Group Study Corner

Report – 1

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1. Introduction

1.1 Purpose

The purpose of this document is to give a platform for an online group studying portal which would cater the needs of students on an intranet. To develop an instant messaging solution to enable users to seamlessly get the solution for their problems by communicating with their group. The project should be very easy to use enabling even a novice person to use it.

1.2 Scope

Students would like to have a communication software wherein they can communicate instantly within their group. This system will be designed to maximize the student's way of learning and sharing knowledge. The software uses an internal network setup which makes it very secure from outside attacks. More specifically, this system is designed to allow a student to manage and communicate with a group of students and teachers for more effective learning. The system also contains a relational database containing some important information and notes which students can access at any point of time. A user can only connect with the server with the only IP address.

1.3 Definitions, Acronyms, and Abbreviations

- SRS – Software Requirement Specification
- IEEE – Institute of Electrical and Electronics Engineers
- VoIP – Voice over IP
- JDK – Java Development Kit
- JRE – Java Runtime Environment
- RMI – Remote Method Invocation
- OTA – Over The Air

1.4 References

IEEE. *IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications.* IEEE Computer Society, 1998.

1.5 Overview

The Group Study Corner which we have implemented contain following things: -

1. Login/ Sign Up
2. Join chat room
3. File upload/ download
4. Discussion forum
5. Notes sharing

2. General Description

2.1 Product Perspective

The orthodox intranet chatting application consist of basic chat controls like text messaging, emoji etc. This project contains additional features like file upload/ download, notes sharing, discussion forums etc. which makes it more useful and efficient in real world scenarios.

2.2 Product Functions

This project performs various functions which includes peer to peer discussion, solution center, sharing important notes and information, a sample quora etc.

2.3 User Characteristics

Students are the basic users of this application. The working of this application depends up on the strategy adopted which includes time devoted to the application, way of operation etc. by the user. The users may be extended to the teachers and other professional personalities.

2.4 General Constraints

On the basis of future requirements of user, the project may embed some additional features like VoIP/ Video Conferencing., and other tools which include highlighter for shared notes, calculator, quick memos.

2.5 Assumptions and Dependencies

The basic assumption of this application is that it pre acknowledge that the user has some basic functional tools like operating system, Java runtime environment etc. without which the execution of this application is not possible.

3. Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interfaces

The application will include the client's module which will interact directly with the novice users and serve their basic requirements. Clients module will include basic tools and graphics which directly interacts with the server module to process the inputs. The client module pre require the server module to be turned on so that it can work efficiently.

3.1.2 Hardware Interfaces

Some essential and optional hardware requirements of this project are as follows,
Server Machine, Minimum P3, 256 MB RAM, 10 GB Hard Disk
Client Machine, Minimum P3, 256 MB RAM, 10 GB Hard Disk
Serial/Optical Mouse
Keyboard 104 Enhanced Standard

3.1.3 Software Interfaces

Some essential and optional software requirements of this project are as follows,
OS: Windows 7 or up
Technology: Core Java, Advance Java (RMI, Socket Programming etc.)
Software: JDK v1.6 or up, Tomcat
Web Server: Apache Tomcat 8.0 or up (optional)

3.1.4 Communications Interfaces

To server the complete purpose of the project a sever module is deployed on any one of the PC on the network. Through which all other client PCs are connected. All the functional modules of the application are embedded in this server module.

3.2 Functional Requirements

3.2.1 Functional Requirement of Text Messaging

3.2.1.1 Introduction
Text messaging refers to sending and receiving text to other clients on the network. This is done with the help of server module which acts as an intermediate.
3.2.1.2 Inputs
The inputs of this module is simple text, which can be done by Keyboard 104 Enhanced Standard or any virtual keyboard software.
3.2.1.3 Processing
The text user/ client inputs are end to the server machine further it is broadcasted to every other client on the network.
3.2.1.4 Outputs
After processing stage is completed the message is sent/broadcasted to every other client on the network.
3.2.1.5 Error Handling
Generally, this kind of functionality does not face any type of error, but a common technical fault may occur when the server directory is missing or when client tries to access an inactive server.

