# 

KEA\_STUD CHAT MESSENGER

Installing and supporting the solution

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# **Document information**

## Document version

|  |  |  |
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## Confidentiality Rating

|  |  |
| --- | --- |
| Rating |  |
| Company Confidential | X |
| Non Confidential |  |

# **General**

KEA\_STUD Chat messenger will provide the possibility of using a chat within an institute. It will provide the user with the facility to communicate in-group or private, to exchange small/medium files during conversation and save the chat history. In order to run, the chat system will be using a Local Area Network (LAN) connection.



***Fig-1***

# **Architecture Overview**

KEA\_STUD LAN chat messenger is based on the Model View Controller (MVC) architecture in order to make further extension of the application easy and making code reusable. The processing and logic part has been kept separate from the graphical user interface and controllers, i.e. meaning that the application handling for database queries is implemented separately while the user interface presentation and logic processing likewise have been implemented separately. The whole application is furtherly divided into sub applications i.e. client side app and server app. The client application runs on the user’s computer and the server can run on any computer on a network. To send/receive a message the user should be connected to the server. The user can broadcast a message to all the users online (Public Chat) or can send it to any particular user (Private Chat).

The application is developed using Object Oriented Programming in Java Language. To establish the communication link between the systems on the network we need socket connections. A socket enables the application/users to connect to the network and communicate with other applications/users connected to the same network. On a particular machine the socket is composed of an IP address and a port number.

As mentioned above there will be two applications, one for the client and one for the server, so two sockets are made. The client application will execute the client socket, while the server application will run the server socket. To connect to the server socket, the client requires its IP and the port number. The client and server need to share the same port number in order to achieve the connection. Moreover they need to agree upon the protocol used that could be TCP, UDP or RAW. In our case it will use TCP/IP protocol for connection.



***Fig-2***

# **Requirements**

**Internet browsers:**

Due to our application being a Graphical User Interface application (GUI) then there is no need for our application to support any web browsers.

**Internet Connection:**

Our application runs over the host’s local area network (LAN) connection. Therefore, there is no need for an internet connection to be present for the application to work.

**Operating Systems:**

Our application is supported by the following operating systems:

1. Windows Vista, 7, 8 and 8.1
2. Mac OS X
3. Linux

**Hard Drive:**

There should be at least **1GB** of free space on your hard disk.

**RAM:**

The minimum memory requirement for launching an application is **119MB** RAM.

**CPU:**

Pentium or newer

**Network Card:**

A network interface controller (NIC) - 10BaseT Ethernet card or wireless card is needed on the system.

**Software Requirements:**

**MySQL Workbench**

MySQL Workbench is not required to be installed on the system in order to run a MySQL Server but MySQL Workbench is a great tool to use in addition to monitoring database connections on your server. Apart from Workbench, there are alternative open source programs that can be used to monitor database connections, such as Sequel Pro for Mac (Workbench was used during the development of the KEA\_STUD LAN chat messenger and therefore we recommend using this). When installing MySQL Workbench there are, however some requirements that need to be fulfilled before it will run on your system. Depending on your operating system then the requirements are as follows:

1. ***Windows***

* Microsoft .NET 4.0 Framework (If needed – download available [here](http://www.microsoft.com/en-us/download/details.aspx?id=17851))
* Microsoft Visual C++ 2013 Redistributable Package (MSVC2013) (If needed - download available [here](http://www.microsoft.com/en-us/download/details.aspx?id=40784))
* Windows 7 or above

1. ***Linux and Mac OS X***

* The requirements for Linux are embedded within their respective packages. Use the platform specific tool (for example, yum or apt) to install the package and their dependencies.

# **Installation Manual**

**Development Environments**

We used Eclipse Luna IDE for Java developers.

**Step 1:** Download Eclipse Luna IDE for Java developers [here](https://www.eclipse.org/downloads/packages/eclipse-ide-java-developers/lunasr2)

* Download the zip file to the desktop to ensure easy access

**Step 2:** Extract

* Extract the Eclipse zip file to the desktop

**Step 3:** Finished

* To use Eclipse, access the folder and double click the Eclipse application .exe

Additionally we used Java Development Kit (JDK) and MySQL Connector/J and for development. MySQL Connector/J will be installed with the MySQL Installer on Windows and should be contained in the repository packages for Linux. However will need to be manually installed on Mac OS X.

