OBJECT ORIENTED PROGRAMMING LAB

Name – BHAVYA TALWAR

SAP ID – 500121992

Course – BTech CSE AIML

BATCH-03

Submitted To– Mr. Saurabh Jain

Experiment - 08

1. Create an exception class, which throws an exception if the operand is non-numeric in calculating modules. (Use command line arguments).

Code:

```
class NonNumericException extends Exception {
    public NonNumericException(String message) {
        super(message);
    }
}
public class ques1 {
    static double Numeric(String arg) throws NonNumericException {
        try {
            return Double.parseDouble(arg);
        } catch (NumberFormatException e) {
            throw new NonNumericException("Invalid numeric operand: " + arg);
        }
    }
    public static void main(String[] args) {
        try {
            double a = Numeric(args[0]);
            double b = Numeric(args[1]);
            double sum = a + b;
            System.out.println("Sum: " + sum);
        } catch (NonNumericException e) {
            System.out.println("Error: " + e.getMessage());
        }
        finally{
            System.out.println("Bhavya Talwar");
            System.out.println("500121992");
        }
    }
}
```

Output:

```
PS D:\JAVA\PROGRAMS\EXP 8> java ques1 5 a
Bhavya Talwar
500121992
Bhavya Talwar
500121992
Error: Invalid numeric operand: a
```

```
PS D:\JAVA\PROGRAMS\EXP 8> java ques1 5 10
Bhavya Talwar
500121992
Bhavya Talwar
500121992
Sum: 15.0
```

2. Write a Java program to throw an exception for employee details.
   - If an employee's name is a number, a name exception must be thrown.
   - If an employee's age exceeds 50, an age exception must be thrown.

Code:

```
import java.util.Scanner;

public class ques2 {

    String name;
    int age;

    ques2(String name, int age) throws Exception {
        if (!name.matches("[a-zA-Z]+")) {
            throw new Exception("Invalid Name: Your name contains numbers.");
        }
        if (age > 50) {
            throw new Exception("Invalid Age: " + age + " exceeds the limit of
50.");
        }
        this.name = name;
        this.age = age;
    }

    public void display() {
        System.out.println("Employee Name: " + name);
        System.out.println("Employee Age: " + age);
    }

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter Employee Name: ");
        String name = scanner.nextLine();
        System.out.print("Enter Employee Age: ");
        int age = scanner.nextInt();
        try {
            ques2 emp = new ques2(name, age);
            emp.display();
        } catch (Exception e) {
            System.out.println("Error: " + e.getMessage());
        } finally {
            System.out.println("Bhavya Talwar");
            System.out.println("500121992");
        }
    }
}
```

Output:

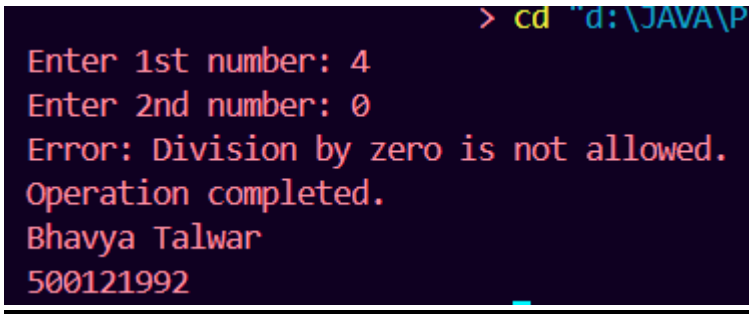
```
Enter Employee Name: 9350881151
Enter Employee Age: 20
Error: Invalid Name: Your name contains numbers.
Bhavya Talwar
500121992
```

3. Write a Java program that takes two integers as input from the user and performs division. Handle the ArithmeticException that occurs if the denominator is zero. Use a try-catch block to catch the exception and display an appropriate error message. Additionally, use a finally block to print "Operation completed" regardless of whether an exception occurs or not.

Code:

```java
import java.util.Scanner;
class ques3 {
    public static void main(String[] args) {
        try {
            Scanner sc = new Scanner(System.in);
            System.out.print("Enter 1st number: ");
            int a = sc.nextInt();
            System.out.print("Enter 2nd number: ");
            int b = sc.nextInt();
            double div = a / b;
            System.out.println("The quotient is: " + div);
        } catch (ArithmeticException e) {
            System.out.println("Error: Division by zero is not allowed.");
        } finally {
            System.out.println("Operation completed.");
            System.out.println("Bhavya Talwar");
            System.out.println("500121992");
        }
    }
}
```

Output:



4. Write a Java program that creates an array of 5 integers and asks the user to enter an index to access the array element. Handle the ArrayIndexOutOfBoundsException if the user enters an invalid index. Use a try-catch block to catch the exception and display an appropriate error message. Use the finally block to print "Array access attempted.

Code:

```
import java.util.Scanner;

public class ques4 {

    public static void main(String[] args) {
        int[] a = {10, 20, 30, 40, 50};
        Scanner sc = new Scanner(System.in);
        try {
            System.out.print("Enter an index to access the array element: ");
            int index = sc.nextInt();
            System.out.println("Element at index " + index + ": " + a[index]);

        } catch (ArrayIndexOutOfBoundsException e) {
            System.out.println("Error: Invalid index! Please enter a value
between 0 and 4.");
        } finally {
            System.out.println("Array access attempted.");
            System.out.println("Bhavya Talwar");
            System.out.println("500121992");
        }
    }
}
```

Output:

```
Enter an index to access the array element: 5
Error: Invalid index! Please enter a value between 0 and 4.
Array access attempted.
Bhavya Talwar
500121992
```