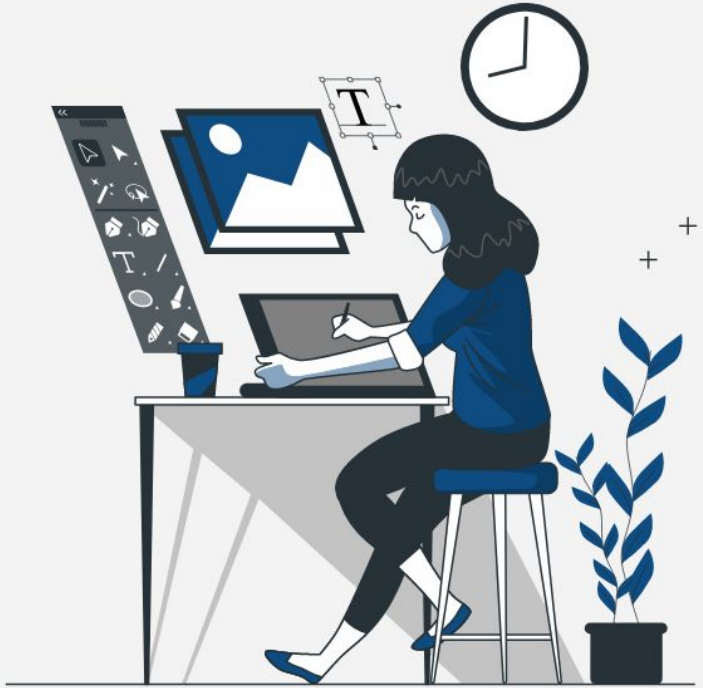
ELECTRO

SUSTAINABLE ELECTRICITY MODEL FOR DOMESTIC USERS



GROUP : G11

OUR TEAM

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GROUP : G11

GROUP DETAILS

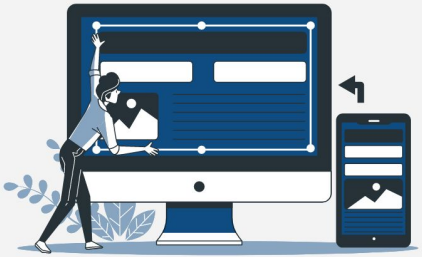
Supervisor

Dr. Dinuni Fernando

Mentor

Mr. Akila Gamage

OUTLINE



1. Problem Definition
2. Introduction
3. Main Functionalities
4. Quality Attributes
5. Technologies
6. Feedback from the proposal presentation and solutions taken
7. Progress
8. Individual Contribution

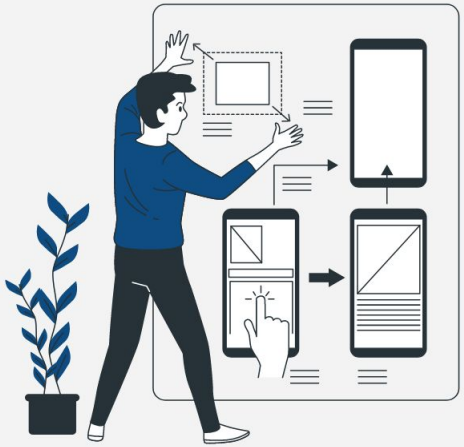
PROBLEM DEFINITION

- Electricity bills of most households are calculated based on the consumed units.
- TOU method is less popular among household consumers.
- No proper platform to check the most suitable billing method to use considering electrical devices using in a household.
- No mechanism to get suggestions and predictions to reduce the electricity bill.
- It will be difficult for users to regulate their electric equipment usage device-by-device.

