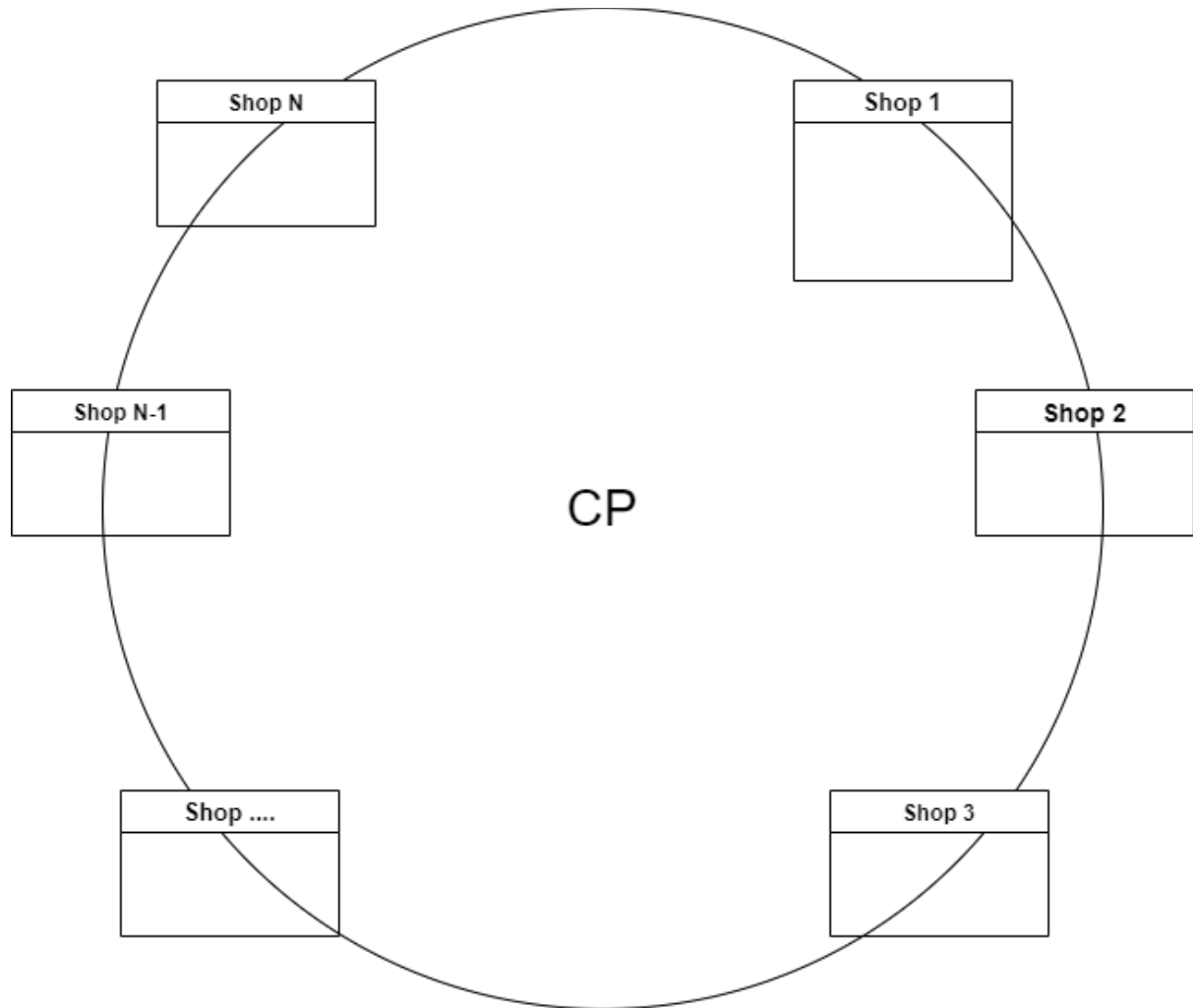


CP (100 Marks)

In the city of Codinga, there is a famous place known as CP. CP is famous because it is a high energy place and is circular in nature. There are **N** cloth shops in CP which are arranged in a circular manner.



