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Spring 2017

Digitized Engineering Notebook

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ABSTRACT

Digitized Engineering Notebook is a Web site application that simulates and transforms the characteristics of a paper notebook used for recording details of laboratory works into a digital version of such notebook. Digitized Engineering Notebook allows users to store records of text, data and images to a database, and at the same time provides functionalities for easy access. Digitized engineering notebook also allows users to create and edit files online while collaborating with other team members in real-time.

Major features include front page with a menu, admin console for site administration, a list of exiting project and creation of new projects, table of content, chronological listing of log entries, pages with multimedia, search, calendar of events, etc. Key functionalities include user login, log entry forms, file upload function, converting HTML to PDF, log printing, etc.

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1   Project Description

Notebooks are the traditional form of storing the data since ages which gave information on how a revolutionary idea was shaped and structured at its perfection. Many scientists or Engineers always relied on notebooks to save or document their info like their innovations, inventions and also their corrections out of missteps. In fact, notebooks give abundant knowledge rather than just giving an overview of any application or a process where many of them wouldn't know about the discoveries of Leonardo da Vinci if he had not put his discoveries on a notebook. But with the modernization of current era, ideas and inventions took new birth to revolutionary technologies which brought many changes in the way we use the things and out of such innovations, Digitized Engineering Notebook is the one which replaced a paper-bound notebook as it's an inefficient means of recording any information.

Digitized Engineering Notebook (DEN) is the one in which an engineer can formally document the work formally, in a chronological order of all the work that is associated with a specific design of a project. A detailed and clear description can be of the design process can be given in a way that someone unfamiliar with the work can also take over the project without further information.

1.1   Competitive Information

Digitized Engineering Notebook is a challenge to other applications where we can upload any kind of data into the application like not just the text but also image files or any kind of data into it. There are few more applications which are used for online note taking like Evernote, Google Notes, Spring note, etc. which gives a tough competition to our application but Digitized Engineering Notebook is simple yet powerful application to takes notes or generate pdf's and easy to understand.

1.2   Relationship to Other Applications/Projects

This project is related to Evernote which is a leading online note taking application which is used by many users that has a drag and drop option to view the files online and even offline. Also, DEN uses XAMPP software for server support and data base support (MySQL) to run the application on localhost.

1.3   Assumptions and Dependencies

This project is dependent on XAMPP server, an open source cross platform software used for creating a local server for testing purposes. Also, dependent on MySQL server which allows storage of data and a web programming language, PHP.

1.4   Future Enhancements

At present DEN can just generate PDF documents but in future it will be able to generate a document (PDF or word or excel) and can be exported to any type of document where DEN does the document conversion online when the required output file is exported by the user

1.5   Definitions and Acronyms.

DEN: Digitized Engineering Notebook
PHP: Personal Home Page
XAMPP: It stands for cross-platform, Apache, MySQL, PHP and Perl
SQL: Structured Query Language

PDF: Portal Document Format

2   *Project Technical Description*

For creating Digitized Engineering notebook, we have used the framework called Code Ignitor. This is a strong PHP framework with a simple functionality for creating complex web-applications. It is an Open Source Framework. The main features of Code Igniter are:

- MVC based System
- Form and Data Validations
- Data Encryptions
- Session Management

2.1   *Application Architecture*

The below diagram gives you the architectural diagram of the Code Igniter.
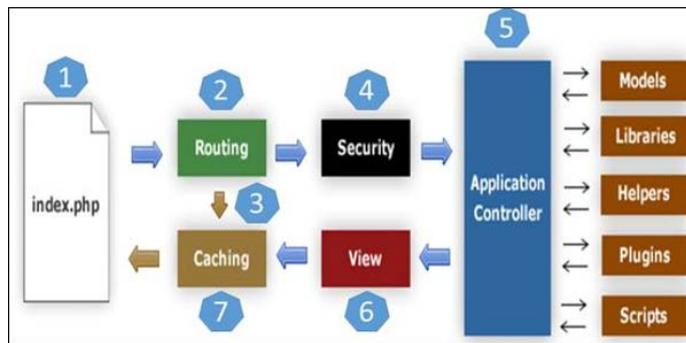
2.2   *Application Information flows*

Whenever user communicate with code Igniter, the request will be in the form of index.php page. The routing block will decide whether the request should send to Security or Caching. Caching is the process of storing the pages for future references. If the requested page is found in caching, then the request goes to catching and the response will be given to user.

If the request is not existing, then it is sent to security block for security checks. Application Controller loads related libraries, models, helpers, plugins, Scripts and then the output is passed to view. View performs rendering and sends output to catching for future references

2.3   *Capabilities*

Provide a list of the capabilities need to support this Project. Example: a database application must provide capabilities to support business application such as retrieving/adding/deleting/updating user data.

- Creating online notes
- Upload text, images or any kind of data online
- Generate PDF's
- Organize Project and Teams
- Always available for online access
- 24x7 data retrieving capability from the Server
- Provide testimonials to clients

2.4 Risk Assessment and Management

This section is used to identify as early as possible some of the risks that are associated with the introduction of this project. It should also contain recommendations to eliminate or minimize these risks.

Providing project information before risk management begins is important where following can be defined before a Risk Management Plan is developed.