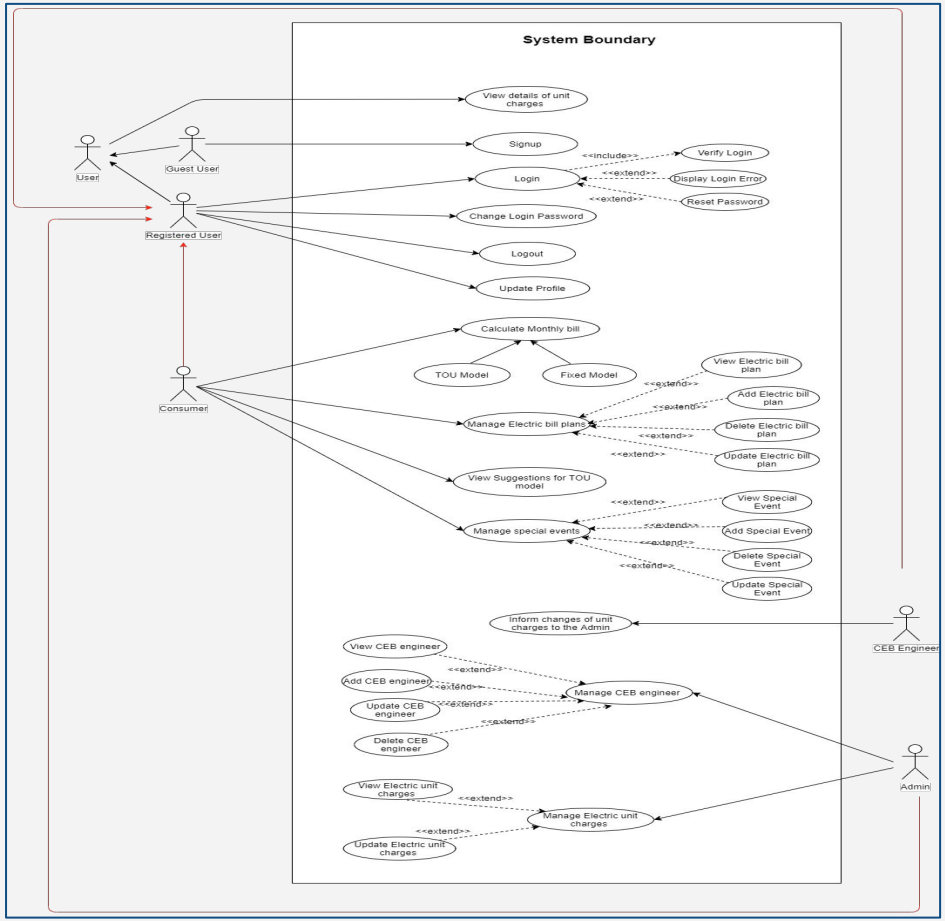
INTRODUCTION

- Users should set a priority level along with the device details when inputting data in to the system.
- The system will automatically calculate the monthly bill using both methods.
- Will be providing suggestions to reduce electricity bill in TOU method.
- Proposing a Scheduling Algorithm to schedule the usage of electric equipments.
- Consumers can get their future predicted electricity usage using our system.

MAIN FUNCTIONALITIES



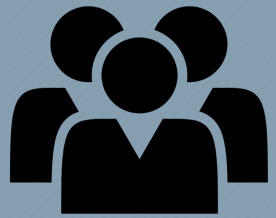
USE CASE DIAGRAM



ACTORS OF THE SYSTEM

1. Admin
2. Consumers
3. CEB Engineer

COMMON FOR ALL USERS



- Login
- Logout
- Updating the user profile
- View the electricity unit charges for both the Fixed model and TOU model

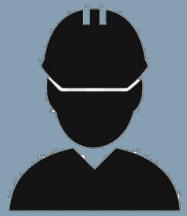
CONSUMERS

- View their calculated monthly bill using both methods
- View the device wise usage using charts for both methods
- View the suggestions to reduce their electricity bills for the TOU model.
- Add/Update/Delete/View monthly electricity bill plan details using both models.
- Add/Update/Delete/View special events bill plan details for a specific time period using both models.

ADMIN

- Managing unit charges received by CEB Engineer.
- Adding a new CEB Engineer to the system.
- Removing a CEB Engineer from the system.
- Updating details of the available CEB Engineers in the system

CEB ENGINEER



- Informing about the changes of the unit prices to the admin.
- Verify correctness of the calculations.