All the **N** shops receive cartons of cloth from an old manufacturer. For some time, the old manufacturer is not well and has decided to not continue the manufacturing business and focus on his health. All the shop owners sympathized with him and wished him speedy recovery. But they are also in a dilemma as to how to continue their business as the old manufacturer was handling all their cloth carton requirements.

They all called for a meeting at night and discussed the issue. After the meeting, they have unanimously decided to work with a new manufacturer in the area. All the talks of pricing and timing have been done and the new manufacturer has received the demand of cartons (**Di**) from all the shops. The next day, the manufacturer went to deliver the cartons to the shops but got puzzled seeing the circular nature of the CP. It was difficult for him to understand which shop belonged to whom so he delivered the cartons in random order and hoped he was right.

After some time, the shop owners reached their shops and were amazed to see that the manufacturer had made a mistake in delivering the orders. For the *i*th shop, if the demand was **Di** cartons, the manufacturer had supplied **Si** cartons.

Note: It is possible that for a particular shop, the demand and supply are the same, i.e., the order is matched. Also, there are atleast two shops for which the demand and supply of carton is mismatched.

The owners informed the manufacturer about the chaos and he apologized for the inconvenience. The market was about to open in some time and the shop owners did not want their customers to see all this. They decided to transfer the cartons to the shops according to the demands such that all the owners will have their demands fulfilled. For this, they all agreed to bring their most trusted worker, Harish. Harish is trusted by all the shop owners as he is efficient, honest and has a pricing policy in place.

Pricing policy of Harish:

1. **Service Charge:** The service charge by Harish is 10 per shop in CP.
2. **Working Charge:** Working charge is directly proportional to the time taken by Harish to move an item from source to destination in minutes. At one instance, Harish can carry only one item. Harish charges only for the time he is carrying an item.

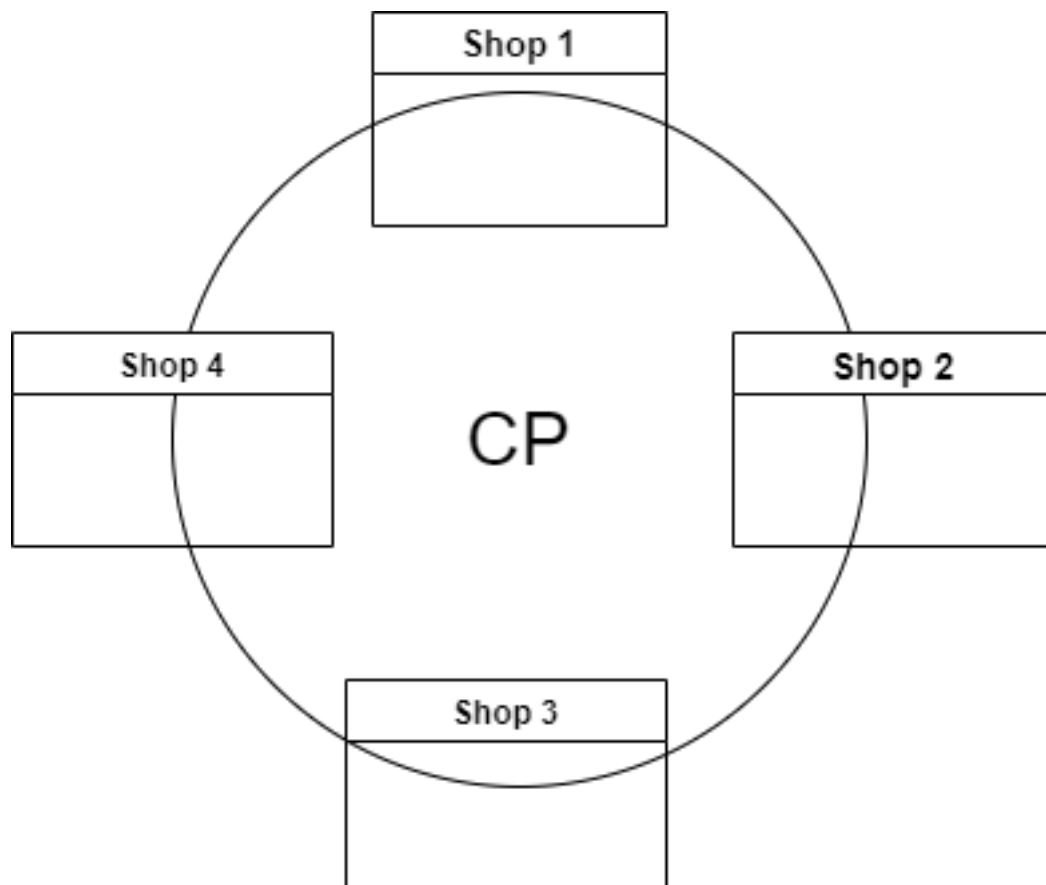
Working Charge \propto Time Taken in minutes