3.2.2 Functional Requirement of Note Sharing

3.2.2.1 Introduction
Note sharing refers to uploading important information to the server machine. This is done with the help of server module which acts as an intermediate. Further other clients can access this information for the sever.
3.2.2.2 Inputs
The inputs of this module is simple text, which can be done by Keyboard 104 Enhanced Standard or any virtual keyboard software.
3.2.2.3 Processing
The text user/ client inputs are end to the server machine further they are redirected to every other client on the network when requested.
3.2.2.4 Outputs
After processing stage is completed the text is sent to every other client on the network which generates the request.
3.2.2.5 Error Handling
Generally, this kind of functionality does not face any type of error.

3.2.3 Functional Requirement of Discussion Forum

3.2.3.1 Introduction
Note sharing refers to posting and answering questions that may have been posted by other users. This is done with the help of server module which acts as an intermediate. Further other clients can access this discussion forum to see the solution for their problems.
3.2.3.2 Inputs
The inputs of this module is simple text, which can be done by Keyboard 104 Enhanced Standard or any virtual keyboard software.
3.2.3.3 Processing
The text user/ client inputs are end to the server machine further they are stored in the server directory.
3.2.3.4 Outputs
Every client on the network can access this forum to see their problem and can answer to other problems.
3.2.3.5 Error Handling
Generally, this kind of functionality does not face any type of error, but a common technical fault may occur when the server directory is missing or when client tries to access an inactive server.

3.3 Non-Functional Requirements

3.3.1 Performance

The application is completely build up on the swing architecture of java which is light in weight as compare to the orthodox java frame components. Which makes it performance efficient, enhanced response times, lower transaction time, and higher throughput.

3.3.2 Reliability

Since the software is built up on the java frames using socket programming as prior technology. Hence the rate of failure increases generally due to delay/fault in connection to server. These errors can be corrected by use of adequate and efficient socket programming algorithms.

3.3.3 Security

The software is totally secured by id and password. Hence no outsider can anonymously access or chat with the one which are online.

3.3.4 Maintainability

The application will be enacted with OTA feature in its future version which will enable the users to receive updates and mod fixes in real time without deploying man power to the user site.

3.5.5 Portability

The two modules clients and server are fully portable. Both of these can work on any intranet without the overhead of specific network requirements.

