



# SLIIT

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Sri Lanka Institute of Information Technology

## **FA-Assignment**

**IE2072 - Foundations of Algorithms**

Submitted by:

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Date of submission

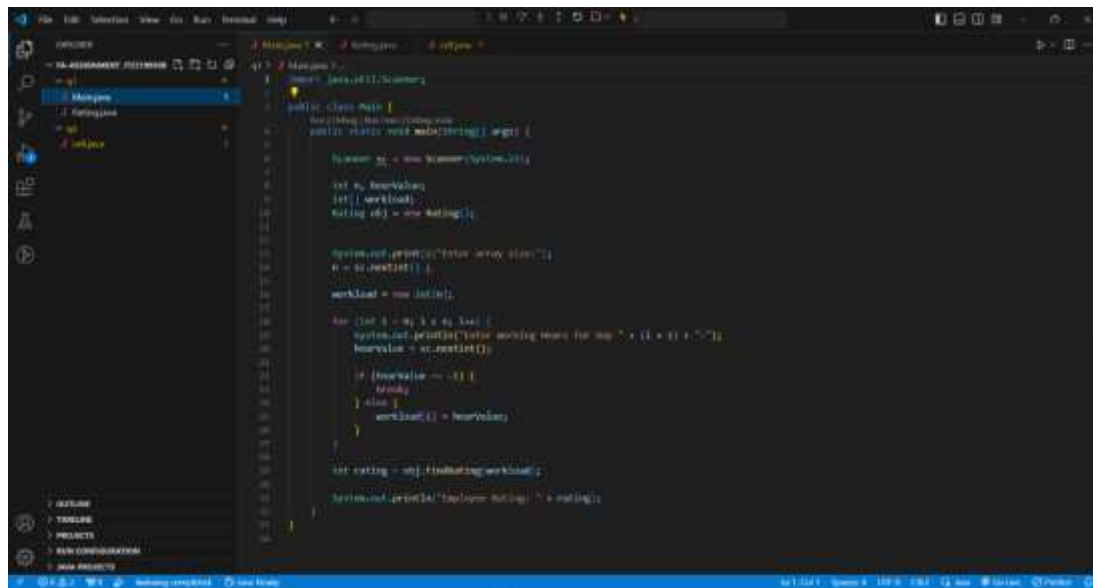
2024.05.12

## Question 1

➤ source codes and screenshots of the outputs.

- Source codes

- **Main.java**



```
import java.util.Scanner;

public class Main {
    Scanner sc = new Scanner(System.in);

    public static void main(String[] args) {
        int n;
        int[] arr;
        Rating obj = new Rating();

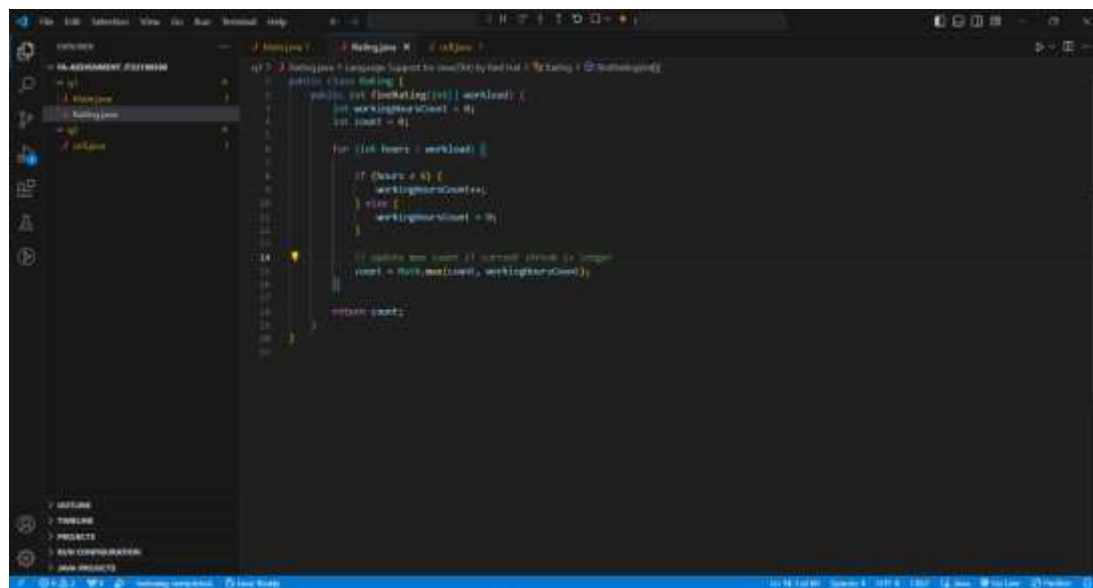
        System.out.print("Enter array size:");
        n = obj.nextInt();
        arr = new int[n];

        for (int i = 0; i < arr.length; i++) {
            System.out.print("Enter working hours for day " + (i + 1) + ":");
            arr[i] = obj.nextInt();
        }

        int rating = obj.findRating(arr);

        System.out.print("Average Rating: " + rating);
    }
}
```

