Rapid Application Development

CST 243-3

Group 11

PROJECT PROPOSAL

ELECTRICITY BILL CALCULATOR

Computer Science & Technology

Department of Computer Science & Informatics

Uva Wellassa University

May 2021

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Introduction

Our project entitled “Electricity Bill Calculator” aims is to generate electricity bill with all the charges. Manual system that is employed is extremely laborious and quite inadequate. It only makes the process more difficult and hard. The aim of our project is to develop a system that is meant to partially computerize the work performed in the Electricity Board like generating monthly electricity bill, record of consuming unit of energy or calculate energy consumption of a particular electric appliance for a given period of time. Also we plan to display some trivia type of interesting facts about electricity and electricity consumption aiming to encourage people to save energy. Ultimately this application helps users to get a rough idea about their monthly power usage and keeps on track with each and every electric appliance throughout the month.

So overall our aim is to calculate the electric usage taken by each and every electric appliance in our home or industrial work. That mean we can use this app for both industrial and domestic usage. First the user must enter the electric appliance and its numbers watts used by each and every appliance. Then he has to enter the hours or numbers of days which he is going use that particular appliances. Then the application will display the full amount that he has to pay. If someone wants to find the accurate bill then he has to go to our other section and need to select the category, numbers of unit and numbers days then again application will display the amount that he has to pay. All the results will be display in Sri Lankan rupees. This research consists of several objectives as stated below:

- To develop an offline standalone system to manage electrical billing for the User.
- To calculate the electrical bill and generate a report on the power consumption information.

Background Study

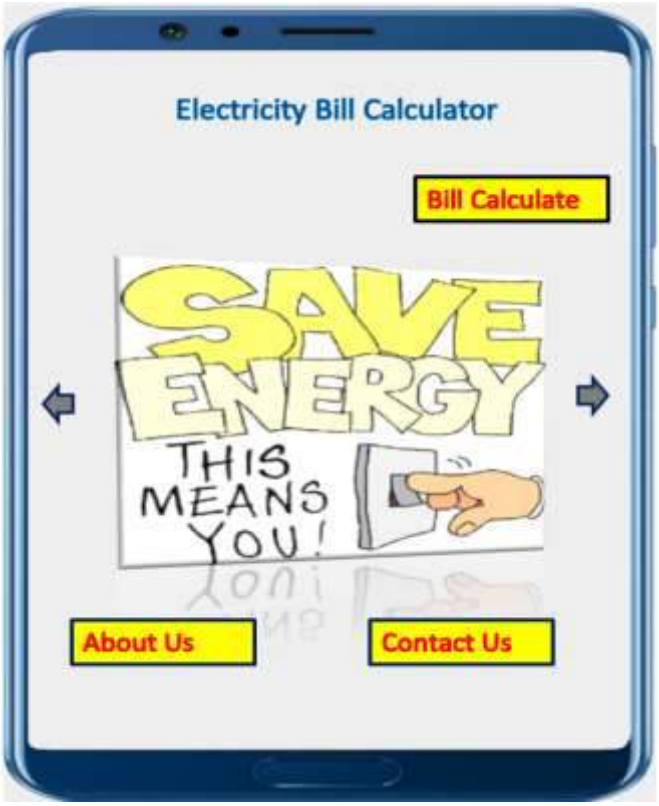
Since 19th century the monitoring of electricity is performed using electromechanical meters or electrical meters. Even though these meter are a master art of engineering designed a hundred of years ago measuring in kilowatt hour (kWh) but still they are not capable to measure new rates structures. Nowadays, the monitoring of electricity is still required the human to record the meter value from the house customers have to receive the electricity bill then able to make payment without knowing the accuracy of power used by the house owner. The value of meter may not be very accurate as the meter value is entered by human and sometimes human may make mistakes when entering the meter value. This leads to the serious problem when the workers have to go to the house again and re-enter the meter value in order to correct it. Furthermore, it is difficult to keep track the customer's value of meter and calculates the usage of power for large resident area. Besides, the customer cannot keep track of the usage of the power consumption hourly and cannot plan on the power consumption. It is also difficult to manage the price of customer's power used in meter without centralized server.

