

## Two Pointers

Used for:- Sorted arrays / Linkedlist

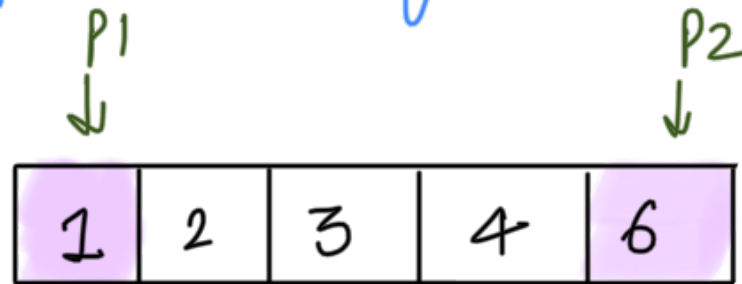
Scenario :- To find set of elements that fulfill certain constraints.  
eg. a pair, triplet or subarray.

Example :- Given an array of sorted numbers and a target sum, find a pair in array whose sum equal to given target.

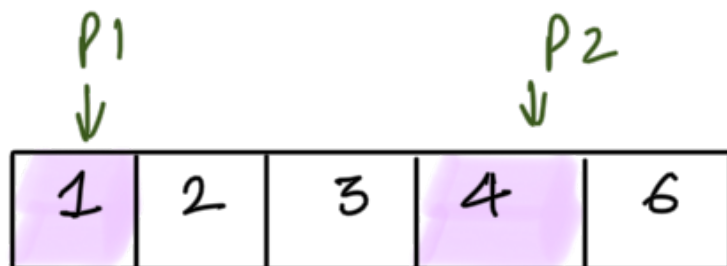
target sum = 6

P1 → Pointer 1

P2 → Pointer 2

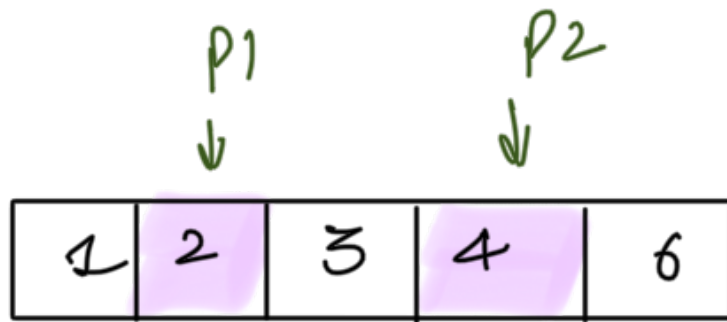


① Starting with P1 at 0 (starting of array) and P2 at length-1 (ending of array)



② With P<sub>1</sub> at 0 and P<sub>2</sub> at length-1  
Sum = 1 + 6 = 7  
Sum > target sum. So we decrement P<sub>2</sub> to get a smaller sum

Now  $\text{sum} = 1 + 4 = 5$ .  $\text{sum} < \text{target sum}$ . So we have to increment  $P1$  to get a larger sum.



③  $\text{sum} = 2 + 4 = 6$   
 $\text{sum} = \text{target sum}$   
Break loop and return indexes.

Time Complexity :-  $O(N)$