**package** com.cdac;

**import** java.util.Scanner;

/\*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.

\*/

**public** **class** ArrayQone {

**public** **static** **void** main(String[] args) {

**int**[] arr=**new** **int**[5];

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

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

}

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

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

{

System.***out***.println("enter the value at index " + i);

arr[i]=sc.nextInt();

}

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

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

}

}

}

**package** com.cdac;

**import** java.util.Scanner;

**public** **class** ArrayQsecond {

/\* 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.

\*/

**public** **static** **void** main(String[] args) {

**int**[] arr=**new** **int**[5];

*acceptRecrd*(arr);

*printRecord*(arr);

}

**private** **static** **void** printRecord(**int**[] arr) {

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

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

}

}

**private** **static** **void** acceptRecrd(**int**[] arr) {

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

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

System.***out***.println("enter the element at " + i);

arr[i]=sc.nextInt();

}

}

}

**package** com.cdac;

**import** java.util.Scanner;

/\*3. Write a program to find the maximum and minimum values

\* in a single-dimensional array of integers.

\*/

**public** **class** ArrayQthree {

**public** **static** **void** main(String[] args) {

**int**[] arr=**new** **int**[7];

*acceptRecord*(arr);

*printRecord*(arr);

*findMax*(arr);

*findMin*(arr);

}

**private** **static** **void** findMin(**int**[] arr) {

**int** min=arr[0];

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

**if**(min>arr[i]) {

min=arr[i];

}

}

System.***out***.println("minimum value is" + min );

}

**private** **static** **void** findMax(**int**[] arr) {

**int** max=arr[0];

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

**if**(max<arr[i]) {

max=arr[i];

}

}

System.***out***.println("maximum value is" + max );

}

**private** **static** **void** printRecord(**int**[] arr) {

// **TODO** Auto-generated method stub

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

System.***out***.println("element at " + i + arr[i]);

}

}

**private** **static** **void** acceptRecord(**int**[] arr) {

// **TODO** Auto-generated method stub

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

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

System.***out***.println("enter the element at index" + i);

arr[i]=sc.nextInt();

}

}

}

**package** com.cdac;

/\*4. Write a program to remove duplicate elements

\* from a single-dimensional array of integers.

\*/

**public** **class** ArrayQFour {

**public** **static** **int** removeduplicates(**int** a[], **int** n)

{

**if** (n == 0 || n == 1) {

**return** n;

}

**int**[] temp = **new** **int**[n];

**int** j = 0;

**for** (**int** i = 0; i < n - 1; i++) {

**if** (a[i] != a[i + 1]) {

temp[j++] = a[i];

}

}

// checking the last element present in temp[]

**boolean** check = **true**;

**for** (**int** i = 0; i < j; i++) {

**if** (temp[i] == a[n - 1]) {

check = **false**;

**break**;

}

}

**if** (check == **true**) {

temp[j++] = a[n - 1];

}

**for** (**int** i = 0; i < j; i++) {

a[i] = temp[i];

}

**return** j;

}

**public** **static** **void** main(String[] args)

{

**int** a[] = { 1, 1, 2, 2, 2, 4, 2 };

**int** n = a.length;

n = *removeduplicates*(a, n);

**for** (**int** i = 0; i < n; i++)

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

}

}

**package** com.cdac;

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

**public** **class** ArrayQsix {

**public** **static** **void** main(String[] args) {

**int**[] arr= {1,2,3,6,7,9,10,4,8};

**int** n=10;

**int** sum=0;

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

sum=sum+arr[i];

}

**int** miss=n \* (n+1) /2 -sum;

System.***out***.println(miss);

}

}

**package** com.cdac;

**import** java.util.Scanner;

/\*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.

\*/

**public** **class** ArrayQSeven {

**private** **int**[] arr;

**public** ArrayQSeven(**int** size)

{

arr = **new** **int**[size];

}

**public** **void** acceptRecord() {

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

System.***out***.println("Enter array element:");

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

System.***out***.print("Enter value for element " + (i + 1) + ": ");

arr[i] = scanner.nextInt();

}

}

// Method to print the array values

**public** **void** printRecord() {

System.***out***.println("Array Elements:");

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

System.***out***.println("Element " + (i + 1) + ": " + arr[i]);

}

}

**public** **static** **void** main(String[] args) {

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

System.***out***.print("Enter the size of the array: ");

**int** size = scanner.nextInt();

ArrayQSeven array = **new** ArrayQSeven(size)

array.acceptRecord();

// Print the entered array values

array.printRecord();

}

}

**package** com.cdac;

**import** java.util.Scanner;

/\*8. Modify the previous assignment to use getter and setter methods

\* instead of acceptRecord and printRecord.

