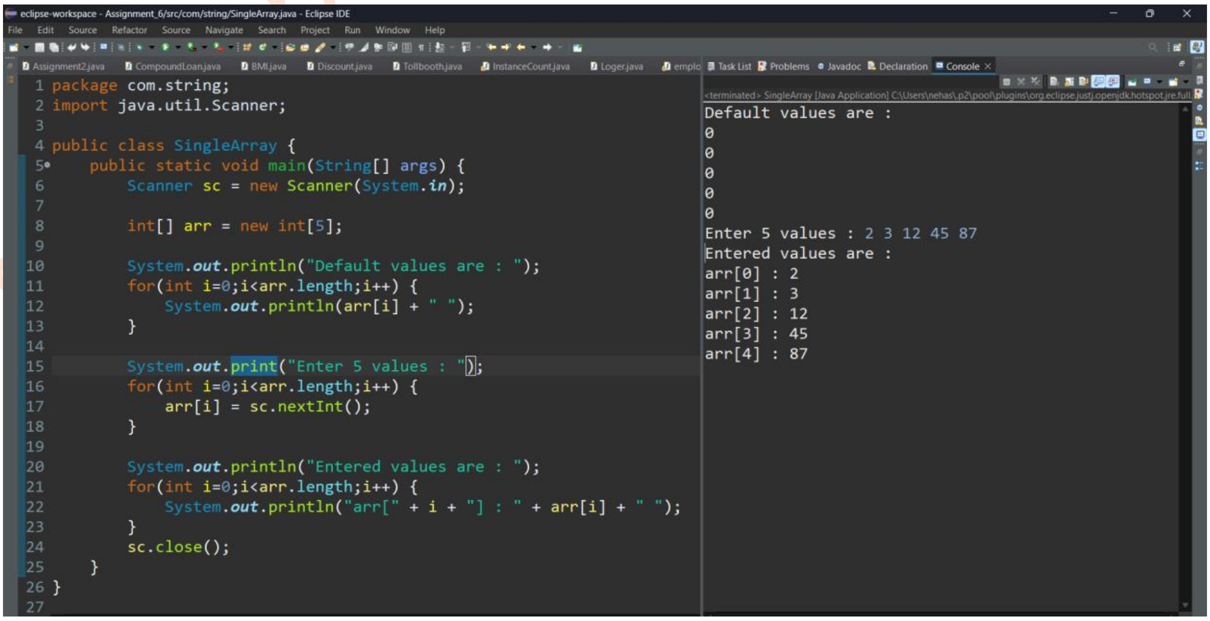
ASSIGNMENT NO.7

1. Declare a single-dimensional array of 5 integers inside the `main` method. Traverse the array to print the default values. Then accept records from the user and print the updated values of the array.

```
package com.string;
import java.util.Scanner;

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

            int[] arr = new int[5];

            System.out.println("Default values are : ");
            for(int i=0;i<arr.length;i++) {
                    System.out.println(arr[i] + " ");
            }

            System.out.print("Enter 5 values : ");
            for(int i=0;i<arr.length;i++) {
                    arr[i] = sc.nextInt();
            }

            System.out.println("Entered values are : ");
            for(int i=0;i<arr.length;i++) {
                    System.out.println("arr[" + i + "] : " + arr[i] + " ");
            }
            sc.close();
    }
}
```



