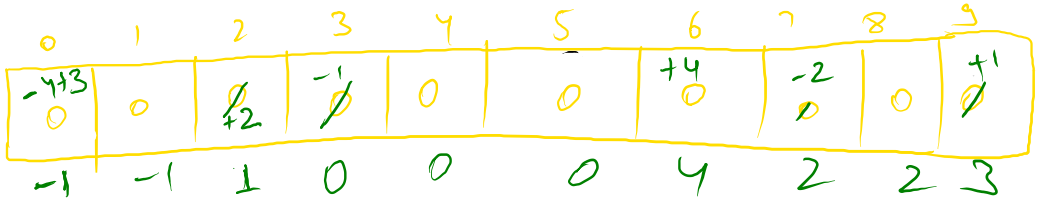
range addition

ans :



length = 10

9

q →

si	ei	val
2	6	+2
3	8	-1
0	5	-4
0	9	+3

ans[si] += val

ans[ei+1] -= val

O(2q) + O(n) → O(n+q)

Prefix Sum

	0	1	2	3	4	5	6	7	8
ans :	2	3	-1	5	6	-4	7	2	-3
→ Psum :	2	5	4	9	15	11	18	20	17

Psum[i] = ans(0,i) → O(n)

$$Psum[i] = \begin{cases} Psum[0] = ans[0] \\ \text{otherwise} \\ Psum[i] = Psum[i-1] + ans[i] \end{cases}$$

Sum(i,j) = Psum[j] - Psum[i-1]

Best meeting Point

a	b	c	d	e
x1	x2	x3	x4	x5

$$dist = a + b + 0 + d + e$$

$$updist = (a-x) + (b-x) + x + (d+x) + (e+x)$$

$$= a + b + d + e + x$$

	0	1	2	3	4
0	1	0	0	0	1
1	0	0	0	0	0
2	0	0	1	0	0

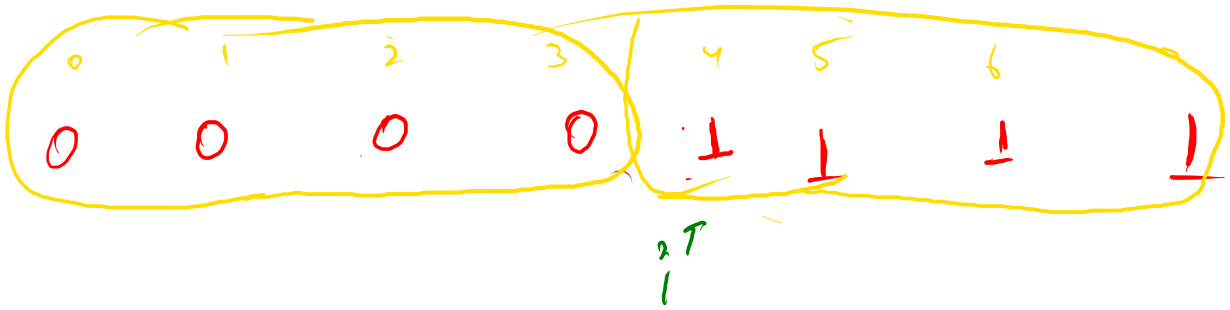
{0, 2, 4}

{0, 0, 2}

{0, 2}

$O(n+m)$

Segregate 0 - 1



(0, i-1) ⇒ 0's region

(i, j-1) ⇒ 1's region

(j, n-1) ⇒ unknown

```
if (arr[j] == 1) {
    j++
} else {
    swap(i,j)
    i++;
    j++;
}
```

maximum swap

0	1	2	3	4	5	6	7	8	9
9	9	8	8	8	5	3	4	2	7
9	9	8	8	8	7	7	7	7	9

O(n) → time

~~O(1) → space~~

suffin mon

suffinmon ⇒ (i, n-1) ← mon

prefin

(0, i)

suffin

(i, n-1)