TRIBHUVAN UNIVERSITY

INSTITUTE OF ENGINEERING

PULCHOWK CAMPUS

DEPARTMENT OF ELECTRONICS AND COMPUTER

ENGINEERING

A

Report On

MARRAIGE

Submitted To:

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We would humbly welcome any suggestions and guidance for the improvement of this project.

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1. ABSTRACT

Marriage is a popular card game played between two to five players. In this project we have developed a complete marriage game for PC's that can be played between two to five players connected in a LAN.

The game we have built is a cross-platform software which can be run on any system having JRE. We have utilised the different GUI components of JAVA to create a user friendly game window. Similarly the socket connection functionalities of JAVA are employed to obtain the server-client communication required in our game.

Presently marriage is only played using actual cards due to the lack of usable LAN based game. Thus the main objective of this project is to provide the popular fan base of marriage game a very user friendly and complete marriage game that can be played at different places through computers connected in a common network.

2. INTRODUCTION

The project "Marriage" is an implementation of popular game 'marriage'. Marriage is originated from different card games from around the world and has become a most fascinating cultural card game amongst us. Our project marriage is a multiplayer LAN game, through socket Server-Client Networking. This game is Game developed under OOP environment using platform independent Programming language JAVA.

2.1 OVERVIEW OF MARRIAGE GAME

Marriage is a 3 – Deck card game which can be played among at least 2 players to at most 6 players. For more numbers of players (i.e. up to 8), 4 decks of card are required. In the game, at first, each player is distributed 21 hand cards from well shuffled deck. Player can draw card from deck or from floor thrown by adjacent player on turn basis. The player who shows 3 sequences can see the *maal* and accordingly is eligible to go for game. Then the player should have set of sequences or trials consisting 3 to 5 cards so that just 1 card remain at last in hand cards (hand cards are cards that are distributed at first and are updated as game progresses) for game to finish. The total *maal* for each player is counted and points calculations is done for each player as per the specified definite rule. Then new round starts.

The different terminologies related to marriage game are briefly introduced as follows:

a) **Sequence:**
   A set of three cards having same suit and consecutive number.
b) **Tunnella:**
   A set of three cards with same card suit and number.
c) **Pure Tunnella:**
   A tunnella when registered before drawing any card is called pure tunnella and is assigned 5 points.
d) **Joker:**
   A card which can be assigned any card suit number.

e) Maal:

A card which is selected in course of game. And jokers are determined according to this card. A maal is assigned 3 points.

f) Kancha:

The card with same suit as the maal and the card number one less.

g) Jetha:

The card with same suit as the maal and the card number one more.

h) Alter:

The card with same card number as the maal and alternate card suit.

2.2 INTRODUCTION TO PC GAME MARRIAGE

The PC game "Marriage" is a fully functional implementation of real card game. It has all the necessary characteristics of the simulated game. These characteristics are implemented using cross platform programming language JAVA.

Different APIs and built in packages are utilised to develop the game "Marriage " which has all the features required in a GUI base system. It is played with the help of mouse. Different actions can be preformed to play the game using the mouse. GUI of the game includes card images, buttons, tabbed panes, etc.

Socket based communication between the server and clients are realised using the networking capabilities of JAVA. Up to four clients can be connected to a server through a common socket. A serializable network object can be passed between the server and the client to transfer the different data required during game progress.

The steps and rules of playing our marriage game can be summarized in the following points:

1. According to the number of players ,a deck is formed and shuffled.
2. A total of 21 cards are distributed to each player.

3. The players forms a circular queue and thereby determines the turn .

4. A player when his turn is set, can draw a card either from the deck or the floor.

5. After the card draw, card throw is done. The thrown card goes to the Floor that serves as a option card for next player. Once a card is thrown, turn changes.

6. In the very first round, the pure trials can be shown that counts to Tunnela.

7. Player needs to show 3 sequences to view the Joker card.The possible combinations of a sequence are as follows:

- Tunnela ,Tunnela,Tunnela.
- Sequence, Sequence.Sequence.
- Sequence, Tunnela, Sequence.
- Tunnela,Tunnela,Sequence.
- Sequence, Sequence,Tunnela.

Note: For viewing Joker, an impure sequence is not counted as a sequence ,but it does after viewing Joker.

8. Therefore once a player views the Joker, he gets only 12 cards left in his hand. Then, with the help of available Jokers and card draw, the player tries to match the next four sequences.

