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	Section:	1H	Page(s):	3
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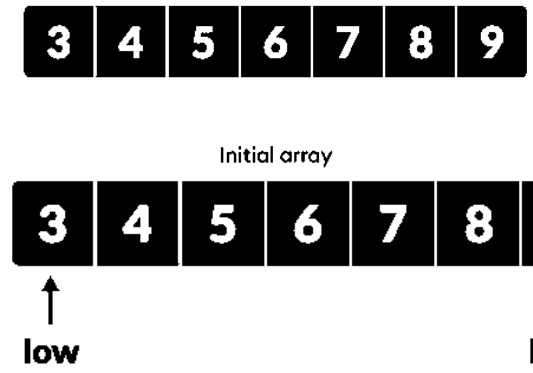
Student : Name:_____ Roll No._____ Section:_____

Question 1:

You are given an array A of size n. You have to find an element's position in a sorted array by dividing array into half. This search technique is a mechanism used to find the given elements from the sorted array by continuously halving the array and then searching specified elements from a half array using formula:

```
arr[(low + high)/2]
```

And the process goes on till the match is found. You have to take the searching element from the user. Please see below for understanding.



3. Find the middle element `mid` of the array ie. `arr[(low + high)/2] = 6` .

Mid element

4. If x == mid, then return mid.Else, compare the element to be searched with m.

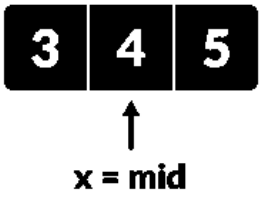
5. If `x > mid`, compare `x` with the middle element of the elements on the right side of `mid`. This is done by setting `low` to `low = mid + 1`.

6. Else, compare `x` with the middle element of the elements on the left side of `mid`. This is done by setting `high` to `high = mid - 1`.

7. Repeat steps 3 to 6 until low meets high.

Mid element

8. `x = 4` is found.



Input:
arr[] = {10, 20, 30, 50, 60, 80, 110, 130, 140, 170}
x = 110 //element to be searched
Output: Element is found at index 6
Explanation: Element x is present at index 6.

Input:
arr[] = {10, 20, 30, 40, 60, 110, 120, 130, 170}, x = 175
Output: Number not found
Explanation: Element x is not present in arr[].

Sol:

```
#include<iostream>
using namespace std;
int main()
{
   int i, arr[10], num                    ;
   cout<<"Enter 10 Elements (in ascending order): ";
   for(i=0; i<10; i++)
      cin>>arr[i];
   cout<<"\nEnter Element to be Search: ";
   cin>>num;
```