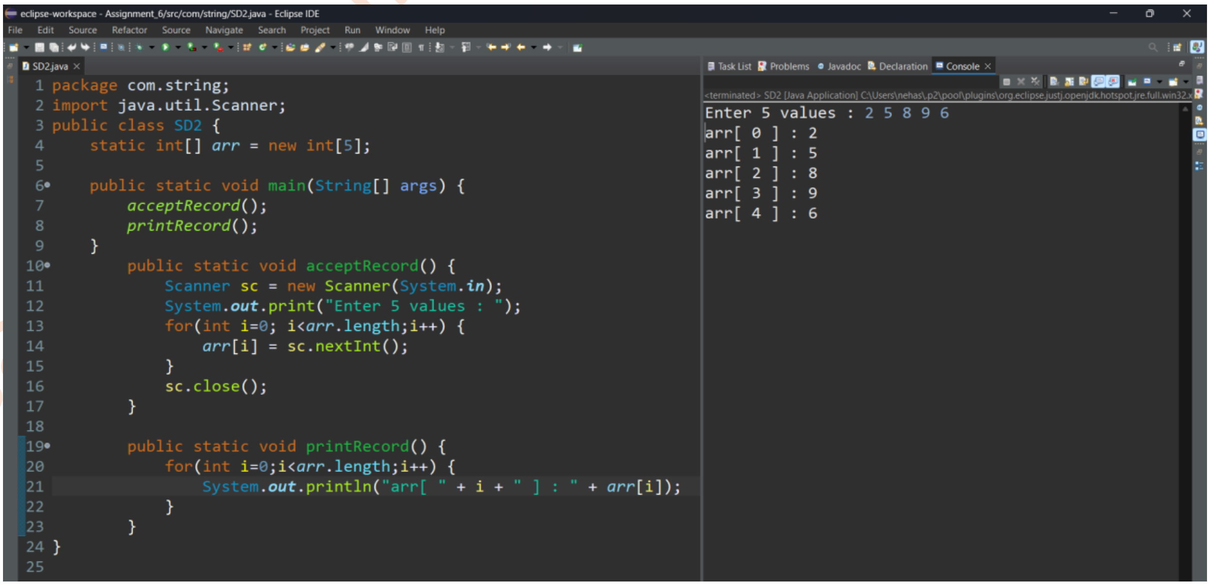
eclipse-workspace - Assignment_6/src/com/string/SingleArray.java - Eclipse IDE
File Edit Source Refactor Source Navigate Search Project Run Window Help
Assignment2.java CompoundLoan.java BMI.java Discount.java Tollbooth.java InstanceCount.java Loger.java emplo
Task List Problems Javadoc Declaration Console

```
package com.string;
import java.util.Scanner;

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

        int[] arr = new int[5];

        System.out.println("Default values are : ");
        for(int i=0;i<arr.length;i++) {
            System.out.println(arr[i] + " ");
        }

        System.out.print("Enter 5 values : ");
        for(int i=0;i<arr.length;i++) {
            arr[i] = sc.nextInt();
        }

        System.out.println("Entered values are : ");
        for(int i=0;i<arr.length;i++) {
            System.out.println("arr[" + i + "] : " + arr[i] + " ");
        }
        sc.close();
    }
}
```

```
<terminated> SingleArray [Java Application] C:\Users\nehas\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.
Default values are :
0
0
0
0
0
Enter 5 values : 2 3 12 45 87
Entered values are :
arr[0] : 2
arr[1] : 3
arr[2] : 12
arr[3] : 45
arr[4] : 87
```

2. Declare a single-dimensional array of 5 integers inside the `main` method. Define a method named `acceptRecord` to get input from the terminal into the array and another method named `printRecord` to print the state of the array to the terminal.

```
package com.string;
import java.util.Scanner;
public class SD2 {
        static int[] arr = new int[5];

        public static void main(String[] args) {
                acceptRecord();
                printRecord();
        }
                public static void acceptRecord() {
                        Scanner sc = new Scanner(System.in);
                        System.out.print("Enter 5 values : ");
                        for(int i=0; i<arr.length;i++) {
                                arr[i] = sc.nextInt();
                        }
                        sc.close();
                }

                public static void printRecord() {
                        for(int i=0;i<arr.length;i++) {
                                System.out.println("arr[ " + i + " ] : " + arr[i]);
                        }
                }
}
```



eclipse-workspace - Assignment_6/src/com/string/SD2.java - Eclipse IDE
File Edit Source Refactor Source Navigate Search Project Run Window Help
SD2.java
Task List Problems Javadoc Declaration Console
<terminated> SD2 [Java Application] C:\Users\nehas\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x