Where 1 minute = 1 (in currency)

It takes Harish one minute to move between the adjacent shops. Harish is very honest so he would try to minimize the total charge the shop owners have to pay.

Example:

Consider there are 4 shops, $N = 4$



For the given representation, the table below shows the time taken by Harish to move from one shop to another.

Shop Number (Source)	Shop Number (Destination)	Time Taken by Harish
1	2	1
1	3	2
1	4	1
2	3	1
2	4	2

The shop owners are busy cleaning and setting up the shop and need your help. They will provide you the details of cartons demanded and cartons supplied to shops and you have to determine the amount of money Harish will charge them for making the mismatch of orders correct so that they can arrange for the money before hand and save the time. Help the Shop owners.

Example:

The number of Shops, $N = 6$

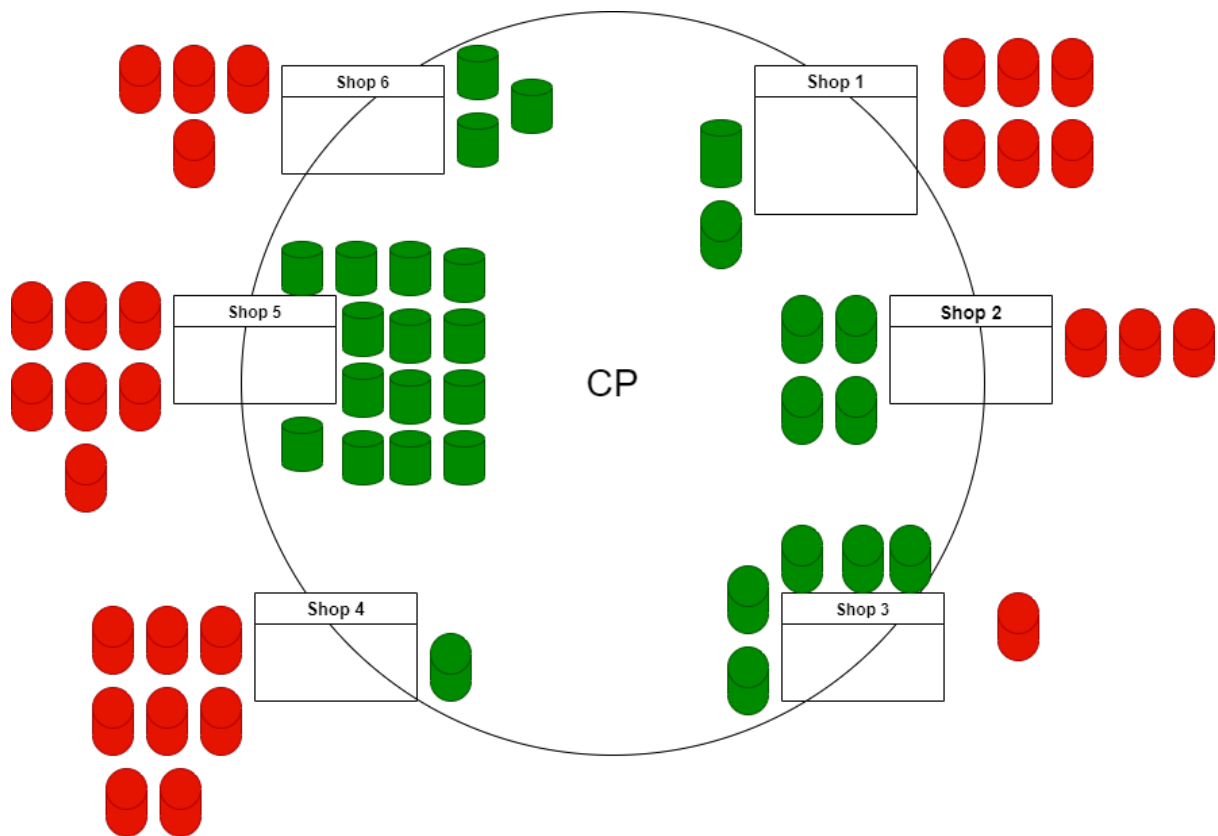
The demanded and supplied cartons for each shop are provided.

