

# Earth Simulator

Wouldn't you love to create and run your own planet? Control the weather, species growth, planetary orbit, everything? Well now you can, with Earth Simulator! Make a small planet, make a big planet, make one as big as your head! Make it cold, make it hot, make it rain diamonds! Maybe you want a planet covered in grass, or a planet covered in dinosaurs, or maybe a planet made of water full of sea life. Its entirely up to you!

Who wouldn't want to get this awesome game? A planet full of dinosaurs, how cool is that? Of course, they don't mention the fine print that with a planet full of dinosaurs, they all eat each other and they all die out really fast. Maybe you can help me stabilize my creating craze.

The game lets you set up a bunch of animals and plants and bacterial organisms. Each organism eats a certain subset of other organisms (but never their own species). If any one species gets too big or too populous, their food source may die out, meaning they die out, meaning anything eating them die out, etc. Only a planet where each individual animal can eat and be eaten can be considered a 'stable' planet. I have made a bunch of random planets, but I haven't started the life progression yet. Can you tell me if these planets are stable enough to withstand life? Assume organisms are smart enough that they will always eat to keep the planet stable, if such a possibility exists.

## Input

Input begins with a single number  $W$ , the number of worlds I have made. Each world begins with a line containing two space separated positive numbers,  $S$  ( $S < 500$ ) and  $E$ , the number of species and the number of species to species edibility (described later). The next  $S$  lines begin with a string of lowercase alphabetic characters, the species name, a space, a positive integer  $C$ , the number of individual organisms of this species, another space, and the number of individual organisms that will supply the species with enough food to survive. Following the species are  $E$  lines, with two species names per line,  $A$  then  $B$ , meaning species  $A$  can eat species  $B$ .

## Output

For each world, output "The planet lives!" if the planet is stable, or "Death to them all." if any one organism cannot eat or cannot be eaten.

## Sample Input

```
2
3 3
grass 6 1
goat 2 6
fungi 1 2
grass fungi
fungi goat
goat grass
5 8
grass 6 1
goat 2 3
antelope 2 3
lion 3 4
fungi 1 4
goat grass
antelope grass
lion goat
lion antelope
grass fungi
fungi goat
fungi antelope
fungi lion
```

**Sample Output**  
The planet lives!  
Death to them all.