CAPSTONE PROJECT REPORT

(Project Term August-December, 2019)

(FUEL MONITORING SYSTEM)

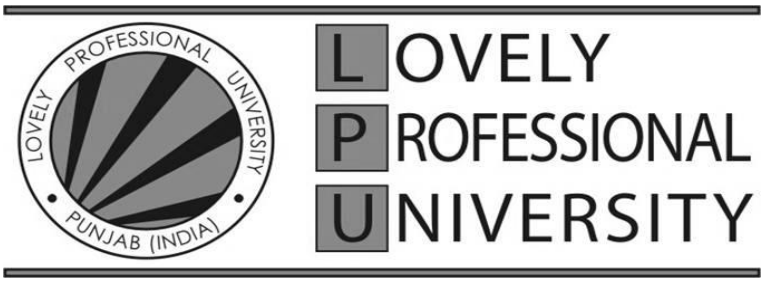
Submitted by

Abhinav Wadia	**11612507**
Km Saloni	**11605459**
Sambangi Vamsi Krishna	**11602696**

Project Group Number: 4
Course Code: CSE439

Under the Guidance of
(Mr. Makul Mahajan, Asst. Professor)

School of Computer Science and Engineering



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LOVELY PROFESSIONAL UNIVERSITY

DECLARATION

We hereby declare that the project work entitled “Fuel Monitoring System” is an authentic record of our own work carried out as requirements of Capstone Project for the award of B.Tech degree in Computer Science Engineering from Lovely Professional University, Phagwara, under the guidance of Mr.Makul Mahajan, during August to December 2019. All the information furnished in this capstone project report is based on our own intensive work and is genuine.

Project Group Number: 4

Name of Student 1: Abhinav Wadia

Registration Number: 11612507

Name of Student 2: Km Saloni

Registration Number: 11605459

Name of Student 3: Sambangi Vamsi Krishna

Registration Number: 11602696

(Signature of Student1)
Date:

(Signature of Student 2)
Date:

(Signature of Student 3)
Date:

CERTIFICATE

This is to certify that the declaration statement made by this group of students is correct to the best of my knowledge and belief. They have completed this Capstone Project under my guidance and supervision. The present work is the result of their original investigation, effort and study. No part of the work has ever been submitted for any other degree at any University. The Capstone Project is fit for the submission and partial fulfillment of the conditions for the award of B.Tech degree in Computer Science Engineering from Lovely Professional University, Phagwara.

Mr. Makul Mahajan

Asst. Professor

School of Computer Science and Engineering,
Lovely Professional University,
Phagwara, Punjab.

Date :

ACKNOWLEDGEMENT

We, three students of Computer Science Engineering of 4th year in Lovely Professional University, Phagwara are preparing a final year project name “Smart Agriculture System”. We whole heartedly express our sincere gratitude to Mr. Makul Mahajan who guided us for the completion of the project. We are also thankful for explaining on critical aspect of topics related to the project. We are also grateful to the assistances of Workshop for permitting us to have some help from them.

TABLE OF CONTENTS

1. INTRODUCTION

In this project, fuel monitoring system, we have used different components to create a communication path between the vehicle, the owner and another independent GSM node which can act as the supplier of the fuel. In this system, we track and monitor the fuel level of the fuel tank with the help of different components. We have inserted a Bluetooth module, a GSM module and arduino in the project. The Bluetooth is a wireless technology standard for exchanging data from fixed and mobile devices and building personal area networks (PANs). The Bluetooth module is responsible for sending live notifications of the fuel level to the vehicle owner's mobile phone. The task of sending live notification to the mobile phone is done with the help of an application that is ardutooth. This application sends and receives data directly on Smartphone via Bluetooth. The other module that is GSM module is used in the project to establish communication between the GSM/GPRS system and computer system, in our case, it is the smartphone. It also requires a SIM that is Subscriber Identity Module. It is the user equipment that communicates with the mobile network. The GSM modem in our project sends out message notification to the registered mobile number about the level of fuel in the tank. This registered mobile number can act as the provider of the fuel. Along with these modules, other components like transistor BC547, buzzer, capacitor, resistor, LED, bridgewave rectifier, diodes and 7805 IC are also used for the building of the project. This work of Fuel Monitoring System is an initial step for better fuel management and also becomes the scope of our work. The data collection with sensors and also by implementing the micro controller is done at different speed range and also with different load condition. Based on the inference from the collected data suggestions are made for better utilization of the fuel. Equation has been developed between the economic factor and its influencing factors like load and speed. In future we hope that this engine performance monitoring will be highly helpful for automation.

2. PROFILE OF THE PROBLEM

Scope of the study

This study includes information about all the components used in the project that is fuel monitoring system. The components discussed and explained in the study of this project are Bluetooth module, GSM module and arduino, transistor BC547, buzzer, capacitor, resistor, LED, bridgewave rectifier, diodes and 7805 IC. The study also covers existing system, DFD for present system, What's new in the system to be developed, Problem Analysis, Software Requirement Analysis, Specific Requirements, System design of the project, all the design notation used in the project, a detailed design, flowchart of the whole system, testing of the project, how the project is going to implemented. The study also contains current status of the project, remaining areas of concern, technical and managerial lessons learnt. All the source codes and necessary project snapshots are also inserted in this project study. The repport also contains brief information on some components that we have utilize to make a correspondence way between the vehicle, the proprietor and another free GSM hub which can go about as the provider of the fuel. In this framework, we track and screen the fuel level of the fuel tank with the assistance of various parts. We have embedded a Bluetooth module, a GSM module and arduino in the venture.

