|  |  |
| --- | --- |
| ASSIGNMENT 1 Solutions  In Java | Ishaan Mishra    1024030346 |

Lab Assignment 1 Solutions in Java

# Question 1

// Question 1: Menu driven program for array operations  
import java.util.Scanner;  
class ArrayMenu {  
 static int arr[] = new int[50];  
 static int n = 0;  
  
 static void create(Scanner sc) {  
 System.out.print("Enter size: ");  
 n = sc.nextInt();  
 System.out.println("Enter elements:");  
 for (int i = 0; i < n; i++) arr[i] = sc.nextInt();  
 }  
  
 static void display() {  
 for (int i = 0; i < n; i++) System.out.print(arr[i] + " ");  
 System.out.println();  
 }  
  
 static void insert(Scanner sc) {  
 System.out.print("Enter position and element: ");  
 int pos = sc.nextInt(), val = sc.nextInt();  
 for (int i = n; i > pos; i--) arr[i] = arr[i - 1];  
 arr[pos] = val; n++;  
 }  
  
 static void delete(Scanner sc) {  
 System.out.print("Enter position: ");  
 int pos = sc.nextInt();  
 for (int i = pos; i < n - 1; i++) arr[i] = arr[i + 1];  
 n--;  
 }  
  
 static void linearSearch(Scanner sc) {  
 System.out.print("Enter element to search: ");  
 int x = sc.nextInt();  
 for (int i = 0; i < n; i++)  
 if (arr[i] == x) { System.out.println("Found at " + i); return; }  
 System.out.println("Not found");  
 }  
  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.in);  
 while (true) {  
 System.out.println("1.CREATE 2.DISPLAY 3.INSERT 4.DELETE 5.SEARCH 6.EXIT");  
 int ch = sc.nextInt();  
 switch (ch) {  
 case 1: create(sc); break;  
 case 2: display(); break;  
 case 3: insert(sc); break;  
 case 4: delete(sc); break;  
 case 5: linearSearch(sc); break;  
 case 6: return;  
 }  
 }  
 }  
}

# Question 2

// Question 2: Remove duplicates from array  
class RemoveDuplicates {  
 public static void main(String[] args) {  
 int arr[] = {1, 2, 2, 3, 4, 4, 5};  
 int n = arr.length;  
 int temp[] = new int[n];  
 int j = 0;  
 for (int i = 0; i < n - 1; i++) {  
 if (arr[i] != arr[i + 1]) temp[j++] = arr[i];  
 }  
 temp[j++] = arr[n - 1];  
 for (int i = 0; i < j; i++) System.out.print(temp[i] + " ");  
 }  
}

# Question 3

// Question 3: Predict Output  
  
output: 10000

# Question 4

// Question 4a: Reverse an array  
class ReverseArray {  
 public static void main(String[] args) {  
 int arr[] = {1, 2, 3, 4, 5};  
 for (int i = arr.length - 1; i >= 0; i--)  
 System.out.print(arr[i] + " ");  
 }  
}  
  
// Question 4b: Matrix Multiplication  
class MatrixMultiply {  
 public static void main(String[] args) {  
 int a[][] = {{1, 2}, {3, 4}};  
 int b[][] = {{5, 6}, {7, 8}};  
 int c[][] = new int[2][2];  
 for (int i = 0; i < 2; i++)  
 for (int j = 0; j < 2; j++)  
 for (int k = 0; k < 2; k++)  
 c[i][j] += a[i][k] \* b[k][j];  
 for (int i = 0; i < 2; i++) {  
 for (int j = 0; j < 2; j++) System.out.print(c[i][j] + " ");  
 System.out.println();  
 }  
 }  
}  
  
// Question 4c: Transpose of Matrix  
class MatrixTranspose {  
 public static void main(String[] args) {  
 int a[][] = {{1, 2, 3}, {4, 5, 6}};  
 int r = 2, c = 3;  
 for (int i = 0; i < c; i++) {  
 for (int j = 0; j < r; j++) System.out.print(a[j][i] + " ");  
 System.out.println();  
 }  
 }  
}

# Question 5

// Question 5: Row and Column Sum  
class RowColSum {  
 public static void main(String[] args) {  
 int a[][] = {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}};  
 int r = 3, c = 3;  
 for (int i = 0; i < r; i++) {  
 int sum = 0;  
 for (int j = 0; j < c; j++) sum += a[i][j];  
 System.out.println("Row " + i + " sum = " + sum);  
 }  
 for (int j = 0; j < c; j++) {  
 int sum = 0;  
 for (int i = 0; i < r; i++) sum += a[i][j];  
 System.out.println("Col " + j + " sum = " + sum);  
 }  
 }  
}