Green University of Bangladesh

Department of Computer Science and Engineering (CSE)

Faculty of Sciences and Engineering

Semester: (Summer , Year:2022), B.Sc. in CSE (Day)

LAB REPORT NO 2

Course Title: Structured Programming Lab

Course Code: CSE 106 Section:PC-213DA

Lab Experiment Name: Linear Search & Binary Search

Student Details

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Lab Date :22-06-2022

Submission Date :28-06-2022

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[For Teachers use only: Don't Write Anything inside this box]

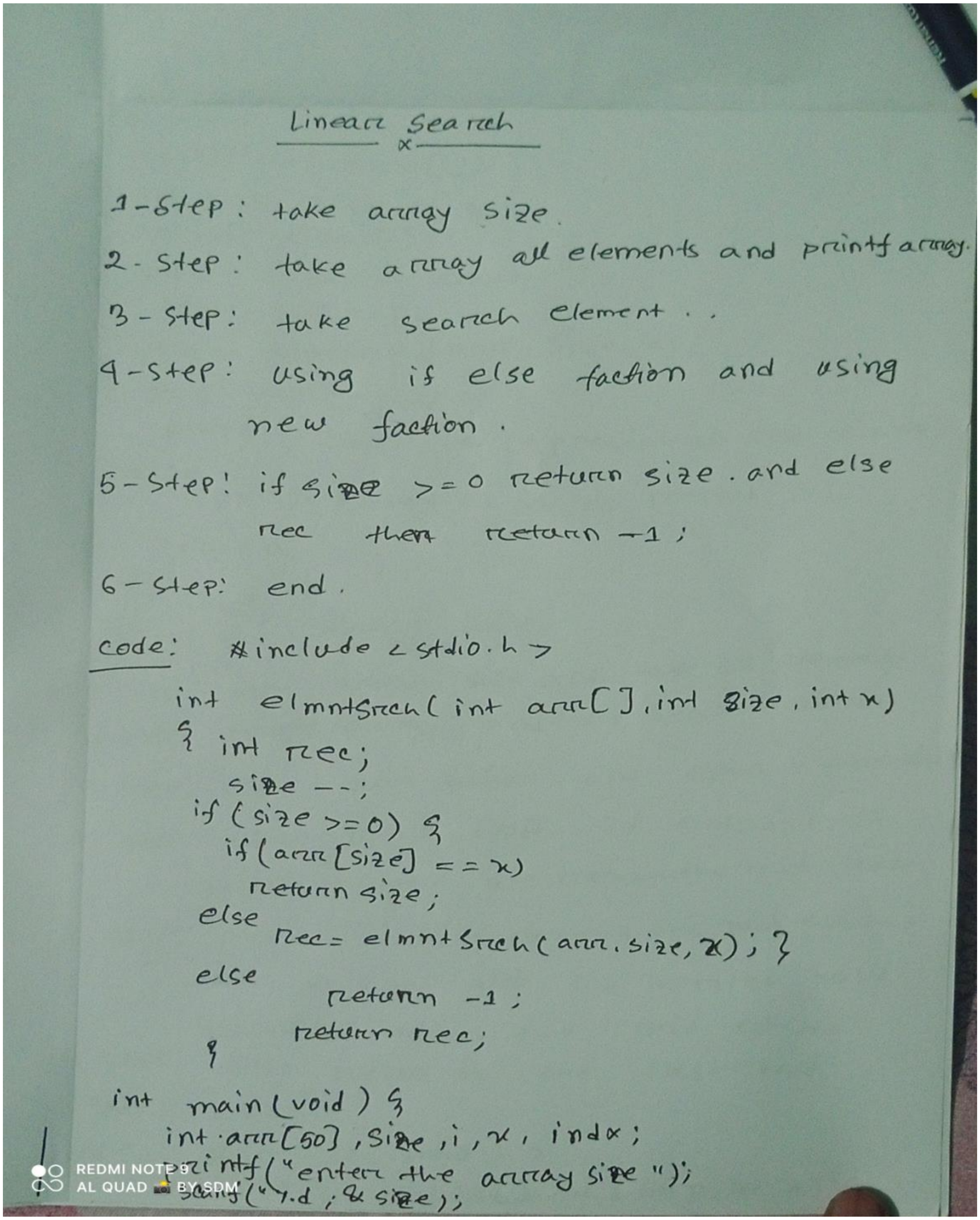
Lab Report Status

Marks: ………………………………… Signature:....................

