

Week & Date	Idx	Program	Sign
8	8.1	Linear Search	
	8.2	Binary Search	
	8.3	Bubble Sort	
	8.4	delete or remove a character using StringBuffer	
	8.5	Matrix Multiplication	
	8.6	Minimum and Maximum Element in an Array	
	8.7	Sum and Average of Array elements	

Program1

AIM: Write a JAVA program to search for an element in a given list of elements using linear search mechanism.

PROGRAM:

```
import java.util.Scanner;
public class LSearch {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the number of elements : ");
        int n = sc.nextInt();
        int[] a = new int[n];
        int i, key;
        System.out.println("Enter the elements : ");
        for (i=0; i<n; i++) {
            a[i] = sc.nextInt();
        }
        System.out.print("Enter the element to search: ");
```

```

key = sc.nextInt();
for (i=0; i<n; i++) {
    if (a[i] == key) {
        break;
    }
}
if (i!=n)
    System.out.println("Element found at Position : " + (i+1));
else
    System.out.println("Element not found.");
sc.close();
}
}

```

OUTPUT:

```

D:\AY2026_27\JAVA\LAB\Week8>javac LSearch.java

D:\AY2026_27\JAVA\LAB\Week8>java LSearch
Enter the number of elements: 5
Enter the elements:
23
41
76
53
25
Enter the element to search: 53
Element found at Position : 4

D:\AY2026_27\JAVA\LAB\Week8>java LSearch
Enter the number of elements: 5
Enter the elements:
23
41
76
53
25
Enter the element to search: 50
Element not found.

```

Program2

AIM: Write a JAVA program to search for an element in a given list of elements using Binary Search Mechanism.

PROGRAM:

```
import java.util.Scanner;
public class LSearch {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the number of elements : ");
        int n = sc.nextInt();
        int[] a = new int[n];
        int i, key;
        System.out.println("Enter the elements : ");
        for (i=0; i<n; i++) {
            a[i] = sc.nextInt();
        }
        System.out.print("Enter the element to search: ");
        key = sc.nextInt();
        int lb=0;
        int ub=n-1, mid=-1;
        while(lb<=ub)
        {
            mid = (lb+ub)/2;
            if (a[mid] == key)
                break;
            else if(a[mid] > key)
                ub=mid-1;
            else
                lb=mid+1;
        }
        if (lb<=ub)
            System.out.println("Element found at Position : " + (mid+1));
        else
            System.out.println("Element not found.");
        sc.close();
    }
}
```

}

OUTPUT:

```
D:\AY2026_27\JAVA\LAB\Week8>javac BSearch.java

D:\AY2026_27\JAVA\LAB\Week8>java BSearch
Enter the number of elements : 5
Enter the elements :
10
20
30
40
50
Enter the element to search: 50
Element found at Position : 5

D:\AY2026_27\JAVA\LAB\Week8>java BSearch
Enter the number of elements : 5
Enter the elements :
12
14
36
48
59
Enter the element to search: 60
Element not found.
```

Program3

AIM: Write a JAVA program to sort the elements in a given list using bubble sort

PROGRAM:

```
import java.util.Scanner;
public class BubbleSort {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the number of elements: ");
        int n = sc.nextInt();
        int[] arr = new int[n];
        System.out.println("Enter the elements : ");
        for (int i = 0; i < n; i++) {
            arr[i] = sc.nextInt();
        }
        for (int i = 0; i < n - 1; i++) {
            for (int j = 0; j < n - 1 - i; j++) {
                if (arr[j] > arr[j + 1]) {
                    int temp = arr[j];
                    arr[j] = arr[j + 1];
                    arr[j + 1] = temp;
                }
            }
        }
        System.out.println("Array after sorting : ");
        for (int i = 0; i < n; i++) {
            System.out.print(arr[i] + " ");
        }
        sc.close();
    }
}
```

OUTPUT:

```
D:\AY2026_27\JAVA\LAB\Week8>javac BubbleSort.java
```

```
D:\AY2026_27\JAVA\LAB\Week8>java BubbleSort
```

```
Enter the number of elements: 5
```

```
Enter the elements :
```

```
12 76 34 93 45
```

```
Array after sorting :
```

```
12 34 45 76 93
```

Program4

AIM: Write a JAVA program using String Buffer to delete or remove a character.