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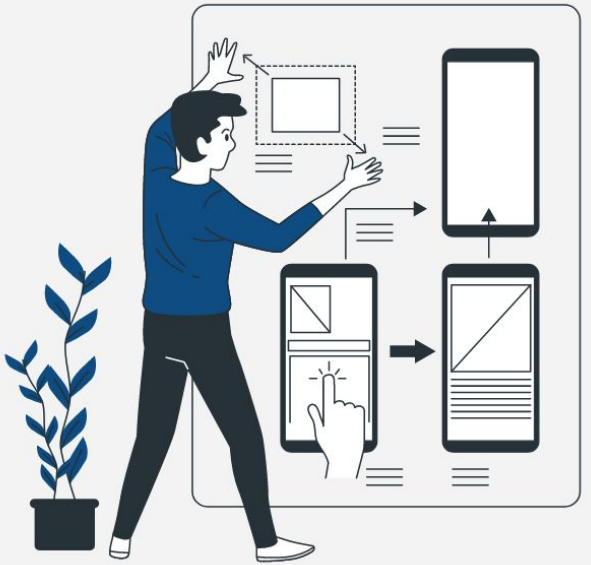
QUALITY ATTRIBUTES



QUALITY ATTRIBUTES

Efficiency

- Handle large amount of details given by user without affecting performance

Usability

- Simple and easy to use interfaces throughout the system

Accuracy

- Database will be updated real-time to avoid unnecessary troubles users may have to experience.
- Data validation

QUALITY ATTRIBUTES CONT.

Security

- Only authorized persons can access details of the customers
- Sensitive field, elements such as user logins and passwords will be kept encrypted in the database

Supportability

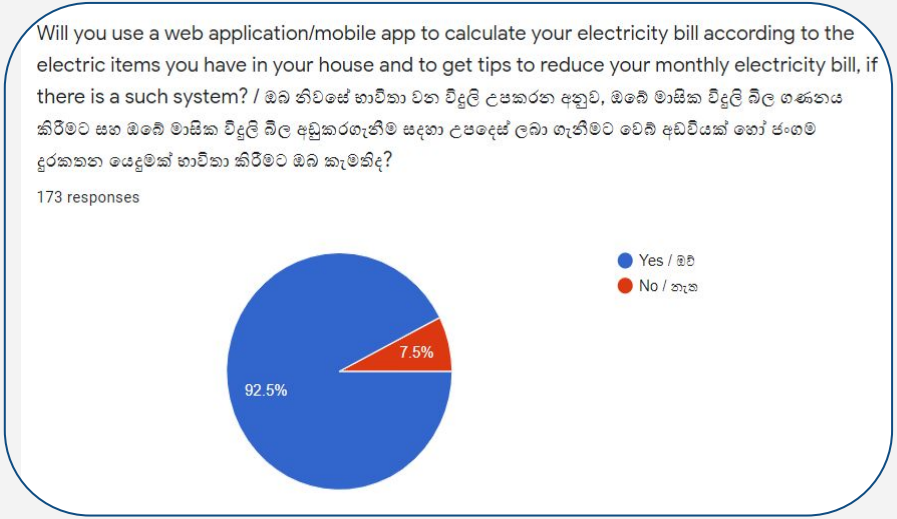
- The web site is developed in a way to support most frequently used web browsers by the users

