PROBLEM OF THE MONTH, FEBRUARY 2018

Now that 2017 just ended and 2018 just began, here is a nice problem for you to think about.

Find a positive integer n such that the first four digits of n^3 are 2018 and the last four digits of n^3 are 2017. In other words, n^3 has to have the following form

$$n^3 = 2018\ldots 2017$$

For additional bragging rights, prove that there exist infinitely many such positive integers.

Submit your solutions to professor Dan Ismailescu, Mathematics Department via email at dan.p.ismailescu@hofstra.edu, or bring it in person at 103C Roosevelt Hall.