PROGRAM:

```
import java.util.Scanner;
public class StringBufferDelete {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a string: ");
        String str = sc.nextLine();
        StringBuffer sb = new StringBuffer(str);
        System.out.print("Enter the index of the character to delete: ");
        int index = sc.nextInt();
        if (index >= 0 && index < sb.length()) {
            sb.deleteCharAt(index);
            System.out.println("String after deleting the character: " + sb);
        } else {
            System.out.println("Invalid index.");
        }
        sc.close();
    }
}
```

OUTPUT:

```
D:\AY2026_27\JAVA\LAB\Week8>javac StringBufferDelete.java
D:\AY2026_27\JAVA\LAB\Week8>java StringBufferDelete
Enter a string: LBRCE
Enter the index of the character to delete: 2
String after deleting the character: LBCE
```

Program5

AIM: Write a Java program to perform matrix multiplication

PROGRAM:

```
import java.util.Scanner;
public class MM {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter rows of first matrix: ");
        int r1 = sc.nextInt();
        System.out.print("Enter columns of first matrix: ");
        int c1 = sc.nextInt();
        System.out.print("Enter rows of second matrix: ");
        int r2 = sc.nextInt();
        System.out.print("Enter columns of second matrix: ");
        int c2 = sc.nextInt();
        if (c1 != r2) {
            System.out.println("Matrix multiplication is not possible.");
            return;
        }
        int[][] a = new int[r1][c1];
        int[][] b = new int[r2][c2];
        int[][] result = new int[r1][c2];
        System.out.println("Enter elements of first matrix:");
        for (int i = 0; i < r1; i++) {
            for (int j = 0; j < c1; j++) {
                a[i][j] = sc.nextInt();
            }
        }
        System.out.println("Enter elements of second matrix:");
```

```

for (int i = 0; i < r2; i++) {
    for (int j = 0; j < c2; j++) {
        b[i][j] = sc.nextInt();
    }
}
for (int i = 0; i < r1; i++) {
    for (int j = 0; j < c2; j++) {
        for (int k = 0; k < c1; k++) {
            result[i][j] = result[i][j] + a[i][k] * b[k][j];
        }
    }
}

```

```

System.out.println("Resultant Matrix:");
for (int i = 0; i < r1; i++) {
    for (int j = 0; j < c2; j++) {
        System.out.print(result[i][j] + " ");
    }
    System.out.println();
}
sc.close();
} }

```

OUTPUT:

```
D:\AY2026_27\JAVA\LAB\Week8>javac MM.java
```

```
D:\AY2026_27\JAVA\LAB\Week8>java MM
```

```
Enter rows of first matrix: 2
```

```
Enter columns of first matrix: 3
```

```
Enter rows of second matrix: 3
```

```
Enter columns of second matrix: 2
```

```
Enter elements of first matrix:
```

```
2 1 3
```

```
4 0 2
```

```
Enter elements of second matrix:
```

```
5 2
```

```
1 4
```

```
3 7
```

```
Resultant Matrix:
```

```
20 29
```

```
26 22
```

```
D:\AY2026_27\JAVA\LAB\Week8>javac MM.java
```

```
D:\AY2026_27\JAVA\LAB\Week8>java MM
```

```
Enter rows of first matrix: 3
```

```
Enter columns of first matrix: 3
```

```
Enter rows of second matrix: 2
```

```
Enter columns of second matrix: 3
```

```
Matrix multiplication is not possible.
```

Program6

AIM: Write a Java program to find Minimum and Maximum Element in an Array

PROGRAM:

```
import java.util.Scanner;
```

```
public class MinMaxArray {
```

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

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

```
        System.out.print("Enter the number of elements: ");
```

```
        int n = sc.nextInt();
```

```
        int[] arr = new int[n];
```

```
        System.out.println("Enter the elements:");
```

```
        for (int i = 0; i < n; i++) {
```

```
            arr[i] = sc.nextInt();
```

```
        }
```

```
int min = arr[0];
int max = arr[0];
for (int i = 1; i < n; i++) {
    if (arr[i] < min) {
        min = arr[i];
    }
    if (arr[i] > max) {
        max = arr[i];
    }
}
System.out.println("Minimum element: " + min);
System.out.println("Maximum element: " + max);
sc.close();
}
}
```

OUTPUT:

```
D:\AY2026_27\JAVA\LAB\Week8>javac MinMaxArray.java

D:\AY2026_27\JAVA\LAB\Week8>java MinMaxArray
Enter the number of elements: 5
Enter the elements:
45 23 76 12 55
Minimum element: 12
Maximum element: 76
```

Program7

AIM: Write a Java program to find sum and average of elements in an Array

PROGRAM:

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

        System.out.print("Enter the number of elements: ");
        int n = sc.nextInt();
        int[] arr = new int[n];
        System.out.println("Enter the elements:");
        for (int i = 0; i < n; i++) {
            arr[i] = sc.nextInt();
        }
    }
}
```

```
int sum = 0;
float avg = 0.0f;
for (int i = 0; i < n; i++) {
    sum=sum+arr[i];
}
avg = (float)sum/n;

System.out.printf("Sum = %d%n ",sum);
System.out.printf("Average = %.2f ",avg );
sc.close();
}
}
```

OUTPUT:

```
D:\AY2026_27\JAVA\LAB\Week8>javac SumAvgArray.java

D:\AY2026_27\JAVA\LAB\Week8>java SumAvgArray
Enter the number of elements: 5
Enter the elements:
10 15 20 25 30
Sum = 100
Average = 20.00
```