Railroad Network

The preparation to Lea's vacation in Templonia is under way, and after coming back from the Money Exchange, she plans her trips. Sadly enough, the Templonian airlines have very bad reputation. The Templonian people are too much into spirituality and temple architecture to bother about routing baggage from one airport to another. This means that on many occasions a traveler will be sent to its destination, but his or her baggage will not, and will be routed to another airport in Templonia instead. Unfortunately, there is no way around such an airline. Lea's first destination is the capital Tempolis. However, from experience one knows that it is highly probable that the baggage arrives at Starta. Now, the baggage is forwarded to Tempolis by trains, because the domestic railroad network is quite developed. Planning ahead, Lea wants to find a way to forward all the baggage from her plane from Starta to Tempolis. Can you help her find the solution such that the maximal amount of baggage is transported from Starta to Tempolis?

Input

The first line of the input contains an integer t. t test cases follow, each of them separated by a blank line.

Each test case starts with two integers, n and m, the number of cities n (indexed from 1 to n) and the number of railroad connections m. m lines follow describing the railroad connections, each containing three integers a_i, b_i and w_i where a_i and b_i are the endpoints of the connection and w_i describes the maximal baggage weight on this connection. Note that connections are undirected, i.e., if there is a connection from city a_i to city b_i, then there is one in the opposite direction as well.

Assume that baggage can be split up in integral parts as much as you like.

City 1 is considered to be Starta, city n is Tempolis.

Output

For each test case, output one line containing "Case #i:" where i is its number, starting at 1, and the maximal weight of the baggage that can be sent from Starta to Tempolis or "impossible" if there is no path between Starta and Tempolis. Each line of the output should end with a line break.

Constraints

- $1 \le t \le 20$
- $2 \le n \le 500$
- $1 \le m \le 5000$
- $1 \le a_i, b_i \le n$ for all $1 \le i \le m$
- $1 \le w_i \le 1000$ for all $1 \le i \le m$

Sample Input 1

```
2
4 5
1 2 8
1 3 5
2 3 6
3 4 12
2 4 1

4 6
1 2 7
1 3 6
2 3 2
2 3 3
2 4 4
3 4 7
```

Sample Output 1

```
Case #1: 12
Case #2: 11
```

Sample Input 2

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

2 5
1 2 8
1 2 2
1 2 3
2 1 3
1 2 10

5 8
1 5 8
1 3 9
3 1 9
5 3 1
5 4 7
3 5 7
4 2 10
5 4 3

4 4
3 4 4
1 4 9
1 4 2
3 2 9

2 2
1 2 2
1 2 7
```

Sample Output 2

```
Case #1: impossible
Case #2: 26
Case #3: 16
Case #4: 11
Case #5: 9
```