Governors State University
OPUS Open Portal to University Scholarship

Spring 2017

Digitized Engineering Notebook

Sai Ram Reddy Ergam Reddy
Governors State University

Jahnavi Reddy Kora
Governors State University

Sai Chandu Minnakanti
Governors State University

Vinay Tallapaneni
Governors State University

Follow this and additional works at: http://opus.govst.edu/capstones

Part of the Computer Sciences Commons

ABSTRACT

An engineering Notebook is defined as a record which is used by an engineer to record all the innovative thoughts, procedures and results of all thoughts. It is the permanent, documented, and primary record of what goes on in the design setting. Our project aims at designing the Digitized Engineering Notebook which is a web application that simulates and transforms the characteristics of a current notebook used for recording details of robotics competition projects 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 functionaries for easy access.

It allows its users to add in the database at ease and maintain the log details of respective project information. It also allows users to create and edit files online while collaborating with other team members in real-time. Creation of dated log entries for ideas, details, practices, trails and errors and allows to file upload for text documents, drawings, sketches, figures, etc. It provides discussion board to discuss project information with their team members. It handles adding new members and managing members, adding new projects and managing project details.

The admin can add a captain who can further add new member/team/projects and easily manage member/team/projects. The captain can activate or deactivate members of projects and can manage project details like images, drawings, sketches. User can upload files and images. It allows creating the calendar events and create PDF files from logs. User can share ideas, knowledge with their team members online.

Table of Contents:

1   Project Description

Digitized Engineering Notebook, a web application can be used by an engineer for recording innovative thoughts, procedures and results of all thoughts. This notebook is used to record all details of robotic competition projects into a digital version. This can be used for user to work on a certain project. This project allows Captain and Team Members work on the project simultaneously together. So, they can put more innovative thoughts on the project and this makes the project more effective. This project allows Multimedia elements in Web pages. Captain can edit the project and can make changes to the document, while team member cannot. This is more user-friendly. Any person who is interested in working on a certain project can search for the project in this website and sign up under the captain and can work on that project. If admin thinks that the project is not useful, he/she can delete it.

1.1   *Competitive Information*

In digitized engineering notebook, one can register for a project as a team member under a captain and work on the project. Captain leads the project and helps team members working on the project. This way the innovative thoughts of both the captain and team members can be put in the project. Any person can register a team member under a certain project, by the acceptance of the captain they can work on the project. This way this project is used for all engineers with no cost and the project is designed with open source software. This makes the project more efficient and user-friendly.

1.2 Relationship to Other Applications/Projects

Digitized engineering notebook, using open source software is designed for making current notebook digitized and is used for recording details of any project. This is a Digitized version of such notebook and is unique. Adding new members and managing them make a group work on single project under the guidance of a Captain. So, group ideas are put together and the Captain can edit files and discuss with team members. All these features made the project Unique.

1.3 Future Enhancements

In future, Digitized Engineering Notebook can be taken to next level in developing an App on Android or Apple. This makes easy for users to login and add records of their project. This makes the project more user friendly and even without a computer, users can upload images or records to the project and can discuss online using a mobile phone.

2 *Technical Description*

This Project Digitized Engineering Notebook is designed based on Admin, Captain and Team Member. Everyone have their own Login and Captain, Team member have their own Signup pages. Using PHP and Creating all databases as per the requirements is the main part of this project. The Architecture diagram is mentioned below and the database diagram is provided.

2.1 *Project/Application Architecture*

The figure 2.1 is the architecture diagram of the Project Engineering Notebook. In Home page, the registration of Captain and Team member is provided and Log in button is given which makes Admin, Captain or the team member log in to their Home page. Three Home pages are provided, one for the Admin, one home page is for Captain and one for Team Member. A logic is given that Admin should accept the Captain and his project to access the home page and the Captain should accept the Team member to access his Home page. In Admin Home Page, accept/Reject button is given in which he can accept or reject the Captain. Current projects button is provided by which he can view the current projects going on and can delete them. Same way, in Captains Homepage, accept or reject Team members button is given and he can add document or edit it. The same way, the Team Member can add document but cannot edit it.
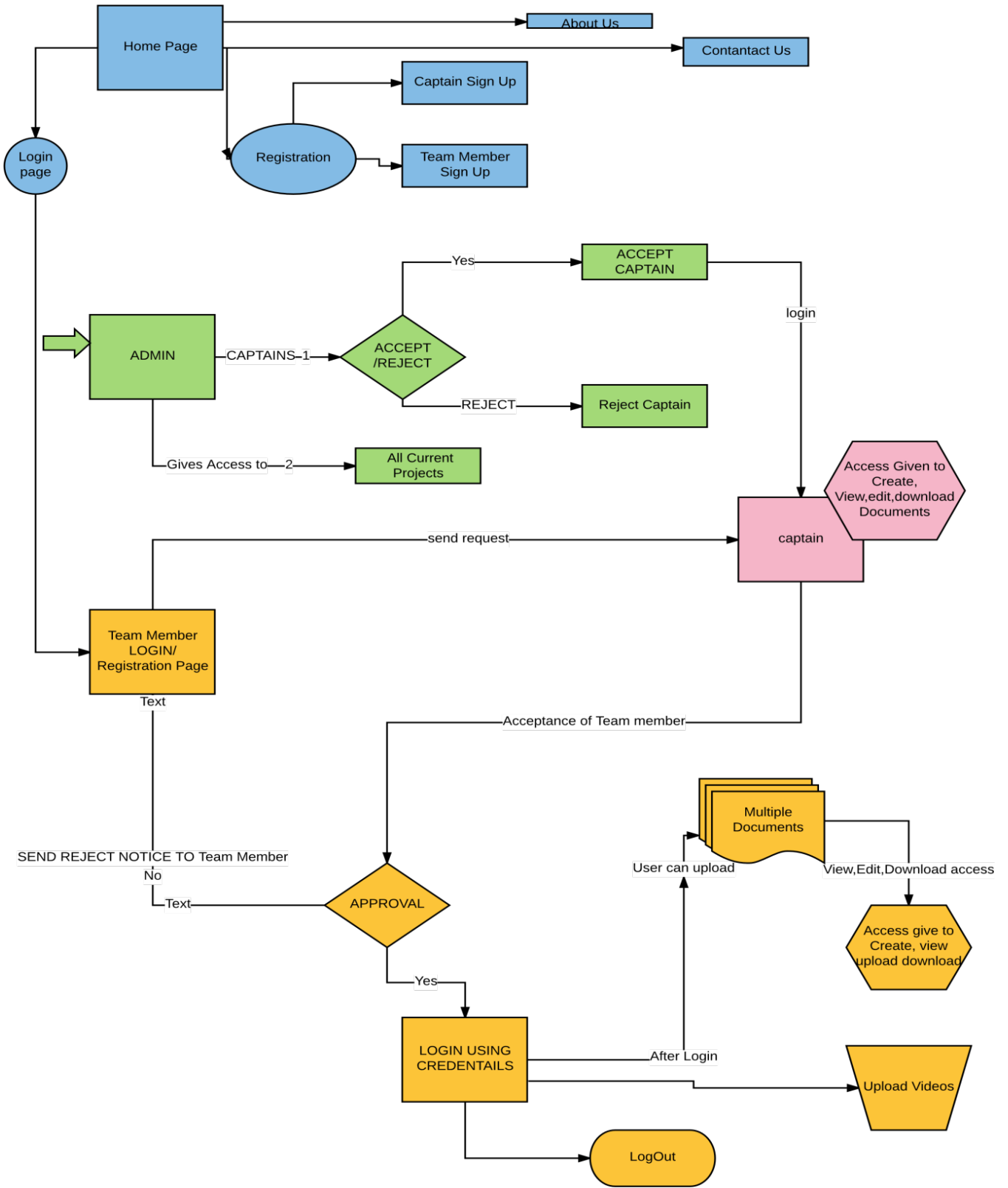
figure 2.1: Architecture Diagram

