CHATTING APPLICATION

Submitted by:

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In

Computer Science Engineering

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING &INFORMATION TECHNOLOGY

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DECLARATION

I/We hereby declare that this submission is my/our own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgment has been made in the text.

Place: NOIDA   Signature:

Date: Name: ARPIT SINGHAL

                                                                 Enrolment No: 9913103432

(v)

CERTIFICATE

This is to certify that the work titled "…………………………(Bold)……………" submitted by "……….(Name in bold)………….." in partial fulfilment for the award of degree of ………….(Name of programme e.g. B. Tech, M. Tech etc.)…….. of Jaypee Institute of Information Technology University, Noida has been carried out under my supervision. This work has not been submitted partially or wholly to any other University or Institute for the award of this or any other degree or diploma.

Signature of Supervisor   …………………….

Name of Supervisor :   Dr Arti Jain

Date   ……………………..

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ARPIT SINGHAL(9913103432)

<u>SUMMARY</u>

The chatting application generally provides us a platform to communicate from one system to another using internet but the chatting application developed here gives a way to communicate through an offline network from one system to as many as 20 other systems initially and there will be no need of an internet or wifi connection since it will also work on an offline network to which the systems are connected. The server of this system when started will allow many client systems to be connected at same time and communicate with each other without any difficulties related to internet connection or high speed data requirements.

This chatting application will be highly efficient when used in a specific institution or organisation since it will highly reduce the cost for the organisation invested in establishing an internet connection and other basic requirements for such applications and also since it will be a private connection for every individual institution so there will be no security threats of information leak or hacking of the confidential information shared on the application.

This chatting platform will provide the users an easy and time savvy way to communicate with each other and the users will not have to wait for a high speed connection and other connection problems.

Signature of Student   Signature of Supervisor

Name : ARPIT SINGHAL   Name : Dr Aarti Jain

Date   Date

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List of Acronyms

1. IP – Internet Protocol

2. QoS – Quality Of Service

3. RTP – Real Time Protocol

4. DES – Data Encryption Service

1) <u>Introduction</u>

1.1 General Introduction

Communicating via means of audio and video is an unique way of chatting and sharing ideas, thoughts and perceptions via different mediums like texts, audio and video methods. The technology has been available for years but the acceptance it was quite recent. This software can have further potentials, such as file transfer and video conferencing options that can be worked upon later. The merging of data networks and voice networks makes this service available at low costs to all the users and the industries which are dependent on low budgets and high quality services can have a huge benefit from such applications thereby improving the technology at large.

Apart from these cost savings, the integration of the data and voice networks opens up a huge area of improvisation for the technology enthusiasts and the improvements that are brought alongside such application are infinite. A very important element that is missing from this whole system is mobility as the users can carry such application anywhere in their respective gadgets and all they need is to connect their devices on same LAN and they can easily communicate over the network anywhere regardless of the internet facilities available at such places. The transition of VoIP to the wireless space is a very futuristic move which is already being pursued to extend it to larger region of signals of same network to an extent where long distance communication on wireless LAN would be possible.

The client's acceptance of the wireless LAN facilities have made this efficient technology capable of growing in the it industry infrastructure and since issues like security have been already addressed and resolved now the companies are joining access points into wireless technology implementing companies.

1.2 Problem Statement

There is great need of an application for implementing a course of action to provide an easier, cost effective and a more secure and reliable way to establish a communication through a network amongst users. Hence, many security problems have arrived in the technology of internet communication like hacking, spam, fishing and other frauds.

Technology has improved a lot and hence there is a need for an optimal way of making voice or video communications. The users need a service of communication providing a high quality of video and audio feed to and at the same time they need this service at low costs of installation and maintenance.

1.3 Empirical Study

S No.	Title	Publication	Strength	Weakness	Result
1	Voice and Video over Wireless LAN	International Journal Of Scientific and Research Publications	The algorithms recommended like SIP protocol, RTP protocol are very efficient.	Some parameters are not taken in account	The algorithms recommended in this research paper are very efficient and they work over wireless LAN network very smoothly.
2	Development of LAN chat messenger using RUP (Rational Unified Protocol)	World Conferences Of Integration Of Knowledge	Analyzing the designing of the wireless chat messenger which uses RUP for the planning and designing of the project.	Performance analysis is not considered	The methods and techniques to plan and design the way to the phase of implementation were very helpful.
3	Voice Call Communication Over Wi-Fi using LAN	International Journal Of Engineering Research and Technology	The audio calling over the WI-FI, its implementation including the connection establishment and flow of data is all explained in this research paper.	The research paper only tells us about the voice call implementation and the video calling topic was not touched at all.	The voice calling module was successfully implemented in the application with the help of this research paper.

Table 1: Empirical Study

1.4 Approach to Problem in terms of technology

The wireless LAN provides the cost effective method to the users to use the service of chat messenger and since there is no internet connection required by the users therefore a high quality video and audio feed is guaranteed for the users to experience a real time environment while using this chat messenger. There are now a few security solutions available that are recommended to protect the network infrastructure and user data as well as mitigate the risk of malicious service disruptions and these techniques are quite effective and efficient. There are many techniques such as using firewalls and Virtual Private Network(VPN) and encryption implemented for less risk of hacking and misusing of the data. The SIP module is recommended to convert speech to bytes and then they are transmitted to the receiver client which is a very efficient method with a high performance rate.

1.5 Support for novelty of problem

The chatting application currently available for the users are highly dependent on a high speed internet connection for the transmission of audio and video feed which makes the communication between two clients possible. Consider Skype for an instance, it needs an internet connection which must be available at both of the end users and then only the users can chat with each other with less delay and even for small distance audio or video calling the internet connection is required. This unique problem can now be solved by using a wireless LAN network for sending texts or audio or video calling by the users. No internet connection is required for chatting in the chat application proposed in this report and hence there is negligible lag in audio or video transmissions and this application can easily be installed in small companies or institutions which cannot afford installation of such high speed internet connections in their building.

2.1 Summary of Papers Studied

Title of Paper 1: Voice and Video over wireless LAN

Authors: Akshay Iyer (Vidyalankar Institute Of Technology, India)

Akshay Badgujar (Vidyalankar Institute Of Technology, India)

Mahesh Kumar Eaga (Vidyalankar Institute Of Technology, India)

Rohit Iyer (Vidyalankar Institute Of Technology, India)

Summary:

There are many technologies that are available for transmitting voice over long distance, however they are quiet expensive and for using these services we need to have access to net connection. It could be a costly affair for most of the companies since only big industries can afford such high costs of internet connection. The installation of wired LAN and maintaining it is very tedious and expensive and comparatively installation of WLAN is simple, quicker and cost effective which accounts for a big difference in perspective of most business which run on low costs. The GUI of the entire application is made using swing in java. The registering on server, the conferencing and the progressive states. The flow of packets of data between the server and receiver occurs using RTP protocol and either client can disconnect from the network.

Web Link : www.ijsrp.org

Title of Paper 2: Chat messaging Application using RUP (Rational Unified Protocol)

Authors: Ibrahim Muhammed Abba (Linton University College, Malaysia)

Mia Torres-Dela Cruz (Linton University College, Malaysia)

Umapathy Eaganathan (Vels University, India)

Janet Gabriel (Linton University College, Malaysia)

Year of Publication: November 2013

Summary:

RUP is the process of building a working system by using object oriented concepts to describe work flows and phases of an information system. The LAN chat messenger provides a low cost communication between the sender and the receiver when rational unified protocol is used for communications.

The important changes includes the separation of workflows, and the advantage of employing multimedia in a user's environment is portion of the process. The target of this research paper is to provide a method for making high quality conferencing available and at the same time meet the needs of its clients inside an estimated design and budget.

Web Link : www.WorldConferences.net

Title of Paper 3: Voice Call Communication Over Wi-Fi using LAN

Authors: Omkar V Manjare

Sagar S Bamnikar

Prathamesh N Deshmane

Om U. Dongre

Year of Publication: July 2013

Summary:

Video conferencing may be one solution to saving both time and money in this era when real time audio/video communication has become a necessity for everyone to communicate over long distances. Video conferencing is an effective and optimal way of communicating to clients and customers. There are many applications available to users that can install video conferencing and will allow you to share anything that is on your computer monitor and meet people face to face and share ideas, thoughts etc in real time over the network via audio or video. This research paper proposes a detailed study of audio and video transmission using wireless LAN or Wi-Fi.

This paper provides a solution for the above mentioned limitations. Existing Wi-Fi facilities are utilized for enhancing the technology in communication between client for long distance calling and chatting. New client is added in the system by entering the ip address of the device used bty the client in the databse by the database manager and WLAN facility is used for communication by the clients to establish long distance call over wireless connection.

Web Link : www.ijert.org

2.2 Integrated Summary of the Literature Study

The chatting application uses TCP/IP sockets to establish a communication between the two clients. We start with a simple graphical chat client. It takes the client's ip address as an input to connect to the other client whose ip address is then connected via same network. It makes a socket connection and then opens a window with a small input region for the ip address of the client and a large output region to start chatting via text, audio or video as the preferred medium of communication.

After the user types text into the input region and hits the send button, the text is transmitted to the client to read the respective text. The receiver client displays everything received from the sender client in the output region.

The proposed protocols and algorithms like using RTP protocol for the flow of data and DES algorithm for the encryption of data that is being transmitted can be a advancement for many internet chat applications which work on other algorithms which are less efficient and will cost the organization lesser resources to implement; it provides users to make voice call and send files; it supports peer-to-peer and server-based modes; user interface is common and simple and at the same time attractive to make the client have fun while using the system. There are other advantages of the system like a lag free chatting session between the clients for experiencing a real time environment while using the system and have a hassle free and uninterrupted session.

There are technologies that are presently available in market for sending voice and video feed over long distance while providing their clients with a high quality service too however they are quiet expensive and they need a very high speed data connection even when the transmission of data is required at small distances . There are systems available for the general users like Skype which are useful for low cost communication like Skype for example allows free calls for certain number of clients to Skype but if the user wants to have more than certain specified number of contacts on the same identity then the user needs to pay tariff to Skype for accessing the respective service.

In case the user doesn't want to pay the tariff then the user need to open a new account with new identity which really is not much of an option for a user who wants this facility on regular basis. For using these services we need to have access to net connection and it could be a costly affair for small industries and other users which cannot afford such high costs of using these services.

The installation of wired LAN and maintaining this service is a very expensive and inefficient method to provide such services to a large number of users. The SIP module is recommended to convert speech to bytes and then they are transmitted to the receiver client which is a very efficient method with a high performance rate.

3. <u>Analysis, Design and Modelling</u>

3.1 Overall Description

The project on "Chatting Application" is independent and totally self-contained and contains no connections with any larger system or any external interface.

The client/server network is one of the most preferred network which is installed and currently in working state in many large industries. The client/server network gives a much needed security to the industry which is in hold of the server since they can install the server at the safest place and manage it accordingly and since there will be only one server dedicated for a number of clients so at least for those clients it is a relaxation as they don't need to worry about their privacy and security of the data they share to other clients.

There are a few limitations of this network too which can be a bit troublesome if such situation occurs and hence there are some consequences accordingly to such situations. Most of its resources on the network are not available and the whole system goes down and stays in that state unless server is turned back ON. Although there is another way which is to have more than one server and therefore each server can be allotted to play a different role for the clients.

The client/server network uses sockets to send data though the network. Consider the audio chatting session for an instance, every audio signal is converted to bytes first which is then sent through the socket at the sender endpoint and then those bytes are received at the receiver endpoint which is then converted back to audio signal.

The video chatting session also sends the audio through the socket connection established between the sender and the receiver and the video feed is sent frame by frame to the receiver which also increases the throughput of the process and the high quality media is guaranteed to be provided in such systems since there is negligible lag in video and audio transmission and it provides such high quality continuously throughout the session. The application requirements are simple and easy to install and maintain for availing its services thereby making it easy for a large number of users to use this application on minimal necessities and at the same time experience the technology.

The application gives the user multiple options of communicating over the network and these options are very easy to use and comprehend for the general public which is not accustomed to use such services. The interface describes it all is the approach used in this application to deal with such issues since the product is meant to be used by everyone all over the world and with that aim in mind a user interface which is attractive, easy to use and accessible to all has been developed. The industries which require such facilities to be installed in their respective buildings to give their employees a medium to communicate amongst each other and thereby reducing the wastage of time and improving the output can benefit from such applications especially the small scale industries which are low budget ventures running on low operational costs.

Hardware requirements

- System Processor : intel-core i3 2.4 GHz
- Hard Disk : 300 GB
- RAM : 2 GB (Minimum)
- Webcam
- Microphone
- Speaker

Software requirements

In software requirement every software, application and framework that are necessary to be installed on the system are essential to be described. The software requirements for this application are as follows---

- Operating System : Windows 7
- Language : Java
- JDK and JRE
- Framework : Netbeans
- OpenCV (version 2.4.13)

3.2 Functional Requirement

- The IP address of the client must be correctly entered in the input section since the devices will not be connected otherwise and the communication will not be established for the chat session.

- The client function should be able to connect with the address of the other client which is possible only when both the devices are connected on the same wireless local area network.

- The socket function must be implemented correctly for transfer of data between networks to be performed since all of the transmission that occurs between the sender and receiver is all possible because of these socket connections between the two devices.

3.3 Non Functional Requirements

- Efficiency: The system must be efficient in respect to the services it provides and this chat application is very efficient in terms of providing the video chatting and audio chatting services in high quality and negligible lag of real time transmission of video and audio.

- Reliability: The application is very reliable providing very secure and safe service to the user with minimum failure probability.

- Availability: The system is 24x7 available and operational with high quality streaming of audio and video guaranteed with no degradation in performance at all.

- Portability: The system is portable and usable anywhere without any requirement of internet connection and any other external devices. The application can be easily installed and used in any device with minimal requirements.

- Usability: The application is very efficient to use and the user interface is very easy to learn and use by the user belonging to the non technical field also.

- Performance: The response time of the application is very short compared to average performance rates, the text, audio or video chat session is ready instantly when the clients are connected and the audio and video feeds are also sent and received immediately with minimal delay hence it gives a high throughput.

3.4 Logical Database Requirements

- The logical database required for this application includes the log files which will store the chats which has happened between the clients in the past.

- The names of the clients which have connected with the server once or more than once and this name of the clients is stored as a list represented by "buddy list" is also stored in the database.

- The session summary of the clients from the starting of the session to the ending of the session is all shown on the server end.

- The ip addresses of the clients are also shown on server end in a secured place.
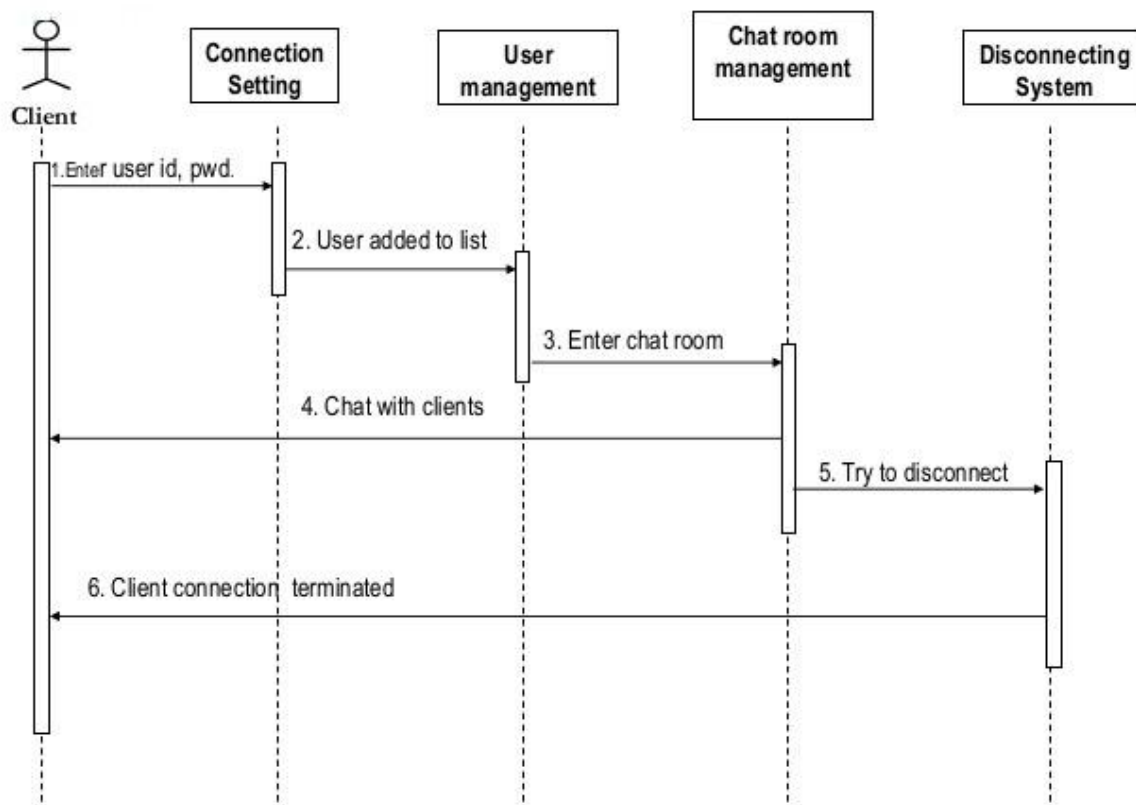
3.5 Design Diagrams

3.5.1 Sequence diagram
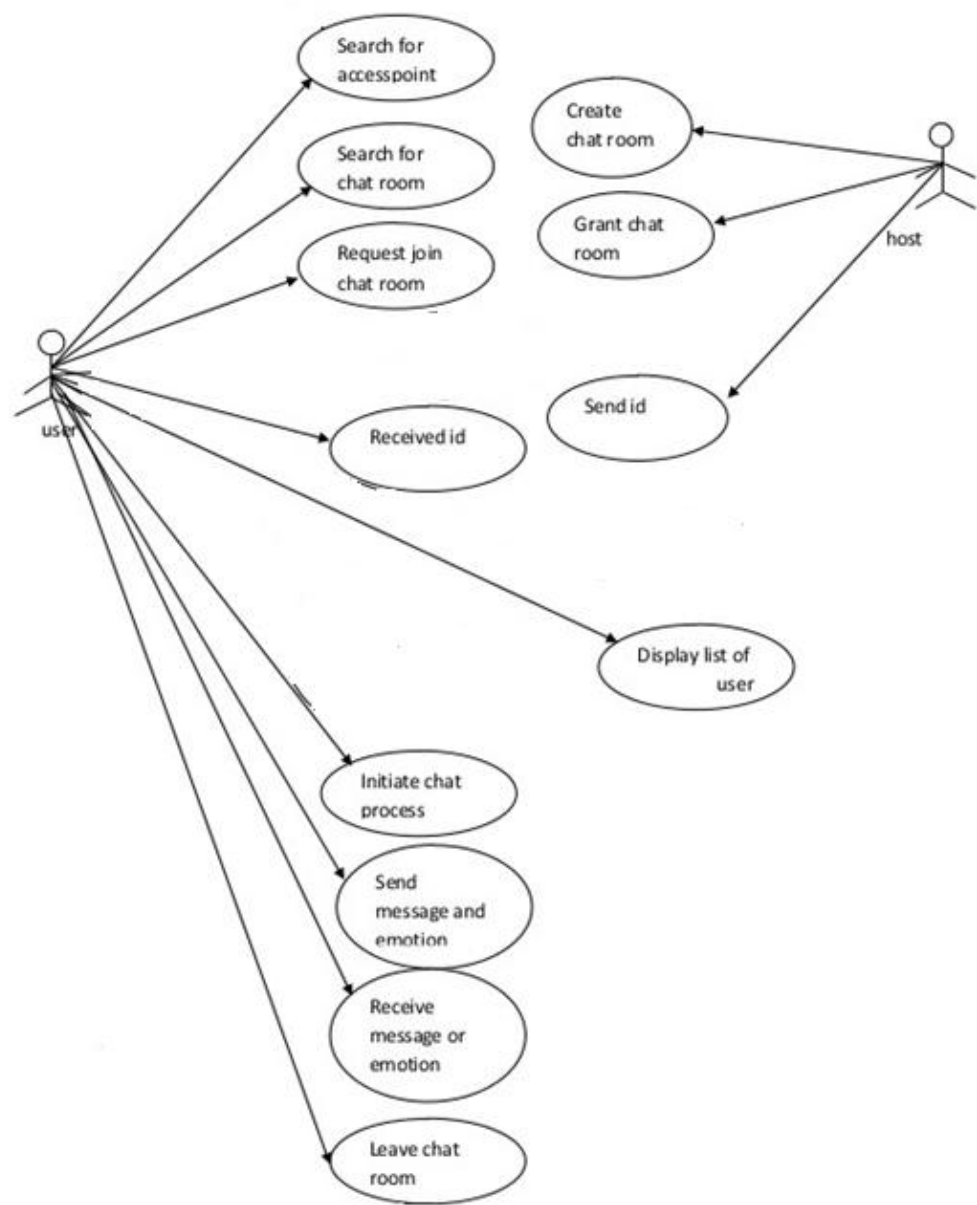

Fig 1

3.5.2 Use Case Diagrams
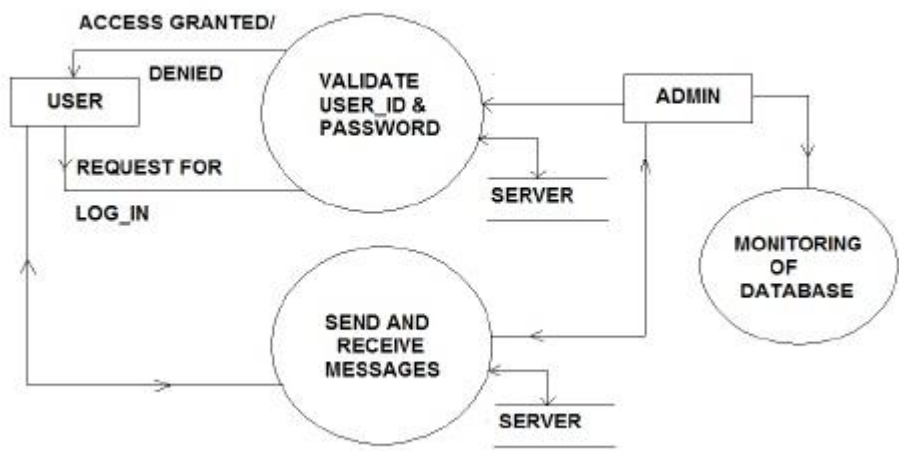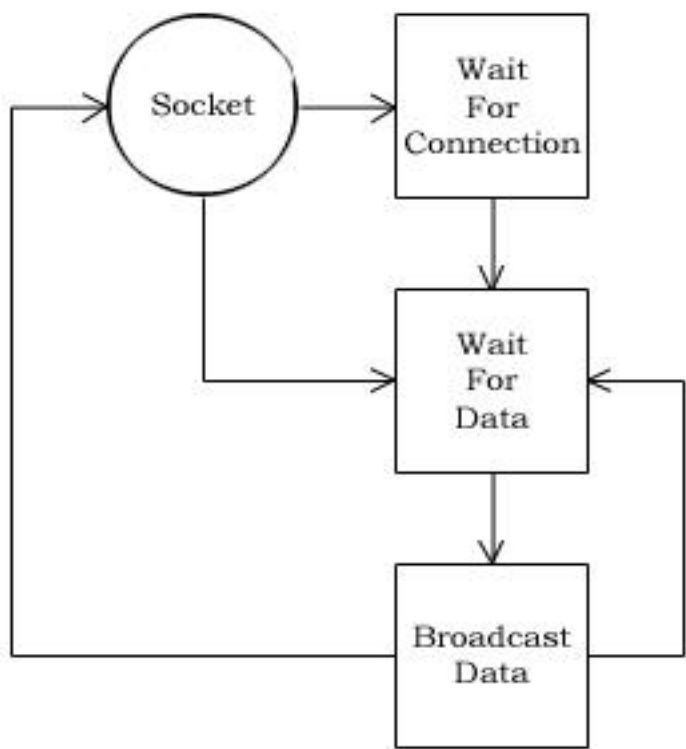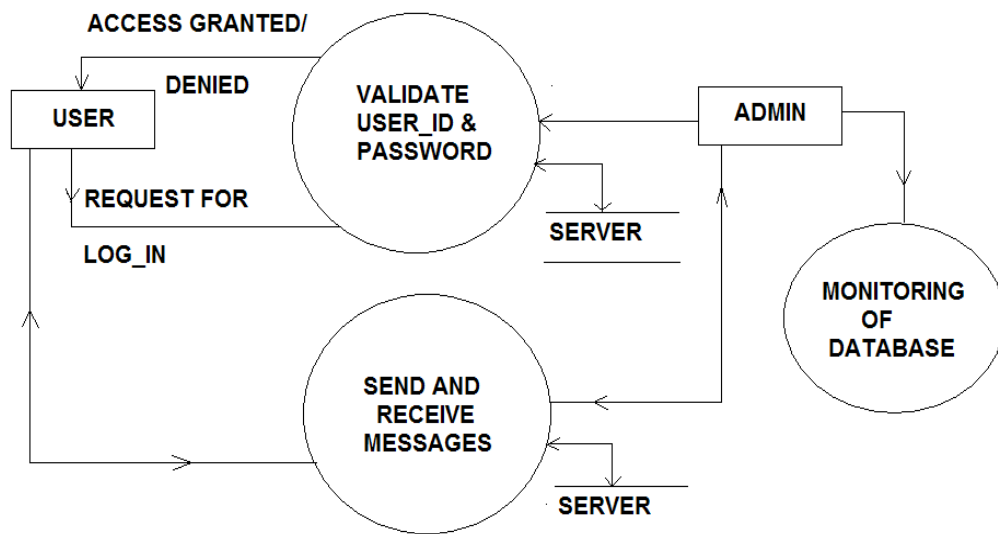

Fig 2

3.5.3 Data Flow Diagram

Fig 3(a)