Download for MySQL Connector/J can be found [here](http://dev.mysql.com/downloads/connector/j/)

**Step 1:** Download MySQL Connector/J for your corresponding operating system

**Step 2:** Double click the install icon and follow the onscreen instructions

For Java Development Kit (JDK), you can download the latest version for your operating system [here](http://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html).

**Step 1:** Download Java Development Kit (JDK) for your corresponding operating system

**Step 2:** Double click the install icon and follow the onscreen instructions

In order to run the KEA\_Stud Chat Messenger application, the hosting computer will need to have a MySQL server installed due to the application’s need to connect to a database to store usernames and passwords. Furthermore, the purpose of this manual is to provide the operations team with a simple way of installing said MySQL server onto the hosting computer depending on the computer’s operating system.

*Note: Username and password for the database are the default settings in the KEA\_Stud Chat Messenger i.e. meaning, Username = root and password is left empty*

The methods of installation of the MySQL server depends on your operating system and are as follows:

**Windows**

There are three ways to install the MySQL server on Windows.

***MySQL Installer***

This is the full installation package and features all of the MySQL products into one installation. It is recommended to use this installation method if one is more inexperienced with configuring databases, because this will install every product/component needed to maintain server/database connections and in addition configure the server/database during the installation process.

**Step 1:** Download the MySQL Installer – available [here](http://dev.mysql.com/downloads/windows/installer/)

**Step 2:** Double-click the installer icon.

* Once this is done, you will be prompted with a license agreement.

**Step 3:** Select an appropriate setup type depending on the system.

* ***Developer***: Install all products needed to develop applications with MySQL. (Recommended choice and the default system setup for the application)
* ***Server only***: Only installs the MySQL server.
* ***Client only***: Only installs the MySQL client products, this does not include the MySQL server.
* ***Full***: Install all MySQL products.
* ***Custom***: Manually select which MySQL products to install.

Once a setup has been selected - click next.

**Step 4:** System check

* The installer will now check the system to see whether it fulfills the requirements for certain products or not[[1]](#footnote-1).
* When finished, the installer will present a list of products to be installed.
* Click execute.

**Step 5**: Server Configuration type

* After the products have been installed, a configuration window is displayed (if it is required – given the circumstances, it is expected that this will be the first installation instance on the system and therefore will display this window).
* Here you are asked to select which server configuration type the system will have:
  + **Developer**: A system, which will host many other applications. This could be your personal laptop/desktop. This option will use the least amount of memory.
  + **Server**: Multiple other applications will be running on this system. This option will use a medium amount of memory.
  + **Dedicated**: A system, which will be dedicated to running the MySQL server. This option will use all available memory on the given system.

Once a desired configuration type has been chosen, move to connectivity.

* + The KEA\_Stud chat messenger uses the default settings.
  + Click next.

**Step 6:** Account

* You are to determine an account for the server.
  + *Optional:* If there are to be more than one admin on the server, you can add this user.
* Once finished - click next.

**Step 7**: Windows Service

* Windows Service details are to be determined. Such as service name, if the server should start up with the system and how the server is executed.
* Once finished – click next.

**Step 8**: List of configurations displayed

* A window that lists the configurations steps will now be displayed.
* Once reviewed and certain of the settings - click execute.

Done. Your MySQL server is now configured and ready for use.

For the next two methods of installing the MySQL server and Workbench. We will not being going in depth with these because they are self-explanatory and we recommend the previous method for a simple way to install the MySQL Server and MySQL Workbench.

***Web-community installer***

The web-based installer will contain the installer and configuration files that are needed to run a server as well as allow the user the freedom to select which products to install on the system.

Download available [here](http://dev.mysql.com/downloads/windows/installer/)

***Installing each product separately***

This is an option where each product will be downloaded using its standalone package and installed via said package. This is an option for the more experienced users, because this will involve manual Database/Server configuration.

Downloads available at:

* [MySQL Server](http://dev.mysql.com/downloads/mysql/)
* [MySQL Workbench](http://dev.mysql.com/downloads/workbench/)
* [Connectors](http://dev.mysql.com/downloads/connector/)
  + Specifically, Connector/ODBC

**Linux:**

For Linux there are two methods of installing the MySQL Server. By repository packages or by installing the products separately. Furthermore, the procedures for the installation are different depending on the Linux distribution in which the system uses.

***Repository Packages***

There are two different repository packages, Yum and APT. Each repository supports a different distribution.

***Yum Repository***

**Step 1**: Download the Yum repository

* Download Yum repository [here](http://dev.mysql.com/downloads/repo/yum/).
* Select and download the package for your distribution.
* Install the package with the following command: ***shell> sudo rpm -Uvh platform-and-version-specific-package-name.rpm*** (replace ***platform-and-version-specific-package-name*** with the name of the package)

**Step 2**: Install MySQL with Yum

* Install MySQL with the following command: ***shell> sudo yum install mysql-community-server***. This will install the package for the MySQL server.
* You can also install other products by specifying the product’s name in the command line (example: ***shell> sudo yum install mysql-workbench****)*

***APT Repository***

**Step 1:** Download the APT repository

* Download APT repository [here](http://dev.mysql.com/downloads/repo/apt/).
* Select and download the package for your distribution.
* Install the package with the following command**: *shell> sudo dpkg -i /PATH/platform-and-version-specific-package-name.deb*** (replace ***platform-and-version-specific-package-name*** with the name of the package. Along with its path, if you are not running the command within the same folder in which the package is contained in).

**Step 2**: Install MySQL with APT

* Install MySQL with the following command: ***shell> sudo apt-get install mysql-server***. This will install the package for the MySQL server along with packages for the client and database.
* During the installation process, you will be asked two questions
  + Supply a root password for your MySQL Server
  + If you want to install a test database – select no.

***Installing each product separately***

This is an option where each product will be downloaded using its standalone package and installed via said package.

Downloads available at:

* [MySQL Server](http://dev.mysql.com/downloads/mysql/)
* [MySQL Workbench](http://dev.mysql.com/downloads/workbench/)
* [Connectors](http://dev.mysql.com/downloads/connector/)
  + Specifically, Connector/ODBC

***Mac OS X:***

For Mac OS X you will have to install each product separately

***MySQL Server***

**Step 1:** Download the MySQL Server package installer – download is available [here](http://dev.mysql.com/downloads/mysql/)

**Step 2:** Double-click the installer icon.

* Once this is done, you will be prompted with an introduction dialogue – click continue.
* A license agreement is now shown – click continue then agree

**Step 3:** Installation Type

* You will now be able to choose which installation type you want to install
  + **Install:** This will perform a full installation using default settings (recommended)
  + **Customize:** This will allow you to choose which components that are to be installed
  + **Change Installation Location:** This can change the installation type or location

**Step 4**: Click install

Done. A message with a brief summary will be shown on the display, and after closing the installer, you can now use your MySQL Server.

***MySQL Workbench***

**Step 1:** Download the MySQL Workbench package installer – download is available [here](http://dev.mysql.com/downloads/workbench/)

**Step 2:** Double-click the installer icon.

* You will now be shown the installation window

**Step 3:** Drag the MySQL Workbench icon onto the applications icon

Done. Your MySQL Workbench is now installed.

***MySQL Connector***

**Step 1**: Download the MySQL Connector called ODBC – available [here](http://dev.mysql.com/downloads/connector/odbc/)

**Step 2:** Double-click the installer icon.

Done. The MySQL ODBC Connector is now installed.

