# Analysis

I am creating a free to play Texas hold ’em poker web application that can be played from any web browser with JavaScript. Existing products I have seen are Appeak Poker, an online poker app for IOS and Android. In this app a user can join different tables to play poker, add friends and keep track of their stats as they play, along with a total amount of money they have earned throughout their game time.

My supervisor will be my dad who knows how to play poker. He works with websites so understands fundamental website and database design. The end users are people aged 16 and over who enjoy playing poker without having to commit any real money to the game.

## The Rules of Texas hold ’em

### https://upload.wikimedia.org/wikipedia/commons/thumb/c/c0/Texas_Hold%27em_Poker_Table_with_Blinds.svg/1920px-Texas_Hold%27em_Poker_Table_with_Blinds.svg.pngPre-Game

One player acts as the dealer. The dealer is represented by the player with the dealer button, and moves clockwise each round.

The game starts with two forced bets by the two players to the dealers left. These are called the small blind (SB) and the big blind (BB).

The SB is equal to the minimum bet. The BB is twice that of the small blind. After the blinds, play moves into the betting phase.

### Play

Following the blinds, each player receives two cards face down. These are your ‘hole’ cards. The play continues clockwise, where each player following the blinds can either:

* **Call** – Calling matches the highest bet, in this cast the BB.
* **Raise** - A player can raise the bet up to the amount they have left on the table.
* **Fold** – By folding, a player is choosing not to continue betting and withdraws from the round.

The betting round continues until every player has put an equal amount of money in the pot or there is only one player left in the round. If a player calls or raises up to all of their money, they are said to have gone ‘all-in’, and a side-pot is created, which contains the pot which equates to the amount of chips the player has put in.

This means that the other players may continue to bet between themselves with the all-in player only eligible to win chips up to the amount he has put in.

Once the betting round has completed, three community cards are shown, known as ‘the flop’. Community cards can be used by any player to make the best 5 card hand possible.

Another betting round then commences where the players have an option to call (or ‘check’ if no bet has been made), raise (or bet if a bet has been made) or fold. When the second betting round is finished, a fourth card is shown, known as ‘the turn’.

Another betting round takes place, after which the final card is shown, known as ‘the river’ and after the final betting round if there are still two or more players left, the game goes to a showdown.

### Image result for texas holdem hand rankShowdown

https://snapguide.com/guides/play-poker/

If a player bets and all other players fold, the player is awarded the pot and is not required to show his cards. However, if there are still two or more players left after the final round of betting, a ‘showdown’ occurs, where the last player to bet is the first to show his hand, unless everyone checks in which case the player to the left of the dealer button is the first to show.

After the first player has shown his cards, the players must show their cards in a clockwise rotation if they can beat the best players hand to show. Otherwise they can choose not to show, and ‘muck’ their losing hand without showing them.

If two players have the same hand strength, ‘kickers’ can be used to break ties. These are extra cards that do not add to the rank of the hand.

For example **K-K-10-3-2** would beat **K-K-9-8-7** even though they are both pairs of kings, as the **10** would beat the **9**. If the best hand is shared by two or more players, the pot is shared between them. If the pot cannot be equally distributed among all the players in the split pot, the odd chips are given precedence to the winners that are first to play.

## Algorithms

I am using the Django framework for my web application because it is one of the most documented and versatile web app frameworks for Python. I am using sqlite3 to manage the database for its ease of use.

## Objectives

1. Players will be able to register and log in/out.
2. A player’s total money is stored in a database
3. User passwords are stored using the SHA-256 hashing algorithm
4. Players will be able to create and the and join tables
5. The pack is shuffled between rounds
6. The dealer button moves one place to the dealers left each round
7. Tables have a maximum number of players (between 2 and 8) which can be specified by the table’s creator
8. Tables have a buy-in to enter, which is specified by the table’s creator
9. Once in a table, players can play live poker according to the rules above
10. Players will only be able to see their pocket cards and the table’s community cards
11. Once a player leaves a table their money from the table is added to the player’s total money
12. If a player leaves a table, they will automatically fold
13. Players will be able to add friends and join the table they are in
14. A leader board shows all players’ stats
15. Players can interact with each other using an in-table chat
16. The chat can be filtered so that swear words would be censored
17. A how to play page for new players

## Extension Objectives

1. Players can create private tables, which require a password to enter
2. Temporary storage of data in poker games could be stored in a NO SQL database as it offers quicker read and write speeds
3. Players can keep track of other stats such as number of hands played, % hands won etc.
4. Players can join multiple tables at once, and switch between them
5. The table could be shown with players in a circle and a pot and community cards in the middle, rather than being text based
6. Cards shown with images instead of text
7. Card and chip animations
8. A poker AI could optionally be added to tables to add players to the game
9. Site uses HTTPS to prevent username and passwords being intercepted, along with poker hands

Not analysis

## Table Design

The online poker tables on the web app will be designed so that any user can create a poker table, specifying the buy in and the maximum number of players. The minimum bet is 1/100th of the buy in. If a table is empty for over 15 minutes it will be deleted.

## Users

Each user will be able to create and join any table if they have enough money to meet the buy in. The starting amount of money for a user will be 1000 credits, which can be reset if they go below that. Users will be able to gain credits by winning them off other people in poker tables, and the credits will persist even after they log out.