Comments:... Date:.............................

```
#include <stdio.h>
Int elmntSrch(int arr[], int size, int x) {

  Int rec;
  Size--;
```

```
    If (size >= 0) {

        If (arr[size] == x)

            Return size;
        Else
            Rec = elmntSrch(arr, size, x);
    }
    Else
        Return -1;
    Return rec;
}
Int main(void) {
    Int arr[50],size,I,x, indx;
     Printf("enter the array size");

     Scanf("%d",&size);



    For(i=0;i<size;i++)

        {

        Scanf("%d",&arr[i]);

        }

        For(i=0;i<size;i++)

        Printf("%d",arr[i]);



        Printf("\n search element");

        Scanf("%d",&x);

    Indx = elmntSrch(arr, size, x);

    If (indx != -1)
        Printf("Element %d is present at index %d", x, indx);
    Else
        Printf("Element %d is not present", x);

    Return 0;
}
```



Linear Search

1-Step : take array size.

2-Step : take array all elements and printf array.

3-Step : take search element . .

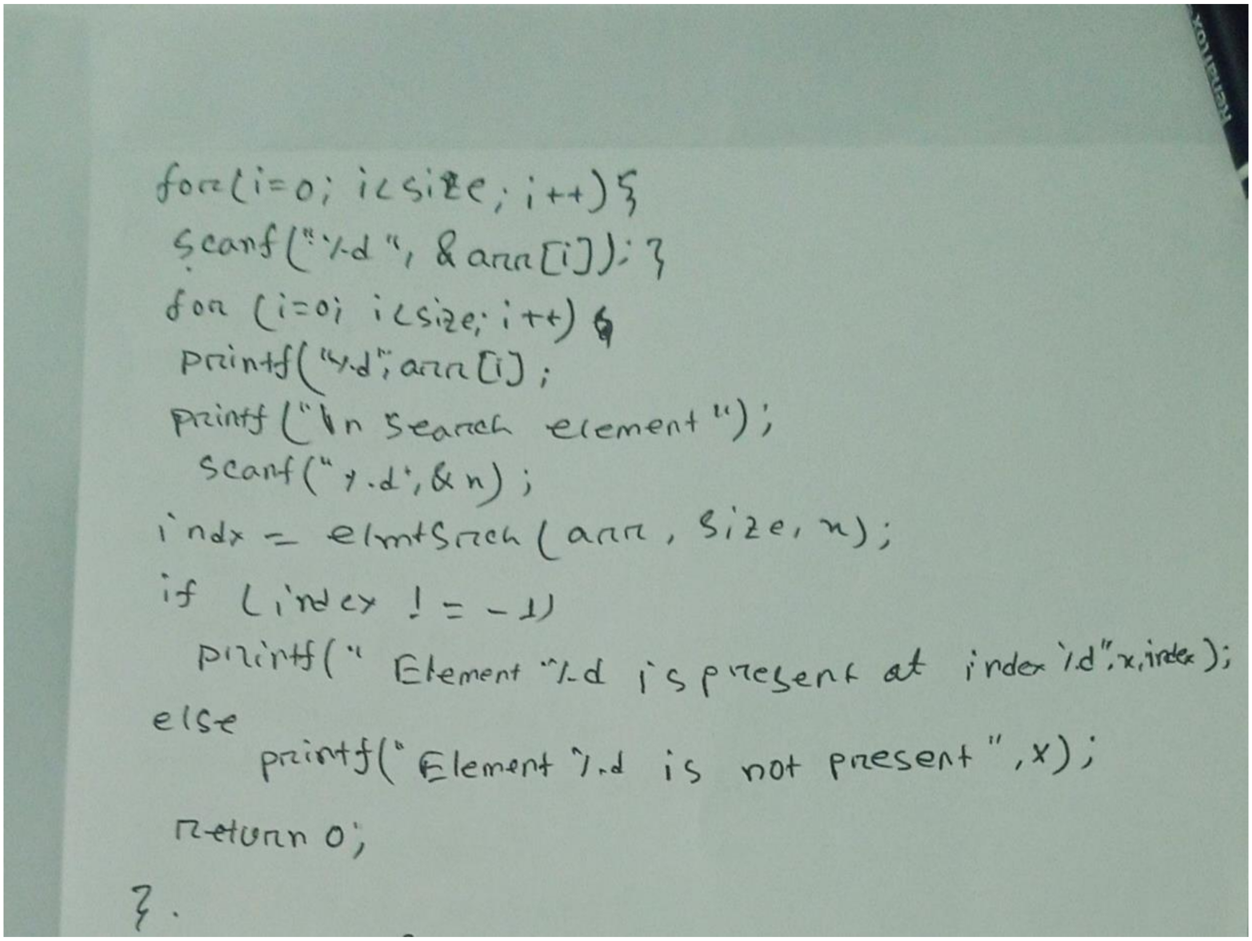
4-Step : using if else faction and using new faction.

