1 Selling Gold

A small gold merchant does selling and buying business of gold bars. He always buys gold bar and does it business. He lost money in this business. After having learnt the lessons, he now want to minimize his losses. So, he secured a chart of distinct projected prices of gold over the next several months. The merchant can buy and sell at minimum loss.

Given the number of months and the corresponding projected prices of gold, write a program to print the minimum amount of money he would lose in the business.

Input	Output	Comments
3 **5 10 3**	2	● First line 3 – represents total number of months ● Second line (5 10 3) – represents gold prices of next three months. Stored in an array say priceArray[5, 10, 3] ● The merchant buys gold in month 1 priceArray[0]=5 and sells it in 3rd month priceArray[2] =3 ● Minimum loss (5 -3) = **2**
5 **20 7 8 2 5**	2	● First line 5 – represents total number of months ● Second line – represents priceArray [20, 7, 8, 2, 5] ● The merchant buys in month-2 priceArray[1]=7 and sells it in month-5 priceArray[4]=5. ● So the minimum loss **(7 – 5 = 2)** .

2 TV Servicing Mechanic

A TV service mechanic, besides doing this regular servicing job, wants to earn extra money by purchasing/selling second-hand TVs of different brands. His collection has many TVs of many brands.

An e-commerce site regularly announces TV exchange mela by listing the offers and the schedule. The site defines worth (an integer, starting from 1) for every TV brand. Worth 1 is less than worth 2 and so on. All offers must be availed in any order but on the same day of offer only. Any number of exchanges can be made on that day.

The offers list is a collection of ordered pairs such as (A, B) allowing users to exchange TVs of Brand-A with equal number of TVs of Brand-B. It also defines the day on which the offer can be availed.

The TV mechanic wants to make his collection of TVs more valuable.

Assume that the TV mechanic has enough TVs to exchange. Given the number of TVs (N) and number of offers available on the site (M), on the worth and schedule, write a program to find out the maximum possible value of the collection of TVs owned by the mechanic after all offers.

Input/Output

Input	Output	Comments
3 4 1 3 5 1 4 3 1 1 3 2 6 22 3 5 8	16	• The first line (3 4) – **3** represents total number of TVs (N) with the Mechanic. **4** represent the total number of offers (M) listed by the ecommerce site. • Second line (1 3 5) – has N values represent the Worth of TVs he has. (Worth-1, Worth-3, Worth-5) • The next M lines lists the offers of the web site. • Explanation: • Day-1 (1 4 3) (1 1 3) • First, TV of worth-1 with be exchanged with a TV of worth-3. ***He collection changes to 2 TVs of worth-3, and a TV of worth-5*** • Second, he can exchange two TVs of worth-3 with two TVs of worth-4. Value of his collection at the end of Day-1 (4+4=8) • Day-2 (2 6 22) – Nothing to avail. • Day-3 (3 5 8) • Exchange one TV worth-5 with that of worth-8. • Total value of his collection of TVs would be **4 + 4 + 8 = 16**

3 Shipping Gold Container

A security agency has been tasked to transport containers of very precious diamonds, jewelry and gold bars from different cities to the treasury of a kingdom. In order to provide security to the containers and safe transport, the agency, at certain locations (checkpoints) on the transit path, deploys teams of security men of different team sizes. Those teams guard the surrounding areas of the checkpoint.

A transit path can have **n** checkpoints and it can be imagined as x-axis. Each team of size p(i) located at x(i) can provide security cover to [x(i) - p(i), x(i) + p(i)] area. Because of the different sizes, multiple teams may guard common areas and there could be no guards in certain areas.

Given the starting position S and the end position E on the x-axis, the number of checkpoints N followed by n-lines each line, has the position of the checkpoint on x-axis and the size of the security team deployed, *find out the total area that is not covered by any of the security teams*.

Input/Output

Input	Output	Comments
5 229 8419 **1795 95** **4873 720** **3149 81** **6101 2325** **3674 629**	2626	● First line (5 229 8419) – Total Number of checkpoints (5), Starting Position (S) on x-axis 229 End Position (E) on x-axis 8419 ● Next 5 lines represent the checkpoint position on x-axis and the number of security personnel. 1. 1795 95 2. 4873 720 3. 3049 81 4. 6001 2325 5. 3674 629 ● (1) 1795 position on x-axis, 95 number of security personnel. ● From Starting position (s) to End position(E), the total area which is not covered by any of the security teams is 2626.