System.out.println("Overflow: can't add
value");
		}
	}
	public static void main(String[] args) {
		// creating an object of matrix and initializing
its size as 4;
		Matrix mat = new Matrix(4);
		mat.setMatrixValue(1);
		mat.setMatrixValue(5);
		mat.setMatrixValue(8);
		mat.setMatrixValue(10);
		mat.setMatrixValue(50); // this will throw an
error of overflow


	}

}
```

OUTPUT:



Task – 5:

Inheritance

Create a Shape class with a method area() and extend it with Circle and Rectangle classes overriding the area() method appropriately.

CODE:

```java
package com.assignmetns.day1and2;

public class Inheritance {
	public static class Shape{


		public void area() {
			System.out.println("Shape Class");

		}

	}
	public static class Circle extends Shape{
		public void area(int radius) {
			double ar = 3.14 * radius * radius;
			System.out.println("Circle area is: " + ar);
		}
	}

	public static class Rectangle extends Shape {
		public void area(int len, int width) {
			int ar = len * width;
			System.out.println("Area of Rectangle is : "
+ ar);
		}
	}

	public static void main(String[] args) {
		Shape shape = new Shape();
		shape.area();

		Circle circle = new Circle();
		circle.area(5);

		Rectangle rect = new Rectangle();
		rect.area(5, 10);


	}
}
```

OUTPUT:

Task – 6:

Packages/Classpath

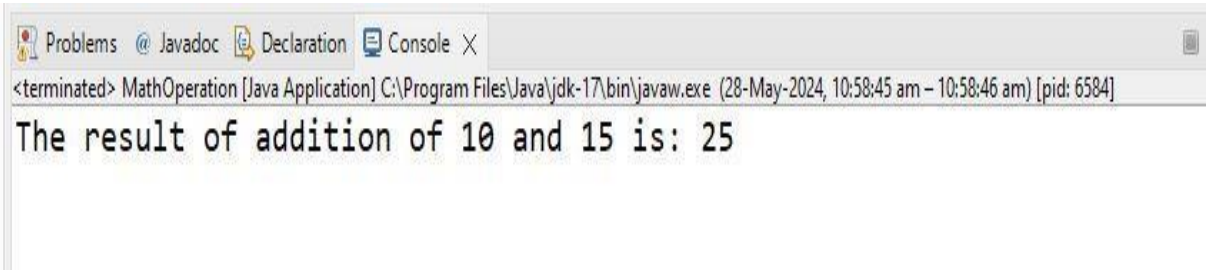
Create a package com.math.operations and include classes for various arithmetic operations. Demonstrate how to compile and run these using the classpath.

CODE:

```
package com.math.operations;

public class Addition {
    public static int add(int num1, int num2) {
        return num1 + num2;
    }
}
```

```java
package com.math.operations;

public class MathOperation {

    public static void main(String[] args) {
        int res = Addition.add(10, 15);
        System.out.println("The result of addition
of 10 and 15 is: " + res);
    }
}
```

OUTPUT:



Task – 7:

Basic Exception Handling

Write a program that attempts to divide by zero, catches the ArithmeticException, and provides a custom error message.

CODE:

```java
package com.assignmetns.day1and2;

public class ExceptionHandeling {
	public static void main(String[] args) {
		try {
			int res = 10/0;
		}
		catch(ArithmeticException e) {
			System.out.println("Custom ERROR: Can't
divide by zero");
			System.out.println(e.toString());
		}
	}
}
```

OUTPUT: