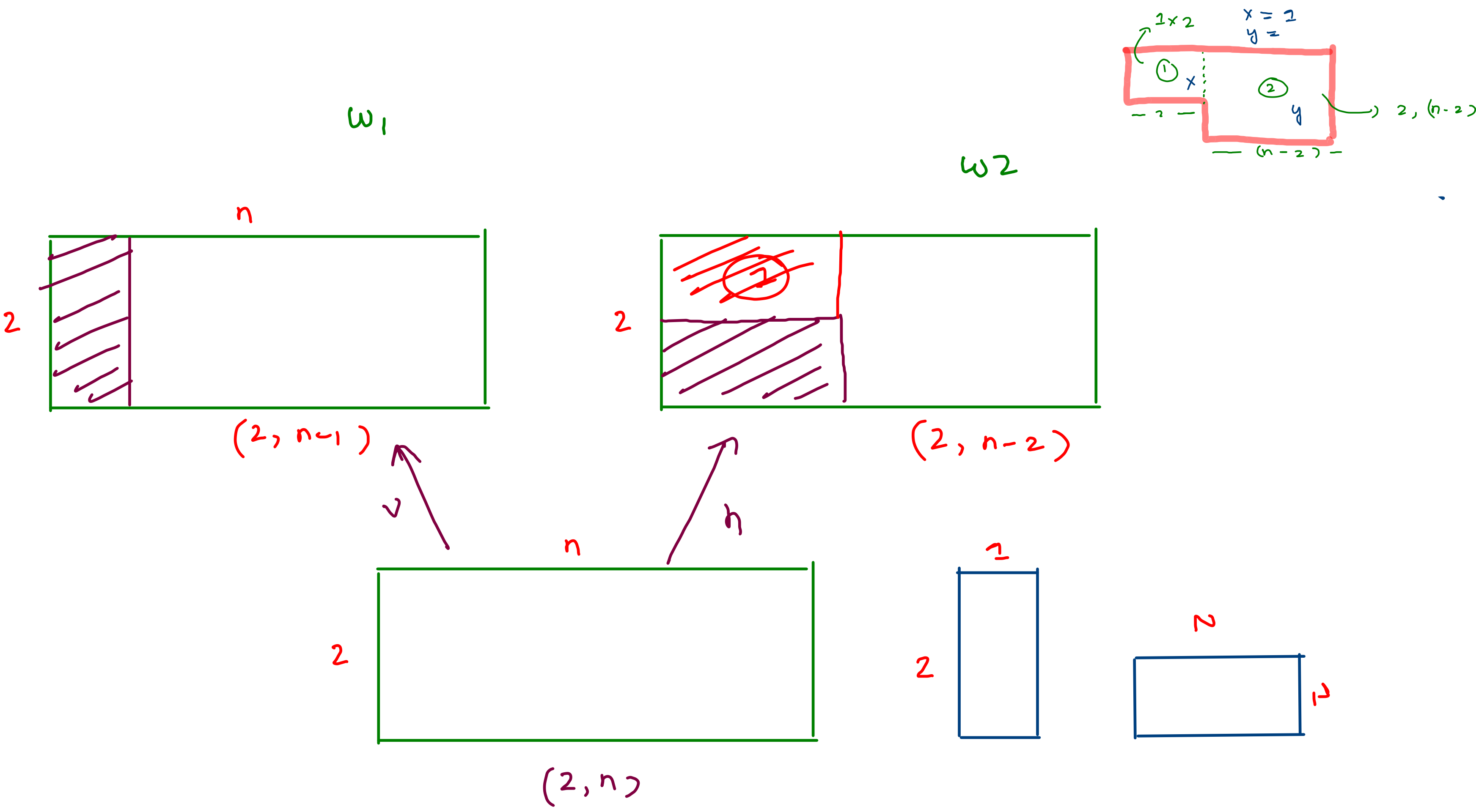
n = 4

k = 3 (r, g, b)

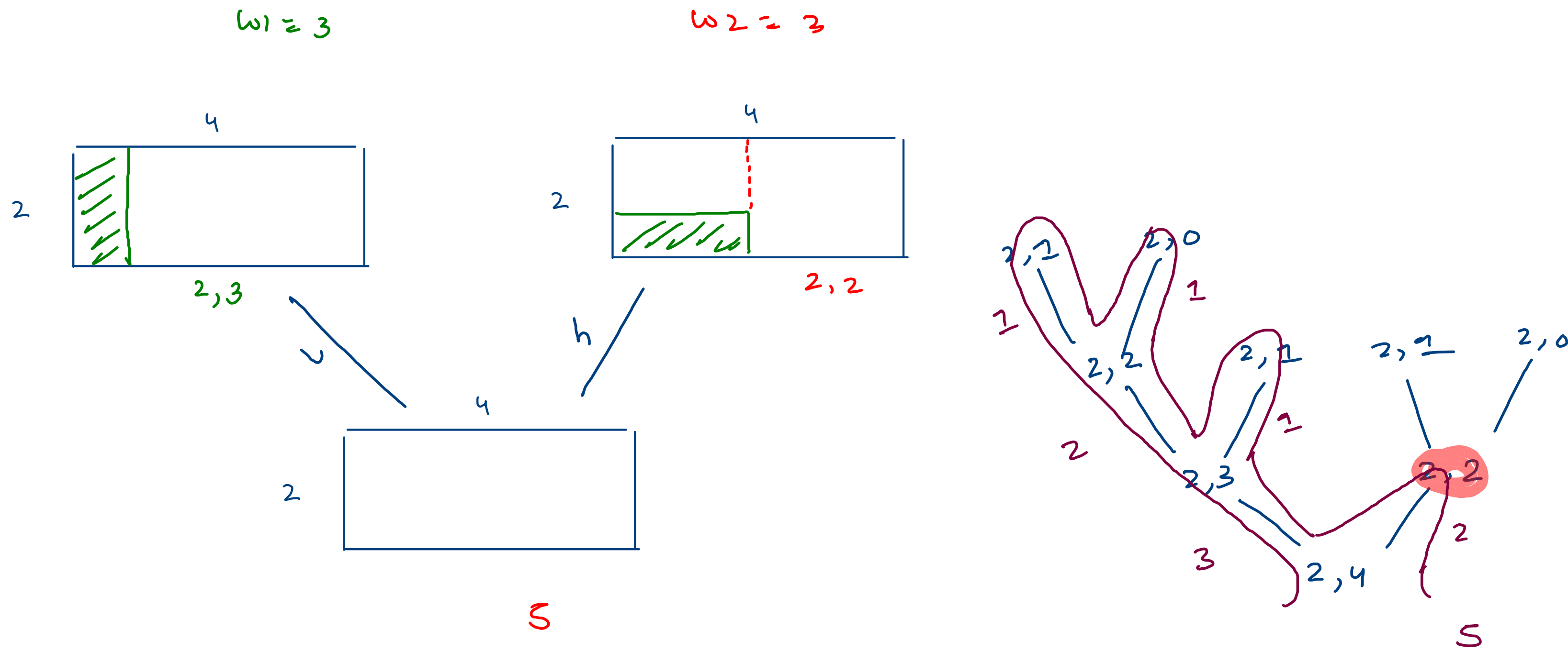
	1	2	3	4
last 2 have same color	-	3 rr gg bb	6 rgg rbb grr gbb brr bgg	18
last 2 have diff. colors	-	6 rg rb gr gb br bg	18	48
0	1	2	3	4

66

valid : not more than 2 adjacent fences should be same color.



1x2
x = 1
y =
x
y
2, (n-2)
(n-2)
w1
w2
n
2
(2, n-1)
2
(2, n-2)
v
h
n
2
(2, n)
1
2
2
1


w1 = 3
w2 = 3
4
2
2, 3
4
2
2, 2
u
h
4
2
5
2, 1
2, 0
1
1
2, 2
2, 1
1
2
2, 3
2, 1
2, 0
2, 2
3
2, 4
2
5

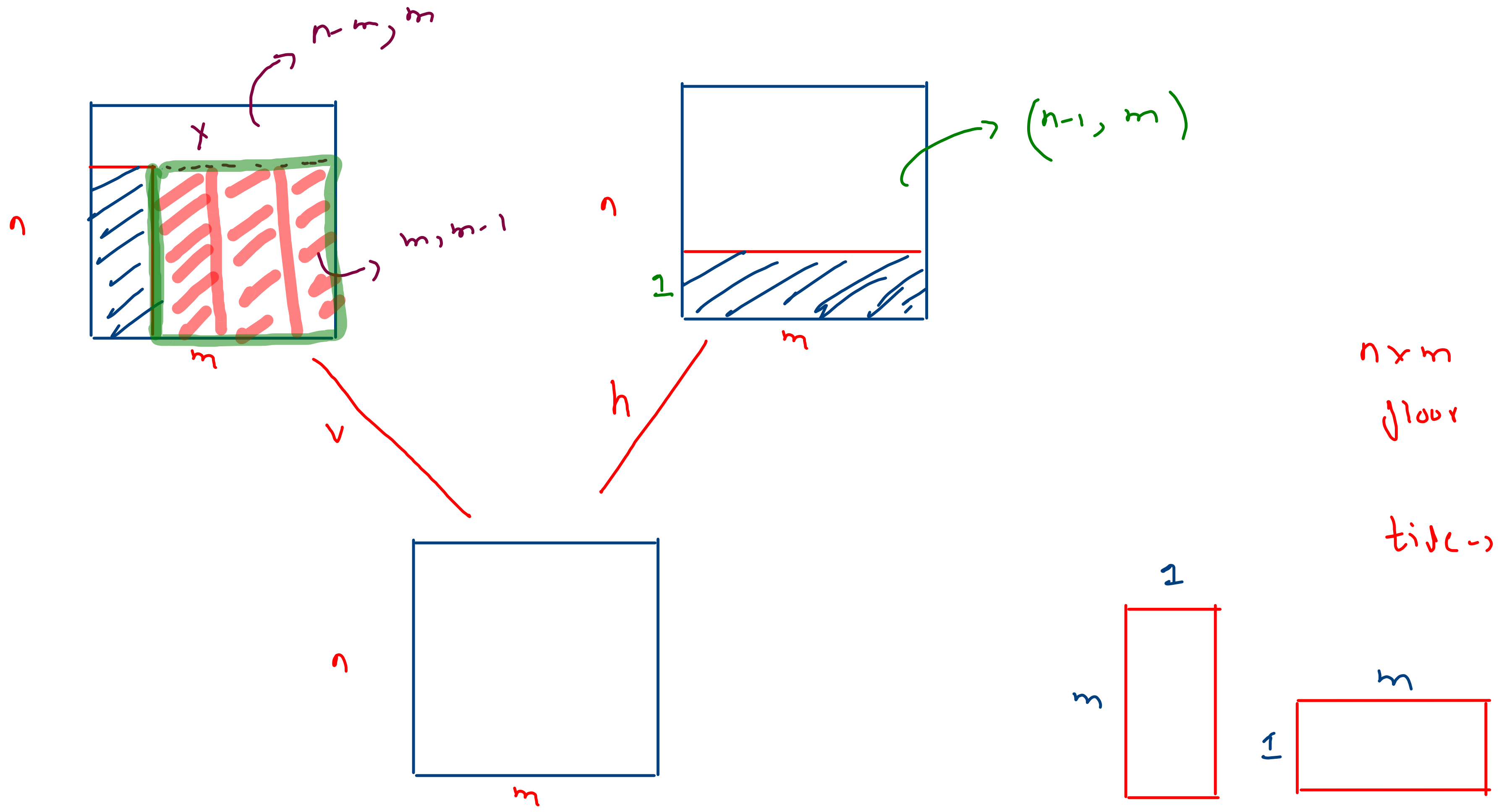
$n = 4$

1	1	2	3	5
0	1	2	3	4

$dp[i] \to 2 * i$ area tile up ways

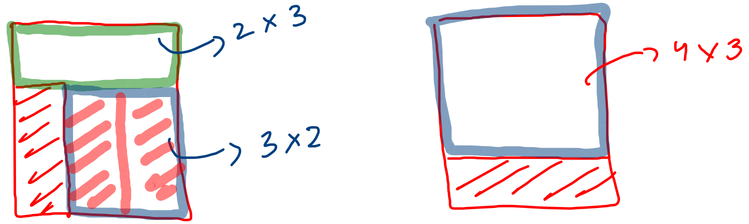
$$dp[i] = dp[i-1] + dp[i-2]$$

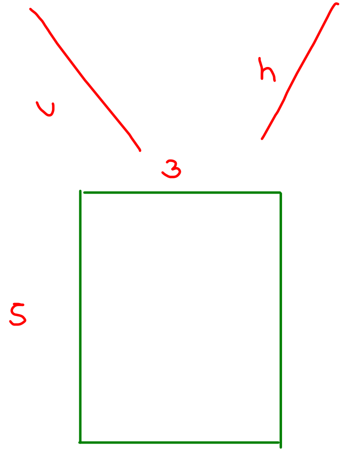
$$f(2, i) = f(2, i-1) + f(2, i-2)$$



n x m
floor

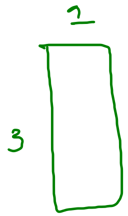
tile -> m x 1





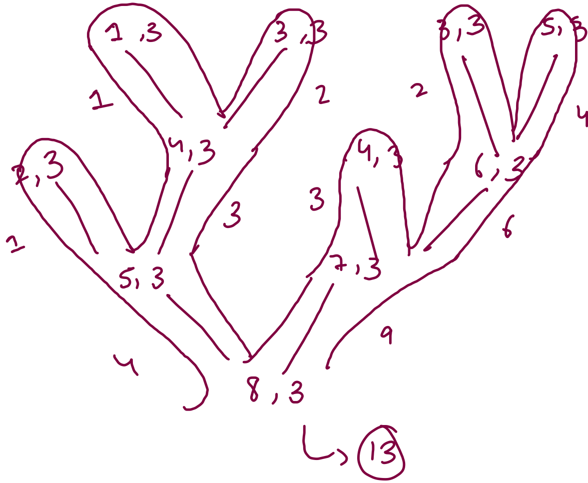
$n = 5$

$m = 3$



n-m, m   n-1, m

n, m



$$f(n, m) = f(n-m, m) + f(n-1, m)$$

$$\boxed{dp[n] = dp[n-m] + dp[n-1]}$$

$n = 8$

$m = 3$

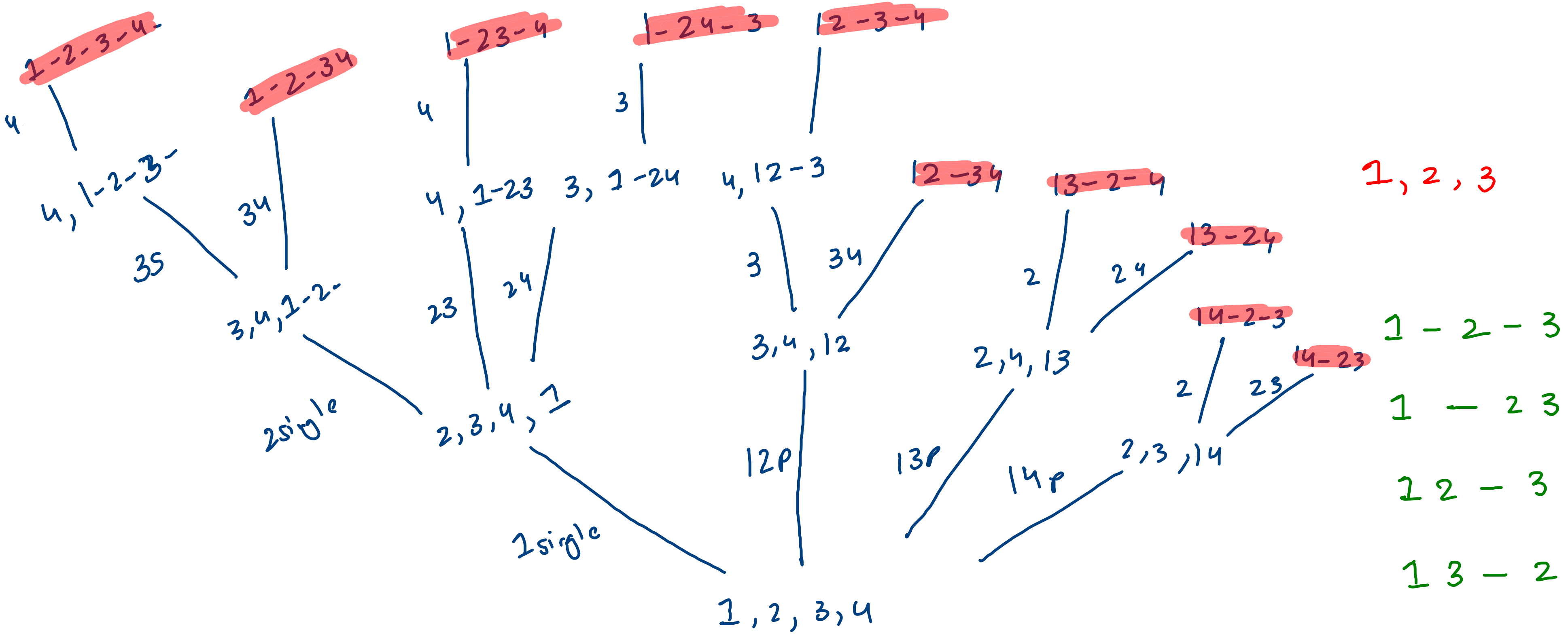
1	1	1	2	3	4	6	9	13
0	1	2	3	4	5	6	7	8

$i < m$

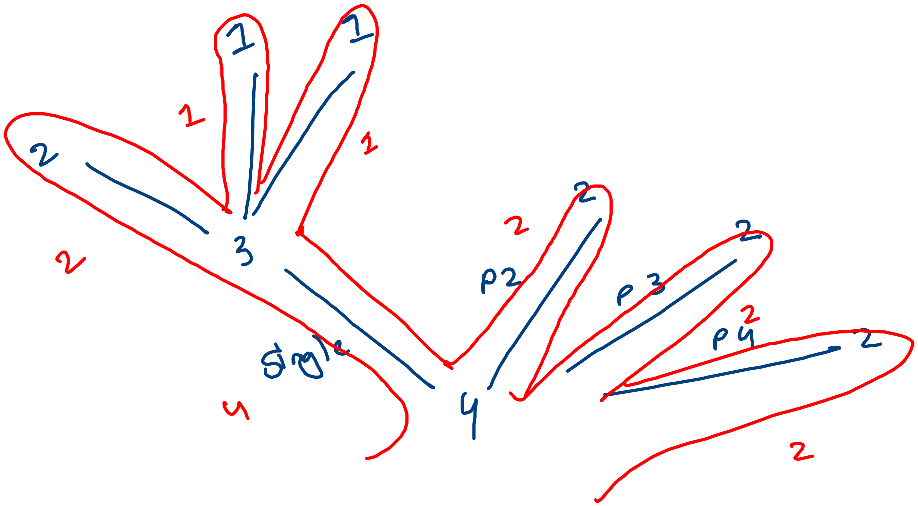
ways = 1 (horizontally place all tiles)

$i == m$ (2)

$dp[i] \rightarrow$ $i \times m$ tile up ways



1-2-3-4-
1-2-34
1-23-4
1-24-3
12-3-4
4
4
3
4, 1-2-3-
34
4, 1-23
3, 1-24
4, 12-3
12-34
13-2-4
1, 2, 3
35
3
34
13-24
3,4,1-2-
23
24
2
24
14-2-3
3,4,12
2,4,13
2
23
14-23
1 - 2 - 3
2sigle
2,3,4,1
1 - 23
12p
13p
14p
2,3,14
12 - 3
1sigle
13 - 2
1,2,3,4



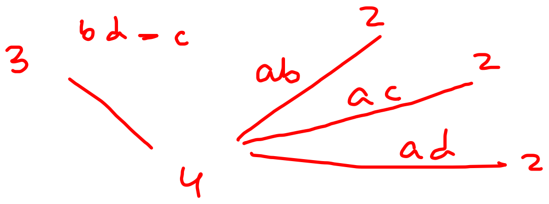
1	1	2	4	4+6
0	1	2	3	4

b - c - d

b - cd

bc - d

bd - c



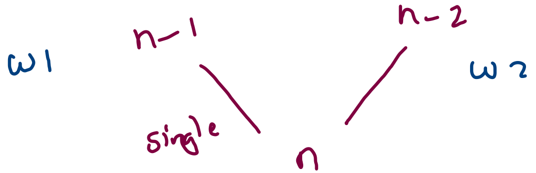
a - b - c - d

a - b - cd

a - bc - d

a - bd - c

a, b, c, d



$ans = w1 + w2 * (n-1)$

For n = 4 and k = 3 total ways is 6
12-3-4
1-23-4
13-2-4
14-2-3
1-24-3
1-2-34

n = 4

k = 2

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

1 2	34
1 3	2, 4

1, 2, 3, 4

k = 3

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

$$\boxed{ans = x + y * k}$$

a bc d

a bd c

a b cd

$n-1, k-1$ $\quad$ $n-1, k$

n, k

$x = 3$

$3, 2$ $\quad$ $3, 3$

$y = 1$

$4, 3$

a, b, c, d

ab-c-d

b-ac-d

b-c-ad

b c d

$$\boxed{dp(n, k) = dp(n-1, k-1) + k * dp(n-1, k)}$$

n \ k	0	1	2	3
0	0	0	0	0
1	0	1	0	0
2	0	1	1	0
3	0	1	3	1
4	0	1	7	6
5	0	1	15	25

$\times 2$

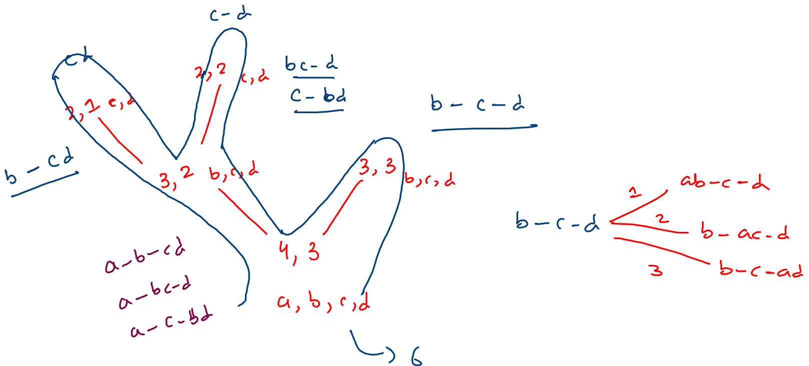
4,2 4,3

5,3

n = 5
k = 3

```
i == j {
  ways = 1;
}
i < j {
  ways = 0;
}
if(i > j) {
dp[i][j] = dp[i-1][j-1] +
}          j * dp[i-1][j];
```