5-Step ! if size >= 0 return size. and else rec then return -1 ;

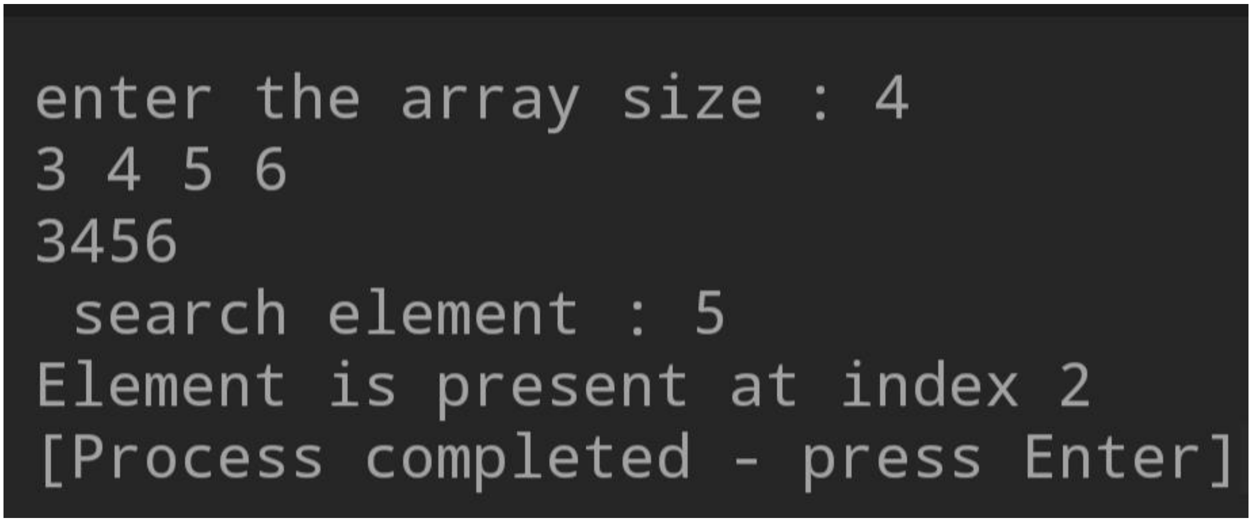
6-Step: end.

code:

```
#include <stdio.h>

int elmntSrch( int arr[ ], int size, int x)
{ int rec;
   size --;
 if ( size >=0) {
   if (arr [size] == x)
    return size;
 else
     rec= elmntSrch(arr, size, x); }
 else
        return -1 ;
      return rec;
 }
int main(void) {
   int arr[50], size, i, x, indx;
   printf("enter the array size ");
   scanf("%d ; & size);
```



```
for(i=0; i<size; i++){
 scanf("%d", &arr[i]); }
for (i=0; i<size; i++) {
 printf("%d", arr[i];
 printf("\n search element ");
  scanf("%d", &n);
indx = elmtSrch(arr, size, n);
if (index != -1)
  printf(" Element %d is present at index %d",x,index);
else
    printf("Element %d is not present",x);
return 0;
}.
```