FEASIBILITY STUDY

Operational Feasibility

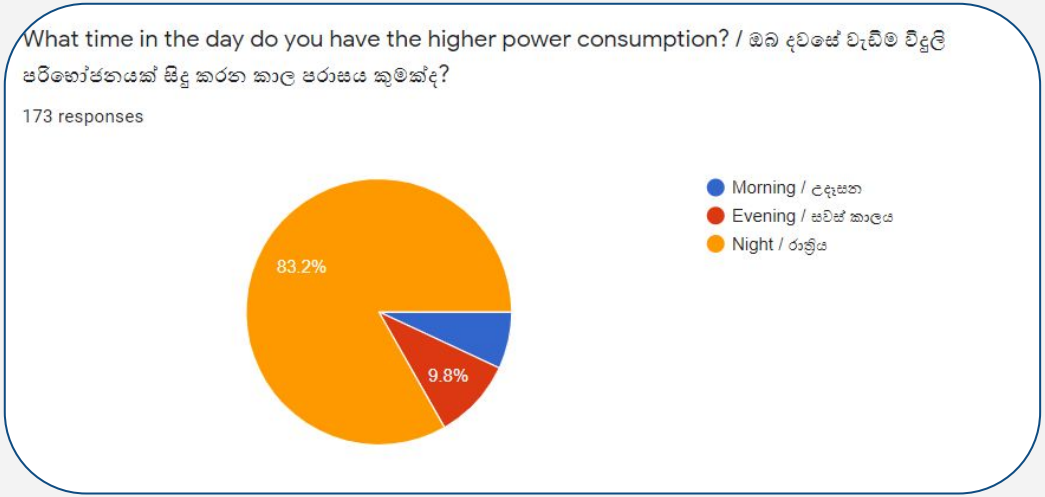
- We conducted a survey to check the feasibility of this system.
- Majority of the Survey Participants,

1. Liked to have a mobile app/web application to calculate the electricity bill and to get tips to reduce the monthly electricity bill.



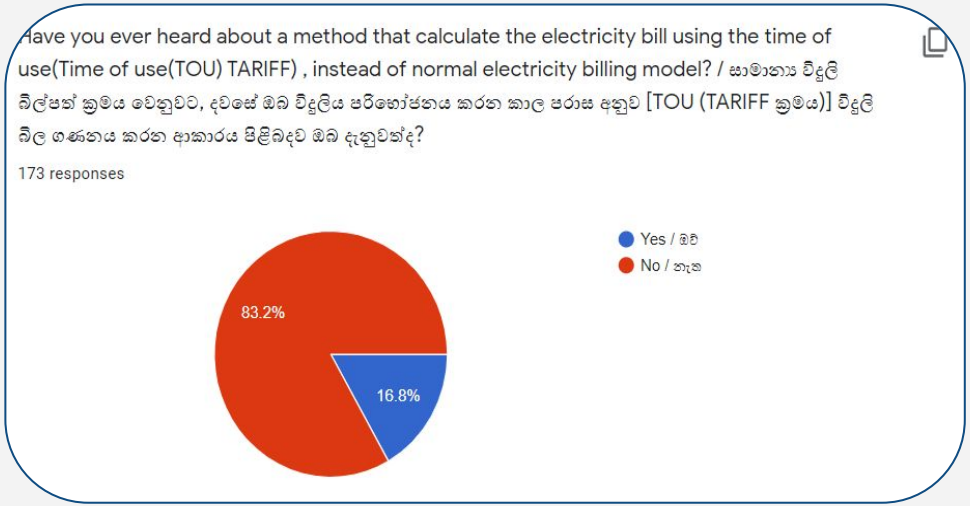
Operational Feasibility

2. Use electricity at night where the production cost of single unit is very high.



Operational Feasibility

3. Do not know about the TOU method where users can reduce their electricity bill when using this method.



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Legal Feasibility

- No sensitive information will be collected upon Login or Signup and it ensures End-User Privacy & Information Security.
- Developers have the whole authority over the application, hence no breach of Government Rules & Regulations.

Technical Feasibility

- System will be implemented as a web application and a mobile app
- Front End-Mobile app : React Native
- Front End-Web application : React Js
- Back End : Nodejs
- Database : MYSQL
- Proposed technologies are ones that are familiar to the developers

