

Spiderman's Workout

Spiderman undertakes a climbing exercise every day. The exercise consists in climbing up and down a wall. The exercise is described by a sequence of distances d_1, d_2, \dots, d_m that Spiderman has to climb up or down. It doesn't matter whether each distance is climbed up or down, but the distances must be climbed in the given sequence. Also, the exercise must start and end at street level (0 meters above ground) and it may never go below street level. Among the legal solutions Spiderman wants one that minimizes the required building height. You must help him out.

For example, if the distances are 20 20 20 20 he can either climb up, up, down, down or up, down, up, down. Both are legal, but the second one is better (in fact optimal) because it only requires a building of height 22, whereas the first one requires a building of height 42. If the distances are 3 2 5 3 1 2, an optimal legal solution is to go up, up, down, up, down, down. Note that for some distance sequences there is no legal solution at all (e.g., for 3 4 2 1 6 4 5).

Input

The first line of the input contains an integer N giving the number of test scenarios, $1 \leq N \leq 101$. The following $2N$ lines specify the test scenarios, two lines per scenario: the first line gives a positive integer $M \leq 40$ which is the number of distances, and the following line contains the M positive integer distances. For any scenario, the total distance climbed (the sum of the distances in that scenario) is at most 1000.

Output

For each input scenario a single line should be output. This line should either be the string "IMPOSSIBLE" if no legal solution exists, or it should be a string of length M containing only the characters "U" and "D", where the i th character indicates if Spiderman should climb up or down at the i th stage. If there are several different legal and optimal solutions, output one of them (it does not matter which one as long as it is optimal).

Examples

Sample input 1

```
3
4
20 20 20 20
6
3 2 5 3 1 2
7
3 4 2 1 6 4 5
```

Sample output 1

```
UDUD
UUDUDD
IMPOSSIBLE
```

Limits

Time limit is 1 second.

Memory limit is 256 megabytes.