3.4 Use Cases

3.5 Design Constraints

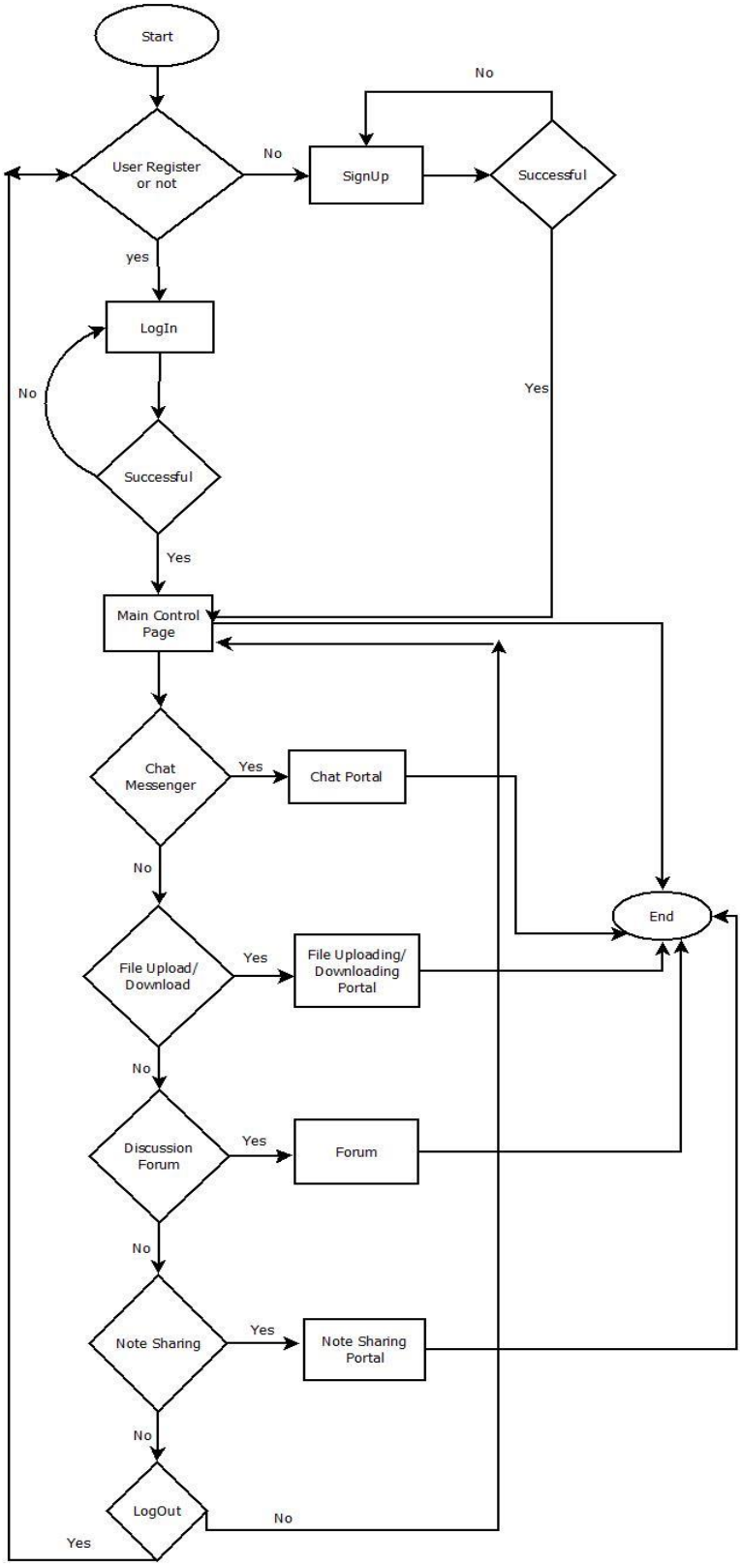
There are no as such design constraints imposed by the authority. But certainly this application will be fully fledged with the best possible graphical units. Which would make the novice users experience more interactive.

3.6 Logical Database Requirements

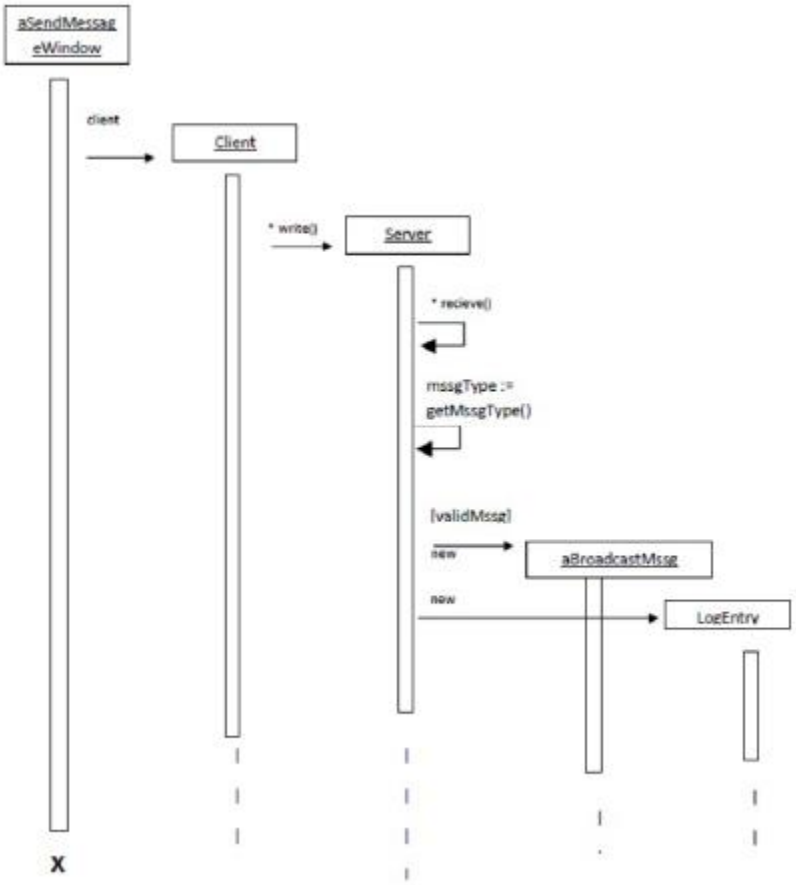
The user data is stored in the encrypted data files, instead of typical non portable databases. This would enhance its portability in real time.

