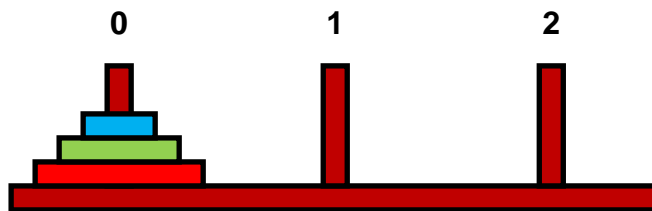


# The Linear Tower of Hanoi and the Ternary Gray Code

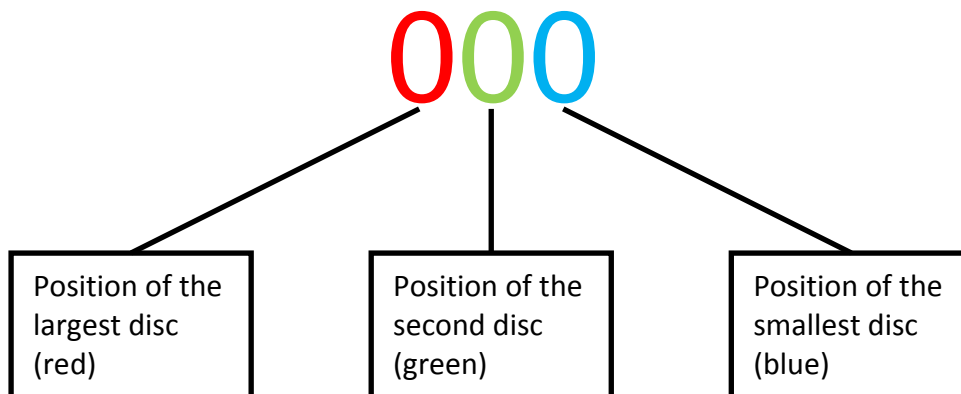
by Goh Pit Khiam

Consider a Tower of Hanoi puzzle which is linear. The goal of the puzzle is to move the three-layer tower from pole 0 to pole 2 subject to three rules:

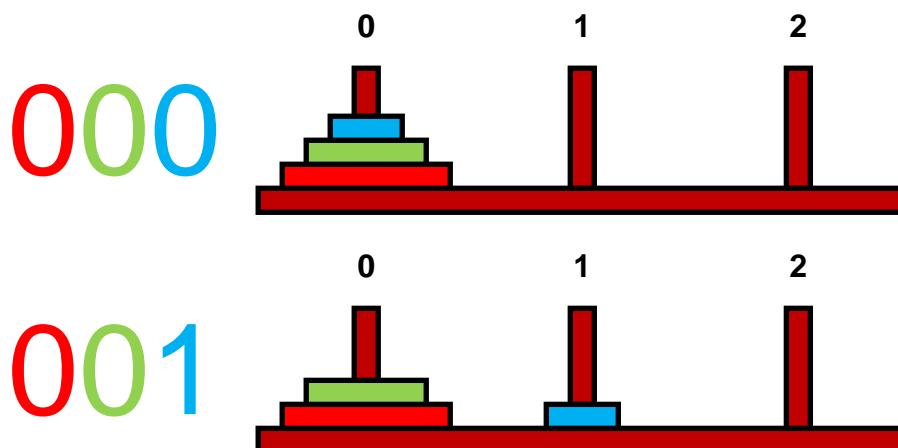
- (1) Only one disc can be moved at one time
- (2) A disc can only be moved to an adjacent pole
- (3) A disc can only be placed on a larger disc

