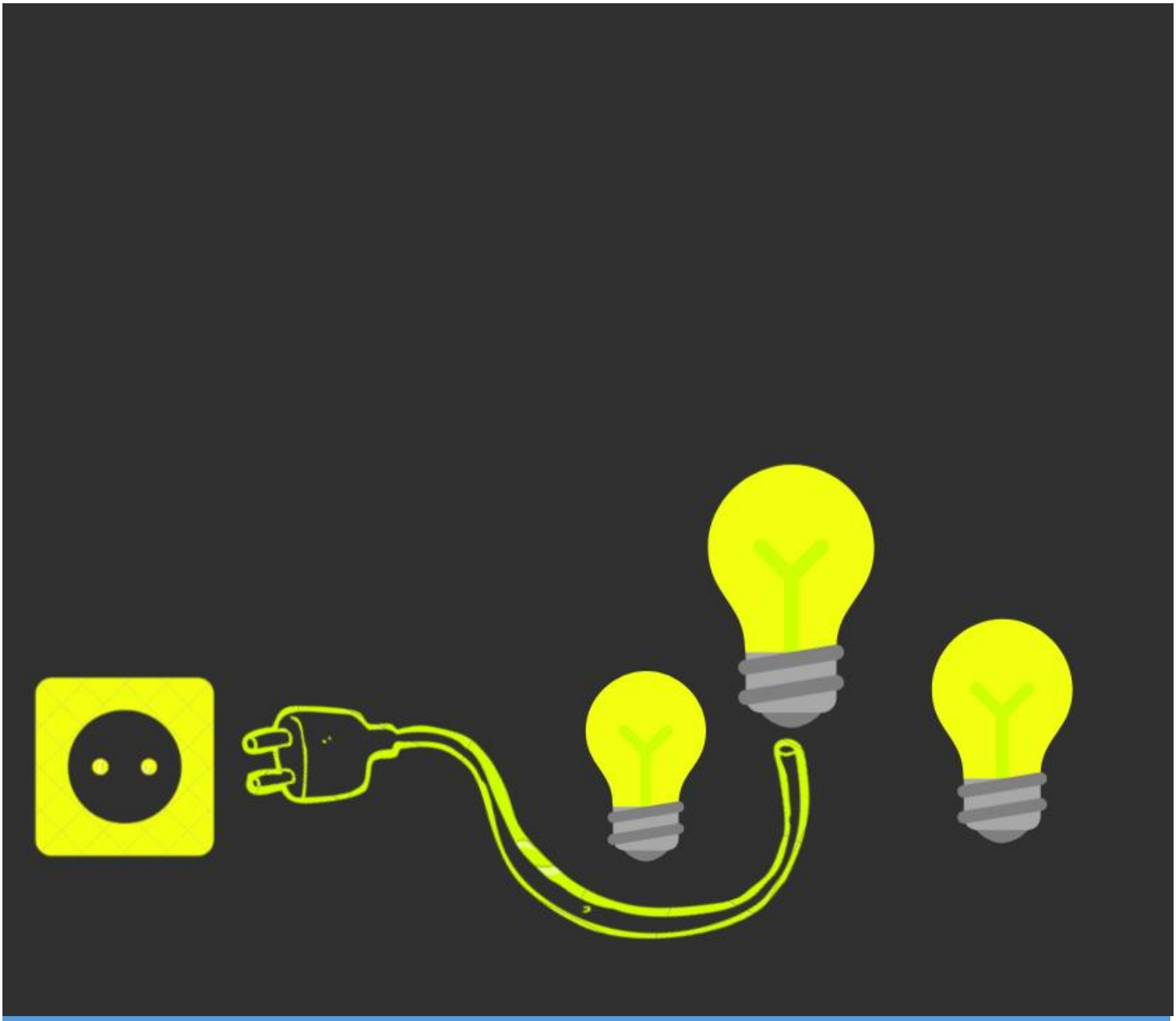


Engineering Design Project

CSE Report

11/16/18

DS302

PRODUCT BRIEF

A retrofit modular device which can be used to switch any appliance on and off from anywhere in the world in GSM Mobile Network coverage.

