# 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, which is 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 entire game time. My supervisor will be my dad, who knows how to play poker and creates websites so understands fundamental website and database design. The end user will be people aged 16 and up 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 continues as normal for the remaining players.

### 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, which matches the highest bet, (in this cast the BB), raise, up to their money in the table, or fold, which means not betting anymore money into the pot but also giving up your chance to win it. The betting round continues until every player has put an equal amount of money in the pot or the player has folded. 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 equitable 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, 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, the turn. Another betting round takes place, after which the final card is shown, 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

If a player bets and all other players folds, 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.

## Algorithms

I am using the Django framework for my web application and sqlite3 to manage the database.

## Objectives

1. Players will be able to sign up and log in and out, with their total money stored in a database
2. Users passwords are stored encrypted
3. Players will be able to create and the and join tables
4. In the tables, players will be able to play live poker with other players
5. Once a player leaves a table their money from the table is added to the players total money
6. If a player leaves a table, they will automatically fold
7. Players will be able to add friends which they can see whether they are active and join the table they are in
8. Players can keep track of other stats such as number of hands played, % hands won etc.
9. A leaderboard could show all players’ stats, and track their progress
10. An in-table chat could be implemented so that players could interact with each other
11. The chat could optionally be filtered so that swear words would be censored out the chat
12. A how to play page could be implemented for new players.
13. Site uses HTTPS to prevent username and passwords being intercepted, along with poker hands

## Extension Objectives

1. Players could create private tables, which require a password to enter
2. Players could join multiple tables at once, and switch between them
3. The table could be shown with players in a circle and a pot and community cards in the middle, rather than text based
4. A hand strength percentage could be implemented that would give a player an indication on how strong their current hand is
5. Cards could be shown with images instead of text
6. Card animation could be included
7. A poker AI could optionally be added to tables to fill up players

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 5 minutes it will be deleted.

## Users

Each user will be able to create and join any table that they have enough money to meet the buy in. The starting amount of money for a user will be 1000 credits, which users can 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.