- Scope needs to be defined, scope varies based on the changes on project requirements
- Schedules, Resources needs to be defined
- Work Breakdown Structure (WBS) needs to be developed for the project
- Project cost estimation
- Finalizing the budget
- Available and Required resources needs to be developed
- Performance of the application needs to be measured
- Minimum and Maximum thresholds need to be defined
- Risk Management Roles & Responsibilities are to be defined
- Team of the project looks at risk assessment meetings

3   Project Requirements

3.1   Identification of Requirements

<GSU-GS-SP2016-1 SERVER AVAILABILITY>
> Server should run 24/7 so that team members, captain, and admin can modify required data round the clock.
> Implementation: Mandatory

<GSU-GS-SP2016-2>PDF CONVERTER
> The project should support pdf Converter software so that it allows every user to convert the required data
> into pdf format.
> Implementation: Mandatory

<GSU-GS-SP2016-3 TEAM ID>
> Every group should have unique team id so that it becomes easy for users to identify and join the group.
> Implementation: Mandatory

<GSU-GS-SP2016-4 LOG ENTRIES>
> The project should allow captain, admin, and team members to create log entries. These log entries shared by team members are reviewed by captain
> Implementation: Mandatory

<GSU-GS-SP2016-5 UPDATING LOG ENTRIES >
> Log entries created by team members can be updated, deleted or added by Captain.
> Implementation: Mandatory

<GSU-GS-SP2016-6 CAPTAIN REQUEST>

The project should allow admin to accept captain request so that captain can create project and team for the application
Implementation: Mandatory.

<GSU-GS-SP2016-7 PROJECT REQUEST>
Members can be able to see the active projects and can send request to corresponding captain for joining the team
Implementation: Mandatory

<GSU-GS-SP2016-7 DATA TYPE>
Team members can be able update any kind of data such as images, tabular data, and graphical data.
Implementation: Mandatory

<GSU-GS-SP2016-8 PDF FORMAT>
The project should allow captain and team members to look for data according to date and time and download it in pdf format.
Implementation: Mandatory

<GSU-GS-SP2016-9 PROJECT STATUS>
Only admin and Captain can be able to update the project status i.e. they can update the status by active or inactive.
Implementation: Mandatory

<GSU-GS-SP2016-10 REGISTRATION>
The project should allow every user to register as a captain, member and send corresponding request to others. But, user can only become captain when admin accept its request and user can become member of the team only when captain accept its request.

3.2 Implementation: Mandatory Operations, Administration, Maintenance and Provisioning (OAM&P)

Digitized Engineering notebook is a web based application developed by using PHP and XAMPP server. The front end of the website is developed by using HTML, JAVASCRIPT, and CSS. To access the digitized notebook users must have web browsers of any version.
Here, we have used HostGator to deploy the project and the admin should back up the database for 2 weeks and the users are required to change their passwords every week for security purposes.
Users who registered for digitized engineering notebook (DEN), can perform operations based on their roles

Admin:
- ✓ Approval of Captain request
- ✓ Delete the project

Captain:
- ✓ Approval of Member's request
- ✓ Creation of project
- ✓ Creation of team
- ✓ Updating Log-Entries

Members:
- ✓ Sending request to Captain
- ✓ Creating Log entries
- ✓ Download pdf

3.3   Release and Transition Plan

Project was started on Feb 6 2017 and continued till May5 2017.The final demo was given on May 8th 2017. The details of deliverables are as follows:

- ➢ Phase 1 of the project: March 6th 2017
- ➢ Phase 2 of the project: April 17th 2017
- ➢ Final phase of the project: May 8th 2017

