Chess Game

L1 Requirements

1. Graphics and UI specific information and code should be kept to a minimum, if not excluded entirely, from the game logic classes. The graphics and UI information and code should be contained within separate, modular classes from the game logic component they relate to.
2. All game logic relating to defining or enforcing the rules of chess should be separated from the chess components they apply to, and should not be defined in a way that does not allow them to be changed.
3. There should be a single class through which all information about the current state of the chess board can be accessed. Internal subclasses for certain information is allowed, but should be avoided if there is a reasonably low-cost alternative.
4. There should be a single class through which all information about a single chess piece can be accessed. Internal subclasses for certain information is allowed, but should be avoided if there is a reasonably low-cost alternative. This information should apply to the current state of the chess piece itself; it should not include any information related to its current position or any information related primarily to the chess board.
5. The game should be playable as both Player vs. Player and Player vs. AI.
6. There should be a main menu, which has the following options: Quit, Start game, view/edit game rule sets, and settings.
7. After starting a game, the player should be able to select the game rule set, and if there opponent is an AI or a Player.
8. The player should be able to define custom rule sets that the game is played by. There should be some rules which cannot be changed by the player, including: Pieces can’t move though other pieces, the basic movement patterns of each piece. Rules that can be changed by the player include: Enabling rules like castling, if there is a timer (and its time configuration, with some presets and customs: FIDE fast chess, FIDE 1, FIDE 2, Custom Constant Time, Custom FIDE, and allow for other clock setups), randomizing who goes first.
9. When viewing/editing a rule set, there should be a help button/dialog beside each option that gives a description of the setting.
10. A default classic rule set should be included with the game, which cannot be edited but is the default settings for a new rule set. The default rule set should have the following settings: No timer, no random select who starts, and all basic chess rules enabled.
11. The player should be able to make temporary changes to a saved rule set before starting a game. This will mark the rule set name as “ORIGINAL\_NAME **(Custom)**”. The player should also be given the option at the end of the game or during the game to save the current rule set (if a modification of a saved rules set) as a new saved rule set.
12. There should be an in-game menu, which provides the following choices: resume, settings, quit, main menu, view current rule set.
13. The board should constrain the pieces to the grid.

L2 Requirements

1. (3) There should be a single class, ChessBoard, which contains the current locations of the chess pieces in play, which white and which black chess pieces have been eliminated, and any other information primarily related to the state of the chess board. This class should also contain methods for accessing and manipulating the previously stated information.
2. (4) There should be a single class, ChessPiece, which contains the color and type of the chess piece. It also contains methods for modifying these properties.

L3 Requirements

1. (2) The type of a chess piece should be represented with the enum type PieceType defined within the ChessPiece class.
2. (2) The color of a chess piece should be represented as the enum type PieceColor defined within the ChessPiece class.
3. (2) The color state of a chess piece should be readonly.

L4 Requirements

1. (1) The chess piece types should be defined with PAWN=0 first.
2. (2) The chess piece colors should be defined with WHITE=0 first.
3. (1) The value range for the type of a chess piece should be enforced on initialization
4. (1) The chess piece type should only be directly settable from within the ChessPiece class.