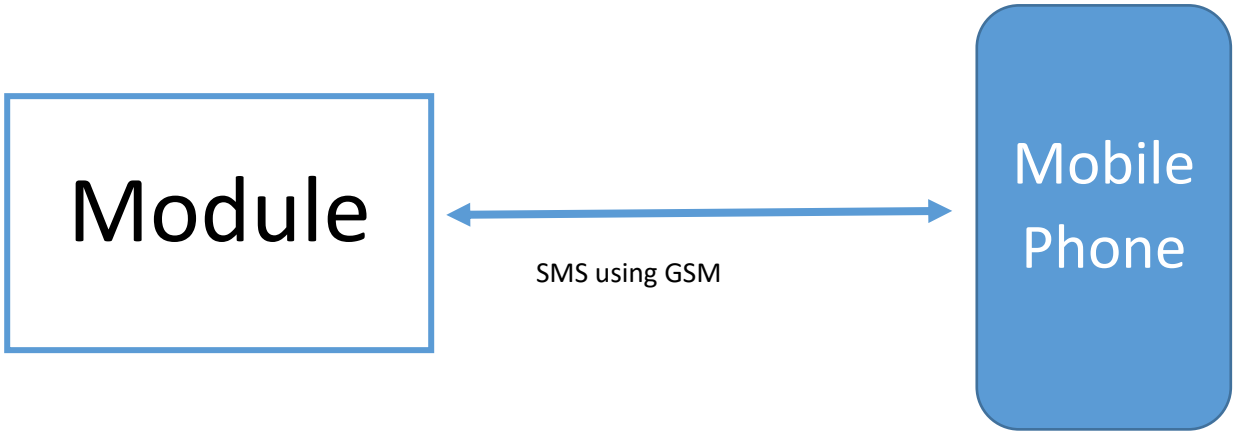
DESCRIPTION: -

The product will be devised keeping in mind the cost effectiveness, remote access and high portability.

The module receives commands using SMS service from a mobile app after which it turns on/off the appliance and sends the feedback to the mobile device.

User will be provided with an easy to use application to control the product.

User must insert a SIM Card with incoming and outgoing SMS service activated to enable the product to communicate. (Carrier charges would incur on both ends)



IDENTIFYING A MODULE UNIQUELY :-

It's very likely for a user to have multiple units of this module. In that case how would the user (and app) will identify each of them uniquely.

To overcome this ambiguity each module has its own 4-digit ID (also called PIN). Application must know the module's mobile number and its pin to send commands to it.

This PIN would be labeled on the module that must be manually entered in the app during setup.

Application would be made in a way that it can handle multiple modules (using profiles with unique mobile numbers and PIN)

Module 1	Module 2	Module 3
ID : 1234	ID : 3456	ID : 4567

ON / OFF FEATURES :-

1. **Timer** : User can set timer on a particular module after which application will automatically send off message to module.

These features are implemented on App level using android libraries and NOT in the module.

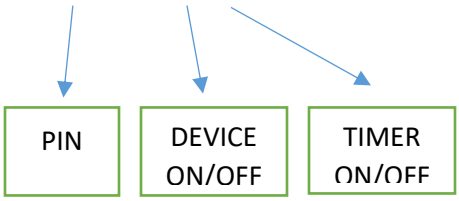
COMMUNICATION PROCESS :-

The mobile app and module communicates in the following way :

1. App sends a message to module

   The message format is like the following :

