

Final Report

(Real Time Collaborative Editor)

Group No. 6

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Project Description:

A platform for collaborative real time editing using express and socket.io.

The main features implemented in the project are :

- Collective editing of the documents or the code
- Chat box for the communication among users
- The users are distinguished by their group name
- Simple interface and high performance

In real time there are many applications like the following

- Making a group project
- Extensive use for blind group of one-on-one interviews.
- Both document editing and chat among users simultaneously.

Design Summary:

- **Login Page:** Joining a group with user name and group name OR create a group of your own choice of name.
- **Server :** Maintaining user details and sending multiple triggers to the client programs using express and socket.io .
- **Adding Features:**
 - Edit document in real time.

- Communication with other users in the group.
- Multiple users can edit the document at the same time.
- Multiple groups can be created for editing and chat
- You can also see which users are in the group in your group
- You can also see who is editing the document.

Technical Requirements:

- Nodejs
- PHP
- Python
- HTML
- CSS
- Javascript
- Socket.io
- Express

Client Requirements :

- Browser like Google Chrome or any of the newest browsing engines
- Linux or Windows Operating Systems
- Atleast 512 MB of RAM
- Should have an active internet connection to connect to the server

Server Requirements :

- Active all the time
- Linux or Windows Operating Systems
- Tangible amount of RAM

Instructions:

1. Install npm in your computer (also node.js)
2. cd to the directory collabeditor
3. Run the following commands:
 - npm install
 - npm start
4. Now you need to just open the browser and run "localhost:8080"
5. Enter your name and `groupname` (this is to be shared with other users whom you wish to collaborate with).
6. Get your IP address using the command `ifconfig -a`
7. Share this IP address and the group name with your friends to collaborate.

8. Now you can see if your friend has joined or not in the left side of the webpage under Room Members.
9. In the middle of the web page there is an editor in which you can edit the documents along with your friend.
10. In the right side of the document, you can chat with your friends as well.
11. There can be multiple groups and multiple friends in each of the groups.

Technical Challenges :

Speed of communication between client and server in editing the document is limited by network latency. This creates a fundamental dilemma: users need their own edits incorporated into the document instantly, but if they are incorporated instantly, then because of communication latency, their edits must necessarily be inserted into different versions of the document.

An example illustrates this problem:

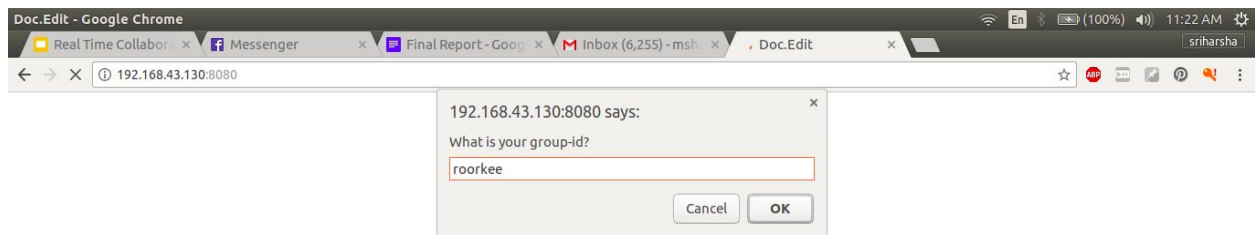
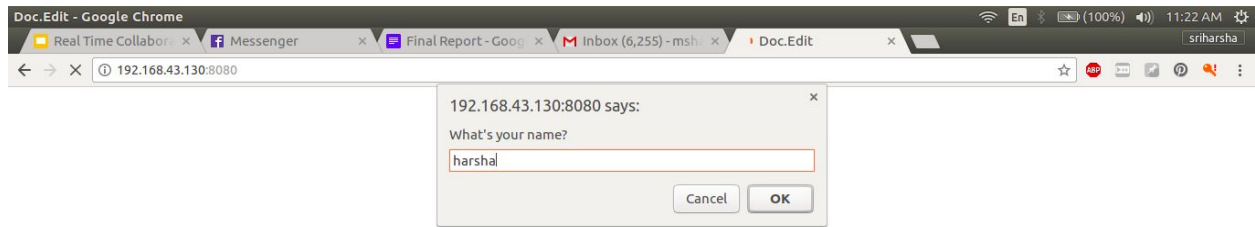
Suppose Bob and Alice start with a document containing the word *Mary*. Bob deletes 'M', then inserts 'H', to change the word into *Hary*. Alice, before she receives either edit from Bob, deletes 'r', then deletes 'a', to change it into *My*. Both Bob and Alice will then receive edits that were applied to versions of the document that *never existed* on their own machines.

Similar scenario may occur when multiple versions are created by the same user and the latest version comes faster than the previous versions.

