UCF "Practice" Local Contest — Aug 27, 2016

Plate Spinning

filename: `plate`

(*Difficulty Level:* `Medium`)

(Picture from Firefighternation.com)

Plate spinning is a circus act where a person spins various objects (usually plates and bowls) on poles without them falling off. It involves spinning an object and then returning back to the object in order to add additional speed to prevent it from falling off the pole.

In this problem you will simulate plate spinning where the plates are placed in a circular arrangement (much like the picture to the right). You must determine whether Chester the Clown will be able to maintain the plates spinning or whether one or more plates will end up falling off poles.

The Problem:

Given the number of poles/plates in a circular arrangement and the speed up to which Chester the Clown spins the plates (in degrees per second), determine if he can maintain the act or if plates will fall. For this problem, we will assume that plates degrade (slow down) at a constant rate of 5-degrees-per-second per second and that Chester can move from one pole to any other pole in 0.5 seconds. In addition, assume that Chester can spin up a plate with zero time cost.

A plate falls off when its rate is zero. However, if Chester arrives at a plate exactly at the same time the rate reaches zero, Chester will spin the plate and prevents it from falling, i.e., the rate must reach zero before Chester arrives for the plate to fall.

The Input:

The first line of the input will be a single positive integer, *a*, representing the number of acts to evaluate. Each of the following *a* lines will represent a single act and will contain two positive integers, *n* and *p*, separated by a single space, where *n* represents the number of poles ($1 \leq n \leq 15$) and *p* represents the speed up to which Chester spins a plate ($0 < p \leq 100$) in degrees per second. At the very beginning of each act, all plates are initially spinning at this speed, and he is currently at a plate in the circle (he can choose which plate to start at in order to maximize his chance of success).

The Output:

For each circus act, output a header "`Circus Act` *i*:" on a line by itself where *i* is the number of the act (starting with 1). Then, on the next line, output "`Chester can do it!`" if Chester can maintain the act, or output "`Chester will fail!`" if one or more plates will fall. Leave a blank line after the output for each test case.

Sample Input:

```
3
2 10
5 7
2 12
```

Sample Output:

```
Circus Act 1:
Chester can do it!

Circus Act 2:
Chester will fail!

Circus Act 3:
Chester can do it!
```