Methodology

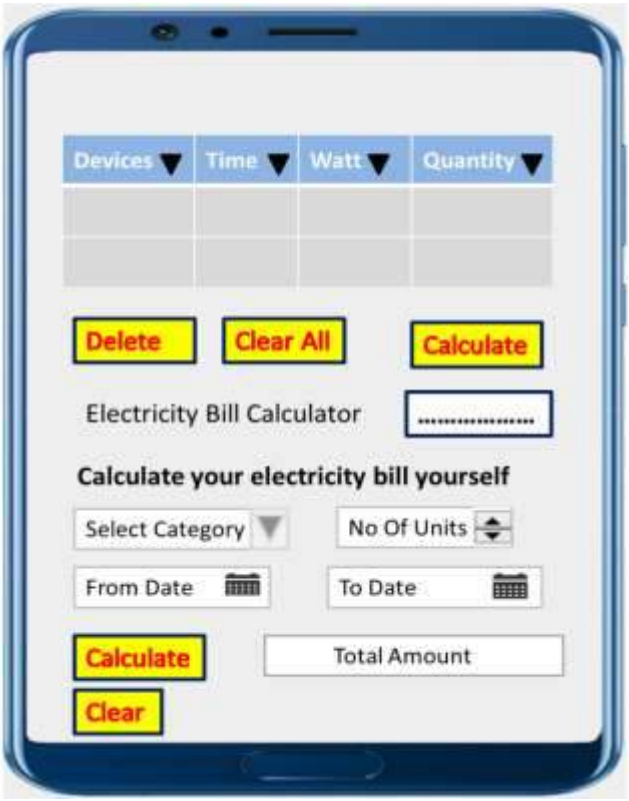
A prototype is an interface mockup that demonstrates how a program is going to look or behave. Effective prototypes have clear goals. In our project, we use Medium Fidelity Prototype to describe our System. Here we built prototypes using computer. Using this prototyping model, user can get better idea about our system. Using this prototype we can communicate and visualize design ideas.

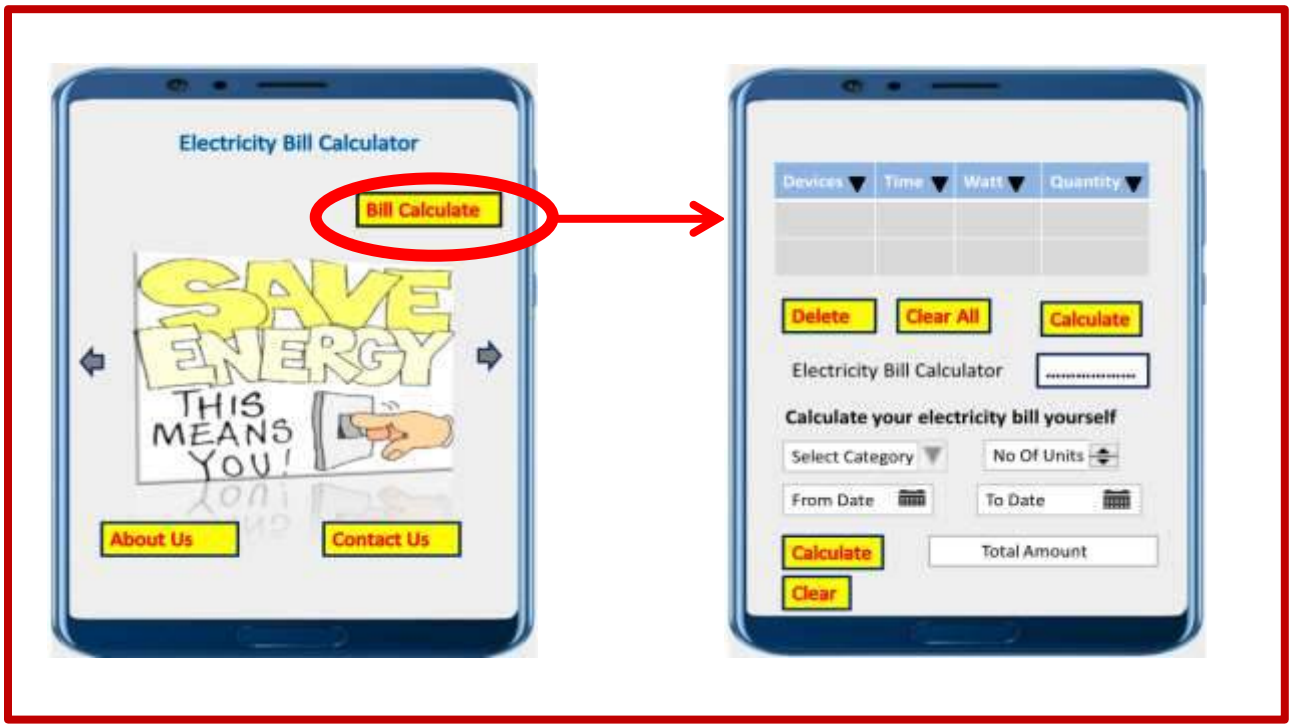
Here we used Scenario (With Storyboard) type. Here modest attempt to look real, but obviously not. It shows task flows and minimal functionality. We show the basic architectural features of our application including some of its graphic elements as well as some units of actual content and it shows as below,

