Start here | linear and binary search.c

```c
#include <stdio.h>
#include <time.h>
int linears(int i);
int binaryS(int f,int l);
void sort();
int a[10],key;
void main()
{
 int i,b,choice;
 clock_t start,end;
 for(i=0;i<=9;i++)
 {
     a[i]=rand()%100;
 }
 printf("The array of random elements are\n");
 for(i=0;i<=9;i++)
 {
     printf("%d\n",a[i]);
 }
 printf("Enter the number to be searched\n");
 scanf("%d",&key);
 printf("Enter 1 for linear search and 2 for binary search \n");
 scanf("%d",&choice);
 switch(choice)
 {
     case 1:
            start=clock();
            b=linears(0);
            end=clock();
            printf("Time taken:%f\n",(((double)(end-start))/CLOCKS_PER_SEC));
            if(b==-1)
            printf("Number not found\n");
            else
            printf("Number %d found at position: %d\n",key,b+1);
            break;
    case 2:sort();
           start=clock();
           b=binaryS(0,9);
           end=clock();
           printf("Time taken:%f",(((double)(end-start))/CLOCKS_PER_SEC));
           if(b==-1)
```

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```
39              end=clock();
40              printf("Time taken:%f",(((double)(end-start))/CLOCKS_PER_SEC));
41              if(b==-1)
42             {
43               printf("Number not found\n");
44             }
45              else
46             {
47               printf("Number %d found at position:%d",key,(b+1));
48             }
49  }
50 }
51 void sort()
52 {
53     int i,j,c;
54     for(i=0;i<9;i++)
55     {
56         for(j=i+1;j<=9;j++)
57         {
58             if(a[j]<a[i])
59             {
60              c=a[i];
61              a[i]=a[j];
62              a[j]=c;
63             }
64         }
65     }
66     printf("Sorted Array is:\n");
67     for(i=0;i<=9;i++)
68     {
69       printf("%d\n",a[i]);
70     }
71 }
72 int linears(int i)
73 {
74     if(i==10)
75     return -1;
76     else if(a[i]==key)
77     return i;
78     else
79     linears(++i);
```

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```
62                  a[j]=c;
63              }
64          }
65      }
66      printf("Sorted Array is:\n");
67      for(i=0;i<=9;i++)
68      {
69        printf("%d\n",a[i]);
70      }
71  }
72  int linears(int i)
73  {
74      if(i==10)
75      return -1;
76      else if(a[i]==key)
77      return i;
78      else
79      linears(++i);
80  }
81  int binaryS(int f,int l)
82  {
83      int m;
84      m=((f+l)/2);
85      if(key==a[m])
86      {
87          return m;
88      }
89      else if(key>a[m])
90      {
91          return binaryS(++m,l);
92      }
93      else if(key<a[m])
94      {
95          return binaryS(f,--m);
96      }
97      else if(f>l)
98      {
99          return -1;
100     }
101 }
102
```