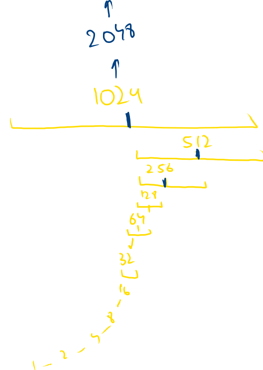

[2,9,3,2,14,12,4];

target = 15

arr[i] key = target - arr[i]

a + b = 15 arr[i] ⟶

12 + __ = 15

__ = 15 - 12 =

[5, 2]

Keys	Value
2	3
9	1
3	2
14	4

Subarrays and Subsequence and subset

[10 , 3 , 4, 9, 8 , 12]

[10 , 9, 3] ✓ ✗ ✗

[4] ✓ ✓ ✓

[4, 8] ✓ ✓

[ ] ⇒ subset ✓ subseq ✓ Subarray ✗

[9, 8, 9] ✗

[10, 9] ✓

[12, 4]

Subarray
* Continuous chunk of the array

All subarray are Subseq.

[9 , 8 , 12]

Subseq.
* Sequence
* Need not to be Contiguous

[23, 3, 4]
[8, 4, 10]
[10, 4, 8]
[3 , 4, 9]

for(sp=0 ; sp<n; sp++){
for(ep=sp; ep<n; ep++){
sp → ep

20 30 40 10

20
20 30
20 30 40
20 30 40 10

30
30 40
30 40 10

[20 , 30 , 40 , 10]

Print All subarray

No. of subarray ⇒ 4+3+2+1 $\frac{n(n+1)}{2}$

Num of subarray

Subseq [4 3 6] ⇒ n=3

[ ]
[6]
[3]
[3 6]
[4]
[4 6]
[4 3]
[4 3 6]

8

[40 50] n=2

[ ]
[50]
[40]
[40 50]

4

n=1 [50]

[ ]
[50]

2

Num of subseq ⇒ 2^n

2 2 2 2 2

2^5

Dutch National flag

[0 0 0 1 1 1 1 1 2 2 2]

i = 1 → i++
i = 0 → swap(i,j) i++, j++
i = 2 ⇒ swap(i,k) k--;

[0 0 0 0 0 1 1 1 1 1]

i ⇒ 0, swap(i,j) i++; j++

i ⇒ 1, i++

target = 13 Two Sum

[3 2 6 4 7 8 2 5]

Approach 1

target = 7

[2 2 3 4 9 12 14]

14 + 2 = 16
12 + 2 = 14
9 + 2 = 11
4 + 2 = 6
4 + 3 = 7