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.

Ans –

package cdac.array_q1;

import java.util.Scanner;

public class Array {

> **public static void main(String[] args) {**
>
> > **Scanner sc = new Scanner(System.*in*);**
> >
> > **int arr[] = new int[5];**
> >
> > **System.*out*.println("Default values of the array :   ");**
> >
> > **for (int index = 0; index < arr.length; ++index) {**
> >
> > > **System.*out*.println(arr[index] + " ");**
> >
> > **}**
> >
> > **System.*out*.println("Enter the 5 elements of array :   ");// enter the elements**
> >
> > **for (int i = 0; i < arr.length; ++i) {**
> >
> > > **arr[i] = sc.nextInt();**
> >
> > **}**
> >
> > **System.*out*.println("Updated values of array :   ");// enter the elements**
> >
> > **for (int i = 0; i < arr.length; ++i) {**
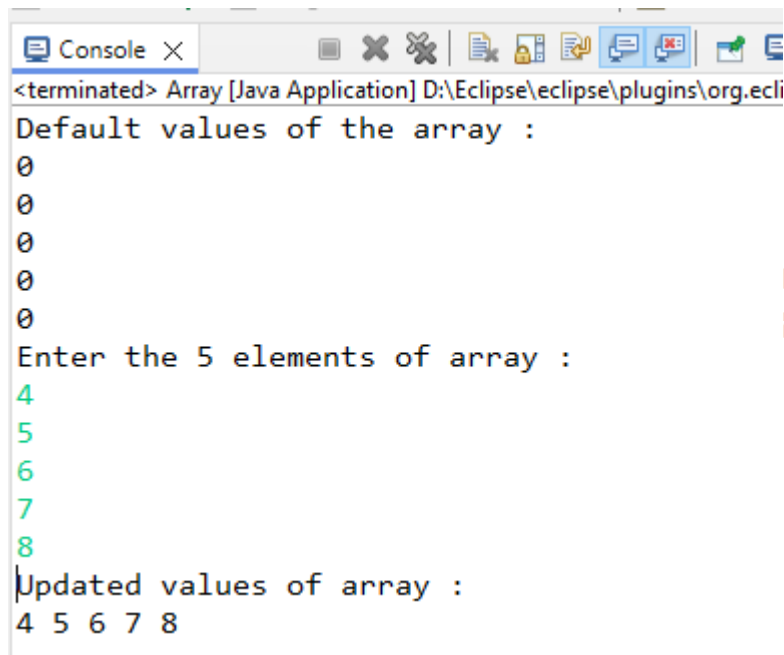
System.*out*.print(arr[i] + " ");

}

sc.close();

}

}

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.
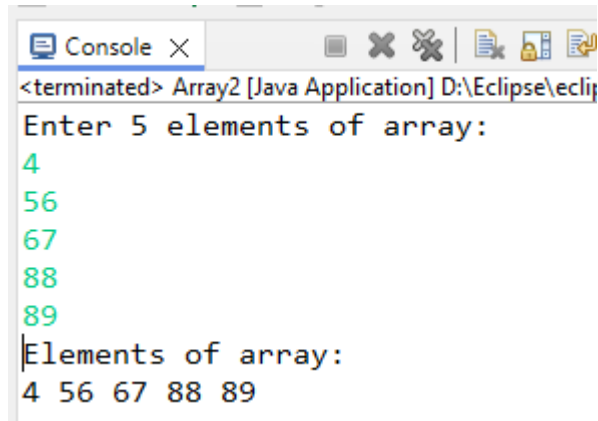
Ans –

package cdac.array_q2;

import java.util.Scanner;

public class Array2 {

Scanner sc = new Scanner(System.*in*);

```java
public void acceptRecord(int[] arr) {

        System.out.println("Enter 5 elements of array:   ");

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

                arr[i] = sc.nextInt();

        }

}



public void printRecord(int[] arr) {

        System.out.println("Elements of array:   ");

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

                System.out.print(arr[i] + " ");

        }

}



public static void main(String[] args) {

        int arr[] = new int[5]; // array initialisation

        Array2 a2 = new Array2(); // object of class is made to acess methods and
variables/fields of class

        a2.acceptRecord(arr);

        a2.printRecord(arr);

    }

}
```

Console ×   ■ ✖ ✖ 📄 📑 📑
<terminated> Array2 [Java Application] D:\Eclipse\eclip
Enter 5 elements of array:
4
56
67
88
89
Elements of array:
4 56 67 88 89

