

# ITS202: Algorithms and Data Structures

## Searching Algorithms

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# Searching Algorithms

Searching Algorithms that we will study are:

- ① Linear Search
- ② Binary Search

# Linear Search

Idea of the algorithm is to iterate across the array from left to right, searching for a specified element.

## In Psuedocode

- ① Repeat, starting at the first element:
  - If the first element is what you're looking for (the target), stop.
  - Otherwise, move to the next element.
- ② For  $i$  from 0 to  $n-1$  If  $i$ 'th element is the element to be searched
  - Return true

Return false

# Binary Search

## Concepts

The idea of algorithm is to divide and conquer, reducing the search by half each time while trying to find the target element.

**Important:** To perform binary search in an array, the array needs to be sorted always.

# Binary Search

## Pseudocode

- ① Repeat until the array is of size 0
  - Calculate the middle point of the current array.
  - If the target is at the middle, stop.
  - Otherwise, if the target is less than what's at the middle, repeat, changing the end point to just to the left of the middle.
  - Otherwise, if the target is greater than what's at the middle, repeat, changing the start point to just to the right of the middle.