2.2   *Project/Application Information flows*

Any person who wants to work on a project can register as a team member and by the acceptance of the captain; they can start working on the project. Any person who wants to create a project can register as a captain and Admin needs to accept them. The Captain can create a document regarding the project or edit it. He/she can look at all the project he is dealing with and can de activate a team member if he wants to. The team member can create a document and submit it to the Captain. There is no possibility of editing the document for the team member after he submit it, but he can add images, upload videos to the document before he submits it and can view the document after he submit it. This way both the team member and Captain can work on the project simultaneously.
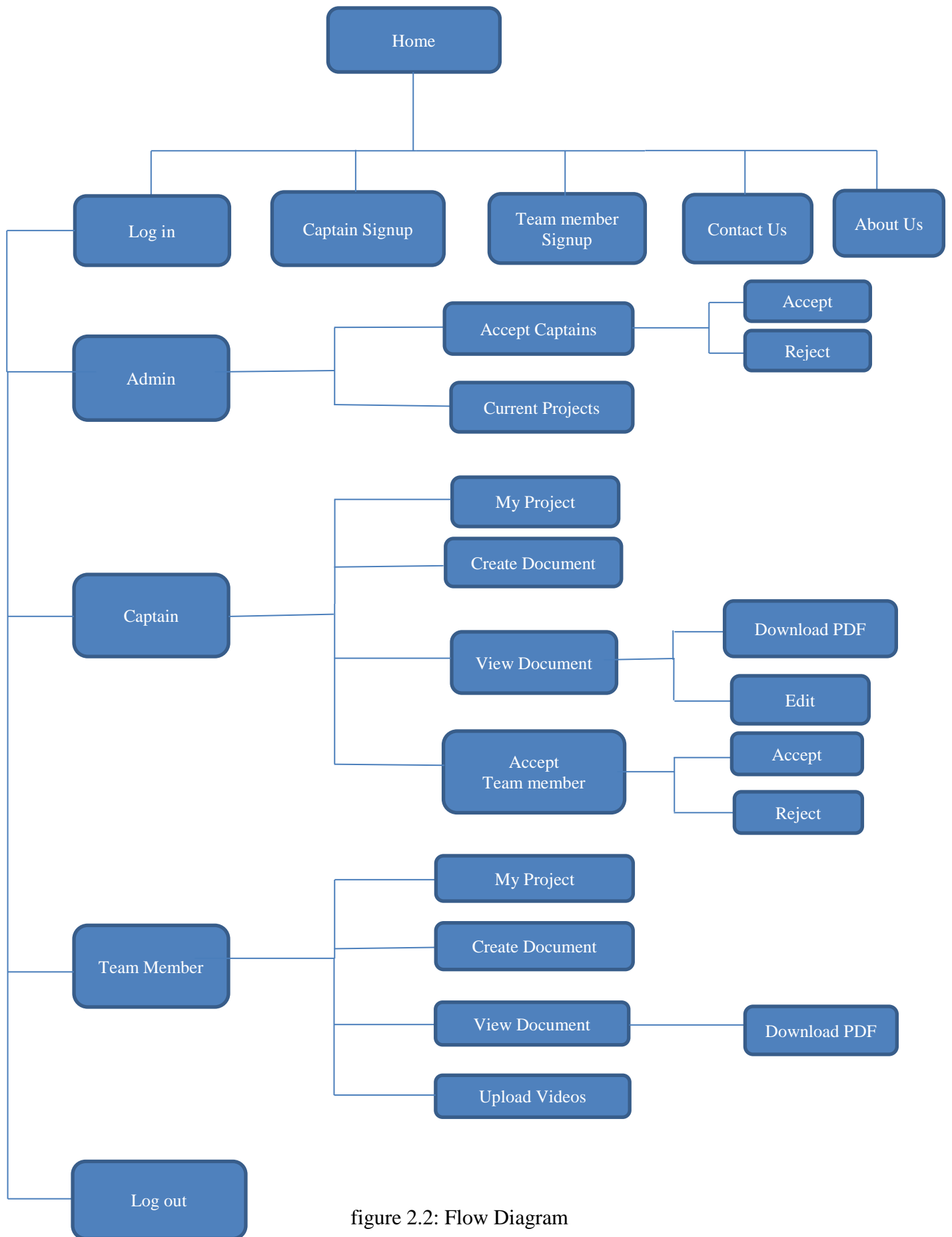
figure 2.2: Flow Diagram

2.3   *Interactions with other Projects (if Any)*

There is no interaction with any other project.

2.4   *Capabilities*

Digitized Engineering Note book allows user to create project, work on the project. They can add their records of the project and can add images and upload videos to the project. Admin could accept the Captain and then he can start the project. The Admin have the capability to delete the project. The captain can add or delete team members. He can edit the document. If the Captain or Team member forgets the password, they can refer the mail for username and password as they have the credentials in the mail. This project is User friendly and easy for the user to add or delete the project. Password encryption is another capability of this project.

2.5   *Risk Assessment and Management*

Time The important and major risk is that the project should be completed in time. This risk can be managed only if all the Team members in the Team works as per time given for each task in the project

3   Project Requirements

Below list is the functionalities which this project should include but not limited to the listed below:

R1: A front page with welcome message and a menu for navigation.

R2: Admin console for site administration.

R3: Option to create a new project or select an existing project.

R4: Add team members to project.

R5: Creation of dated log entries for ideas, details, observations, etc.

R6: Chronological listing of log entries.

R7: File upload for text documents, drawings, sketches, figures, etc.

R8: Allow multimedia elements such as pictures and videos embedded in Web pages.

R9: Search and listings.

R10: Calendar of events.

R11: Creation of PDF version of log.