Solution :

In a client-server scenario, one of the editor instances is assigned the role of collaboration server when the document is opened. This server ensures that other editors are kept in sync by determining network latency and acting as a time synchronisation server. The server receives timestamped notifications of changes made to the document by other users. It creates a queue of versions by the users and does the corresponding operations based on the time-stamp. It determines how those changes should affect its local copy, and broadcasts its changes to the collaboration pool.

Snapshots Of the implementation :



Doc.Edit - Google Chrome

Real Time Collabor... x Messenger x Final Report - Goog x Inbox (6,256) - msh x Doc.Edit x

← → ↻ Not secure 192.168.43.182:8080

☆ 68P 3.10

En (94%) 11:33 AM

sriharsha

Room-Members

You
Harsha Vardhan
Sanju Prabhath Reddy
Dinesh Reddy

Document

1 MY NAME IS SRI HARSHA

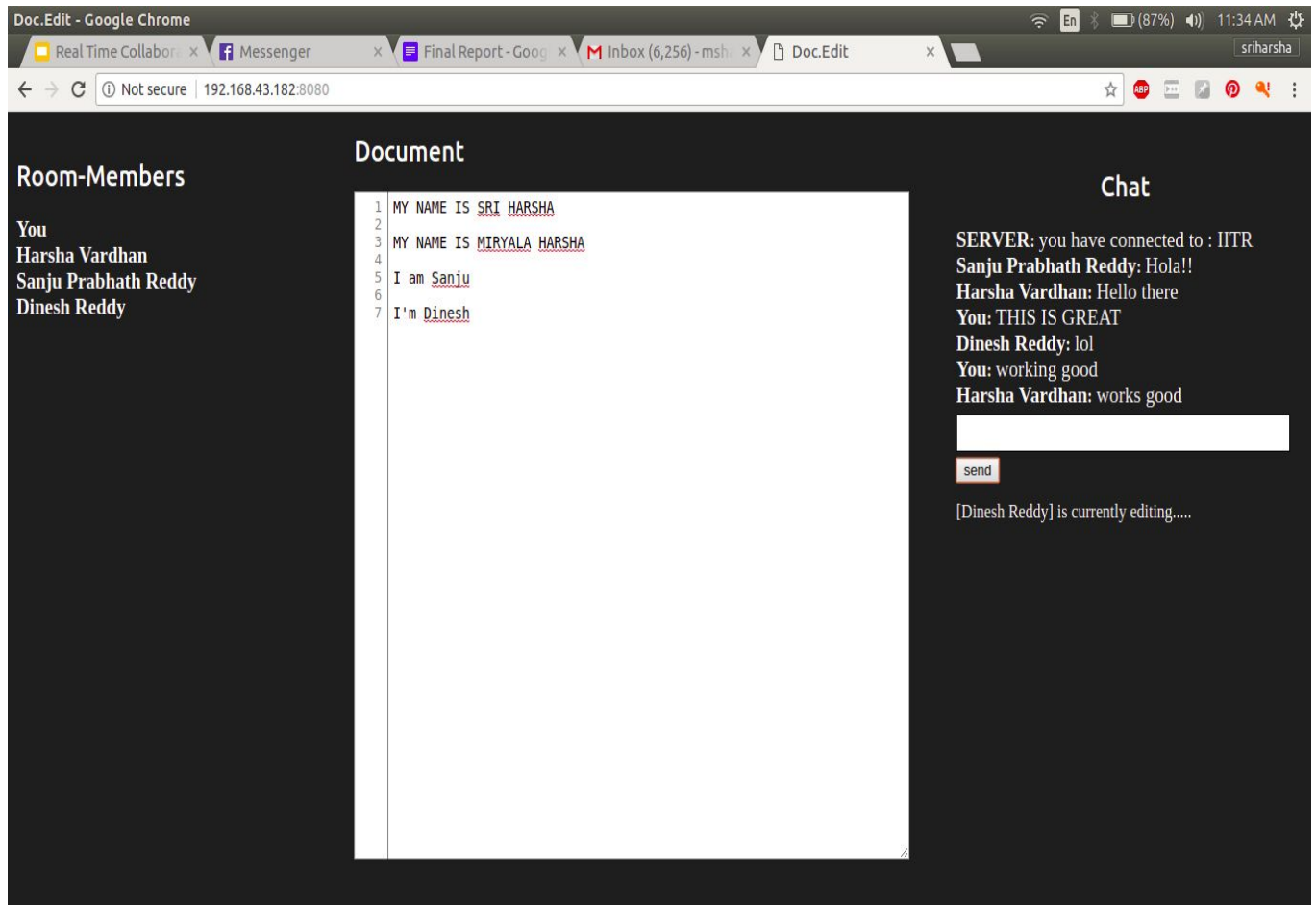
2 MY|

Chat

SERVER: you have connected to : IITR

send

[Harsha Vardhan] is currently editing.....



Contributions :

Initial Contributions :

Independent Document editor :

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Independent Chat :

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Final Contributions :

Integration of document editor and chat application

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