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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();

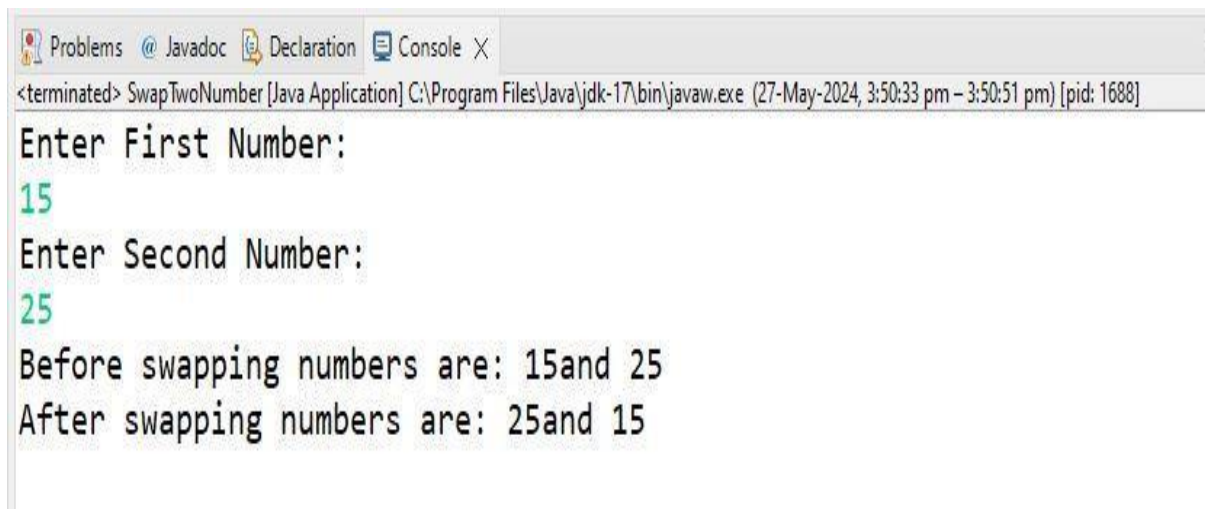
        System.out.println("Before swapping numbers
are: " + firstNum + "and " + secondNum);
        // Swapping values of first and second
number
        firstNum = firstNum + secondNum;
        secondNum = firstNum - secondNum;
        firstNum = firstNum - secondNum;

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

    }

}
```

OUTPUT:



```
Problems @ Javadoc Declaration Console X
<terminated> SwapTwoNumber [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (27-May-2024, 3:50:33 pm – 3:50:51 pm) [pid: 1688]
Enter First Number:
15
Enter Second Number:
25
Before swapping numbers are: 15and 25
After swapping numbers are: 25and 15
```

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:

```
Problems @ Javadoc Declaration Console X
<terminated> SimpleCalculator [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (27-May-2024, 4:07:16 pm – 4:07:39 pm) [pid: 6976]
Enter operator:
+
Enter the two operand:
10
20
Result of addition: 30
```

Subtraction:

```
Problems @ Javadoc Declaration Console X
<terminated> SimpleCalculator [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (27-May-2024, 4:08:28 pm – 4:08:41 pm) [pid: 8128]
Enter operator:
-
Enter the two operand:
20
10
Result of Subtraction: 10
```

Multiplication:

```
Problems @ Javadoc Declaration Console X
<terminated> SimpleCalculator [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (27-May-2024, 4:09:12 pm – 4:09:22 pm) [pid: 1052]
Enter operator:
*
Enter the two operand:
5
10
Result of Multiplication: 50
```

Division:

```
Problems @ Javadoc Declaration Console X
<terminated> SimpleCalculator [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (27-May-2024, 4:10:01 pm – 4:10:14 pm) [pid: 1832]
Enter operator:
/
Enter the two operand:
10
2
Result of Division: 5
```

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 {

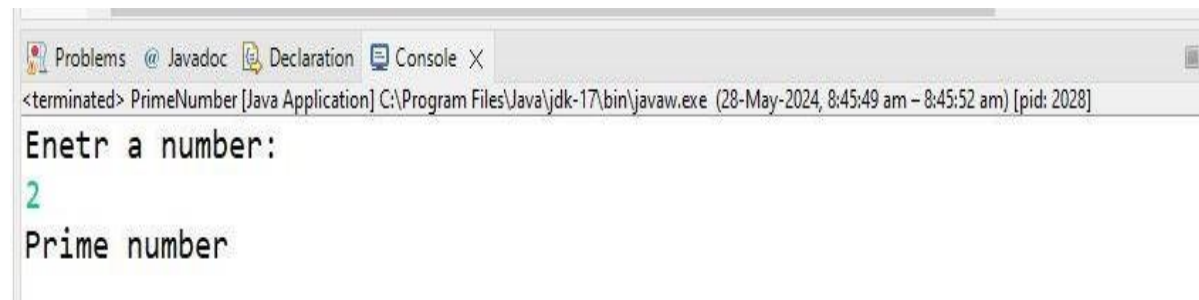
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

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

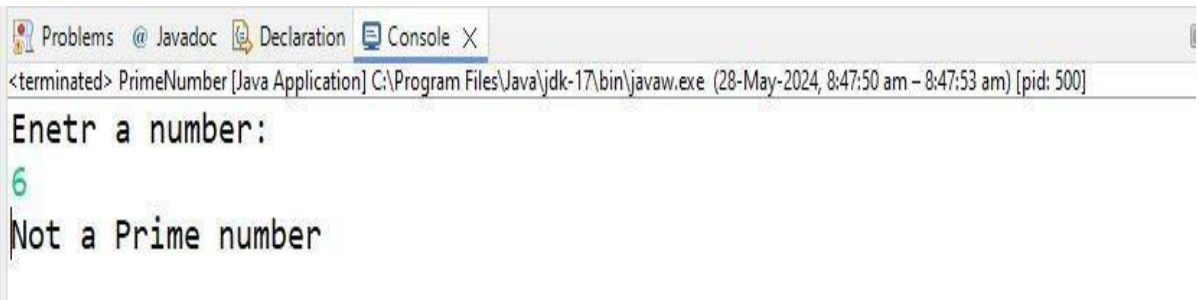
        for(int i=2;i<=num/2;i++) {
            if(num%i == 0) {
                System.out.println("Not a Prime
number");
                return;
            }
        }
        System.out.println("Prime number");
    }

}
```

OUTPUT:



```
<terminated> PrimeNumber [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (28-May-2024, 8:45:49 am - 8:45:52 am) [pid: 2028]
Enetr a number:
2
Prime number
```



```
<terminated> PrimeNumber [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (28-May-2024, 8:47:50 am - 8:47:53 am) [pid: 500]
Enetr a number:
6
Not a Prime number
```

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:

```

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:

```
Problems @ Javadoc Declaration Console X
<terminated> Constructors [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (28-May-2024, 10:04:25 am – 10:04:26 am) [pid: 4996]
Value 1 added at position 0
Value 5 added at position 1
Value 8 added at position 2
Value 10 added at position 3
Overflow: can't add value
```

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:


```

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:



```
<terminated> Inheritance [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (28-May-2024, 10:26:06 am – 10:26:07 am) [pid: 4976]
Shape Class
Circle area is: 78.5
Area of Rectangle is : 50
```

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;

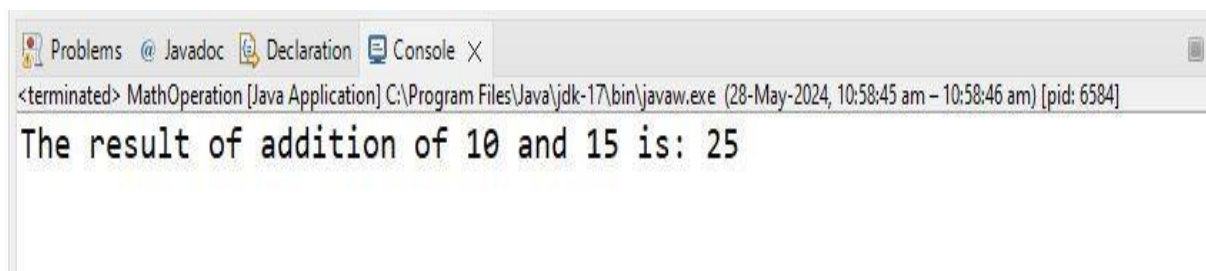
public class Addition {
    public static int add(int num1, int num2) {
        return num1 + num2;
    }
}
```

```
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

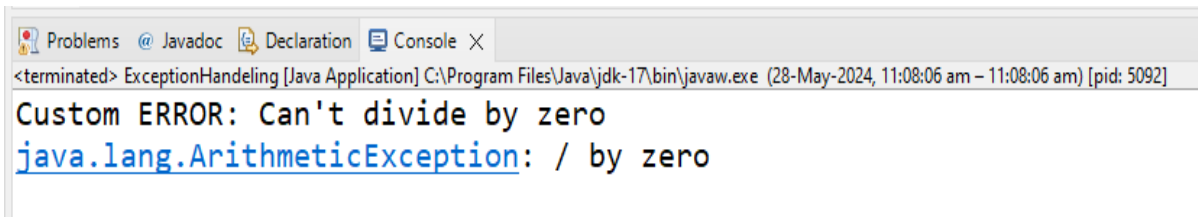
Write a program that attempts to divide by zero, catches the `ArithmeticException`, and provides a custom error message.

CODE:

```
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:



```
<terminated> ExceptionHandeling [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (28-May-2024, 11:08:06 am – 11:08:06 am) [pid: 5092]
Custom ERROR: Can't divide by zero
java.lang.ArithmeticException: / by zero
```