Shop Number (Ni)	Demanded Cartons of Cloth (Di)	Supplied Cartons of Cloth (Si)
1	2	6
2	4	3
3	5	1
4	1	8
5	14	7
6	3	4

Color coding:

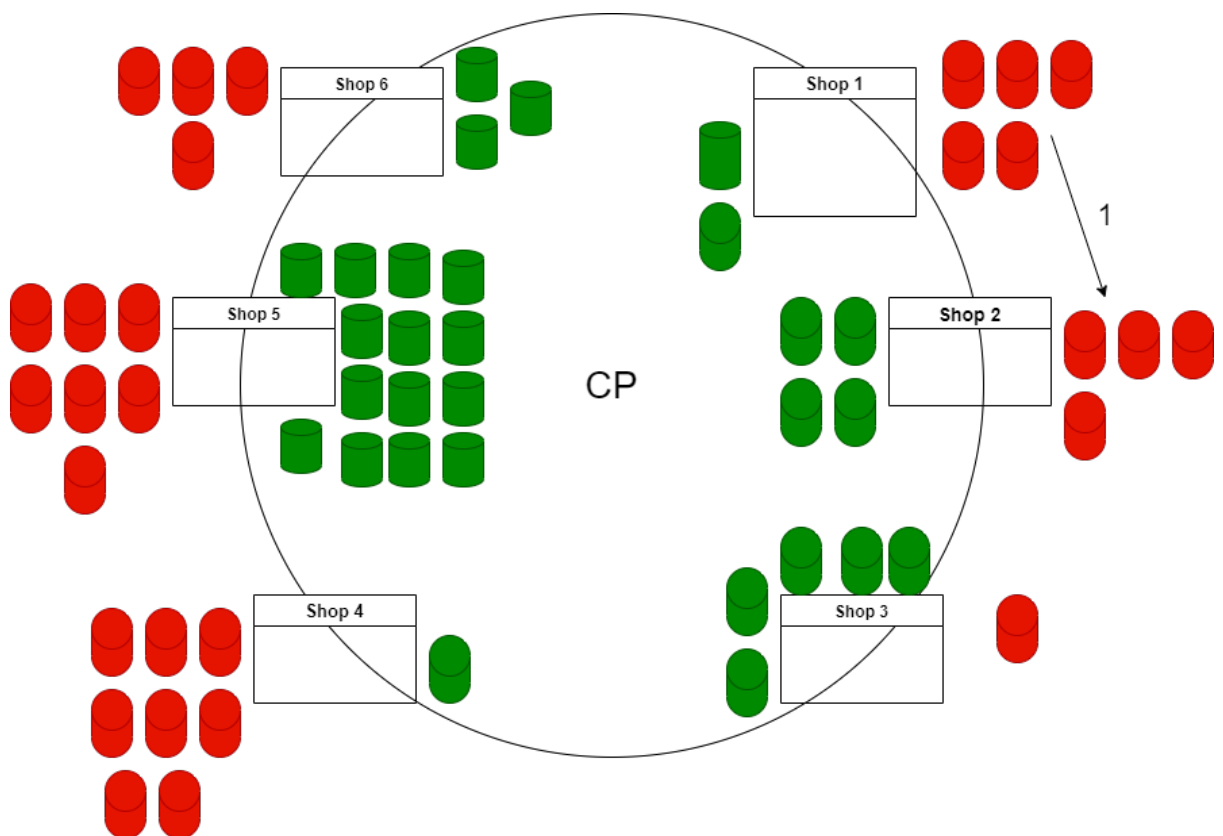
Green - Represents the number of demanded cartons of cloth