3. EXISTING SYSTEM

3.1 Introduction

The present system that is used in vehicle tracks the fuel level of the fuel in the fuel tank and displays it on the vehicle dashboard. It means that the person who wants to know about the level of fuel in the vehicle's fuel tank need to be in the vehicle and the vehicle needs to be turned on for the information to get displayed on the dashboard. Although the present system is okay but not advanced. The system of fuel monitoring needs to be upgraded. The present system does not work when the vehicle is off and the driver is away from the vehicle. Moreover it does not solve the problem of tank draining and fraud attempts which are very common problem.

3.2 What's new in the system to be developed

The present framework that is utilized in vehicle tracks the fuel level of the fuel in the fuel tank and shows it on the vehicle dashboard. It implies that the individual who needs to think about the degree of fuel in the vehicle's fuel tank should be in the vehicle and the vehicle should be turned on for the data to get showed on the dashboard. In spite of the fact that the present framework is alright however not progressed. The arrangement of fuel checking should be updated. The present framework doesn't work when the vehicle is off and the driver is away from the vehicle. Also it doesn't take care of the issue of tank depleting and misrepresentation endeavours which are extremely normal issue.

The present system needs to have live fuel tracking or monitoring even when the vehicle is off. It also needs to have a graphical interface that can display information over smartphone as smrtphone is the only device that is along with person everytime and it does not have to do anything with the turning On and Off of the vehicle.

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4. PROBLEM ANALYSIS

4.1 Problem Identification

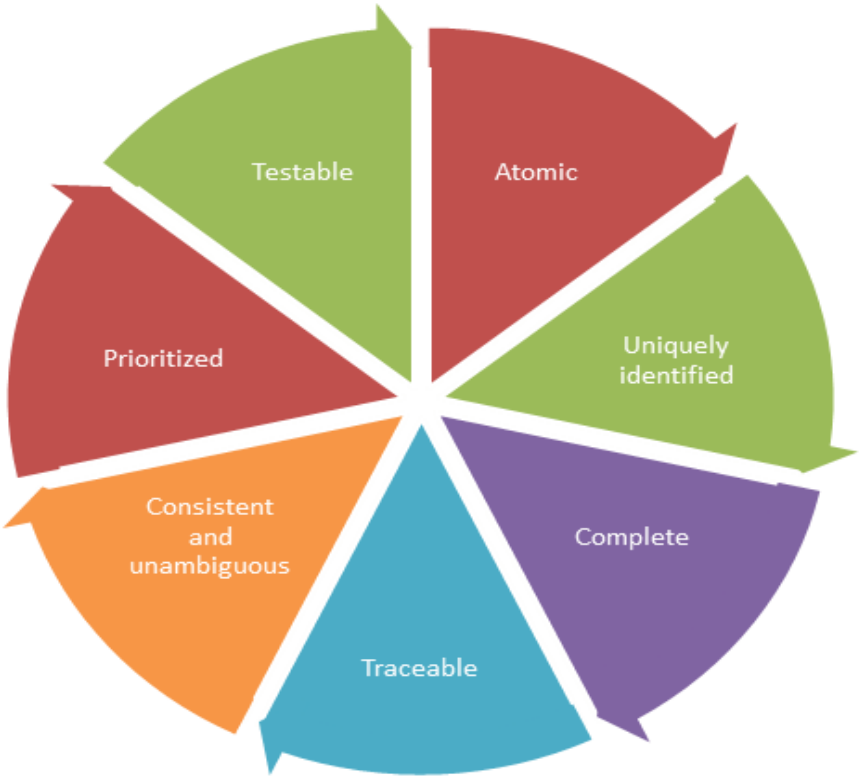
Even a regular vehicle user, do not know as when to fill the fuel for the vehicle as and because one use to fill it by weekly or daily basis. And now particularly for a new person it becomes a difficult task to identify the level of fuel. So it becomes a customary problem for a long traveler. Here an experimental work has been carried out to suggest a equation to predict the time of filling based on the distance basis".

4.2 Feasibility Analysis

This idea of fuel monitoring system which provides live fuel monitoring along with user interface on Smartphone and real time alerts and providing an already setup connection between the vehicle, the owner and the supplier of the fuel has not been in use. Although the idea is in process in some parts of the world but in India, it has not been executed. Talking about the feasibility of the fuel monitoring system, yes it is feasible and it requires moderate investment. This project also prevents tank draining and fraud attempts which are very common. The cost of fuel is always a concern, and fuel savings continue to be fundamentally important in running a successful fleet operation. In most vehicle operations fuel expenses account for at least 32% of operating costs, so fuel monitoring & management is the logical place to start in order to reach fuel efficiency. Unmonitored vehicles are left vulnerable to fuel theft, and the surveillance of fuel tank level becomes critical to catching thieves in their act.

