Statement Problem Pulse

The two famous bug-coutries *United Bug Land* and *Al-Bugida* are at war. Our protagonist is the spy Tzutzu from *United Bug Land* and his mission is to infiltrate in *Al-Bugida*.

It is known that the world map is a $N \times N$ matrix where *United Bug Land* is situated at coordinates $(1,\ 1)$ and *Al-Bugida* is situated at coordinates $(N,\ N)$.

Tzutzu starts his mission from coordinates $(1,\ 1)$ and each day he can choose to move one unit up, down left or right or he can stay still without ever leaving the world map.

Unfortunately, because it is war, the world is constantly being bobmarded by P pulsar bombs. Such a bomb is defined by three numbers: $X,\ Y$ representing the coordinates of the center of the bombing zone and R, the radius of action. A pulsar bomb works as follows: every R days the bomb detonates starting with day 0, the start of Tzutzu's mission. In the first day the bomb renders the zone at coordinates $(X,\ Y)$ inaccessible, then each day the radius of inaccessible zones extends by one, until the next detonation occurs, when everything resets (thus the radius of the bomb is pulsating). In other words, at any moment of time T, all the cells at a Manhattan distance less than or equal to $T\ mod\ R$ from the zone at coordinates $(X,\ Y)$ are inaccessible.

Tzutzu wants to know the minimum number of days he has to spend in the war zone.

Input

The input will be read from *stdin* which contains on the first line two numbers the size of the world mab N and the number of pulsars P. Then, another P lines follow, the i^{th} line describing the i^{th} pulsar bomb: $X_i\ Y_i\ R_i$.

Output

The output will be written to *stdout* and it will consist of one line with one integer: the minimum number of days Tzutzu has to spend in the war zone.

Restrictions

- $1 \leq X_i\ Y_i \leq N \leq 500$
- $1 \leq P \leq 15000$
- $1 \leq R_i \leq 6$

- For 10 points: $N \leq 10$
- For another 20 points: $R_i = 1 \ \forall \ i \in [1, P]$
- For another 20 points: $N \leq 50$
- It is guaranteed that Tzutzu can reach his destination.

Example

stdin	stdout
5 1 3 3 3	9
5 1 3 3 4	11

Explanation

A valid path for Tzutzu is:

- Day 0: $(1,\ 1)$
- Day 1: $(1,\ 2)$
- Day 2: $(1,\ 2)$
- Day 3: $(1,\ 3)$
- Day 4: $(1,\ 4)$
- Day 5: $(1,\ 5)$
- Day 6: $(2,\ 5)$
- Day 7: $(3,\ 5)$
- Day 8: $(4,\ 5)$
- Day 9: $(5,\ 5)$