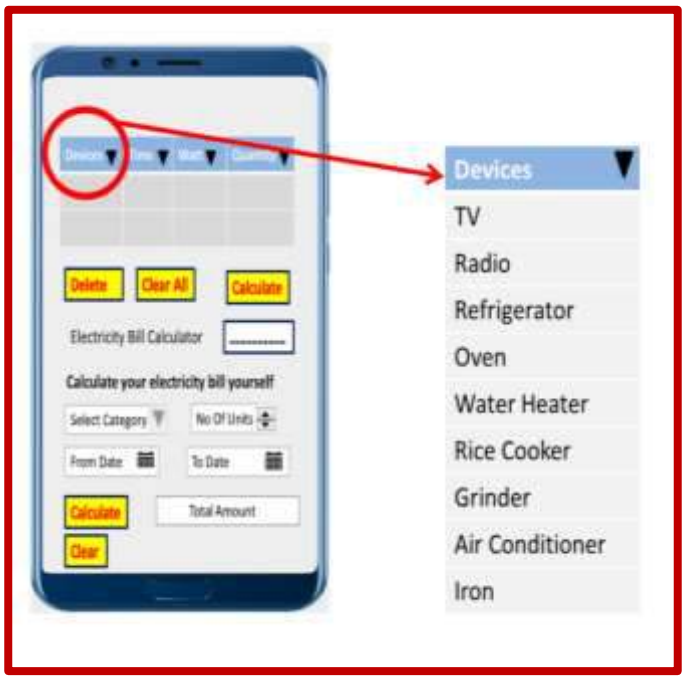
First page (Home Page)

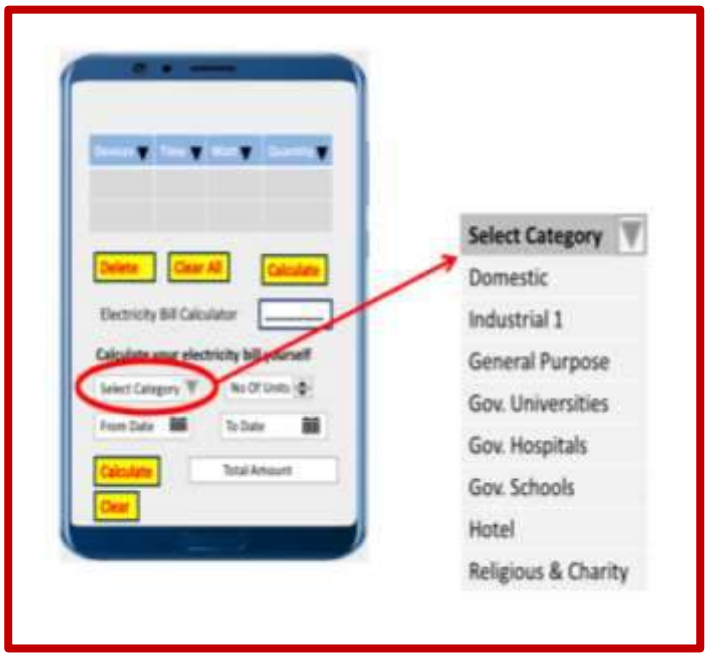


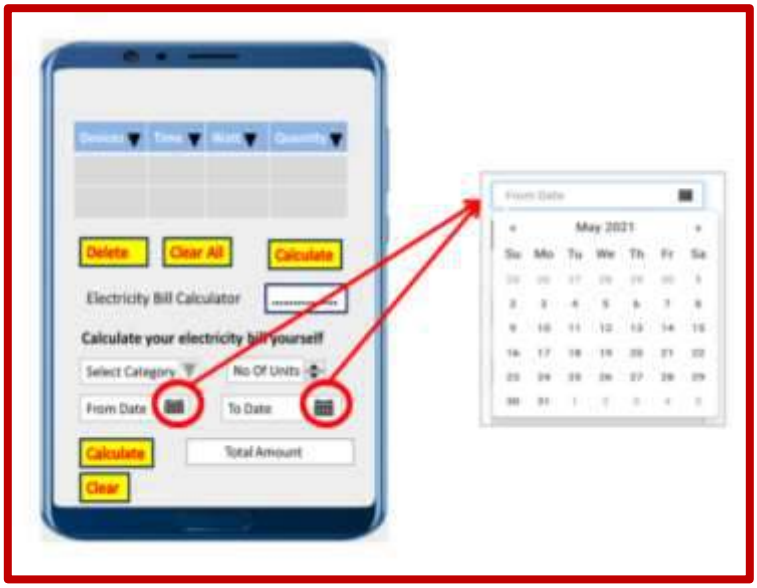
Second Page




Electricity Bill Calculator
Bill Calculate
SAVE ENERGY
THIS MEANS YOU!
About Us
Contact Us
Devices
Time
Watt
Quantity
Delete
Clear All
Calculate
Electricity Bill Calculator
Calculate your electricity bill yourself
Select Category
No Of Units
From Date
To Date
Calculate
Total Amount
Clear


Devices
TV
Radio
Refrigerator
Oven
Water Heater
Rice Cooker
Grinder
Air Conditioner
Iron


Select Category
Domestic
Industrial 1
General Purpose
Gov. Universities
Gov. Hospitals
Gov. Schools
Hotel
Religious & Charity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Process Model

For a successful development of any system, there must be a set of methods, principles, procedures and techniques that must be undergo by the developer which will help the analyst to understand. According to James Martin, Rapid Application Development (RAD) is the ways to deal with programming advancement put less accentuation on arranging and more accentuation on process. Rather than the waterfall demonstrate, which calls for thoroughly characterized particular to be built up before entering the improvement stage, RAD approaches accentuate flexibility and the need of altering prerequisites in light of information picked up as the venture advances. Models are frequently utilized as a part of expansion to or once in a while even set up of outline determinations. RAD has advantage of putting software into working earlier than any other approach, not necessarily need testing because of user involvement (user understand the system during the development process). But RAD required a highly skilled system analysts, also RAD requires lager percent of stakeholder' time.

There are four phrases of RAD (Rapid Application Development). They are,

- Requirements Planning
- User Design
- Construction
- Cutover(Deployment)

We use this RAD process model to develop our Application.

Following are the Languages and technologies we used here when developing this system.

Programming Languages

- Java –An extremely versatile language, Java helps keep our app flexible, modular, and extensible. Java is easy to handle and many open source libraries are made available for users to choose from.

Tools (Technologies)

- Adobe Photoshop - Adobe Photoshop is a raster graphics editor developed and published by Adobe Inc. for Windows and macOS.
- intelliJ IDEA - An integrated development environment (IDE) is software for building applications that combines common developer tools into a single graphical user interface (GUI). IntelliJ IDEA is an integrated development environment written in Java for developing computer software. It supporting to Java and a galore of Java frameworks.
- SQLite - SQLite is a relational database management system (RDBMS) that is contained in a C library. In contrast to most other database management systems, SQLite is not a client-server database engine but is embedded into the end program.
- SQLite Browser - DB Browser for SQLite (DB4S) is a high quality, visual, open-source tool made for creating, designing, and editing database files that are compatible with SQLite. It is for users and developers who want to create, search, design and edit databases. It is a tool that lets us view the data that is stored in a SQLite Database.

Time Frame

Task	Time(Weeks)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Identify topic														
Requirements gathering & defining the scope														
Create proposal														
proposal submission														
Requirements analysis & specification														
User Design														
Prototyping														
App development (Construction)														
Testing														
Deployment														
Final report submission														