There are 12 gnomes living in a forest. Each one has his own group of friends and his own house painted either blue or red. On the ith month of the year, the ith gnome visits all his friends. If more than half of his friends have their house painted of a different color than his own, then he joins them by repainting his house. Show that there is a moment (perhaps after many years) where no gnome will have to repaint his house. (Gnome friendship is mutual and it never changes overtime.)