# The Game of Nim

The first game of Nim

Nim was a very special gnome from the forest. Whenever he played, he wanted to win and he used to get very upset if he lost. No matter how much the oldest gnome from the forest scolded him, telling him that it is not always possible to win and that the important thing is to play, he did not take the slightest notice of it. For that reason, he spent days and days trying to make up games in which he could always win.
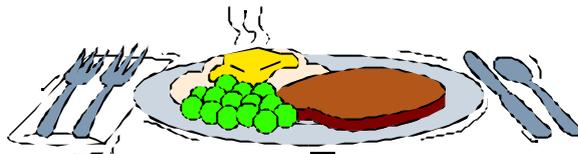
One night, while he and his sister Nam were removing the plates from the table (they could only remove 1 or 2 at he same time, since, although gnomes are very small, they like to eat in very big plates), Nim was doing some calculations: '1 less and Nam has 4 plates left; 2 less and Nim has 2left; 1 less and the last one is for Nam'. Suddenly, he thought of a game:

'2 players are in front of 5 objects and, in turns, they go on removing objects from the pile. In their turn, they can only remove 1 or 2 objects. The

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player to remove the last object (so there's none left), will win the game'

Excited with his idea, he spent all the night playing with his sister, until he discovered that there was always a player who could win. He also discovered that, to win always, he was the one to start playing. Or perhaps not?; I believe it was his sister Nam who had to start. Or perhaps it was so?. I do not remember who was to start but, it does not matter, you will discover it.

Since all gnomes like playing, from that day on it became one of their favorite games and they all called it 'the game of Nim'.

But it happened that, soon after that, other gnomes also discovered the way to always win and, then, their games always began with an eternal discussion on whom it would be first in removing objects from the pile:

I start!; no, I start!, I!, I!, ...

Nim was sad, thinking about how short time his game had lasted. Nobody wanted to play the game of Nim any longer, except for some absent-minded gnomes, who had not yet discovered the way to play and always win and who was the one to start removing objects from the table.

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Gnomes are clever, but not as much as humans are. So, you must find out which player is the one that can always win (the one that starts the game or the second player?) and how he must play to win, no matter what his partner does.

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Have you already found it out?. In that case, **try to win me**. You choose which one of us start playing.

YOU WILL NEED:
5 objects

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