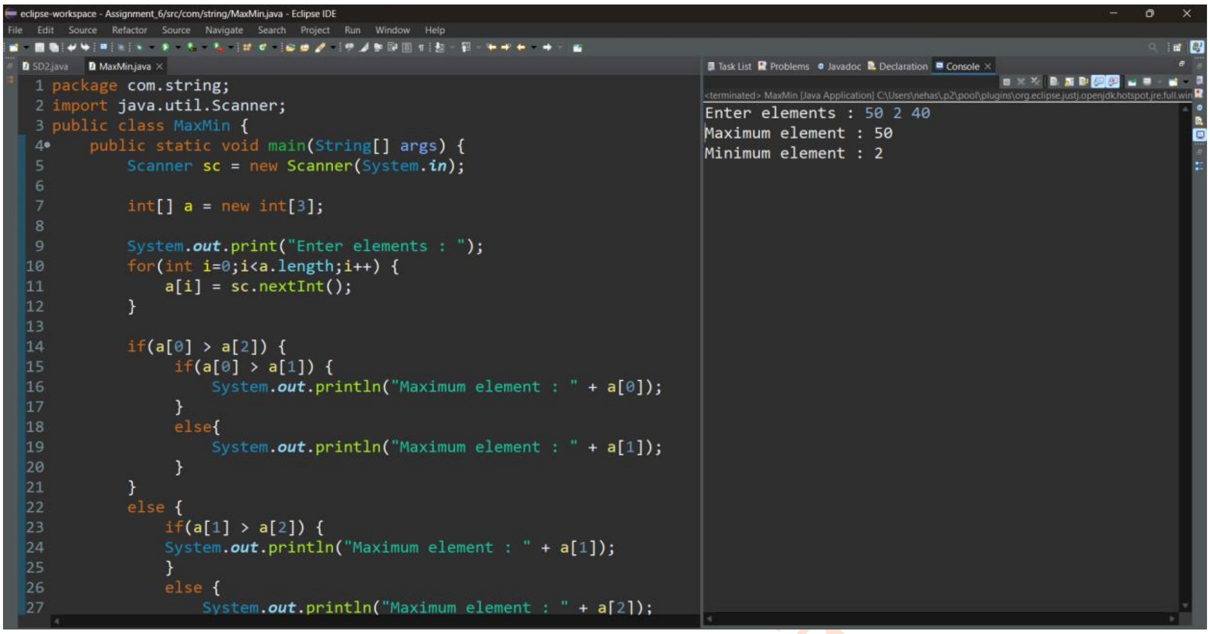
```
package com.string;
import java.util.Scanner;
public class SD2 {
    static int[] arr = new int[5];

    public static void main(String[] args) {
        acceptRecord();
        printRecord();
    }
        public static void acceptRecord() {
            Scanner sc = new Scanner(System.in);
            System.out.print("Enter 5 values : ");
            for(int i=0; i<arr.length;i++) {
                arr[i] = sc.nextInt();
            }
            sc.close();
        }

        public static void printRecord() {
            for(int i=0;i<arr.length;i++) {
                System.out.println("arr[ " + i + " ] : " + arr[i]);
            }
        }
}
```

```
Enter 5 values : 2 5 8 9 6
arr[ 0 ] : 2
arr[ 1 ] : 5
arr[ 2 ] : 8
arr[ 3 ] : 9
arr[ 4 ] : 6
```

3. Write a program to find the maximum and minimum values in a single-dimensional array of integers.

```
package com.string;
import java.util.Scanner;
```

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

        int[] a = new int[3];

        System.out.print("Enter elements : ");
        for(int i=0;i<a.length;i++) {
            a[i] = sc.nextInt();
        }

        if(a[0] > a[2]) {
             if(a[0] > a[1]) {
                 System.out.println("Maximum element : " + a[0]);
             }
             else{
                 System.out.println("Maximum element : " + a[1]);
             }
        }
        else {
            if(a[1] > a[2]) {
            System.out.println("Maximum element : " + a[1]);
            }
            else {
                System.out.println("Maximum element : " + a[2]);
            }
        }

        if(a[0] < a[2]) {
             if(a[0] < a[1]) {
                 System.out.println("Minimum element : " + a[0]);
             }
             else{
                 System.out.println("Minimum element : " + a[1]);
             }
        }
        else {
            if(a[1] < a[2]) {
            System.out.println("Minimum element : " + a[1]);
            }
            else {
                System.out.println("Minimum element : " + a[2]);
            }
        }
        sc.close();
    }
}
```


eclipse-workspace - Assignment_6/src/com/string/MaxMin.java - Eclipse IDE
File Edit Source Refactor Source Navigate Search Project Run Window Help
SD2.java
MaxMin.java
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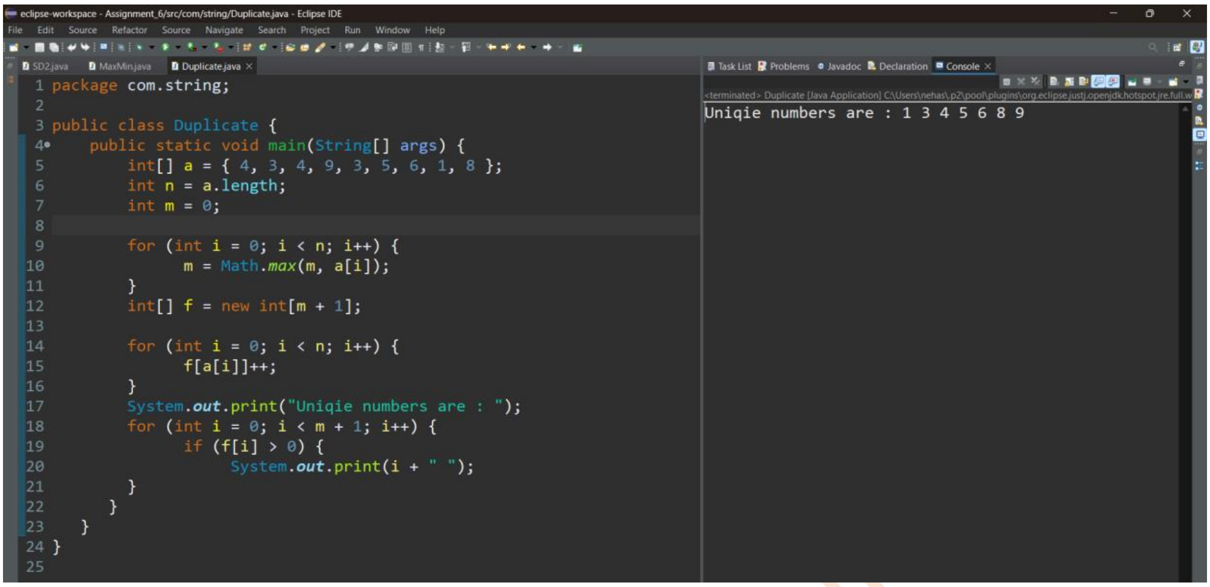
```
package com.string;
import java.util.Scanner;
public class MaxMin {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        int[] a = new int[3];

