TESTING

Clue Detective

How to play Clue

If you are not familiar how to play Clue, here are a couple of helpful links:

- Wikipedia article for Clue: https://en.wikipedia.org/wiki/Cluedo#Game
- Short video that goes over the rules: https://youtu.be/5DGy0GBbMyA

I designed and coded the Clue Detective based on the app version. Note a couple of rule variations from the references above:

- In the app, Scarlett doesn't always go first. Any player can go first, chosen randomly by the app.
- In the app, players take turns clockwise and reveal cards counterclockwise. For example, if the turn order is (Orchid, Scarlett, Mustard), then Scarlett takes a turn after Orchid, and the potential disprovers for Scarlett are Orchid and Mustard, in that order.

Features

Here are a list of features to test for while running the program.

Error Handling:

- For ANY input prompt, capitalization should not matter.
- For prompts that ask the user for a card or player, only the valid 2-letter codes will be accepted, except when noted (e.g., 'X' for skip).
- The user can type 'Q' at ANY time to quit.
- For prompts that need multiple entries, the program will print a confirmation message at the end and allow the user to accept the entry or try again before proceeding.
- The prompt for accepting a multiple entry prompt is binary: 'N' means to try again, but any other entry (including just ENTER) will accept. This was a compromise I made, since implementing error handling for this would be unnecessarily complicated.
- The program should not allow more than 6 players, since there are only 6 valid entries for players, and the multiple entry loop ignores duplicates. An error message should ask the user to try again, however, if the number of players entered is just one.
- After the players have been listed, the program calculates how many cards each player should have. Since there are a total of 21 cards, and 3 are in the "envelope," 18 cards are dealt to the players. This means that if the number of players is 2, 3, or 6, then everyone gets an equal amount of cards. However, if the number of players is 4 or 5, two of the players will receive one less card than everyone else; the program will prompt for who these two players are.

Basic Note Taking:

- The program automatically marks the cards in the user's hand in the notebook before the first turn begins. The program also crosses out these cards for all the other players.

- When a card is revealed to the user, the program marks it for the player that revealed the card and automatically crosses it out from all the other players.
- When a player passes on disproving (i.e., they have none of the cards in the suggestion in their hand), the program automatically crosses out the cards in the suggestion for that player.
- When a player secretly disproves a suggestion, the program automatically marks the cards in the suggestion as a maybe for the disproving player, as long as they are not already marked or crossed.

Detective:

- The program detects if all the cards in a player's hand is known and automatically crosses out all the other cards for that player.
- After logging a turn, the program automatically checks for new information. If a maybe gets marked as known for a player, the program will remove all of the other maybes marked for that turn for that player. For example, if we marked Scarlett, Candlestick, and Hall as maybes for Mustard, then Mustard reveals to us that he has Candlestick, then the notebook will no longer consider Scarlett and Hall as maybes for Mustard. Since it is possible that Mustard has more than one card out of those three, but he can only show us one, then once we know one, the maybe for the other two becomes ambiguous and unhelpful, so we remove it.
- After logging a turn, the program automatically checks for new information. If only one maybe remains from a particular turn, then that means the player has that card, and the program will automatically mark it as such.
- After the program checks for all new information, it checks for solutions. First, it checks by row - if there is a card that is crossed out for all the players, then that means no one has it, so it must be a solution.
- After the program checks for all new information, it checks for solutions. Second, it checks by column - if all but one of the cards of a type (suspect, weapon, or room) is known to be in one of the players' hands, then that card must be the solution.

Class Demo

In class, I demoed a hypothetical Clue game between three players. Here are the cards in each players' hands, along with the game's solution. The players are named in the order of their turn:

SCARLETT	MUSTARD	ORCHID	SOLUTION
Mustard	Orchid	Plum	Green
Scarlett	Wrench	Peacock	Candlestick
Revolver	Lead Pipe	Rope	Dining Room
Ballroom	Conservatory	Dagger	
Lounge	Billiard Room	Study	
Library	Kitchen	Hall	

Here are the list of turns I demonstrated in class and a note describing what it demonstrates:

Whose Turn Is It?	Room	Suspect	Weapon	Disprover	Revealed	NOTE
Scarlett	Study	Scarlett	Wrench	Mustard	X	Marks maybes
Mustard	Dining Room	Orchid	Wrench	X	X	Crosses off for players that can't disprove

Orchid	Ballroom	Scarlett	Candlestick	Scarlett	Scarlett	Two new checks: check for revealed card and check for an old maybe that has been deduced
Scarlett	Dining Room	Scarlett	Revolver	X	X	Shows a partial solution when found
Mustard	X					Allows for skipping turns
Orchid	Dining Room	Green	Candlestick	X	X	Full solution found!