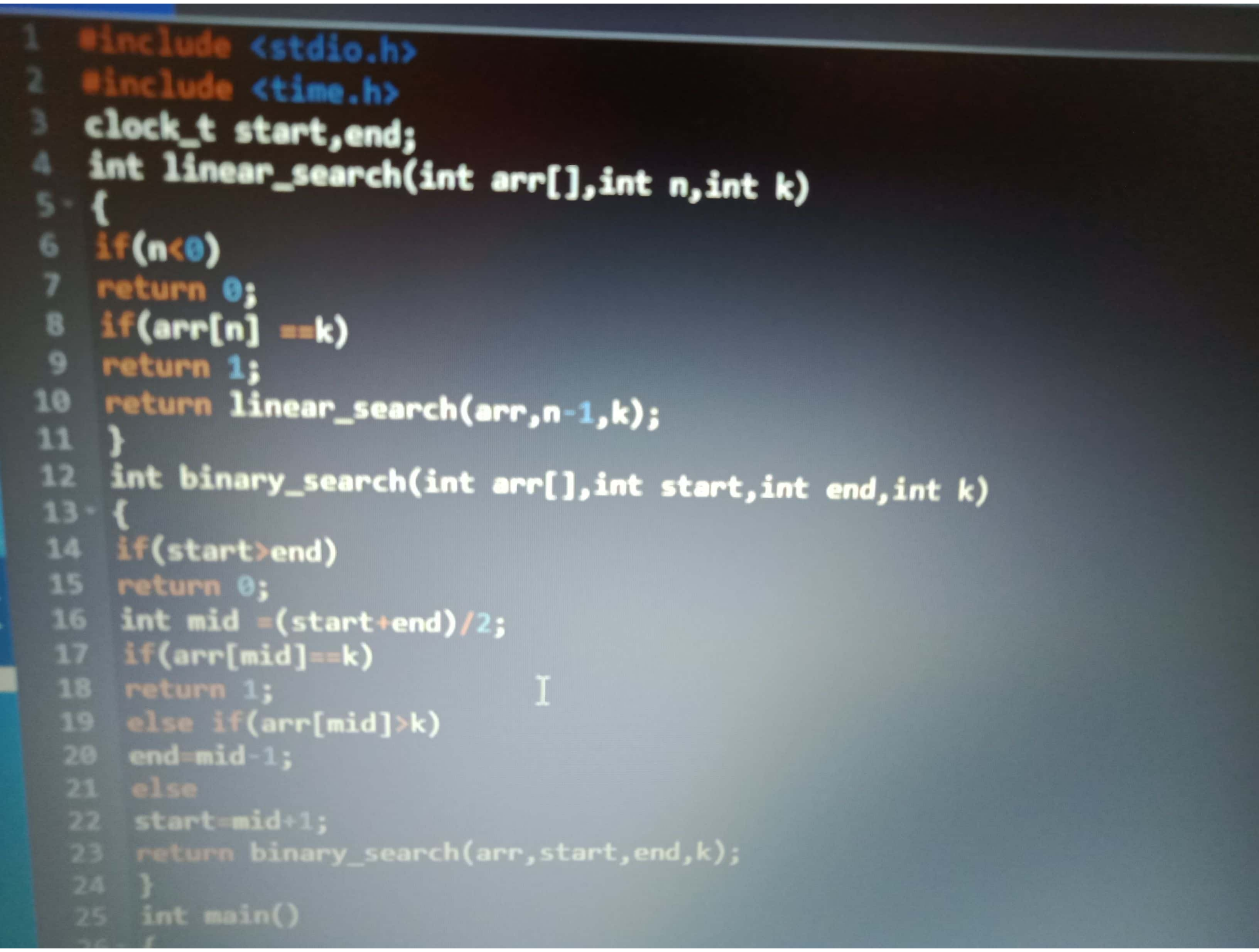
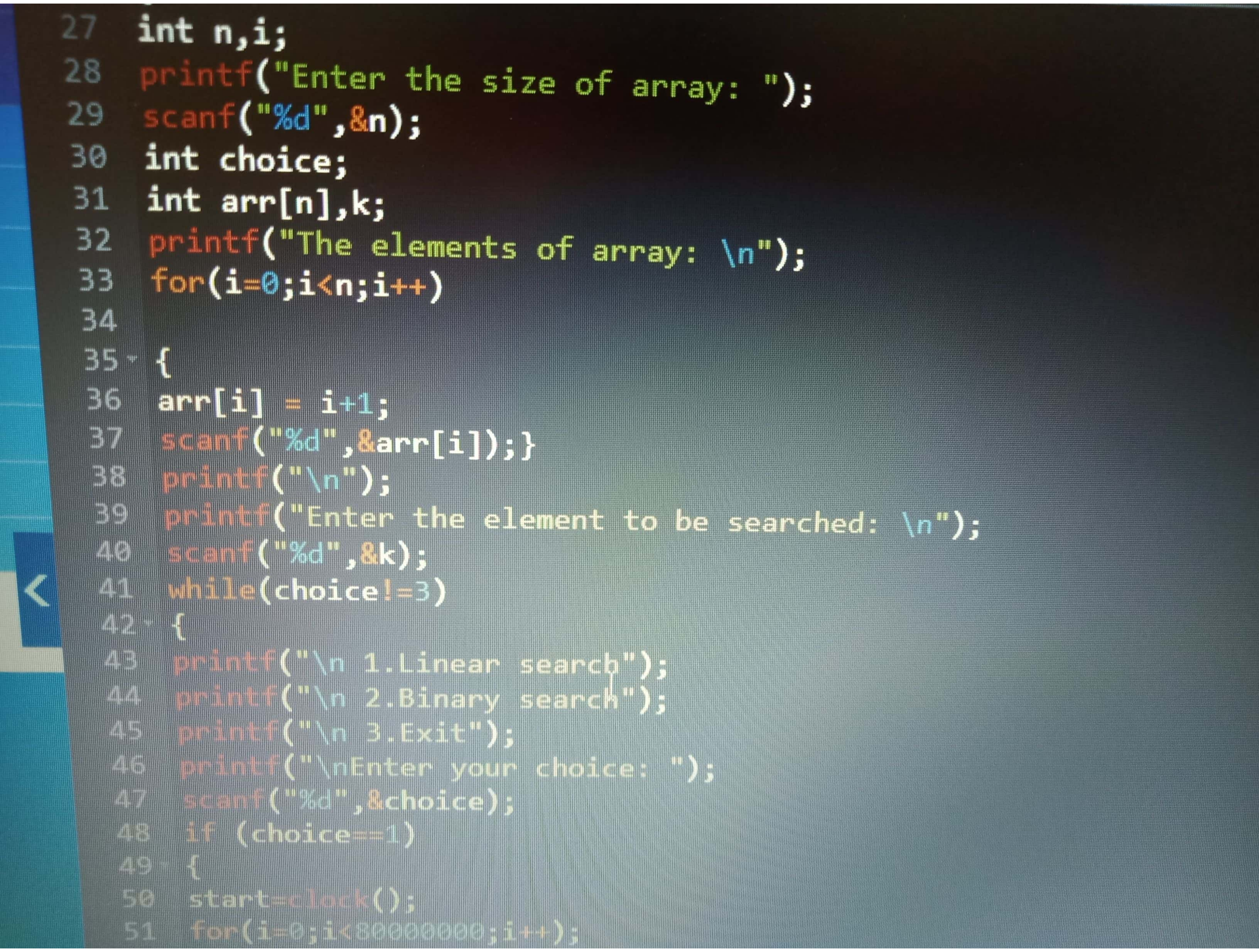
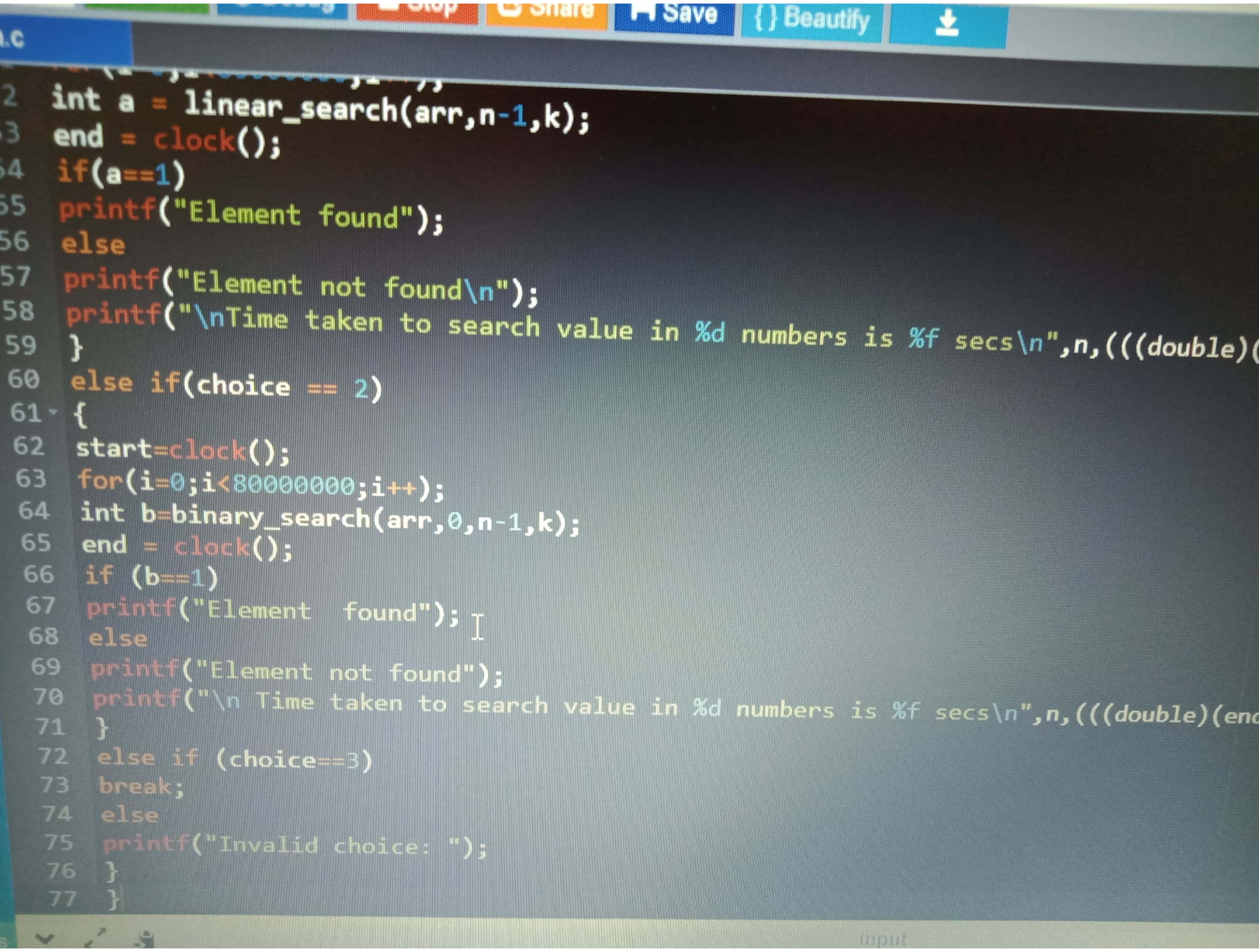


```
#include <stdio.h>
#include <time.h>
clock_t start,end;
int linear_search(int arr[],int n,int k)
{
if(n<0)
return 0;
if(arr[n] ==k)
return 1;
return linear_search(arr,n-1,k);
}
int binary_search(int arr[],int start,int end,int k)
{
if(start>end)
return 0;
int mid =(start+end)/2;
if(arr[mid]==k)
return 1;
else if(arr[mid]>k)
end=mid-1;
else
start=mid+1;
return binary_search(arr,start,end,k);
}
int main()
{
```



```c
int n,i;
printf("Enter the size of array: ");
scanf("%d",&n);
int choice;
int arr[n],k;
printf("The elements of array: \n");
for(i=0;i<n;i++)

{
arr[i] = i+1;
scanf("%d",&arr[i]);}
printf("\n");
printf("Enter the element to be searched: \n");
scanf("%d",&k);
while(choice!=3)
{
