

Assignment 2, Due Sept. 27 at 5:00 p.m.

Connect 4

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Assignment

Write a program that plays Connect-4 well. Your program should not lose when given a large enough minimax tree depth.

Graduate Students

Extend the above program to play Connect-N well where N ranges from 4 - 10. N should be a command line argument (see below).

Specification

Use minimax search and $\alpha - \beta$ pruning and with user selectable depth to speed up your program. The program should allow the user the choice of specifying who makes the first move and it should print out the board after each move. For this game your program should not lose (ever) above a certain search depth. The program should also do error checking so that a user cannot cheat.

Your program should use the following optional command line arguments

- User selectable depth (-d depth)
- Whether or not to use $\alpha - \beta$ pruning (-A means to use $\alpha - \beta$ pruning)
- For graduate students only: N in Connect-N (-n N), board size in terms of the number of columns (-c nColumns) and rows (-r Rows).

Handing it in

You need to do two things:

1. Turn in a hardcopy of source code and a script of your interaction with the program that shows off its strengths and weaknesses. In addition, we need a writeup of your assignment that includes,
 - (a) A typeset explanation of your program's design: logic, data structures and control. Justify your static evaluator.
 - (b) A typeset explanation of how to use your program (A man page).

Finally, place the program executable on your web page; tell me where it is (URL) in your handin. Test and make sure you can download the executable from your web-page and can run the executable after downloading.

2. Sign up for a demo on the sheet outside my door. Demos will be held in SEM 252 on the 28th of September. If you demo, we won't need the script of your interaction. In any case you will be **graded** on your program's correctness (80%), writeup (15%), *and* man page (5%). Use any language available on our machines (CS and Engr Lab). We can help you only with C/C++, Java, Scheme, and Lisp.

Extra Credit

You will get extra credit for writing a web-version that runs on ALL web browsers. Make sure that you specify the URL in your assignment writeup.

0.1 Grading

- Static Evaluator: 40%
- Minimax: 20%
- $\alpha - \beta$ pruning: 20%
- Documentation and description of algorithms: 20%