        System.out.print("Enter elements : ");
        for(int i=0;i<a.length;i++) {
            a[i] = sc.nextInt();
        }

        if(a[0] > a[2]) {
             if(a[0] > a[1]) {
                 System.out.println("Maximum element : " + a[0]);
             }
             else{
                 System.out.println("Maximum element : " + a[1]);
             }
        }
        else {
            if(a[1] > a[2]) {
            System.out.println("Maximum element : " + a[1]);
            }
            else {
                System.out.println("Maximum element : " + a[2]);
```

```
<terminated> MaxMin [Java Application] C:\Users\nehas\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win
Enter elements : 50 2 40
Maximum element : 50
Minimum element : 2
```

4. Write a program to remove duplicate elements from a single-dimensional array of integers.

```
package com.string;

public class Duplicate {
        public static void main(String[] args) {
                int[] a = { 4, 3, 4, 9, 3, 5, 6, 1, 8 };
                int n = a.length;
                int m = 0;

                for (int i = 0; i < n; i++) {
                     m = Math.max(m, a[i]);
                }
                int[] f = new int[m + 1];

                for (int i = 0; i < n; i++) {
                     f[a[i]]++;
                }
                System.out.print("Uniqie numbers are : ");
                for (int i = 0; i < m + 1; i++) {
                     if (f[i] > 0) {
                          System.out.print(i + " ");
                }
           }
   }
}
```

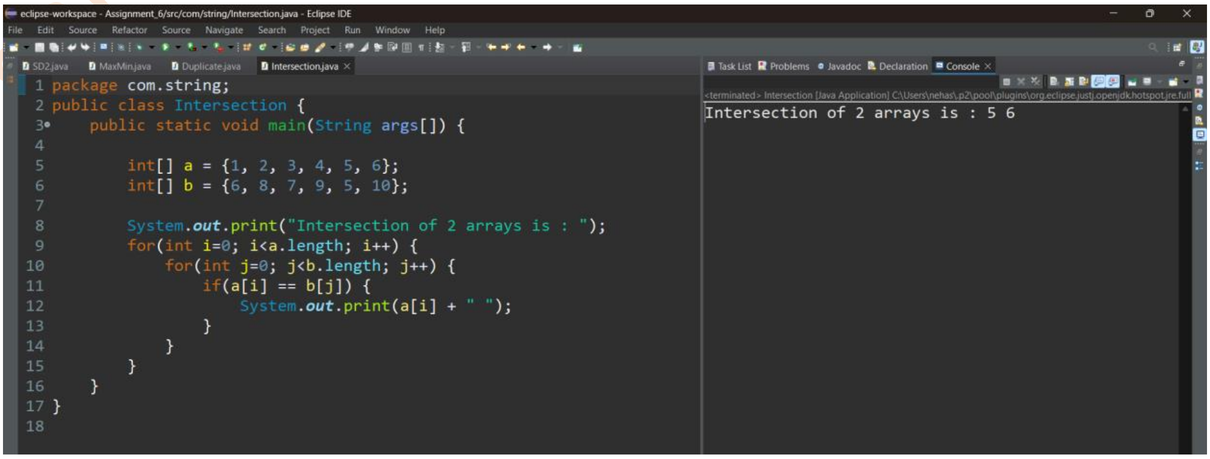

eclipse-workspace - Assignment_6/src/com/string/Duplicate.java - Eclipse IDE
File Edit Source Refactor Source Navigate Search Project Run Window Help
SD2.java MaxMin.java Duplicate.java
Task List Problems Javadoc Declaration Console
<terminated> Duplicate [Java Application] C:\Users\nehas\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.w

```java
package com.string;

public class Duplicate {
    public static void main(String[] args) {
        int[] a = { 4, 3, 4, 9, 3, 5, 6, 1, 8 };
        int n = a.length;
        int m = 0;

        for (int i = 0; i < n; i++) {
            m = Math.max(m, a[i]);
        }
        int[] f = new int[m + 1];

        for (int i = 0; i < n; i++) {
            f[a[i]]++;
        }
        System.out.print("Uniqie numbers are : ");
        for (int i = 0; i < m + 1; i++) {
            if (f[i] > 0) {
                System.out.print(i + " ");
            }
        }
    }
}
```

```
Uniqie numbers are : 1 3 4 5 6 8 9
```

5. Write a program to find the intersection of two single-dimensional arrays.

