Exercise 4: Logical thinking

Arrange 9 chocolates in 3 rows with 4 in the first row, 3 in the second row, and 2 in the third row.

This is a game for two players. You win by picking up the last chocolate. When it’s your turn, you play by taking as many chocolates as you like from any row (you may take the whole row if you like) but from one row only. This is the game of NIM and is actually a logical puzzle, because the first player can always win. Figuring out how to do that is pretty tough, but you should be able to figure out some good strategies.

Divide into groups of 2 and try playing the game a few times, alternating who goes first. Think about what leads to a win. Can you find some rules for good configurations to present to your opponent? It might help to start at the end of the game and work backwards; i.e., under what conditions are you guaranteed to win when it’s your turn? What conditions can you present to your opponent that forces him/her to leave you a guaranteed win?

If you get tired of playing the game this way, try playing that the person who takes the last chocolate loses.