4. Analysis Models

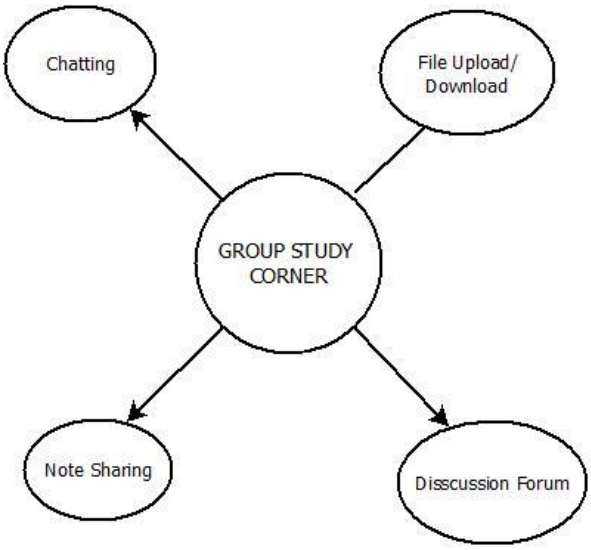
4.1 Activity Diagram



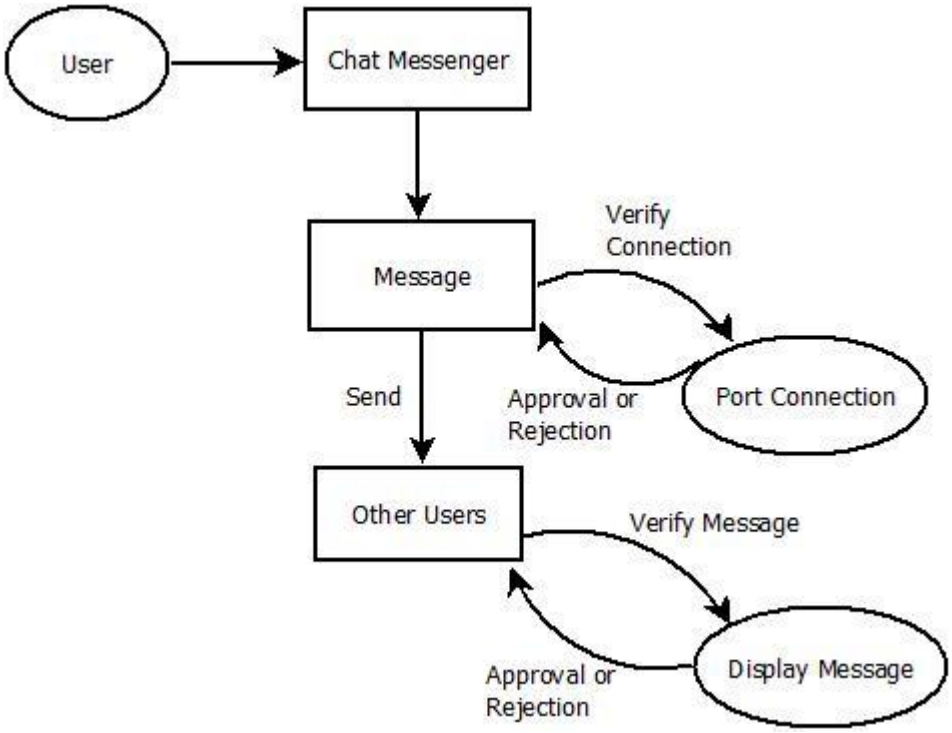