Fig 3(b)
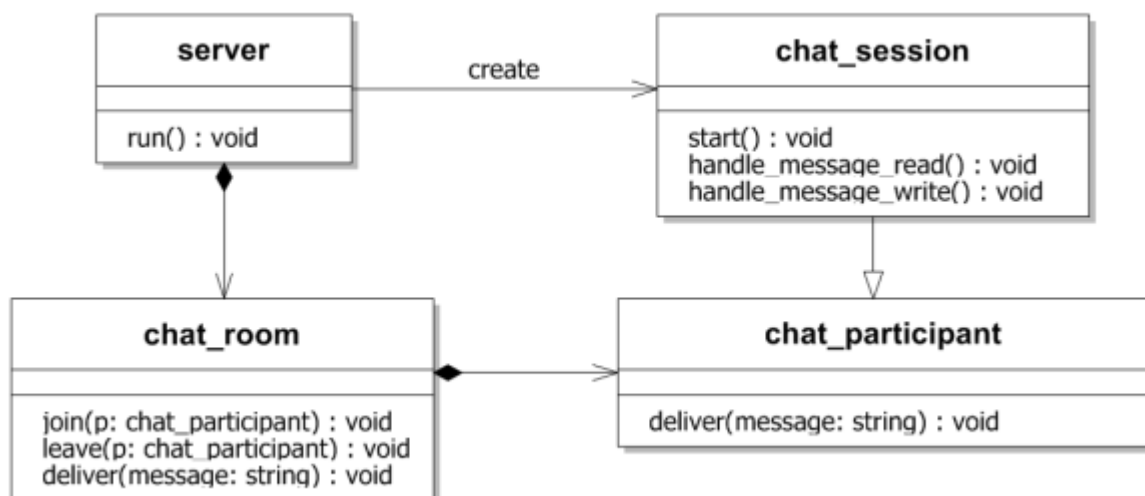
Fig 3(c)

3.5.4 Class Diagram

Fig 4

3.5.5 E-R Diagram
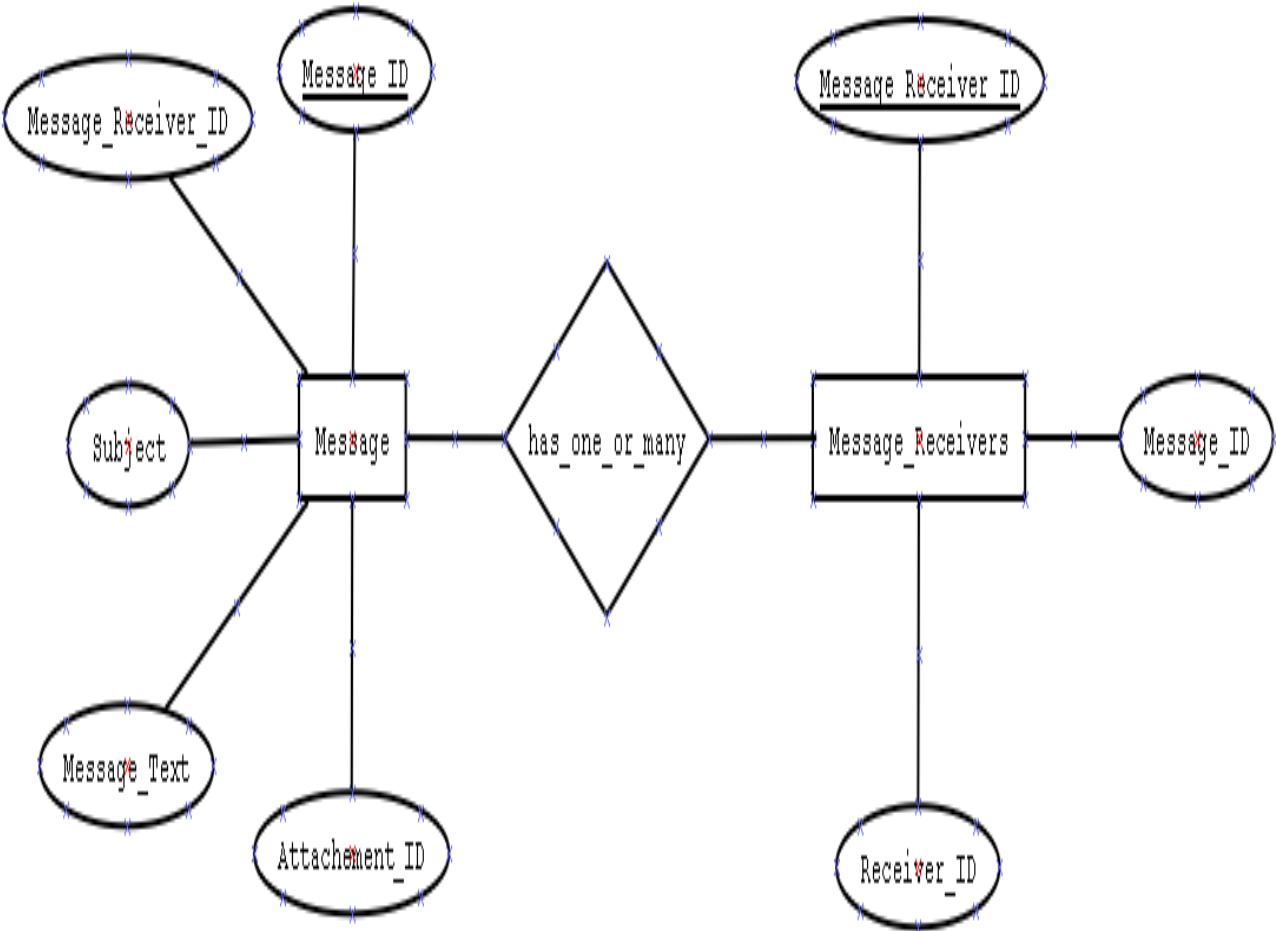
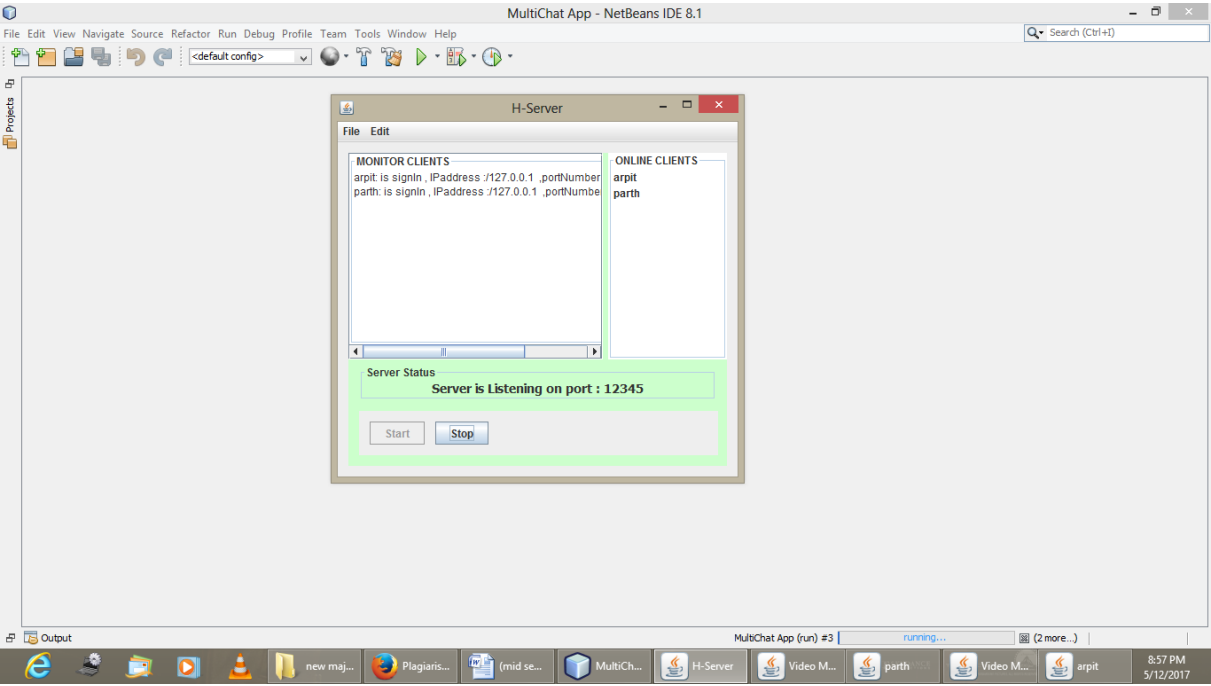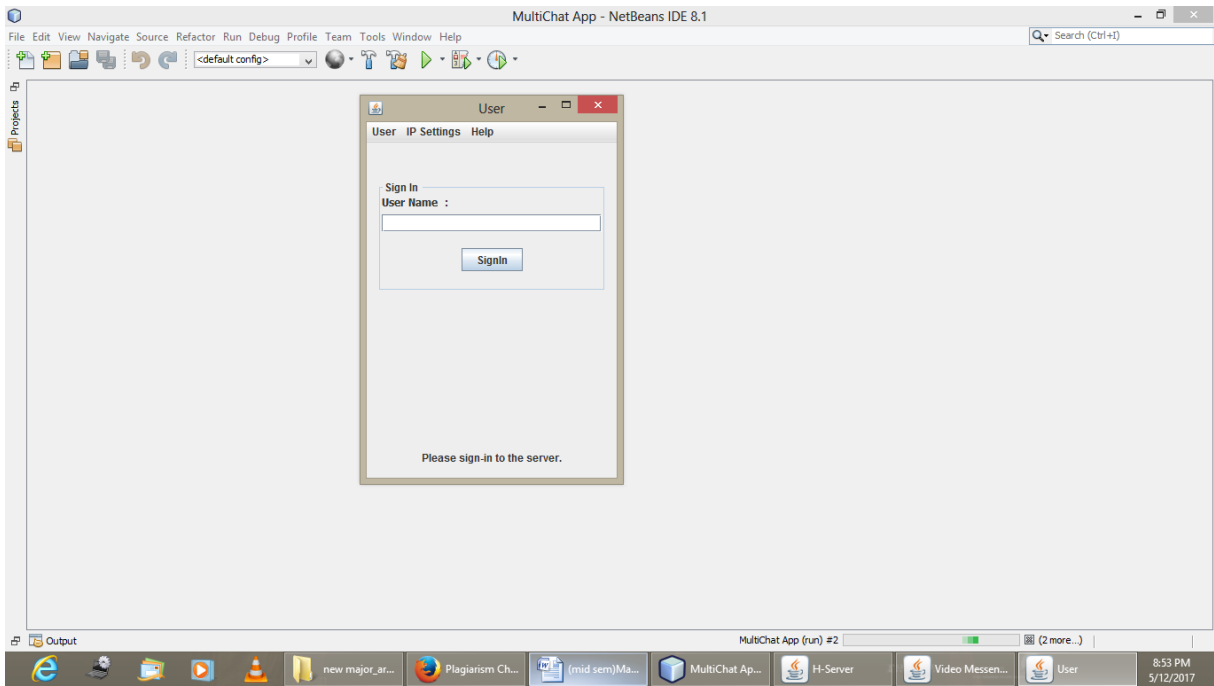**Fig 5**

