

23/04/18

## (Lecture 7.8) Binary Search.

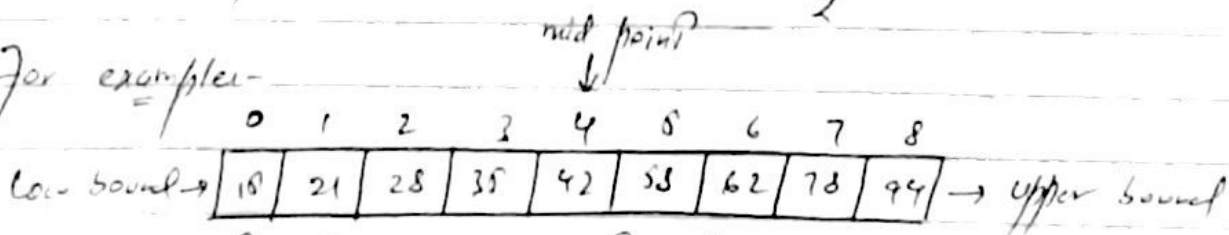
- In binary search, values has been stored in ascending order.
- After each comparison, half of elements has been eliminated.

In binary search, [mysoftbooks.ml](http://mysoftbooks.ml)

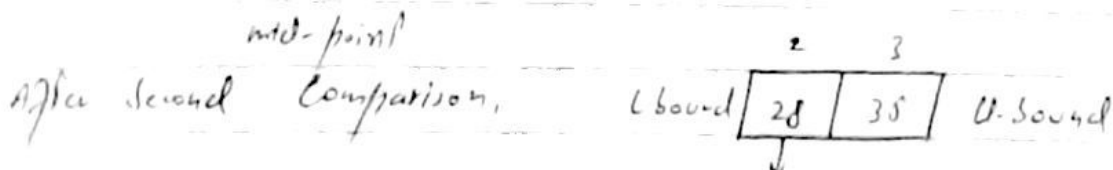
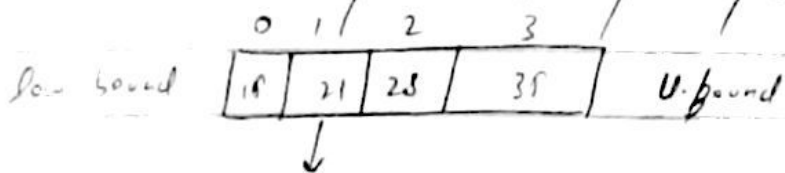
we have 'Mid point', 'Low bound', 'Upper bound'

- Low bound = 0
- Upper bound = (length of Array) - 1
- Mid-point =  $\frac{\text{Lower bound} + \text{Upper bound}}{2}$

For example-



we have to find 28, After first comparison



After third comparison, we will find out the Number

## Example Program for Binary Search:

```
#include <iostream>
using namespace std;
int binarySearch ( int array[], int size, int value )
{
    int low = 0 ;
    int high = size - 1 ;
    int mid ;
    while ( low <= high )
    {
        mid = ( low + high ) / 2 ;
        if ( value == array[mid] )
        {
            return mid ;
        }
        else if ( value > array[mid] )
        {
            low = mid + 1 ;
        }
        else
        {
            high = mid - 1 ;
        }
    }
    return -1 ;
}
```

mysoftbooks.ml

```
int main ( )
{
    int arr [ ] = { 12, 22, 34, 47, 55, 67, 82, 98 } ;
    int value ;
    cout << " Enter value To Search " ;
    cin >> value ;

    int result = binarySearch ( arr, 8, value )
    if ( result >= 0 )
    {
        cout << " Number " << value << " found at
            index " << result ;
    }
    else
    {
        cout << " Number " << value << " doesn't found " ;
    }
}
```

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