Sri Lanka Institute of Information Technology

FA-Assignment

IE2072 - Foundations of Algorithms

Submitted by:

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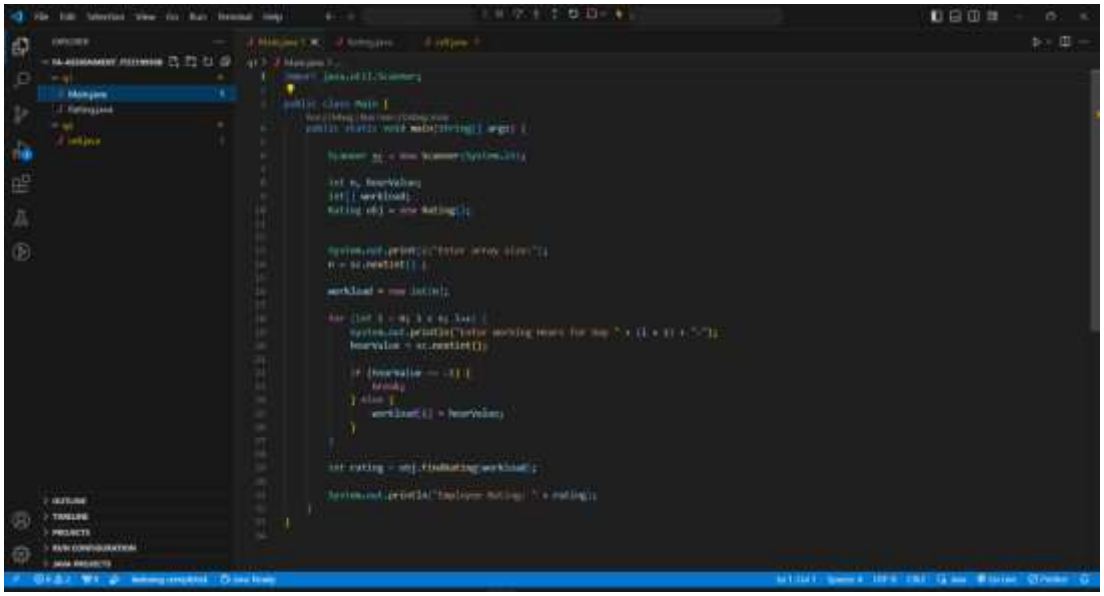
Question 1

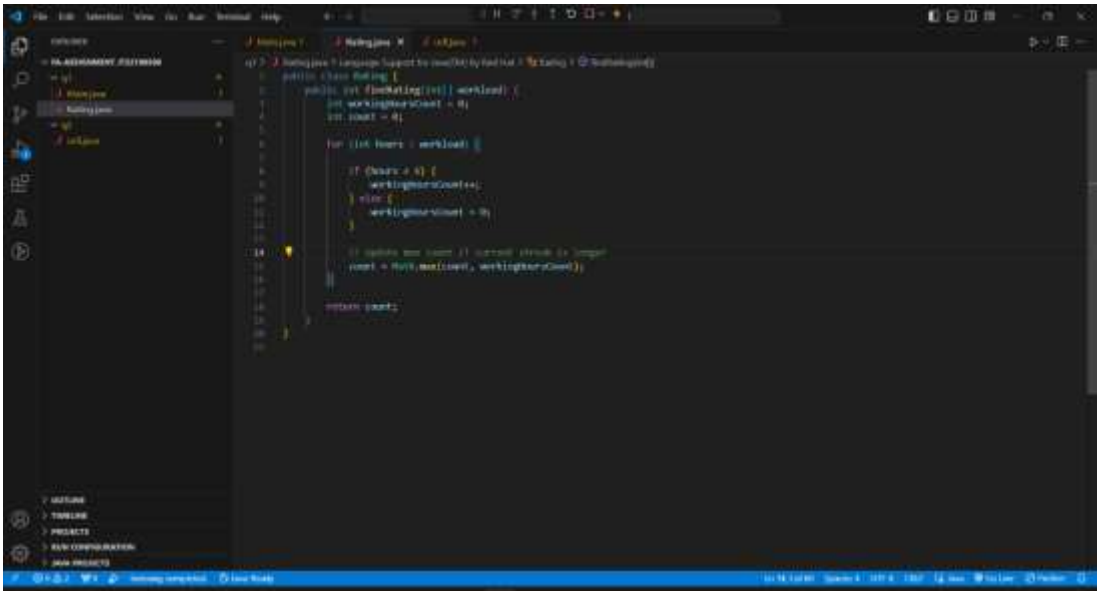
- source codes and screenshots of the outputs.