\*/

**public** **class** ArrayQEight {

**private** **int**[] arr;

**public** ArrayQEight(**int** size) {

arr = **new** **int**[size];

}

**public** **int**[] getArr() {

**return** arr;

}

**public** **void** setArr(**int**[] arr) {

**this**.arr = arr;

}

**public** **void** setArr(**int** position ,**int** value ) {

arr[position]= value ;

}

**public** **static** **void** main(String[] args) {

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

System.***out***.print("Enter the size of the array: ");

**int** size = scanner.nextInt();

ArrayQEight array = **new** ArrayQEight(size);

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

System.***out***.print("Enter value for element " + (i + 1) + ": ");

**int** value = scanner.nextInt();

array.setArr(i,value);

}

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

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

}

}

}

**package** com.cdac;

**import** java.util.Scanner;

**public** **class** ArrayQNine {

**private** **char**[][] seats;

**private** **int** rows;

**private** **int** columns;

**public** ArrayQNine(**int** rows, **int** columns) {

**this**.rows = rows;

**this**.columns = columns;

seats = **new** **char**[rows][columns];

initializeSeating();

}

**private** **void** initializeSeating() {

**for** (**int** i = 0; i < rows; i++) {

**for** (**int** j = 0; j < columns; j++) {

seats[i][j] = 'A'; // A represents an available seat

}

}

}

**public** **void** displaySeatingChart() {

System.***out***.println("\nCurrent Seating Chart:");

System.***out***.print(" ");

**for** (**int** col = 1; col <= columns; col++) {

System.***out***.print(col + " ");

}

System.***out***.println();

**for** (**int** i = 0; i < rows; i++) {

System.***out***.print((i + 1) + " ");

**for** (**int** j = 0; j < columns; j++) {

System.***out***.print(seats[i][j] + " ");

}

System.***out***.println();

}

}

**public** **boolean** bookSeat(**int** row, **int** column) {

**if** (isValidSeat(row, column)) {

**if** (seats[row - 1][column - 1] == 'A') {

seats[row - 1][column - 1] = 'O';

System.***out***.println("Seat booked successfully.");

**return** **true**;

} **else** {

System.***out***.println("Seat is already occupied.");

**return** **false**;

}

} **else** {

System.***out***.println("Invalid seat selection.");

**return** **false**;

}

}

**public** **boolean** cancelSeat(**int** row, **int** column) {

**if** (isValidSeat(row, column)) {

**if** (seats[row - 1][column - 1] == 'O') {

seats[row - 1][column - 1] = 'A';

System.***out***.println("Booking cancelled successfully.");

**return** **true**;

} **else** {

System.***out***.println("Seat is not occupied.");

**return** **false**;

}

} **else** {

System.***out***.println("Invalid seat selection.");

**return** **false**;

}

}

**public** **boolean** checkSeatAvailability(**int** row, **int** column) {

**if** (isValidSeat(row, column)) {

**if** (seats[row - 1][column - 1] == 'A') {

System.***out***.println("Seat is available.");

**return** **true**;

} **else** {

System.***out***.println("Seat is occupied.");

**return** **false**;

}

} **else** {

System.***out***.println("Invalid seat selection.");

**return** **false**;

}

}

**private** **boolean** isValidSeat(**int** row, **int** column) {

**return** row > 0 && row <= rows && column > 0 && column <= columns;

}

**public** **static** **void** main(String[] args) {

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

System.***out***.print("Enter the number of rows: ");

**int** rows = scanner.nextInt();

System.***out***.print("Enter the number of columns: ");

**int** columns = scanner.nextInt();

ArrayQNine a = **new** ArrayQNine(rows, columns);

**while** (**true**) {

System.***out***.println("\nAirplane Seat Management:");

System.***out***.println("1. Display Seating Chart");

System.***out***.println("2. Book a Seat");

System.***out***.println("3. Cancel a Booking");

System.***out***.println("4. Check Seat Availability");

System.***out***.println("5. Exit");

System.***out***.print("Enter your choice: ");

**int** choice = scanner.nextInt();

**switch** (choice) {

**case** 1:

a.displaySeatingChart();

**break**;

**case** 2: // Book a seat

System.***out***.print("Enter row number: ");

**int** bookRow = scanner.nextInt();

System.***out***.print("Enter column number: ");

**int** bookColumn = scanner.nextInt();

a.bookSeat(bookRow, bookColumn);

**break**;

**case** 3: // Cancel a booking

System.***out***.print("Enter row number: ");

**int** cancelRow = scanner.nextInt();

System.***out***.print("Enter column number: ");

**int** cancelColumn = scanner.nextInt();

a.cancelSeat(cancelRow, cancelColumn);

**break**;

**case** 4: // Check seat availability

System.***out***.print("Enter row number: ");

**int** checkRow = scanner.nextInt();

System.***out***.print("Enter column number: ");

**int** checkColumn = scanner.nextInt();

a.checkSeatAvailability(checkRow, checkColumn);

**break**;

**case** 5: // Exit

System.***out***.println("Exiting the system.");

scanner.close();

**return**;

**default**:

System.***out***.println("Invalid choice. Please try again.");

}

}

}

}