4   Project Design Description

In Digitized Engineering Notebook (DEN), user can create a project and share the project with number of users and discuss about it online. It allows users to access it online and update the data whenever user needs. To do this first User has to create a project. If other users are interested to join the project, they have to send the request to captain. If captain accepts the request, then user becomes the member of the project. Once user becomes the member, he can update the data, access it and download it. The data can be any type like image, tabular data, graphical data etc.
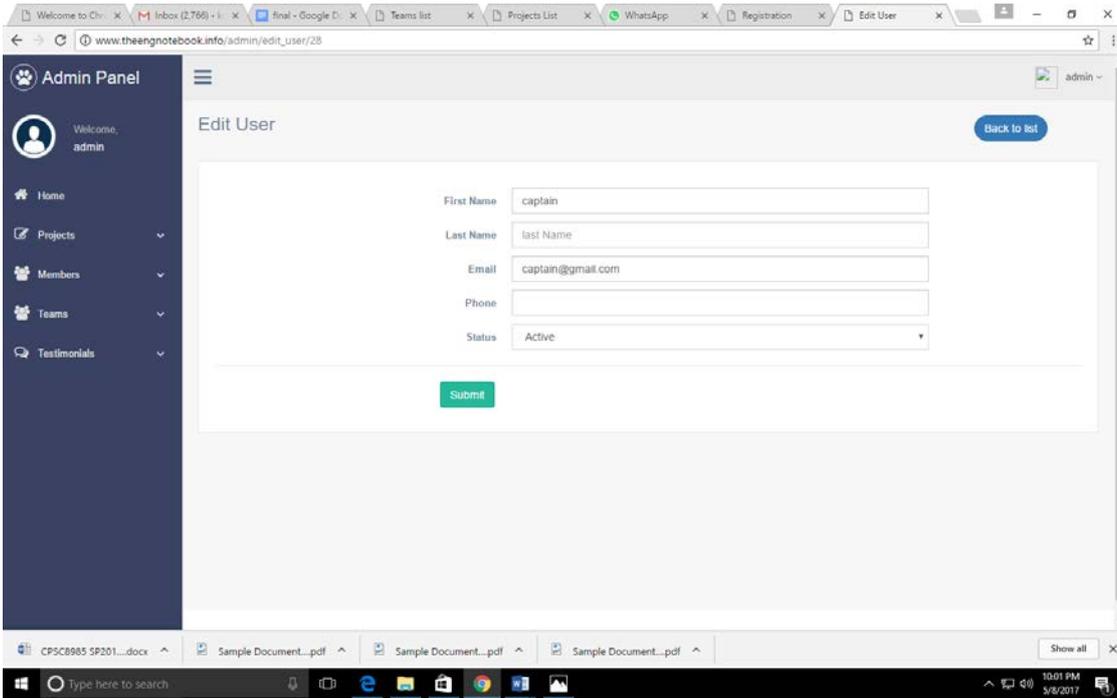
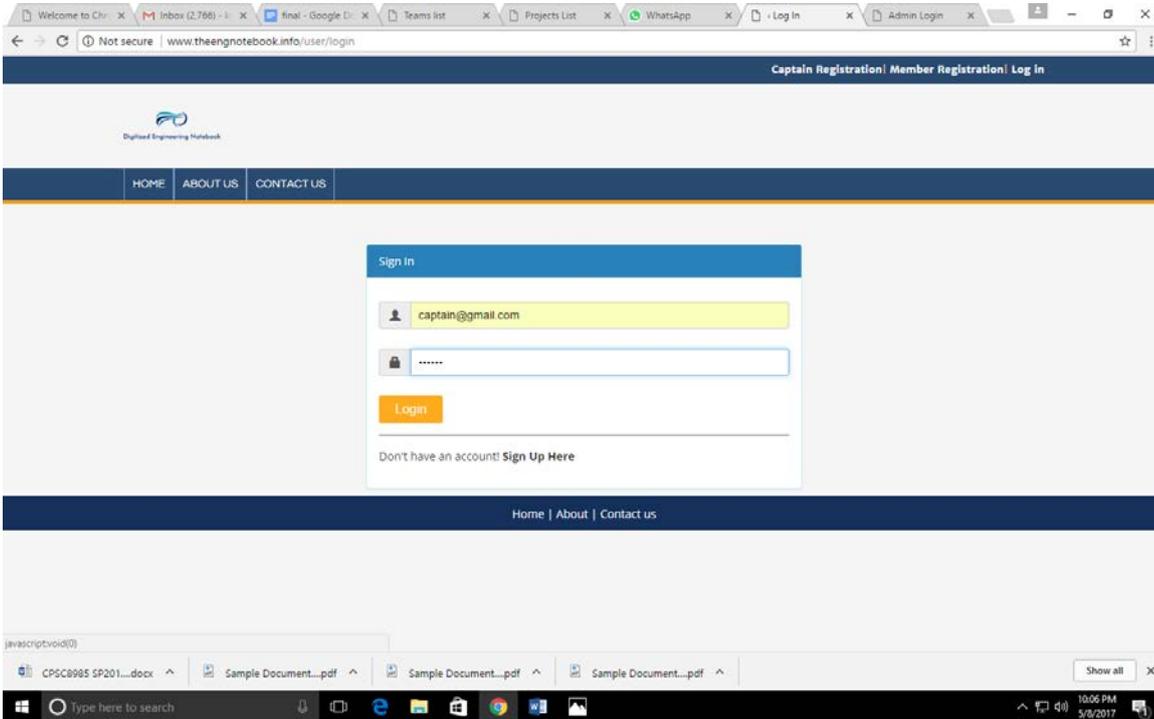The below screenshot shows the creation of captain credentials.
