Lab5 Questions

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Lab5.A Shopping

- Festival is coming and Andrea decides to buy n gifts for her friends. However, n gifts are sold on different days. So Andrea will buy them **in order**. For the i^{th} gift, the price is c_i.
- In her city, there are only 1 dollar coins and 100 dollar notes. Before shopping, Andrea prepares m coins and plenty of notes (you can assume that she always has enough notes to buy gifts).
- There is only one cashier in the store and his efficiency depends on the gift he sells. For the i^{th} gift, his efficiency is w_i and he needs $x * w_i$ seconds to check out where x is the total number of the notes and coins he needs to give Andrea. The cashier always minimizes x.
- Andrea wants to pay in such a way that the total time she needs to check out should be as small as possible.
- Please help her to find out the minimum time she needs!

Input:

5 34 — the number of gifts; the number of coins

15 760 755 411 950 → price

2 2 2 2 2 → efficiency

price	15	760	755	411	950
weight	2	2	2	2	2

34 -15→ 19 +40→ 59 -55→ 4 +89→ 93 -50→ 43

total time:
40*2+89*2 = 258

price	15	760	755	411	950
weight	2	2	2	2	2

34 -15→ 19 +40→ 59 +45→ 104 -11→ 93 -50→ 43

total time:
40*2+45*2 = 170

Output:

170

Input:

```
5 193
178 887 466 475 10
816 136 880 340 800
```

price	178	887	466	475	10
weight	816	136	880	340	800

total time：

13*136+25*340=10268

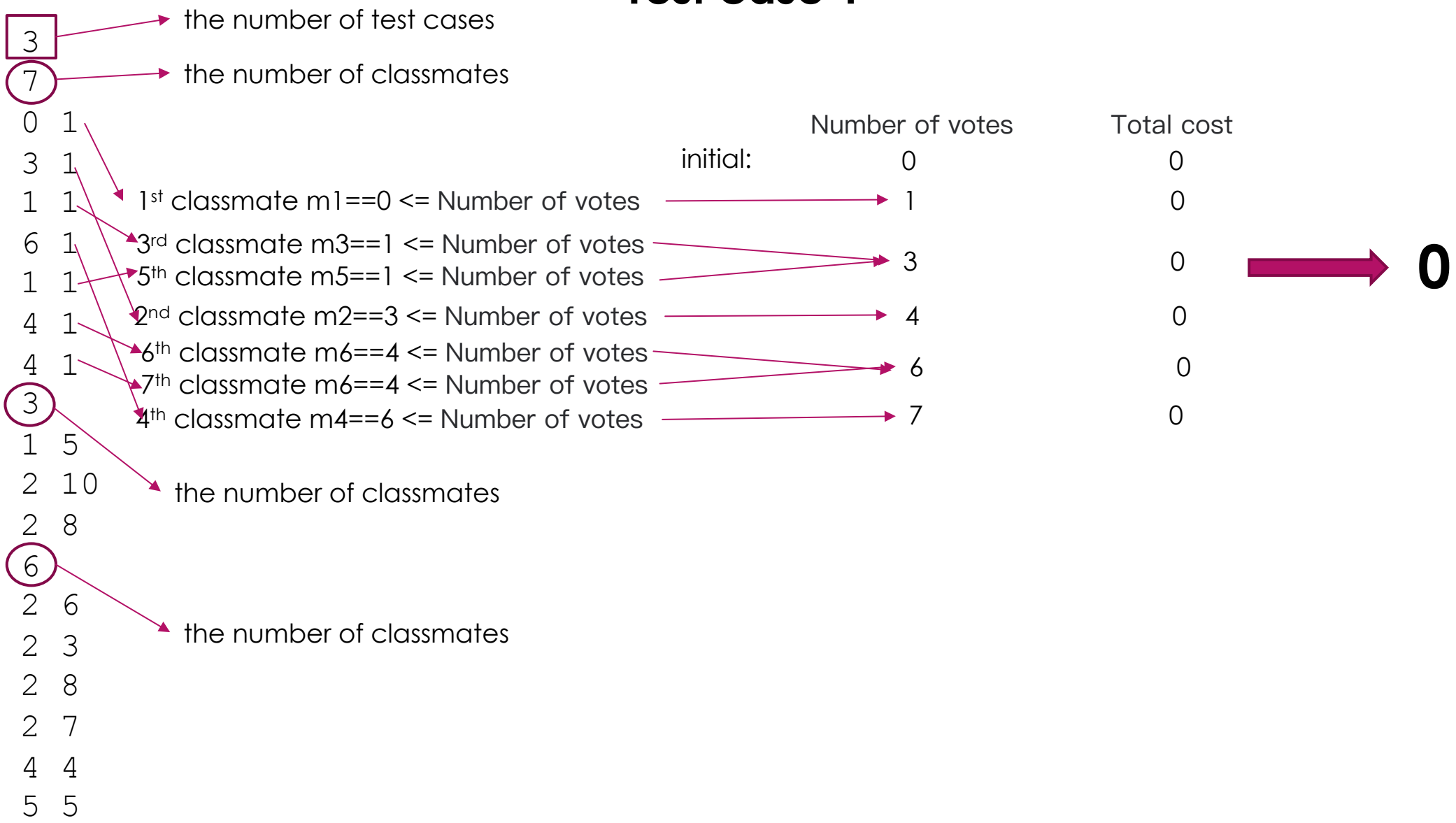
Output:

```
10268
```

Lab5.B Voting

- A monitor election is going to be held in your class. There are $\$(n+1)\$$ students in your class. And you want all your $\$n\$$ classmates to vote for you.
- There exist two ways to convince each of your classmates to vote for you. The first way to convince your i^{th} classmate is to pay him/her c_i coins. The other way is to make m_i other classmates vote for you, and the i^{th} classmate will vote for you for free.
- It should be noticed that the voting takes places in several steps. For example, if you have four classmates with $m_1 = 1, m_2 = 2, m_3 = m_4 = 3, m_5 = 5$, then if you buy the vote of the 5^{th} classmate, then all your classmates will vote for you. And the set of classmates vote for you changes as: $\{5\} \rightarrow \{5,1\} \rightarrow \{5,1,2\} \rightarrow \{5,1,2,3,4\}$.
- Please calculate the minimum coins you need to spend so that all your classmates will vote for you.

Test case 1


3
the number of test cases
7
the number of classmates
0 1
3 1
1 1
6 1
1 1
4 1
4 1
3
1 5
2 10
2 8
6
2 6
2 3
2 8
2 7
4 4
5 5
the number of classmates
the number of classmates
Number of votes
Total cost
initial:
0
0
1st classmate m1==0 <= Number of votes
1
0
3rd classmate m3==1 <= Number of votes
5th classmate m5==1 <= Number of votes
3
0
2nd classmate m2==3 <= Number of votes
4
0
6th classmate m6==4 <= Number of votes
7th classmate m6==4 <= Number of votes
6
0
4th classmate m4==6 <= Number of votes
7
0
0

Test case 2

```
3
7
0 1
3 1
1 1
6 1
1 1
4 1
4 1
3
1 5
2 10
2 8
6
2 6
2 3
2 8
2 7
4 4
5 5
```

the number of classmates

	Number of votes	Total cost
initial:	0	0
1st classmate cost the least →	1	5
then 3rd classmate cost the least →	2	13
2nd classmate m2==2 <= Number of votes →	3	13 ✗

Not the minimum cost

	Number of votes	Total cost
initial:	0	0
3rd classmate →	1	8
1st classmate m1==1 <= Number of votes →	2	8
2nd classmate m2==2 <= Number of votes →	3	8 √

Test case 3

```
3
7
0 1
3 1
1 1
6 1
1 1
4 1
4 1
3
1 5
2 10
2 8
6
2 6
2 3
2 8
2 7
4 4
5 5
```

the number of classmates

	Number of votes	Total cost
initial:	0	0
6th classmate has the largest m	1	5
then 5th classmate	2	9
m1,m2,m3,m4==2 <= Number of votes	6	9 ✗

Not the minimum cost

	Number of votes	Total cost
initial:	0	0
2nd classmate, cost 3	1	3
5th classmate, cost 4	2	7
m1,m3,m4==2 <= Number of votes	5	7
m5==5 <= Number of votes	6	7 ✓