printf("\n 1.Linear search");
printf("\n 2.Binary search");
printf("\n 3.Exit");
printf("\nEnter your choice: ");
scanf("%d",&choice);
if (choice==1)
{
start=clock();
for(i=0;i<80000000;i++);
```



```
for(i=0;i<80000000;i++);
int a = linear_search(arr,n-1,k);
end = clock();
if(a==1)
printf("Element found");
else
printf("Element not found\n");
printf("\nTime taken to search value in %d numbers is %f secs\n",n,(((double)(
}
else if(choice == 2)
{
start=clock();
for(i=0;i<80000000;i++);
int b=binary_search(arr,0,n-1,k);
end = clock();
if (b==1)
printf("Element  found");
else
printf("Element not found");
printf("\n Time taken to search value in %d numbers is %f secs\n",n,(((double)(enc
}
else if (choice==3)
break;
else
printf("Invalid choice: ");
}
}
```

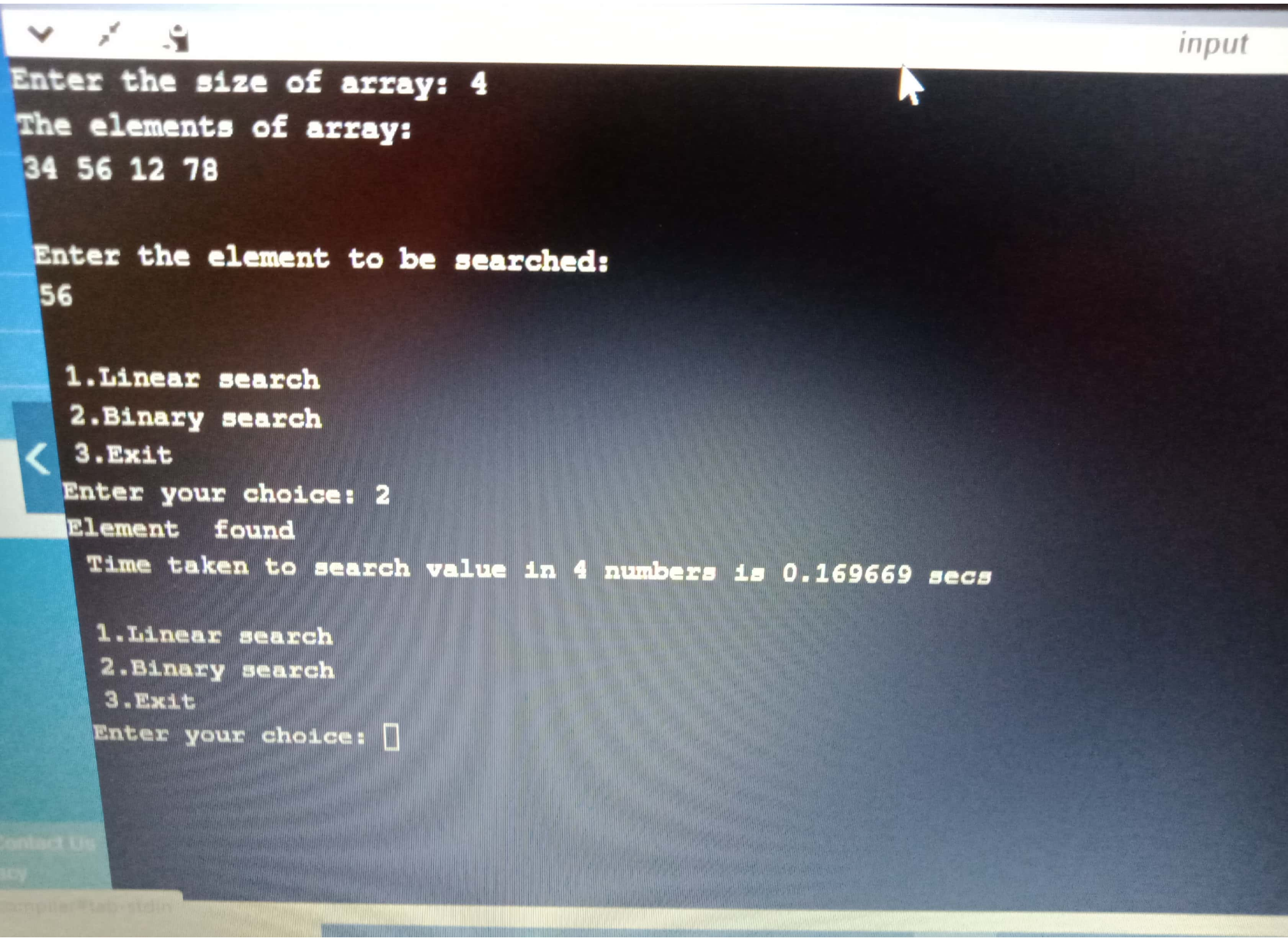
* Linear and Binary search:

```
#include <stdio.h>