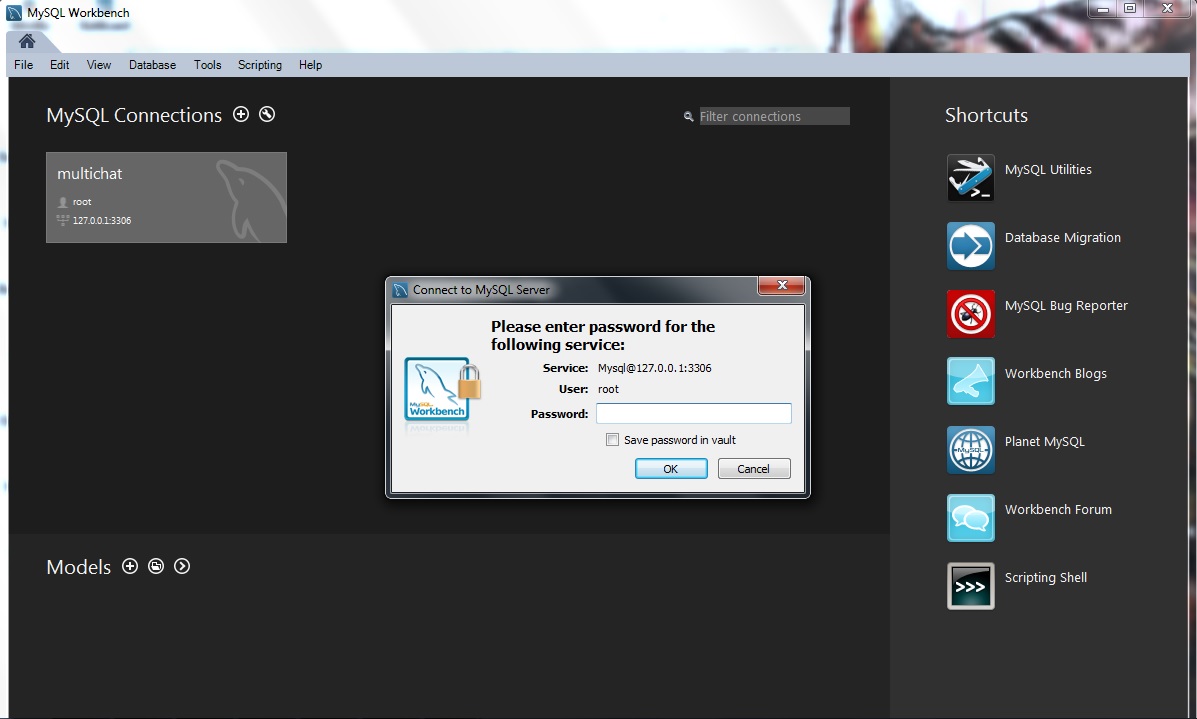
# **Operation Manual**

This manual is to provide the operations team with an overview on how to operate the database and server because in order for the chat application to run, the database and chat server must be running on the host computer.

To do this follow the guidelines set below:

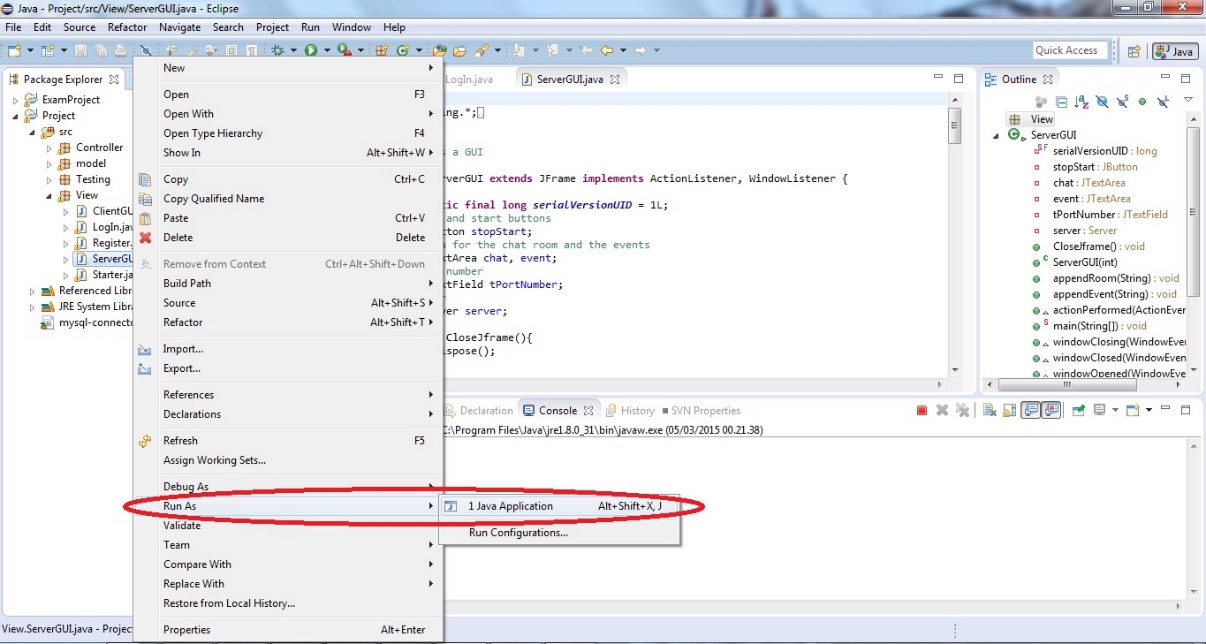
**Step 1**: Start the database

* Start the database by opening MySQL Workbench
* Click on the local network connection and supply the login box with username and corresponding password