9. With next 4 sequences and one unmatched card left, a player can appeal for the game over. 11. After the game is declared over, points calculations is done for each player .
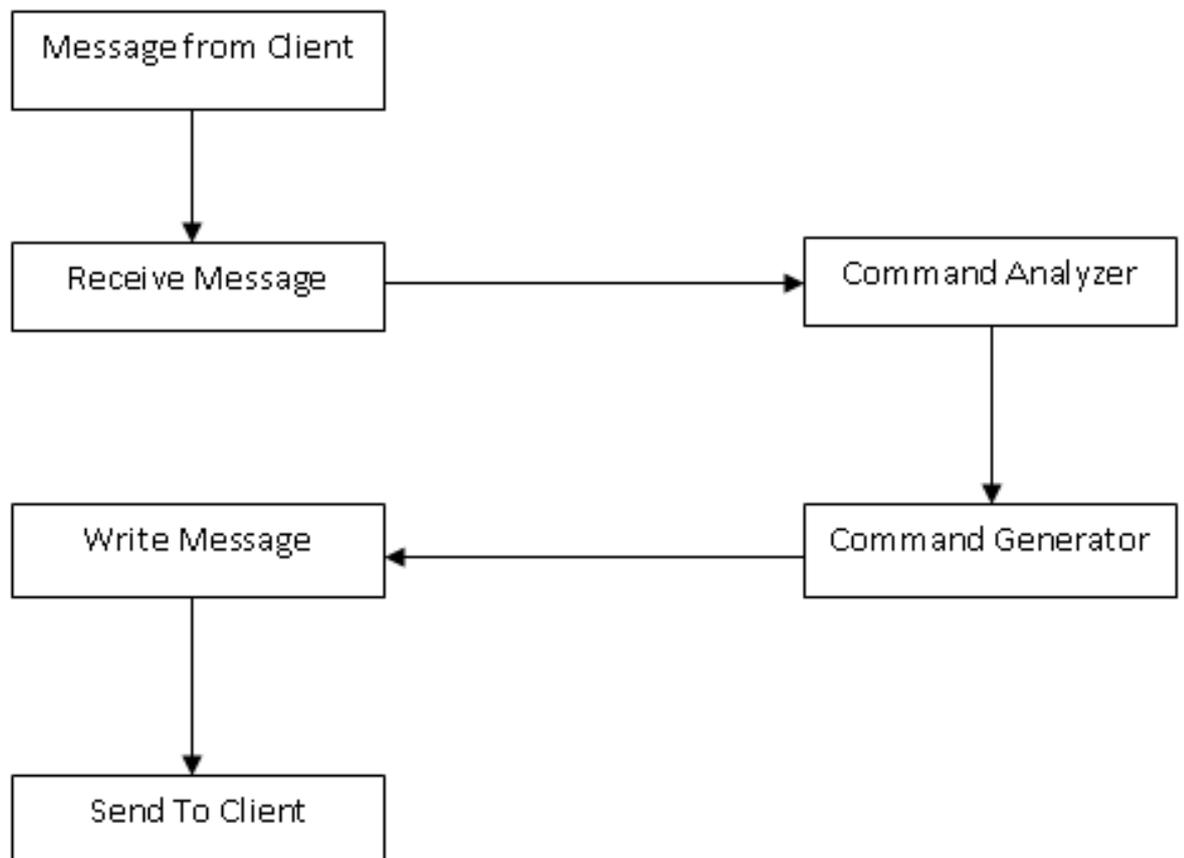
3. OBJECTIVES

The main objectives of the game are as follows:

- To develop culturally profound "Marriage " card game for PC.

- To develop a server-client based game using LAN.

- To provide a fine Graphical User Interface to our game.