- Source codes

  - **Main.java**



  - **Rating.java**



- **Output of question 1**

Source codes:

Main.java

```
import java.util.Scanner;


public class Main {
    public static void main(String[] args) {


        Scanner sc = new Scanner(System.in);


        int n, hourValue;
        int[] workload;
        Rating obj = new Rating();



        System.out.print("Enter array size:");
        n = sc.nextInt() ;


        workload = new int[n];
```

```
        for (int i = 0; i < n; i++) {
            System.out.println("Enter Working Hours for Day " + (i + 1) + ":");
            hourValue = sc.nextInt();

            if (hourValue == -1) {
                break;
            } else {
                workload[i] = hourValue;
            }
        }

        int rating = obj.findRating(workload);

        System.out.println("Employee Rating: " + rating);
    }
}
```

Rating.java

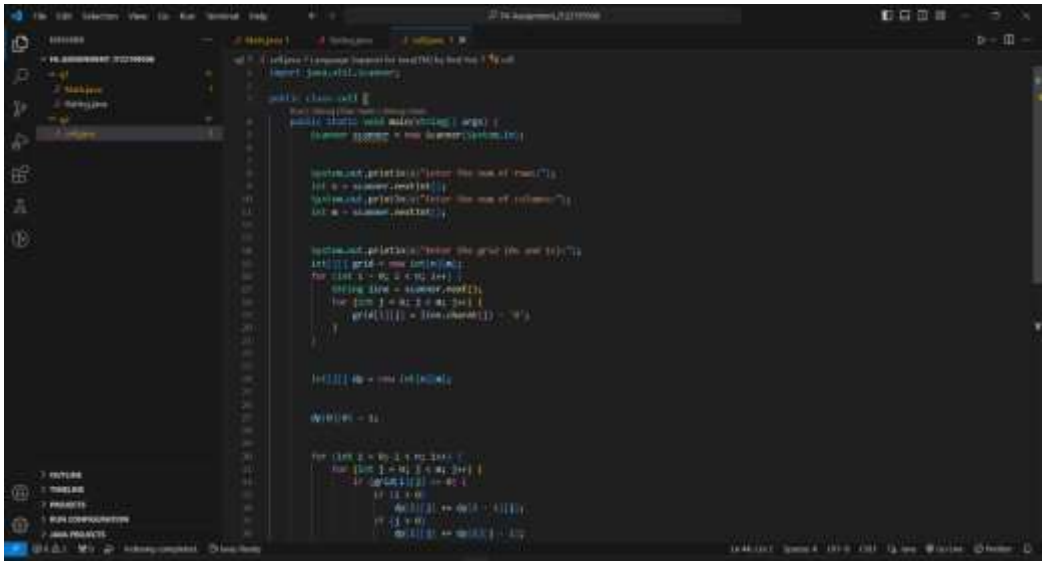
```
public class Rating {
    public int findRating(int[] workload) {
        int workingHoursCount = 0;
        int count = 0;

        for (int hours : workload) {

            if (hours > 6) {
                workingHoursCount++;
            } else {
                workingHoursCount = 0;
            }

            // Update max count if current streak is longer
            count = Math.max(count, workingHoursCount);
        }

        return count;
    }
}
```

