Final Report Group 29

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Project name

Texas Hold’em Simulator

Language used

Matlab

Summary of the project

Simulate multi-player Texas Hold’em Poker in the same local area network with GUI.

Motivation

Texas Hold’em is a kind of poker game popular in the US. It is a game that people battle each other with their calculation skills and psychological tactics. However, created to be a gambling poker game, hold’em is not welcomed by the majority of Chinese people. Therefore, our project intends to popularize this game.

What has been achieved

1. A script where all standard Texas Hold’em game rules are implemented.
2. A server script and a client script to achieve command-line poker game on different PCs in the same local area network.
3. A GUI that can replace the client script for much better user experience.

Potentials of our project

1. More integated GUI with fancy animations.

2. User system to keep track of the users' statistics.
3. Gameplay over world-wide-web.

Design of our project

Communications

Before the start of the game, the GUI prompts the user to input the port number and userName, the tcpip objects are stored in a structure `tcpipServer`. We used `inform` and `announce` functions to meet different needs of communications.

Graphical user interface

We used the `GUIDE` tool in matlab to design the GUI.

Gameflow

Before the game

All players are given the same amount of chips. (in this game, 1000 for every player). We used a table `T` to store all the informations of players. including `isFold`, `isCall`, `chips` etc.

Hand cards dealing

All people are dealt 2 hand cards that are invisible to others, a player is decided as the dealer, the next player in clockwise direction(small blind) and the next-next player (big blind) are asked to bet some certain amount of chips. (In this game, small blind is 5 and big blind is 10)

We used `inform` to deal the cards, and `announce` to announce the small blind and big blind.

In each round

In each round, and in the clockwise direction, all players have the right to call(bet the same amount of chips as the previous player), raise(bet more chips than the previous player so that other players have to pay more to compete), or fold(give up betting in this round). When all players that haven't folded bet the same amount of chips, all chips go into the pot and the next round begins.

We used `getResponse` to get the response from players, and then modify the corresponding players' `isCall`, `isFold`, `chips`, etc. We then use `announce` to tell everyone this player's response.

Deal the table cards

There are totally four rounds of bets. The first round (pre-flop), the second round (flop), the third round (turn), and the fourth round (river). In the flop round, the system reveals three flop cards that are visible to every player, another turn card is revealed in the turn round, and the river card is revealed in the river round. Whenever a player forces everyone else to fold, he/she gets all chips in the pot.

We used `announce` to deal the table cards.

Showdown

After all four rounds of bettings, if there are still more than 1 players that haven't folded, the showdown begins. In the showdown, the players that haven't folded show their cards, among the combination of the 2 hand cards and the 5 table cards, find the 5 cards that rank the highest to compete with each other. (How cards are ranked can be found in the hyperlink the appendix) The player with the highest rank gets the chips in the pot.

How showdown is done when players all-in (bet all chips he/she has) is too complicated to be described here. We implemented the algorithm in the `Showdown` part in the `server` script. We use `announce` to perform the showdown.

What we have learned

1. Use GUIDE to design GUI in matlab.
2. Simple TCPIP connections
3. Simple coding and decoding between servers and clients.
4. Sub function skills

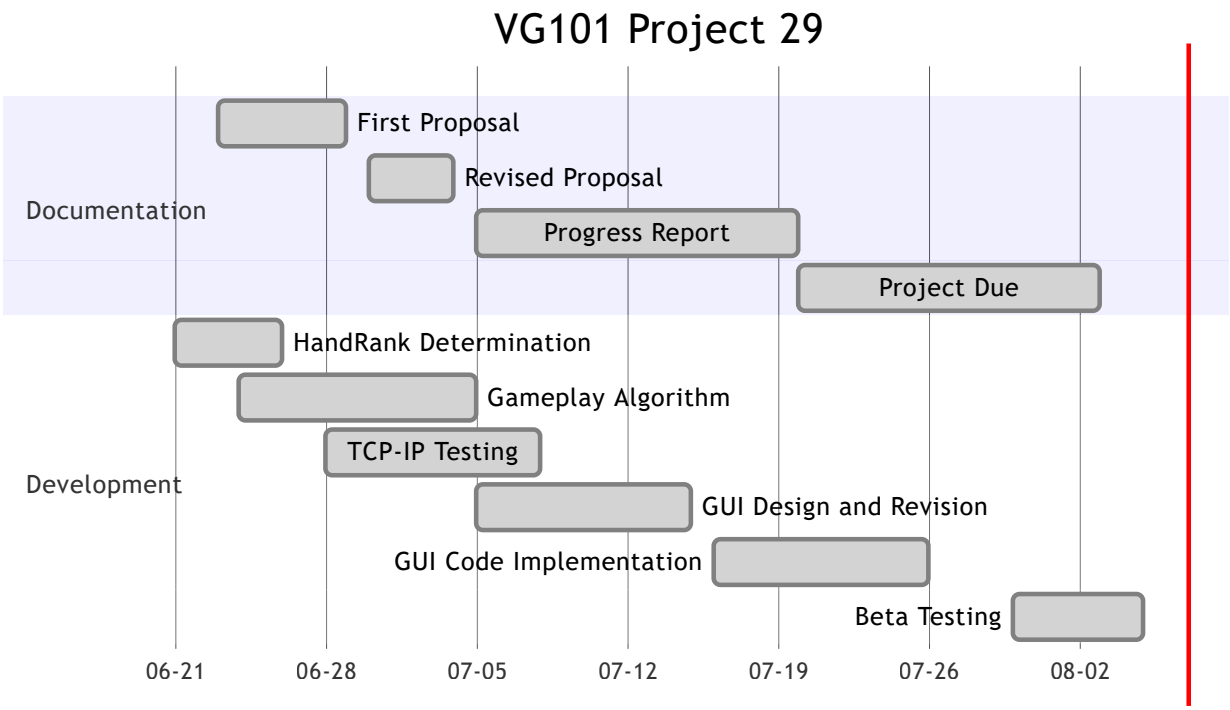
Workload distribution

Dingkun Zhang: Design and test the GUIDE in matlab; part of report.

Wenwen Xu: Implement the Texas Hold'em ranking and gameflow; part of GUI design; part of TCPIP connection design; demo recording; part of report; README file.

Yifan Shen: TCPIP connection design; part of report.

Timeline



Appendix

The full rule of Texas Hold'em
https://en.wikipedia.org/wiki/Texas_hold_'em (https://en.wikipedia.org/wiki/Texas_hold_%27em)