

## Binary Search

**Binary Search** is a search algorithm that is used to find the position of an element (target value ) in a sorted array. The array should be sorted prior to applying a binary search.

Binary search is also known by these names, logarithmic search, binary chop, half interval search.

### Working

The binary search algorithm works by comparing the element to be searched by the middle element of the array and based on this comparison follows the required procedure.

**Case 1** – element = middle, the element is found return the index.

**Case 2** – element > middle, search for the element in the sub-array starting from middle+1 index to n.

**Case 3** – element < middle, search for element in the sub-array starting from 0 index to middle -1.

### ALGORITHM

**Parameters** initial\_value , end\_value

```
Step 1 : Find the middle element of array. using ,
middle = initial_value + end_value / 2 ;
Step 2 : If middle = element, return 'element found' and
index.
Step 3 : if middle > element, call the function with end_value
= middle - 1 .
Step 4 : if middle < element, call the function with
start_value = middle + 1 .
Step 5 : exit.
```