Digitized Engineering Notebook Home Page:

As per the requirements given, there is a list of functionalities which this project should include but not limited to the listed below:

R1: A front page with welcome message and a menu for navigation:

This page is the front page of the Project which welcomes with Caption Digitalized Engineering Note Book. Home, Contact Us and About Us buttons are provided. Captain Sign Up, Team Member Sign Up and Log in buttons are provided. This let the user register to a project as Captain or Team Member.

figure 3-1: Home Page

R2: Admin console for site administration:

This is the Home page of the Admin. After the Admin log in this page appears. Home, Deactivating and Log out buttons are provided. This lets the Admin Deactivate the Captain or Log out. Current Project button lets the user see all the Projects going on in the lead of the Captain. Accept Captains button is provided which lets the Admin to see all the Captains registered and he can accept or reject the Captain.

figure 3-2: Admin Home Page

R3: Option to create a new project or select an existing project:

Captain can start a new project by signing up as a Captain. After Admin accepts the Captain, Captain can start the project with his Team Members. The Captain can start the project or edit it. Create Document and View Document list buttons are provided so that Captain can create a document or view the Document and can edit it.
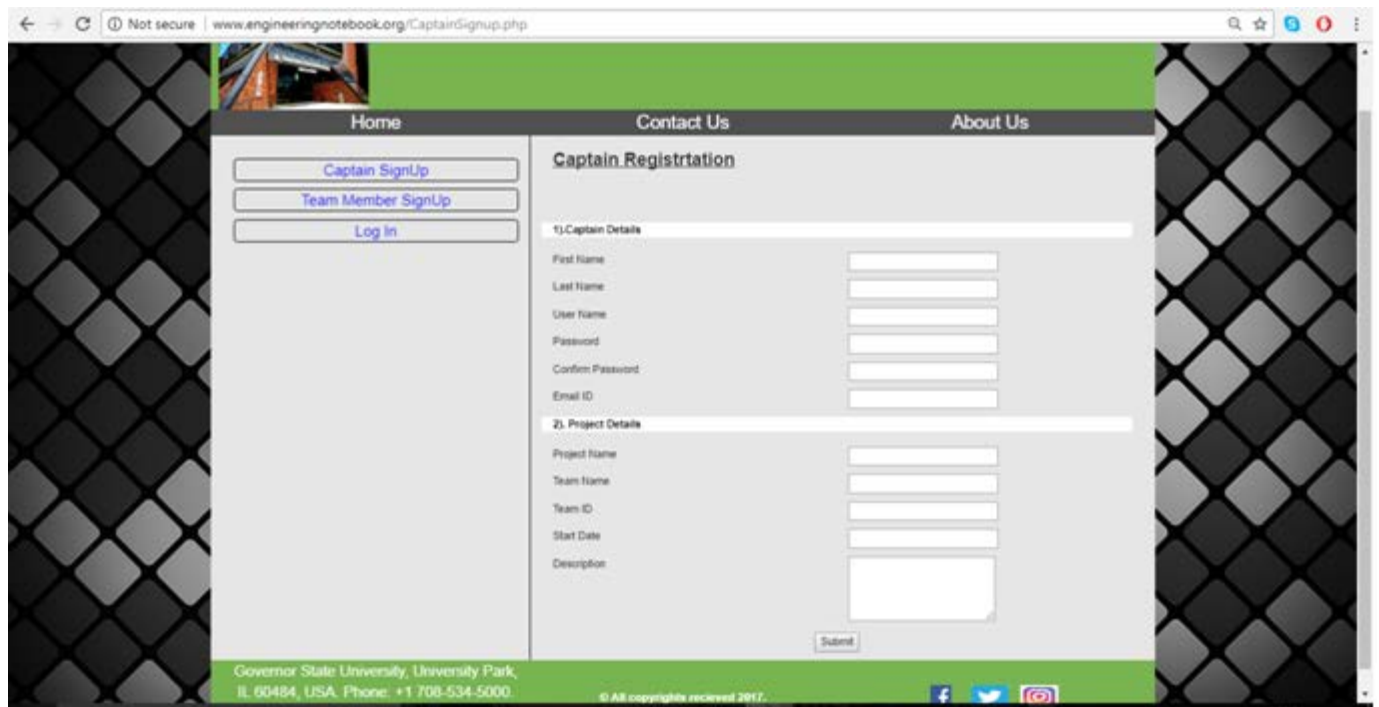

figure 3-3: Captain Sign Up

R4: Add team members to project:

Here Team Member can search for the team he wants to work on and select the project by searching with Team Id or Team Name. Team Member can Sign up for a certain captain and work on the project but once he submits the document he cannot edit it.
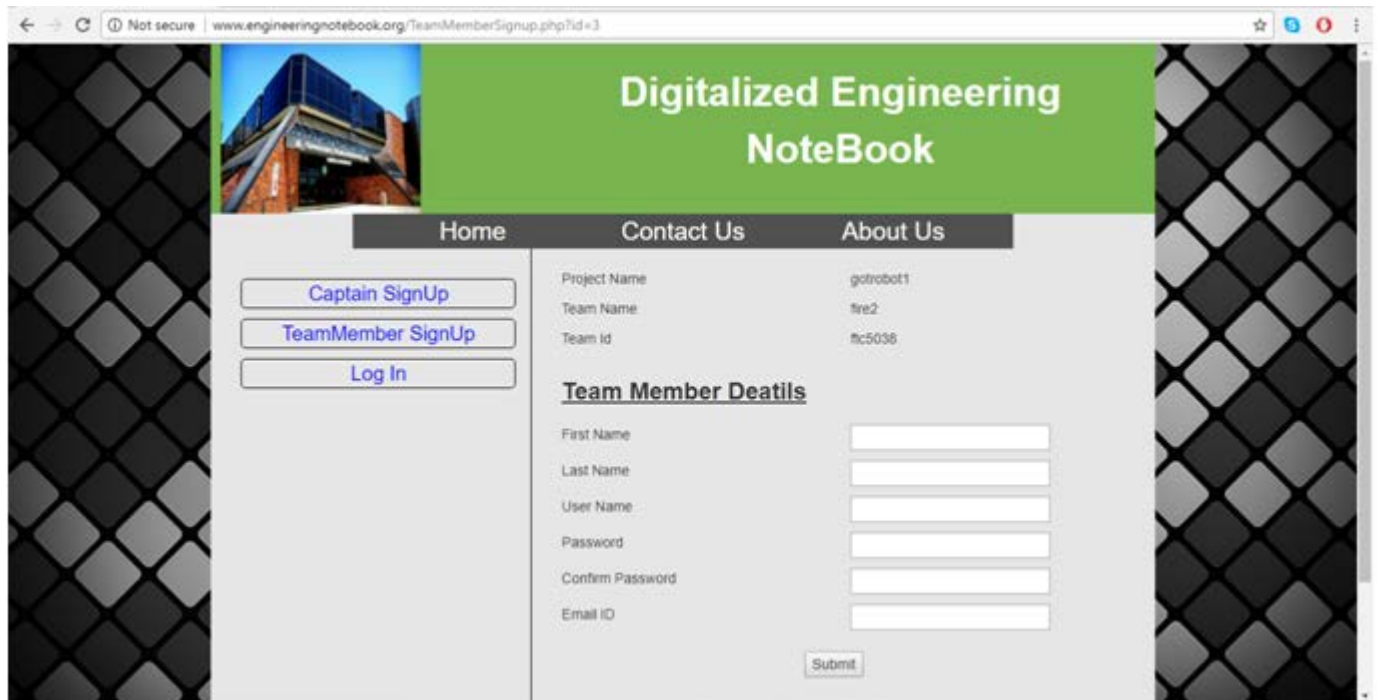

figure 3-4: Team Member Sign Up

R5: Creation of dated log entries for ideas, details, observations, etc.:

Either Captain or Team Member can create log Entry. This page will be same for Captain and Team Member but the only difference is that Captain can edit the document and the Team Member cannot edit the document after he submits the document.
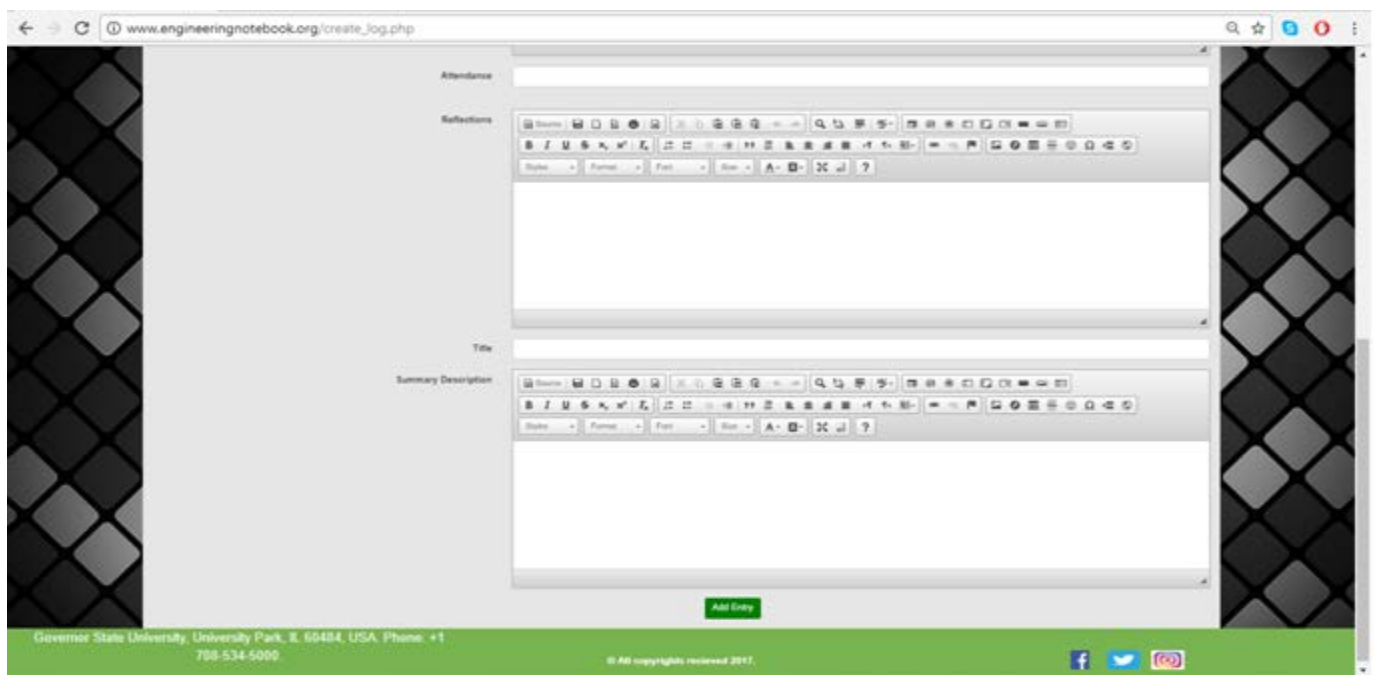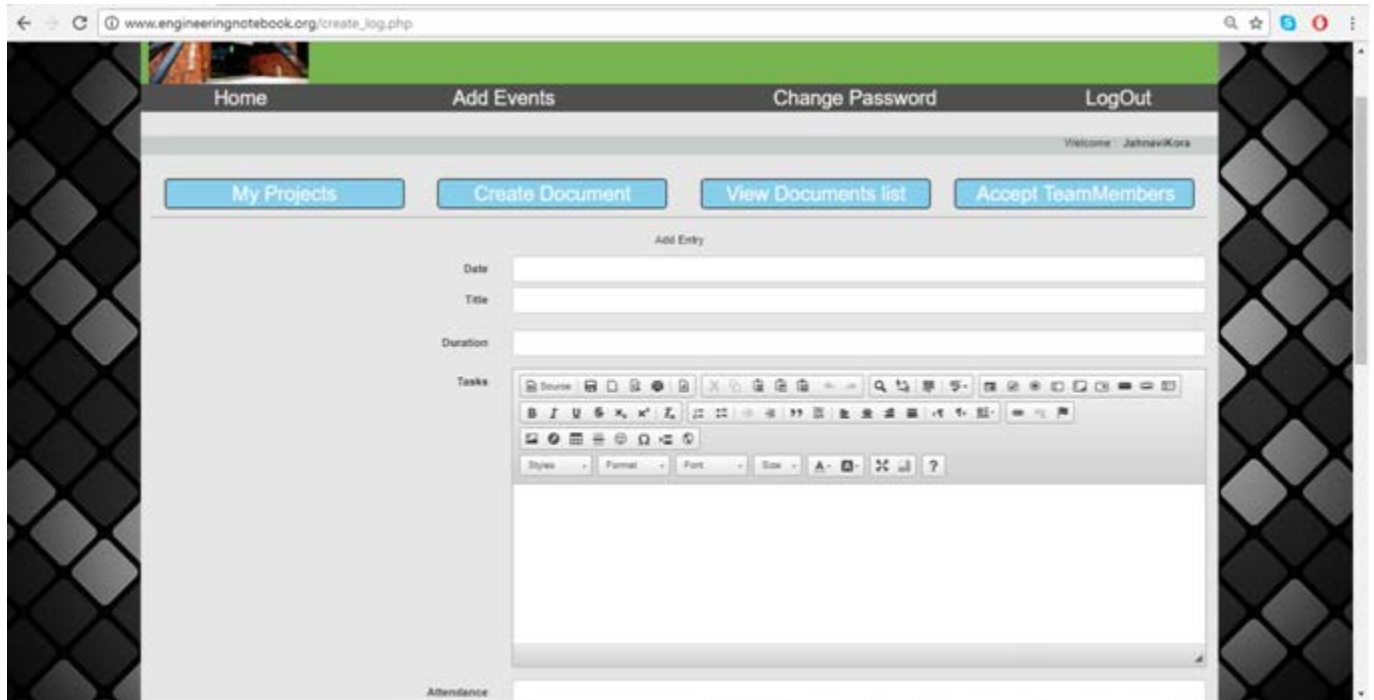

figure 3-5: Log Entries

R6: Chronological listing of log entries:

This page is about the listing of all log entries. The figure below is the Captains Page in which all the documents created are shown. Edit option is given so that the Captain can edit the document.
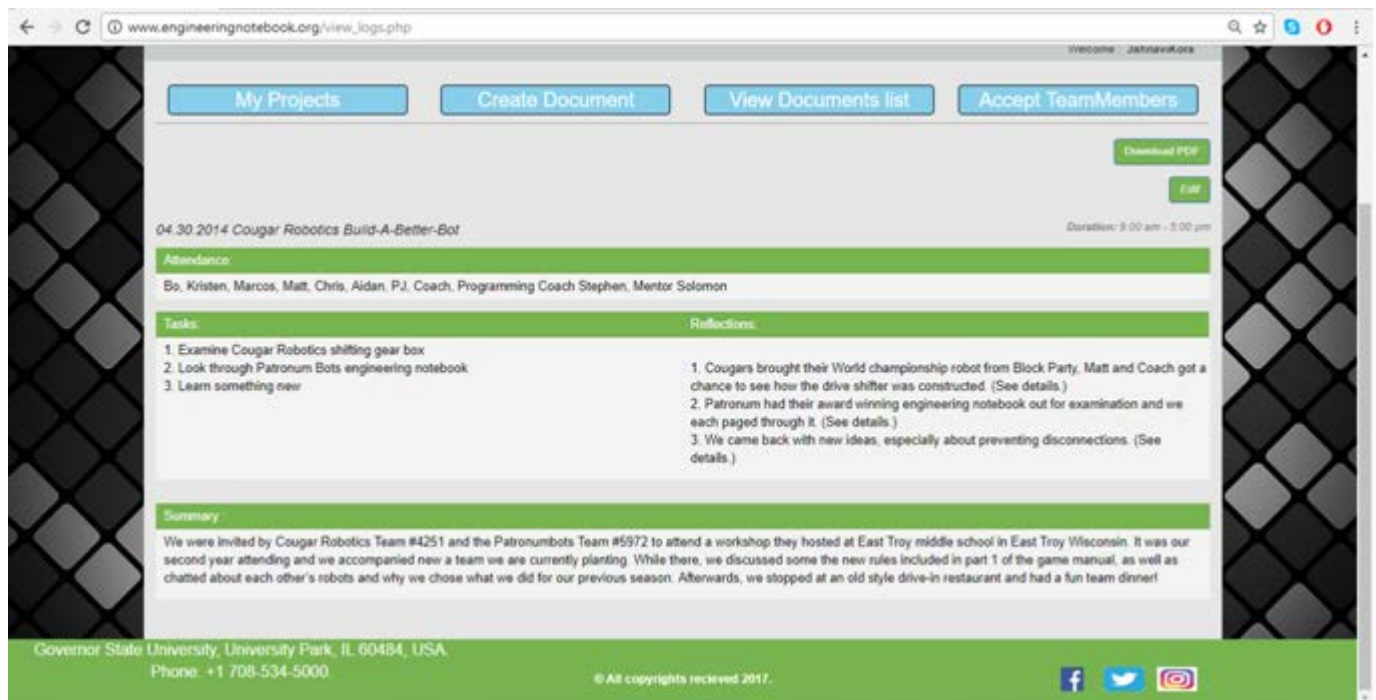

figure 3-6: Listing of Log Entries

R7: File upload for text documents, drawings, sketches, figures, etc.:

The figure below is about how all the text can be entered and how figures are uploaded. Once Add entry is clicked, file gets uploaded and once view documents list is clicked, Document will be appeared.
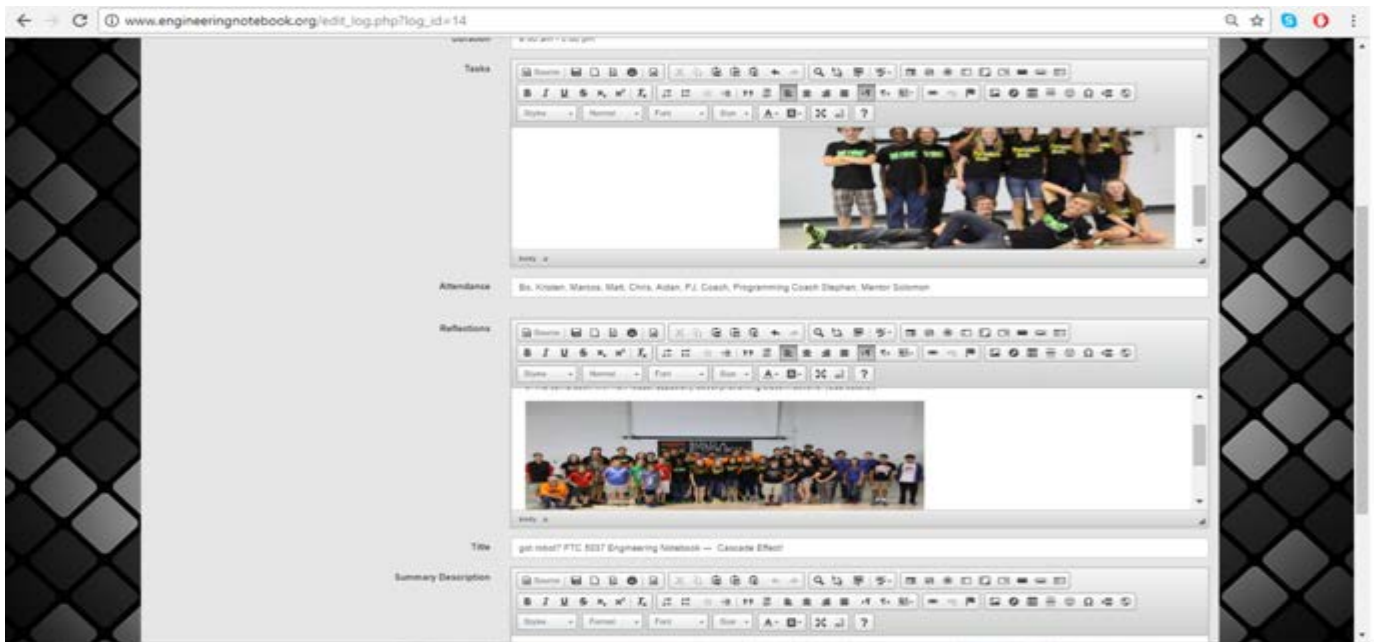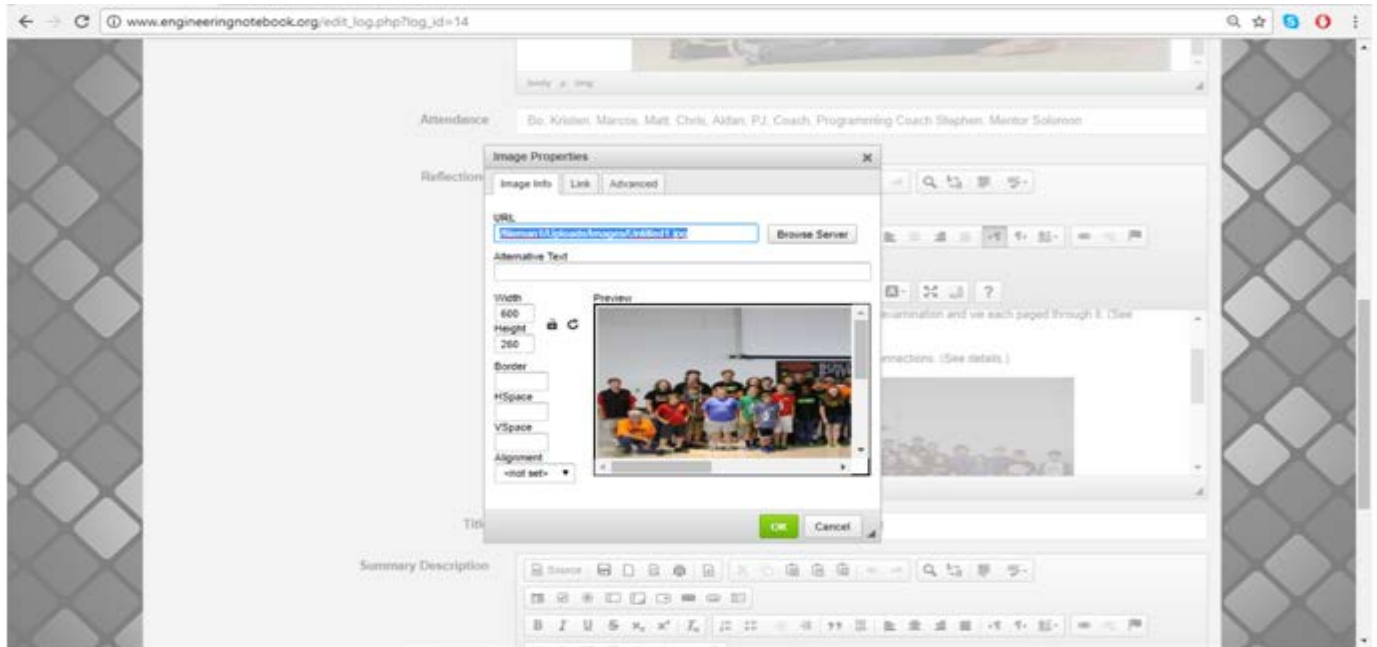

