Final Project Report

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Web Applications

CSE40613

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1. Summary

This project's main purpose is to serve as a common ground for people interested in technology and programming, willing to share experiences, resources, news, and any interesting material with other users. People will be able to post links, and upload media and documents to their public "wall"; essentially a social network for technology.

The final product of this project is this website, which is unofficially called "Techroot". The idea behind is to serve as a kind of social network, but directed toward technology. The current state of development allows only images and URLs to be shared, but further improvements may include forum-style functions, such topics with questions asked and sharing other types of files. The website offers its own authentication system and a sign-in identification using Google.

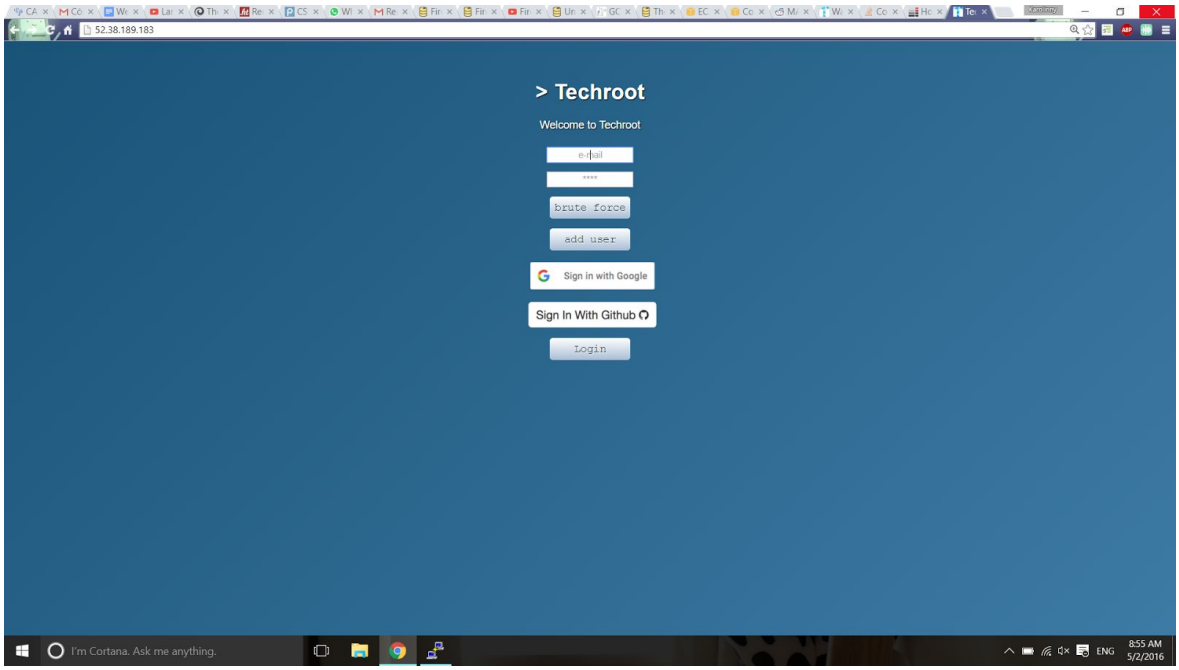
2. Components

In this section, the main components of the website are going to be explained in more details.

