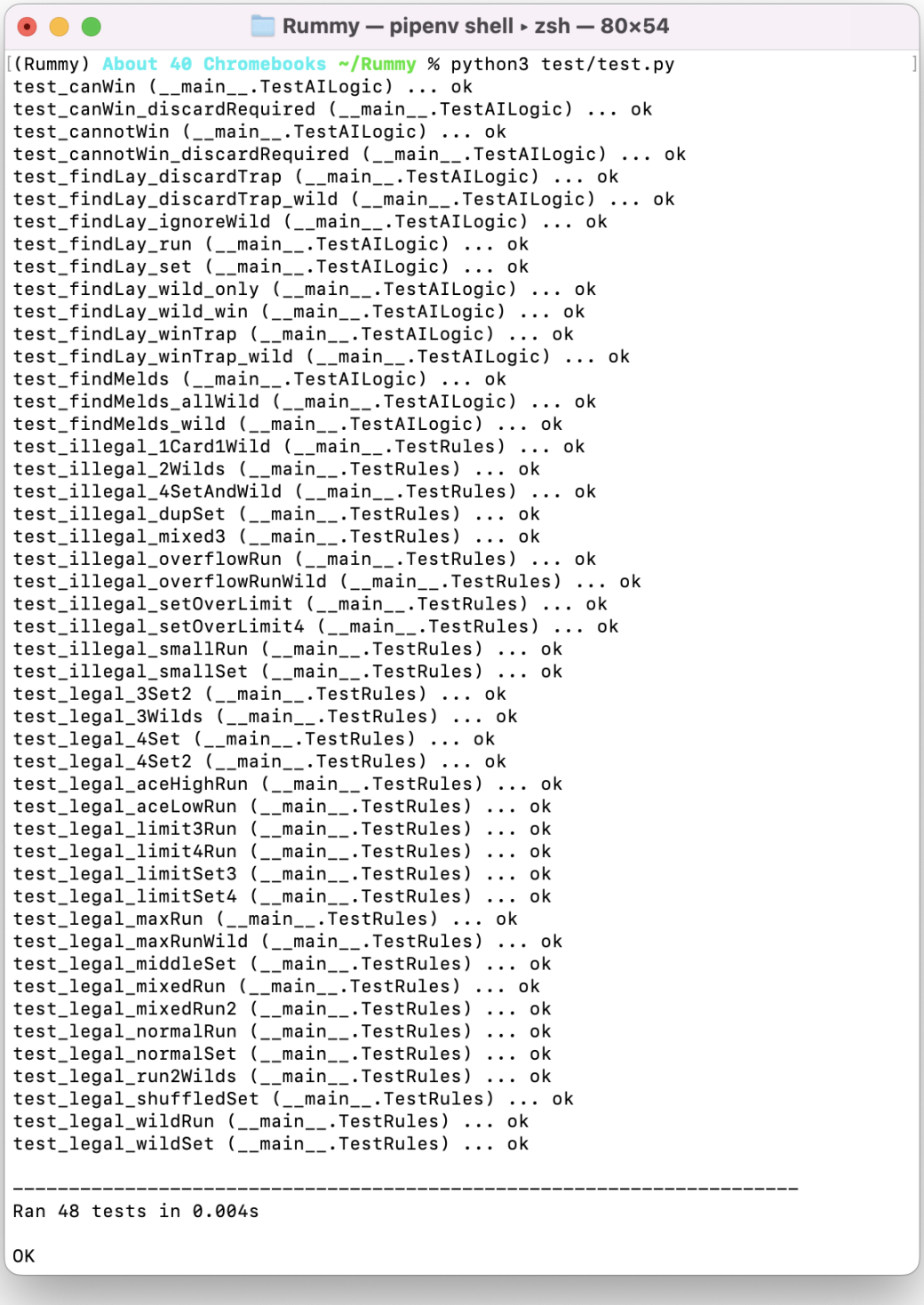
Unit testing (implementation)



Use case testing

Case: Add AI player

Main Scenario:

1. User sends “add AI player” request
2. Server verifies that the game has not started
3. Server verifies that there is room in the lobby
4. Server adds AI player to game
5. Server notifies other players of the new lobby

Alternative Scenarios:

2a: Server sees that game has started
2b: Server ignores request
3a: Lobby is full
3b: Server ignores request

Test Cases: (100% coverage)

(main) Add an AI player to a lobby
2a. Try to add an AI player to a lobby after the game has started
3a. Try to add an AI player after the lobby is full of players

Case: User joins game

Main Scenario:

1. User sends “join game” request to server
2. Server verifies that the game has not started
3. Server verifies that there is room in the lobby
4. Server removes player from their current lobby
5. Server adds the player to the new lobby
6. Server notifies other players of the new player

Alternative Scenarios:

2a: Server sees that the game has started
2b: Server ignores the request
3a: Lobby is full
3b: Server ignores request

Test Cases: (100% coverage)

(main) Join a game as normal
2a. Send a join request to a lobby that’s already started a game
3a. Send a join request to a full lobby

Case: User creates meld

Main Scnenario:

1. User sends “meld” request
2. Server verifies that the game is in play
3. Server verifies that it is the player’s turn
4. Server verifies that the player has drawn
5. Server verifies that the meld consists of 3 or more cards
6. Server verifies that all cards are in the player’s hand
7. Server verifies that the meld is a run or a set
8. Server moves the cards to a new meld
9. Server notifies all players of the state change