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

Ans –

package cdac.array_q3;

public class Array3 {

    public static void main(String[] args) {

//   **int arr [] = {1, 2, 3, 4, 5};**

    int arr[] = new int[5];

    arr[0] = 134;

    arr[1] = 25;

    arr[2] = 36;

    arr[3] = 445;

    arr[4] = 51;

    int max = arr[0];

```java
        int min = arr[0];


        for (int i = 1; i < arr.length; ++i) {

            if (arr[i] > max) {

                max = arr[i];

            }

        }


        for (int i = 1; i < arr.length; ++i) {

            if (arr[i] < min) {

                min = arr[i];

            }

        }


        System.out.println("Maximum of array:   " + max);

        System.out.println("Minimum of array:   " + min);

    }

}
```
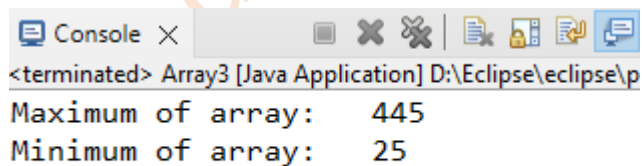
```
Console  ×                          ■ ✖ ✖  ▤ ▤ ▤ ▤
<terminated> Array3 [Java Application] D:\Eclipse\eclipse\p
Maximum of array:    445
Minimum of array:    25
```

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

Ans-

package cdac_array_q4;

public class Array4 {

  int arr[] = { 23, 33, 45, 56, 45, 67, 23 };

  int count = 0;

  int newArr[] = new int[7];

  public void duplicateRemoval() {

    // To store unique elements in newArr after removing the duplicate elements

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

      int j;

      for (j = 0; j < count; j++) {

        if (arr[i] == newArr[j])

          break;

      }

      if (j == count) {

        newArr[count] = arr[i];

        count++;

      }

    }

    // printing the elements of old arr array

```java
        System.out.println("Elements of old array:   ");

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

                System.out.println(arr[i] + " "); // it will print array

        }


    // printing the elements of newArr array

    System.out.println("Elements of new array:   ");

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

            System.out.print(newArr[i] + " "); // it will print array

    }

}


public static void main(String[] args) {

        Array4 a = new Array4();

        a.duplicateRemoval();

    }

}
```
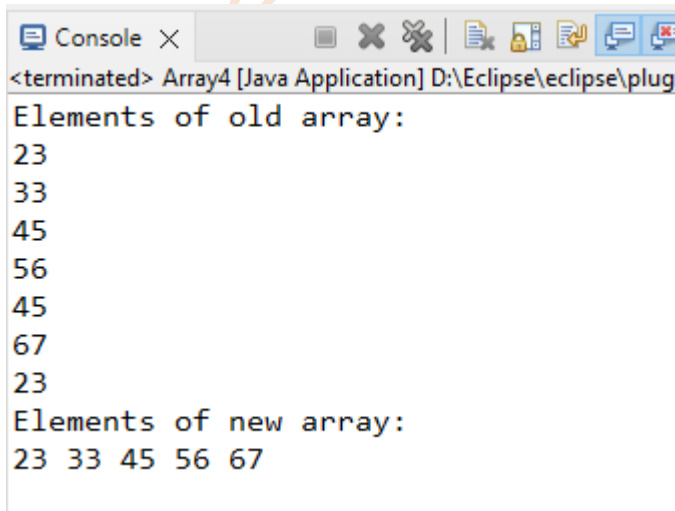
```
Console ✕        ■ ✖ ✖ | ▤ ⬚ ⬚ ⬚ ⬚
<terminated> Array4 [Java Application] D:\Eclipse\eclipse\plug
Elements of old array:
23
33
45
56
45
67
23
Elements of new array:
23 33 45 56 67
```

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

Ans-

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

Ans-

package cdac.array_q6;

public class Array6 {

    public static int findMissingNumber(int[] arr, int n) {

        int totalSum = n * (n + 1) / 2; // calculate sum of all numbers from 1 to n

        int arrSum = 0; // initialized to store the sum of the numbers in array

        for (int i = 0; i < arr.length; ++i) { // loop goes through each number(value) in array & add it to arrSum

            arrSum = arrSum + arr[i];

        }

        return totalSum - arrSum; // to find missing number we have to substract the sum of array from the

                // extracted sum

    }

    public static void main(String[] args) {

        int[] arr = { 1, 2, 4, 5 }; // array initialization

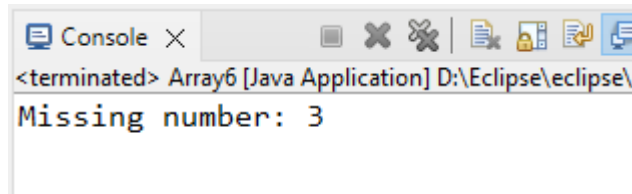   **int missingNumber = *findMissingNumber*(arr, 5); // method calling**

        System.*out*.println("Missing number: " + missingNumber);

        }

}

```
Console ×          ■ ✖ ✖ | ▤ ▤ ▤ ▤
<terminated> Array6 [Java Application] D:\Eclipse\eclipse\
Missing number: 3
```

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.