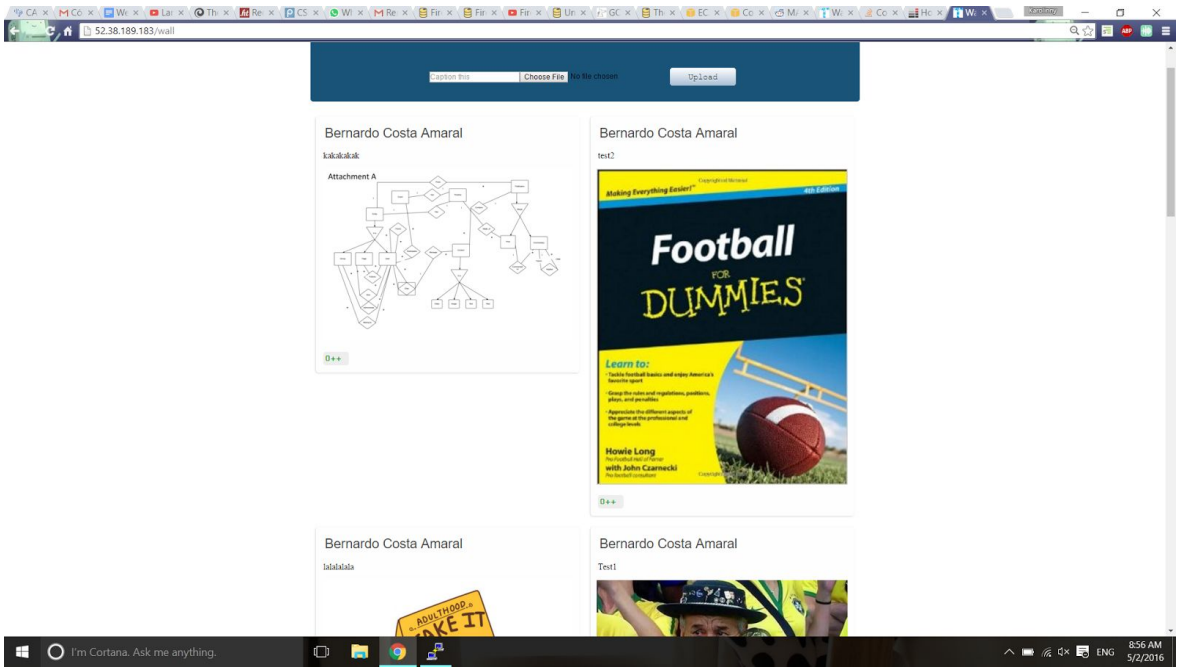
a. A profile page, public to other users, but editable only by the owner. The content of this page would include his/her profile picture, name, and all the material uploaded or shared by him.
b. An upload functionality, which the content owner can share files stored locally to the network, making it visible to other users.
c. A feed page, where the recent content uploaded by other users would be displayed.
d. And finally the content interaction: how other users can interact with the content available to them.

3. Views

The main views of the website.



1. Login page



2. Wall page

4. Frontend

For the development, we have used the Express framework and the jQuery JavaScript library. For repetitive tasks, such as minifying the files, we have used the JavaScript task runner Grunt.

The static HTML content was generated from Jade, which is a Node template engine and also a language, to write HTML templates, instead of files. The choice of Jade (recently renamed to Pug) permitted us to more easily build dynamic pages, resulting in a more concise and clean static code, while allowing the template take care of the dynamic content.

5. Backend

For the web server, we have used Node JS in the background, holding all the web application requests, with NPM as the package manager.

The backend of the website will be structured as follows: The general text data storage, settings, and user information and authentication will be responsibility of Firebase. The files uploaded and any other large data will be hosted in Amazon S3 buckets, accessed by the application in running time. The website hosting will be (at first) under a personal domain of a group member.

6. Data dictionary

```
/tech_root      # firebase root of website
|
|__/Uploads         # user posts: uploaded files, and links
|   |__/[category]      # category of files [link, image, audio, document,...]
|       |__/[item]          # uploaded item id
|           |__ url             # Amazon s3 bucket file url
|           |__ uid             # uid of creator
|           |__ caption         # text attached to post (e.g.: description)
|           |__ stats           # statistics of post (e.g.: # of ++ (likes))
|
|__/Users           # users information and settings
    |__/[uid]           # user unique identification
        |__ email_address   # user e-mail address (required)
        |__ name            # name of user (required)
```

```
|__ nick            # nickname of user
|__ gender          # gender of user
```

7. Contribution

The set of tasks were divided for each team member. The main components (in the next section) draw a primary division of tasks. In addition, we plan have used git for version control and pair programming to achieve higher productivity. In these lines, each of the following tasks will be assigned for two group members that will work together:

- The static content (HTML/CSS) - Lucas and Karol;
- The communication with the database - Karol and Bernardo;
- The dynamic changes such as file upload and user interaction - Bernardo and Lucas;
- Security measures and permissions - Karol and Bernardo.

8. User guide

To have access to all the Techroot functionalities, the user should have an account, by creating it in the Homepage. The account can be created either by using an existing Google or GitHub account, or by providing email, name, username and password. After that, the user can login and will be redirected to the Wall page, where he can share picture and stats with the other users, and see what people are talking about.

9. Related ideas

While there are several social medias in the Internet and many of them are also niche websites -- geared toward a particular part of the population, instead of a general purpose network -- there is not an obvious choice when it comes to the tech field. Usually this audience is part of one or many forums where they can exchange answers, experiences, and news. A few examples are Reddit, 4chan, StackOverflow, and other more specific forums and communities.

10. Future work

To improve the user interactiveness, the next steps would be implement comments regarding the post and enable likes.

Implement the profile page.

Share files between users.

Upload different document types, like audio, video, pdf, etc.

Customize the feed priority.