   $123410% – 6 digit numeric code



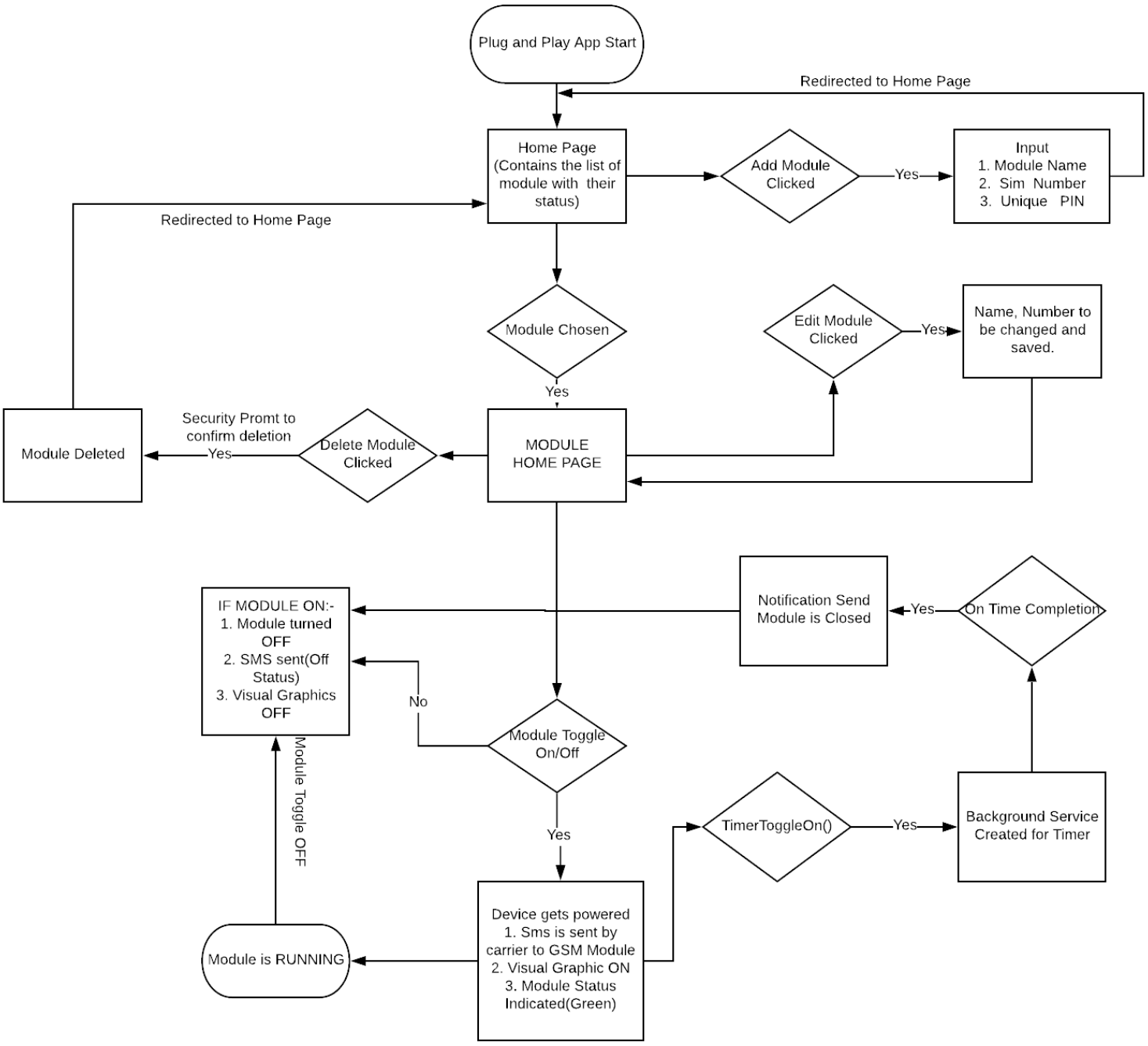
   $: preamble

   % : delimeter

2. Module processes the request according to the message string.
3. Module echoes the reply to mobile application.

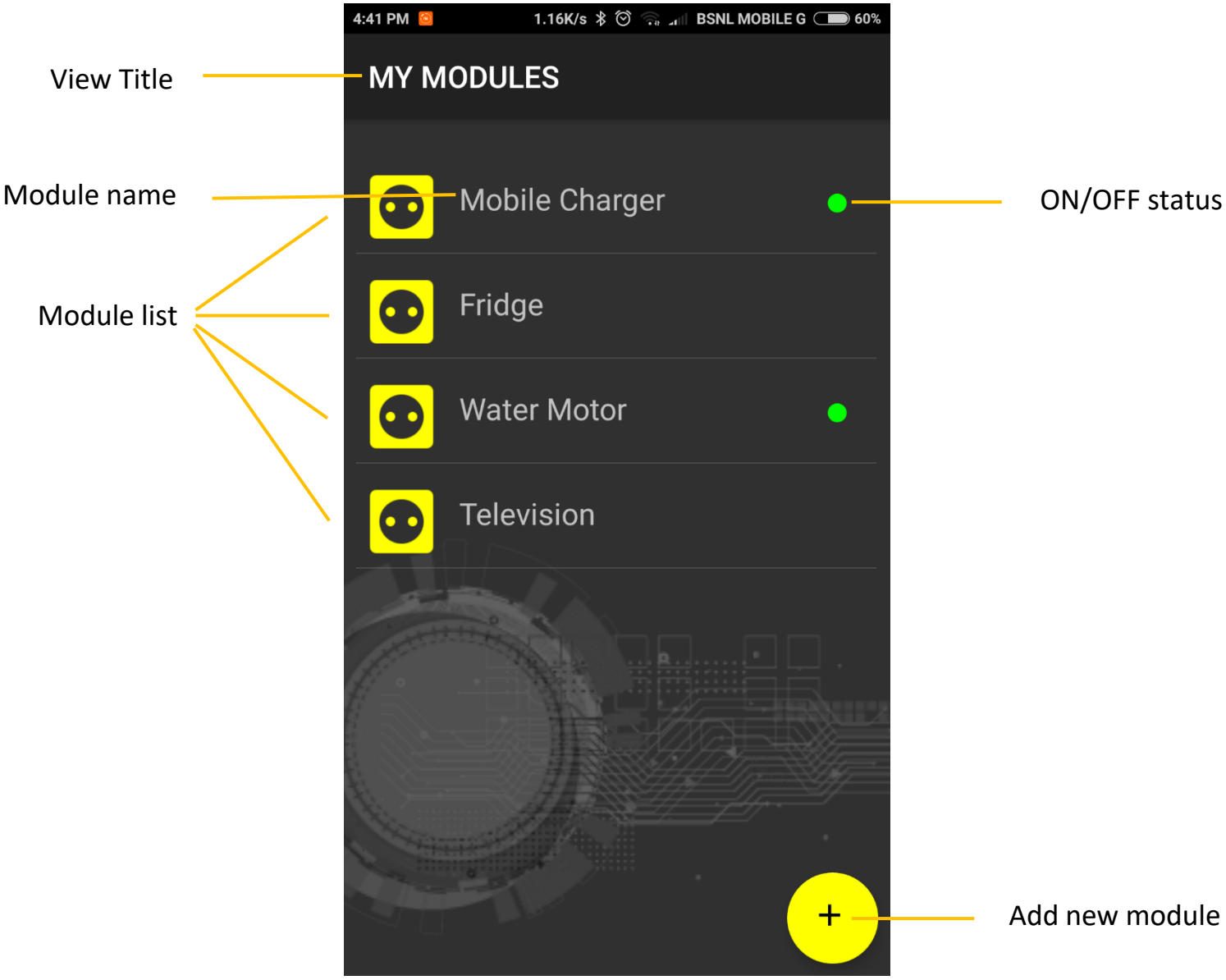
   $123410%

APPFLOW

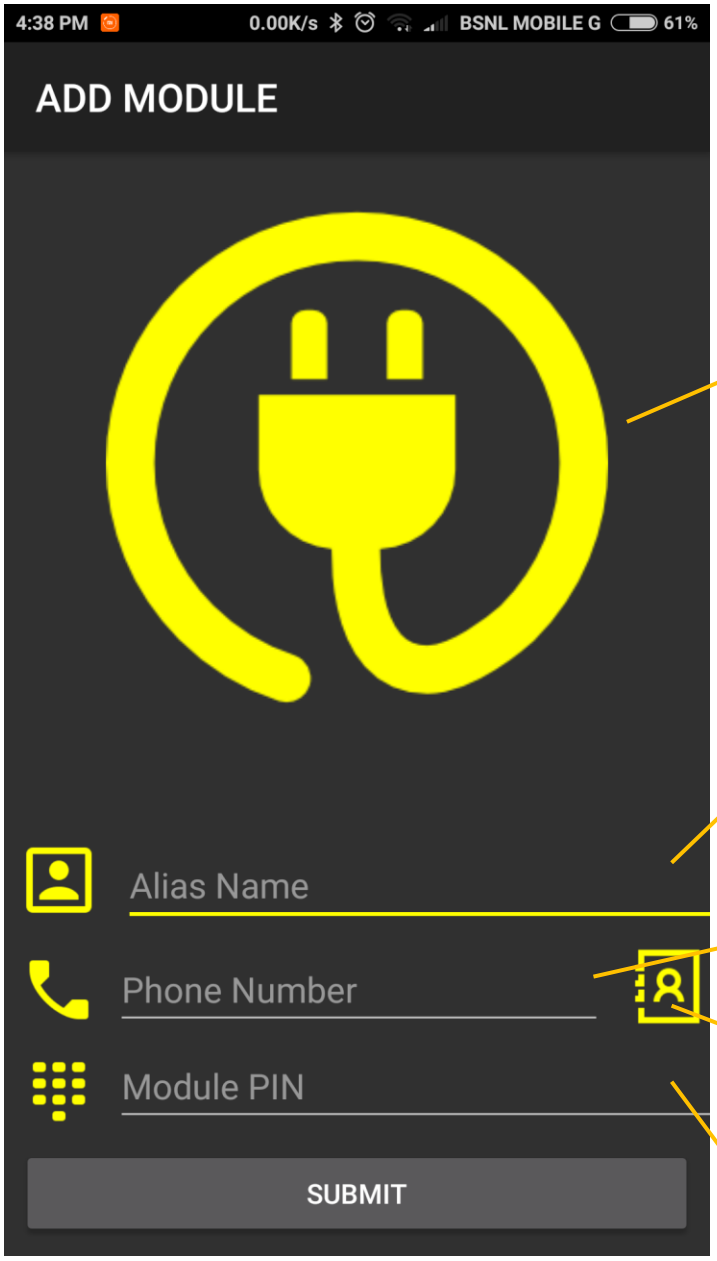

Plug and Play App Start
Redirected to Home Page
Home Page (Contains the list of module with their status)
Add Module Clicked
Yes
Input
1. Module Name
2. Sim Number
3. Unique PIN
Redirected to Home Page
Module Chosen
Edit Module Clicked
Yes
Name, Number to be changed and saved.
Yes
Module Deleted
Security Promt to confirm deletion
Yes
Delete Module Clicked
MODULE HOME PAGE
IF MODULE ON:-
1. Module turned OFF
2. SMS sent(Off Status)
3. Visual Graphics OFF
Notification Send Module is Closed
Yes
On Time Completion
No
Module Toggle On/Off
Module Toggle OFF
Yes
TimerToggleOn()
Yes
Background Service Created for Timer
Device gets powered
1. Sms is sent by carrier to GSM Module
2. Visual Graphic ON
3. Module Status Indicated(Green)
Module is RUNNING

