

# Pokerface - v2024.06.10



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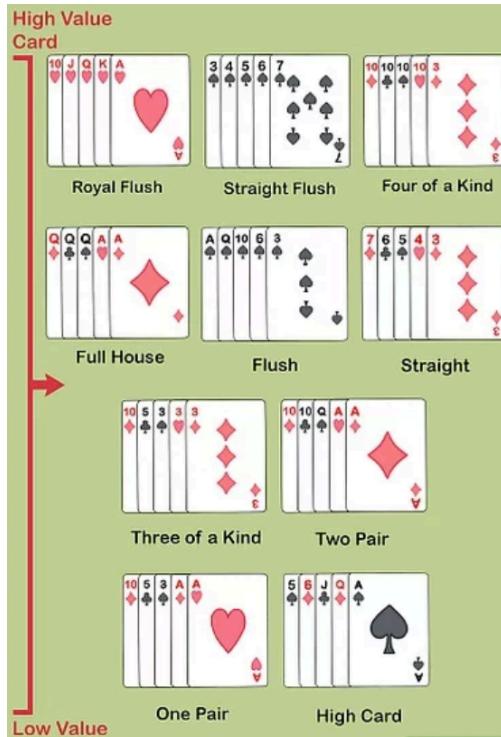
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# Glossary

**Poker Hand** - consists of 5 cards in total per player, with each of them having a different ranking from low to high.

- **Royal Flush:**  
A, K, Q, J, 10, all of the same suit, highest ranking.
- **Straight Flush:**  
Five consecutive cards of the same suit.
- **Four of a Kind:**  
Four cards of the same rank and one side card or ‘kicker’.
- **Full House:**  
Three cards of one rank and two cards of another rank.
- **Flush:**  
Five cards of the same suit, not in sequence.
- **Straight:**  
Five consecutive cards of different suits.
- **Three of a Kind:**  
Three cards of the same rank and two unrelated side cards.
- **Two Pair:**  
Two cards of one rank, two cards of another rank, and one side card.
- **One Pair:**  
Two cards of the same rank and three unrelated side cards.
- **High Card:**  
Any hand that does not qualify under the categories listed, the highest card plays (this is the lowest ranking).



- **Preflop:** Before any community cards are dealt, players receive two private cards (hole cards) and place initial bets through blinds or antes.
- **Flop:** Three community cards are dealt face up, allowing players to begin forming poker hands; betting follows, starting from the player left of the dealer.
- **Turn:** A fourth community card is added to the community board, providing more chances to build a hand, followed by another round of betting.
- **River:** The fifth and final community card is dealt, completing the possible hand combinations, with a final round of betting ensuing.
- **Showdown:** Remaining players reveal their hole cards, and the best five-card hand using any combination of their hole and community cards wins the pot.
- **Call:** To match the current bet made by another player to stay in the hand.
- **All In:** To bet all remaining chips. This move is made when a player puts their last chips into the pot.
- **Action:** Refers to a player's turn to act during a hand.
- **Backdoor:** Hitting needed cards on both the turn and the river to make a drawing hand.
- **Bad Beat:** Losing a hand where you were a strong favorite to win.
- **Bet:** To wager chips into the pot based on the strength of your hand, or to bluff other players into folding their hands.

## 1. Online Poker

## **1.1 Usage Scenario**

## General Client Usage:

## Client Side GUI:

The user will be prompted with this GUI at the start of the game:

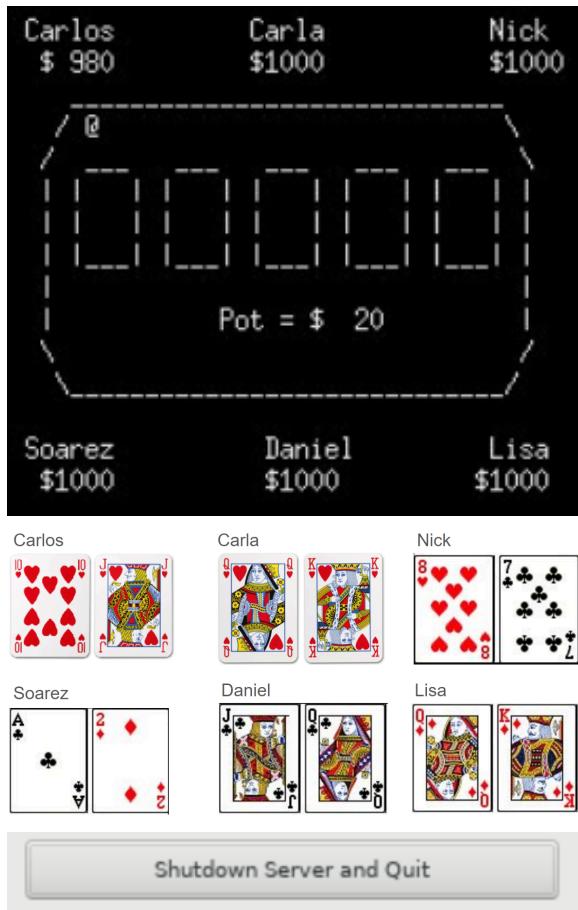


After the game has begun:



### Server Side GUI:

The GUI after the server is connected:



## 1.2 Goals

To achieve victory, the player must have the highest ranking five card hand compared to any other player that is playing the game.

Coding Goals:

- Unit tests for every module.
- TCP/IP communication between the linux server and the users.
- Working graphical user interface with a main menu and the poker game.
- Working poker program that can determine if a user has won by checking for the player that has the highest ranking five card hand compared to any other player that is playing the game.

## 1.3 Features

Display:

- Graphical user interface with a main menu and the poker game
- Players log in with username and password
- Poker table, chips, and cards all displayed
- Players can see other players (or AI) at the table

## Gameplay:

- Ability to choose which seat the user wants to sit at
- Ability to play with up to 5 players
- Ability to change the “bet” being placed, with support for user score
- Full implementation of all Texas Hold’em Poker rules
- TCP/IP communication via sockets/ports

## **2. Installation**

### **2.1 System Requirements**

<b>Hardware</b>	<b>Minimum Specification</b>
CPU	Any x86_64 processor with clock speed of at least 1GHz
RAM	At least 1 GB
Disk Space	At least 500 MB
Operating System	Linux (RHEL7/RHEL8)

### **Software**

Xming downloaded to be able to display the poker GUI in separate window

### **2.2 Setup and Configuration**

- Installation (basic user, no building or compiling necessary)
- Download Poker.tar.gz compressed folder.
- Navigate to the directory where the Poker.tar.gz folder is located after downloading(for example, 'cd Downloads'), and then run command (in terminal) 'gtar xvzf Poker.tar.gz' in order to unpack/unzip the file.
- Navigate within the newly unzipped folder in the terminal ('cd poker'), and then navigate to the 'bin' folder in order to run the program executable ('./pokerserver [port number]' to start the server, './pokerclient [hostname] [port number]' to start each client, use ports 10080-10089).

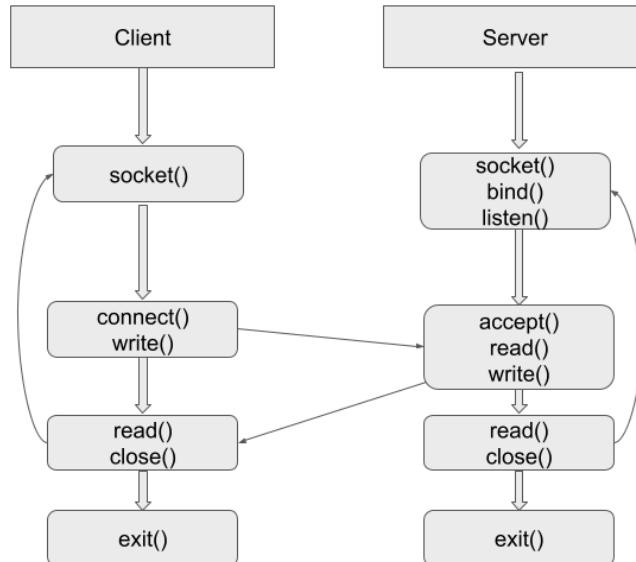
### **2.3 Uninstalling**

- Uninstallation (for both basic and advanced users)
- Navigate to the folder where Poker.tar.gz was uncompressed within terminal ('cd Downloads', then 'cd poker), taking extra care that there are no other contents in the folder besides the files that were unzipped from the Poker.tar.gz file, then use 'rm -rf \*' to remove all files within the downloaded and unzipped folder without needing to authorize the deletion of each file at a time.
- Additionally, to remove the poker directory from inside of it ('cd ..', then 'rm -rf \*/') which will remove the entire poker directory which should be empty.

