# DS PRACTICAL 03

AIM: [A] Create an array of size n and write a program to sort a given array by selection sort and bubble sort.

## SELECTION SORT

PROGRAM:

```
#include <stdio.h>

int main()

{

   int i, j, a[100],n, temp;


   printf("enter total number of array element");

   scanf("%d",&n);


   printf("enter array elements to be sorted :");

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

      scanf("%d", &a[i]);

   }


   printf("sorting the array elements....\n");

   for (i = 0; i < n; i++) {  // Loop until 4, because we compare arr[j] with arr[j+1]

      for (j = 0; j < n - i; j++) {

         if (a[j] > a[j + 1])  // To sort in ascending order

         {

            temp = a[j];

            a[j] = a[j + 1];

            a[j + 1] = temp;

         }

      }

   }


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

      printf("%d \n", a[i]);
```

```
    }
    return 0;
}
```

OUTPUT

```
PS C:\Users\Arpit\Desktop\cpp> cd 'c:\Users\Arpit\Desktop\cpp\output'
PS C:\Users\Arpit\Desktop\cpp\output> & .\'selection.exe'
enter total number of array element5
enter array elements to be sorted using binary search :1
3
2
4
5
sorting the array elements....
1
2
3
4
5
PS C:\Users\Arpit\Desktop\cpp\output>
```

BUBBLE SORT

PROGRAM:

```
#include<iostream>
using namespace std;
int main()
{
    int n, i, arr[50], j, temp;
    cout<<"Enter array Size : "<<endl;
    cin>>n;

    cout<<"Enter array element"<< endl;
    for(i=0; i<n; i++){
        cin>>arr[i];
    }

    for(i=0; i<(n-1); i++)
```

```
    {
        for(j=0; j<(n-i-1); j++)
        {
            if(arr[j]>arr[j+1])
            {
                temp = arr[j];
                arr[j] = arr[j+1];
                arr[j+1] = temp;
            }
        }
    }
    cout<<"The New Array is:"<<endl;
    for(i=0; i<n; i++)
        cout<<arr[i]<<" ";
    cout<<endl;
    return 0;
}
```

OUTPUT

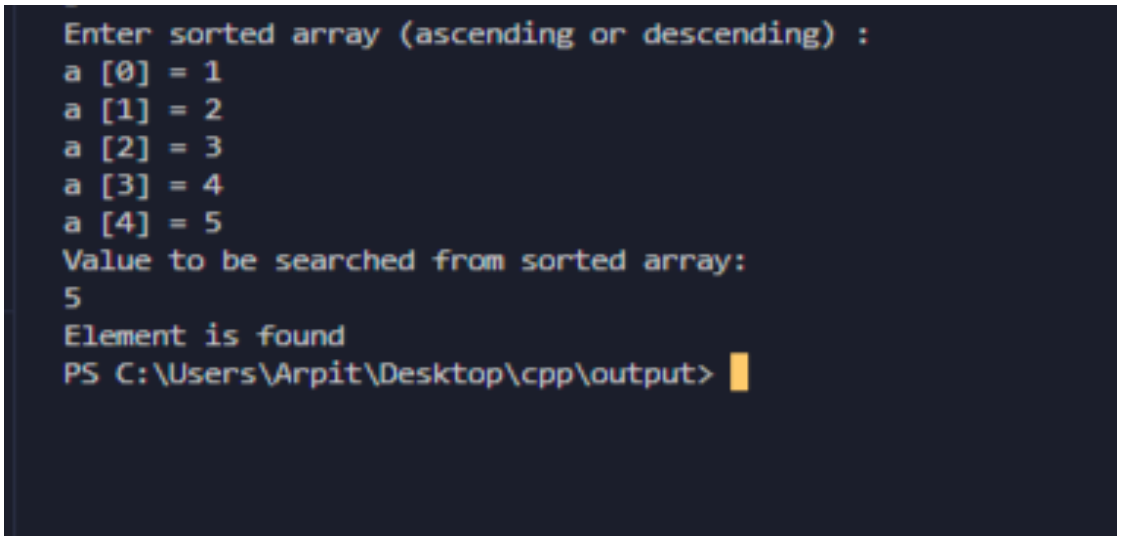
Write a program to search any number in your array using binary search.

PROGRAM:

```
#include <iostream>
using namespace std;
int main()
{
   int a[100], start_element, mid, end_element, i, n, value;

   cout << "Enter the array size: " << endl;
   cin >> n;

   cout << "Enter sorted array (ascending or descending) : " << endl;
   for (i = 0; i < n; i++)
   {
      cout << "a [" << i << "] = ";
      cin >> a[i];
   }

   start_element = 0;
   end_element = n - 1; // size of array n - 1

   cout << "Value to be searched from sorted array: " << endl;
   cin >> value;

   while (start_element <= end_element)
   {
      mid = (start_element + end_element) / 2;

      if (a[mid] == value)
      {
```

```
        cout << "Element is found" ;
        exit(0);
      }

      else if (value > a[mid])
      {
        start_element = mid + 1;
      }

      else if (value < a[mid])
      {
        end_element = mid - 1;
      }
    }
    cout << "Number is not found. " << endl;
    return 0;
}
```

OUTPUT




GITHUB LINK FOR PRACTICAL:

https://github.com/AYUSH-Mahajan-07/DS-