SEARCHING

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- SEARCHING IS THE METHOD TO FIND ELEMENT FROM THE LIST OF THE ELEMENTS.IF ELEMENT IS FOUND THEN IT WILL DISPLAY THE LOCATION OF THE ELEMENTS ELSE IT WILL PRINT ELEMENT IS NOT FOUND.

- SEARCHING HAS TWO TYPES. THESE ARE AS FOLLOWES:-

- BINARY SEARCH

- LINEAR SEARCH

BINARY SEARCH

o **IT WORKS ONLY ON THE SORTED LIST.**

o **IT FINDS THE MID VALUE WITH THE HELP OF FORMULA THAT IS :- (LB+UB)\2 IF MID VALUE MATCHED WITH THE ELEMENT WHICH WE WANT TO**

o **FIND THEN SEARCHING IS COMPLETED ELSE IF ELEMENT IS GREATER THEN MID THEN (LB=MID+1) IF LESS THEN (UB=MID-1) THEN IT TAKE ANOTHER MID TO FIND THE ELEMENT THIS PROCESS IS CONTINUED TILL THEN ELEMENT IS NOT FOUND.**

EXAMPLE

[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
10	20	30	40	50	60	70	80	90	100

SUPPOSE WE WANT TO FIND 80 THEN WE HAVE TO TAKE MID AND   MID =4

80 IS NOT MATCHED WITH THE MID TAKE ANOTHER MID THAT IS (5+9)/2=7

THEN 80 IS FOUND ON 7TH POSITION

ALGORITHM

- ## BINARY(DATA,LB,UB,ITEM,LOC)

  HERE DATA IS A SORTED ARRAY WITH LOWER BOUND LB AND UPER BOUND UB,AND ITEM IS A GIVEN ITEM OF INFORMATION. THE VARIABLES BEG,END AND MID DENOTE.RESPECTIVEILY, THE BEGINNING,END AND MIDDLE LOCATION OF A SEGMENT OF ELEMENTS OF DATA THIS ALGORITHM FINDS THE LOCATION LOC OF ITEM IN DATA OR SETS LOC=NULL

ALGORITHM CONTD…

1. [INTIALIZE SEGMENT VERIABLES]
   SET BEG:=LB,END:=UB AND MID:=INT((BEG+END)/2).
2. REPEAT STEP 3AND4 WHILE BEG<=END AND DATA[MID]!=ITEM.
3. IF ITEM<DATA[MID],THEN:
   SET END:=MID-1
   ELSE:
   SET BEG:=MID+1
   [END OF IF STRUCTURE]
4. SET MID:=INT((BEG+END)/2)
   [END OF STEP 2LOOP]
5. IF DATA[MID]=ITEM,THEN:
   SET LOC:=MID
   ELSE:
   SET LOC:=NULL
   [END OF IF STRUCTURE]
6. EXIT.

PROGRAM

- #include<stdio.h>
- #include<conio.h>
- void bin(int[],int,int,int);
- int mid;
- void main()
- {
- int a[5],i,item;
- clrscr();
- printf("enter any five no");
- for(i=0;i<5;i++)
- {
- scanf("%d",&a[i]);
- }
- printf("enter item which u want to search");
- scanf("%d",&item);
- bin(a,0,4,item);
- getch();
- }

```c
void bin(int a[],int lb,int ub,int item)
{
mid=(lb+ub)/2;
if(a[mid]==item)
{
printf("element is found at %d",mid+1 );
return;
}
else
{
if(a[mid]<item)
{
lb=mid+1;
}
else
{
ub=mid-1;
}
```

```c
if(lb>ub)
{
printf("element is not found");
return;
}
bin(a,lb,ub,item);
}
}
```