

No Limit Texas Hold'em

by Pokerers

Thomas Herzog, 01.06.2023

No Limit Texas Hold'em

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The Game

The Game

Introduction

- A card game played by two or more people, in which the players bet on the value of their hands, the winner taking the pool.
- Texas Hold'em is a variant in which each player is dealt two cards facedown and all players share five cards dealt faceup.
- No Limit Texas Hold'em is played with No Limit rules: this means that the betting amounts and number of raises is unlimited.

The Game

Economics

- Blinds are minimal bets. Some players have to pay before a new hand is played.
- The small blind has to be paid by the player to the right of the dealer.
- The big blind has to be paid by the player to the right of the small blind.
- The pot is the sum of money that players bet during each hand. After each betting round, all bets go into the pot until one player is left or wins in the showdown.

The Game

Gameplay

- There are 4 betting rounds and before every round starts some cards are dealt to the players.
- The dealer indicates opening the betting rounds. It is moved one player to the right after every betting round.
- 5 (board) cards are dealt to the table, visible to all players, in sequence:
 - **Flop:** The first 3 cards are dealt after the first betting round
 - **Turn:** The 4th card is dealt after the second betting round
 - **River:** The 5th (and final) card is dealt after the third betting round

The Game

Actions

- **Check:** If a player matches the current highest bet, he can decide to bet zero.
- **Bet:** The dealer opening the betting round can freely choose the opening bet
- **Call:** If a player currently bets less than the highest bet, he can decide to match his bet.
- **Fold:** If a player currently bets less than the highest bet, he can decide to discard his pocket cards and discontinue playing this hand by folding.
- **Raise:** If a player bets less than the highest bet, he can decide to bet more than the highest bet.

poker

Hand Rankings

▲ BEST

1

ROYAL FLUSH



2

STRAIGHT FLUSH



3

FOUR OF A KIND



4

FULL HOUSE



5

FLUSH



6

STRAIGHT



7

THREE OF A KIND



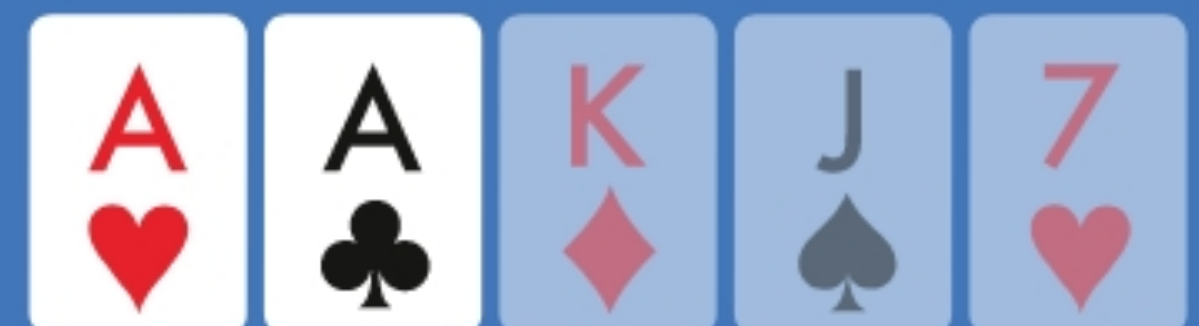
8

TWO PAIR



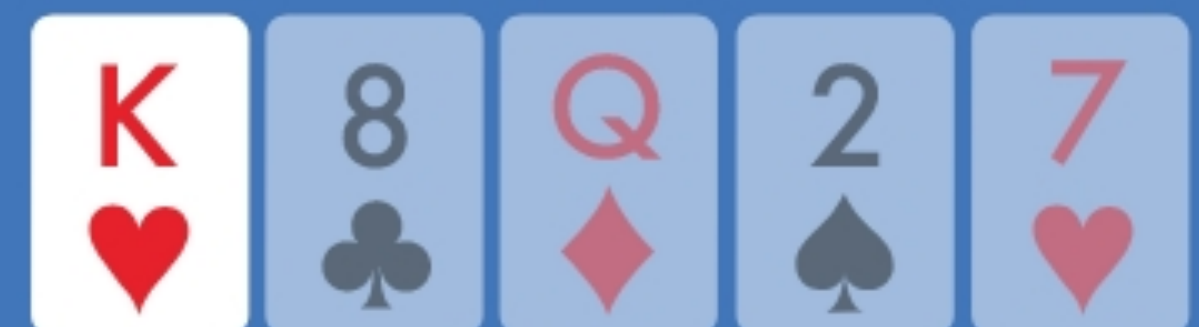
9

PAIR



10

HIGH CARD



▼ WEAKEST

Faced Challenges

Faced Challenges

- **Team:** Coordinating and communicating with team members ensuring everyone understands the requirements and goals
 - Distribution of the tasks depending on the skill level of the member
 - e.g. server: Mikail (networking) and Thomas (documentation and testing)
- **Architecture:** Designing an efficient way for state representation / evaluation
 - Storage: $(\text{color} := \text{internal_value} / 13)$ and $(\text{value} := \text{internal_value} \% 13)$
 - Evaluation based on color / value pair

Faced Challenges

- **Development:** Creating a consistent game flow without exceptions
 - Ensuring proper validation of inputs and actions (preventing crashes)
 - Identifying critical bugs promptly and issuing fixes before the deadline
- **Documentation:** Maintaining clear documentation to ensure everyone understands the codebase
 - Understanding and using tooling (unknown to us) provided by Rust

Lessons learned

Lessons learned

- **Team:** Working as a team requires coordination, cooperation, and compromise
 - Only assigning tasks based on individual strengths and expertise leads to efficient progress
- **Testing:** Incorporating automated tests and test-driven development practices streamlines bug detection.
 - By creating the tests first, we realized early that some card evaluations were completely wrong

Lessons learned

- **Development:** Using the most suitable tools for the task helps maintaining momentum
 - Rust for asynchronous networking and memory-safety critical task
 - C++ for graphical user interface (no other viable options)
- **Flexibility:** Adapting to unexpected challenges or changes in scope during the project to maintain progress
 - Being open to feedback and making necessary adjustments based on the team's opinion and project requirements

Live demo

Questions?