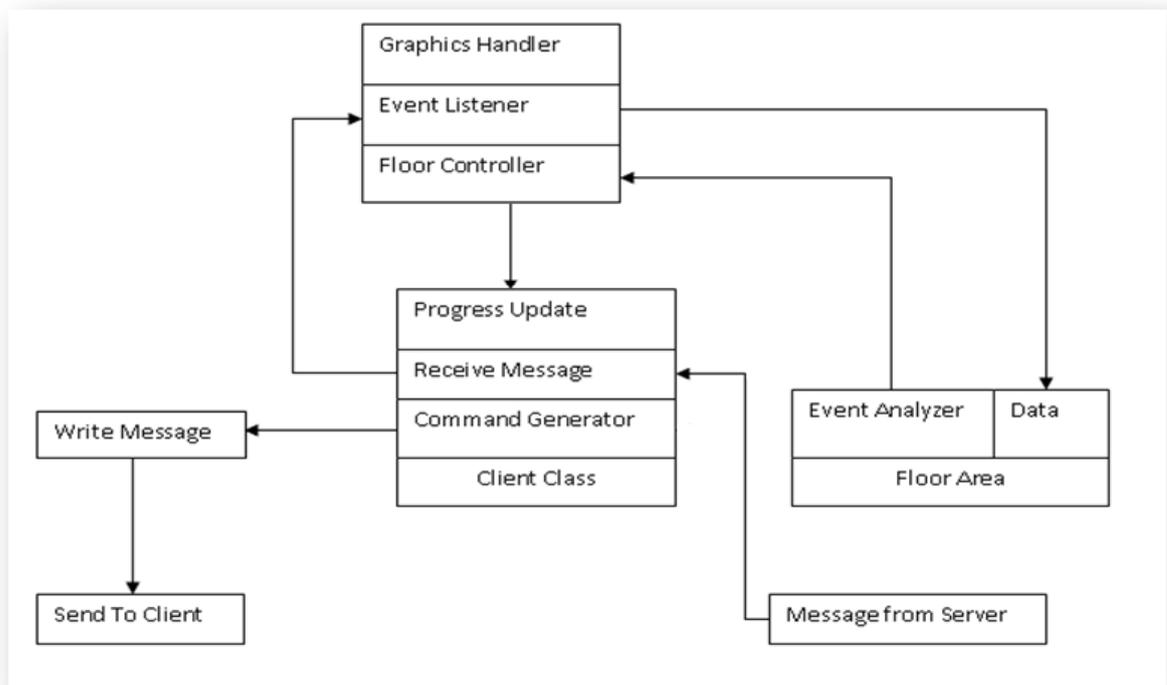- To provide complete entertainment through the game environment.
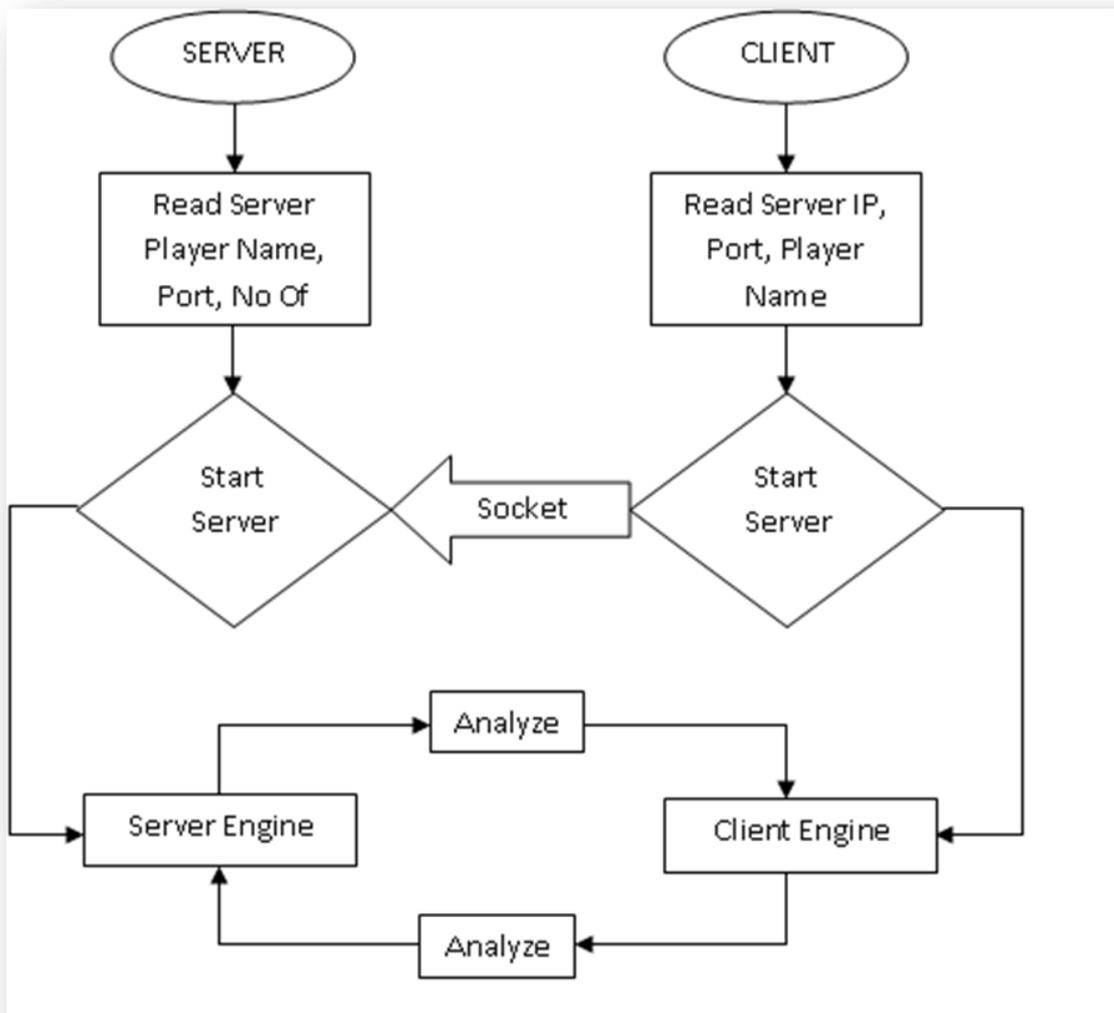
4. DESCRIPTION

