Bilkent University
Department of Mathematics

PROBLEM OF THE MONTH

Term: December 2023

There are several red and several white boxes on the table, each of these boxes contains at least one ball. A positive integer number not exceeding 1111 is written on each of these balls.

† Any two boxes contain different number of balls.

†† No box contains two balls with the same number.

††† For each $1 \leq i \leq 1111$ there is at most one red box containing ball with number i.

†††† For each $1 \leq i \leq 1111$ there is at most one white box containing ball with number i.

Find the maximal possible number of boxes on the table.