3.5.6 Architectural diagrams
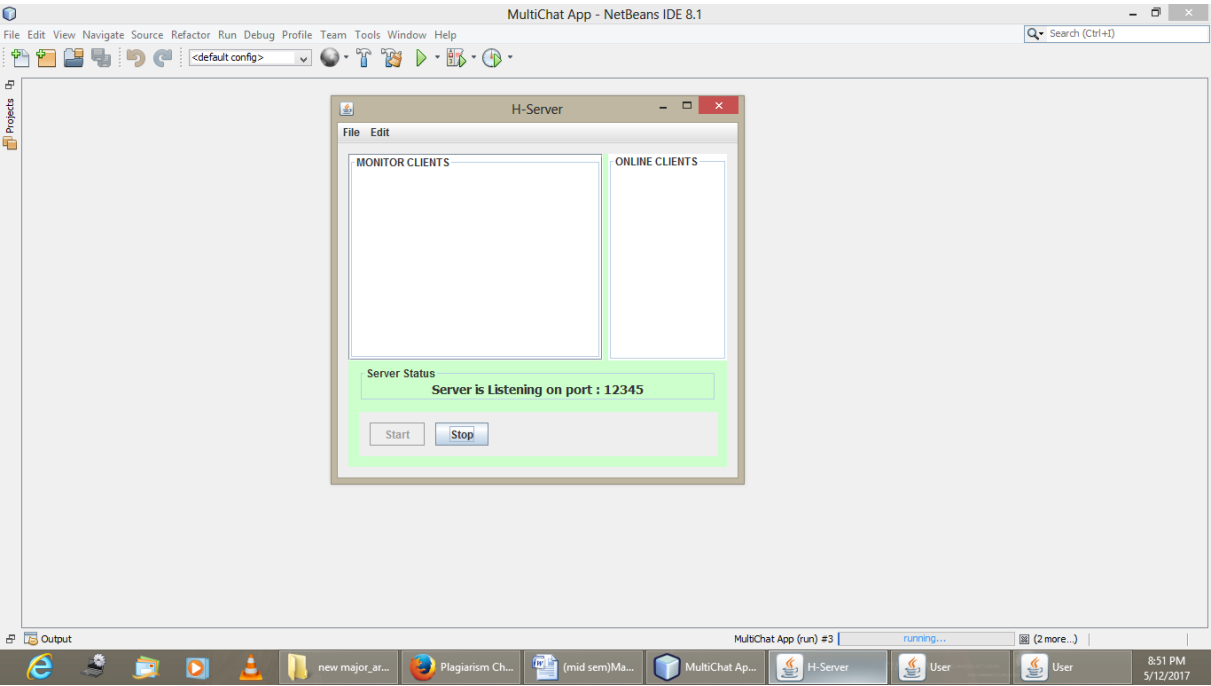
Fig 6(a)

Fig 6(b)

Fig 6(c)
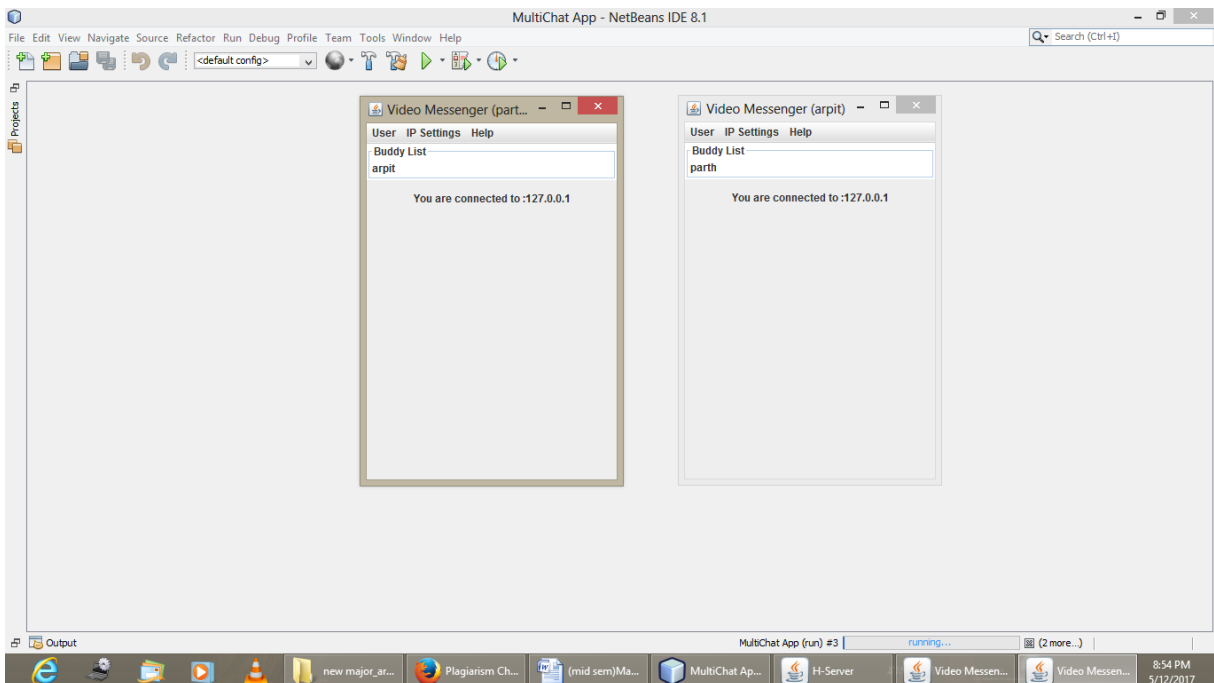
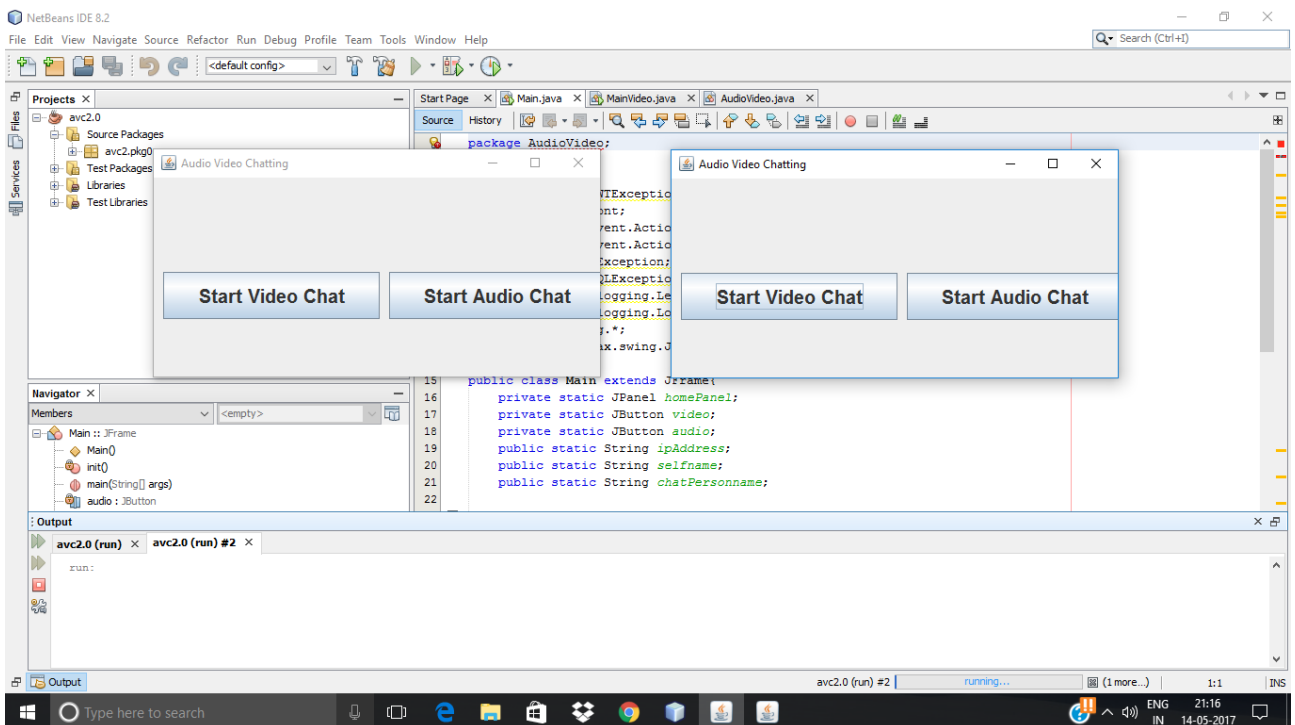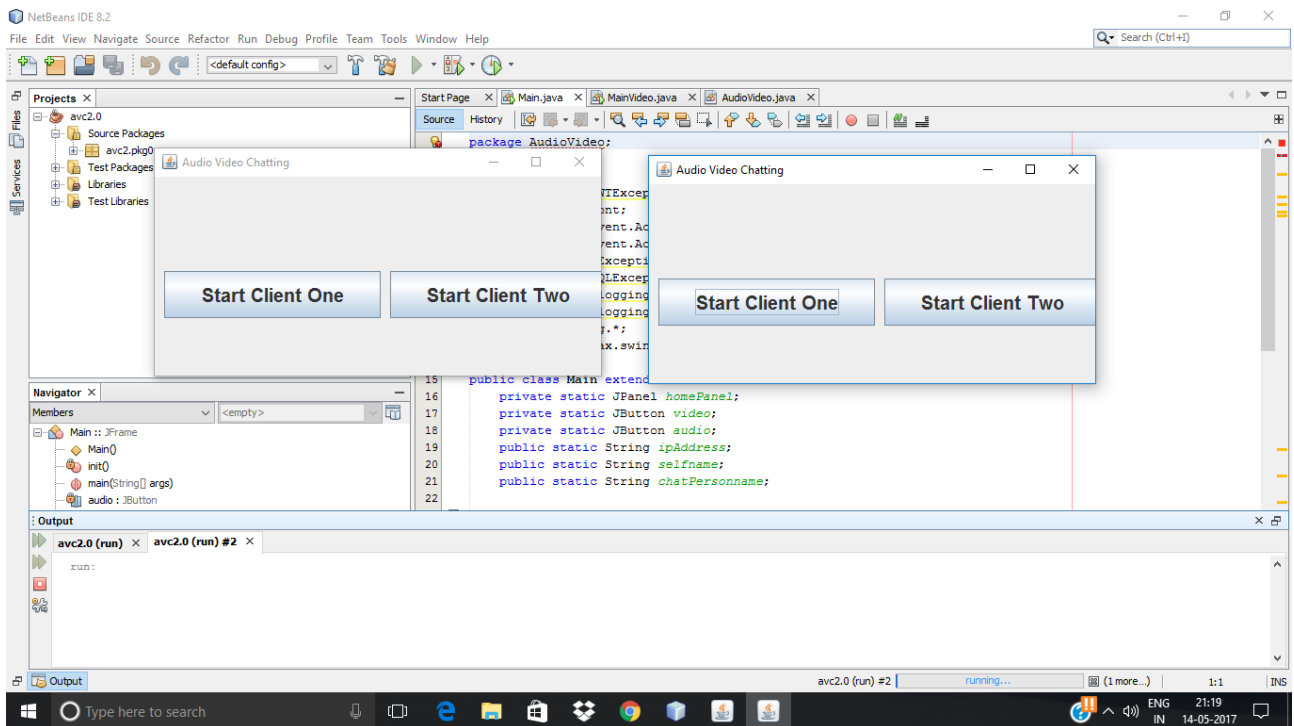**Fig 6(d)**
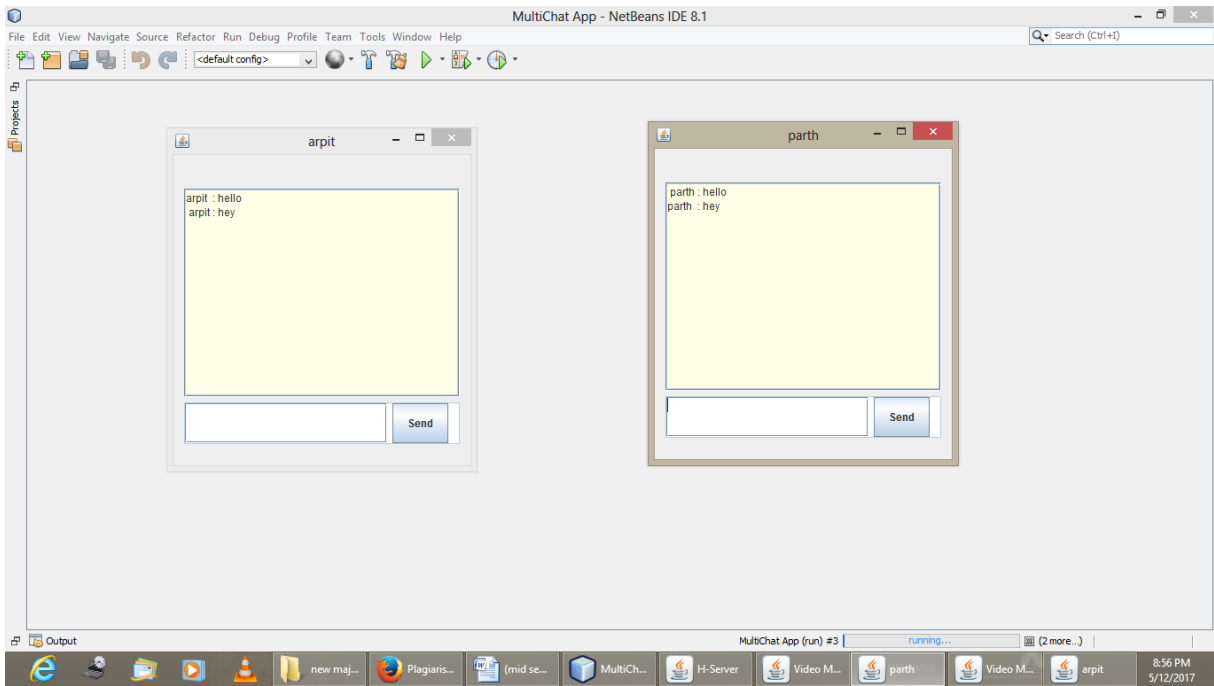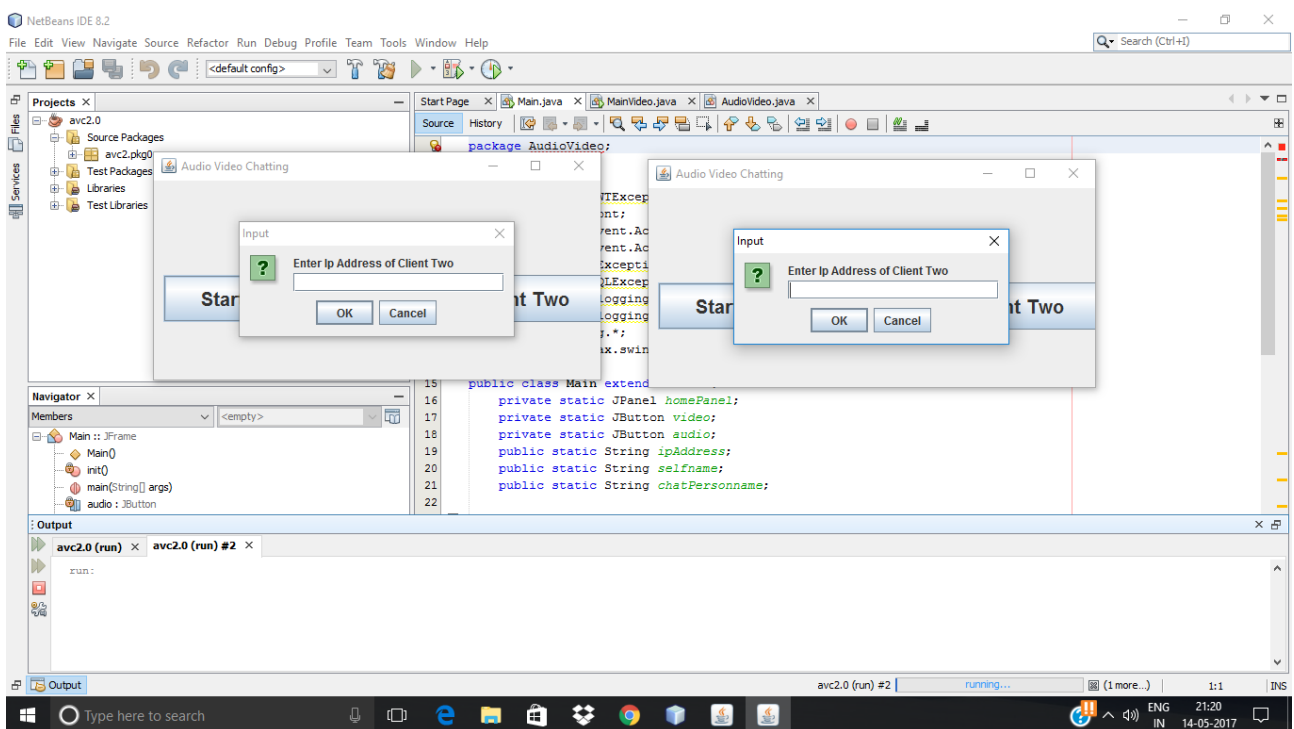
Fig 6(e)