Red - Represents the number of cartons of cloth supplied by the new manufacturer.



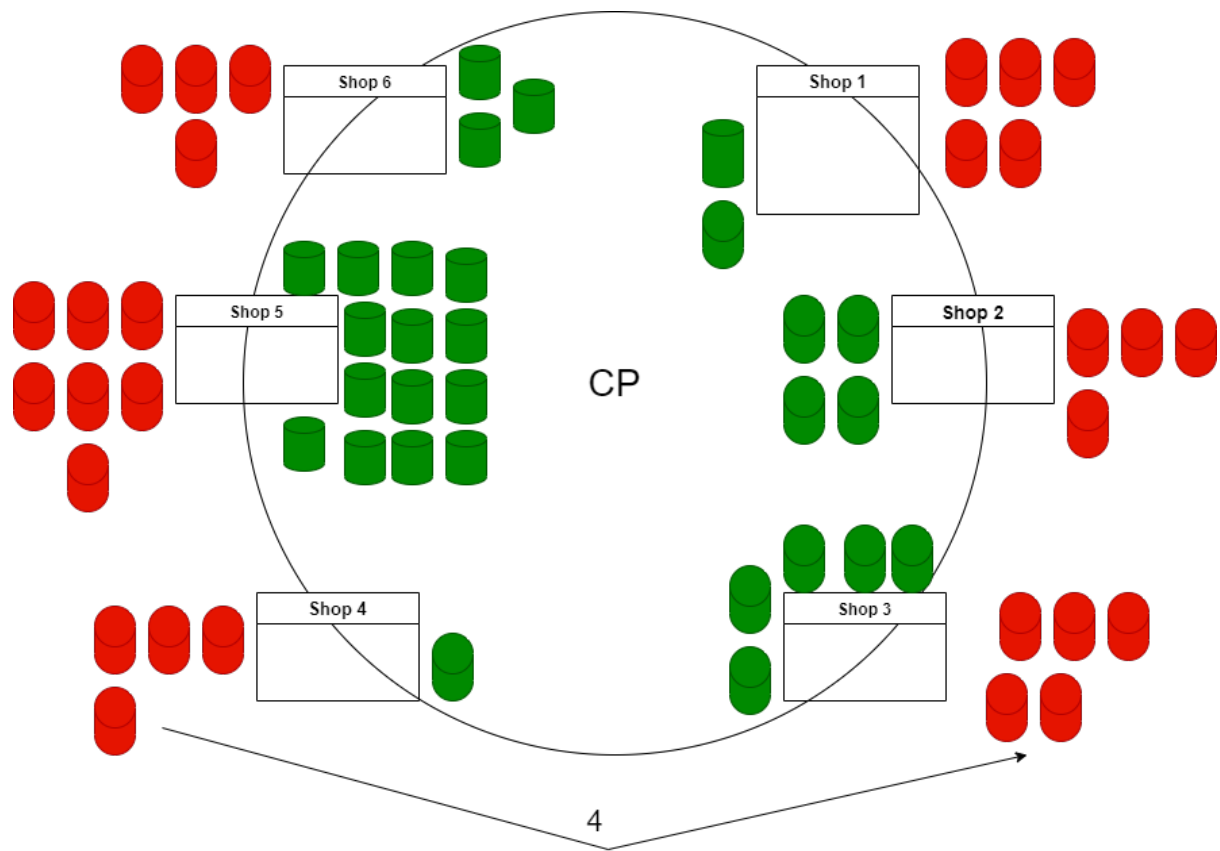
Harish can work in the following way:

1. **Moving 1 carton from Shop 1 to Shop 2.**



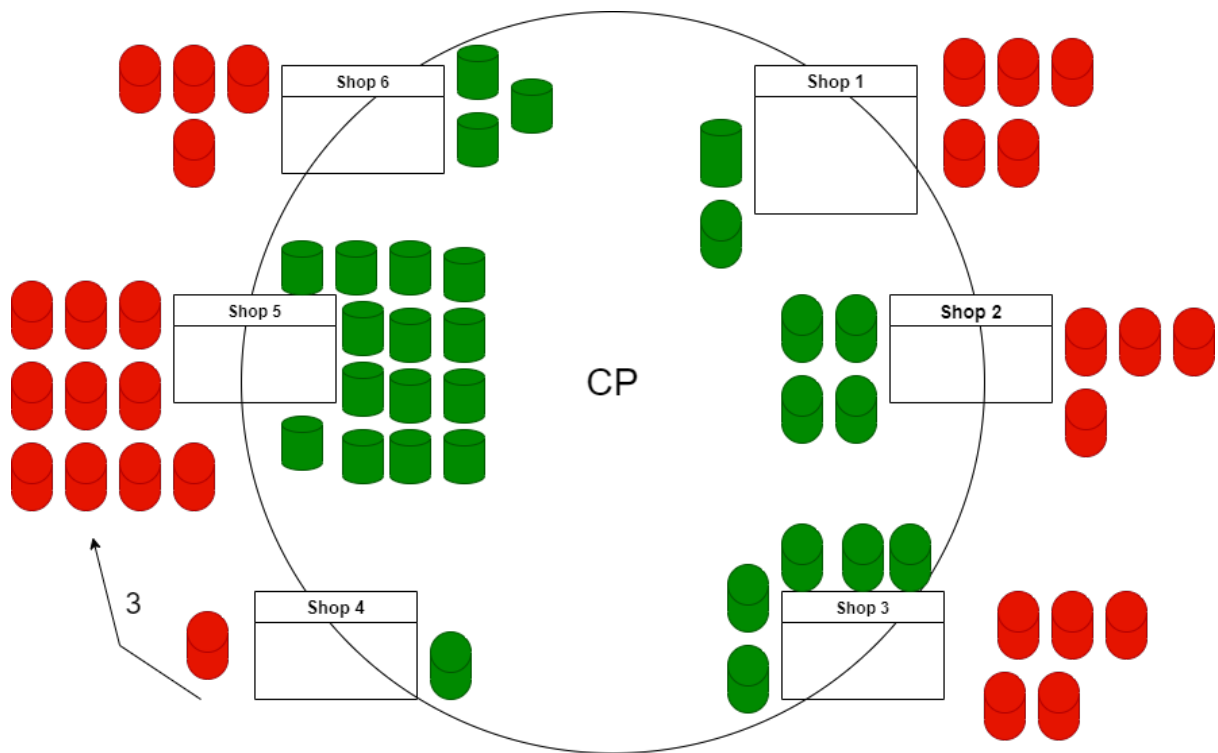
Demand for Shop 2 is met.

