



Bilkent University  
Department of Mathematics

## PROBLEM OF THE MONTH

**Term:** January 2018

The sequence of positive integers  $x_0, x_1, \dots, x_{2018}$  is said to be a *new year* sequence if it satisfies the following three conditions:

†  $1 = x_0 \leq x_1 \leq x_2 \leq \dots \leq x_{2018}$

†† the range of the sequence consists of exactly 100 different positive integers

†††  $\sum_{i=2}^{2018} x_i(x_i - x_{i-2}) = 9998.$

Find the number of distinct new year sequences.