5. SOFTWARE REQUIREMENT ANALYSIS

5.1 Introduction

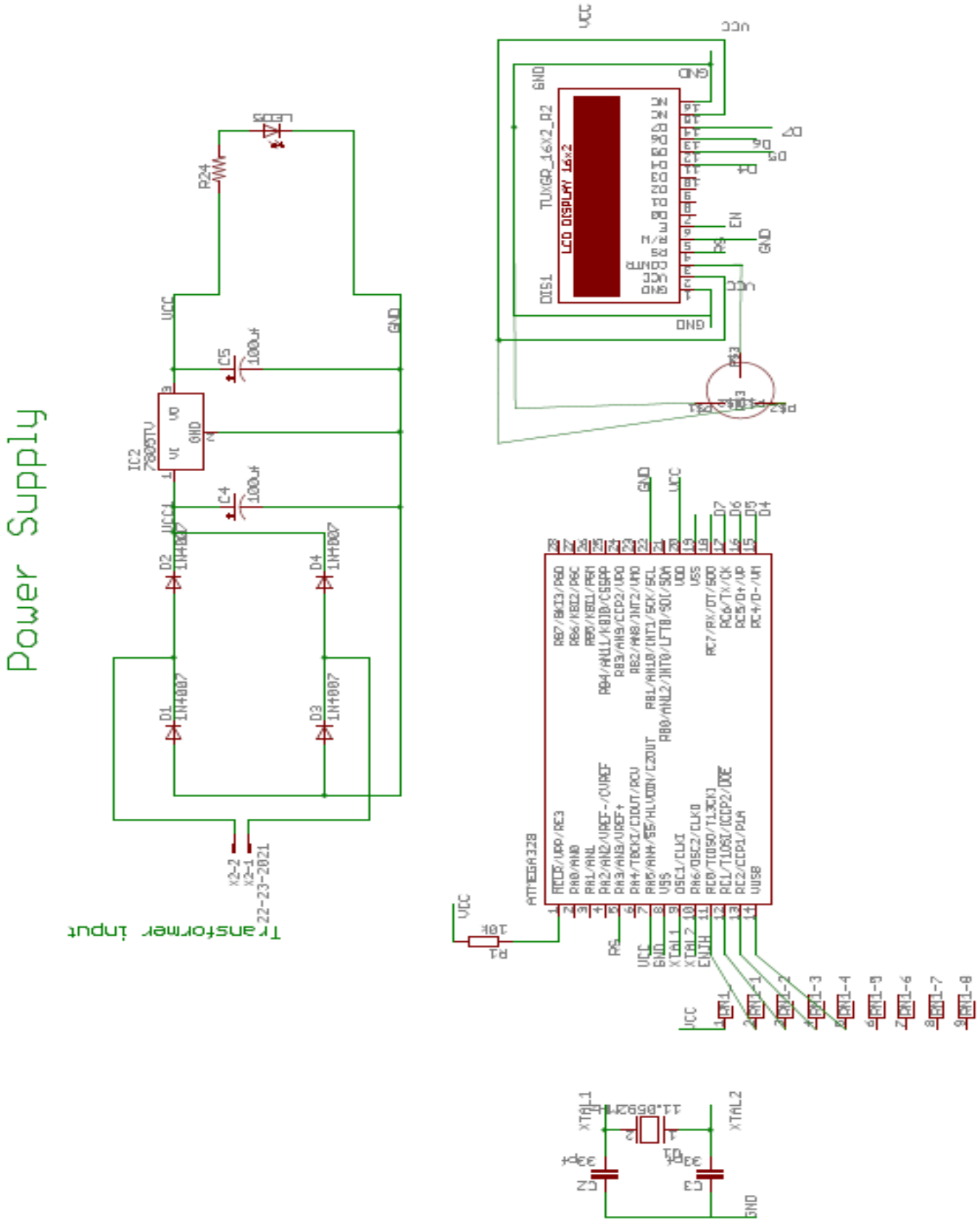


5.2 Specific Requirements

Fuel monitoring system provide good quality of services to the users. It provides fuel monitoring of their vehicle on time. System saves the time of the user because it provide live view of their fuel if there is any chance of fuel empty then user can full their tank on time there is no chance of time wasteing for example if user is going to somewhere they can check their fuel reading easily .It provides security to the user's fuel because in present time theft is everywhere fuel. Steeling is contionusly going on so user can save their fuel.

6. DESIGN

6.1 System Design



6.2 detailed Design

BlueTooth-HC05-Modules- Bluetooth is a wireless technology standard for exchanging data over short distances (using short-wavelength UHF radio waves in the ISM band from 2.4 to 2.485 GHz) from fixed and mobile devices, and building personal area networks (PANs). Range is approximately 10 Meters (30 feet). HERE's a great Instructable that shows how to make a Android phone control a 3-D maze through this HC05 module, a YourDuino RoboRED and a couple of servos. (RIGHT) (And some 3-D printed parts!)

