

Project Proposal [Draft]: JustChat

Team Name: 416 Squad Goals

Team Members:

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Problem

Online text-based chat rooms have been used as a means of convenient communication for the latter part of the 20th century and have been revolutionized in recent years (Slack, FB Messenger, Skype, Google Hangouts etc.). However, many of these chat rooms lack one convenient feature: sending **private** messages/files within the current chat feed, without the need of creating an additional ‘room’/channel to send that file or message.

Overall System Description

JustChat is a distributed chat room system that aims to provide ‘global’ IRC communication in a simplified way through the terminal/command line. Our main goal with JustChat is to enable participating clients, i.e. chat room members, to interact with each other in one seamless social setting.

Proposed Solution

JustChat intends to provide a file transfer interface where participating clients can send and receive files through the chat room (more on this to follow) to/from other participating clients without other participating clients knowing. JustChat also serves as a general chat room where multiple clients can interact with each other in a group like manner. Clients can join and leave from the chat room continuously. Each client’s message will have their username assigned to it to differentiate between participating clients.

Among participating clients, a moderator will be selected automatically through a leader election algorithm. Any participating client in the chat room has an equal and likely chance of being a moderator. Only a moderator will know that they are the moderator of the chat room. The moderator role comes with many privileges. When a moderator is selected, it has the ability to ‘accept’ or ‘kick’ participating nodes in or out of the chat room.

JustChat also has a pre-built filter that scans messages and then censors words in the message that matches words in the filter (fppk --> ****). Moderators have the ability to turn this filter on/off. Moderators can also set global restrictions to the chat room, such as age. If a client has an attribute matching the moderator’s restriction, the client is automatically disconnected from the chat room and will be unable to re-join unless the moderator changes the restriction. A chat room can be created by any client. To access the chat room, each participating client must have knowledge of the chat room’s password/key and location(ip:port). Clients retain their username upon disconnection. Each client has a unique username.

Must Haves

Private messaging

File Transfer

Moderation

Basic chat room

Nice to Haves

Chat history - disconnected nodes can rejoin and see a chat history of previous messages from the last time they disconnected.

GUI - a graphical user interface for the proposed problem

Video streaming - when a client sends a video file to another client, the file is streamed upon receipt until full file is received. (dependant upon GUI)

Timeline (weeks start on Monday)

Feb 29 - Mar 6

System design/architecture (interface + protocols + security + clarifying scope), assign tasks

Mar 7 - Mar 13

Server logic, client logic, handle joining/leaving, failures, testing

Mar 14 - Mar 20

File transfer protocol, private messaging, testing

Mar 21 - Mar 27

moderator, filters, GUI, testing

Mar 28 - Apr 3

chat history, video streaming, testing

Apr 4 - Apr 10

written report, final system testing

Apr 11

Project Due

SWOT Analysis

Strengths	Weaknesses
<ul style="list-style-type: none">- Specs are similar to what we've done for previous assignments.- Project is in Golang which makes it very convenient for all group members who've had a considerable amount of experience with the language.	<ul style="list-style-type: none">- Project is very similar to other chat-like applications offering minimal novelty. So the project's competitiveness in the marketplace may not be as strong as the developers would like it to be.- No previous use of the GoVector library or ShiViz- Connecting Golang code with GUI code.
Opportunities	Threats
<ul style="list-style-type: none">- Project provides an avenue to explore the benefits of various types of chat rooms. It also allows the developers to raise questions as to the design decisions of established applications. Why certain features are there, why some others are missing, etc.	<ul style="list-style-type: none">- JustChat may open up various privacy issues given the 'openness' of the chat room nature. However, this threat can be minimized by file encryption, which can potentially be explored at a later date.- Time commitments to do the project vary by group member