# 3. Poker Program Functions and Features

## 3.1. Detailed description of client and server communication

- Users first connect to a server via their computers in order to play Poker, then communicate via messages (TCP/IP).
- The client-side (user) initiates a request for service (which in this case is to play a game of Poker) from the server through a communication method known as Point-to-Point.
- The client and server are both known as software processes, meaning that they are running programs on hosts, which in this case are computers.
- Clients (users) connect to the server via ports, a virtual point where a network connection is established. Every port has a service/function to be carried out, as well as a number that identifies every port.
- The connection itself between two processes is known as a socket, allowing data to be sent and received.
- The server then provides service to one or more clients, (which in this scenario is a Poker game from start to finish).
- Upon connecting to the server, clients send requests to join the game, receive game updates, and submit actions (ex. fold , bet, raise).
- The server sends game updates to all connected clients, including current player actions, community cards, and game results.



### **3.2: Detailed description of dealer choice and card distribution**

#### **Dealer Choice:**

- The dealer position rotates clockwise after each hand.
- The dealer is responsible for shuffling and distributing 2 cards to each player at the beginning of every round starting from the player to the left of them.
- There is no input from the dealer, a controller function will be able to automate the dealing of the cards after every round using a random shuffler.

#### **Card Distribution:**

- The server shuffles a standard 52-card deck before each hand
- Cards are dealt to players in a clockwise manner, starting from the player next to the dealer.
- Each player receives 2 cards according to the Texas Hold'em edition rules.

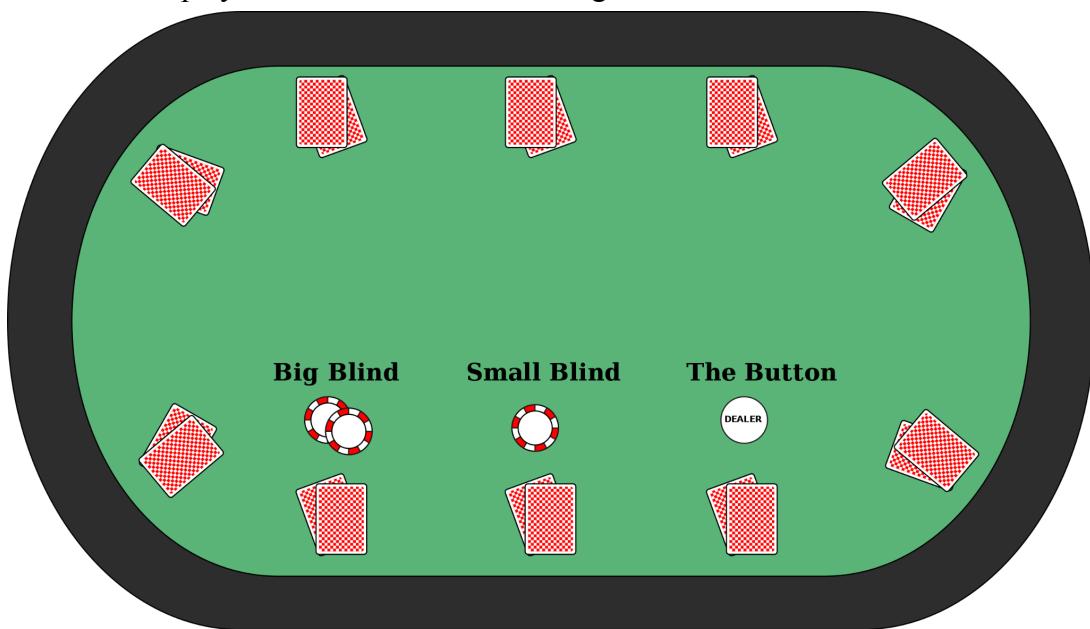


Figure 1: Diagram of how a poker table would be laid out, in a game of Texas Hold'Em Poker with no dedicated dealer at the table.