#include <time.h>
clock_t start, end;
int linear_search (int arr[], int n , int k)
{
 if(n<0)
  return 0;
  if(arr[n] == k)
  return 1;
  return linear_search (arr, n-1, k);
  }
 int binary_search (int arr [], int start , int end,
                       int k)
 {
  if(start > end)
  return 0;
  int mid = (start +end)/2;
  if(arr [mid] == k)
  return 1;
  else if (arr [mid] > k)
  end = mid-1;
  else
  start = mid+1;
  return binary_search (arr, start, end, k);
  }
```

```
int main()
{
int n,i;
printf("Enter the size of array: ");
scanf("%d",&n);
int choice;
int arr[n],k;
printf("The elements of array:\n");
for(i=0;i<n;i++)
{
arr[i]=i+1;
printf("%d",arr[i]);
}
printf("\n");
printf("Enter the element tosearch:"
scanf("%d",&k);
while(choice!=3)
{
printf("1.Linear search");
printf("2.Binary search");
printf("3.Exit\n");
printf("Enter your choice");
scanf("%d",&choice);
if(choice==1)
{
```

```
start =clock();
for (i=0;i<80000000;i++);
int a = linear_search (arr, n-1, k);
end=clock();
if (a==1)
Printf ("Element found\n");
else
printf (" Element not found");
Printf ("Time taken to search value in %d
  numbers is %f secs", n, (((double)(end-start))
  clocks_PER_SEC));
}
else if (choice==2)
{
start =clock();
for(i=0;i<80000000;i++);
int b= binary_search (arr,0,n-1,k);
end=clock();
if(b==1)
Printf("Element found\n");
 else
 Printf ("\ntime taken to search value
   in %d number is %f secs\n", n,
    (((double)(end_start))/clocks.PER_
       SEC)); }
```

```
else if ((choice ==3)
 break;
 else
  Printf ("Invalid choice: ");
 int a= linear_search (arr, n-1, k);
 end=clock();
 if(a==1)
  Printf ("Element found ");
 else
  Printf("Element not found");
 Printf ("\n Time taken to search value
 in %d numbers is %f secs\n", (((double)
 (end-start)) / CLOCKS_PER_SEC));
  }
  else if(choice ==2)
 {
 Start = clock();
 for (i=0; i<80000000; i++);
 int b= binary_search (arr, 0, n-1, k);
 end = clock();
 if (b==1)
 Printf ("Element ,found \n");
 else
printf ("Element not found\n");
printf("\n time taken to search value in
 %d numbers is %f secs\n", n, ((double)(end
 start)) /CLOCKS_PER_SEC));
}
else if (choice == 3)
break;
 else
  printf("Invalid choice.");
  }
```



```
Enter the size of array: 4
The elements of array:
34 56 12 78

 Enter the element to be searched:
 56

  1.Linear search
  2.Binary search
  3.Exit
 Enter your choice: 2
 Element  found
  Time taken to search value in 4 numbers is 0.169669 secs

   1.Linear search
   2.Binary search
   3.Exit
  Enter your choice: 
```