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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();

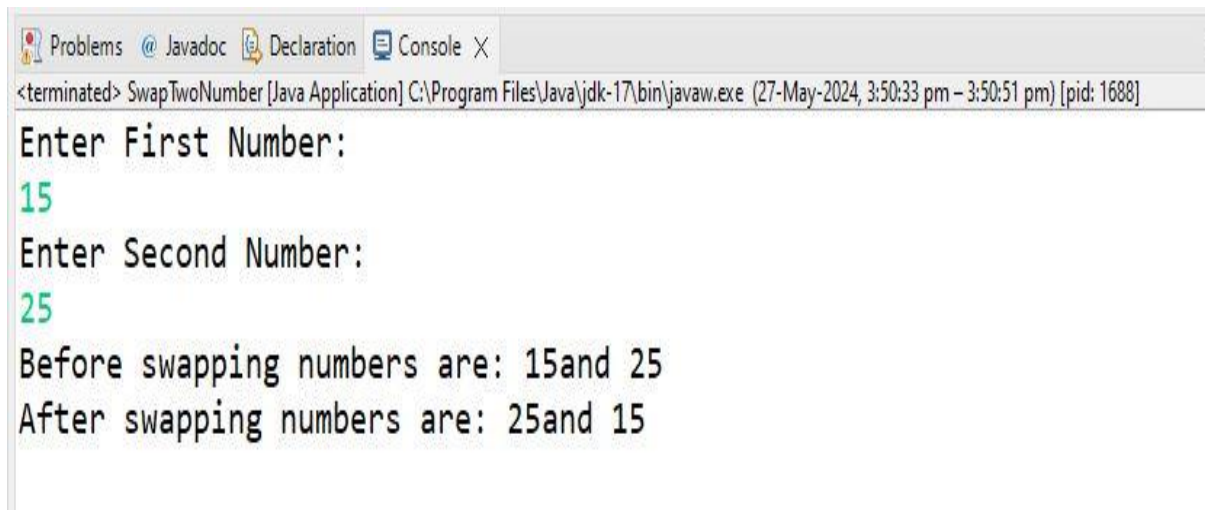
        System.out.println("Before swapping numbers
are: " + firstNum + "and " + secondNum);
        // Swapping values of first and second
number
        firstNum = firstNum + secondNum;
        secondNum = firstNum - secondNum;
        firstNum = firstNum - secondNum;

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

    }

}
```

## OUTPUT:



```
<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 {

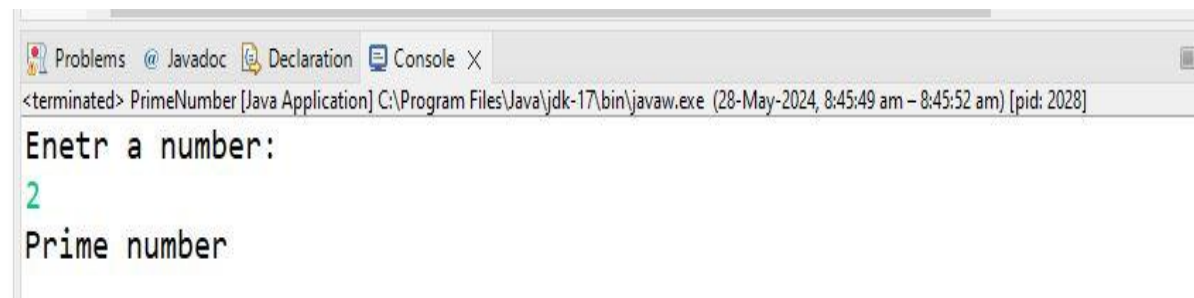
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

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

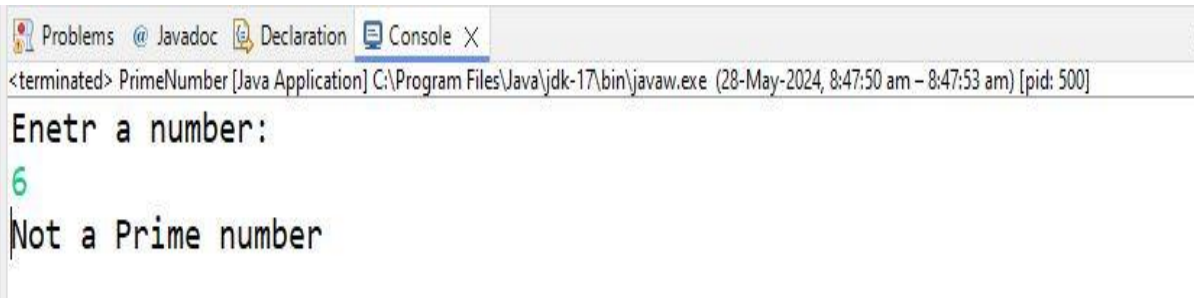
        for(int i=2;i<=num/2;i++) {
            if(num%i == 0) {
                System.out.println("Not a Prime
number");
                return;
            }
        }
        System.out.println("Prime number");
    }