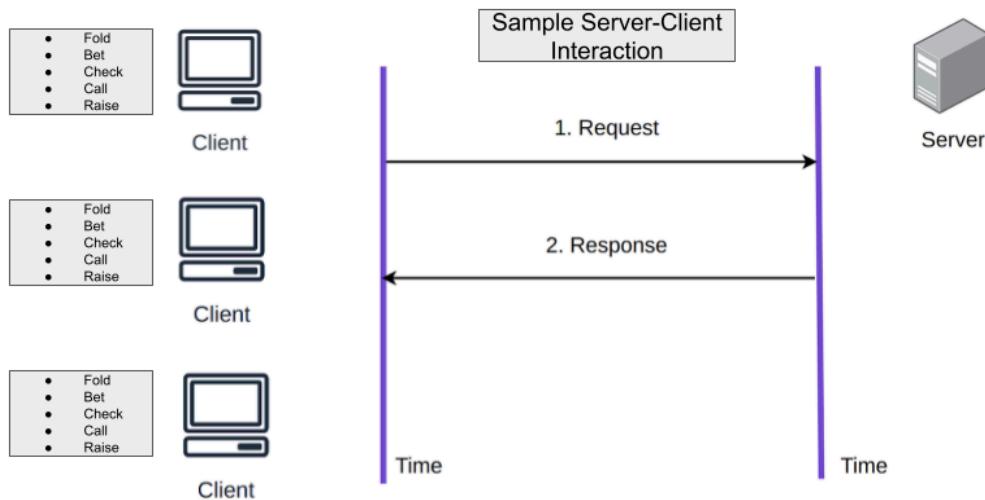
### **3.3: Detailed description of poker game integration**

#### **User Input**

- Players provide input through the client interface, selecting actions such as fold, check, bet, raise, or call.
- The input is sent to the TCP/IP server, which validates the action based on game rules and updates the game state accordingly, which will update the game screen for all players.

#### **Program Output:**

- The server sends game state updates to all connected clients, informing them of the current game status, including player actions, community cards, and game results.
- Clients display this information to the players, updating the graphical user interface (GUI) to reflect the latest game state.



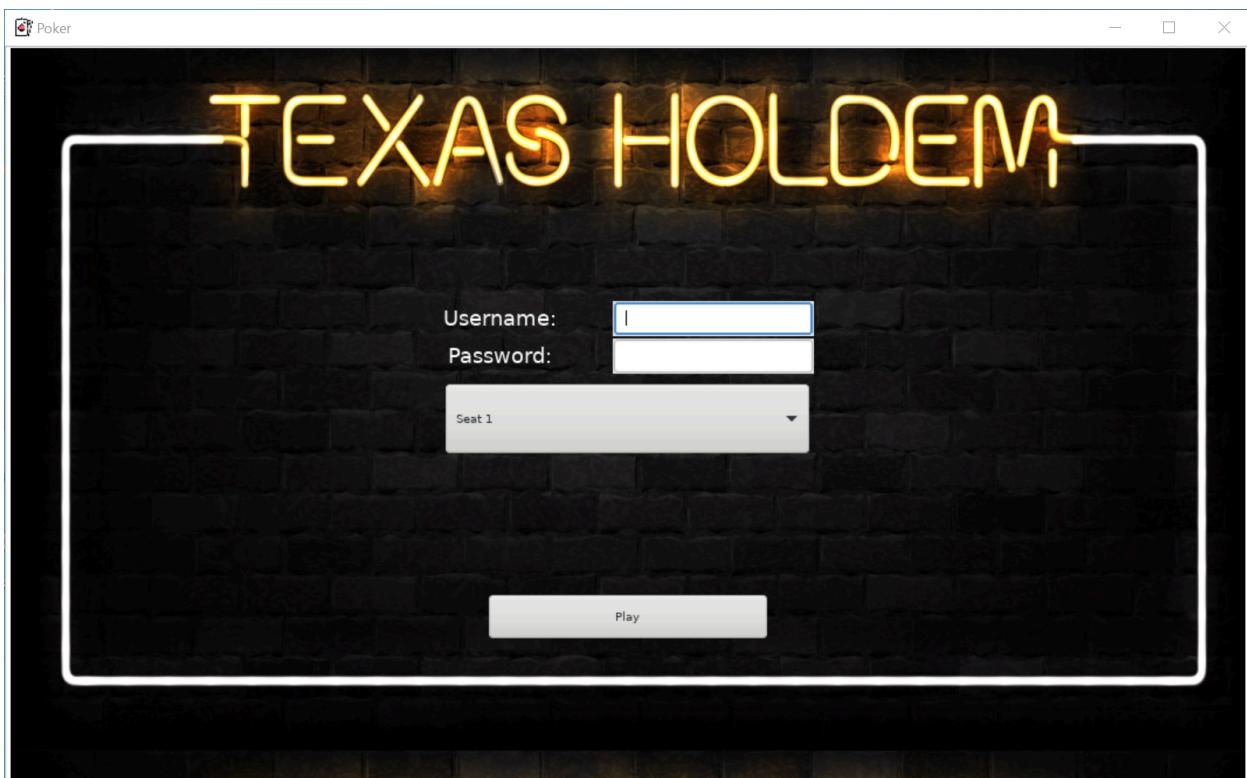
### **3.4: Detailed description of graphical user interface**