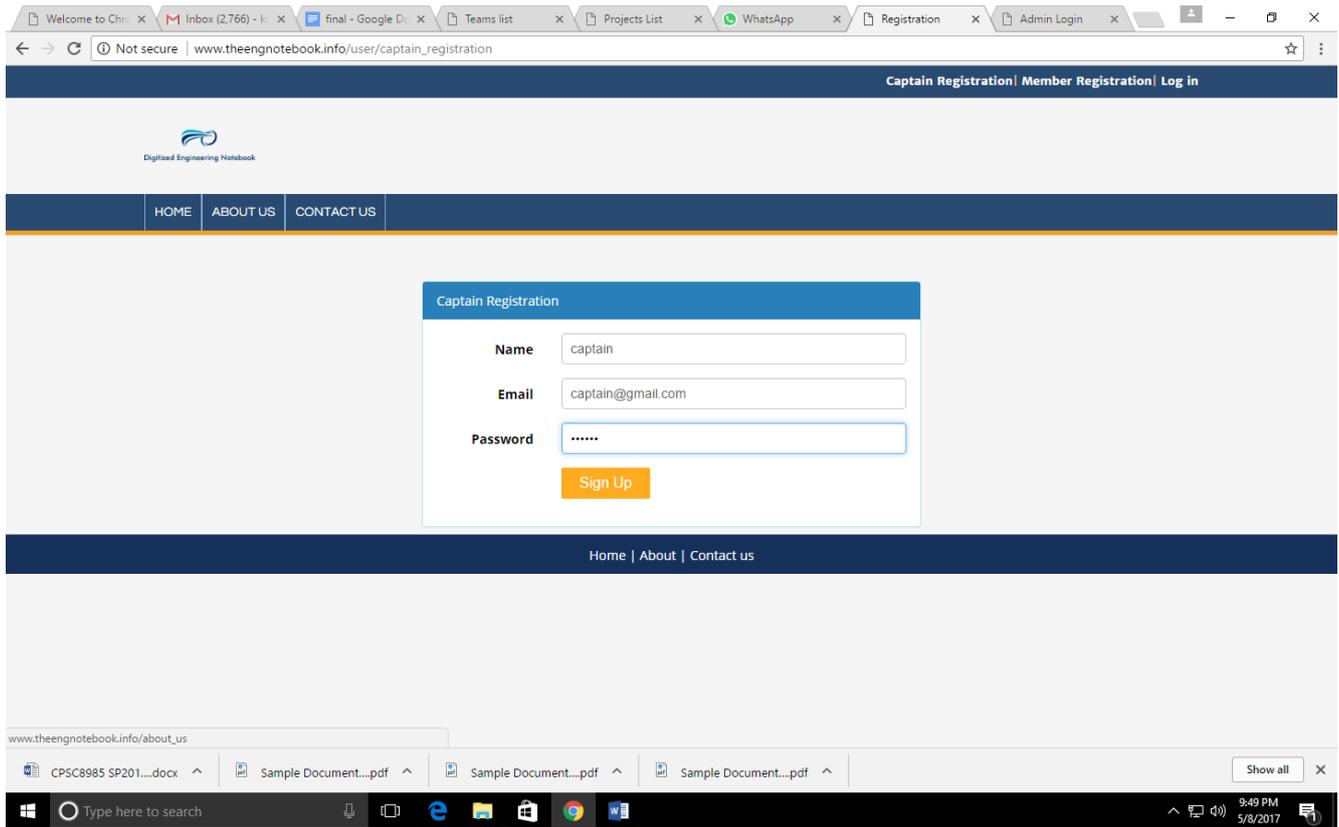
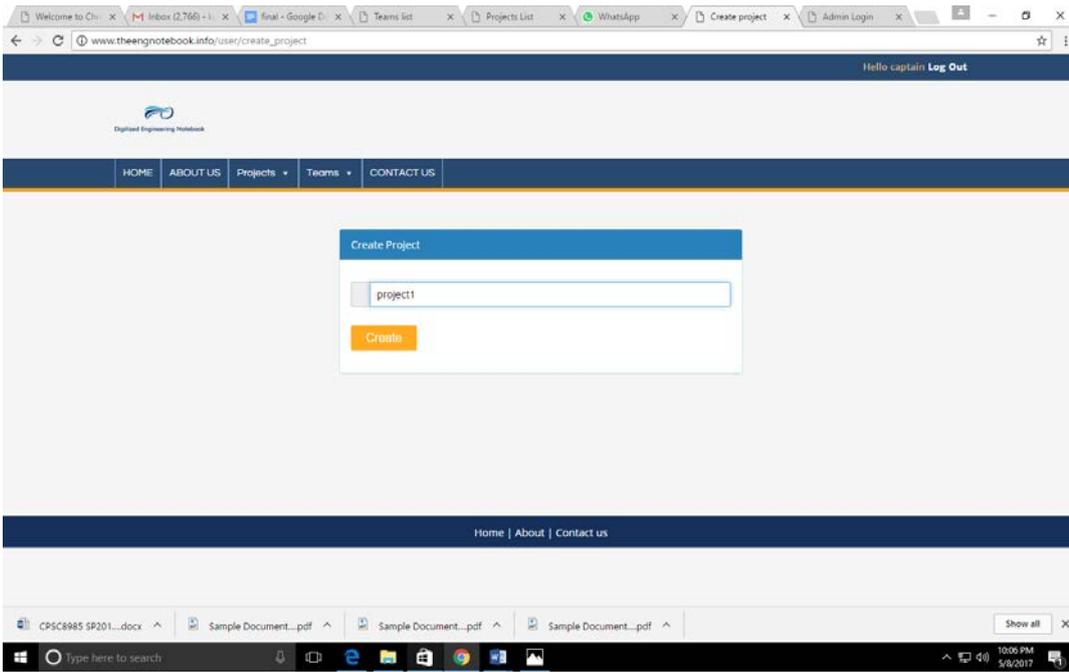The below screenshot shows the admin log in page:
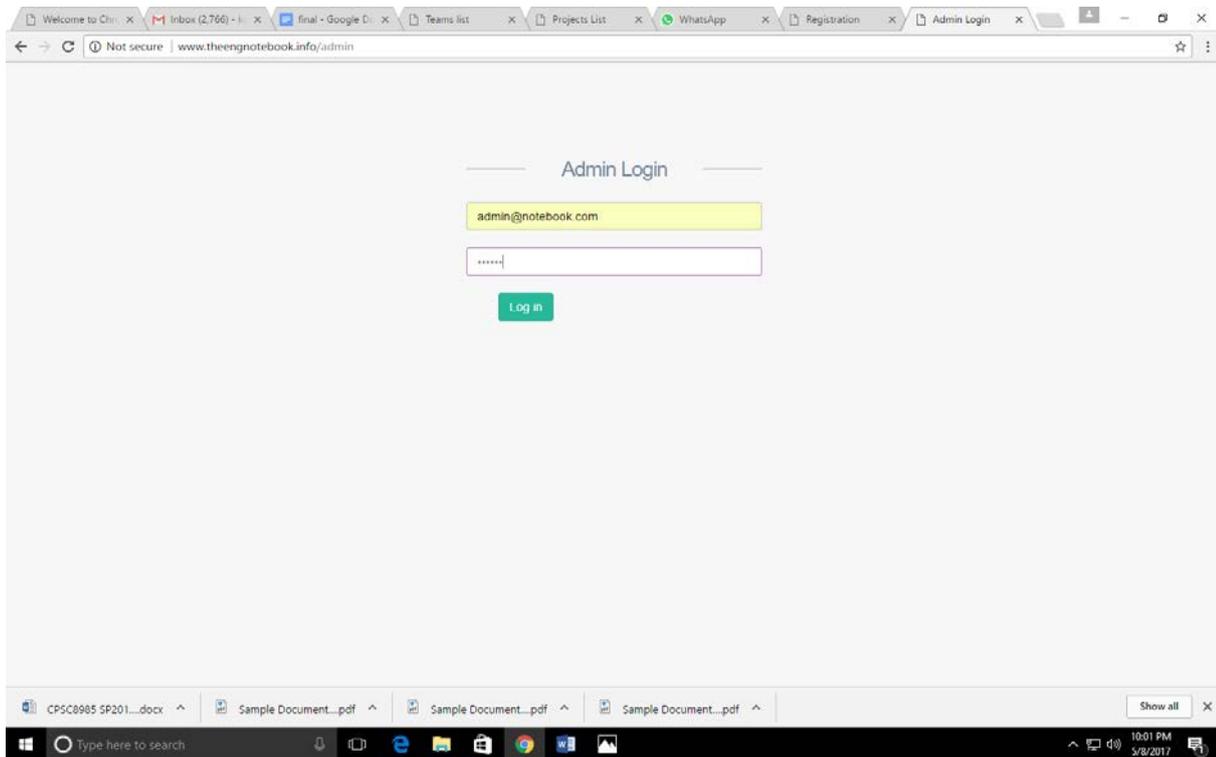
The below screenshot shows the admin page which accepts captain request by making it accept.
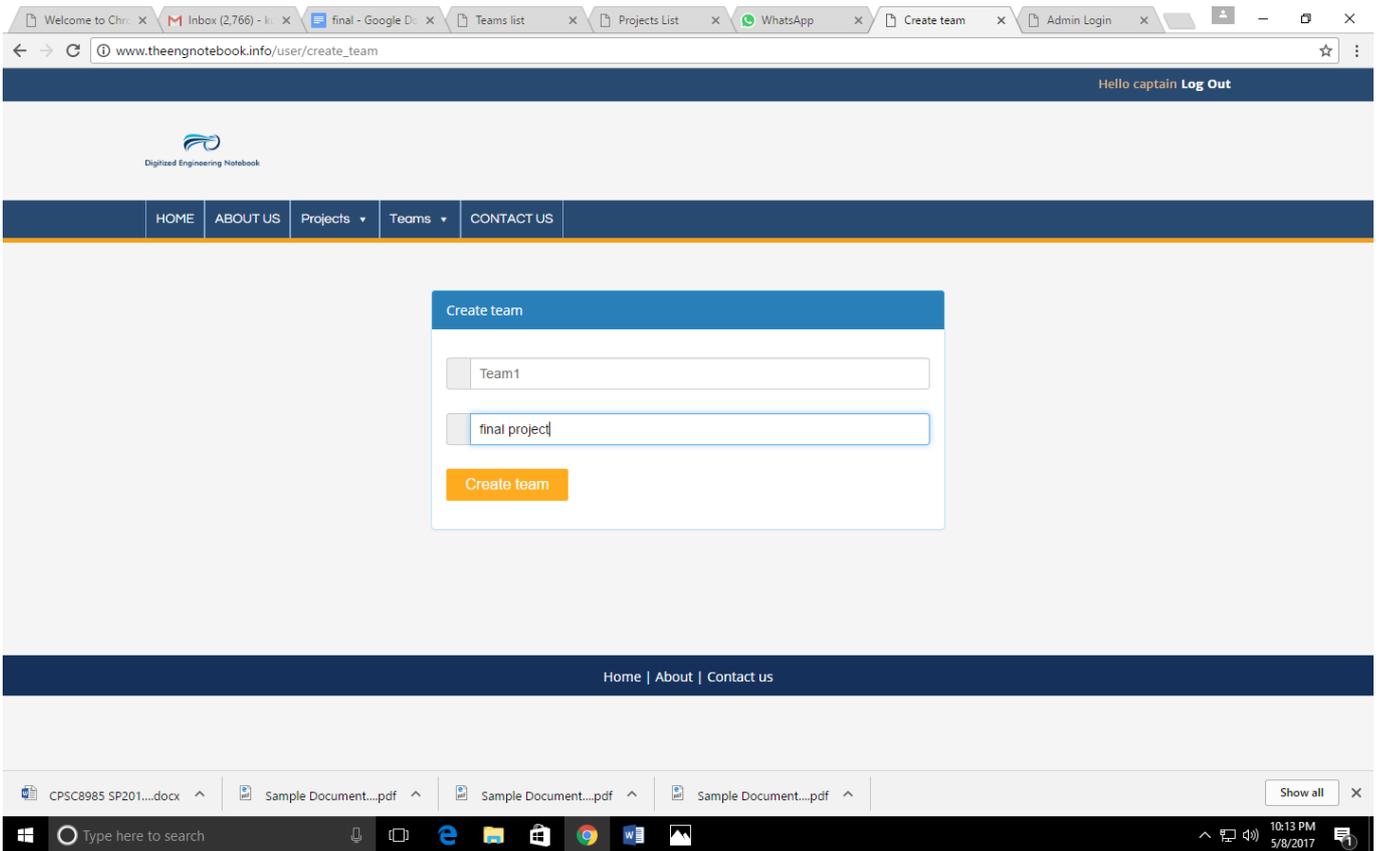

