1 Selling Photo Frames

Shakuni, a self-employed photo frame maker, has started his business. In short time, he became popular as the frames were quite good and more importantly the prices were reasonable. Now that the business is on track, Shakuni, in order to make more money, has devised a cunning formula for the prices. According to the new formula, in a given transaction, per customer, the price of a frame shall be equal to its *current price * (number of frames purchased previously + 1).*

Bheem and his friends wanted to purchase some photo frames. After knowing the pricing formula of Sakuni to maximize the cost of frames, he is looking for someone to help him with an idea that gives the minimum cost and buy the required number of photo frames for him and his friends.

Given, the total number of Frames (F), the number of friends (N) and the price list of all frames, write a program to find the minimum total cost that Bheem must pay to purchase F number of frames from Shakuni.

Input/Output

Input	Output	Comments

3 2
2 5 6
	15	• The first line **3 2 – Total Frames (F=3) and Friends(N=2)**
		• Second line **2 5 6 – Prices of Frames**
		• **First person**
		  ○ **purchases Frame of 5 so its cost is**
		  ▪ **(0+1)*5 = 5**
		  ○ **Purchases Frame of 2 so its cost is**
		  ▪ **(1+1)*2 = 4**
		• **Second Person**
		  ○ **Purchases Frame of 6 so its cost is**
		  ▪ **(0+1)*6 = 6**
		• **Total Cost of Frames = 5 + 4 + 6 = 15**

7 3 **1 3 5 7 9 11 13**	**66**	

2 Cost to Trace Pandavas

Dhurodhana wanted to trace Pandavas during their Aagyathavas. He approached many of allies for help and they demanded gold in return. The allies also had their own allies (friends) who worked for free. The chain of allies and friends could cover vast region and Dhurodhana was ready to pay anything to trace Pandavas.

But, Karna intervened and told Dhurodhana to save money for a potential war in future. He asked to give him the details of the number of allies and their connected friends, to figure out how much gold is needed for allies to get on to the work of tracing Pandavas.

Given the total number of allies (N), the amount of gold each ally demanded, the total number of pair of allies (P) and pairs of allies/friends, write a program to find out the minimum amount of gold that Dhurodhana needs to pay so that all allies will get on to the job.

Input/Output

Input	Output	Comments

5 2
2 5 3 4 8
1 4
4 5
	10	• The first line **5 2**
		  ○ **5** represents total number of allies
		  ○ **2 represents pairs of allies**.
		• The next line **2 5 3 4 8** represents amount of gold demanded by each ally
		• The next two lines represent ally/friend pairs
		  ○ 1 4
		  ○ 4 5
		• If 1st receives gold then he seek help from 4th for free and 4th can seek help from 5th for free. So, no need to pay **4th** and **5th.**
		• Need to 2nd and 3rd allies
		• So the total gold that must be paid is
		  ○ 2 + 5 + 3 = 10

10 5 **1 6 2 7 3 8 4 9 5 10** **1 2** **3 4** **5 6** **7 8** **9 10**	**15**	**1 - 2 = 1** **3 - 4 = 2** **5 – 6 = 3** **7 – 8 = 4** **9 – 10 = 5** **Total Gold = 1 + 2 + 3 + 4 + 5 = 15**

3 Illuminating Streets of Warwickshire

Some streets in a city, Warwickshire, were very narrow and very long. All houses were numbered starting from 1. There are some empty plots in the lanes. The local authorities wanted to illuminate those streets at a minimum cost. So, they thought of placing LED lamps on top of some houses so that the entire street has light covered. All LED lamps are not alike in their light coverage. So, they decided to use similar kind of LED lamps for in a street.

Given the total number of houses (H), the illuminating range of each LED lamp and the location of houses (excluding empty plots), write a program to find out the minimum number of LED lamps needed to illuminate the entire street.

Input	Output	Comments
5 1 **1 2 3 4 5**	**2**	• First line **5 1** represents number of houses **5** and illuminating capacity of LED lamp **1** • The next line **1 2 3 4 5** represents houses • Lamps can be placed on House (2) and (4) and the entire street is illuminated.
8 2 **7 2 4 6 5 9 12 11**	**3**	Place lamps on houses (4) (9) and (12)