2. **Moving 4 cartons from Shop 4 to Shop 3**



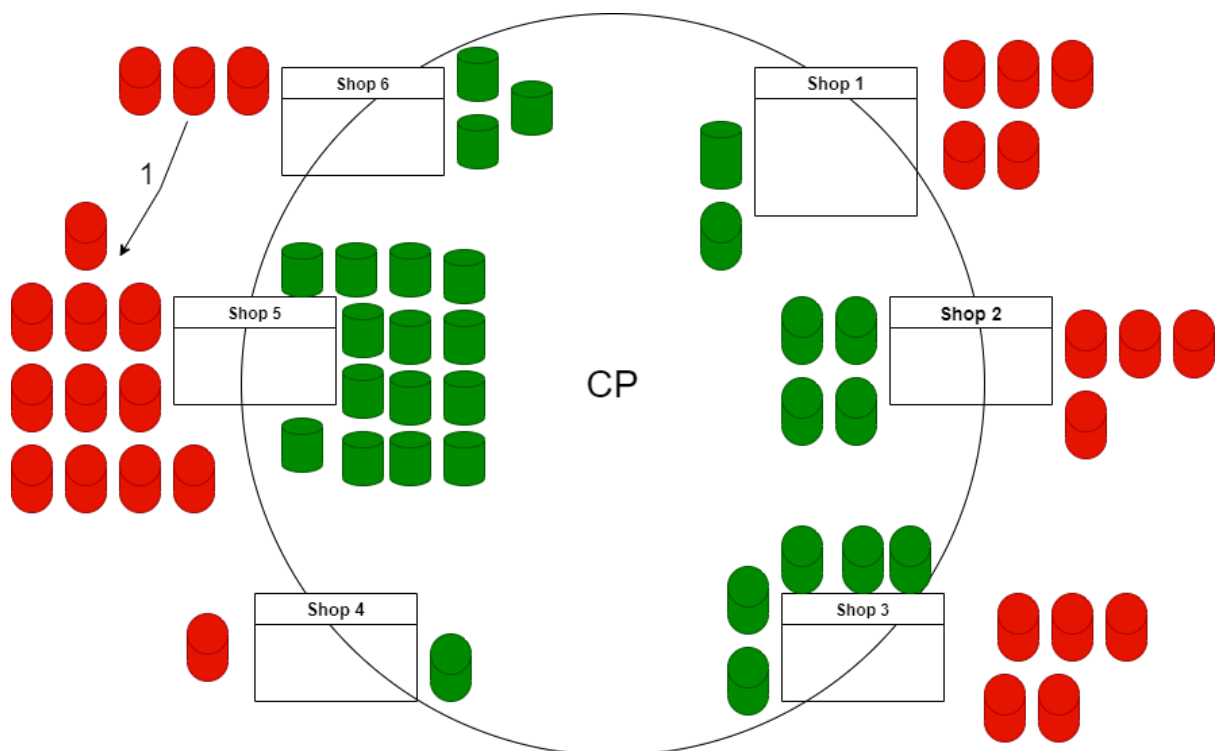
Demand for Shop 3 is met.

