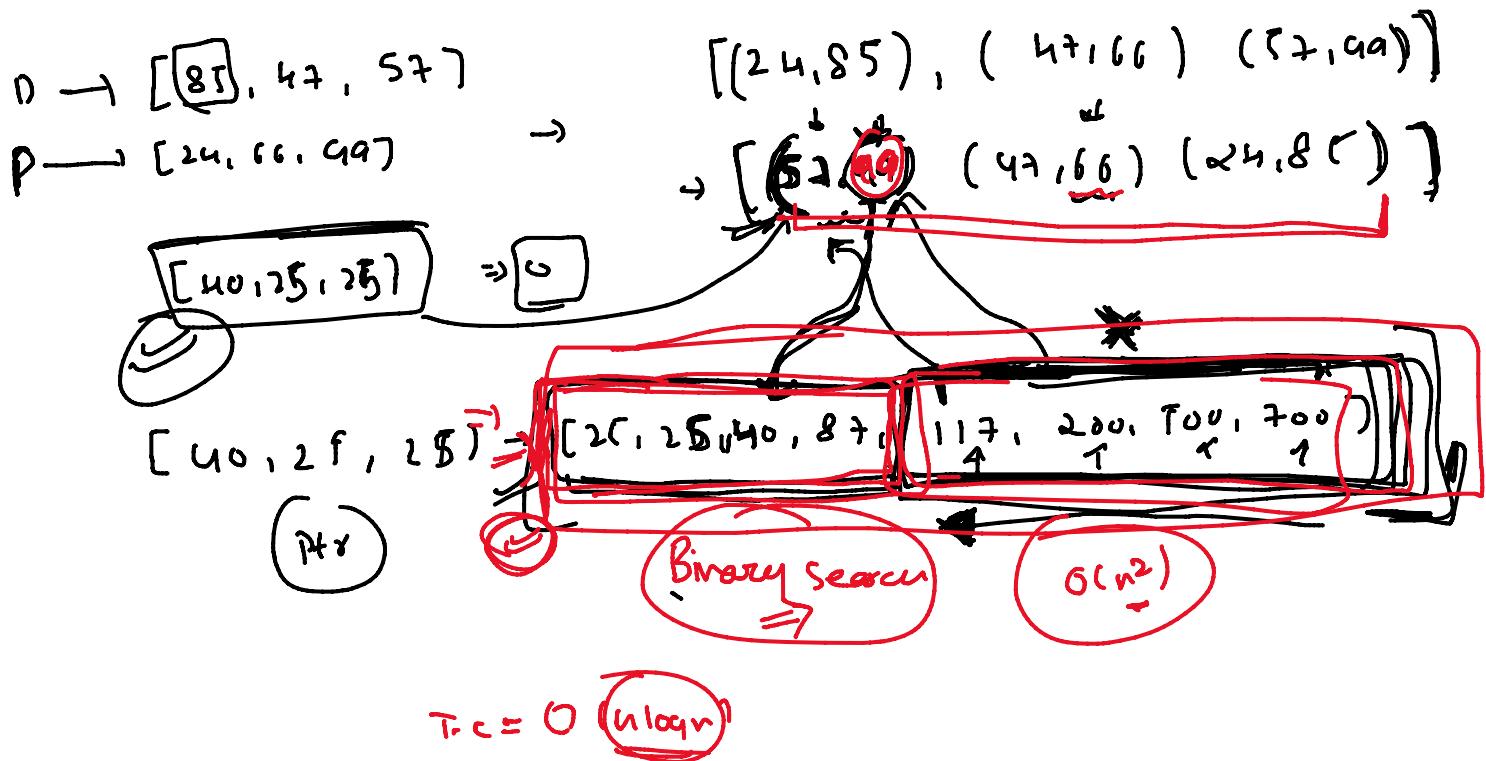
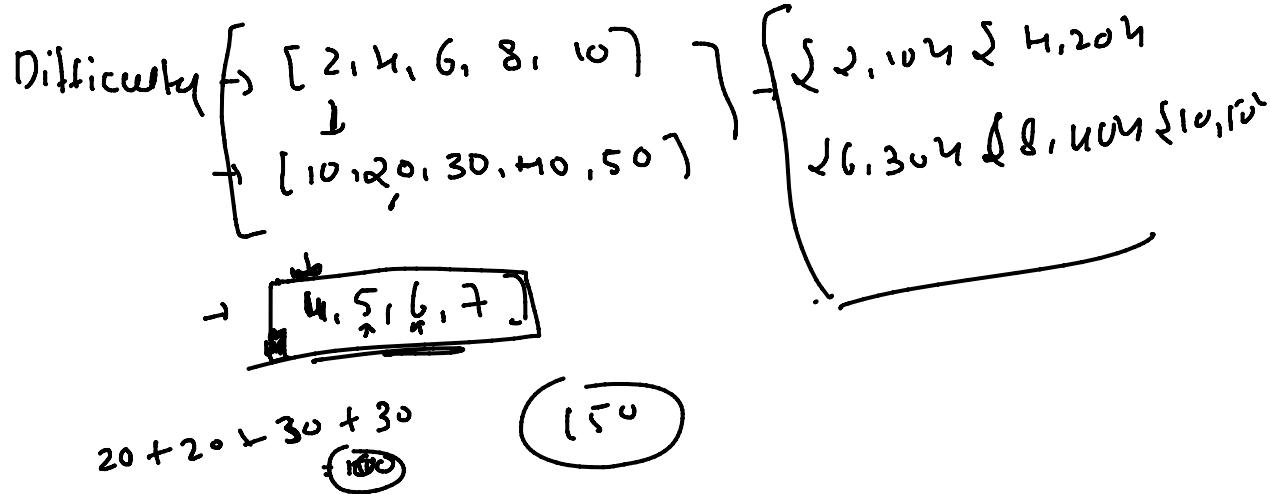