The below screenshot shows where the captain enters his credentials

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The below screenshot shows the captain home page and creation of project called project1

The below screenshot shows the creation of team by using team id called **Team 1** and Team name called **Final Project**
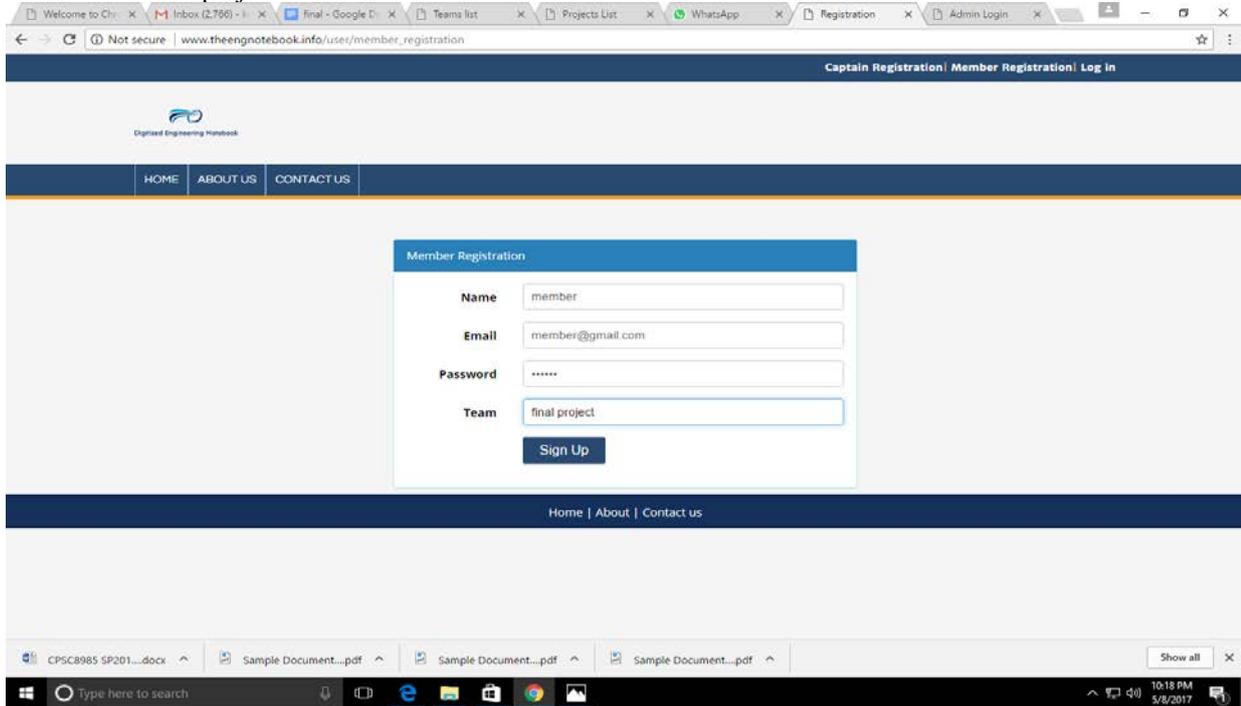
The below screenshot shows the member registration by entering following credentials
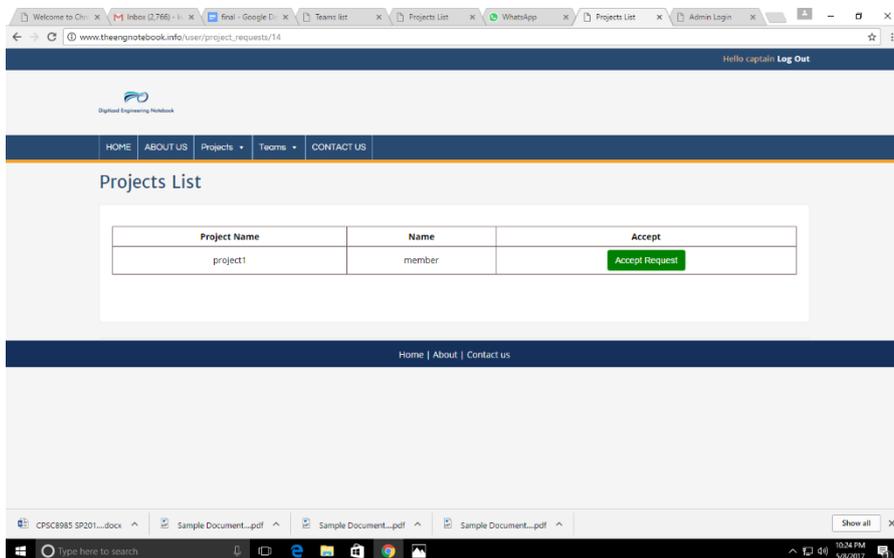
Member name: member
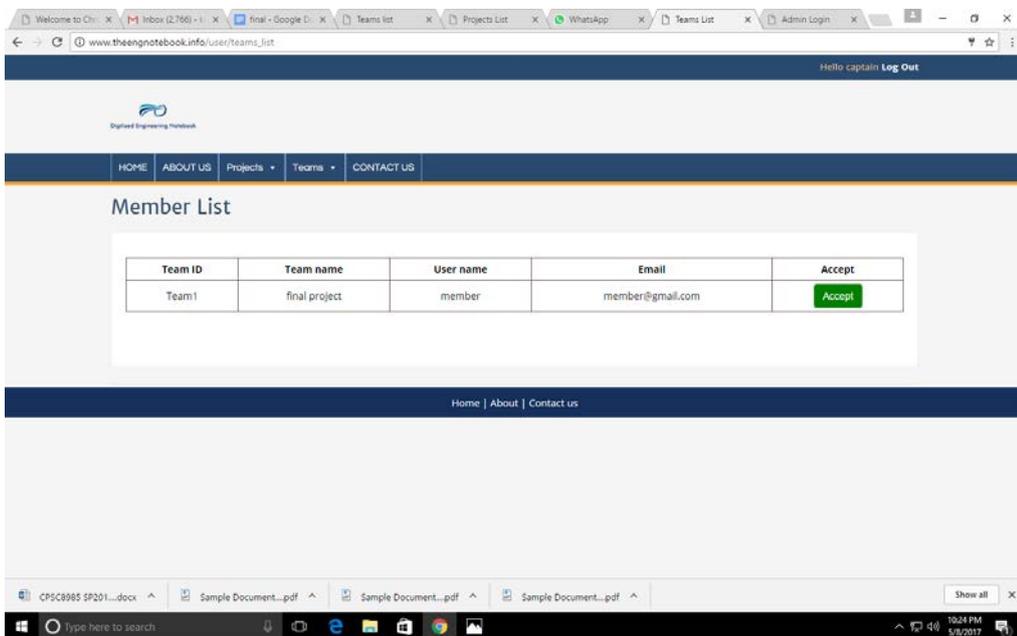Member email id: member@gmail.com
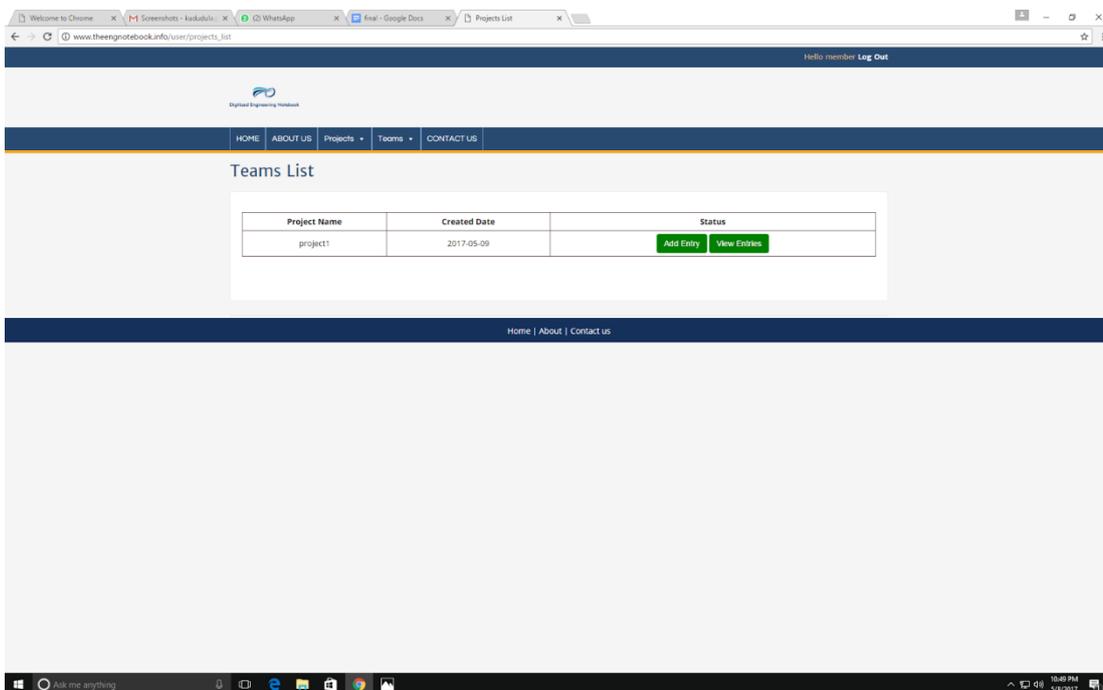Password:123456
Team name: final project