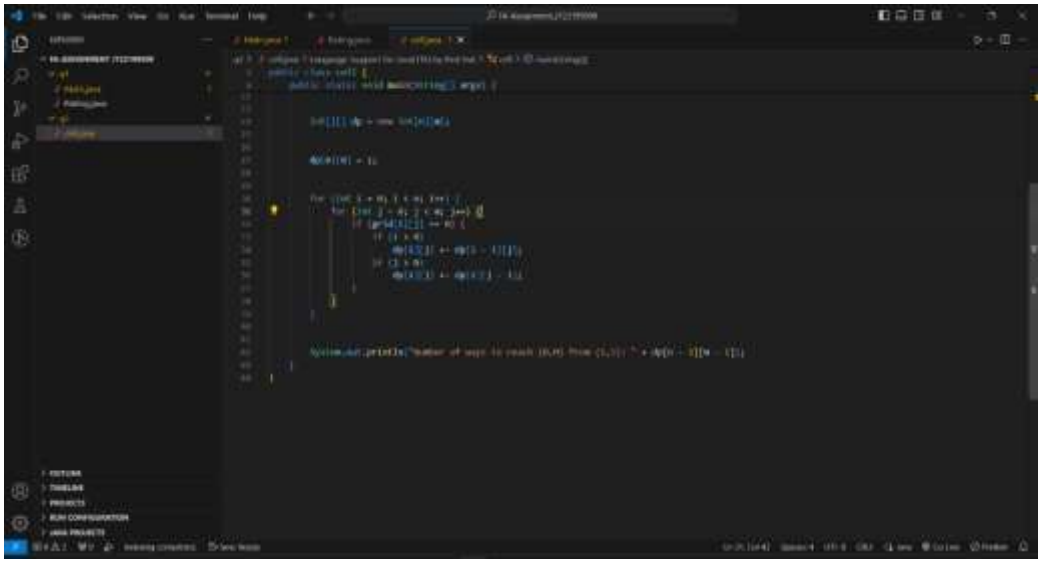
Question 2

- source codes and screenshots of the outputs.

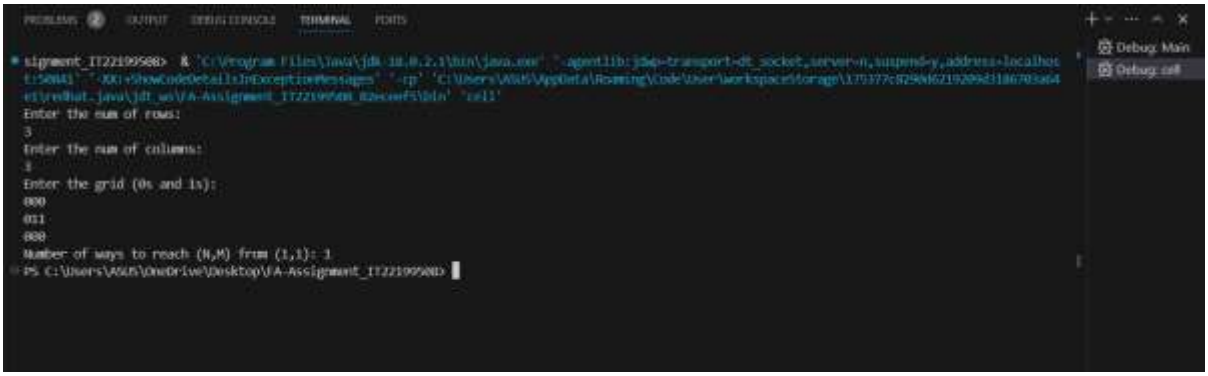
- Source codes

  - **cell.java**





- **output of question 2**



Source codes:

cell.java

```
import java.util.Scanner;

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



        System.out.println("Enter the num of rows:");
        int n = scanner.nextInt();
        System.out.println("Enter the num of columns:");
        int m = scanner.nextInt();



        System.out.println("Enter the grid (0s and 1s):");
        int[][] grid = new int[n][m];
        for (int i = 0; i < n; i++) {
            String line = scanner.next();
            for (int j = 0; j < m; j++) {
                grid[i][j] = line.charAt(j) - '0';
            }
        }



        int[][] dp = new int[n][m];



        dp[0][0] = 1;
```

```
        for (int i = 0; i < n; i++) {
            for (int j = 0; j < m; j++) {
                if (grid[i][j] == 0) {
                    if (i > 0)
                        dp[i][j] += dp[i - 1][j];
                    if (j > 0)
                        dp[i][j] += dp[i][j - 1];
                }
            }
        }


        System.out.println("Number of ways to reach (N,M) from (1,1): " + dp[n - 1][m - 1]);
    }
}
```