MOBILE APPLICATION VIEWS

1. Homepage



2.Add new module



Visual Graphics

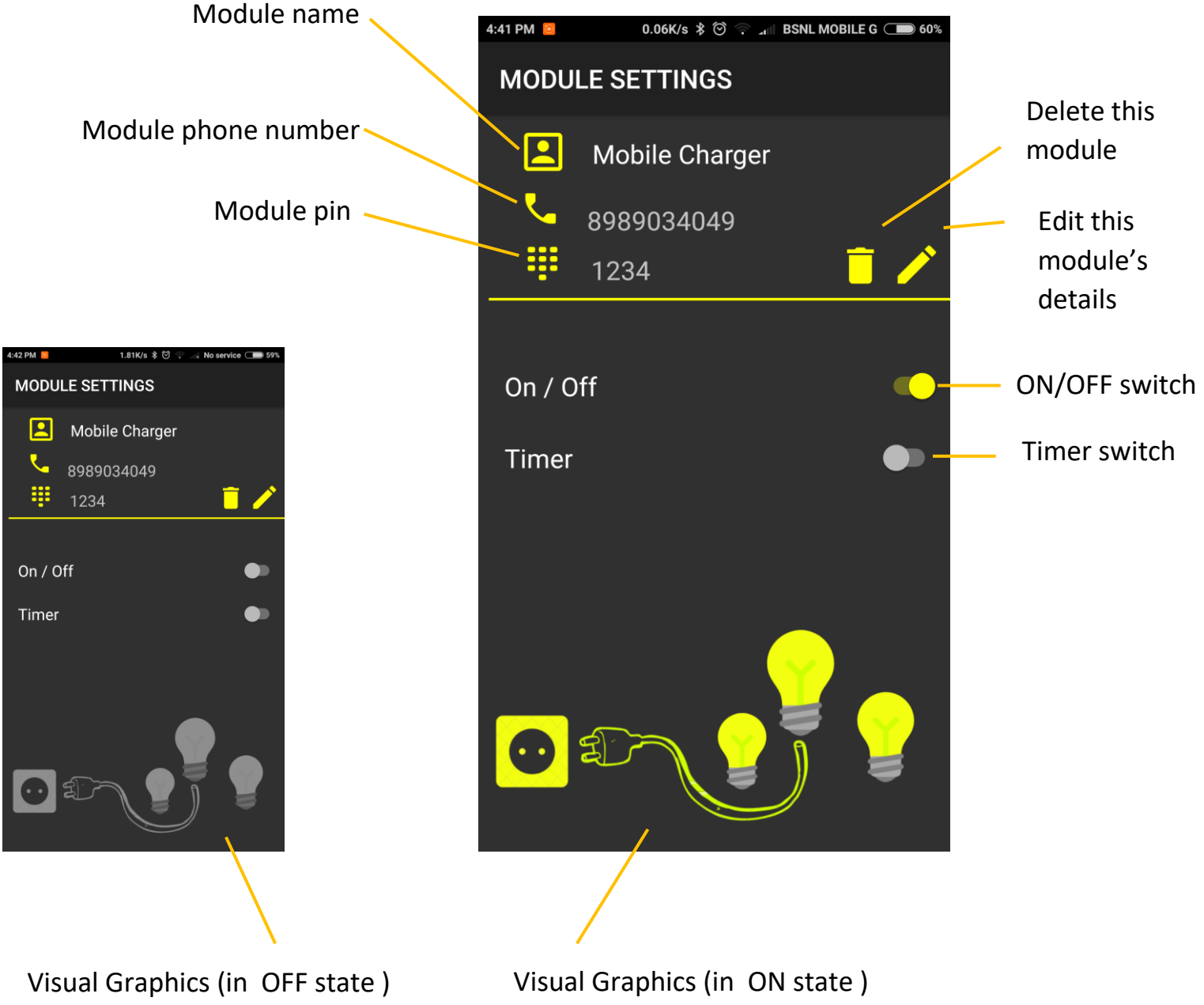
Name given to module for easy identification

Phone Number of SIM inserted in the module

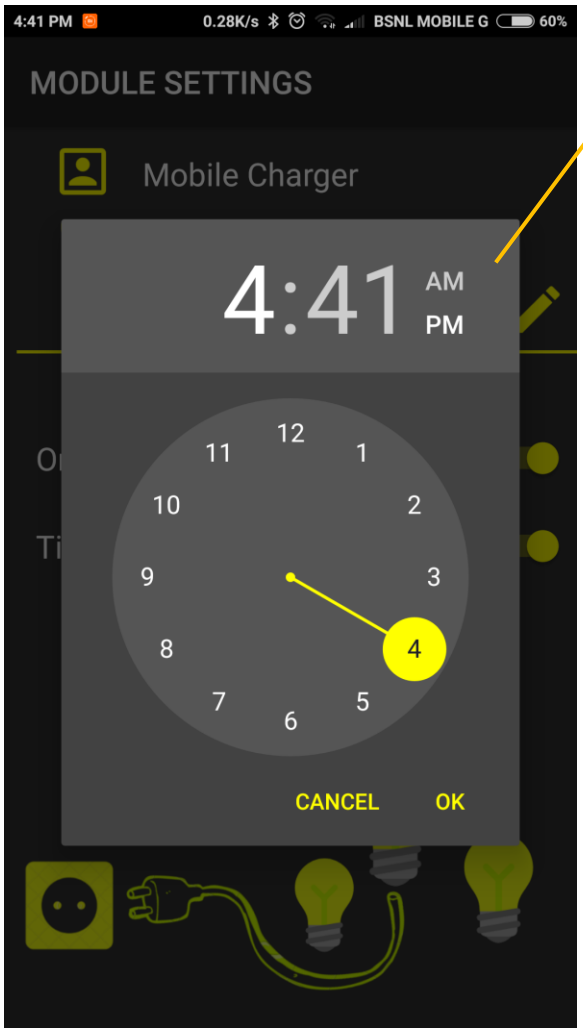
Button to pick phone number from Contacts