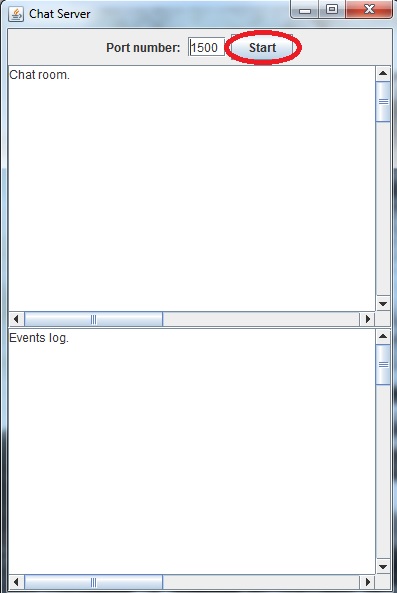


**Step 2:** Start the Server

* You start the server by:
  + Opening Eclipse
  + If the project folder is not open, then open it
  + Open the View package
  + Right click on ServerGUI and click run



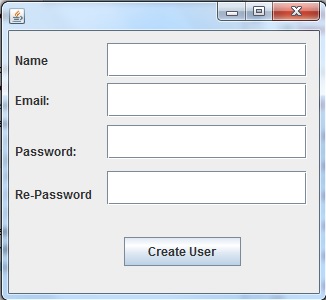
* + Once ServerGUI is running you click on Start



* Once the server is started, you will be able to monitor activity in the chat room along with the event logs.

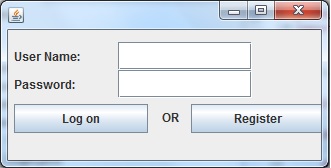
**Step 2:** Registration

* Supply:
  + Username
  + Email – note: email must contain an
  + Password – note: password must contain letters and digits and be of at least two characters
  + Re-enter your password to ensure they are equal



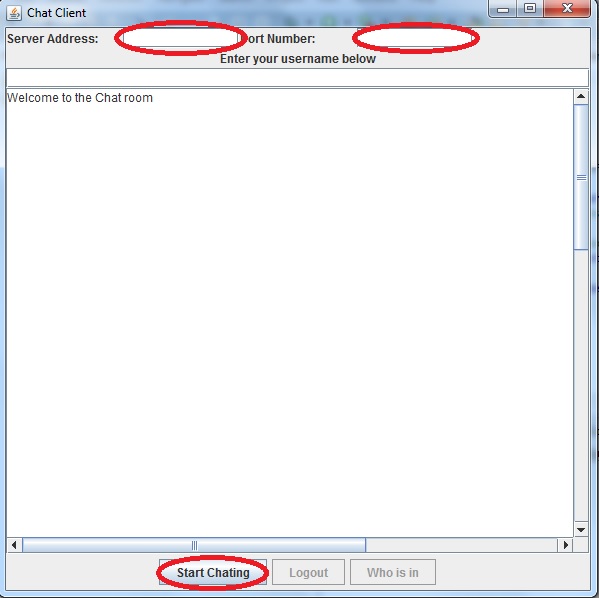
**Step 3:** Login into the chat client

* Supply your designated username and password there after click “Log on”
* If you do not have a username and password then refer back to step 2 to follow guidelines for registration



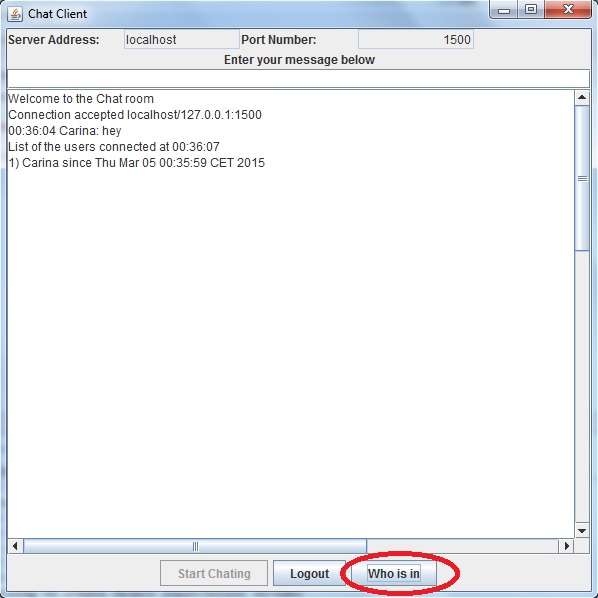
**Step 4:** Connecting to the server (client side)