Alternative Scenarios:

2a. The game is not in play
2b. Server ignores request
3a. It is not the player’s turn
3b. Server ignores request
4a. The player has not drawn
4b. Server ignores request
5a. The meld consists of < 3 cards
5b. Server ignores request
6a. Some cards are not in the player’s hand
6b. Server ignores request
7a. The meld is not a valid run or set
7b. Server ignores request

Test Cases: (100% coverage)

(main) Main scenario
2a. Try to make a move before the game starts
3a. Try to make a meld out of turn
4a. Try to make a meld before drawing
5a. Try to meld with 2 cards
6a. Try to meld with an illegal set of cards (e.g. a 1, a 5, and a 9)
7a. Try to meld with cards that are already on the table

Case: User empties hand

Main Scenario:

1. User uses meld, lay, or discard action to empty hand
2. Server notices that hand has emptied
3. Server tallies hand values of all players
4. Server sends “end” event to all players with hand scores
5. Client adds hand scores to winner (the player that emptied their hand)
6. Server sends “lobby” event to return players to the lobby

Alternative Scenarios:

2a. Hand has not emptied
2b. Play continues as normal (turn moves to the next player if move was a discard)

Test Cases: (100% coverage)

(main) Empty a player's hand
2a. Take a turn without emptying the player's hand

Case: User draws card

Main Scenario:

1. User sends "draw" request with a card
2. Server verifies that the game is in play
3. Server verifies that it is the player's turn
4. Server verifies that the player has not drawn
5. Server verifies that the card is either at the top of the deck or the discard pile
6. Server moves card to player hand
7. Server notifies all players of state change

Alternative Scenarios:

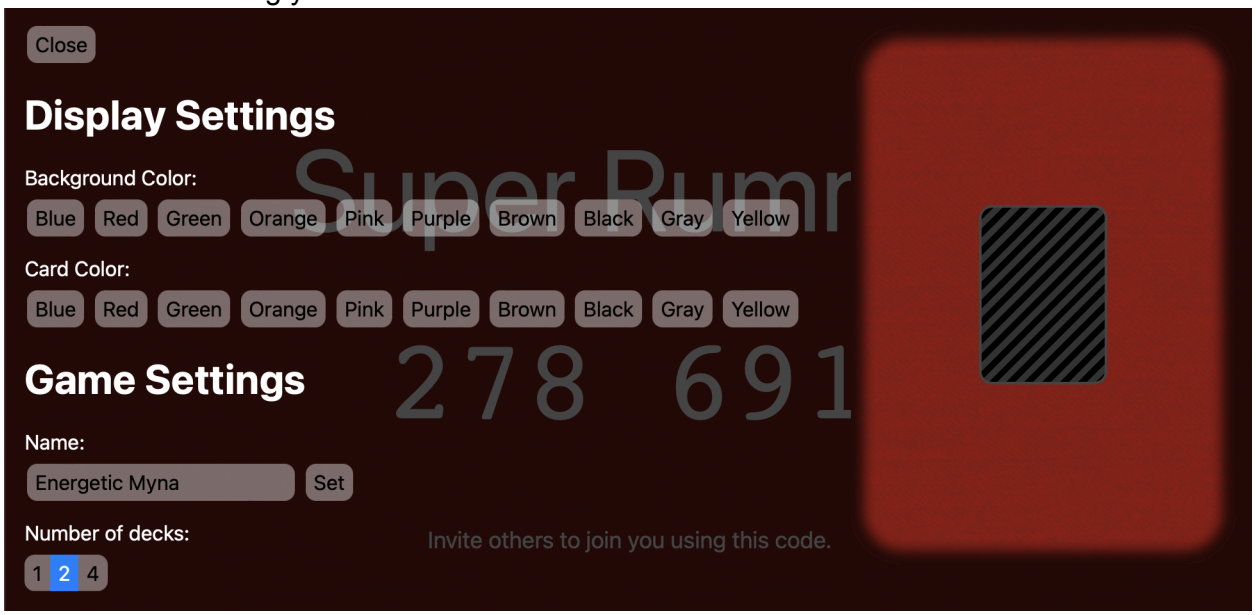
2a. Game is not in play
2b. Server ignores request
3a. It's not the player's turn
3b. Server ignores request
4a. The player has drawn already
4b. Server ignores request
5a. The player is trying to draw a different card
5b. Server ignores request

Test Cases: (100% coverage)

(main) User makes valid draw move
2a. Send a request when the game is still in a lobby
3a. Send a request when it's someone else's turn
4a. Try to draw twice
5a. Try to draw a card from the bottom of the stack

Acceptance testing

For acceptance testing, we had others play the game, including coworkers and classmates. We noticed some small usability issues that were addressed over time. For example, we noticed when someone tried to customize the colors, that they didn't expect the shade that resulted, and that was a less-than-ideal situation. So, we made a change to make the card and board style visible while choosing your color scheme:



In response, we also adjusted the actual colors to more natural shades.

We also found an issue that the settings weren't accessible during the actual gameplay, and this was frustrating for users. This was also fixed with some updates to the settings interface.