The below screenshots shows how the captain accepts the member request and how he updates the project to active state.
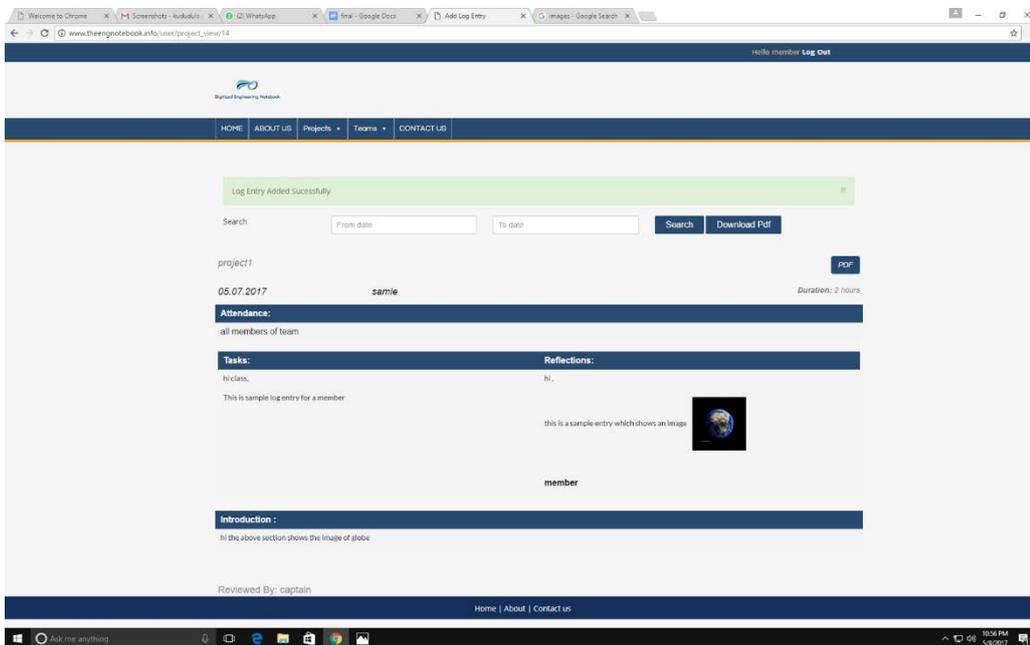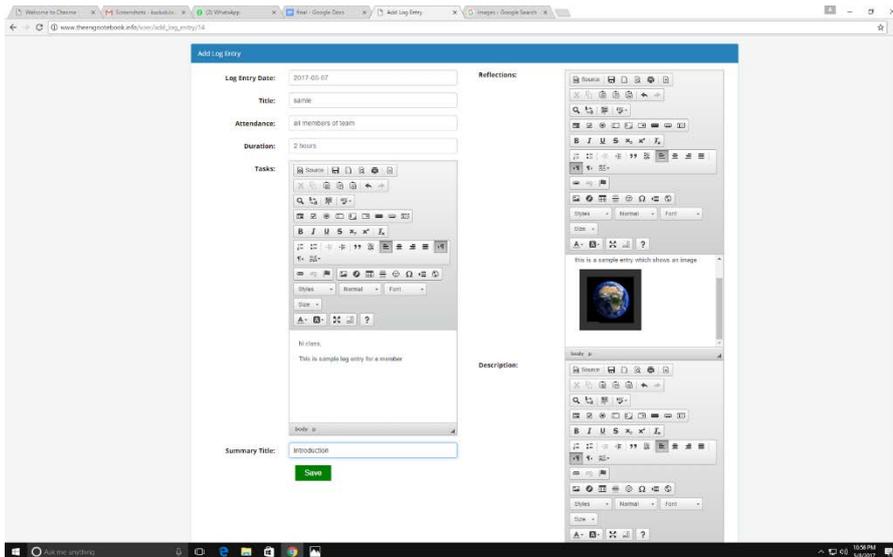
The below screenshot shows members page who is accepted by captain for the **project 1** project. Here we can also see the **add entry button** which allows member to create log entries.