3. **Moving 3 carton from Shop 4 to Shop 5**



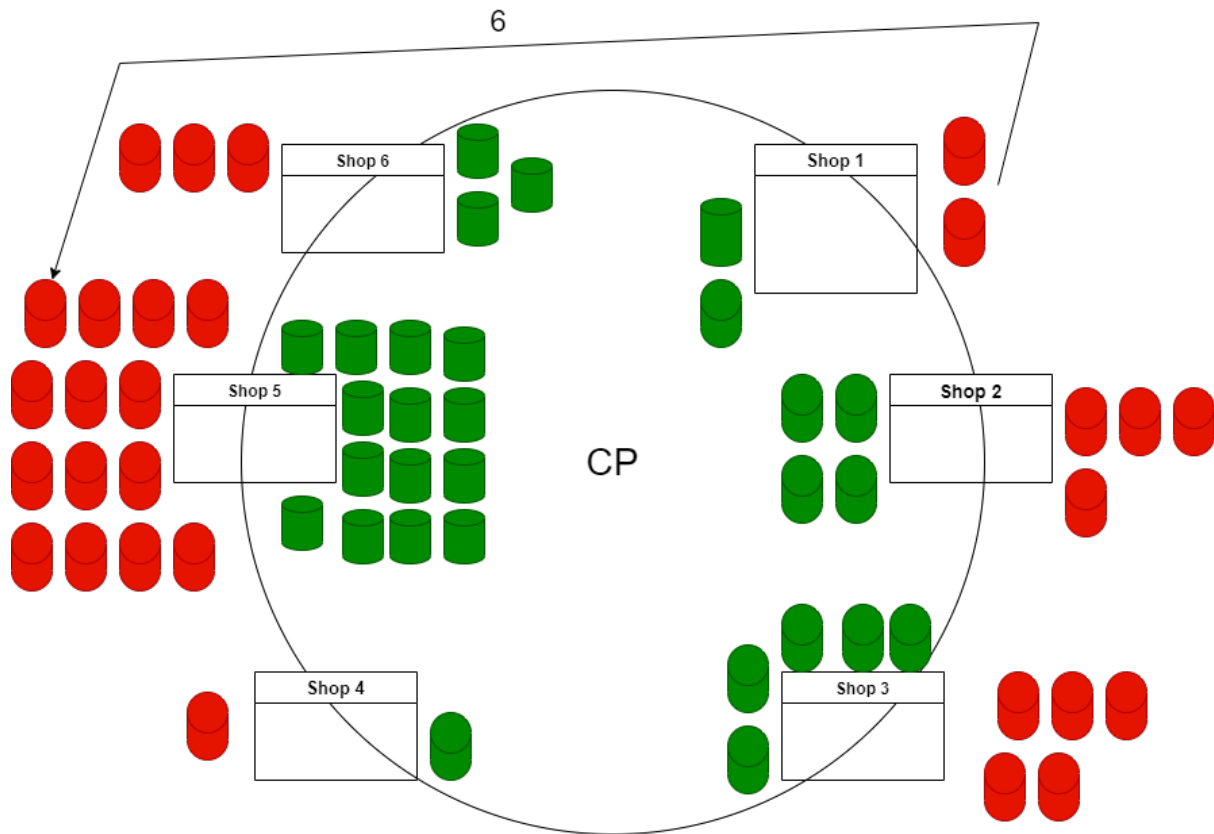
Demand for Shop 4 is met.

4. **Moving 1 carton from Shop 6 to Shop 5**



Demand for Shop 6 is met.

5. **Moving 3 cartons from Shop 1 to Shop 5**



At this point, the demand for cartons is met for all the shops.

Note: Integer on arrow represents the time taken by Harish to move the cartons from source to destination. There might be multiple ways to complete the task but the amount of money to be paid to Harish should be minimized.

The total amount of time taken by Harish = $1 + 4 + 3 + 1 + 6 = 15$ minutes.

The working charge = 15

The service charge = $10 + 10 + 10 + 10 + 10 + 10 = 60$

The total amount of money shop owners have to pay = Service charge + Working charge = $60 + 15 = 75$

Input Format

The first line of input consists of the number of Shops, N .

Next N lines follow. Each line will consist of the two space-separated integers representing the number of cartons demanded (**Di**) and the number of cartons supplied (**Si**) to the i th shop.

Constraints

$2 \leq N \leq 100000$

$0 < D_i \leq 1000$

$0 < S_i \leq 1000$

Output Format

Print the amount of money Shop owners have to pay to Harish.

Sample TestCase 1

Input

6
2 6
4 3
5 1
1 8
14 7
3 4

Output

75

Explanation

As explained in the example.

Time Limit(X):

0.50 sec(s) for each input.

Memory Limit:

512 MB