

nimsticks v1.01

Peter Rowlett

July 12, 2020

1 Background

`nimsticks` is a package for \LaTeX that draws sticks for representating games of multi-pile Nim.

Nim objects could be anything, of course, but conventionally sticks or stones are used. There are various types of dot in \LaTeX that might look like stones, but somehow a line of dots didn't seem satisfactory. There are various ways to draw a line (e.g. just typing `IIII`), including some tally markers (e.g. in `hhcount`). My problem with these (call me picky) is that they are all identical lines, and a 'heap' of them just looks very organised. Really, I want a set of lines that looks like someone just threw them into heaps (though probably without crossings for the avoidance of ambiguity).

The way this works is it draws a thick vertical line in TikZ with a little wobble added so each one doesn't look extremely well-lined-up with its neighbour, achieved by adding or subtracting a small random number to the top and bottom coordinate.

It does this by providing two commands:

- `\drawnimstick`: draws a single Nim stick with a little random wobble;
- `\nimgame`: takes a comma-separated list of numbers and draws a line of Nim heaps holding those number of sticks.

2 Usage

For example, the input `\nimgame{5,3,4}` will produce output like this (precise look affected by random wobble in the sticks):



This is designed to look like a 3-pile Nim game with 5 sticks in the first pile (or heap), 3 in the second and 4 in the third.

It is likely the user will want to use `\nimgame` and not `\drawnimstick` directly, but the input `\drawnimstick` will produce output like this (precise look affected by random wobble in the sticks):

`\nimgame` will happily work with one heap, so for example the input `\nimgame{7}` will produce output like this (precise look affected by random wobble in the sticks):

W/IV

3 Issues

There is no limit in the code to the number of piles or the number in a pile, but this code doesn't do anything to cope when line breaks start happening, and presumably there is a computational limit.

In principle, if you add lots of piles it will just wrap onto multiple lines, though it will start to look less clear. For example, the input

```
\nimgame{1,2,3,4,5,6,7,8,9,10,9,8,7,6,5,4,3,2,1}
```

will produce the output:

[illegible]

Similarly, if you have a lot of sticks in the same heap, it will wrap and look confusing, for example the input `\nimgame{128}` will produce the output: