Experiment No 3:

A program for Binary Search

Aim: Write a program to implement Binary search.

Theory:

- Binary Search is used for searching an element in a sorted array.
- It is a fast search algorithm with run-time complexity of O(log n).
- Binary search works on the principle of divide and conquer.
- This searching technique looks for a particular element by comparing the middle most element of the collection.
- It is useful when there are large number of elements in an array.

Algorithm:

(Binary Search) BINARY(DATA,LB,UB,ITEM,LOC)

Here data is sorted array with lower bound LB and upper bound UB, and ITEM is a given item of information. The variables BEG,END and MID denote, respectively, the beginning, end and middle locations of segment of elements of DATA. This algorithm finds the location LOC of ITEM in DATA or sets LOC=NULL.

1.[Initialize segment variables.]
 Set BEG:=LB,END:=UB and MID=INT((BEG+END)/2)
2. Repeat Steps 3 and 4 while BEG≤END and DATA[MID] ≠ITEM
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 2 loop)

5.If DATA[MID]=ITEM, then:
        Set LOC:=MID.
   Else:
        Set LOC:=NULL.
[End of If structure.]

6.Exit

PROGRAM:

OUTPUT

CONCLUSION