figure 3-7: Uploading of Data

R8: Allow multimedia elements such as pictures and videos embedded in Web pages:

The below figure shows all the multimedia elements in the document. There are options given to enter all the multimedia elements so that the user can directly enter the pictures.
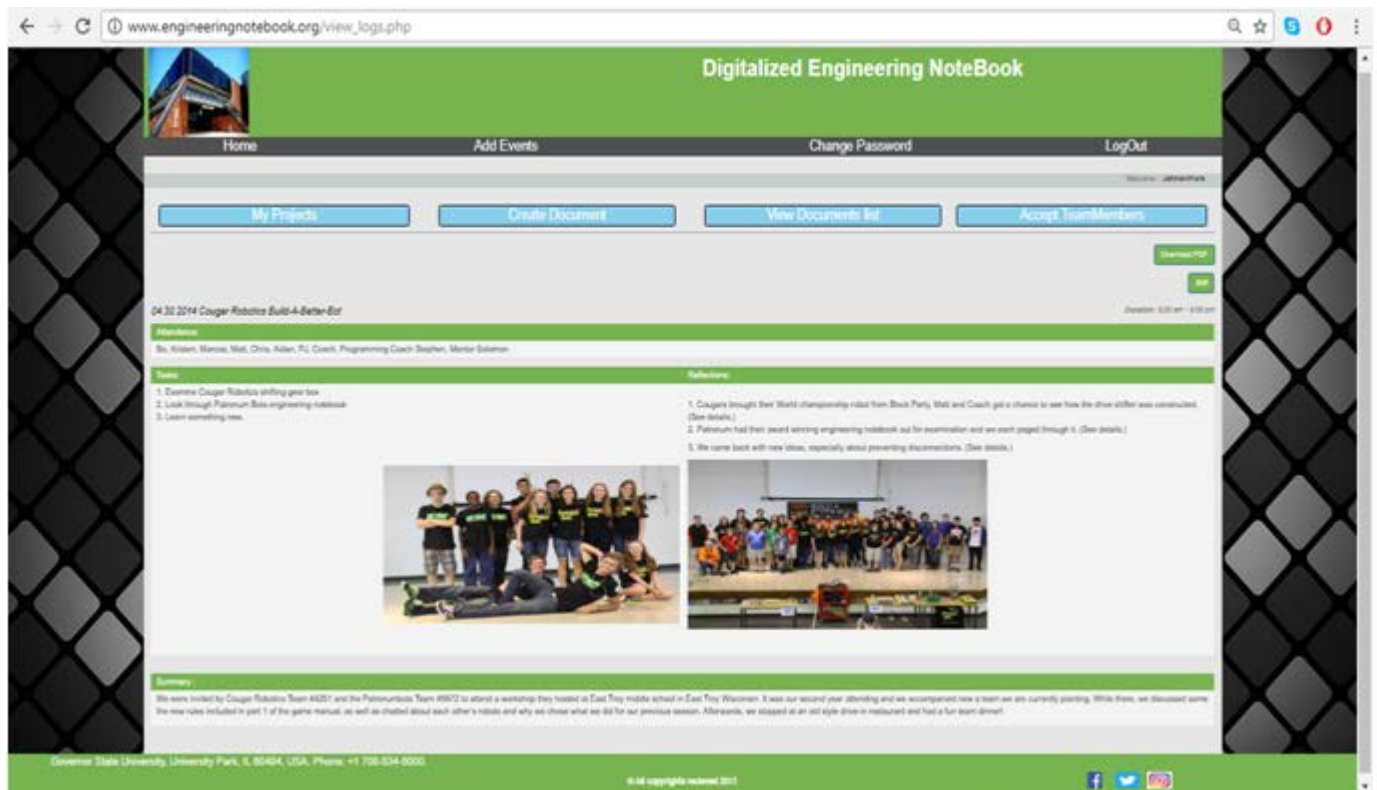
figure 3-8: Picture Embedding in Web Page

R9: Search and listings.

figure 3-9: Search

R10: Calendar of events:

There is a button added Add Events, so that all the events can be added by the user and when add event is clicked, the vent of that day gets added.

figure 3-10: Adding of Events

R11: Creation of PDF version of log:

There is an option given called Download PDF, when user click on Download PDF, the document directly gets downloaded in PDF.

