

ASSIGNMENT -11 DATE-27/7/24

1. Using the concepts of thread with implementing Runnable interface in Java to find whether a given number is prime or not.

Sample Input : 5

Sample Output : 5 is Prime

Code:

```
class PrimeChecker implements Runnable {
    private int number;

    PrimeChecker(int number) {
        this.number = number;
    }

    @Override
    public void run() {
        if (isPrime(number)) {
            System.out.println(number + " is Prime");
        } else {
            System.out.println(number + " is not Prime");
        }
    }

    private boolean isPrime(int num) {
        if (num <= 1) {
            return false;
        }
        for (int i = 2; i <= Math.sqrt(num); i++) {
            if (num % i == 0) {
                return false;
            }
        }
        return true;
    }
}

public class Main {
```

```

public static void main(String[] args) {
    int inputNumber = 5;
    PrimeChecker primeChecker = new PrimeChecker(inputNumber);
    Thread thread = new Thread(primeChecker);
    thread.start();
}
}

```

Output

NEW

STDIN

Input for the program (Optional)

Output:

5 is Prime

2. Generate a Java code to handle Exceptions such as Arithmetic Exception, ArrayIndexOutOfBoundsException, NullPointerException using Multi-Catch Statements.

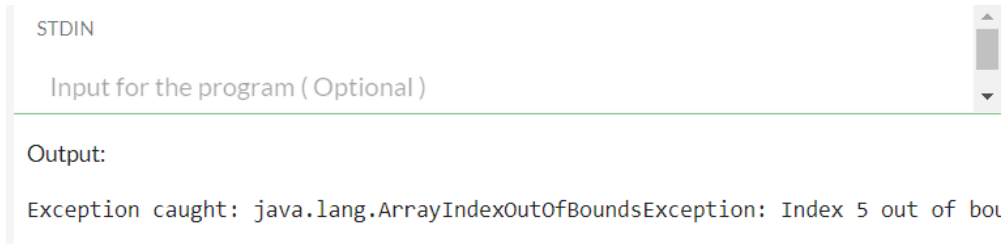
Code:

```

public class MultiCatchExample {
    public static void main(String[] args) {
        try {
            int[] numbers = { 1, 2, 3 };
            int result = numbers[5] / 0;
            System.out.println("Result: " + result);
        } catch (ArithmeticException | ArrayIndexOutOfBoundsException |
        NullPointerException e) {
            System.out.println("Exception caught: " + e);
        }
    }
}

```

Output:



3. Generate a Java Code to Write and Read the string “Computer Science and Engineering” using FileWriter and FileReader Class.

Code:

```
package com.mycompany.progg;
import java.io.FileWriter;
import java.io.FileReader;
import java.io.IOException;

public class Progg {

    public static void main(String[] args) {
        String data = "Computer Science and Engineering";
        String filename = "output.txt";

        // Writing to the file
        try (FileWriter writer = new FileWriter(filename)) {
            writer.write(data);
            System.out.println("Data written to file: " + data);
        } catch (IOException e) {
            System.out.println("An error occurred while writing to the file.");
            e.printStackTrace();
        }

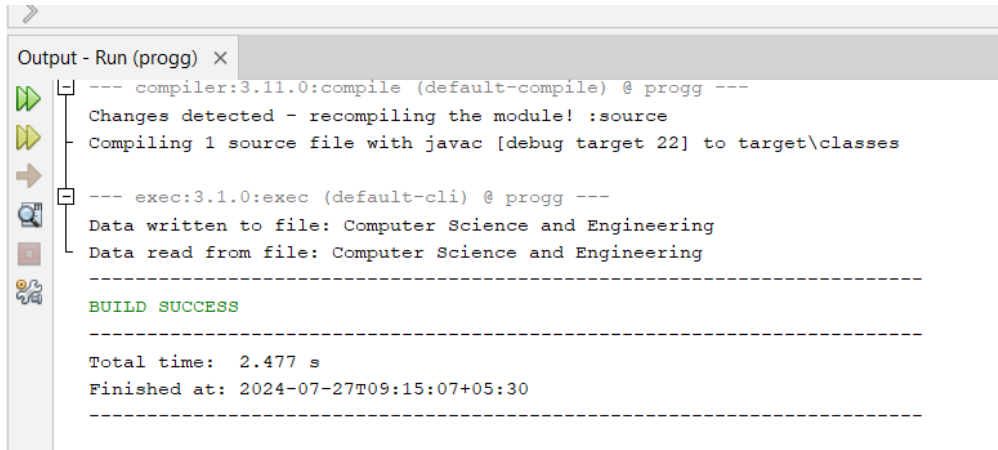
        // Reading from the file
        try (FileReader reader = new FileReader(filename)) {
            int character;
            StringBuilder readData = new StringBuilder();
            while ((character = reader.read()) != -1) {
                readData.append((char) character);
            }
            System.out.println("Data read from file: " + readData.toString());
        } catch (IOException e) {
```

```

        System.out.println("An error occurred while reading from the file.");
        e.printStackTrace();
    }
}
}

```

Output:



```

--- compiler:3.11.0:compile (default-compile) @ progg ---
Changes detected - recompiling the module! :source
Compiling 1 source file with javac [debug target 22] to target\classes

--- exec:3.1.0:exec (default-cli) @ progg ---
Data written to file: Computer Science and Engineering
Data read from file: Computer Science and Engineering

-----
BUILD SUCCESS
-----

Total time:  2.477 s
Finished at: 2024-07-27T09:15:07+05:30
-----

```

4. Create a java program to construct the volume of Box using default constructor method
Code:

```

class Box {
    double length;
    double width;
    double height;
    Box() {
        length = 1.0;
        width = 1.0;
        height = 1.0;
    }
    double calculateVolume() {
        return length * width * height;
    }
}

public class Main {
    public static void main(String[] args) {
        Box myBox = new Box();
        System.out.println("Volume of the Box: " + myBox.calculateVolume());
    }
}

```

Output:

```
Output

java -cp /tmp/wCUA0XA0B7/Main
Volume of the Box: 1.0

=== Code Execution Successful ===
```

5. 5. Accept the string “Welcome to Saveetha university” from the user and perform the following operations by writing a suitable Java code.

- i) Replace any word in the given String
- ii) Find the length
- iii) Uppercase Conversion

Code:

```
import java.util.Scanner;
public class StringOperations {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.println("Enter a string: ");
        String inputString = scanner.nextLine();
        // Replace any word in the given String
        String replacedString = inputString.replace("Saveetha", "XYZ");
        System.out.println("Replaced String: " + replacedString);
        // Find the length
        int length = inputString.length();
        System.out.println("Length of the String: " + length);
        // Uppercase Conversion
        String upperCaseString = inputString.toUpperCase();
        System.out.println("Uppercase String: " + upperCaseString);
        scanner.close();
    }
}
```

Output:

Output

```
java -cp /tmp/ewWEyL9f1D/StringOperations  
Enter a string:  
javaapplication  
Replaced String: javaapplication  
Length of the String: 15  
Uppercase String: JAVAAPPLICATION  
  
=== Code Execution Successful ===|
```