PROGRAMME:

1)

```c
#include<stdio.h>
#include<stdlib.h>

float e,a[50];
int n,c,j;

int ls()
{
   int i;
   for(i=0;i<n;i++)
   {
      c++;
      if(e==a[i])
      {
         c++;
         return i;
      }
      c++;
   }
   c++;
   return -1;
}

int bs(int f,int l)
{
   int m;
   m=(f+l)/2;
   if(e==a[m])
   {
      c++;
      return m;
   }
   else if(f==l)
   {
      c=c+2;
      return -1;
   }

   if(e<a[m])
   {
      c=c++;
      l=m-1;
   }
   else if(e>a[m])
   {
      c=c+2;
      f=m+1;
   }
   bs(f,l);
}

int main()
{
   int op;
   printf("1.Linear Search 2.Binary Search \n");
   scanf("%d",&op);
```

```c
    switch(op)
    {
    case 1:
        printf("Give the array size\n");
        scanf("%d",&n);
        printf("Give the array elements\n");
        for(int i=0;i<n;i++)
        {
            scanf("%f",&a[i]);
        }
        printf("Give the element that has to be
searched\n");
        scanf("%f",&e);
        if(ls()!=-1)
        {
            printf("The value of c is %d\n",c);
            printf("The first instance of the
element was found at %d position\n",ls()+1);
        }
        else
        printf("Element not found\n");
        break;

    case 2:
        printf("Give the array size\n");
        scanf("%d",&n);

        printf("Give the sorted array
elements\n");
        for(int i=0;i<n;i++)
        {
            scanf("%f",&a[i]);
        }
        printf("Give the element that has to be
searched\n");
        scanf("%f",&e);
        if(bs(0,n-1)!=-1)
        {
            printf("The value of c is %d\n",c);
            printf("The first instance of the
element was found at %d position\n",bs(0,n-
1)+1);
        }
        else if(bs(0,n-1)==-1)
        printf("Element not found\n");
        break;

    default:
        printf("Invalid input\n");
        break;
    }
    return 0;
}
```

OUTPUT:

```
PS C:\Users\PANKAJ PATIL\Desktop\DAA> gcc 1a.c
PS C:\Users\PANKAJ PATIL\Desktop\DAA> ./a
1.Linear Search 2.Binary Search
1
Give the array size
4
Give the array elements
3 2 6 1
Give the element that has to be searched
6
The value of c is 6
The first instance of the element was found at 3 position
```

```
PS C:\Users\PANKAJ PATIL\Desktop\DAA> ./a
1.Linear Search 2.Binary Search
2
Give the array size
4
Give the sorted array elements
1 2 3 4
Give the element that has to be searched
3
The value of c is 3
The first instance of the element was found at 3 position
```

2)

```c
#include<stdio.h>

#include<stdlib.h>


int c=0;


struct m

{

   float min;

   float max;

};
```

```c
struct m mam(int f,int l,float a[])

{

   struct m mm,mml,mmr;


   int mid;


   if(f==l)

   {

      c++;

      mm.min=a[f];

      mm.max=a[l];
```

```c
    return mm;

}

c++;


if(l==f+1)

{

   if(a[f]>a[l])

   {

      mm.min=a[l];

      mm.max=a[f];

   }

   else

   {

      mm.min=a[f];

      mm.max=a[l];

   }

   c=c+2;

   return mm;

}

c++;


mid=(f+l)/2;

mml=mam(f,mid,a);

mmr=mam(mid+1,l,a);


if(mml.min<mmr.min)

mm.min=mml.min;

else

mm.min=mmr.min;

if(mml.max>mmr.max)

mm.max=mml.max;

else

mm.max=mmr.max;


c=c+2;


return mm;

}

void main()

{

   int n,i;

   printf("Give the number of elements\n ");

   scanf("%d",&n);

   float a[n];

   printf("Give the array elements \n");

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

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


   struct m minmax=mam(0,n-1,a);


   printf("The minimum and maximum numbers are %f %f\n",minmax.min,minmax.max);

   printf("The value of c is %d\n",c);


}
```

OUTPUT:

```
PS C:\Users\PANKAJ PATIL\Desktop\DAA> ./a
Give the number of elements
 5
Give the array elements
1 4 2 6 3
The minimum and maximum numbers are 1.000000 6.000000
The value of c is 15
```