```java
package com.string;
public class Intersection {
	public static void main(String args[]) {
		
		int[] a = {1, 2, 3, 4, 5, 6};
		int[] b = {6, 8, 7, 9, 5, 10};
		
		System.out.print("Intersection of 2 arrays is : ");
		for(int i=0; i<a.length; i++) {
			for(int j=0; j<b.length; j++) {
				if(a[i] == b[j]) {
					System.out.print(a[i] + " ");
				}
			}
		}
	}
}
```

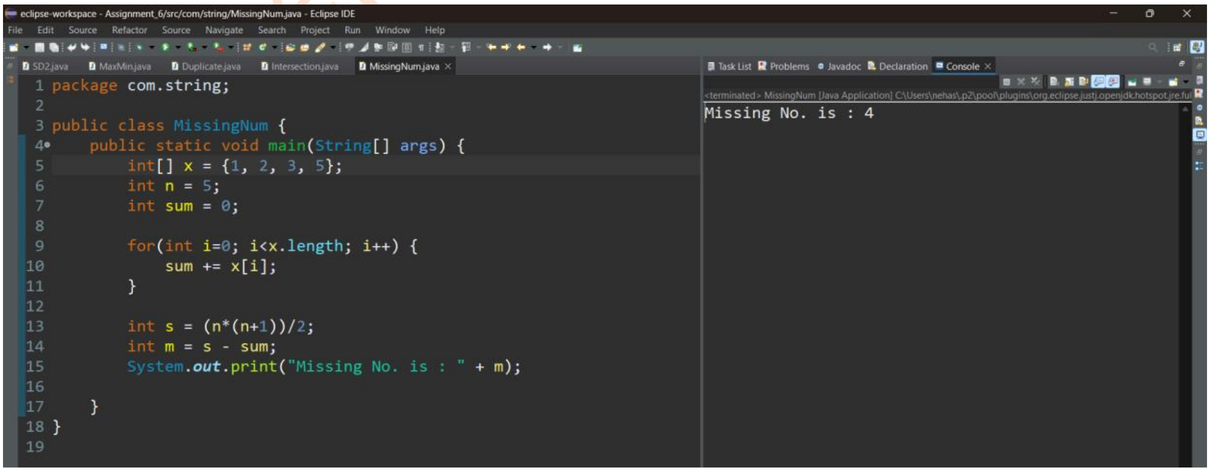

eclipse-workspace - Assignment_6/src/com/string/Intersection.java - Eclipse IDE
File Edit Source Refactor Source Navigate Search Project Run Window Help
SD2.java MaxMin.java Duplicate.java Intersection.java
Task List Problems Javadoc Declaration Console
<terminated> Intersection [Java Application] C:\Users\nehas\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full

```java
package com.string;
public class Intersection {
    public static void main(String args[]) {

        int[] a = {1, 2, 3, 4, 5, 6};
        int[] b = {6, 8, 7, 9, 5, 10};

        System.out.print("Intersection of 2 arrays is : ");
        for(int i=0; i<a.length; i++) {
            for(int j=0; j<b.length; j++) {
                if(a[i] == b[j]) {
                    System.out.print(a[i] + " ");
                }
            }
        }
    }
}
```

```
Intersection of 2 arrays is : 5 6
```

6. Write a program to find the missing number in an array of integers ranging from 1 to N.

```
package com.string;

public class MissingNum {

        public static void main(String[] args) {

                int[] x = {1, 2, 3, 5};

                int n = 5;

                int sum = 0;

                for(int i=0; i<x.length; i++) {

                        sum += x[i];

                }

                int s = (n*(n+1))/2;

                int m = s - sum;

                System.out.print("Missing No. is : " + m);

