



## Day-1

### 'Intermediate' Track

#### Topic: Binary Search

**Binary search** is the most popular and most widely used search algorithm. It is efficient and also one of the most commonly used techniques that are used to solve varying problems.

It only works on a **sorted** set of elements. To use Binary Search, the set/collection of elements must be sorted.

- **(Must Read)** Good Blog to Understand it better, with its basic implementation:  
[www.hackerearth.com/practice/algorithms/searching/binary-search/tutorial/](http://www.hackerearth.com/practice/algorithms/searching/binary-search/tutorial/)
- **(Must Watch)** A Youtube Video, for Better Understanding and Visualisation of Algorithm, to get more grip: [youtube.com/watch?v=GU7DpgHINWQ&feature=youtu.be](https://youtube.com/watch?v=GU7DpgHINWQ&feature=youtu.be)
- **It's complexity**=  $\text{Big-O}(\text{complexity of "find\_where\_to\_go" function} * \log(n))$ , where  $n$  = Range Size, and "find\_where\_to\_go" function determines whether to go to the left range or to the right range.

## Topic: Recursion

Recursion generally means calling the function, inside the same function.

// This is an example of Recursion.

```
void func (int n)
{
if(n<=1) // Termination/Base Case
{
    return;
}
else
{
    print(n);
    func(n/2); // calling the function, inside itself
}
}
```

- We should have a Termination/Base Case because if there isn't a base case, the process won't terminate and the function will keep calling itself infinitely.
- (**Must Watch**) Youtube Video Series (Playlist) on the "How and Where exactly Recursion works?":  
[https://www.youtube.com/playlist?list=PL\\_z\\_8CaSLPWeT1ffjilmo0sYTcnLzo-wY](https://www.youtube.com/playlist?list=PL_z_8CaSLPWeT1ffjilmo0sYTcnLzo-wY)