War of the Giants

Filename: `war`

The world is thrown into disarray as its two most powerful countries, Aliland and Buzzland (which we will refer to as giants), have gone to war. Unfortunately, all other countries are stuck in the middle of these two giants. These countries are forced to make a choice in the interest of their security - they must ally either with Aliland or Buzzland.

Each country will choose to ally with the closer of the two giants. A giant is closer than another if the shortest path between the country and the giant is shorter than the other. If there is no path between the countries then the length of the shortest path is infinity. If both giants are equally close, the country will remain neutral.

For each country, determine its ally or whether it remains neutral. Aliland is represented as country 1 and Buzzland is represented as country 2.

The Problem:

Given a graph where each node represents a country, determine the alliances formed in the War of the Giants.

The Input:

The first line of the input file begins with a single, positive integer, t, representing the number of war. For each wars, two lines follow. The first contains a two integers $3 \leq n$, $m \leq 100{,}000$ representing the number of countries and the number of roads. m lines follow, each with three integers, $1 \leq u$, $v \leq n$ and $1 \leq w \leq 10^9$, representing a bidirectional road between countries u and v with length w. There will be no duplicate edges.

The Output:

For each test case, output a single line saying "`War #i: c`" without the quotes, where `i` is the number of the war, and `c` is a string of n characters, either 'A', 'B', or 'N' at the jth position depending on whether the jth country allies with Aliland, Buzzland, or remains neutral. Aliland and Buzzland are allied to themselves by default.

(Sample Input and Output are on the next page)

Sample Input:

```
2
5 7
1 3 10
2 3 10
1 4 5
4 5 5
2 5 5
3 4 2
3 5 7
7 7
1 2 1
1 7 1
2 3 1
3 4 1
4 5 1
5 6 1
6 7 1
```

Sample Output:

```
War #1: ABAAB
War #2: ABBBNAA
```