4.2 Sequence Diagram



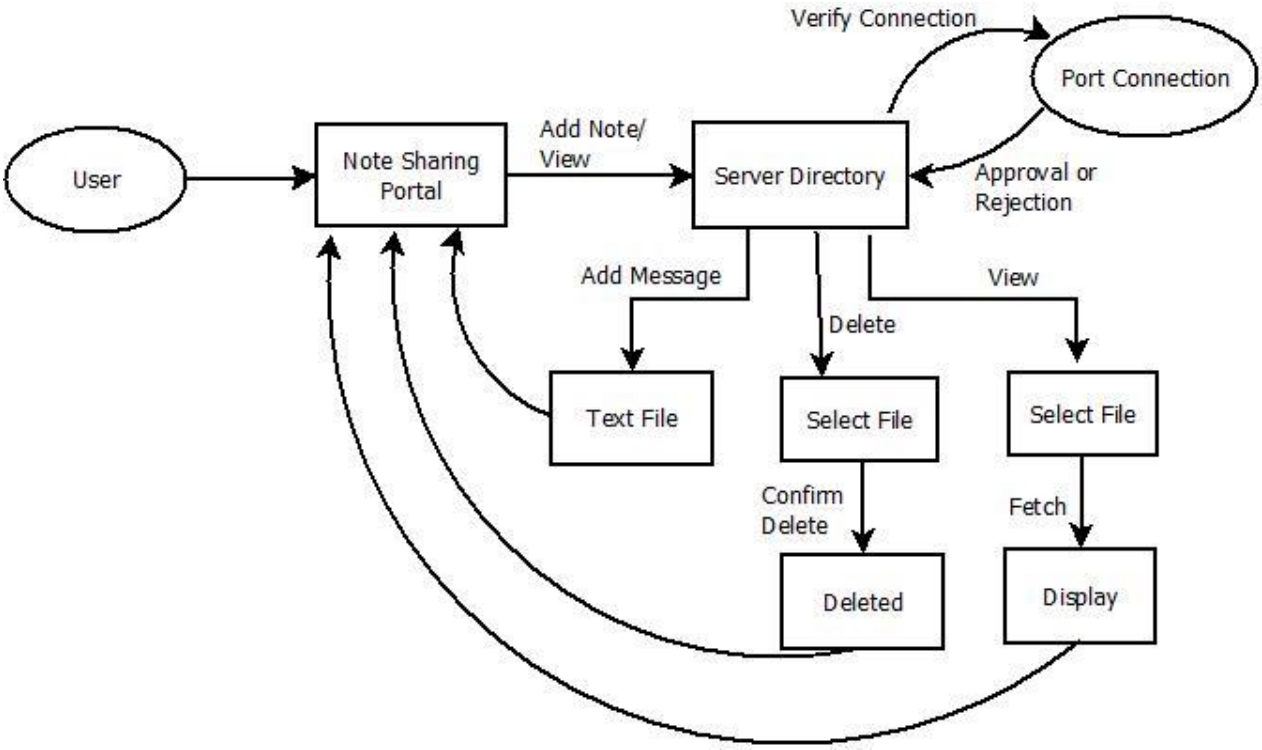
4.3 Data Flow Diagrams (DFD)