HC-05 SUB-MODULE

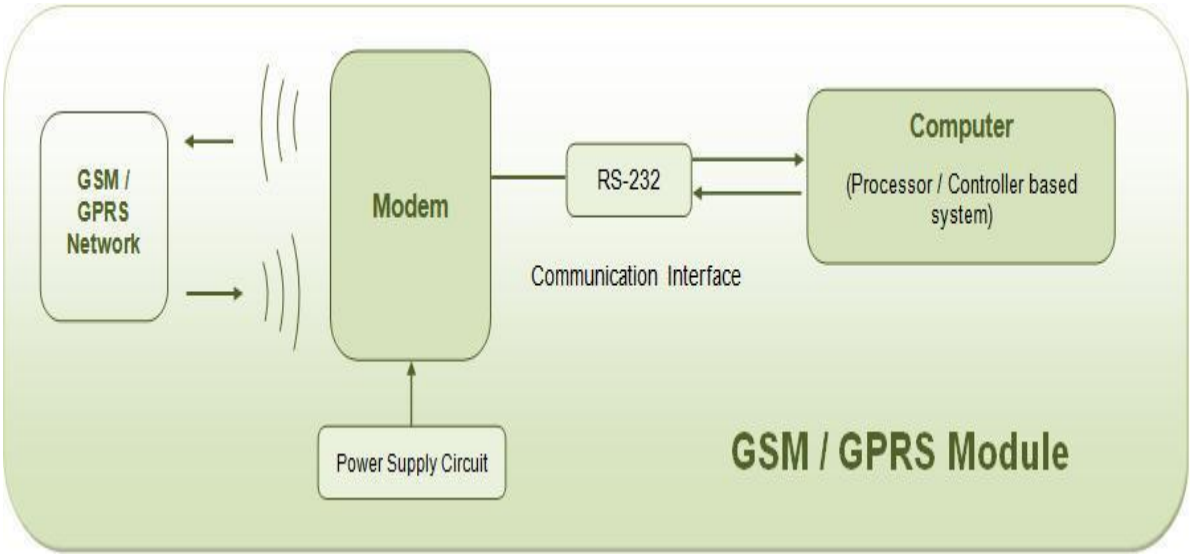
These modules are based on the Cambridge Silicon Radio BC417 2.4 GHz BlueTooth Radio chip. This is a complex chip which uses an external 8 Mbit flash memory. If you like LOTS of details see the: [Data Sheet].

These low-cost Bluetooth Sub-modules work well with Arduino and other Microcomputers. IMPORTANT Definitions:

- HC-05 is a more capable module that can be set to be either Master or Slave (Available HERE)
- HC-06 is a Slave only device. (It looks physically just like the HC-05).(Note: Now HC-06 not cheaper)
- These small (3 cm long) modules run on 3.3V power with 3.3V signal levels, They have no pins and usually solder to a larger board. (See example below)

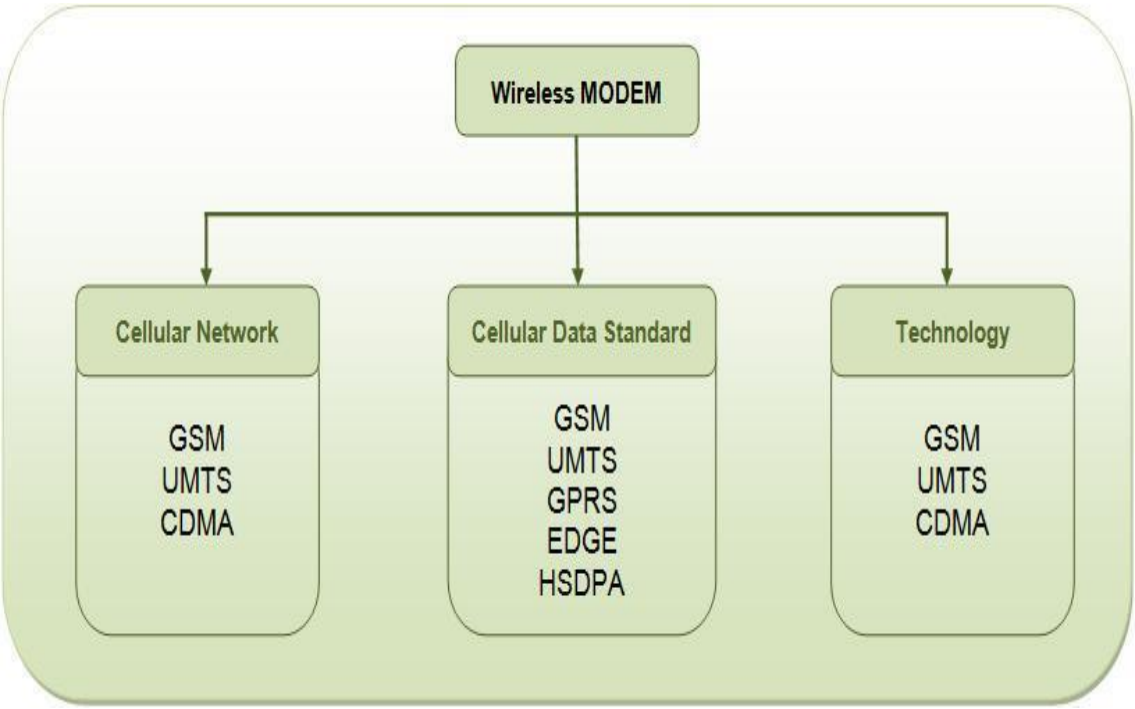
- The module has two modes of operation, Command Mode where we can send AT commands to it and Data Mode where it transmits and receives data to another Bluetooth module.
- "Breakout" Boards that make these easy to use are available and recommended. These mount the sub-module like that shown on the right on a slightly larger board. NOTE: Sellers often label them "HC-05" or "HC-06", but they have some other model number on the reverse side. Most of these boards support operation at 5V power and interface to 5V Arduino signal levels with some technique of level shifting. A typical "breakout" board is shown below