        }

}
```



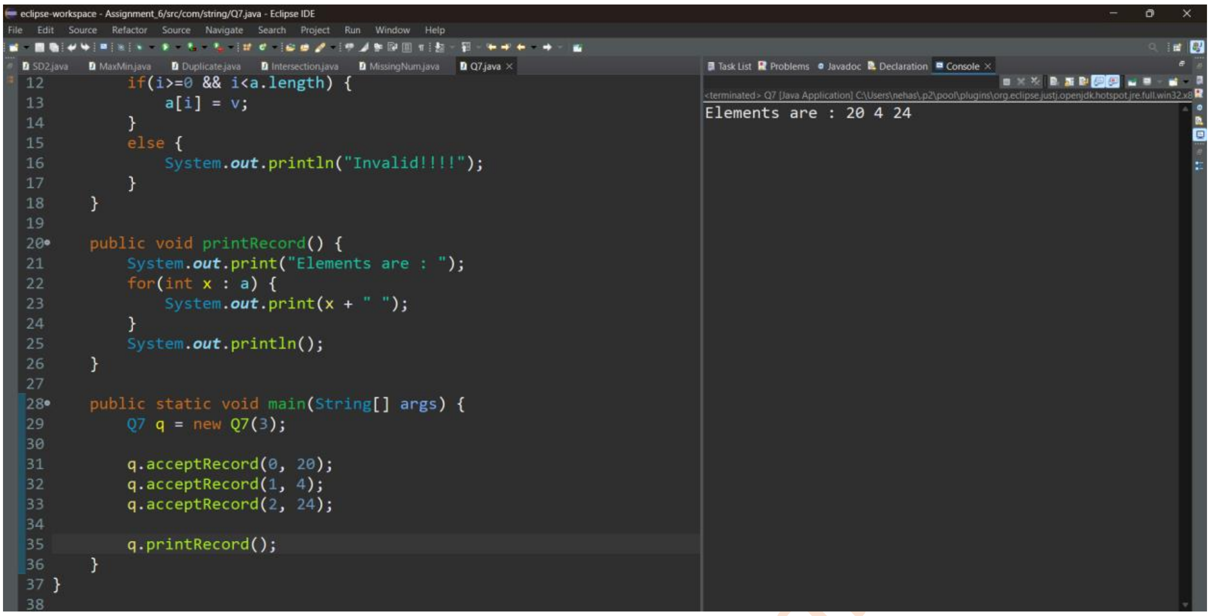
```
package com.string;

public class MissingNum {
    public static void main(String[] args) {
        int[] x = {1, 2, 3, 5};
        int n = 5;
        int sum = 0;

        for(int i=0; i<x.length; i++) {
            sum += x[i];
        }

        int s = (n*(n+1))/2;
        int m = s - sum;
        System.out.print("Missing No. is : " + m);

    }
}
```

```
<terminated> MissingNum [Java Application] C:\Users\nehas\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full
Missing No. is : 4
```

ASSIGNMENT NO.7

7. Declare a single-dimensional array as a field inside a class and instantiate it inside the class constructor. Define methods named `acceptRecord` and `printRecord` within the class and test their functionality.

```
package com.string;

public class Q7 {

        private int[] a;

        Q7(int s){
                a = new int[s];
        }

        public void acceptRecord(int i, int v) {
                if(i>=0 && i<a.length) {
                        a[i] = v;
                }
                else {
                        System.out.println("Invalid!!!!");
                }
        }

        public void printRecord() {
                System.out.print("Elements are : ");
                for(int x : a) {
                        System.out.print(x + " ");
                }
                System.out.println();
        }

        public static void main(String[] args) {
                Q7 q = new Q7(3);

                q.acceptRecord(0, 20);
                q.acceptRecord(1, 4);
                q.acceptRecord(2, 24);

