

# Coursework Report

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## 1 Introduction

The aim of the project was to develop a functioning web app built with the python-flask framework. The project scope was left intentionally open ended to allow the development of any type of web app. Due to this it was decided to build a web chat site. The site would allow user to talk with one another and have a number a separate chat rooms.

## 2 Design

Initially while the web is created in python-flask, by default it is not possible to perform real time communication, therefore the first step take was to install flask-socketio. A flask extension that allows for bi-directional communication between client and server in a more real time fashion. This also required the installation of eventlet, as a requirement of flask-socketio.

Once everything was installed it was time to begin developing the basis of the web app. This is done in two stages, the socketio code on the server side, along with javascript on the client side. On the client side, there is a basic html form consisting of two text boxes and a send button. The first text box is for the user name, the user will enter a name here that will be attached to any messages they send in the chat room, the second is for the message they wish to send. when the user fills in these two text boxes and click the send button, the two pieces of information are stored in an array named 'data', and the username text box is hidden, to prevent the user from continuously editing their user name. when a message is sent it appends to the message list displaying as "user name: message". it will also trigger the socketio server side code, when it receives the data array, the send function cause it to broadcast out to all other connected users, causing the original senders user name and message to be appended to all other users chat list as well, allowing for real time communication.

The main page of the website simply act as means to navigate to the desired room, with the title of the site centred at the top of the page and bellow it a table the lists the different rooms, when a user click on one of these links they are taken to that chat room.

The chat rooms are seperated by the use of socketio's namespace feature, this allows for different rooms, where all users in one name space can see everything sent within that namespace, but messages send in different name spaces, will not interfere with each other. While there are several different

rooms, they are all build from a single jinja2 template. Therefore the name space of each is simply the url path of each room, as this can be easily passed into the template. it also passes in the title of each room to be displayed. There is also a navbar at the top of each page that can be used to navigate either back to the home page, or between the different rooms.

## 3 Enhancements

While the base functionality is in place there are a number of improvements that could be mad to the web app. Most notably is the inclusion of encryption. As it currently stands there is no form of encryption applied to messages as they are sent or received. This is bad practice at all times, but especially since the web app focuses on issues many may consider private and sensitive.

Another big improvement that could be made is if it remembered usernames and the message list if the user remains on the site. Currently if a user moves between rooms, they have to reenter their user name and can no longer see any messages that have been sent. while resetting this if the user leaves the site and comes back is ideal. It would be better if they could move between rooms without losing it. On a similar not when a new user enters a room, it would be ideal if there was a system in place to ensure that multiple users could not have the same username.

Another enhancement that would improve the web site would be the ability for user to have one on on interactions. For instance a user could select another user and and select private chat, this would then initiate a new separate room that would only consist of these two users.

## 4 Critical Evaluation

The core of the website is functional, and works quite well so long as users do not try to maintain conversations across different rooms, as this is not possible. The biggest flaw in the web site as it stands is the styling, it is very plain and basic and not overly pleasing to the eye, while this does not impact the functionality, have a design which is some what nicer to look at would improve the over all user experience. However while it is not well styled the web site over all is simple and fairly intuitive for users to interact with.

## 5 Personal Evaluation

During this project it became apparent that I am not very skilled in the design and styling aspects of web development and need more practice and experience in this area, as the site is very plain and not overly nice looking. I also learned that i need to become better at managing time for projects, especially in times when completing multiple projects along side on another. As having a proper structured schedule for working on each project would likely improve the over all quality of all projects.