Ans-

package cdac.array_q7;

import java.util.Scanner;

public class Array7 {

      int arr[] = new int[5]; // array declaration

      public Array7() {

            this.arr = arr; // assign the passed array to the instance variable arr.

      }

      Scanner sc = new Scanner(System.*in*);

      public void acceptRecord() {

            // allow user to input 5 elements and it assigns these elements to the array
arr

```
        System.out.println("Enter 5 elements of array:   ");

        for (int i = 0; i < arr.length; i++) { // loop starts at the first element (i = 0)
and runs through all elements

                                                                      //
of the array until the last index. Inside the loop, to access each

                                                                      //
element of the array we use arr[i].

                arr[i] = sc.nextInt(); // take input from the user and store it in the
array arr at position i

        }

    }


    public void printRecord() {

        // this method will will print output

        System.out.println("Elements of array:   ");

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

                System.out.print(arr[i] + " "); // it will print array

        }

    }


    public static void main(String[] args) {


        Array7 a = new Array7(); // object of class is made to acess methods and
variables/fields of class

        a.acceptRecord(); // acceptRecord Method calling

        a.printRecord(); // printRecord Method calling

    }
```
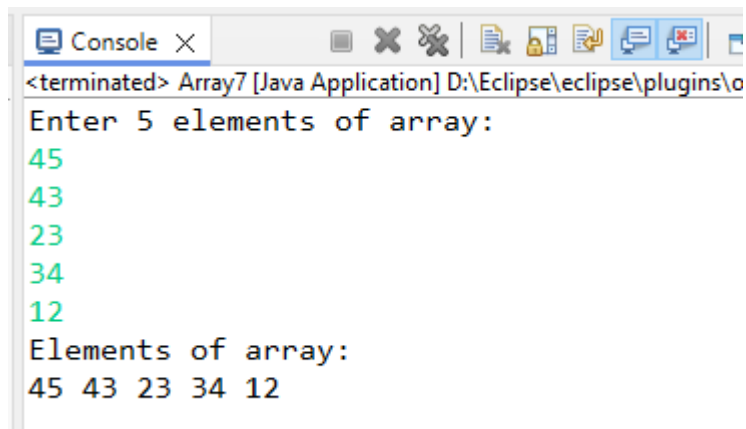
}

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

Ans-

package cdac.array_q8;

import java.util.Scanner;

public class Array8 {

    private int arr[] = new int[5]; // array declaration

    public Array8() {

        int arr[];

    }

    public Array8(int arr[]) {

        this.arr = arr;

    }
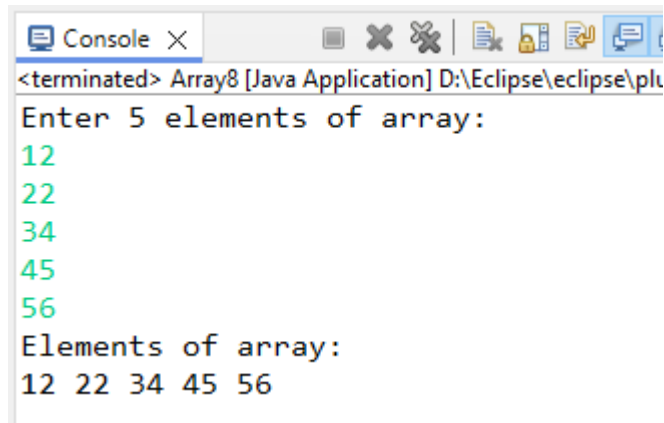
    private static Scanner *sc* = new Scanner(System.*in*);

```java
    public void setArray() {

            System.out.println("Enter 5 elements of array:   ");

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

                    arr[i] = sc.nextInt();

            }

    }



    public void getArray() {

            int i = 0;

            System.out.println("Elements of array:   ");

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

                    System.out.print(arr[i] + " ");

            }
//          return this.arr[i];

    }



    public static void main(String[] args) {


            Array8 a = new Array8(); // object of class is made to acess methods and
variables/fields of class

//          System.out.println(a.setArray());

            a.setArray();

            a.getArray();

    }
```

}

```
Console ×          ■ ✖ ✖ | ⯈ ⯈ ⯈ ⯈ ⯈
<terminated> Array8 [Java Application] D:\Eclipse\eclipse\plu
Enter 5 elements of array:
12
22
34
45
56
Elements of array:
12 22 34 45 56
```

Questions left – 5 (intersection), 9

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.

Ans -