i -> elements
j -> subsets



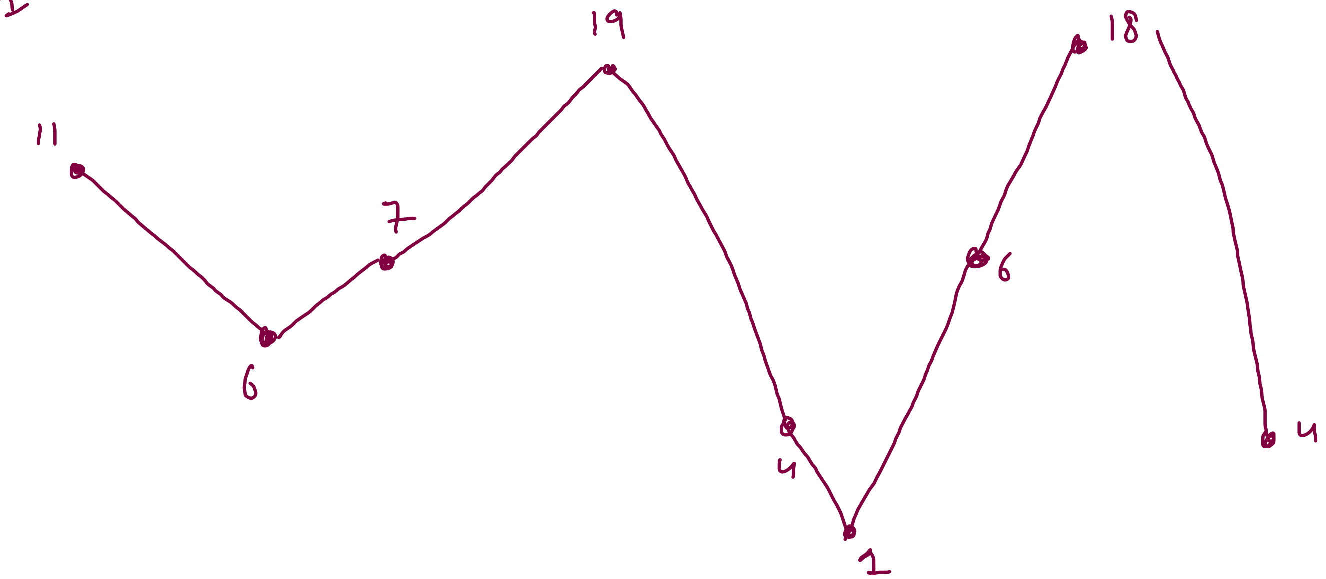
11
6
7
19
4
1
6
18
4

11	6	7	19	4	1	6	18	4
0	1	2	3	4	5	6	7	8

$dmin = \cancel{\infty}\ \cancel{11}\ \cancel{6}\ \cancel{4}\ 1$

$cp = 3$

$omax = \cancel{-\infty}\ \cancel{0}\ \cancel{2}\ \cancel{13}\ 17$



11	6	7	19	4	1	6	18	4
0	1	2	3	4	5	6	7	8

$cp = 4 - 1 = 3$

$lmin = \cancel{\infty}\ \cancel{11}\ \cancel{6}\ \cancel{4}\ 1$

```java
for(int i=0; i < prices.length;i++) {
    if(prices[i] < lmin) {
        lmin = prices[i];
    }

    int cp = prices[i] - lmin;

    if(cp > omax) {
        omax = cp;
    }
}
```

$omax = \cancel{-\infty}\ \cancel{0}\ \cancel{1}\ \cancel{13}\ 17$

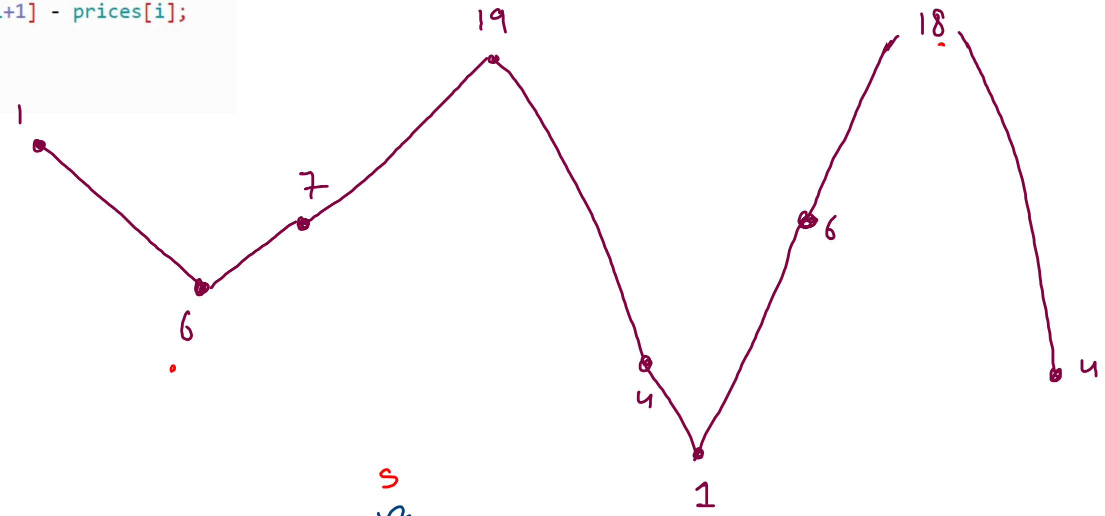
0	1	2	3	4	5	6	7	8
11	6	7	19	4	1	6	18	4

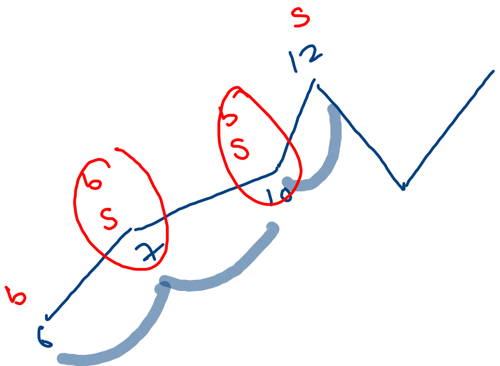
```
int opr = 0;

for(int i=0; i < prices.length-1 ;i++) {

    if(prices[i] < prices[i+1]) {
        opr += prices[i+1] - prices[i];
    }
}

return opr;
```

30

opr = 1 + 12 + 5 + 12

infinite transaction





ans = 1 + 12 + 5 + 12

= 30.