

# TD4136 - Introduction to Artificial Intelligence

## Assignment 3: Minimax and Alpha-Beta Pruning

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Note: We imported math library to initialize variables with +infinite and -infinite

## Q2: Minimax

Starting on 10-14 at 12:30:16

Question q2

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```
*** PASS: test_cases\q2\0-eval-function-lose-states-1.test
*** PASS: test_cases\q2\0-eval-function-lose-states-2.test
*** PASS: test_cases\q2\0-eval-function-win-states-1.test
*** PASS: test_cases\q2\0-eval-function-win-states-2.test
*** PASS: test_cases\q2\0-lecture-6-tree.test
*** PASS: test_cases\q2\0-small-tree.test
*** PASS: test_cases\q2\1-1-minmax.test
*** PASS: test_cases\q2\1-2-minmax.test
*** PASS: test_cases\q2\1-3-minmax.test
*** PASS: test_cases\q2\1-4-minmax.test
*** PASS: test_cases\q2\1-5-minmax.test
*** PASS: test_cases\q2\1-6-minmax.test
*** PASS: test_cases\q2\1-7-minmax.test
*** PASS: test_cases\q2\1-8-minmax.test
*** PASS: test_cases\q2\2-1a-vary-depth.test
*** PASS: test_cases\q2\2-1b-vary-depth.test
*** PASS: test_cases\q2\2-2a-vary-depth.test
*** PASS: test_cases\q2\2-2b-vary-depth.test
*** PASS: test_cases\q2\2-3a-vary-depth.test
*** PASS: test_cases\q2\2-3b-vary-depth.test
*** PASS: test_cases\q2\2-4a-vary-depth.test
*** PASS: test_cases\q2\2-4b-vary-depth.test
*** PASS: test_cases\q2\2-one-ghost-3level.test
*** PASS: test_cases\q2\3-one-ghost-4level.test
*** PASS: test_cases\q2\4-two-ghosts-3level.test
*** PASS: test_cases\q2\5-two-ghosts-4level.test
*** PASS: test_cases\q2\6-tied-root.test
*** PASS: test_cases\q2\7-1a-check-depth-one-ghost.test
*** PASS: test_cases\q2\7-1b-check-depth-one-ghost.test
*** PASS: test_cases\q2\7-1c-check-depth-one-ghost.test
*** PASS: test_cases\q2\7-2a-check-depth-two-ghosts.test
*** PASS: test_cases\q2\7-2b-check-depth-two-ghosts.test
*** PASS: test_cases\q2\7-2c-check-depth-two-ghosts.test
```

\*\*\* Running MinimaxAgent on smallClassic 1 time(s).  
Pacman died! Score: 84  
Average Score: 84.0  
Scores: 84.0  
Win Rate: 0/1 (0.00)  
Record: Loss  
\*\*\* Finished running MinimaxAgent on smallClassic after 1 seconds.  
\*\*\* Won 0 out of 1 games. Average score: 84.000000 \*\*\*  
\*\*\* PASS: test\_cases\q2\8-pacman-game.test

### Question q2: 5/5 ###  
Finished at 12:30:18

Provisional grades  
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Question q2: 5/5  
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Total: 5/5

## Q3: Alpha-Beta-Pruning

Starting on 10-14 at 12:29:56

Question q3  
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\*\*\* PASS: test\_cases\q3\0-eval-function-lose-states-1.test  
\*\*\* PASS: test\_cases\q3\0-eval-function-lose-states-2.test  
\*\*\* PASS: test\_cases\q3\0-eval-function-win-states-1.test  
\*\*\* PASS: test\_cases\q3\0-eval-function-win-states-2.test  
\*\*\* PASS: test\_cases\q3\0-lecture-6-tree.test  
\*\*\* PASS: test\_cases\q3\0-small-tree.test  
\*\*\* PASS: test\_cases\q3\1-1-minmax.test  
\*\*\* PASS: test\_cases\q3\1-2-minmax.test  
\*\*\* PASS: test\_cases\q3\1-3-minmax.test  
\*\*\* PASS: test\_cases\q3\1-4-minmax.test  
\*\*\* PASS: test\_cases\q3\1-5-minmax.test  
\*\*\* PASS: test\_cases\q3\1-6-minmax.test  
\*\*\* PASS: test\_cases\q3\1-7-minmax.test  
\*\*\* PASS: test\_cases\q3\1-8-minmax.test  
\*\*\* PASS: test\_cases\q3\2-1a-vary-depth.test  
\*\*\* PASS: test\_cases\q3\2-1b-vary-depth.test  
\*\*\* PASS: test\_cases\q3\2-2a-vary-depth.test  
\*\*\* PASS: test\_cases\q3\2-2b-vary-depth.test

```

*** PASS: test_cases\q3\2-3a-vary-depth.test
*** PASS: test_cases\q3\2-3b-vary-depth.test
*** PASS: test_cases\q3\2-4a-vary-depth.test
*** PASS: test_cases\q3\2-4b-vary-depth.test
*** PASS: test_cases\q3\2-one-ghost-3level.test
*** PASS: test_cases\q3\3-one-ghost-4level.test
*** PASS: test_cases\q3\4-two-ghosts-3level.test
*** PASS: test_cases\q3\5-two-ghosts-4level.test
*** PASS: test_cases\q3\6-tied-root.test
*** PASS: test_cases\q3\7-1a-check-depth-one-ghost.test
*** PASS: test_cases\q3\7-1b-check-depth-one-ghost.test
*** PASS: test_cases\q3\7-1c-check-depth-one-ghost.test
*** PASS: test_cases\q3\7-2a-check-depth-two-ghosts.test
*** PASS: test_cases\q3\7-2b-check-depth-two-ghosts.test
*** PASS: test_cases\q3\7-2c-check-depth-two-ghosts.test

*** Running AlphaBetaAgent on smallClassic 1 time(s).
Pacman died! Score: 84
Average Score: 84.0
Scores:      84.0
Win Rate:    0/1 (0.00)
Record:      Loss
*** Finished running AlphaBetaAgent on smallClassic after 1 seconds.
*** Won 0 out of 1 games. Average score: 84.000000 ***
*** PASS: test_cases\q3\8-pacman-game.test

```

### Question q3: 5/5 ###

Finished at 12:29:57

Provisional grades

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Question q3: 5/5

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Total: 5/5