GSM/GPRS Module:- GSM/GPRS module is used to establish communication between a computer and a GSM-GPRS system. Global System for Mobile communication (GSM) is an architecture used for mobile communication in most of the countries. Global Packet Radio Service (GPRS) is an extension of GSM that enables higher data transmission rate.GSM/GPRS module consists of a GSM/GPRS modem assembled together with power supply circuit and communication interfaces (like RS-232, USB, etc) for computer. The MODEM is the soul of such modules.



Wireless MODEMs

Wireless MODEMs are the MODEM devices that generate, transmit or decode data from a cellular network, for establishing communication between the cellular network and the computer. These are manufactured for specific cellular network (GSM/UMTS/CDMA) or specific cellular data standard (GSM/UMTS/GPRS/EDGE/HSDPA) or technology (GPS/SIM). Wireless MODEMs like other MODEM devices use serial communication to interface with and need Hayes compatible AT commands for communication with the computer (any microprocessor or microcontroller system).
GSM/GPRS MODEM



GSM/GPRS MODEM

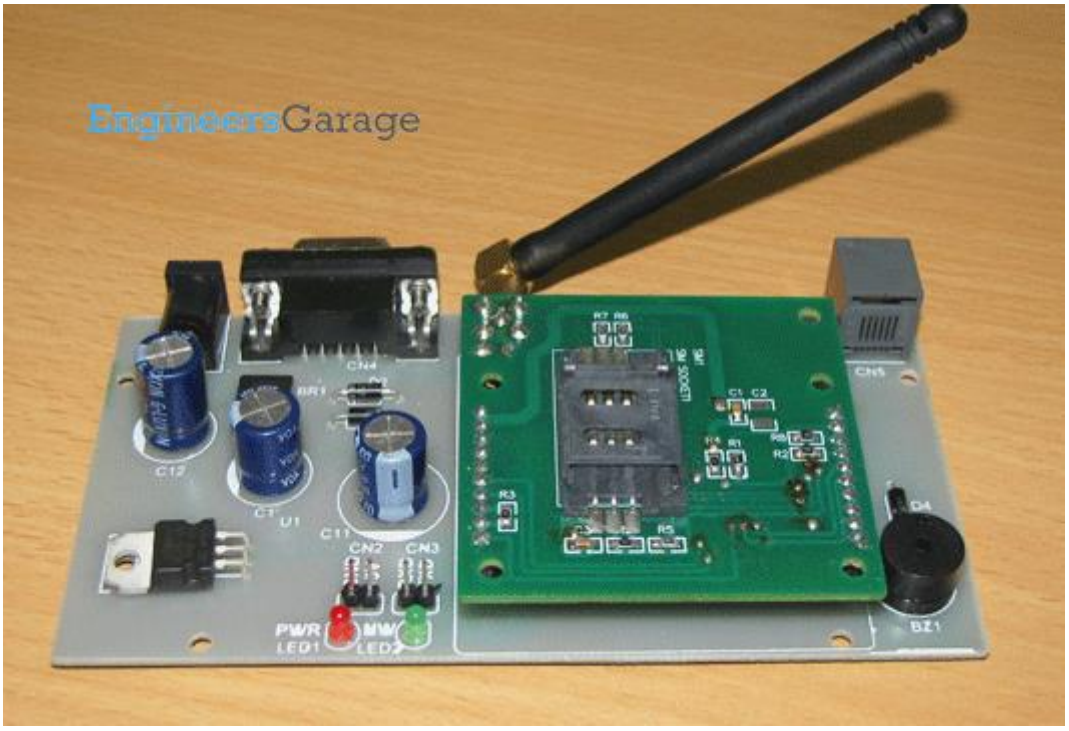
GSM/GPRS MODEM is a class of wireless MODEM devices that are designed for communication of a computer with the GSM and GPRS network. It requires a SIM (Subscriber Identity Module) card just like mobile phones to activate communication with the network. Also they have IMEI (International Mobile Equipment Identity) number similar to mobile phones for their identification. A GSM/GPRS MODEM can perform the following operations:

1. Receive, send or delete SMS messages in a SIM.
2. Read, add, search phonebook entries of the SIM.
3. Make, Receive, or reject a voice call.

