



Bilkent University
Department of Mathematics

PROBLEM OF THE MONTH

Term: October 2022

Each of n guests at a party wears a hat of one of three colours. A guest is said to be *lucky* if at least two of its friends in the party wear differently coloured hats. Find all values of n for which it is **always** possible to choose a guest and to change its hat to hat of one of the remaining two colours such that the total number of lucky guests will not be decreased.