

Binary Search

- The condition for binary search is that the list of elements must be sorted

Example :

A	4	8	10	15	18	21	24	27	29	33	34	37	39	41	43
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14

- The binary search will always search the element in the middle of the list and split it into 2 parts
- For performing binary search we need 3 index that is lower , higher , middle value

$$\text{mid} = [l + h / 2]$$

- Low will point at initial value that is index 0
- high will point at the end of the list
- Mid will point the the centre most value in a list

- Once the value we want is known the list is divided again to check the element in that half

- Once again the same procedure is repeated

A

4	8	10	15	18	21	24	27	29	33	34	37	39	41	43
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
				Low	Mid	High								

- The list value is getting reduced and every time it is getting divided by 2
- When the same steps is performed again all the values (low , high , mid) will point to the same number which will be the search value.

A

4	8	10	15	18	21	24	27	29	33	34	37	39	41	43
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
				Low										

- Hence the search is successful

Example 2 :

Key = 25

A	4	8	10	15	18	21	24	27	29	33	34	37	39	41	43
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	High							Low							
	Mid														

Key = 25

L	H	mid
0	14	7
0	6	3
4	6	5
6	6	6
7	6	x

- When low became greater than high we stop the process it indicated that the element is not present in the list thus the search is unsuccessful