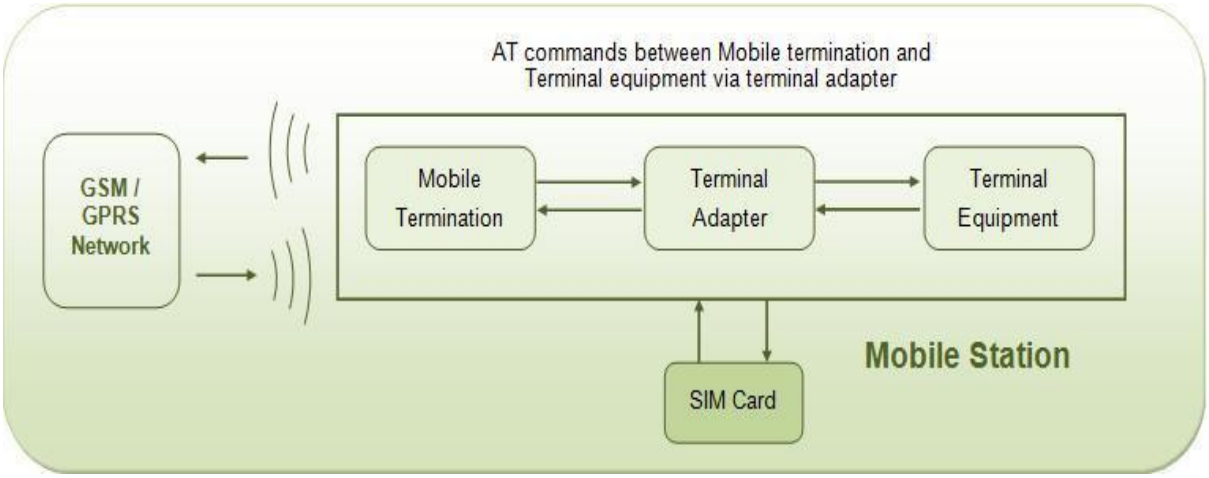
The MODEM needs AT commands, for interacting with processor or controller, which are communicated through serial communication. These commands are sent by the controller/processor. The MODEM sends back a result after it receives a command. Different AT commands supported by the MODEM can be sent by the processor/controller/computer to interact with the GSM and GPRS cellular network.

GSM/GPRS Module

A GSM/GPRS module assembles a GSM/GPRS modem with standard communication interfaces like RS-232 (Serial Port), USB etc., so that it can be easily interfaced with a computer or a microprocessor / microcontroller based system. The power supply circuit is also built in the module that can be activated by using a suitable adaptor.



Mobile Station (Cell phones and SIM):- A mobile phone and Subscriber Identity Module (SIM) together form a mobile station. It is the user equipment that communicates with the mobile network. A mobile phone comprises of Mobile Termination, Terminal Equipment and Terminal Adapter.



How GSM/GPRS Works

Mobile Termination is interfaced with the GSM mobile network and is controlled by a baseband processor. It handles access to SIM, speech encoding and decoding, signaling and other network related tasks. The Terminal Equipmentis an application processor that deals with handling operations related to keypad, screen, phone memory and other hardware and software services embedded into the handset. The Terminal Adapter establishes communication between the Terminal Equipment and the Mobile Termination using AT commands. The communication with the network in a GSM/GPRS mobile is carried out by the baseband processor.

Difference between GSM mobile and GSM/GPRS module:

A GSM mobile is a complete system in itself with embedded processors that are dedicated to provide an interface between the user and the mobile network. The AT commands are served between the processors of the mobile termination and the terminal equipment. The mobile handset can also be equipped with a USB interface to connect with a computer, but it may or may not support AT commands from the computer or an external processor/controller.

The GSM/GPRS module, on the other hand, always needs a computer or external processor/controller to receive AT commands from. GSM/GPRS module itself does not provide any interface between the user and the network, but the computer to which module is connected is the interface between user and network.

An advantage that GSM/GPRS modules offer is that they support concatenated SMS which may not be supported in some GSM mobile handsets. Also some mobile handsets can’t receive MMS when connected to a computer.

Applications of GSM/GPRS module:

The GSM/GPRS module demonstrates the use of AT commands. They can feature all the functionalities of a mobile phone through computer like making and receiving calls, SMS, MMS etc. These are mainly employed for computer based SMS and MMS services.

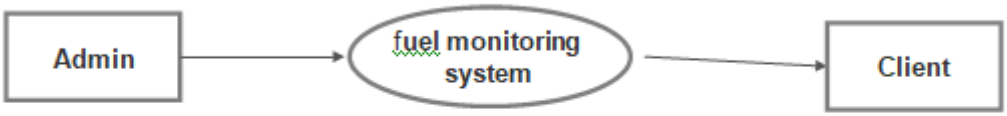
AT Commands:

AT commands are used to control MODEMs. AT is the abbreviation for Attention. These commands come from Hayes commands that were used by the Hayes smart modems. The Hayes commands started with AT to indicate the attention from the MODEM. The dial up and wireless MODEMs (devices that involve machine to machine communication) need AT commands to interact with a computer. These include the Hayes command set as a subset, along with other extended AT commands.