figure 3-11: PDF Conversion

3.1   *Operations, Administration, Maintenance and Provisioning (OAM&P)*
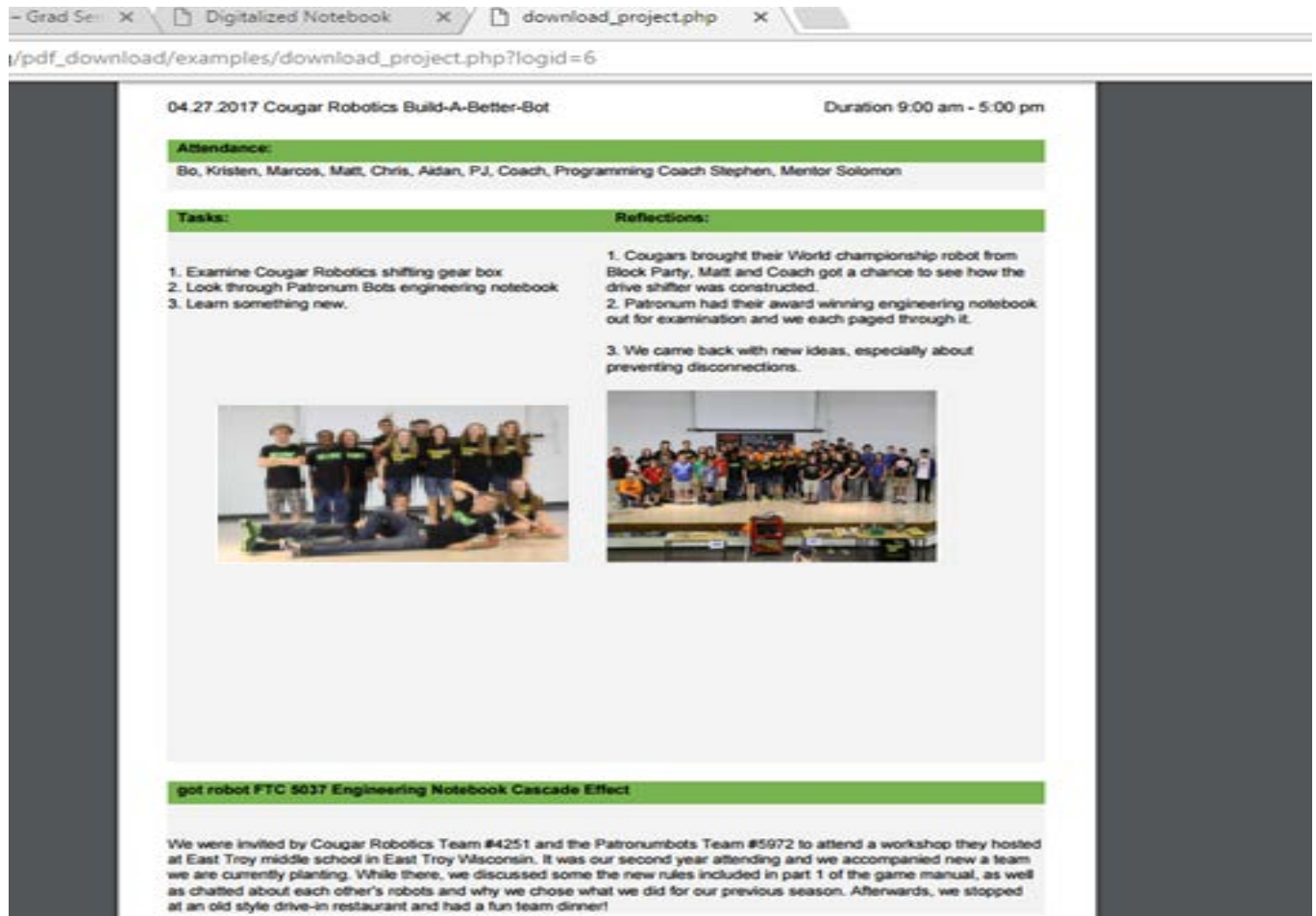
Download xampp sever from google and install xampp sever. Open local host/phpmyadmin. Create a database and given data base named create. Go to database create new table. With the login data table give field names id, username password email id user type status user id member id. Go to C folder -> xampp> htdocs>create new folder. Create coding by using core php and data base create file as connection.php give a database connection. Create a in appropriate files. files for a project related to application in appropriate files. Localhost to run an application in local host go to browser enter project name.

Deployment of the Portal

➢ Purchase a domain from go daddy.

➢ Go to go daddy login id and password and login.

➢ Go to my domains, click on purchased domain.

➢ Go to edit DNS give sever DNS and save it.

➢ To propagate DNS it will take 2 to 3hrs time.

➢ Purchase hosting in hostegater in hostgater.com.

➢ Go to cPanel give user name and password.

➢ Go to domains click on add on domains give purchased domain name click on create.

➢ Go to databases click on create databases give database name and save it.

➢ Create username and assign user to create a database.

➢ Click on PHP my admin, take SQL file from local host.

➢ Run SQL in PHP my admin.

➢ Go to file manager open domain folder and then upload all coding files in to folder.

➢ Go to connection.PHP change user name, PSS, database name and save it.

➢ Go to browser and open given domain name.

a) **Administration and Provisioning:**

In Digitized Engineering Notebook, Admin is the one who accepts the Captain. He has all the authorities in accepting the project and deleting the project. He also has the authority of de activating the project as well as Captain.

b) **Maintenance:**

In every project, Admin have all the authority of accepting and deleting projects. He maintains all the projects. In our project, Admin accepts the Captain and thus give authority to maintain the project. He has the authority to accept team members. He can also delete the team member and the project. He can edit the log entry once created. The Team member once accepted by the captain works on the project but he has no authority in editing the document or deleting the document.

3.2   *Security and Fraud Prevention*

In this Project Digitized Engineering notebook, password security is used so that no one can login without the password and there is an option given for all the users to change password. This helps the user changing the password if he has any doubt if someone hacks his account. The Credentials are sent to the email so that he can refer to his user name and password.
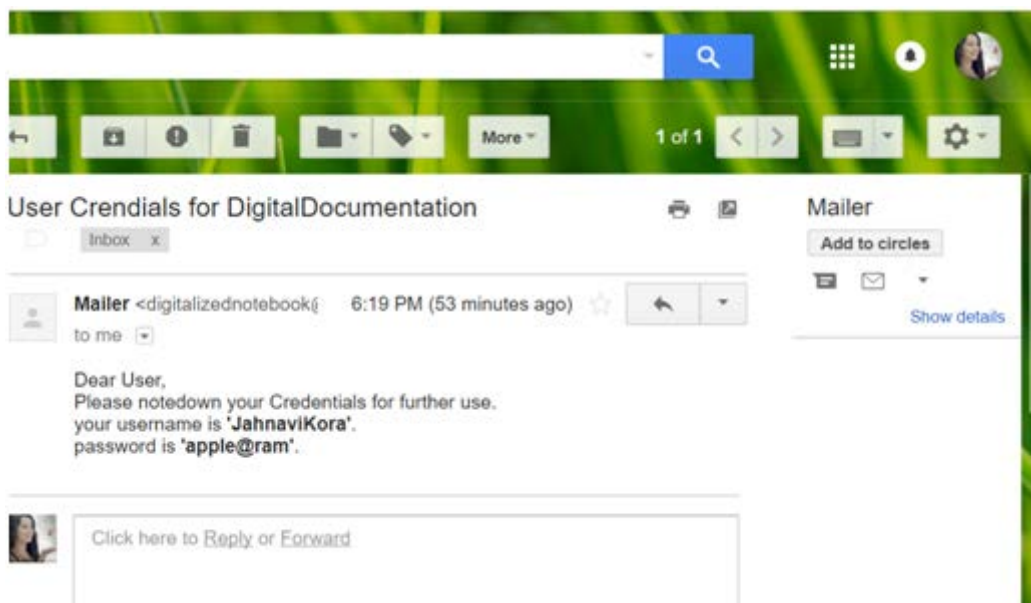
figure 3.2.1: Password Recovery