4.1 FLOW DIAGRAMS

4.1.1 SERVER FLOW DIAGRAM

```
┌──────────────────────┐
│  Message from Client │
└──────────────────────┘
            │
            ▼
┌──────────────────────┐                    ┌──────────────────────┐
│   Receive Message    │──────────────────▶ │   Command Analyzer   │
└──────────────────────┘                    └──────────────────────┘
                                                        │
                                                        ▼
┌──────────────────────┐                    ┌──────────────────────┐
│    Write Message     │◀────────────────── │  Command Generator   │
└──────────────────────┘                    └──────────────────────┘
            │
            ▼
┌──────────────────────┐
│    Send To Client    │
└──────────────────────┘
```

4.1.2 CLIENT FLOW DIAGRAM

4.1.3 OVERALL SYSTEM FLOW DIAGRAM

5. METHODOLOGY

5.1 PROGRAMMING TOOLS

5.1.1 JAVA Introduction

The chronicle of Computer Language introduces JAVA as the evolvement of C++. The basic and major features of JAVA is summarized up as

- Simple, secure and portable.
- Platform independent and interpreted.
- Object oriented.
- Architecture neutral.
- Multithreaded
- Distributed Internet environment.
- Dynamic

The output of Java compiler is not an executable code, rather it's a byte code and designed to be executed by Java runtime system, JVM (Java Virtual Machine).The fact that java program is interpreted makes it Platform independent, secure and portable.

5.2 SERVER CLIENT CONNECTION

5.2.1 NETWORK CONCEPT

A computer network is a collection of computer and other devices that can transfer data and information to/from the computer and connected to each other with the help of physical media such as wire line channel (eg. Optical fibre, coaxial cable, twisted pair cable) or wireless channel (eg. IR transmission, microwave transmission etc).

5.2.2 IP ADDRESS AND PORT NUMBER

IP is the acronym of Internet Protocol. IP address is the address of a particular computer or device in a network. IP serves as a media to transport data between systems, whether within a LAN (Local Area Network) or WAN (Wide Area

Network) environment. Though there are other network protocols available to the windows network programmer, IP provides the most robust technique for sending the data between network devices. Any application or process in a network can be uniquely identified through its IP and port number.

IP address identify the computer and port number identifies the application that need to communicate with other applications . The port number can be between 0 and 65,535. The port numbers upto 1023 is reserved by the system for its services such as e-mail, www server etc. Therefore for user programs, we should use ports above 1023.

Socket

A **Network socket**, is a communication end-point unique to a machine communicating on an Internet Protocol-based network, such as the Internet. In socket based programming we do not directly access the network interface device to send and receive packets. Instead an intermediate file descriptor is created to handle the programming interface to the network. Such special file descriptor used to reference network connections are called sockets.

An Internet socket is composed of the following:
- Protocol (TCP, UDP, raw IP)
- Local IP address
- Local port
- Remote IP address
- Remote port

Of the two types of socket connection we have used stream socket for our purpose.

Stream sockets

In computer networking, **Stream socket** is a type of internet socket which provides a connection oriented, sequenced, and unduplicated flow of data without record boundaries, with well-defined mechanisms for creating and destroying connections and for detecting errors. This internet socket type transmits data on a reliable basis, in order, and with out-of-band capabilities. Traditionally, stream sockets are implemented on top of TCP so that applications can run across any networks using TCP/IP protocol.

