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main.c

```c
/*******************************************************************************

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Code, Compile, Run and Debug online from anywhere in world.

*******************************************************************************/
#include <stdio.h>
#include<stdlib.h>
#include<time.h>

int array[50];
int search,c,n,i,j;
int number;

void linear_search()
{

 printf("numbers in the array are:\n");
  for(int i=0;i<n;i++)
  {
   printf("%d\n",array[i]);
  }

  printf("Enter the number to be searched\n");
  scanf("%d",&search);

  for( j=0;j<n;j++)
  {
    if(array[j]==search)
    {
      printf("The element is present in the array at position-%d\n",(j+1));
      break;
    }
  }

  if(j==n)
```

```
38    if(j==n)
39    {
40      printf("The number is not present\n");
41    }
42  }
43
44  void binary_search()
45  {
46
47  int c, first, middle, last;
48  int temp;
49
50     for (i = 0; i < n; ++i)
51    {
52        for (j = i + 1; j < n; ++j)
53              {
54               if (array[i] > array[j])
55                  {
56                      temp =  array[i];
57                      array[i] = array[j];
58                      array[j] = temp;
59
60                  }
61
62              }
63
64          }
65
66
67    printf("numbers...\n");
68    for(j=0;j<n;j++)
69    {
70      printf("%d\n",array[j]);
71    }
72
73  printf("Enter the element to be searched\n");
74  scanf("%d",&search);
75
```

```
74  scanf("%d",&search);
75
76  first=0;
77  last=n-1;
78  middle = (first+last)/2;
79   while (first <= last) {
80      if (array[middle] < search)
81        first = middle + 1;
82      else if (array[middle] == search) {
83        printf("%d found at location %d.\n", search, middle+1);
84        break;
85      }
86      else
87        last = middle - 1;
88
89      middle = (first + last)/2;
90    }
91    if (first > last)
92      printf("Not found! %d isn't present in the list.\n", search);
93
94  }
95
96  int main()
97  {
98    int choice;
99    clock_t start,end;
100   double tm;
101
102   printf("Enter the number of elements\n");
103  scanf("%d",&n);
104   for( i=0;i<n;i++)
105   {
106
107     number=rand()%100;
108
109     array[i]=number;
110   }
111
```

input

```c
int main()
{
  int choice;
  clock_t start,end;
  double tm;

  printf("Enter the number of elements\n");
 scanf("%d",&n);
  for( i=0;i<n;i++)
  {

    number=rand()%100;

    array[i]=number;
  }

  while(1)
  {
    printf("\nenter 1.for linear search\n 2. for binary search\n ");
    scanf("%d",&choice);
   switch(choice)
   {
    case 1:start=clock();
           linear_search();
           end=clock();
           tm=((double)(end-start))/CLOCKS_PER_SEC;
           printf("the time taken by linear search=%1f\n",tm);
           break;
    case 2:start=clock();
           binary_search();
           end=clock();
             tm=((double)(end-start))/CLOCKS_PER_SEC;
           printf("the time taken by binary search=%1f\n",tm);
           break;
   }
  }
  return 0;
}
```

input

```
Enter the number of elements
6

enter 1.for linear search
 2. for binary search
 1
numbers in the array are:
83
86
77
15
93
35
Enter the number to be searched
35
The element is present in the array at position-6
the time taken by linear search=0.000091

enter 1.for linear search
 2. for binary search
 2
numbers...
15
35
77
83
86
93
Enter the element to be searched
93
```

```
numbers in the array are:
83
86
77
15
93
35
Enter the number to be searched
35
The element is present in the array at position-6
the time taken by linear search=0.000091

enter 1.for linear search
 2. for binary search
 2
numbers...
15
35
77
83
86
93
Enter the element to be searched
93
93 found at location 6,
the time taken by binary search=0.000133

enter 1.for linear search
 2. for binary search
```