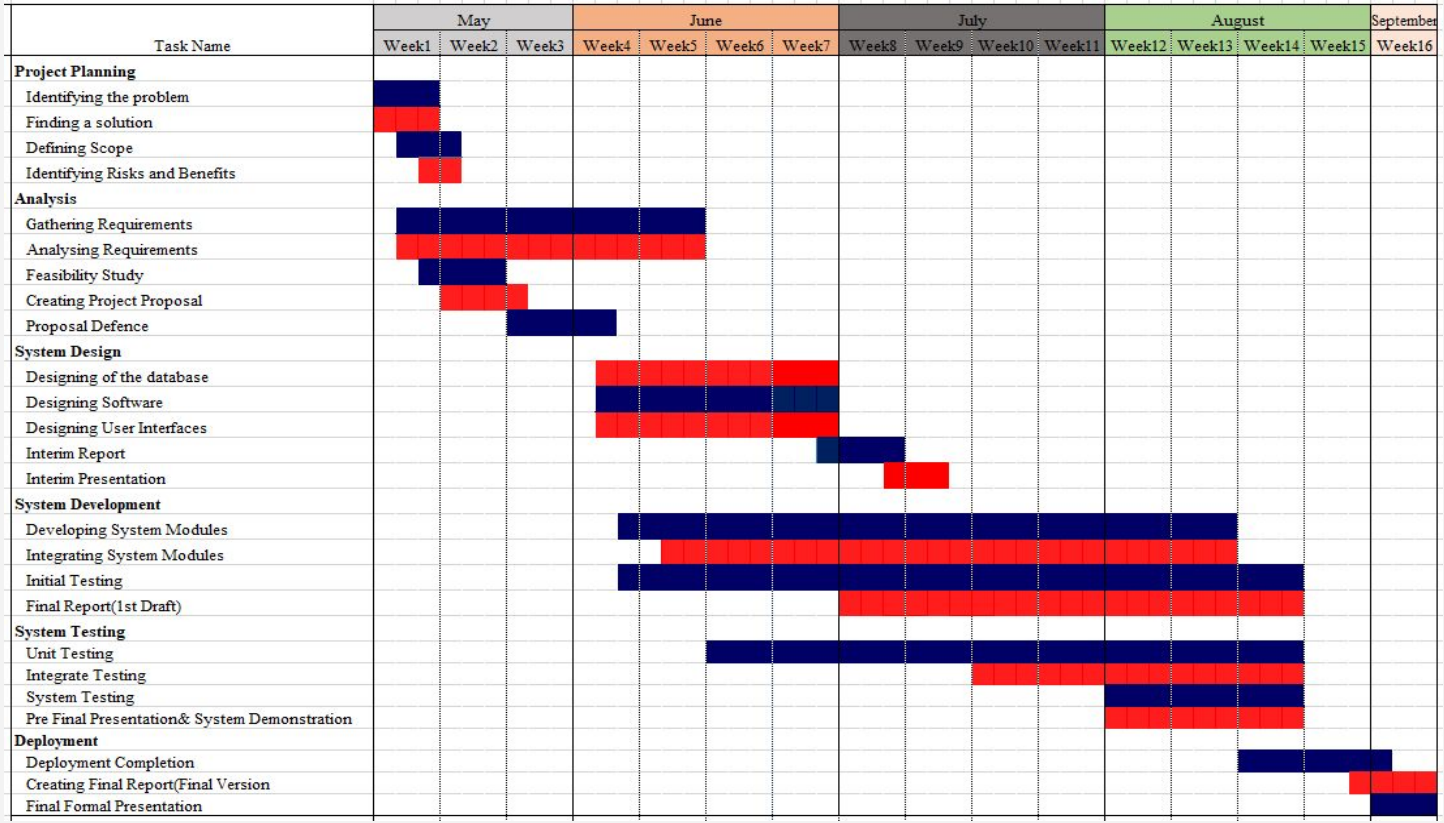
Economic Feasibility

- As the developers are undergraduates, we will be using Free Tools.
- There will be no additional hardware cost for the project.