Unique PIN written on the module for security

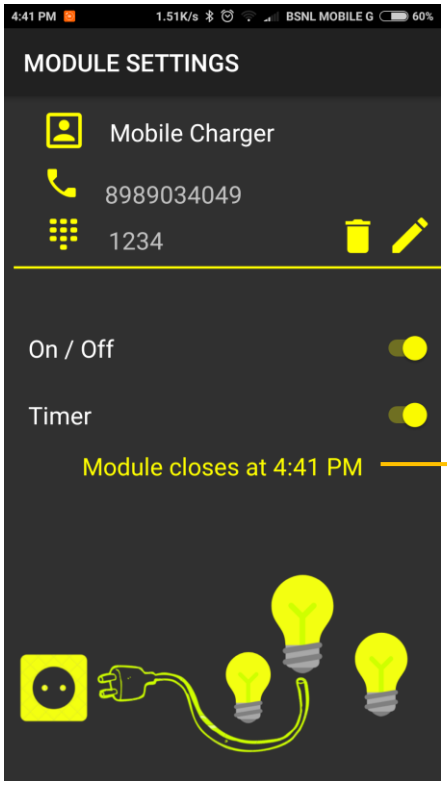
3. Module Control panel



4.Setting the Timer

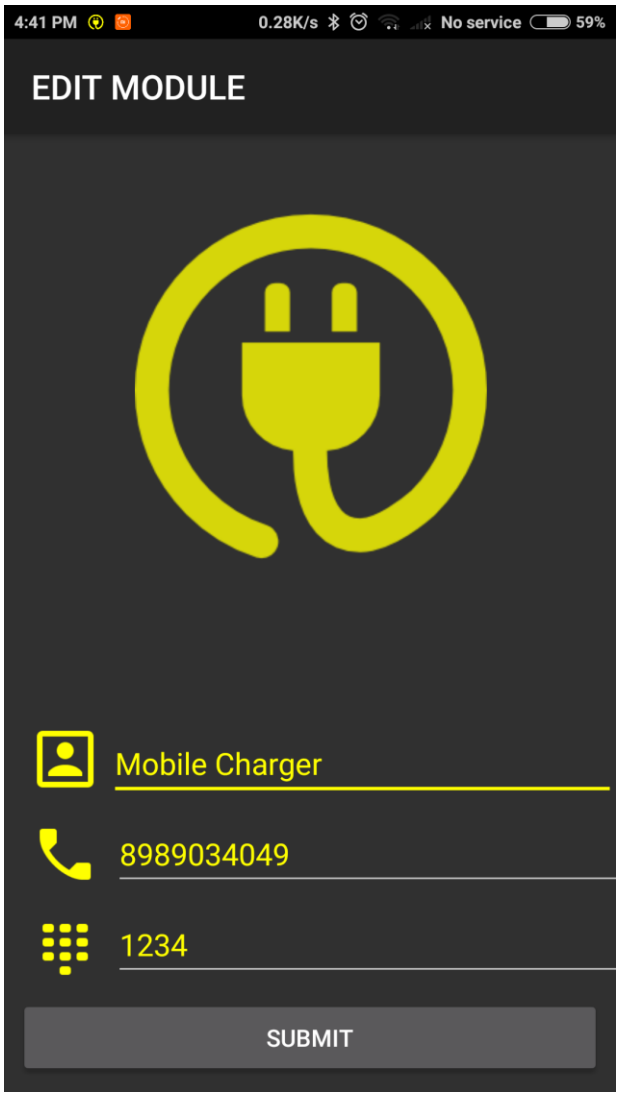


Time picker to set the timer



Time at which module closes.

5. Edit Module



View to Edit Module Details.

All the Field Details are as that of Add new View

The source code for all the pages are listed below.

Title	Front End Files	Back End Files
Home Page	activity_main.xml module_list_layout.xml	MainActivity.java
Add New Page	activity_add_new.xml	AddNew.java
Edit Page	activity_edit_panel.xml	EditPanel.java
Contacts Picker	activity_contacts_picker.xml	ContactsPicker.java
Control Panel Page	activity_control_panel.xml	ControlPanel.java, AlertReceiver.java, NotificationHelper.java, TimerPickerFragment.java

Submitted by :
Mohit Singh Rajput (2015159)
Pratyush Garg (2016190)
Somya Jain (2016265)