}
```

## 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];
        }

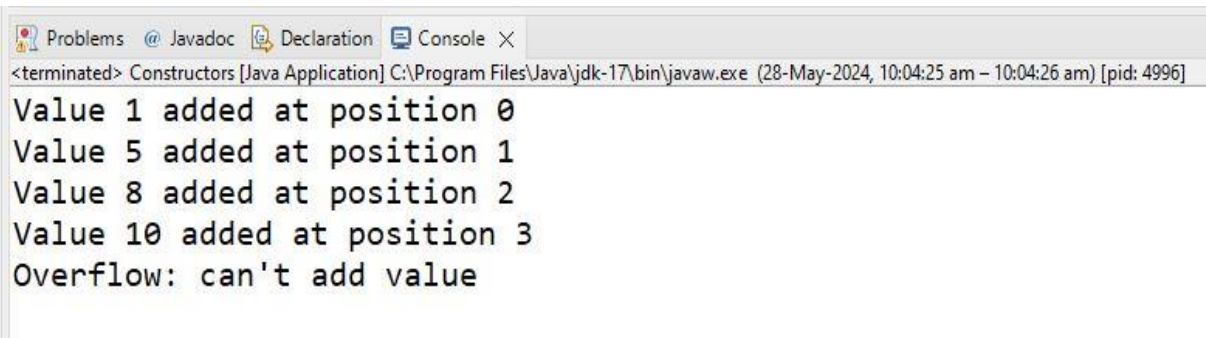
        // Methods to assign value
        public void setMatrixValue(int val) {
            if(this.idx < mat.length) {
                mat[this.idx] = val;
                System.out.println("Value "+val+" added
at position "+this.idx);
                this.idx++;
            }
            else
                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:



```
<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:

A screenshot of a Java IDE's console window. The window has tabs for 'Problems', 'Javadoc', 'Declaration', and 'Console'. The 'Console' tab is active, showing the output of a Java application. The output text is: 'Shape Class', 'Circle area is: 78.5', and 'Area of Rectangle is : 50'. The window title bar indicates the application is 'Inheritance [Java Application]' and the path is 'C:\Program Files\Java\jdk-17\bin\javaw.exe'.

## 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;

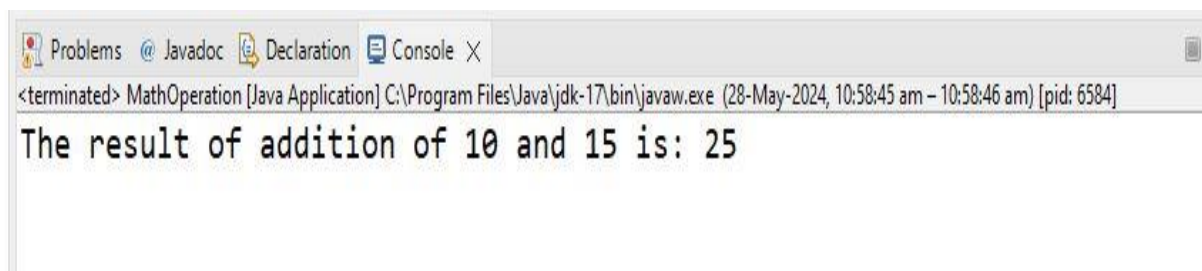
public class Addition {
    public static int add(int num1, int num2) {
        return num1 + num2;
    }
}
```

```
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

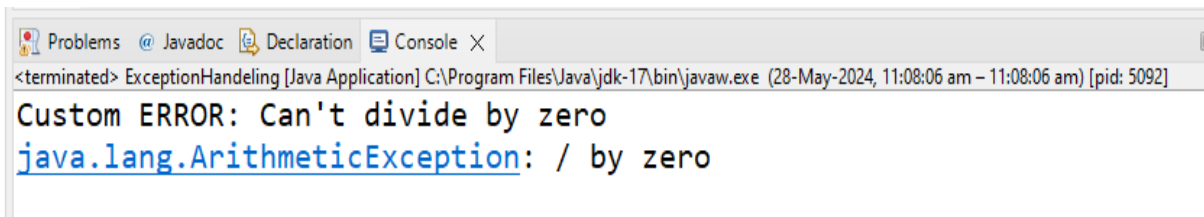
Write a program that attempts to divide by zero, catches the `ArithmeticException`, and provides a custom error message.

## 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:

A screenshot of a Java IDE's console window. The window has tabs for 'Problems', 'Javadoc', 'Declaration', and 'Console'. The 'Console' tab is active, showing the output of the program. The output consists of two lines: 'Custom ERROR: Can't divide by zero' and 'java.lang.ArithmeticException: / by zero'. The first line is in black text, and the second line is in blue text, indicating a link to the exception class. The console title bar shows the file name 'ExceptionHandeling [Java Application]', the path 'C:\Program Files\Java\jdk-17\bin\javaw.exe', the date and time '(28-May-2024, 11:08:06 am - 11:08:06 am)', and the process ID '[pid: 5092]'.

```
<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
```