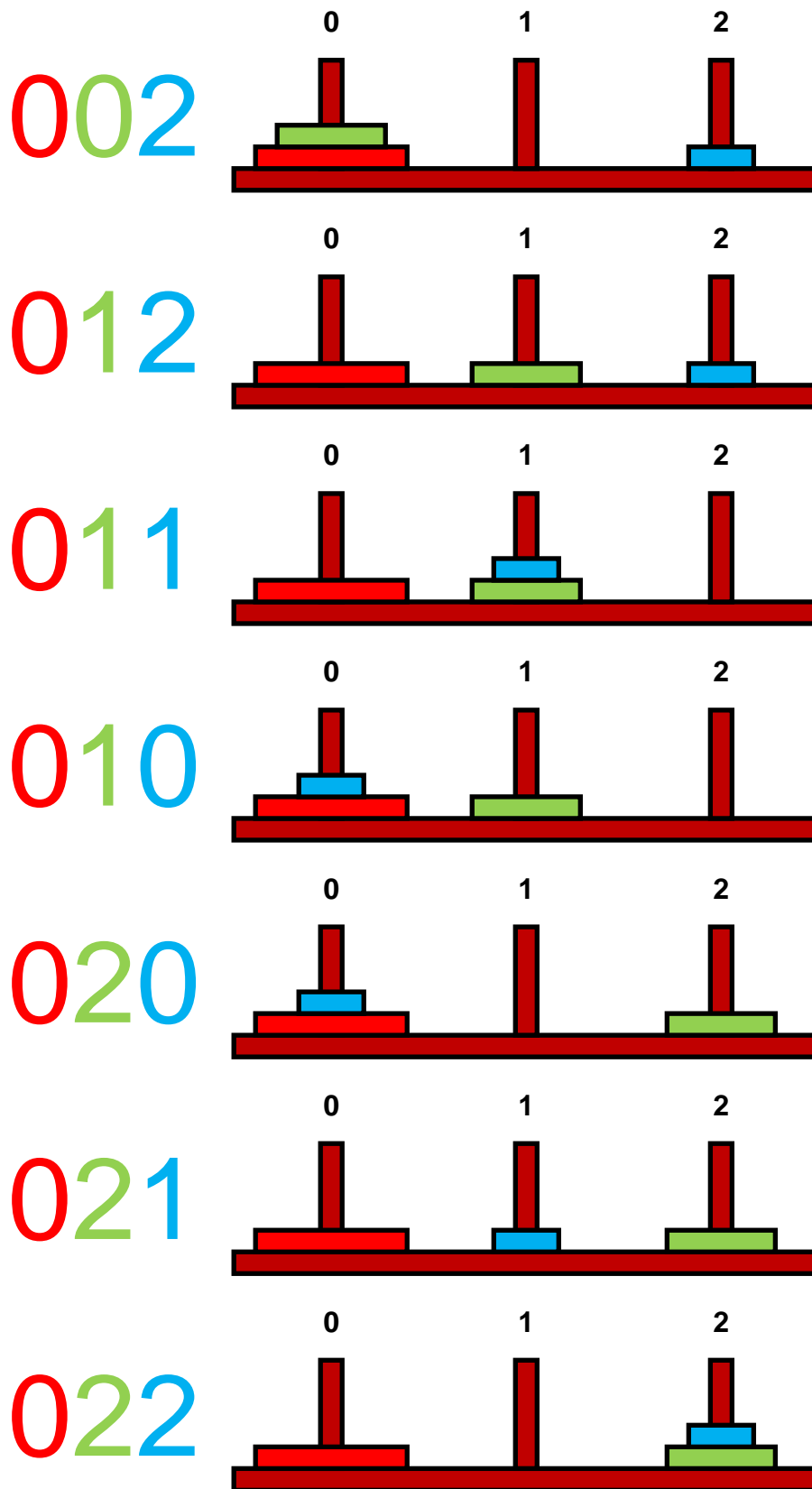


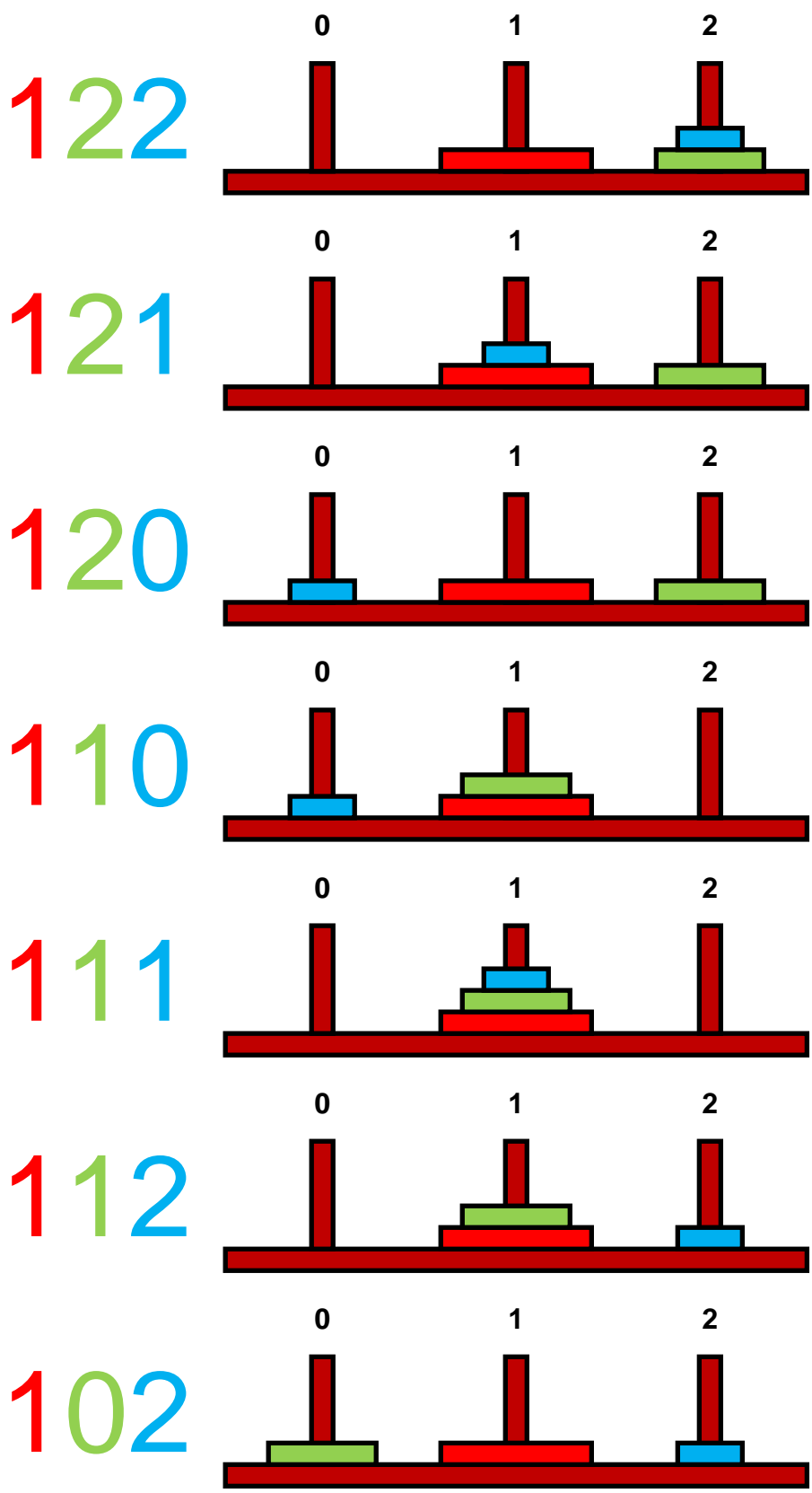
The poles are labelled from left to right as 0, 1 and 2. We can define the state of the three discs as a 3-digit number:

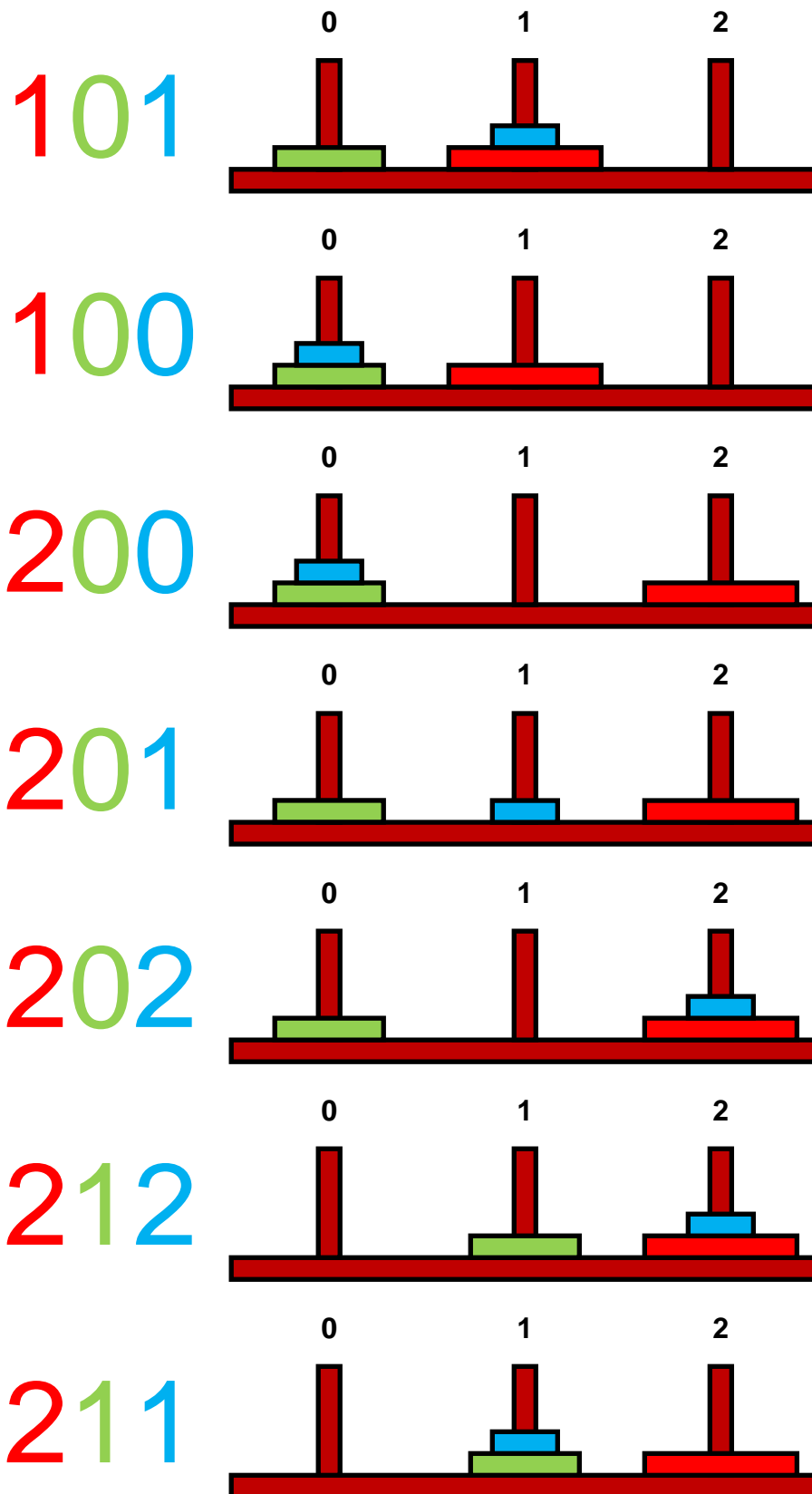


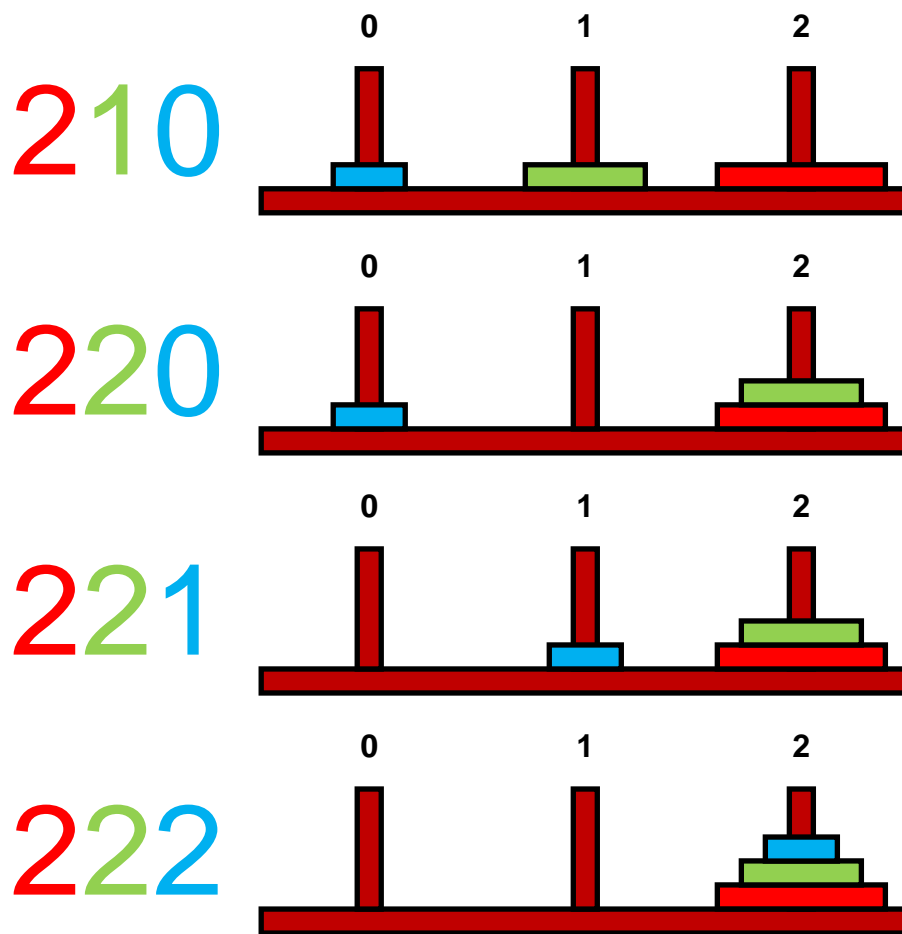
The following shows the solution:











In the Linear Tower of Hanoi, the solution states follow the Ternary Gray code.