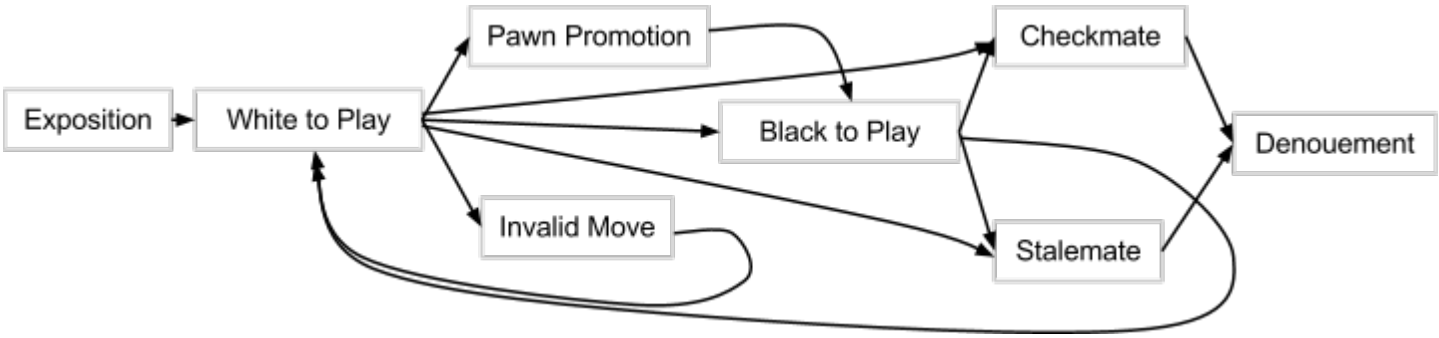
It's the 80s, and you're a hip teenager who spends school days at the arcade and nights on your IMSAI 8080, blanket dialing telephone numbers with your modem, looking for unreleased game software. After playing so many games where the only winning move is not to play, you decide that you'd rather just play a nice game of chess against a dimwitted AI. Several beeps and boops later, your wish is fulfilled by a secret server on the advanced Hack platform, running a plodding, incomplete version of chess with the "retro charm" of ASCII graphics. Radical!

Chess, as She is Played

Hack chess is a vanilla implementation of chess, an underground indie game developed for the Tandy that you probably haven't even heard of. Check out this sweet ~~flow chart~~ infographic:



Starting the game on the Hack platform will first show some basic instructions, and then a starting chess board, with white (the human player) to move:

```
CHESS, A TRAGICOMEDY IN THREE ACTS
YOU PLAY WHITE, THE CULTURED, YET LOVABLY ROGUISH PROTAGONIST.
THE COMPUTER PLAYS BLACK, THE NEFARIOUS, FLAMBOYANT, CAPE-FLOURISHING ANTAGONIST.
ENTER YOUR MOVES IN THE FORM OF "<STARTING COORDINATES><SPACE><ENDING COORDINATES><ENTER>", E.G. "e7 e6".

  a b c d e f g h
8 r n b q k b n r 8
7 p p p p p p p p 7
6   .   .   .   . 6
5 .   .   .   .   5
4   .   .   .   . 4
3 .   .   .   .   3
2 P P P P P P P P 2
1 R N B K Q B N R 1
  a b c d e f g h
White to play: _
```

Moves by the player will be entered in simplified algebraic notation, using the coordinates of the piece to move, followed by a space, followed by the coordinates of the destination square. For instance, to move the e-rank pawn 2 spaces forward, the player must enter:

e2 e4 <enter>

The game will respond with either an error message indicating the invalidity of the move, an additional prompt for pawn promotion, or visual confirmation of the move along with an indication that the AI player (black) is now making its move, has lost, or has drawn:

Successful move.

```
  a b c d e f g h
8 r n b q k b n r 8
7 p p p p p p p p 7
6   .   .   .   . 6
5 .   .   .   .   5
4   .   . P .   . 4
3 .   .   .   .   3
2 P P P P   P P P 2
1 R N B K Q B N R 1
  a b c d e f g h
Moved e2 to e4.
Computer is thinking...
```

Move resulting in promotion

```
  a b c d e f g h
8 r n b q k b n P 8 pp
7 .   .   .   .   7
6   .   .   .   . 6
5 p   .   p p p   5
4   . p p p P B . 4
3 .   .   .   .   3
2 P P   .   . P . 2
1 R N B K Q   N R 1 pr
  a b c d e f g h
Moved h7 to h8.
Promote to [QRBN]: _
```

Move resulting in check

```
  a b c d e f g h
8 r n b q k b n r 8
7 p p p p .   . p 7
6   .   . p p   . 6
5 .   .   .   p B 5
4   .   . P .   . 4
3 .   . P .   .   3
2 P P P .   P P P 2
1 R N B K Q   N R 1
  a b c d e f g h
Moved e2 to h5. Check!
Computer's brow is furrowed...
```

Move resulting in stalemate

```
  a b c d e f g h
8   .   .   .   k 8 PPPPPPPPRBBNN
7 . Q .   .   .   7
6   .   .   .   . 6
5 .   .   .   .   5
4   .   .   .   . 4
3 .   .   .   .   3
2   .   .   .   . 2
1 .   .   . K R   1 pppppppqrrbbnn
  a b c d e f g h
Moved b6 to b7. Stalemate!
Computer starts spouting nonsense about mutually
assured destruction.
```

Invalid Move

```
  a b c d e f g h
8 r n b q k b n r 8
7 p p p p p p p p 7
6   .   .   .   . 6
5 .   .   .   .   5
4   .   .   .   . 4
3 .   .   .   .   3
2 P P P P P P P P 2
1 R N B K Q B N R 1
  a b c d e f g h
Cannot move e8 to e4!
White to move: _
```

Move resulting in capture

```
  a b c d e f g h
8 r n b q k b n r 8
7 p p p   p p p p 7
6   .   .   .   . 6
5 .   . P .   .   5
4   .   .   .   . 4
3 .   .   .   .   3
2 P P P P   P P P 2
1 R N B K Q B N R 1 p
  a b c d e f g h
Moved e4 to d5. Captured p.
Computer leans forward and rests chin on
knuckles...
```

Move resulting in checkmate

```
  a b c d e f g h
8 r n b q k b n r 8
7 p p p p p   . p 7
6   .   .   p   . 6
5 .   .   .   p B 5
4   .   .   .   . 4
3 .   .   P   .   3
2 P P P P   P P P 2
1 R N B K Q   N R 1
  a b c d e f g h
Moved e2 to h5. Checkmate!
Computer angrily flips the board over,
scattering the pieces. You win, but Computer
insists the game was rigged.
```

After the computer decides on its move, the screen will be updated with visual feedback, and any one-liners or monologuing the AI deems necessary to develop the antagonist's personality and colorful backstory.

Technical Notes

The board will be represented as 4 16-bit words for each type of piece for each player (bitboards), as well as a redundant 64-item array, to optimize the speed of move validation and state manipulation in the AI algorithm. The AI will generate a relatively shallow 2-3 ply (white or black player's move) tree of move sequences, and find the best next move among them using the Claude Shannon's classic heuristic of chess position value and the alpha-beta pruning minimax search.

Time permitting, the Hack's built in unicode support will be augmented from code points U+2654 to U+265F, enabling real chess piece graphics support (along with the purchase of a $35 hardware dongle and code wheel).

WONTFIX bugs

- *en passant* pawn capture will not be possible
- castling will not be possible
- 50 move stalemates and 3 repetition stalemates will not not be detected.
- Computer will refuse to admit that it lost.