                q.printRecord();
        }
}
```

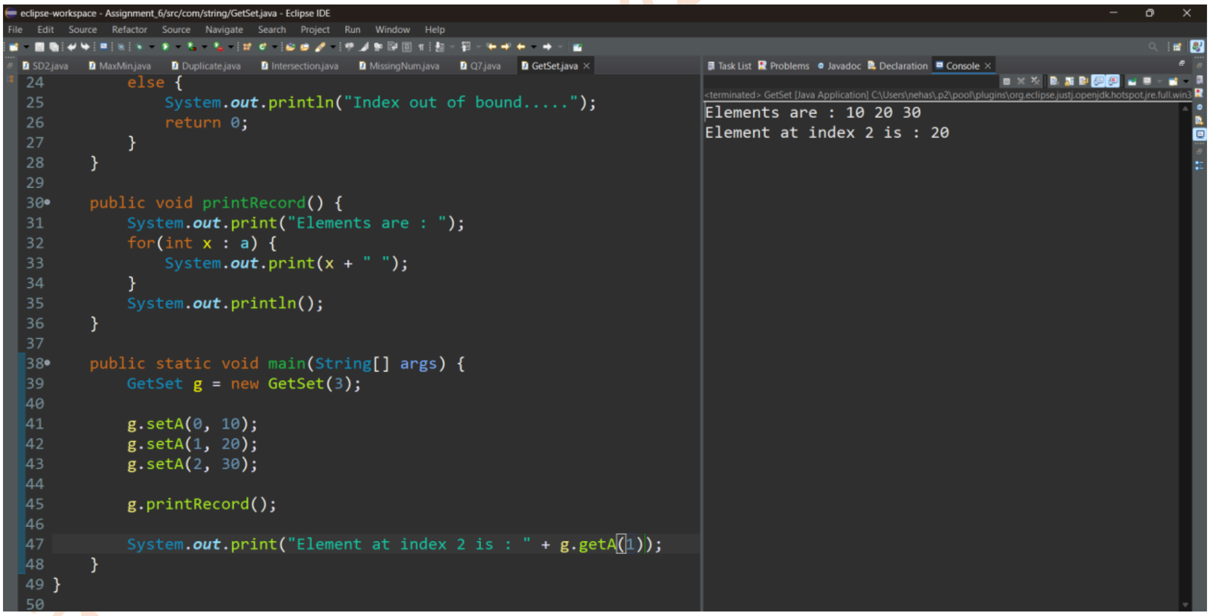

eclipse-workspace - Assignment_6/src/com/string/Q7.java - Eclipse IDE
File Edit Source Refactor Source Navigate Search Project Run Window Help
SD2.java MaxMin.java Duplicate.java Intersection.java MissingNum.java Q7.java
Task List Problems Javadoc Declaration Console
<terminated> Q7 [Java Application] C:\Users\nehas\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x8

```
        if(i>=0 && i<a.length) {
            a[i] = v;
        }
        else {
            System.out.println("Invalid!!!!");
        }
    }

    public void printRecord() {
        System.out.print("Elements are : ");
        for(int x : a) {
            System.out.print(x + " ");
        }
        System.out.println();
    }

    public static void main(String[] args) {
        Q7 q = new Q7(3);

        q.acceptRecord(0, 20);
        q.acceptRecord(1, 4);
        q.acceptRecord(2, 24);

        q.printRecord();
    }
}
```

```
Elements are : 20 4 24
```

8. Modify the previous assignment to use getter and setter methods instead of `acceptRecord` and `printRecord`.

```
package com.string;

public class GetSet {

    private int[] a;

    public GetSet(int s) {
            a = new int[s];
    }

    public void setA(int i, int v) {
            if(i>=0 && i<a.length) {
                    a[i] = v;
            }
            else {
                    System.out.println("Index out of bound.....");
            }
    }

    public int getA(int i) {
            if(i>=0 && i< a.length) {
                    return a[i];
            }
            else {
                    System.out.println("Index out of bound.....");
                    return 0;
            }
    }
    public void printRecord() {
            System.out.print("Elements are : ");
            for(int x : a) {
                    System.out.println(x + " ");
            }
            System.out.println();
    }

    public static void main(String[] args) {
            GetSet g = new GetSet(3);

            g.setA(0, 10);
            g.setA(1, 20);
            g.setA(2, 30);

            g.printRecord();

            System.out.print("Element at index 2 is : " + g.getA(1));
    }
}
```



eclipse-workspace - Assignment_6/src/com/string/GetSet.java - Eclipse IDE
File Edit Source Refactor Source Navigate Search Project Run Window Help
SD2.java MaxMin.java Duplicate.java Intersection.java MissingNum.java Q7.java GetSet.java
Task List Problems Javadoc Declaration Console

```
        else {
            System.out.println("Index out of bound.....");
            return 0;
        }
    }

    public void printRecord() {
        System.out.print("Elements are : ");
        for(int x : a) {
            System.out.print(x + " ");
        }
        System.out.println();
    }

    public static void main(String[] args) {
        GetSet g = new GetSet(3);

        g.setA(0, 10);
        g.setA(1, 20);
        g.setA(2, 30);

        g.printRecord();

