DSA LAB 7

CODE

INPUT — **LINEAR SEARCH**

```
class LinearSearch {
static int linearSearch(int a[], int n, int src) {

  for (int i = 0; i < n; i++)
    {
        if (a[i] == src)
        return i+1;
    }
  return -1;
}
public static void main(String args[]) {
  int a[] = {1,2,3,4,5,6,7,8,9,10};
  int src = 10;
  int n = a.length;
  int res = linearSearch(a, n, src);
  System.out.println();
  System.out.print("The elements of the array are - ");
  for (int i = 0; i < n; i++)
  System.out.print(" " + a[i]);
  System.out.println();
  System.out.println("Element to be searched is - " + src);
  if (res == -1)
  System.out.println("Element is not present in the array");
  else
  System.out.println("Element is present at " + res+"th" +" position of
array");
}
}
```

OUTPUT

```
Install the latest PowerShell for new features and improvements! https://aka.ms/PS

PS C:\Users\krish\Documents\java>  & 'C:\Program Files\Java\jdk-18.0.1\bin\java.ex
sh\AppData\Roaming\Code\User\workspaceStorage\2c70a5e9ead433afa7c9efeb6ea4f1c5\red

The elements of the array are -  1 2 3 4 5 6 7 8 9 10
Element to be searched is - 10
Element is present at 10th position of array
PS C:\Users\krish\Documents\java>
```

BINARY SEARCH

CODE
INPUT

```
 class BinarySearch {
        static int binarySearch(int arr[], int beginning, int ending,
int src) {
            int mid;
            if (ending >= beginning) {
                mid = (beginning + ending) / 2;
                if (arr[mid] == src) {
                    return mid + 1;
                }

                else if (arr[mid] < src) {
                    return binarySearch(arr, mid + 1, ending, src);
                }

                else {
                    return binarySearch(arr, beginning, mid - 1, src);
                }
            }
            return -1;
        }

        public static void main(String args[]) {
            int arr[] = { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 };
            int src = 7;
            int n = arr.length;
            int res = binarySearch(arr, 0, n - 1, src);
            System.out.print("The elements of the array are: ");
            for (int i = 0; i < n; i++) {
                System.out.print(arr[i] + " ");
            }
            System.out.println();
            System.out.println("Element to be searched is: " + src);
            if (res == -1)
                System.out.println("Element is not present in the
array");
```

```
            else
                System.out.println("Element is present at " + res + "
position of array");
        }
    }
```

OUTPUT

```
Install the latest PowerShell for new features and improvements! https://aka.ms/PS

PS C:\Users\krish\Documents\java>  & 'C:\Program Files\Java\jdk-18.0.1\bin\java.ex
sh\AppData\Roaming\Code\User\workspaceStorage\2c70a5e9ead433afa7c9efeb6ea4f1c5\red
The elements of the array are: 1 2 3 4 5 6 7 8 9 10
Element to be searched is: 7
Element is present at 7 position of array
PS C:\Users\krish\Documents\java>
```