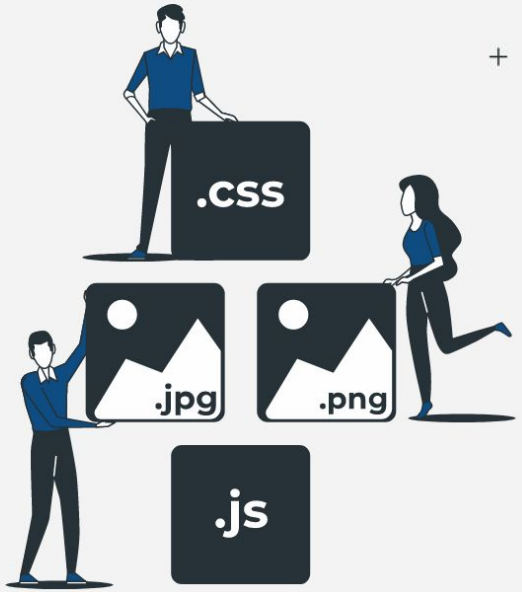
Schedule Feasibility

- Targeted Deadline : 5th of September 2021
- Approaching new methods to enhance the user experience.
- Developing and System Testing will be done accordingly.
- Implementation : By the end of this semester.

TIMELINE


Task Name
May
June
July
August
September
Week1
Week2
Week3
Week4
Week5
Week6
Week7
Week8
Week9
Week10
Week11
Week12
Week13
Week14
Week15
Week16
Project Planning
Identifying the problem
Finding a solution
Defining Scope
Identifying Risks and Benefits
Analysis
Gathering Requirements
Analysing Requirements
Feasibility Study
Creating Project Proposal
Proposal Defence
System Design
Designing of the database
Designing Software
Designing User Interfaces
Interim Report
Interim Presentation
System Development
Developing System Modules
Integrating System Modules
Initial Testing
Final Report(1st Draft)
System Testing
Unit Testing
Integrate Testing
System Testing
Pre Final Presentation& System Demonstration
Deployment
Deployment Completion
Creating Final Report(Final Version
Final Formal Presentation

TECHNOLOGIES



TECHNOLOGIES

Frontend

Backend

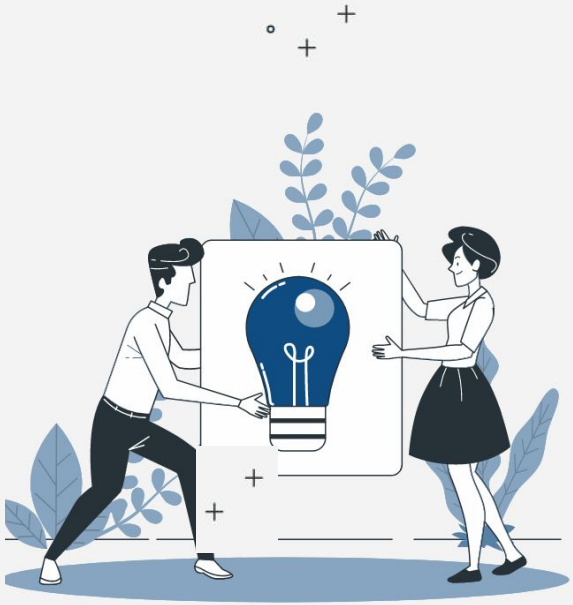
Database

TECHNOLOGIES CONT.

Version Controlling

Collaboration tools

FEEDBACK FROM THE PROPOSAL PRESENTATION & SOLUTIONS TAKEN



FEEDBACK RECEIVED

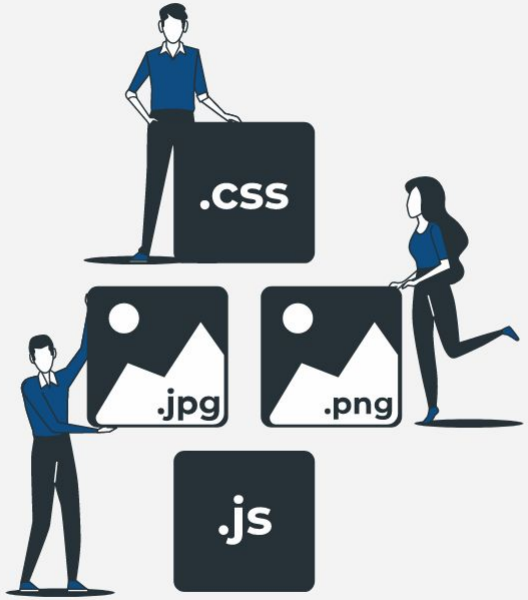
1. Understand the central problem which we are going to address.

