❖ ***Binary Search***

Source Code:-

```
#include <stdio.h>
#include <time.h>
int main()
{  clock_t start, end;
    double time_used;
int i, low, high, mid, n, key;
start = clock();
printf("Enter number of elements\n");
scanf("%d",&n);
int array[n];
printf("Enter %d integers\n", n);
for(i = 0; i < n; i++)
scanf("%d",&array[i]);
printf("Enter value to find\n");
scanf("%d", &key);
low = 0;
high = n - 1;
mid = (low+high)/2;
while (low <= high) {
if(array[mid] < key)
low = mid + 1;
else if (array[mid] == key) {
printf("%d found at location %d.\n", key, mid+1);
break;
}
else
high = mid - 1;
mid = (low + high)/2;
}
if(low > high)
printf("Not found! %d isn't present in the list.\n", key);
end = clock();
time_used = ((double) (end - start)) / CLOCKS_PER_SEC;
printf("\n %f",time_used);}
```

Output:-

```
C:\Users\gaurav\Desktop>a
Enter number of elements
10
Enter 10 integers
23
45
78
90
99
456
500
700
890
999
Enter value to find
890
890 found at location 9.

 33.802000
```

❖ ***LinearSearch***

Source Code:-

```
#include<stdio.h>
#include <time.h>
 int main()
{  clock_t start, end;
    double time_used;
   int i,x,n;
     start = clock();
   printf("Number of Total Elements:");
   scanf("%d",&n);
    int a[n];
   printf("Enter array elements:\n");
   for(i=0;i<n;++i)
      scanf("%d",&a[i]);

   printf("\n Enter element to search:");
   scanf("%d",&x);

   for(i=0;i<n;++i)
      if(a[i]==x)
         break;

   if(i<n)
      printf("Element found at index %d",i);
   else
      printf("Element not found");

 end = clock();
time_used = ((double) (end - start)) / CLOCKS_PER_SEC;
printf("\n %f",time_used);}
```

Output:-

```
C:\Users\gaurav\Desktop>gcc Linear_Search.c

C:\Users\gaurav\Desktop>a
Number of Total Elements:12
Enter array elements:
234
4567
5675
6576
34
323
546
4576
567
567
89
67

 Enter element to search:67
Element found at index 11
 16.488000
C:\Users\gaurav\Desktop>
```