Fig 6(f)

Fig 6(g)

Fig 6(h)

4) Implementation Details and Issues

4.1 Implementation issues.

Implementation involves designing of architecture of the project and working according to that model and apply different methods to achieve the desired result. Once the planning has been completed, the real task is now to implement that plan by working on different modules which are essential for the system to run and then integrate all those modules into a single unit, and then the final major efforts are to ensure that the program in the system is working properly.

Text Chat implementation

- A socket connection will be made be the caller with the server.
- Server will forward the request to specific client by making a socket connection with client
- The clients will be connected through a port which will be provided by the server.
- The chat room will now be displayed on the screen of the clients which has been developed using swing in java.
- The chat room displays the respective names of the clients on their screen and the input region in the chat room is available to write text and hit the send button when the text is to be sent.
- The message sent is now shown in the chat room of the receiver and the receiver can reply via writing the text in the input region of its respective chat room.

Voice Chat Implementation

- In this system firstly the caller needs to establish the connection with the receiver by entering each other's IP address in the input field.
- When the connection has been established the client needs to click on the call button to make the call.
- Now the receiver then needs to accept the call request, and immediately the audio call will be started.
- For voice call the sender simply needs to speak into the microphone and the audio signal will be converted into bytes and at the receiver end the it will be converted back to audio signal.

- Two threads have been used, one for capturing the audio into microphone and sending it through the socket and another for transmission of the bytes and receiving the audio signal through the speaker.

Video Chat Implementation.

- In this system firstly the caller needs to establish the connection with the receiver by entering each other's IP address in the input field.
- When the connection has been established the client needs to click on the call button to make the video call.
- Now the receiver then needs to accept the call request and the audio and video capture devices that is the microphones and the webcams will be automatically be started on both sides.
- The required permissions of webcam software must be granted access previously by the user.
- Audio and video is transmitted on two different ports on the IP address of the receiver and the video chatting session will end when the call is disconnected.

The SIP module is recommended to convert speech to bytes and then they are transmitted to the receiver client which is a very efficient method with a high performance rate.

SECURITY AGAINST UNAUTHORIZED ACCESS:

(1) **Use of administrator passwords**:

The password provides security to the administrator of Associates user so that unauthorized user cannot access the facility of Associates User.

(2) **User related checks and validations:**

For this application, a number of checks and validations can be used for securing the data and chat sessions from unauthorized access like the port number created by server is only provided to the two clients and every chat session has a different port number.

(3) **User authorization keys**:

The IP address of the user's device is a key without which no other user can make spam calls and hence the users can secure engage in their chatting sessions with the other clients.

SECURITY AGAINST DATA LOSS:

1) Provision of efficient data backup system : In this software an efficient system is used for adequate backup facility .

2) Offline data storage: this system is capable for offline data Storage.

3) Multiple database backup: the efficient system is use for this Software to give multiple data backup

4.1.2 Algorithms

- The server module uses a TCP/IP protocol to generate a TCP server to create an instance of the socket object.

- The client module also uses the TCP/IP protocol to generate a TCP client for accepting the socket connection and establishing the communication between the two clients.

- The connection module works on a simple algorithm of socket connection using SIP protocol which helps in creation, modification and termination of the multimedia calls generated from a client.

- The transmission module works on the RTP protocol algorithm which helps in the delivery of data from the sender to the receiver and all the flow of the packets during a session is managed by RTP.

4.2 Risk Analysis and Mitigation Plan

Risk ID	Description of Risk	Risk Area	Probability (P)	Impact (I)	RE (P*I)	Risk Selected for Mitigation (Y/N)	Mitigation Plan (if Y)	Contingency Plan (if N)
1	Error in connection	Algorithm	M	H	M	Y	Developing another more optimized code.	
2	Network access	Algorithm	L	M	M	N		Wait for Error to Resolve from Service Provider's end
3	Unauthorized access	Back-end	L	L	L	N	Choosing high level of passwords	

Table 2: Risk and mitigation plan

Keywords   Meaning

L   Low (0 – 25%)

M   Medium (25% - 75%)

H   High (75% - 99%)

5) <u>Testing</u>

5.1 Testing Plan

The test plan includes testing the algorithms that have been implemented in the application against various benchmark functions which evaluates the performance of the application in all the aspects of its services that application has promised to deliver. It also includes testing the algorithm on various data sets and comparing the results of various already proposed algorithms which are already available and being implemented in this field of applications.

Once the code for the application has been generated and implemented in every module, program testing begins. The testing process focuses on every algorithm, protocol and techniques that have been used in the application, ensuring that all statements of the code have been tested and conducting tests to uncover errors and ensure that defined input will product actual results that agree with required results.

Type of Test	Will Test be Performed	Comments/Explanation	Software Components
Requirement Testing	Yes	This is to keep track whether the application is developed as per requirements.	All modules
Unit	Yes	To check whether all units are working as intended.	Applied to all modules
Integration	Yes	To check if integration of all individual module is successful.(the code has been integrated)	Applied to all modules
Performance	Yes	The performance of project is up to the mark or not	All modules
Time	Yes	Whether the time is minimized or not	Time calculating module
Comparison	Yes	Result received is good or bad as compared to other results	Main module
Security	Yes	Security plays a major role	The implemented project is secure.

Table 3: Testing Details

Activity Plan

Activity	Start Date	End Date
Voice Call implementation and testing	10/2/17	27/3/17
Video Call implementation and testing	1/4/17	3/5/17

Table 4

Role Description

Role	Name	Specific Responsibilities/Comment
Research, Coding, Testing	Arpit Singhal	Report, Research paper, Coding, Integration

Table 5: Role Description

5.2 Component decomposition and type of testing required

S.No	List of Various Components (modules)	Type of Testing Required*	Technique for writing test cases**
1	Voice calls request sent from caller to server	Performance testing	Black Box
2	Voice call received at receiver end	Performance testing	Black Box
3	Video calls request to server through LAN	Performance testing	White Box
4	Video call received at receiver end	Performance testing	White Box

Table 6: Type of testing

5.3 List all test cases in prescribed format

Test Case id	Input	Expected Output	Status
1	Voice calls request sent from caller to	Calculating time delay and status	Pass
2	Voice call received at receiver end	Calculating time delay and response	Pass
3	Video calls request to server through LAN	Calculating time delay and status	Pass
4	Video call received at receiver end	Calculating time delay and response	Fail

Table 7: List of test cases

Test case:

For Login Page

1) The port number created by server is only provided to the two clients and every chat session has a different port number.

2) Validations for wrong entry of username

- Case sensitivity can be tested
- Cursor back to username field after being shown validation message
- Cursor position to Password field on pressing Tab key.

3) Validations for wrong entry of password.