figure 3.2.2: Password Recovery

4   Project Design Description

Engineering Note book project design is made using Xampp and there we created all the database tables. Php coding is used to create all the login and sign up pages. Events data, messages, create document, team member, log entries, captain, log in data tables are created. All the methods are included under each table. Admin login, Captain and Team member login are given and all the logics are given in coding. The figure 4-1 shows the database diagram for all the tables created and shows the relationships. All methods are also shown under each table.
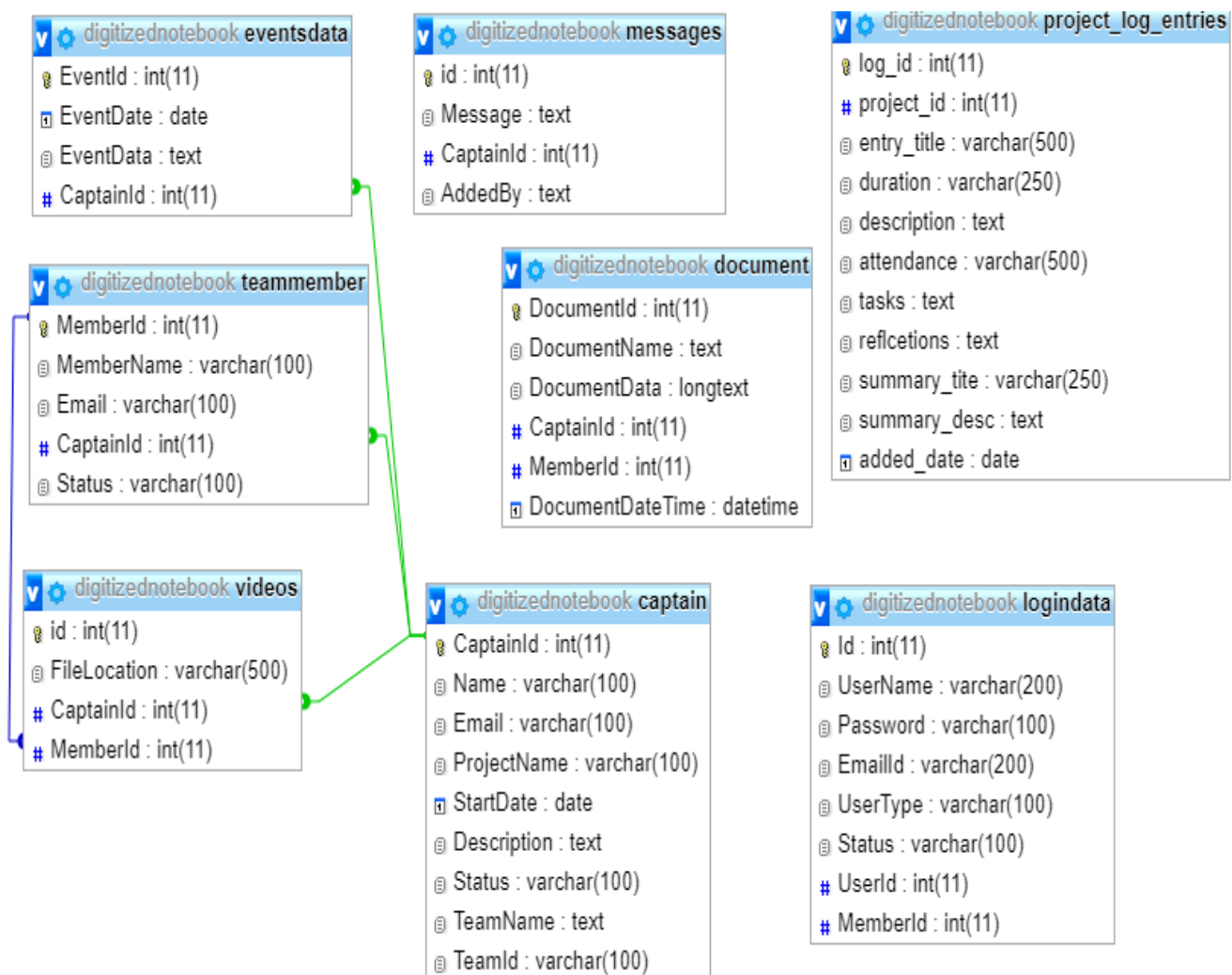

figure 4.1: Relationship Diagram

5 *Project Internal/External Interface Impacts and Specification*

Documentation and other external Specifications and impacts or Internal/External Interface of the Application do not have any impact on the Functional and Design Architecture.

6 *Project Design Units Impacts*

There is a front page which welcomes with a message 'Digitized Engineering Notebook'. There is an Admin for the site administration. Admin Login makes the Admin login to the page and makes the Admin accepts or rejects the Captains and can see all the projects going on. Admin can also delete the project if he thinks that the project is not useful. There is an option to sign up for a new project or select an existing project. Captain can Sign in into his account if the Admin accept him looking at the project description. The Captain can accept or reject team members. Captain create a document or edit a document. Team member can log in and add document and he cannot edit the document once submitted. All the log in pages are provided with passwords, so that no one can access without password. Editing Document option is given for Captain so that Captain creates the document like he wants.

6.1   *Functional Area/Design Unit*

Quality of the Project is the first functional specification of the project. This should be satisfied. Status of the Project shows how much project is completed in time. There is an option given for creating new project. Log entry creation is done and all the multimedia elements can be uploaded by an option given. Communication is present between Captain and Team member and Captain and Admin.

7   *Open Issues*

There can some issues Technically like some coding problems and software problems. There could be some Management issues which are dealt by Admin. Issues with Users regarding Log entries while entering image. There is a search button but it works just if the person search the Captain with team name. To insert an image, it should be searched from the browser, it cannot take the image from the system.

8   References

[1] Engineering Notebook (April 4,2017). Retrieved February 1, 2017,

https://www.firstinspires.org/resource-library/ftc/team-management-resources

[2] PHP MySQL Database (n.d.). Retrieved February 24, 2017,

https://www.w3schools.com/php/php_mysql_intro.asp

[3] The Complete PHP 5 tutorial (n.d.). Retrieved March 9, 2017, http://www.php5-tutorial.com/

[4] Welling, L., And Thomson, L. PHP and MySQL Web Development (March 21, 2009). Retrieved

February 12, 2017, https://www.pearsonhighered.com/product/Welling-PHP-and-My-SQL-Web-

Development-4th-Edition/9780672329166.html

[5] XAMPP (n.d.). Retrieved February 4, 2017, https://www.apachefriends.org/index.html