2. To come up with a strong project idea which all the requirements are cohesive.

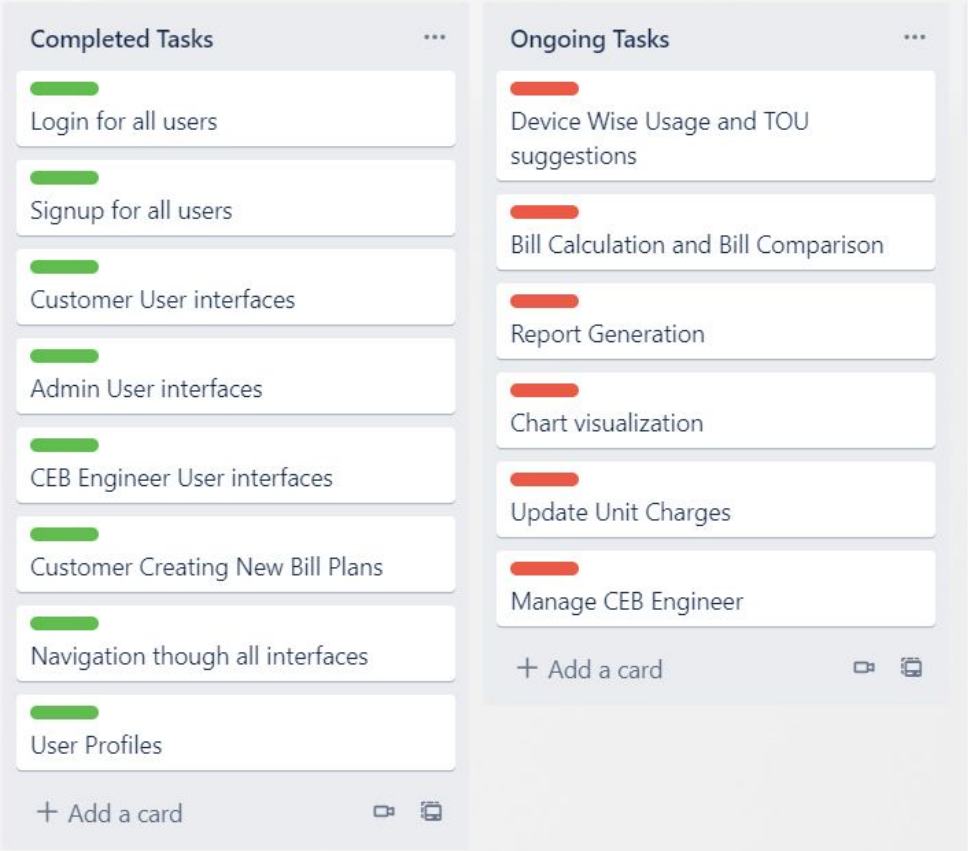
3. Improve the understanding of the business logic.

