



Bilkent University  
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## PROBLEM OF THE MONTH

**Term:** June 2024

There are 353 red balls, 535 white balls and 888 empty boxes numbered  $1, 2, \dots, 888$  on the table. Alice distributed these 888 balls to 888 boxes so that each box contains one ball. Bob is going to find out ball colours in all 888 boxes. In order to do this Bob writes  $N$  pairs  $(i, j)$ ,  $1 \leq i < j \leq 888$  to the board. After that for each pair  $(i, j)$  on the board Alice informs Bob, whether balls in the boxes  $i$  and  $j$  are same-coloured. Find the minimal value of  $N$  for which Bob can guarantee to determine the ball colours in all 888 boxes.