Game of Stones

HackerRank

Two players called $P1$ and $P2$ are playing a game with a starting number of stones. Player 1 always plays first, and the two players move in alternating turns. The game's rules are as follows:

- In a single move, a player can remove either 2, 3, or 5 stones from the game board.
- If a player is unable to make a move, that player loses the game.

Given the starting number of stones, find and print the name of the winner. $P1$ is named `First` and $P2$ is named `Second`. Each player plays optimally, meaning they will not make a move that causes them to lose the game if a winning move exists.

For example, if $n = 4$, $P1$ can make the following moves:

- $P1$ removes 2 stones leaving 2. $P2$ will then remove 2 stones and win.
- $P1$ removes 3 stones leaving 1. $P2$ cannot move and loses.

$P1$ would make the second play and win the game.

Function Description

Complete the *gameOfStones* function in the editor below. It should return a string, either `First` or `Second`.

gameOfStones has the following parameter(s):

- *n*: an integer that represents the starting number of stones

Input Format

The first line contains an integer t, the number of test cases.
Each of the next t lines contains an integer n, the number of stones in a test case.

Constraints

- $1 \leq n, t \leq 100$

Output Format

On a new line for each test case, print `First` if the first player is the winner. Otherwise print `Second`.

Sample Input

```
8
1
2
3
4
5
6
```

```
7
10
```

Sample Output

```
Second
First
First
First
First
First
Second
First
```

Explanation

In the sample, we have $t = 8$ testcases.

If $n = 1$, $P1$ can't make any moves and loses the game.

If $n = 2$, $P1$ removes 2 stones and wins the game.

If $n = 3$, $P1$ removes 2 stones in their first move, leaving 1 stone on the board and winning the game.

If $n = 4$, $P1$ removes 3 stones in their first move, leaving 1 stone on the board and winning the game.

If $n = 5$, $P1$ removes all 5 stones from the game board, winning the game.

If $n = 6$, $P1$ removes 5 stones in their first move, leaving 1 stone on the board and winning the game.

If $n = 7$, $P1$ can make any of the following three moves:

1. Remove 2 stones, leaving 5 stones on the board. $P2$ then removes 5 stones, winning the game.
2. Remove 3 stones, leaving 4 stones on the board. $P2$ then removes 3 stones, leaving 1 stone left on the board and winning the game.
3. Remove 5 stones, leaving 2 stones on the board. $P2$ then removes the 2 remaining stones and wins the game.

All possible moves result in $P2$ winning.

If $n = 10$, $P1$ can remove either 2 or 3 stones to win the game.