Ans 2:- Binary Search :- Let's assume that array A is sorted. We can take advantage of this fact to improve the search time (we are looking something better than O(n))? We can use the binary search algorithm.

The main idea of the algorithm is to divide the given sorted array A into two subarrays at each step and look for the key element (k) in one of the two sub arrays.

- At first we select the middle most element of the array. Let call it (p) (p is located at index $1+(h-1)/2$ of the array, where 1 is the first index of the array and h is the last one.

- If (p) = (k) then a found message is returned.
- If (p) is greated than (k) the (k) is searched in the sub-array to the left of the middle item. Otherwise (k) is searched in the sub-array to the right of the middle item.
- This process continues on the sub-array as well. In each step we update (h) & (l) value to match with the current subarray. If (l) becomes greater than (h) (this means k does not exist in K). Then we defenate the search and a message. "k is not found" is returned.

Example :—