9. Space Race

Program Name: race.java Input File: race.in

Space Race is a board game consisting of 1000 squares with players starting at square 1 and the goal at square 1000. Players take turns rolling a 20-sided die and moving the indicated number of squares ahead on the game board. There are two types of special squares which have instructions that must be followed immediately if the square was arrived at via a die roll. The special squares types are:

Square Type	Special Instructions
prime number	skip ahead to the next prime numbered square
perfect square	move backward to the prior perfect square numbered square (yes, that's grammatically correct)

For example, if a player landed in square 64 (8^2) by a die roll, their piece would be moved back to square 49 (7^2). Similarly, if a player landed in square 5 by a die roll, their piece would be moved forward to square 7.

Input

The first line of input will consist of a single integer, *n*, indicating the number of games to analyze. Each of the next *n* lines represents a player's die rolls, with the first number on the line indicating the number of die rolls contained in the remainder of the line.

Output

For each line of die rolls in the input, display the message "Player #X ended up in square Y". X is 1 for the first player, 2 for the second, etc., and Y is the square the player ended on. Note that a player is moved to square 1000 if he/she lands on it directly, rolls to move beyond it, or the prime number rule attempts to move them beyond it. Once a player has reached square 1000, they cease to move.

Example Input File

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

Example Output To Screen

```
Player #1 ended up in square 3
Player #2 ended up in square 1
Player #3 ended up in square 7
```