

**Faculty of Science and Technology
2021-2022**

**CST3511 - Internet Scales and Applications
Coursework 2 Proposal**

Date: 4 March 2022

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Campus: Dubai











1. Introduction

This project proposal is for the design and development of a poker game. A recent surge in the popularity of poker on a global scale has sparked interest in the game in various fields of computer science study. Texas Holdem, the most popular type of poker, is a game with simple rules and complicated strategies. Much of the state information is hidden from the player, as it is in most card games. Furthermore, because several adversaries have complex interactions, reasoning approaches related to multiagent systems may be used effectively. We will design and develop the whole game for this project using JavaFX.

2. Game Description

Texas holdem in JavaFX steps:

- 4 players join the game.
- They are given \$10,000 in game credit.
- Server generates 2 random cards for each player and is displayed to players.
- Server generates 5 random cards for “Dealer”
- Players have to make a decision based on the their cards: the decisions are
 - FOLD - which means the player does not want to play the hand and will sit out the round
 - CHECK - stays in the game and agrees to the current pot
 - BID - increase the pot and continue playing
- After the decisions are made, the dealer displays their first 3 cards to all players.
- The Players make a decision based on their cards
- The Dealer then displays another card
- The players make their decision again based on their cards
- The Dealer displays their final cards
- The players make their final decisions and bids
- A winner is chosen based on the cards and rules, the hierarchy is displayed below:

Poker Hands Chart					
Rank	Hand Name	Hand Description	Example	Probability	Combinations
1	Royal Flush	A Royal Flush is made out of 10, Jack, Queen, King, Ace, all of the same suit.		1 in 649,737	4
2	Straight Flush	A Straight Flush is five cards in a row, all in the same suit.		1 in 72,193	36
3	Four of a Kind	A Four of a Kind is the same card in each of the four suits.		1 in 4,164	624
4	Full House	A Full House is a pair plus three of a kind in the same hand.		1 in 693	3,744
5	Flush	A Flush is five cards in the same suit, not in numerical order.		1 in 508	5,108
6	Straight	A Straight is five cards in numerical order, but not in the same suit.		1 in 253	10,200
7	Three of a Kind	Three of a Kind is three of one card and two non-paired cards.		1 in 46	54,912
8	Two Pair	Two Pair is two different pairings or sets of the same card in one hand.		1 in 20	123,552
9	One Pair	One Pair is a pairing of the same card.		1 in 1.36	1,098,240
10	High Card	A High Card refers to a hand with no matching cards.		1 in 0.99	1,302,540

(CardsChat™, 2017)

4. Network programming

We will be using WebSockets primarily, for a two-way connection between the Server and the other players. Each web socket would run on its own client thread that joins up to a max of 4 people. Each thread has a web socket to communicate to a server.

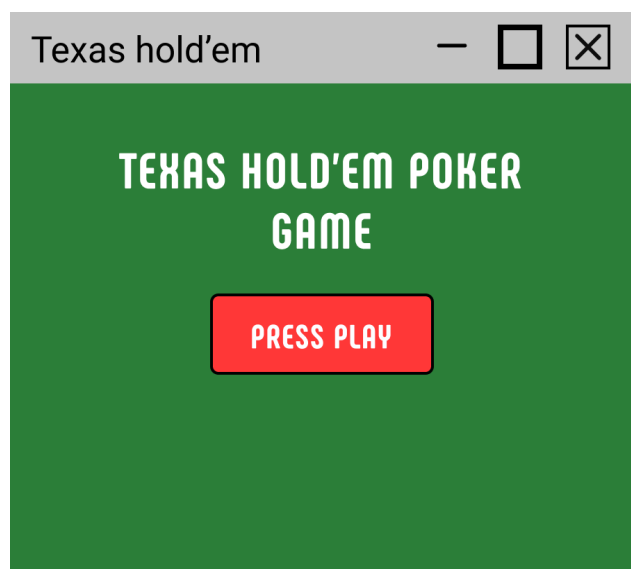
It's clear that we dont want to broadcast a new copy of the complete game state to the players every time some minor change is made in the state. Furthermore, it doesn't really make sense for

all players to know the full game state—that would include the opponent's hand and full knowledge of the deck from which the cards are dealt.

5. Description of the application protocol

The application must be able to simulate the game through the platform used. The application would visualize the concepts of the standard rules of the poker game and ensure that the users comply with it. The application would be able to allow a user to join or leave a game, but players would not be able to join while a game is running. In order to ensure this, the application protocol that would be used is a User Datagram Protocol (UDP). This protocol transmits packets of data without any pre-established connection. The focus of this protocol is to ensure that the data sent and being received is fast. This protocol has also been chosen as a confirmation won't be needed from the receiver, as it takes time for them to reply to you. For example: Letting the server know if the player is still there through the client. UDP was considered to be the best option for the project as the results can be retrieved faster, with minimal loss in data such as duration of a player within the session.

6. GUI design



Pot - \$0

You - \$10000

Player A - \$10000

Player B - \$10000

Player C - \$10000

Your turn..



FOLD

CHECK

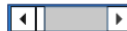
BID

7. Gantt Chart

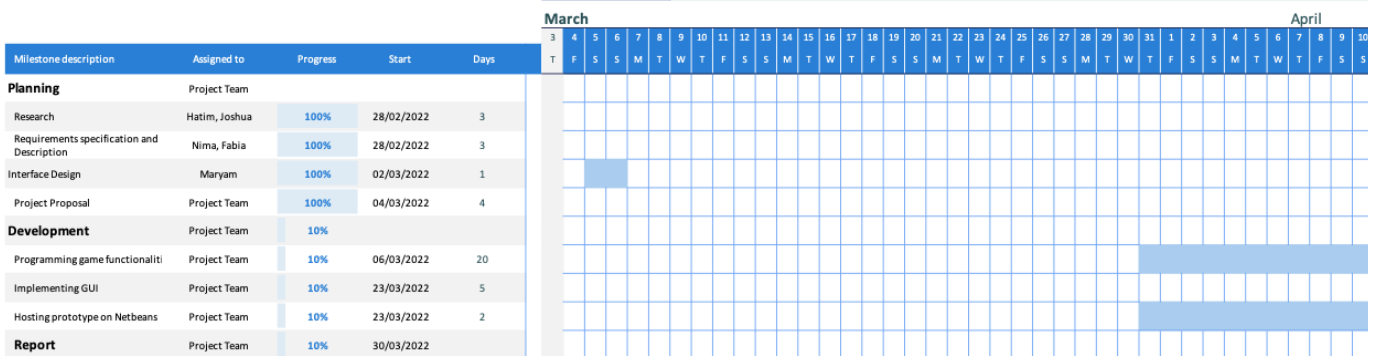
Project title Texas hold'em multiplayer game

Project team Maryam Y Mohamed, Nima Sadeghi, Fabia Saleem, Joshua Cherin, Hatim Fahmi

Project start date: 03/03/2022



Scrolling increment: 0



The dates might not be accurate. Based on the feedback received on the proposal, we will start working on the code.

8. Percentage contribution of each member

Fabia: 20%

Hatim: 20%

Josh: 20%

Maryam: 20%

Nima: 20%