ULTI Robotic Challenge

The ULTI (Upper Level Technology Institution) Robotic Challenge is a world-wide competition starring (what else?) robots! This year's competition involves a designed robot running through a predesignated course, filled with gates. Each of these gates has a certain point value, and the ultimate goal is to obtain the most amount of points as possible! The only time constraint is the battery life of your robot, so the robot is free to move through gates it has already passed, although no points will be gained from doing so. Your run begins when you place your robot at a gate and it begins to move. You will get points for this first gate, so choose wisely. The robot moves from gate to gate by following any of the directed paths connecting a gate to another gate. If you find yourself at a gate and cannot go any further, your run is finished, and you cannot get any more points, so be careful! You are free to stop the run at any time, however. The judging system works by taking the points a contestant has obtained and making it a percentage of the maximum total amount of points possible to obtain, but there is one problem: they have no idea how many total possible points a track has! This is why you are here in the first place, you didn't think you'd be making a robot, right?

Input

Input will begin with a single number, T ($T \leq 50$) which is the number of tracks the judges have come up with. For each track, there will be two numbers G (the number of gates, $G \leq 50{,}000$) and E (the number of pathways, $E < 200{,}000$) separated by a single space. On each of the next G lines will be a single nonnegative integer, denoting the point value of the Gth gate. Following the last gate's points will be E lines with two space separated integers, A and B, meaning there is a path from gate A to gate B (gates are numbered starting from 1). There will never be a direct pathway from a gate to itself (no self-loops). There is a lot of input in this problem, so make sure you take this into account.

Output

Output will be a single number per line per track, which is the maximum possible points a contestant can score on the given track.

Sample Input

```
2
4 3
5
10
20
30
2 1
3 1
2 4
4 4
1
```

```
1
1
1
1 2
2 3
3 4
4 1
```

Sample Output

```
40
4
```