

Hex-a-Pawn

Due March 31, 2013

Assignment 8
CSC 062: Spring, 2013

Hex-a-Pawn

This week's assignment uses trees to play a small chess-like game. You will build a tree representing all possible states that the game board can be in. You will then implement several different players that consult this tree to make moves as they play Hex-a-Pawn. The players include: a human player that asks the user for moves to make; a random player that picks possible moves at random; and a computer player that improves its strategy by learning from past mistakes. In the end, you will be able to run the different players against each other.

The assignment is outlined in Section 12.11 of *Bailey*.

Notes

1. The starter files are in the `/common/cs/cs062/assignments/assignment8` directory. Familiarize yourself with these files *before* starting to work on the assignment. They are described briefly in the book, and the javadoc documentation is available at:

<http://www.cs.williams.edu/~freund/cs136-073/javadoc/hexapawn/index.html>

2. You need to design the `GameTree` class. This is a tree structure with potentially many children instead of just two. Think about the methods you will need in this class and how you can represent the structure. **Come to lab prepared to talk about how you will implement this class.**
3. You can play a game of Hex-a-Pawn by running `java HexBoard` after compiling the `HexBoard.java` starter file. (Note: this will, in turn, compile the `HexMove.java` file. The `Player.java` file will not compile in its current form).
4. Turn in your project to the dropoff folder as usual. Answer thought questions 1 and 2 in comments at the beginning of your class `GameTree`.
5. The starter directory contains Gardner's original paper on Hex-a-Pawn. There are other learning algorithms described in that paper if you are interested in experimenting further.

Turn in

As usual, turn in your entire project to the dropoff folder by Sunday at 11:00pm. Name your folder "Lastname-Assignment8," where you replace *Lastname* with your last name.

If you would like some extra credit, create a GUI version of the game that pops up a window, allows the user to select the kind of opponent, displays nice graphics and allows the user to move by dragging pieces.