- Case sensitivity should be tested
- Cursor back to password field after being shown validation message.
- Focus to Login button on pressing Tab key.

Black Box Testing :-

A Simple Black box Specification:

Black Box Testing is a technique which treats the system as a closed box and the functions and algorithms used in the development of the application are not known to the tester. The tester needs to know the inputs that have to be provided to the system for testing every possible error or failure probability and the results will be displayed to the tester and the tester does not need to know how the program actually reaches to those results and what functionalities have been implemented in the application hence the tester just tests the system based on the input specifications given to him without any details concerning the functionalities implemented in the system and that is the reason black box testing is also considered as behavioural testing or opaque box testing or simply closed box testing.

Iterative Model

In the iterative model, a simple implementation of the algorithms and function in the modules and the analysis of the modules after the implementation and iteratively the modules are enhanced to integrate the complex algorithms and techniques into the system until the complete system is implemented and then the final analysis of the application is performed after which the application is ready to be deployed.

The iterative model is mostly implemented in such projects which do not have all the requirements and functionalities in details at the starting phase of the project since the implementation can be started in iterative model with or without all the specific requirements.
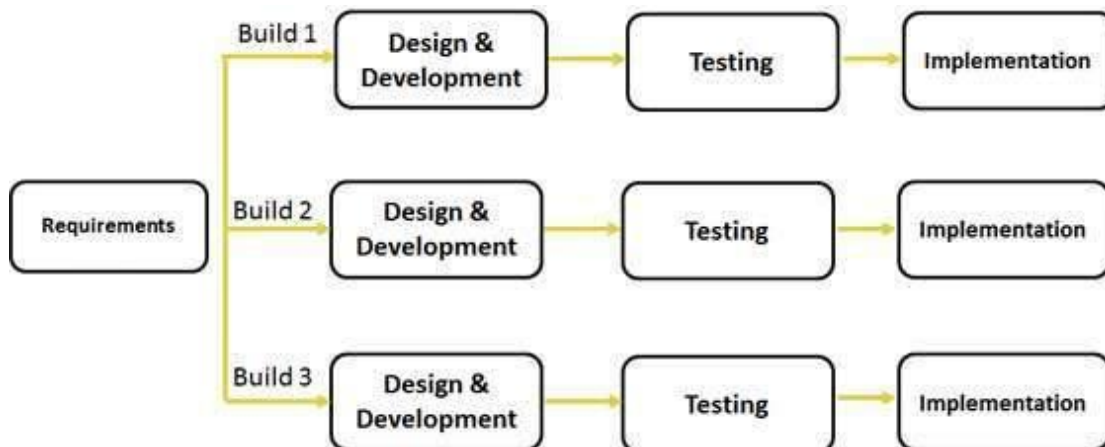

Fig 7

<u>Levels of Testing</u>

- ❖ Unit Testing
- ❖ Component Integration Testing
- ❖ System Testing
- ❖ Acceptance Testing

Unit Testing

Unit testing comprises the set of tests performed usually by the programmers prior to the unit in to a large Program. This is the lowest level of testing and is done by the programmer (Who develops it) who can test it in great detail. The function is done in isolation. This is where the most detailed investigation of internal working of the individual unit is carried out.

Component Integration Testing

The modules which passes the unit testing are then integrated to each other and then the final integrated module is subjected to integration testing, the testing of the module is done for following checks :-

- ❖ The interface of the integrated module
- ❖ The algorithms and functions which have been used in those modules

System Testing

The integrated modules which have been successfully tested for unit testing and component integration testing are then checked for the various features that are required for the application to be deployed in the market. The application is checked for the security features and stability of the application on various platforms. The application is also checked for various test inputs to verify the limits of the application and other various features. The important modules which provides the main functionalities to the application are tested for every possible risks and the situations that can lead to halt in the application.

Acceptance Testing

After system testing was complete, the system was handed over to the training section. Acceptance testing marks the transaction from the developer to the users. The difference between the acceptance testing of the application and other various testing methods are :-

- Firstly, it is a responsibility of the accepting section rather than development department (computer Centre).

- Secondly, the aim of the acceptance testing was to find out whether the software is running successfully instead searching for bugs in the application.

- Thirdly, it also includes the testing of user's department's working practices to ensure that the computer software will fit into clerical & administrative procedures of the concerned section well.

5.4 Errors And Exception Handling

Test case id	List of components	Debugging techniques used
1.	Video calling component	Debugging by Backtracking

Table 8: Debugging technique

The debugging by backtracking is a simple technique to track the logic that was implemented in the application backwards until the point is found when the logic went astray and the bug caused the failure in the application. The video calling component required video feed to be captured by the first client and after being transmitted it was supposed to reach the second client but due to some bug the video feed did not reach the receiver sometimes although it was being transmitted over the network. The debugging technique of backtracking helped in finding the bug after tracking backwards into the logic and finally the failure in the application was removed.

5.5 Limitations of the solution

There are mainly two limitations of the project and that are:

1) The firewall is to be disabled for the application to connect over the wireless LAN and use the webcam facility for a smooth video chatting session.

2) The wireless LAN range is not very large to accommodate long distance chatting over the network. It is most beneficial for institution and companies which require such facilities in their buildings at low costs.

6. <u>FINDINGS AND CONCLUSION</u>

6.1 Findings

- The application introduces us to a new and unique way for improving the communication method to a wireless network chat application.

- Response time of the system is very less and it works very fast.

- The application doesn't require large installation and maintenance costs.

- There is negligible lag in the transmission of any kind of feed over the network.

6.2 Conclusion

The LAN chat application gives the user multiple options of communicating over the network and these options are very easy to use and comprehend for the general public which is not accustomed to use such services. The interface describes it all is the approach used in this application to deal with such issues since the product is meant to be used by everyone all over the world and with that aim in mind a user interface which is attractive, easy to use and accessible to all has been developed.

The industries which require such facilities to be installed in their respective buildings to give their employees a medium to communicate amongst each other and thereby reducing the wastage of time and improving the output can benefit from such applications especially the small scale industries which are low budget ventures running on low operational costs.

This application provides users to make voice call and video calls without any delay in the video or audio feed and hence users can have a real time chat experience without having to travel all the way to the other user. It facilitates a way of letting people with non technical background to easily understand and comprehend the functionalities and services provided by the application.

6.3 Future Scope

Every application or software can be improved and further modified to more innovative and creative features which can be applied not only to the interface but the various functions of the applications too. Right now we are just dealing with text communication but in future this software may be extended to include features such as:

- Conference calling via video or audio calling between any numbers of clients.

- Providing different features like an option to watch movies or television shows using recommending system which will improve the experience for users.

- The features like paint application can be provided to users to send diagrams as images to other clients which will also make it entertaining for the users to use the application.

- Chatting on same wireless LAN connection between 2 clients over long distances too without the requirement of internet connection.

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BIO DATA (RESUME)

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ABOUT ARPIT

Multi-Dimensional, Multi-Skilled and Multi-Tasking.

OBJECTIVE

To work in dynamic, professional and enterprising environment which will provide me the potential for increased IT skills and decision making responsibilities through consistent learning under the business and IT leaders.

ACADEMIC PROFILE

Period	Degree/Certificate	Institute/School, City	Percentage/GPA
2013-Present	Bachelor of Technology in Computer Science Engineering	Jaypee Institute of Information Technology, Noida	6.1
2013	Senior School Examination (Class XII), C.B.S.E.	Bharti Public School, Delhi	82%
2011	Secondary School Examination (Class X), I.C.S.E.	St Pauls Academy, Ghaziabad	86%

KEY SKILLS AND INTERESTS

Technical: Core JAVA, C/C++, My SQL, PHP, Microsoft Office.

Non-Technical: EffectiveCommunication Skills, Organizational Skills, Managerial Skills.

Interests: Database management, PHP web development, Android application development

PROJECTS UNDERTAKEN

TITLE	PROJECT SCOPE	YEAR	TECHNOLOGY USED
Bus Reservation System	The main aim of the project is to "use C, to be precise Date structures. It can be used by any user for database management	2013	C
Autonomous Asynchronous Robot	This project was aimed at getting best out of Robot. It gives us an intelligent way of managing it using ultrasonic sensors, how to handle Arduino chip.	2014	Arduino Chip and C
Music website and android app (minor project) www.mp3swagger.esy.es	The main aim of the project was to provide an easy access to a variety of music and songs to the user with online streaming of songs available on the website and the android application.	2015	HTML,CSS and **PHP**
Multiplayer Game	The project aimed at developing a 2D shooting game and a 3D multiplayer car racing game to give the gamer an enjoyable experience of gaming.	2016	UNITY 3D, C SHARP

PERSONAL DETAILS

- Name   : Arpit Singhal
- Father's Name   : Ajay Kumar Gupta
- Date of Birth   : 21st July 1995
- Sex   : Male
- Nationality   : Indian
- Languages Known : English & Hindi