AI For Games

## Lab 2

1. Below is a Tic-Tac-toe (Noughts and Crosses) board, suggest some predefined values (from 1 to 5 where 5 is the best) which can be used to inform the AI where to make its initial move. Do some research on how to play the game for suggestions. The AI should always try and grab the centre square (allowing for 4 possible lines of symbols), followed by the adjacent and corner squares (with the adjacent squares providing 5 options for symbol placement, as opposed to 3 from the corner squares).

|  |  |  |
| --- | --- | --- |
| 1 | 3 | 1 |
| 3 | 5 | 3 |
| 1 | 3 | 1 |

1. Given the following situation, and assuming the AI is playing **X**, and is taking the next move, what heuristic might you consider? Stop the opponent from winning (so choose the bottom-middle square for the next X, as shown). To come to this conclusion:

* Check if a winning move is possible (by checking the state of the game). If it is possible, take it, otherwise…
* …check if the opponent can make a winning move (by checking the state of the game). If they can, play to block it (chosen in this case), otherwise…
* Check where the best place to the greatest (longest) chain on the board is. Then play into that position

|  |  |  |
| --- | --- | --- |
| X |  |  |
|  | X |  |
| O | X | O |

1. A game has a story line element where, once the player has completed a specified quest, a messenger should appear and deliver a note to the player requesting the player meet a local lord.
   1. What would be the most appropriate approach to this situation?
      1. A hack
      2. A heuristic (chosen approach)
      3. An algorithm
   2. Justify the decision made to the previous question. I believe that a heuristic would make sense as the logic is relatively simple: When the Player completes a certain quest, have a messenger (AI-Controlled)
   3. Given your choice in a. What could go wrong and how could you fix it. For example, the Player could attempt to attack the messenger (which is more likely, if the quest involved combat), believing that the messenger is a hostile character. To resolve this issue, one could A. Make the messenger invulnerable for the time in which they are within the Player’s presence B. Allow the Player to kill the messenger, changing the story line (given the Lord’s uncertainty).