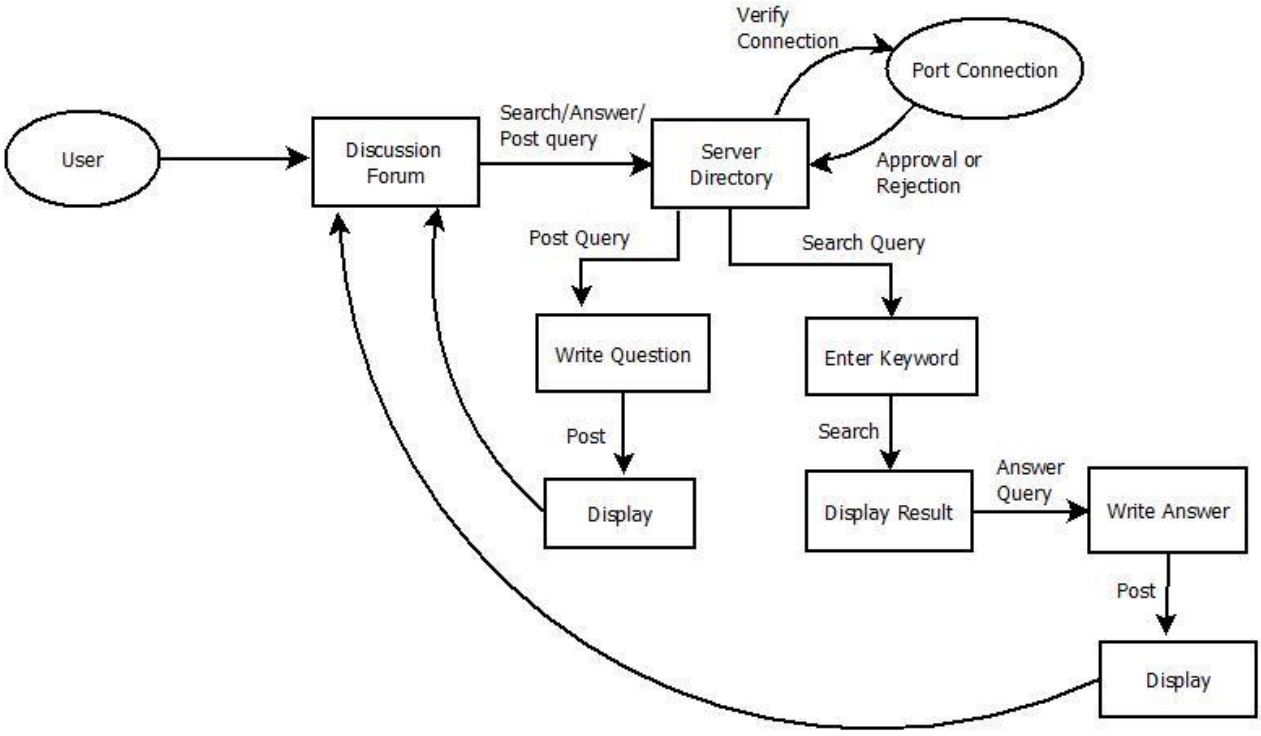
4.3.1 Chat and File Transfer



4.3.2 Notes Sharing



4.3.3 Discussion Forum



5. Change Management Process

To incorporate ad hoc changes in the requirements and to see if proper changes to the system meet the requirements, change management process will be done iteratively with all the activities, the following strategy will be followed. The team will assess the feasibility of the proposed change considering the time constraints and structural constraints of the implemented modules and develop an implementation strategy and submit it to the mentor for approval. A change plan will be created for the implementation of the change and following sequences of the changes is determined. The team will then continue implementing the new requirements. The changes will then be verified for the last time, and a new system release is made.