**Input:** Mouse/Keyboard inputs from an active user

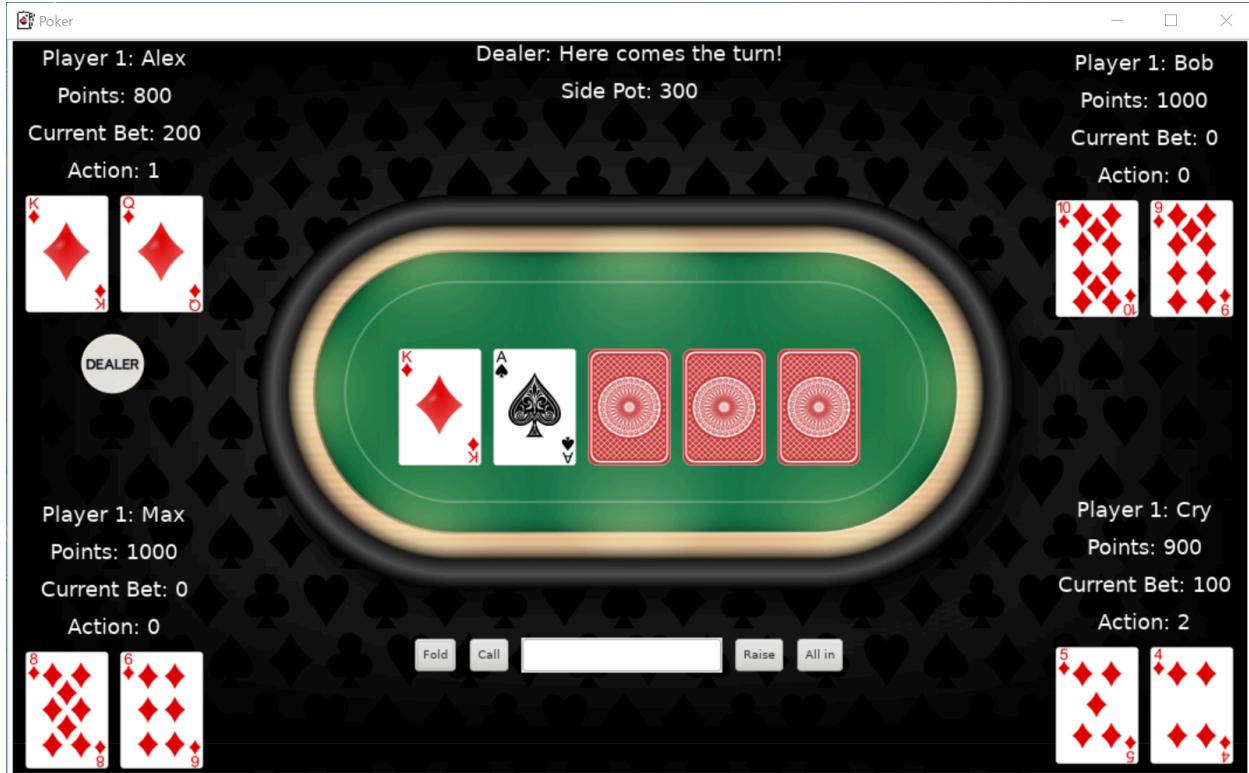
**Output:** The contents of the current poker game is displayed through a separate window on the user's computer monitor.

**Description:** The graphical user interface or GUI gives a visual representation of the poker game and is more immersive compared to a simple ASCII representation. For this program buttons built into the GUI gives users a way to intuitively log in, choose their seat through a main menu and play poker with friends.

**Main Menu:**



After the game has begun:



## Back Matter

### Error Messages

1. “Can not open display” error message occurs when running the executable on an application that does not support/have Xming.
2. “Inadequate Number of Active Players” occurs when the program is run without the required amount of real players to play poker.
3. “Invalid Wager” error message occurs when a user attempts to wager points above what they have or attempting to wager an invalid number of points.
4. “Not Your Turn” error message occurs when a user attempts to execute an action when it’s not their turn.

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