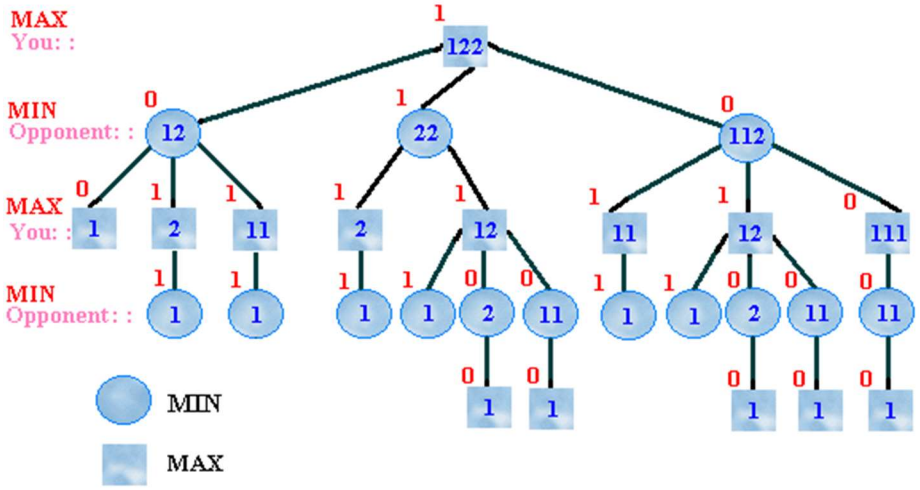
CS4750/7750 HW #4 (20 points)

Fall 2019

Nim is a two-player game in which players alternate making moves. Initially the players are given several piles of sticks. Each pile can have any number of sticks in it. On each turn a player can remove one or two sticks from one pile. The player who picks up the last stick loses. The NIM game (1, 2, 2) is presented below (credit to McGill Univ. for the picture):



Implement the minimax search algorithm to play Nim game (3, 4, 5) and (2, 3, 4, 5). You may use any programming language in your implementation.

For each game, print out one complete step-by-step game play between you and your program, with you making the first move. In addition, in each step that your program determines its move by running minimax search, print out the number of nodes searched (or generated) and CPU execution time in seconds.

Your submission consists of a shared GitHub repository including two requirements:

1) A README file, written in markdown, containing your team member names, a brief description of the implementation of your algorithms, the programming language and hardware used in the experiment, and the printouts of the two games:
    a. Step-by-step moves between you and your program, with you making the first move
    b. For each step that your program determines its move by running minimax

search, print out the number of nodes searched (or generated) and CPU execution time in seconds.

2) Your source code with appropriate comments. You may use code found on the Internet but need to give credits.

You may form teams of up to 3 people. Each person must contribute to the repository and should have at least one commit included in the master branch. The repository will start with a template provided through GitHub Classroom.

As with previous homework assignments, late submissions will be accepted up to three days after the due date for a penalty of 10% per day. However, you must **email the TA** in order to have the most recent commits graded. Otherwise, your repository will be graded as it was on the due date.