        System.out.print("Element at index 2 is : " + g.getA(1));
    }
}
```

```
<terminated> GetSet [Java Application] C:\Users\nehas\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win3
Elements are : 10 20 30
Element at index 2 is : 20
```

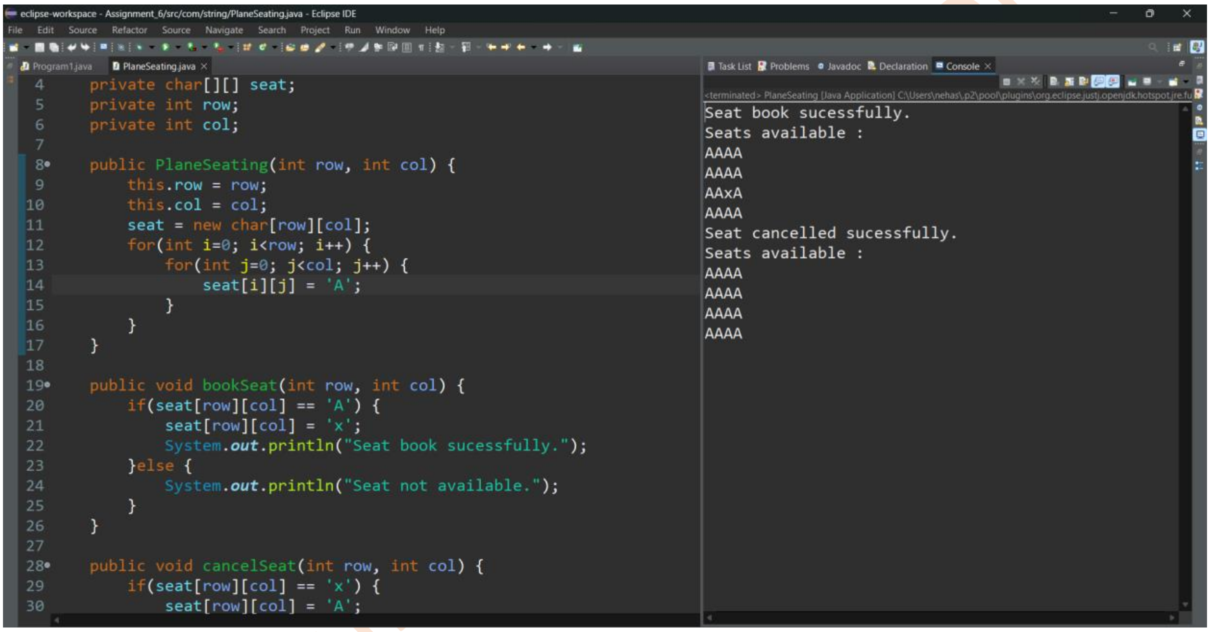
9. You need to implement a system to manage airplane seat assignments. The airplane has seats arranged in rows and columns. Implement functionalities to:

- Initialize the seating arrangement with a given number of rows and columns.
- Book a seat to mark it as occupied.
- Cancel a booking to mark a seat as available.
- Check seat availability to determine if a specific seat is available.
- Display the current seating chart.

```
    package com.string;
    }

public class PlaneSeating {

    private char[][] seat;

    private int row;

    private int col;


    public PlaneSeating(int row, int col) {

        this.row = row;

        this.col = col;

        seat = new char[row][col];

        for(int i=0; i<row; i++) {

            for(int j=0; j<col; j++) {

                seat[i][j] = 'A';

            }

        }

    }


    public void bookSeat(int row, int col) {

        if(seat[row][col] == 'A') {

            seat[row][col] = 'x';

            System.out.println("Seat book sucessfully.");

        }else {

            System.out.println("Seat not available.");

        }

    }
```

```
public void cancelSeat(int row, int col) {
    if(seat[row][col] == 'x') {
        seat[row][col] = 'A';
        System.out.println("Seat cancelled sucessfully.");
    }else {
        System.out.println("Seat is available.");
    }
}

public void displayRecord() {
    System.out.println("Seats available : ");
    for(int i=0; i<row; i++) {
        for(int j=0; j<col; j++) {
            System.out.print(seat[i][j]);
        }
        System.out.println();
    }
}

public static void main(String[] args) {
    PlaneSeating p = new PlaneSeating(4, 4);
    p.bookSeat(2,2);
    p.displayRecord();
```

```
                p.cancelSeat(2,2);

                p.displayRecord();

        }

}
```


eclipse-workspace - Assignment_6/src/com/string/PlaneSeating.java - Eclipse IDE
File Edit Source Refactor Source Navigate Search Project Run Window Help
Program1.java
PlaneSeating.java
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Declaration
Console
<terminated> PlaneSeating [Java Application] C:\Users\nehas\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.fu

```java
    private char[][] seat;
    private int row;
    private int col;

    public PlaneSeating(int row, int col) {
        this.row = row;
        this.col = col;
        seat = new char[row][col];
        for(int i=0; i<row; i++) {
            for(int j=0; j<col; j++) {
                seat[i][j] = 'A';
            }
        }
    }

    public void bookSeat(int row, int col) {
        if(seat[row][col] == 'A') {
            seat[row][col] = 'x';
            System.out.println("Seat book sucessfully.");
        }else {
            System.out.println("Seat not available.");
        }
    }

    public void cancelSeat(int row, int col) {
        if(seat[row][col] == 'x') {
            seat[row][col] = 'A';
```

```
Seat book sucessfully.
Seats available :
AAAA
AAAA
AAxA
AAAA
Seat cancelled sucessfully.
Seats available :
AAAA
AAAA
AAAA
AAAA
```