Class 66Greedy

```
vector<pair<int, int>> v;
```

```
for (i = 0; i < profit.size(); i++)
```

```
v.push_back ( {profit[i], difficulty[i]} );
```

Y

```
sort(v.begin(), v.end(), greater<pair<int,int>>());
```

sort(worker.begin(), worker.end());

int lalt = n;

int ans = 0;

int lastmid = n;

↓

for (i = 0; i < prob[t].size(); i++)

{ int s = 0;

int e = lalt - 1;

while (s <= e)

{ int mid = (s + e) / 2;

if (worker[mid] ≥ v[i].second)

{ lastmid = mid;

e = mid - 1;

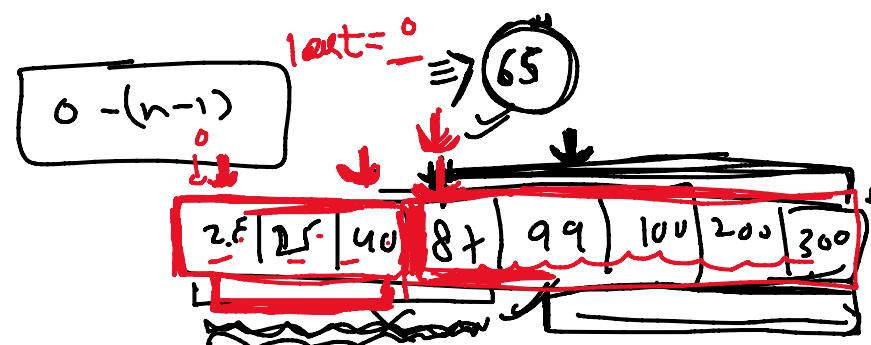
else

g = mid + 1;

ans += (lastmid - lalt) * v[i].first;

lastmid = lalt;

