In our comprehensive test suite for the Texas Poker simulation and the Blackjack game logic, we focused on testing various critical aspects of gameplay such as hand evaluations, card comparisons, and specific gameplay outcomes. Our tests covered a wide range of scenarios, including hand rankings like Royal Flush, Straight Flush, Four of a Kind, and Full House. We used both unit tests to verify the functionality of smaller components and integration tests to ensure that these components work together as expected.

What We Tested

1. Card Initialization: We tested that each card is initialized correctly with its respective rank and suit.
2. Deck Operations: Tests were conducted to ensure the full deck is created correctly and specific cards hold correct ranks and suits.
3. Hand Evaluations: Each hand type (e.g., Royal Flush, Straight, Full House) was tested under various scenarios to ensure accurate identification and ranking.
4. Comparison Tests: Comparisons between different hand ranks to determine the correct stronger hand.
5. Gameplay Outcomes: Checked that the correct outcomes of both games, Texas Poker and Blackjack, are done given different cases.

Omissions in Testing

- Randomized Shuffling: We did not test the randomness of shuffling as it's typically handled by the OCaml environment or would require an external library, and our focus was on deterministic outcomes.
- User Interface Interactions: Given that our tests are for back-end logic, the interaction with a user interface was outside the scope.
- Betting: We did not test betting because we were able to manually test it when playing the game. There are not many ambiguous cases to manually test.

Demonstration of Correctness

The correctness of our system is demonstrated through:
- Coverage: Our tests encompass every function and scenario we could anticipate, from basic operations like deck management to complex hand evaluations in a game setting.
- Robustness: By testing edge cases, such as the handling of multiple aces and comparing hands of the same rank but different values, we ensure that the logic holds under varied conditions.
- Accuracy: Each test asserts that the game logic adheres to the rules of Texas Hold'em and Blackjack, validating that the expected outcomes match the actual results when the functions are executed.