Pimaster Chess Presentation outline

* (andrew) Intro: Howdy y’all. This is lindsey and cody, and I’m Andrew, and today we are going to show you our program, Pimaster Chess! (stats)
* (cody)Timer settings/menu/music: First off, we’ve got the menu. The play button will start the game, and the quit button will close the program. You have three possible settings for the timer: 15 minutes, 5 minutes, or no timer at all for more casual play. As you can see when we click play, the music will change dynamically.
* (andrew)Talk about movement logic/error checking: [move pawn to set up pawn]The board is setup using buttons stored in a dictionary with their position as keys, where the pieces are stored in separate lists for each player. When a button is clicked, the program will check various factors, including the current player turn and if another piece is already selected, to determine how to proceed, not allowing the user to input anything invalid, showing information on the side panel to let them know what action they can perform. [highlight button] To allow for an easy learning experience for newer players, a highlight option is available to show the piece selected in green, possible blank tiles for movement in yellow, and possible pieces to overtake in red. The checkbox can be clicked at any point during gameplay to turn on and off highlights for the moves if desired as you can see here. The biggest piece of logic is taking into account the king. If the player is in check or would end up in check as a result of a move, that move will not be allowed, as you can see right now where certain pieces can’t move or are limited in movement due to being in check.
* (lindsey)Pawn swap/GPIO:
  + GPIO
    - Each piece type has a value, pawn at 1; rook, bishop, and knight at 2; queen at 3
    - Using these values, a score is determined for each player based on the pieces in play.
    - Using this score, a percentage is calculated and is used to divide the led line into the appropriate colors to display which player has the strategic advantage
    - The score of each player is only changed on two occasions: discarding a piece and swapping a pawn for a piece of higher value
    - When the pawn takes the bishop, the discard counter for the second player is updated, and the new scores are evaluated. The new scores have not changed enough for the lights to change…
    - This move gave the ability for the current player to swap the pawn for a piece of a higher strategic value. To this the pawn position and color is considered, and a new instance of a piece is created by the player’s choice using the side panel discard buttons. The pawn is then added to the discard and replaced with the new piece.
    - However, when the pawn is swapped for a new queen, the scores are reevaluated, and the new percent is high enough to alter the lighting of the LEDs.
* (andrew)checkmate: There are two possible win conditions setup, checkmate and, if the timer is on, running out of time. Every time a piece is moved, be it through moving to a blank tile, overtaking, pawn swapping, or a combination of these, a check is made to see if there is at least one possible move any piece on the opponent’s team could make. If there is one, the program will break from the logic and allow the player to move. If not, checkmate is reached and the game is over.
* (cody) popup window: As you can see, after a player has performed a checkmate (or the timer runs out), a victory message will appear, accompanied by music. [close the window and go back to the chess board] The tiles on the chess board do nothing, and this is the final state the game is left in. To exit the game, you can click the Quit button in the bottom-right corner.
* (lindsey) lessons learned\future improvements:
  + Lessons learned:
    - Practice with correct syntax and good programming practices
    - Better understand of designing and making a functioning GUI
    - How to utilize coupling and cohesion to optimize a program and make it more readable and efficient
  + Future Improvements:
    - Animations could be added for various piece actions
    - A button that allows a user to view chess rules mid game in a pop up window
    - Add a new game type that allows users to play through and learn popular chess strategies
    - Implement unique chess moves like castling and en passant
    - Physical chess timer using 7 segment LEDs and a button
    - AI
* (cody)conclusion: Thank you guys so much for listening, and we hope you enjoyed it.