- **Rating.java**



```
import java.util.Scanner;

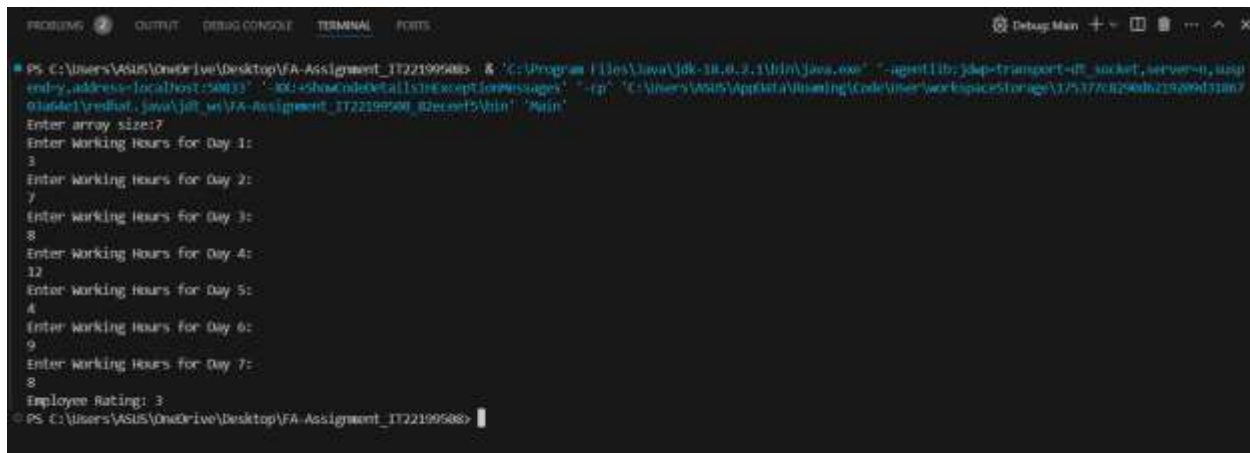
public class Rating {
    public static void findRating(int[] arr) {
        int sum = 0;
        int count = 0;

        for (int i = 0; i < arr.length; i++) {
            if (arr[i] > 0) {
                sum += arr[i];
                count++;
            }
        }

        int avg = sum / count;

        System.out.print("Average: " + avg);
    }
}
```

## ▪ Output of question 1



```
PS C:\Users\ASUS\OneDrive\Desktop\FA-Assignment_TT22199588> .\Main.java
Enter array size:7
Enter Working Hours for Day 1:
3
Enter Working hours for Day 2:
7
Enter Working Hours for Day 3:
8
Enter Working Hours for Day 4:
12
Enter Working Hours for Day 5:
4
Enter Working Hours for Day 6:
9
Enter Working Hours for Day 7:
8
Employee Rating: 3
PS C:\Users\ASUS\OneDrive\Desktop\FA-Assignment_TT22199588>
```

## 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

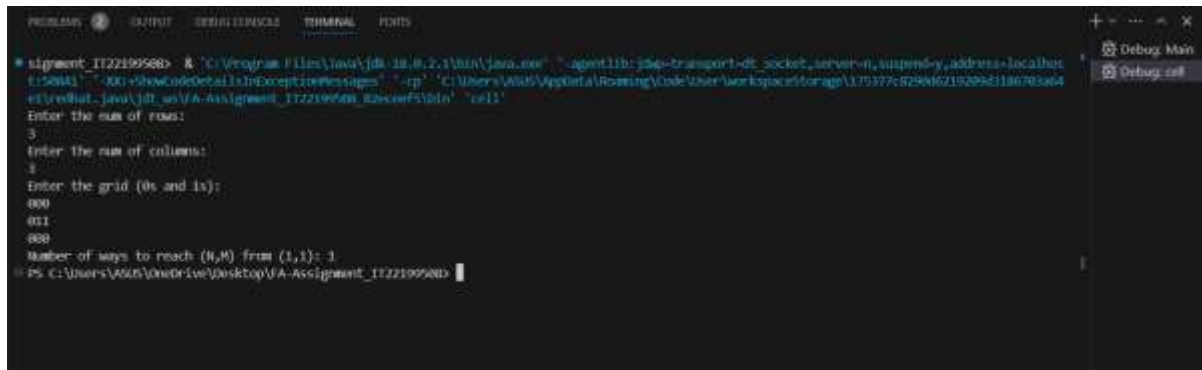
- source codes and screenshots of the outputs.

- Source codes

- **cell.java**

[illegible][illegible]

▪ output of question 2



```
segment IT22199588> & 'C:\Program Files\Java\jdk-11.0.2\bin\java.exe' "-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:15041" "-XX:+ShowCodeDetailsInExceptionMessages" "-cp" "C:\Users\A065\AppData\Local\Temp\Code\User\workspaceStorage\179177c8298d6219209d1186703a64e1\redhat_java\jdk_ws\FA-Assignment_IT22199588\src\conf5\bin" "cell"
Enter the num of rows:
3
Enter the num of columns:
3
Enter the grid (0s and 1s):
000
011
000
Number of ways to reach (H,M) from (1,1): 3
PS C:\Users\A065\OneDrive\Desktop\FA-Assignment_IT22199588>
```

**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]);  
}
```