* Supply:
  + Server Address
  + Port Number
  + Username
* Once these are entered, click “Start Chatting”



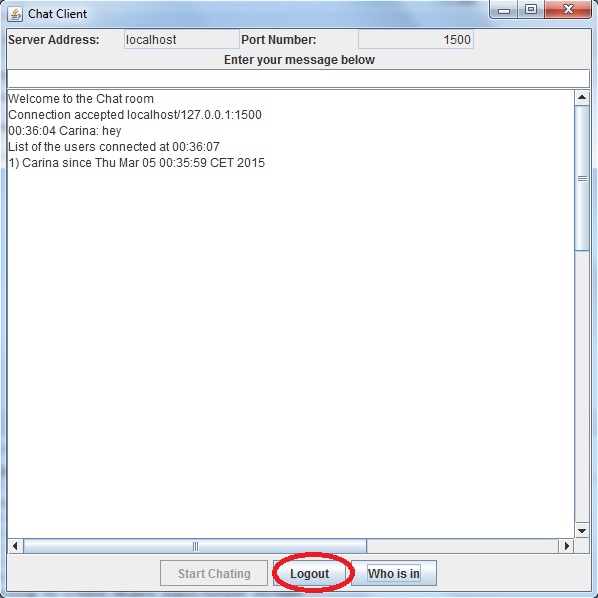
**Step 5:** Who’s online

* A list of available people to chat with can be viewed by clicking on the button “Who is on”
  + If you want to start a private session with a person, click on their username

****

**Step 6:** Disconnecting

* If you no longer want to participate in a chat session and want to logout, click “Logout”



# **Troubleshooting guide**

This guide provides helpful hints and solutions for troubleshooting the product as well as scenarios for possible hardware and software problems.

|  |  |  |
| --- | --- | --- |
| **Problem** | **Cause** | **Solution** |
| MySQL Workbench not found | MySQL Workbench is not installed | Download MySQL Workbench [here](http://dev.mysql.com/downloads/workbench/) |
| Connection to the Database failed | Wrong Password | You need to change the password to access the Database from LogIn.java |
| Connection to the Database failed although password is correct | Missing MySQL connector (Connector/J) | Download MySQL Connector/J [here](http://dev.mysql.com/downloads/connector/j/)  Right click on your project   * Select Build bath * Configure build bath * Select the tab called *“Libraries”* * Click *“Add external JARs”* * Find the missing connecter and add it to the project library |
| Connection to the Database failed (Connector is installed) | Missing MySQL connector (Connector/ODBC) | Download MySQL Connector/ODBC [here](http://dev.mysql.com/downloads/connector/odbc/) |
| Connection to Chat failed | Wrong Host IP Address | Ensure correct host IP address has been entered |
| Connection to Chat failed | The Server is busy | Ensure correct port number has been entered |
| Connecting to MySQL Server failed | MySQL Server is not online | Start your MySQL Server |
| Log in failed | Wrong Username or Password | Ensure Username and Password that was entered is correct. If problem persists contact administration |
| Log in attempts result in failed attempts | Database either running slow or not running | Start or restart MySQL Server |

# **Traceability Matrix**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **BRD** | **FSD** | **Test Scenario ID** | **Test Case ID** | **Status** | **Defects** |
| **1 - Login** | 1.1 - Existing User | Checks to ensure that the user already exists by testing the Authenticate method | #L1.1 | Passed |  |
|  | 1.2 - Connection | Checks the Connect method to ensure that a connection is made between the client and the server | #L1.2 | Passed |  |
| **2 - Registration** | 2.1 - Password | Validates the password to ensure that the password contains letters, numbers and is of at least eight characters | #R1.1 | Passed |  |
|  | 2.2 - Email | Validates the email to ensure that it contains @ and . | #R1.2 | Passed |  |
|  |  | This test ensures that the validation method works when the email is not valid, by not containing an @ sign. | #R1.21 | Passed |  |
|  | 2.3 - Save | Checks to ensure that the new user is saved into the database by testing the saveUser method | #R1.3 | Passed |  |
| **3 - Performance** | 3.1 – Response Time | Using timestamps to check and ensure that the response time between the client connecting to the server and receiving entrance to the chat, takes no more than one second. | #P1.1 | Passed |  |

1. Check page 6 for more information regarding requirements [↑](#footnote-ref-1)