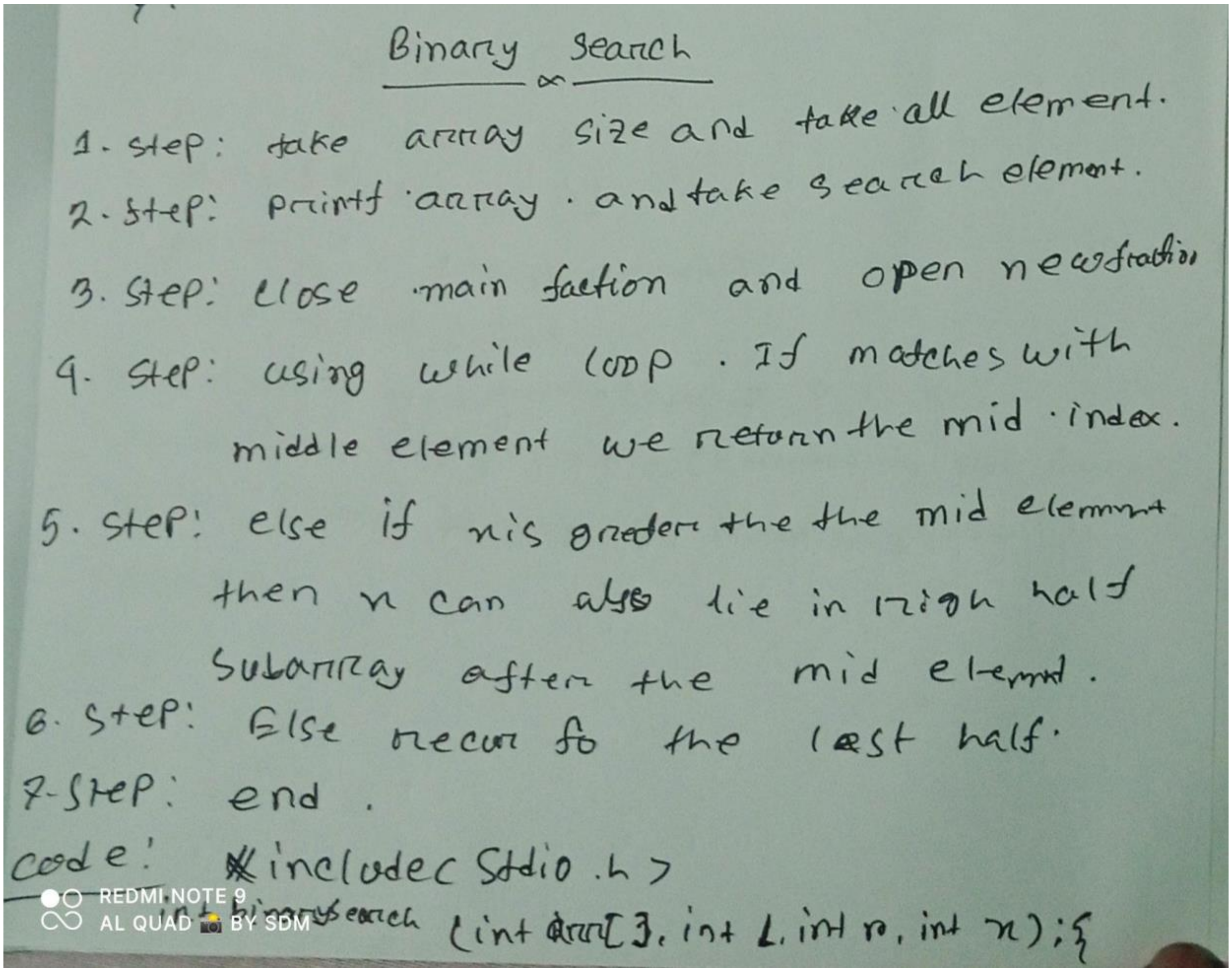


```
enter the array size : 4
3 4 5 6
3456
 search element : 5
Element is present at index 2
[Process completed - press Enter]
```

