Introduction

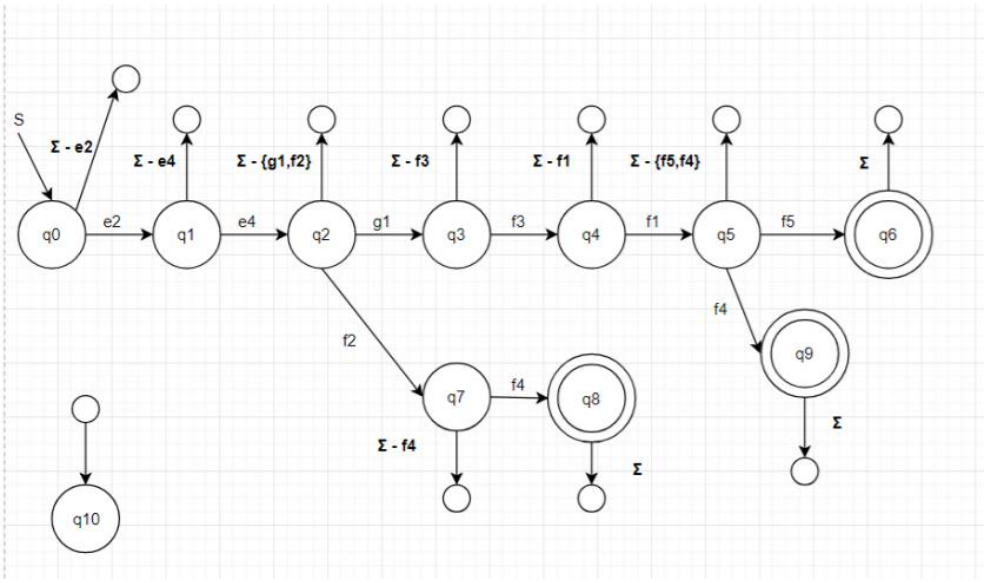
My project is a practice tool for those who want to advance their chess strategy. This tool allows the user to practice their knowledge of 6 common chess openings (three white openings and three black openings) by inputting the moves necessary to complete the opening. The user will first select if they want to practice white openings or black openings. Once this is selected, they will be given 3 common openings (Ruy Lopez, King's Gambit, and Italian for white and Slav Defense, King's Indian Defense, and Bogo-Indian Defense for black). The user will then input a series of positions on the chess board to simulate a move. The starting position of the piece and the position of where the piece is moved to is submitted to signify a move and multiple moves are required to complete an opening. Each position is taken from the input and put through a transition table to determine what state the sequence finishes in. The state is checked if it is accepting and a numerical value determines which opener is accomplished. If the value matches the opener the user selected to practice, they are correct. This project idea came from my desire to get better at chess and learn more openings to have a greater variety in strategies I can implement while playing.

Currently, there are two DFAs for this project. The white and black DFAs respectively indicate the moves required to complete an opening if the user chooses to practice the respective openings. The DFA is currently implemented in a file called "prjDFA.java" as a transition table and the transition method and checking method is also implemented in this file. The next step in this project is to create Java program that will take in user input to select the white or black openings, the specific opening the user chooses to practice, and the sequence of moves required to complete the selected opening. This program will use the DFA file to verify the sequence is correct. If there is time before the project is due, I would like to add more openings to practice

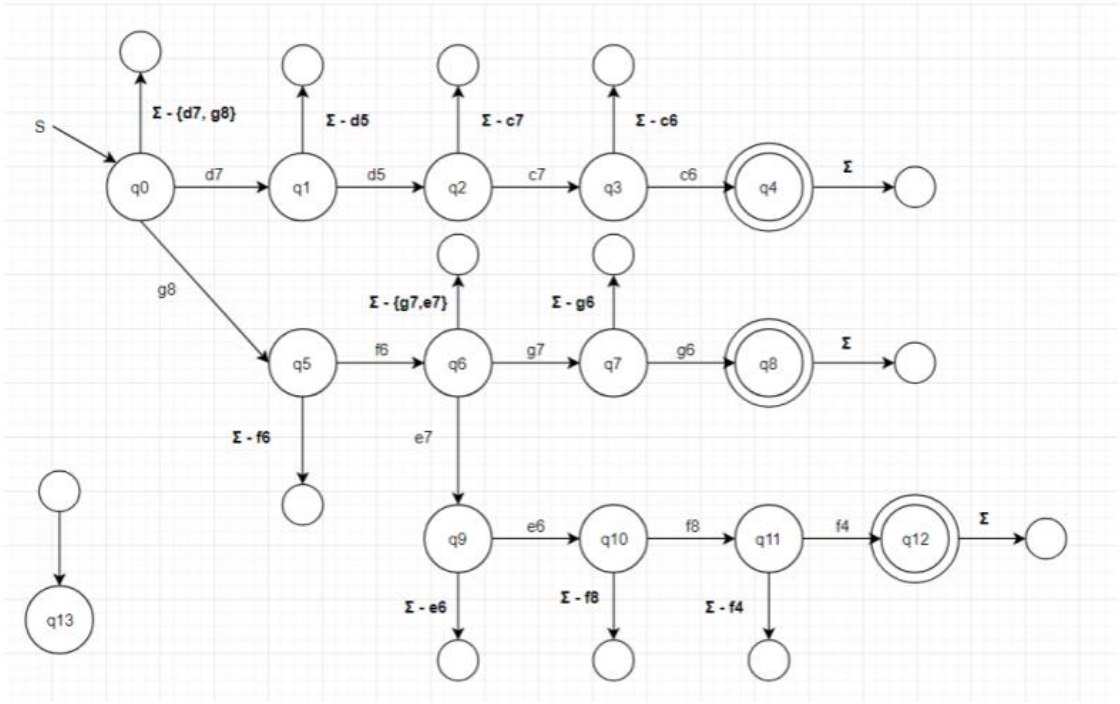
for both white and black and include possible variations on the current openings. This milestone writeup only features two sections of the final writeup (the introduction and the DFA diagram) due to the limited amount of progress made on the project currently. The final writeup will include an abstract of the writeup, a detailed description of how users interact with the system, the requirements needed to run the program, the existing tools for practicing chess, and a conclusion and bibliography. Included on Github is a full explanation of each state of the DFAs and the transition tables for each in a spreadsheet. The DFA diagrams are also available as separate PDFs on Github.

DFA Diagrams

White DFA



Black DFA


S
Σ - {d7, g8}
Σ - d5
Σ - c7
Σ - c6
q0
d7
q1
d5
q2
c7
q3
c6
q4
Σ
g8
Σ - {g7,e7}
Σ - g6
q5
f6
q6
g7
q7
g6
q8
Σ
Σ - f6
e7
q9
e6
q10
f8
q11
f4
q12
Σ
q13
Σ - e6
Σ - f8
Σ - f4