

An Intelligent Computer Nim-game Program

The game:

- Two players take turn to play the game with a pile of coins.
- Before the game starts, the players negotiate to determine (i) n , the number of coins to begin with, and (ii) m , the maximum number of coins a player can take on each turn where *m is less than n and is at least 1*. The players also need to determine taking the last coin meaning winning the game or losing the game.
- Then the players take turn to take at least one coin but no more than m coins each time until there is no coin left.

The optimal strategies for playing the game:

- When taking the last coin means winning the game (**TLCW**), if the remainder of n divided $(m+1)$ equals 0, then there is an optimal strategy for the **second** player to win the game; otherwise, then there is an optimal strategy for the **first** player to win the game.
- When taking the last coin means losing the game (**TLCL**), if the remainder of $n-1$ divided by $(m+1)$ equals 0, then there is an optimal strategy for the **second** player to win the game; otherwise, then there is an optimal strategy for the first player to win the game.