#include <stdio.h>

```
Int binarySearch(int arr[], int l, int r, int x)
{

While (l <= r)
{

Int m = l + (r-l)/2;

If (arr[m] == x)

Return m;

If (arr[m] < x)
L = m + 1;
Else
R = m – 1;
}
Return -1;
}

Int main(void)
{

Int arr[50];

Int x,n,l;
Printf("enter the array size");

    Scanf("%d",&n);



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

      {

      Scanf("%d",&arr[i]);

      }

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

      Printf("%d",arr[i]);
```

```
        Printf("\n search element");

        Scanf("%d",&x);

Int result = binarySearch(arr, 0, n-1, x);

 (result == -1)? Printf("Element is not present in array")

: printf("Element is present at index %d", result);

Return 0;
}
```



Binary search

1. step: take array size and take all element.

2. step: printf array. and take search element.

3. step: close main faction and open newfraction

4. step: using while loop. If matches with middle element we return the mid index.

5. step: else if n is greater the the mid element then n can also lie in righ half subarray after the mid elemnt.

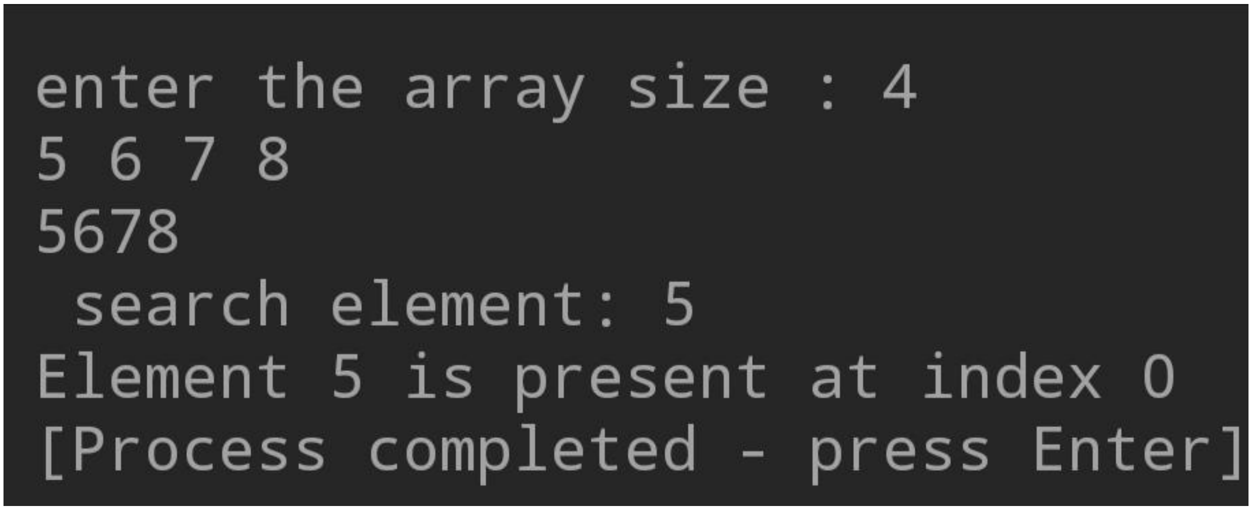
6. step: Else recur fo the lest half.

7-step: end.

code: #include< stdio.h>

int binarysearch (int arr[], int l, int r, int x);{

```
while (l<=r) {
int m=l+(r-1)/2;
if (arr[m]==x)
 return m;
if (arr[m]<x)
  l =m+1;
else .
    r = m-1; }
int main(void)
{
  int arr[50], x,n,i;
  printf(" Enter the array size ");
  scanf ("%d",&n);
  for (i=0; i<n; i++) {
   scanf("%d",&arr[i]; }
   for (i=0; i<n; i++)
    Printf("%d",arr[i];
   printf("\n Search element");
    Scanf("%d ",&x);
int result = binarySearch(arr,0 ,n-1,x);
 (result == -1) ? printf(Element is not found);
:printf("Element is present at index %d,result);
return 0;
}.
```



```
enter the array size : 4
5 6 7 8
5678
 search element: 5
Element 5 is present at index 0
[Process completed - press Enter]
```