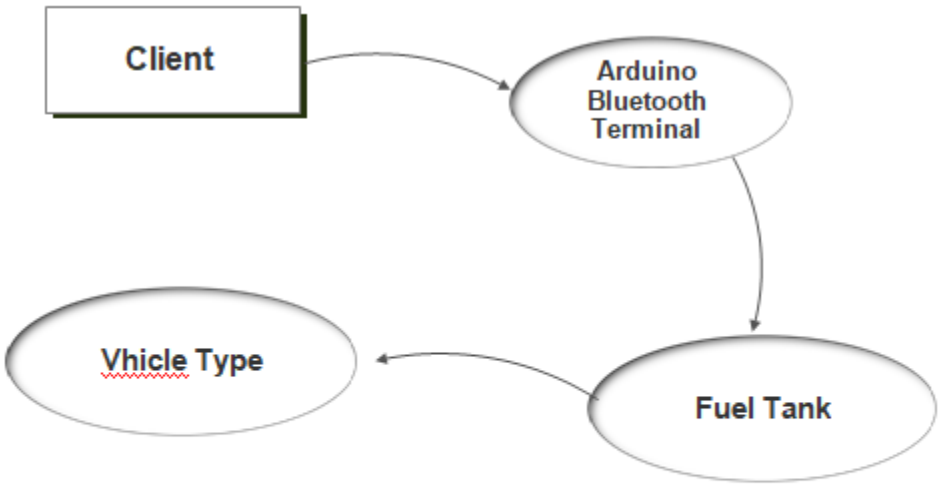
AT commands with a GSM/GPRS MODEM or mobile phone can be used to access following information and services:

1. Information and configuration pertaining to mobile device or MODEM and SIM card.
2. SMS services.
3. MMS services.
4. Fax services.
5. Data and Voice link over mobile network.

