Term Project: Mastermind

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1 Gameplay and rules

Mastermind is a decoding board game that requires two players to play.

Rules:

- One of the players, called the codemaker, has to come up with 4 numbers, and put these numbers in a specific order.

- The other player, called the codebreaker, will try to guess what the 4 numbers and their order, within a fix number of rounds.

- When the codebreaker guesses a quadruple, the codemaker will have to give the codebreaker two meaningful feedbacks. One is about how many digits the codebreaker guessed are not only in the actual quadruple but also in their rightful positions, the other is about how many digits the codebreaker guessed are in the actual quadruple but are in the wrong positions.

- Based on the feedbacks, if the codebreaker guesses correctly before using up all the rounds, then the codebreaker wins. Otherwise, the codemaker wins.

2 Implementation Details

A player with play this game with a computer, and the computer will be the codemaker. The computer will generate a 4-digit number randomly, and the player can start guessing the number. The computer gives feedback by outputting $xAyB$, where $x$ and $y$ are non-negatives integers less than or equal to 4. $xA$ means there are $x$ digits that are correct and are in their rightful positions. $yB$ means there are $y$ digits that are in the right answer but are in wrong positions.
3 Example

For instance, the computer comes up with the 4-digit number: 1345
The human player first guesses 1122
The computer will produce 1A0B, and the game goes on.

To deal with duplicates, for example, if the computers generates 6678 at the beginning, and the user guesses 6062 at some stage, the computer will output 1A1B. It will count the first 6 as the correct one, not the one in wrong position. Thus, every guess is evaluated from left to right, as a convention.

4 Comments

After completing the basics of the game, I will work on GUI for this game.

5 Sources

http://en.wikipedia.org/wiki/Mastermind(board_game)
http://en.wikipedia.org/wiki/Bulls_and_cows
http://baike.baidu.com/subview/358630/11117097.htm?fr=aladdin