The below screenshot shows the log entry page of member .here we can also see the pdf button which allows user to download the log entry in pdf format.

The below screenshot shows downloaded pdf format
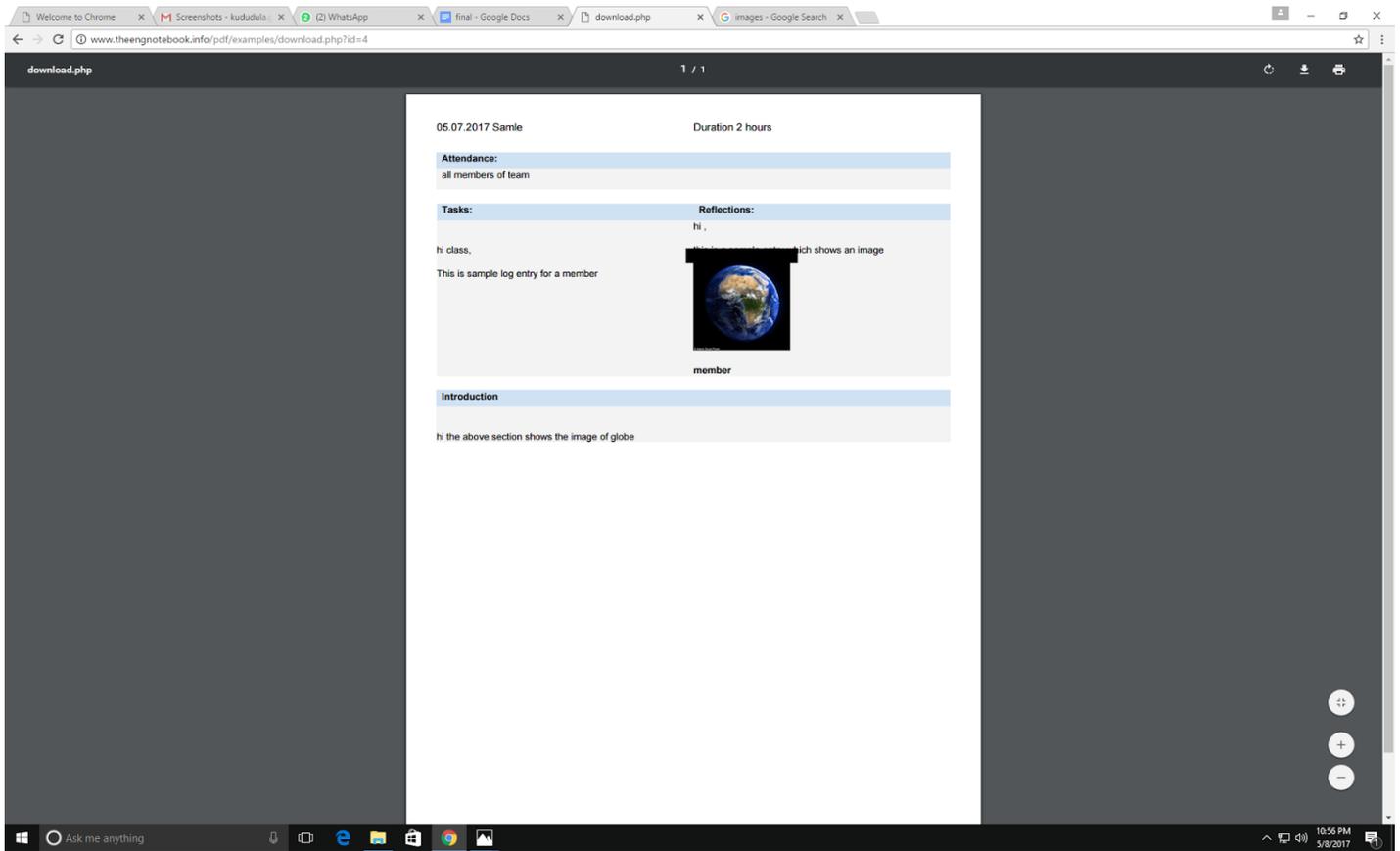
5   Design Units Impacts

5.1   Functional Area A/Design Unit A

5.1.1   Functional Overview
In this Digitized Engineering notebook ,users can do following functions
1. Create a project
2. Create a team
3. Exchange Information
4. Generate pdf

5.1.2   Impacts
 The impacts of the Digitized Engineering Notebook are
   Users can access the notebook from anywhere using internet and Members are not allowed to modify or update the log entries once after submitted

6   Acknowledgements

        We are really grateful that we completed our CPSC-8985 course project work within time given by our professor Dr. Tang. This assignment cannot be completed without the effort and co-operation from our group members Ganesh, Ravi, Anji and Karthik. We also sincerely thank our senior friend Raghu for the guidance and encouragement in finishing this project and also for teaching us a lot. Last but not the least, we would like to express our gratitude to our friends for the support and willingness to spend sometimes with us to fill in the questionnaires

7   References

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