lower_bound



lastmid = 3

mid = 87

lalt = 40

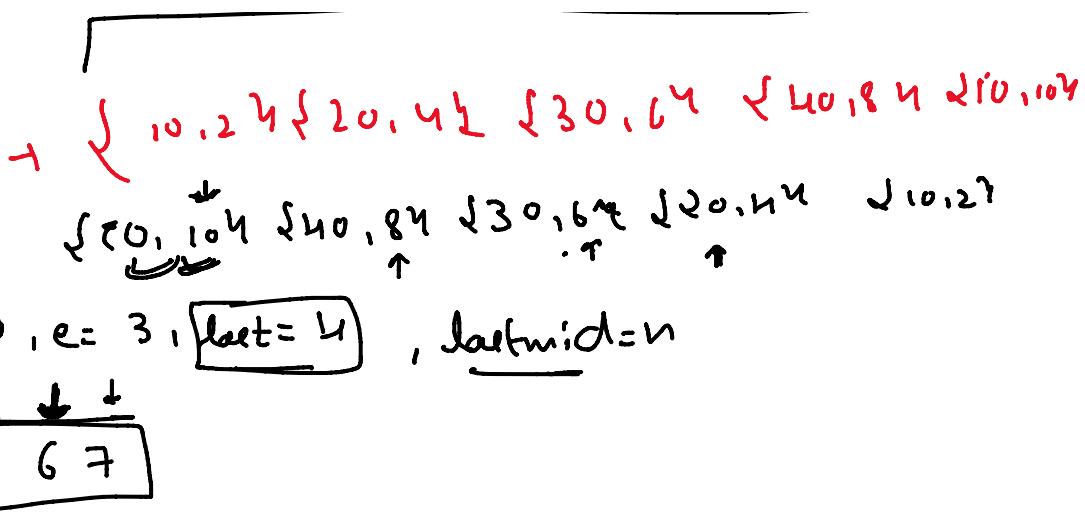
lalt = 87

c = 40
g = 87

lalt = 87

2.5 25 40 87 99 100 200 300

2, 4, 6, 8, 10
10, 20, 30, 40, 50



$$\text{ans} = (4 - 4) * 50 + 2$$

$$\text{lastmid} = \underline{n}$$

$$\text{last} = 2$$

$$\text{ans} = (4 - 2) * 30 = 60$$

$$\text{lastmid} = \underline{2}$$

$$\text{ans} = (2 - 0) * 20 = 40 = 100$$

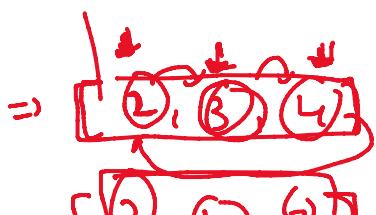
Gas Station

$$\text{Goal} = [1, 2, 3, 4, 5] \rightarrow \text{final} = []$$
$$\text{Cost} = [3, 4, 5, 1, 2]$$

3

$$4 = 3 + 5 = 8 - 2 = 6 + 1 = 7 - 3 = 4 + 2 = 6 - 4 = 2$$
$$2 + 3 = 5 - 5 = 0$$

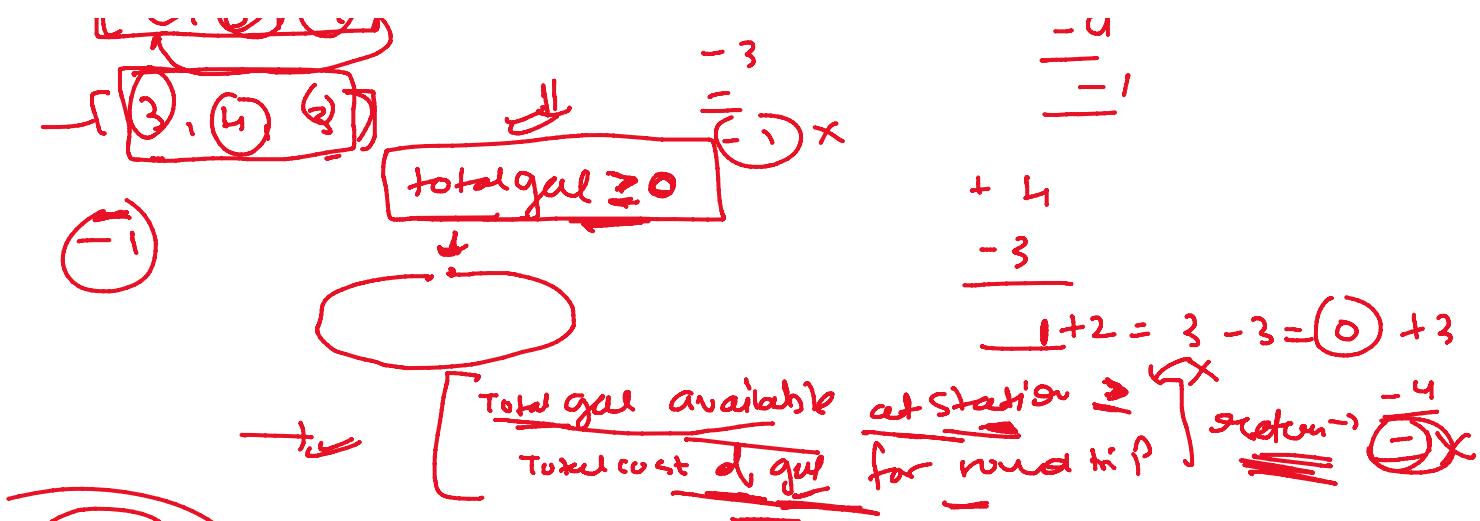
1, 2, 3, 4, 5
3, 4, 5, 1, 2



$$3 - 5 = -2$$

$$5L \quad 6L$$
$$-4 \quad -4$$
$$-1$$

$$+2 \\ -3 \\ = -$$



Index?

