THE FELLOWSHIP OF THE RING

Execution time : **C/C++/Java within 3 seconds for maximum 50 test cases**

Memory : maximum 256MB is available for heap, global, and static combined (Note that maximum 1MB is available for stack)
Submission : **10 times**
Evaluation criteria : **The number of correct test cases**

Default code will be given for the language you are using (C/C++, Java)
Refer to this sample code to learn how to handle the input for your code and to acquaint the matters that require attention of the language you are using
This is for your convenience, so you can freely modify or erase the content.

* For C/C++ language, if you use print() function for your output, you must call
setbuf(stdout, 0); to get partial points when your solution gets time out
(information about calling setbuf() function is included in the default code)

Frodo formed the Fellowship of the Ring and is taking One ring to Mordor.

On the way to Mordor, he encounters N groups of orcs, in the order of 1 no N.
When Frodo bumps into an orc group, he can choose one of the three following options:

Pay the Toll

He can pay a regular toll and pass by them safely.

Recruit a mercenary

If he pays the double of the toll, the corresponding orc group gets hired as mercenaries of the Fellowship of the Ring.

Battle

If the number of the Fellowship of the Ring members is greater than or equal to the number of orcs, a battle is possible.

However,

1. Frodo does not count as one of the members of the Fellowship of the Ring.
2. A hired mercenary can participate at maximum 3 battles. Even if the orcs are alive after 3 battles, the group gets dispersed.
3. In the battle, independent of the number of orcs, all hired mercenaries participate in the battle.
4. The battle goes on until the orc group gets exterminated. The Fellowship of the Ring, will, as well, loose the same number of soldiers.
5. In the Fellowship of the Ring, soldiers get killed in the order of who got hired first.

➢ **Given N, the number of orc group and the toll, find the minimum cost to get to Mordor.**

For instance, suppose there are 7 (N=7) orc groups.
(yellow stands for the number of orcs in the group and white stands for the toll).

1	2	3	4	5	6	7
10 $100	70 $5	80 $15	20 $60	50 $90	30 $80	10 $10

The minimum cost to het to Mordor is $150.

1	2	3	4	5	6	7
10 $100	70 $5	80 $15	20 $60	50 $90	30 $80	10 $10
pass	**hire**	**hire**	**battle**	**battle**	**battle**	**pass**
100$	**110$**	**140$**				**150$**

If there are 11 (N=11) orc groups. The minimum cost becomes 2,370$.

Orc Group	1	2	3	4	5	6	7	8	9	10	11
The Number of Orc	1,000	700	400	300	900	300	50	50	700	500	50
Toll	10	900	500	10	900	10	900	900	900	900	10

Choose	Hire	Battle	Pass	Hire	Pass	Hire	Battle	Battle	Pass	Battle	Pass
Cost($)	20	20	520	540	1,440	1,460	1,460	1,460	2,360	2,360	2,370

Current Orc	1,000	300	300	600	600	900	850	800	600	100	0
Group 1	1,000	300	300	300	300	300	250	200	dispersed		
Group 4				300	300	300	300	300	300	0	exterminated
Group 6						300	300	300	300	100	dispersed

[Constraints]

- $5 \le N \le 20$
- The number of orcs in each group is greater than or equal to 1 and less than or equal to 1,000.
- The toll of each orc group is greater than or equal to 1 and less than or equal to 1,000.

[Input]

The first line contains a single integer T-the number of total test cases.
Below, each test case if given.
The first line of each test case contains N-the number of orc groups,
the next B lines contain the number of orcs and the toll, respectively.

[Output]

Print “#X” (without quotes) for the test case result, leave a blank space and print the answer. (X stands for the test case number and starts with 1.).

[In/Output Example]

input		output
5	// T=5	#1 150
7	// Test Case 1, N=7	#2 3000
10 100	// pass	#3 2370
70 5	// hire	#4 4721
80 15	// hire	#5 8231
20 60	// battle	
50 90	// battle	
30 80	// battle	
10 10	// pass	
9	// Test Case 2, N=9	

600 800
300 400
300 400
1000 400
300 600
100 300
600 300
600 500
1000 300
11
1000 10
700 900
400 500
300 10
900 900
300 10
50 900
50 900
700 900
500 900
50 10
…
	// hire
	// battle
	// battle
	// hire
	// battle
	// battle
	// pass
	// battle
	// pass
	// Test Case 3, N=11
	// hire
	// battle
	// pass
	// hire
	// pass
	// hire
	// battle
	// battle
	// pass
	// battle
	// pass
	// for remaining test cases, refer to “sample.input.txt”	