# Engineering Animuthyam

## Java DSA – Course. Part - 44

# Binary Search

**Course Link:**
https://www.youtube.com/playlist?list=PLjzLBp9HHZWhVXBSPS1VqxXXDoVk07gd9

**Website Link:**
https://www.vigneshreddyjulakanti.in/

**Hello machas, Bagunnara**

**arr = [ 1,3,5,7,8,10]**

**Find the index Where We can insert a new element.**

**Element we are adding in the above array is not there in the array.**

```java
class HelloWorld {
    public static int bs(int arr[],int target){
        int l = 0;
        int r = arr.length-1;
        while(l<=r){
            int m = l + (r-l)/2;
            if (arr[m] > target){
                r = m - 1;
            }else{
                l = m + 1;
            }
        }
        return l;
    }
    public static void main(String[] args) {
        int arr[] = {1, 3, 5, 7};
        System.out.println(bs(arr,4));
    }
}
```

**Q) Given an array of character sorted in ascending order, find the greatest character that is less than the target character in the array.**
**Target character is not present in the array.**

**If there is not such element return ‘a’**

**{'c', 'e', 'g', 'k', 'y'}**

**Target = ‘d’ => ans = ‘c’**

**Target = ‘f’ => ans = ‘e’**

**Target = ‘z’ = > ans = ‘y’**

**Target = ‘b’ => ans = ‘a’**

```java
class HelloWorld {
    public static Character bs(char arr[],char target){
        int l = 0;
        int r = arr.length-1;
        while(l<=r){
            int m = l + (r-l)/2;
            if (arr[m] > target){
                r = m - 1;
            }else{
                l = m + 1;
            }
        }
        if(r < 0){
            return 'a';
        }
        return arr[r];
    }
    public static void main(String[] args) {
        char arr[] = {'c', 'e', 'g', 'k', 'y'};
        System.out.println(bs(arr,'b'));
    }
}
```