Socket based Networking in java

The java.net package provides an object-oriented framework for the creation and use of Internet Protocol (IP). At the core of Java's networking support are the Stream Socket and Datagram Socket classes in java.net. These classes define channels for communication between processes over an IP network. A new socket is created by specifying a host, either by name or with an

InetAddress object, and a port number on the host. The Socket class is used for creating TCP connections over an IP network. A Socket is typically created using an InetAddress to specify the remote host, and a port number to which the host can connect. A process on the remote host must be listening on that port number for incoming connection requests. The remote host is known as Server and the incoming requests , that want connection are Clients.

Establishing a simple server in Java

Establishing a simple server in java requires five steps as summarized below :

1. A call to the ServerSocket constructor such as ServerSocket server = new ServerSocket(port,queuelength); registers an available port number and specifies a maximum number of clients that can wait to connect to the server(i.e. queuelength).
2. The server listens indefinitely for an attempt by a client to connect. Socket connection = server.accept();
   This statement returns an Socket object when a connection with a client is established.
3. The server sends information to the client via an OutputStream object receives information from the client via an InputStream object. To obtain the streams , the server invokes method getOutputStream and getInputStream on the Socket to get a refernce to output and input to the socket respectively.
   ObjectInputStream= newObjectInputStream(connection.getInputStream);
   ObjectOutputStream=newObjectOutputStream (connection.getOutputStream);

4. Next step is the processing phase ,in which the server and client communicates .
5. When the transmission is complete ,the server closes connection by invoking the close method.

Establishing a simple client in Java :

Establishing a simple client in Java requires four steps :
   1. Create a Socket to connect to the server.
      Socket connection = new Socket(serverAddress, serverPort);
   2. The client uses methods getInputStream and getOutputStream to obtain references to the Socket's InputStream and OutputStream.
   3. The client enters the phase of communication with server.
   4. The client determines End Of Streams sent by the server and closes

5.3 MULTITHREADING

A program or application can have more than one part of program that can run concurrently. The running of more than one part of the program concurrently is called multithreading. Each part of such a program is called thread, and each such thread defines a separate path of execution. A thread is a sequence of control within a process. A single threaded process follows a single sequence of control while executing. A multithreaded process has several sequences of control, thus is capable of several independent actions at the same time. When multiple processors are available, those concurrent but independent actions can take place in parallel .All programs have at least one thread. In an application, thread starts at the main function. Thus with the help of multithreading, many concurrent operation and I/O request can take place within a single process.

Multithreading is very important in the server to listen and response for each client in the network. The threading is important in the client process to receive response from the server.

6. OUTPUT AND SCREEN-SHOTS

PLAYER 0   POINTS 14

PLAYER 1   POINTS 5

ROUND : 4
ROUND : 4
ROUND : 4
PLAYER + 1 drew card from Deck
PLAYER + 0 has seen Joker
PLAYER + 0 has seen Joker
PLAYER + 0 has seen Joker
PLAYER + 0 has seen Joker
PLAYER + 0 has seen Joker
PLAYER + 0 Registered Sequence
PLAYER + 0 drew card from Deck
ROUND : 3
ROUND : 3

THROW   JOKER   ARRANGE   DROP

Send

7. SCOPE AND APPLICATION

- The game can be played in any system having JRE.

- The game independent of the operating system so can be easily run on systems having windows, linux or any other OS.

- Mouse and keyboard is needed equally for playing this game.

- A functional LAN connection is mandatory and sufficient so any other device is not required to play this game.

- The game can be played between two to five players.

8. LIMITATIONS

- The server client connection is not dynamic so all the clients are expected to be connected to the server till the completion of the game.

- Due to the non universality of marriage rules some users may find the rules set in our game new.

- To make the game more interesting user is not assisted or suggested at any stage which card to throw or which card to draw.

- Disruption of network connection will promptly end the game and will be required to be restarted.

FUTURE ENHANCEMENTS

- The socket connection can be made dynamic so that removal of any client at the middle of the game can handled properly.

- The LAN connection can be made more reliable loss of transferred data can be detected and resending methods can be invoked.

- An option to assign local game rules can be added to make the game customizable.

- Suggestions and helping functionalities can be integrated so that a new user can play the game easily.

9. CONCLUSION

Thus a cross platform PC game "Marriage" is developed which can be played in LAN connected devices. An interactive user interface was given to the game for easy usage.

And hence the popular card game "Marriage" is made available in PCs which can provide complete Marriage playing experience.

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