Brute force \rightarrow At each index $\rightarrow T.C = O(n^2)$
 $O(N) \times n = O(n^2)$

Optimize!

```

Vector<int> final(n);
int sum;
for (i=0; i<n; i++)
{ final[i] = gas[i] - cost[i]; }
    
```

~~sum += gas[i];~~
~~sum -= cost[i];~~

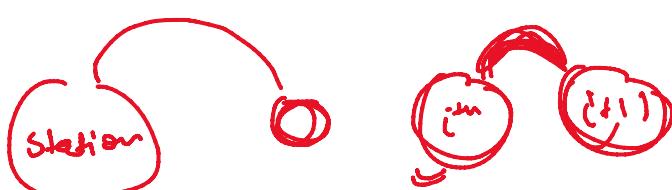
Final[i]!

or sum += final[i]

if (sum < 0) return -1;

int st = 0; (X)

int s = 0;
 \downarrow

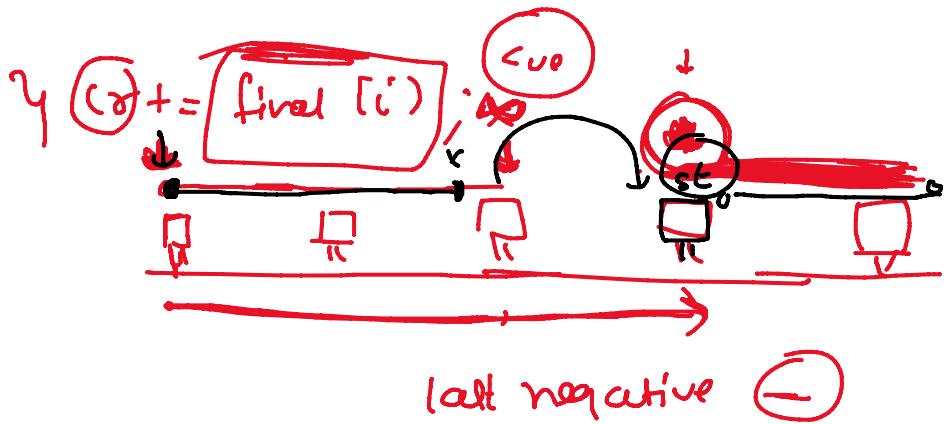


```

int c=0;
for (i=0; i<n; i++)
{
    c+= gari[i];
    c-= colt[i];
    if (c< 0)
        { st= i+1;  

    }
    c= 0;
}

```



for (i=0; i<st; i++)

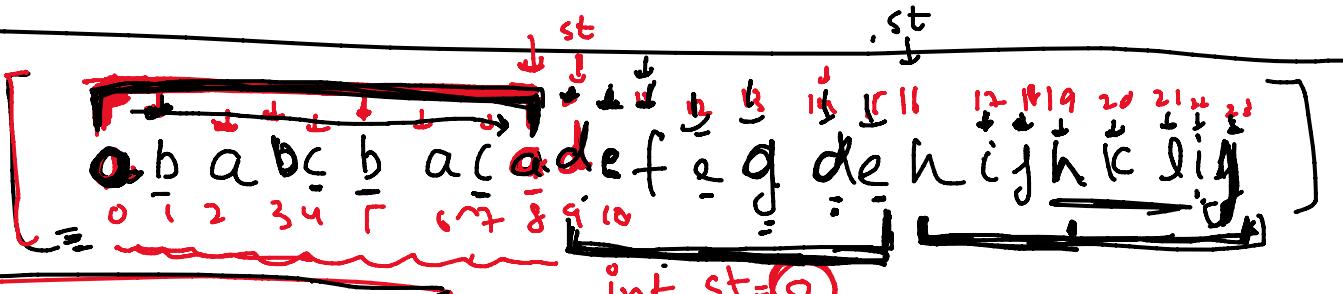
{ c+= final[i];

if (c< 0)

return -1

return st;

$$\begin{aligned}
 & [1, 2, 3, 4, 5] \quad [3, 4, 5, 1, 2] \\
 & \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \\
 & [-2, -2, -2, 3, 3] \quad \Rightarrow 0 \\
 \Rightarrow & [\quad \quad \quad] \quad \Rightarrow 0 \\
 & st = 0 \quad ③ \\
 & c = 0 \quad ④ \quad ⑤ \quad ⑥ \quad c = ③ + 3 = 6 - 2 = 4 - 2 = 2 - 2 = 0
 \end{aligned}$$



ma
a → 8 - | e → 11 | i → 22

int st= 9
For (i= 0; i<n; i++)

<u>ma</u>	
a → 8	e → 11
b → 5	f → 11
c → 7	g → 13
d → 14	h → 19
	i → 22
	j → 23
	k → 20
	l → 21

- ↗
 For ($i = 0; i < n; i++$)
 {
 $\quad mx = \max(mx, ma[s[i]])$
 $\quad if (i == mx)$
 {
 $\quad \quad ave = p[b(i - st + 1)]$
 $\quad \quad st = i + 1;$
 $\quad \quad }$
 $\quad }$