4. Need a proper understanding about the end goal of the project.

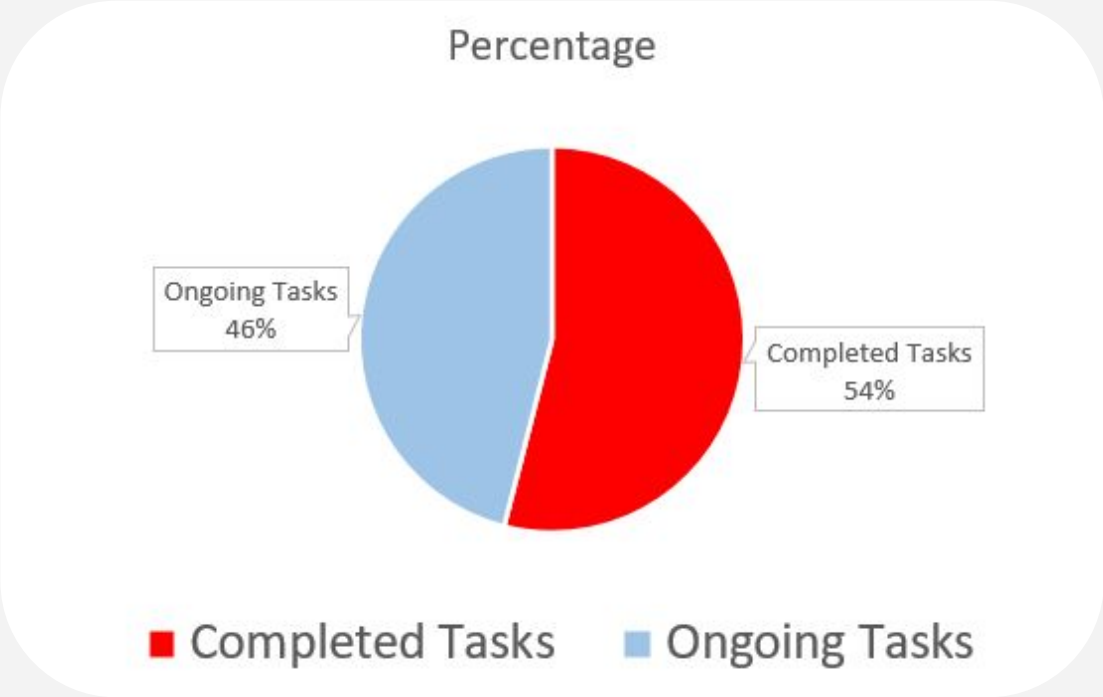
PROGRESS OF THE PROJECT



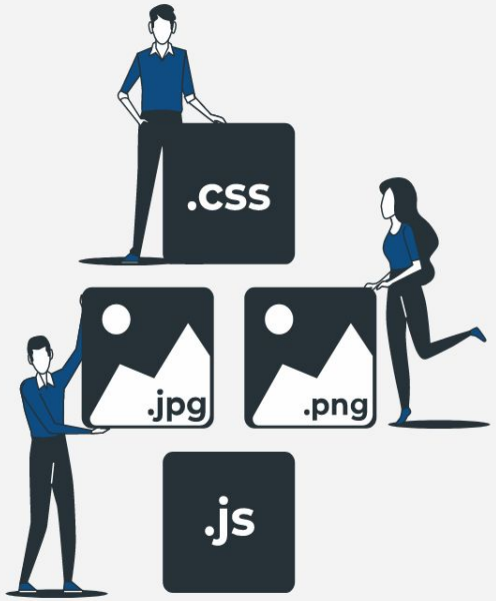
PROGRESS OF THE PROJECT



OVERALL PROJECT COMPLETION AS AT 14/07/2021



INDIVIDUAL CONTRIBUTION



INDIVIDUAL CONTRIBUTION

T.W.T.Dulshan (18000487)	• Manage bill user interface • Special event more details for both models • Add new special event bill plan for both models • Customer navigation for user interfaces • ER diagram
W.M.D.M.Y.Wickramanayaka (18001922)	• Bill Comparison user interface • All view usage charts user interfaces • Information User interface • ER, Class, Use Case, UI flow, work breakdown structure diagrams • Database
A.V.Abeysuriya (18000053)	• All user dashboard interfaces • View TOU suggestions user interface • My bill plans, special event bill plans user interfaces • Device wise usage for both models • Class, Component diagrams

INDIVIDUAL CONTRIBUTION CONT.

W.K.B.K.Madhushanka (18000967)	• Landing page • Signup interface for all users • Login interface for all users • Forgot password interface for all users • Authentication for all users • UI flow diagram
H.A.H.Vidushanka (18020862)	• Admin unit charge update user interfaces • Admin manage CEB engineer user interfaces • All user interfaces for CEB Engineer • Work breakdown structure • Interim report • Presentation

THANK YOU

Q & A