1 Introduction

The game I am interested in developing for my term project is Mastermind. This is a logic and deduction game generally played as a board game, but it has also been developed as a computer game. Some modifications to the game will be needed to translate it into something playable on the command line.

2 Setup

Mastermind is a two player game. One player is the codemaker and the other the codebreaker. The gameboard consists of eleven rows of four peg holes. One of the end rows has a cover that conceals the pegs placed beneath it. Beside the other ten rows are four additional, smaller holes. There are two types of pegs. The larger come in five colors (red, orange, yellow, green, blue) and the smaller in two (white, black) (Figure 1).

3 Gameplay

To begin the game the codemaker hides a pattern of four pegs underneath the cover at one end of the board. Any number of colors may be used and colors may be used more than once or not at all. Once the pegs are hidden, the codebreaker makes a guess for what the code may be. The codemaker then places the black and white pegs. A black peg indicates that the codebreaker has placed a peg of the correct color in the correct position. A white peg
Figure 1: Mastermind board with partial game

indicates the correct color but the wrong position (Figure 1). From these clues, the codebreaker makes another guess. The codebreaker has ten attempts to guess the correct pattern.

4 Scoring

For each game of mastermind, an even number of rounds are played. For each guess the codebreaker makes, the codemaker gets a point. If the codebreaker doesn’t guess the pattern by the end of the round, the codemaker gets an additional point. For the next round, the codemaker and codebreaker switch roles.

5 Implementation

Some changes are necessary to turn this game into something playable on the command line. To do this, I will replace the colors with numbers. The black and white pegs will be 1 and 0 respectively, and the colored pegs will be 2, 3, 4, 5, and 6. The next step is to decide who will play the game.
5.1 Two Players

One possible implementation of mastermind would be to have two players play against each other, much like the board game. The computer would keep track of the score and display the appropriate black and white “pegs” after each guess, but would otherwise act like the game board. The players would play an even number of rounds.

5.2 Player vs. Computer

Another implementation is to have one player play against the computer. In this scenario, the computer would randomize the code and display the appropriate “pegs” after a guess. Here the goal would be for the player to guess the code, rather than each player getting the most points. This would be played however many times the player wanted.