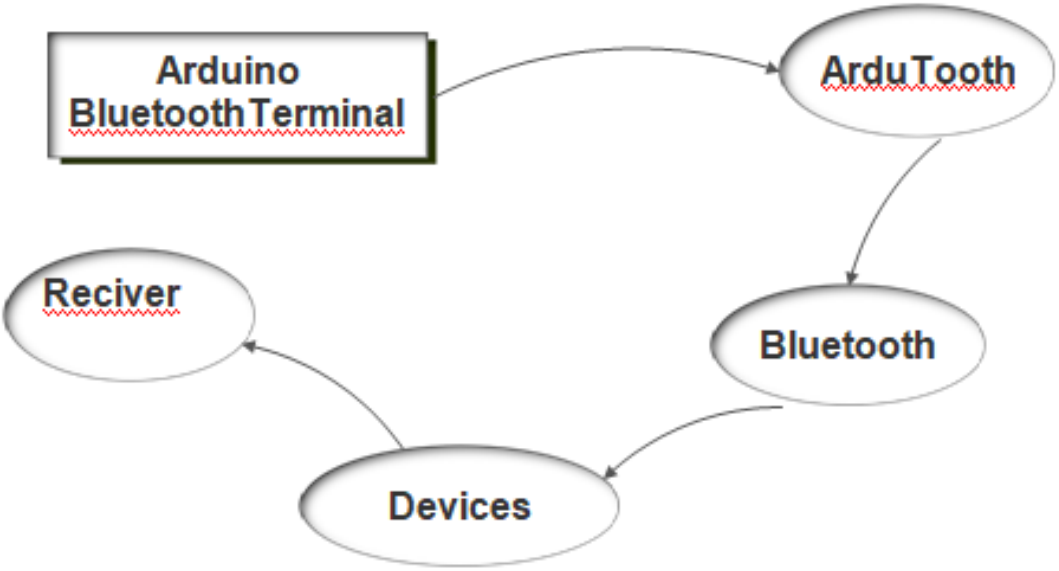
6.3 FLOWCHARTS



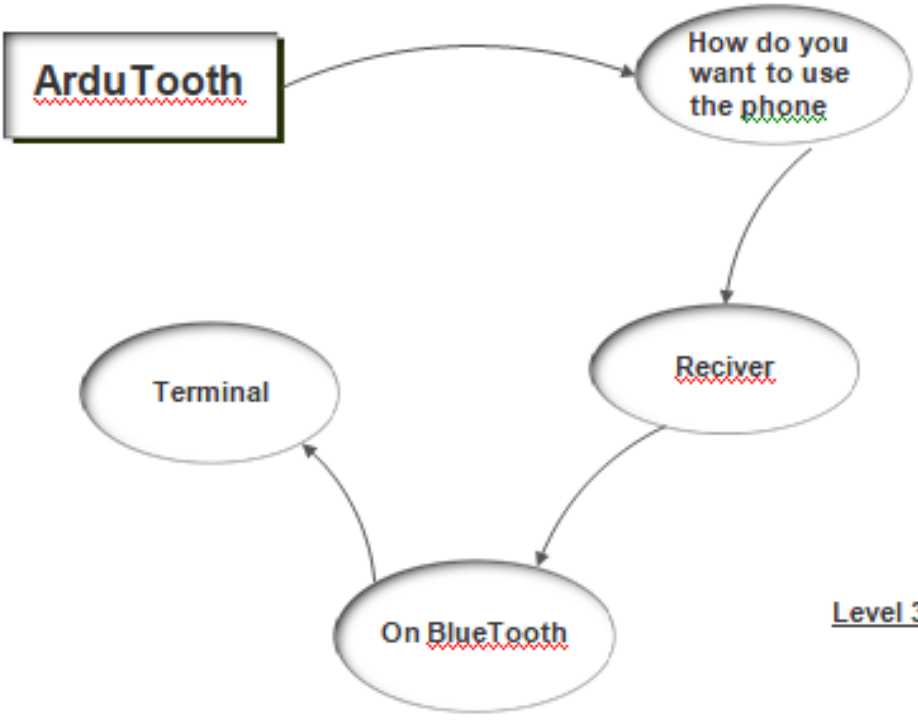
LEVEL 0 DFD



Level 1 DFD



LEVEL 2 DFD



Level 3 Dfd

6.4 PSEUDO CODE

Code used for Arduino Programming

```
#include <LiquidCrystal.h>
#include <SoftwareSerial.h>

SoftwareSerial BTserial(2, 4); // RX | TX
LiquidCrystal lcd(3, 13, 9, 10, 11, 12);
int buz = 6;  //
int low = 5;
int med = 7;
int full = 8;

void setup()
{
BTserial.begin(9600);
pinMode(buz,OUTPUT);
pinMode(buz,OUTPUT);
pinMode(low,INPUT);
pinMode(med,INPUT);
pinMode(full,INPUT);

Serial.begin(9600);
  lcd.begin(16, 2);
```

```
 // Print a message to the LCD.
 lcd.setCursor(0, 0);
 lcd.print("  POLLUTION ");
   lcd.setCursor(0, 1);
     lcd.print("ALERT MACHINE");

digitalWrite(buz,LOW);
delay(250);
 digitalWrite(buz,HIGH);
delay(250);

      digitalWrite(buz,LOW);
delay(250);
 digitalWrite(buz,HIGH);
delay(250);

 digitalWrite(buz,LOW);
delay(250);
 digitalWrite(buz,HIGH);
delay(250);

 digitalWrite(buz,LOW);
delay(250);
 digitalWrite(buz,HIGH);
```

```
delay(250);

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delay(250);
 digitalWrite(buz,HIGH);
delay(250);

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delay(250);
 digitalWrite(buz,HIGH);
delay(250);

 digitalWrite(buz,LOW);
delay(250);
 digitalWrite(buz,HIGH);
delay(250);

 digitalWrite(buz,LOW);
delay(250);
 digitalWrite(buz,HIGH);
delay(250);

 digitalWrite(buz,LOW);
delay(250);
```

```
 digitalWrite(buz,HIGH);
delay(250);

 digitalWrite(buz,LOW);
delay(250);
 digitalWrite(buz,HIGH);
delay(250);

 digitalWrite(buz,LOW);
delay(250);
 digitalWrite(buz,HIGH);
delay(250);
 }

//Main Loop To Calculate RPM and Update LCD Display
void loop()
{
if(digitalRead(low)==HIGH && digitalRead(med)==HIGH &&
digitalRead(full)==HIGH  )
{
   digitalWrite(buz,LOW);
delay(250);
```

```
BTserial.print("FUEL  TANK LEVEL OF THE VEHICLE IS  =
BELOW RESERVE LEVEL
");


//BTserial.print(",");

BTserial.print(";");


     init_sms();

  send_data(" FUEL BELOW RESERVE ");

  send_sms();


  digitalWrite(buz,LOW);

delay(4000);

 delay(500);

 }


if(digitalRead(low)==LOW && digitalRead(med)==HIGH &&
digitalRead(full)==HIGH  )


{

  BTserial.print("FUEL  TANK LEVEL OF THE VEHICLE IS  =
LOW LEVEL                                                    ");

//BTserial.print(",");

BTserial.print(";");

 delay(1000);
```

```
}
if(digitalRead(low)==LOW && digitalRead(med)==LOW &&
digitalRead(full)==HIGH  )


{
  BTserial.print("FUEL  TANK LEVEL OF THE VEHICLE IS  =
MID - LEVEL                                                    ");


//BTserial.print(",");
BTserial.print(";");


 delay(1000);
 }


if(digitalRead(low)==LOW && digitalRead(med)==LOW &&
digitalRead(full)==LOW  )


{
BTserial.print("FUEL  TANK LEVEL OF THE VEHICLE IS  =
FULL - LEVEL
");


//BTserial.print(",");
BTserial.print(";");
```

```
 delay(1000);
 }

digitalWrite(buz,HIGH);
delay(500);
}

void init_sms()
{
   Serial.println("AT+CMGF=1");
   delay(200);
   Serial.println("AT+CMGS=\"+917973658346\"");    // 9882496231
   delay(200);
}
void send_data(String message)
{
  Serial.println(message);
  delay(200);
}
void send_sms()
{
  Serial.write(26);
}
```

7. TESTING

7.1 Functional Testing

Functional Testing is defined as a type of testing which verifies that each function of the software application operates in conformance with the requirement specification. This testing mainly involves black box testing and it is not concerned about the source code of the application.

Each and every functionality of the system is tested by providing appropriate input, verifying the output and comparing the actual results with the expected results.

This testing involves checking of User Interface, APIs, Database, security, client/ server applications and functionality of the Application under Test. The testing can be done either manually or using automation.

The prime objectives of functional testing are checking the functionalities of the software system. .

It mainly concentrates on:

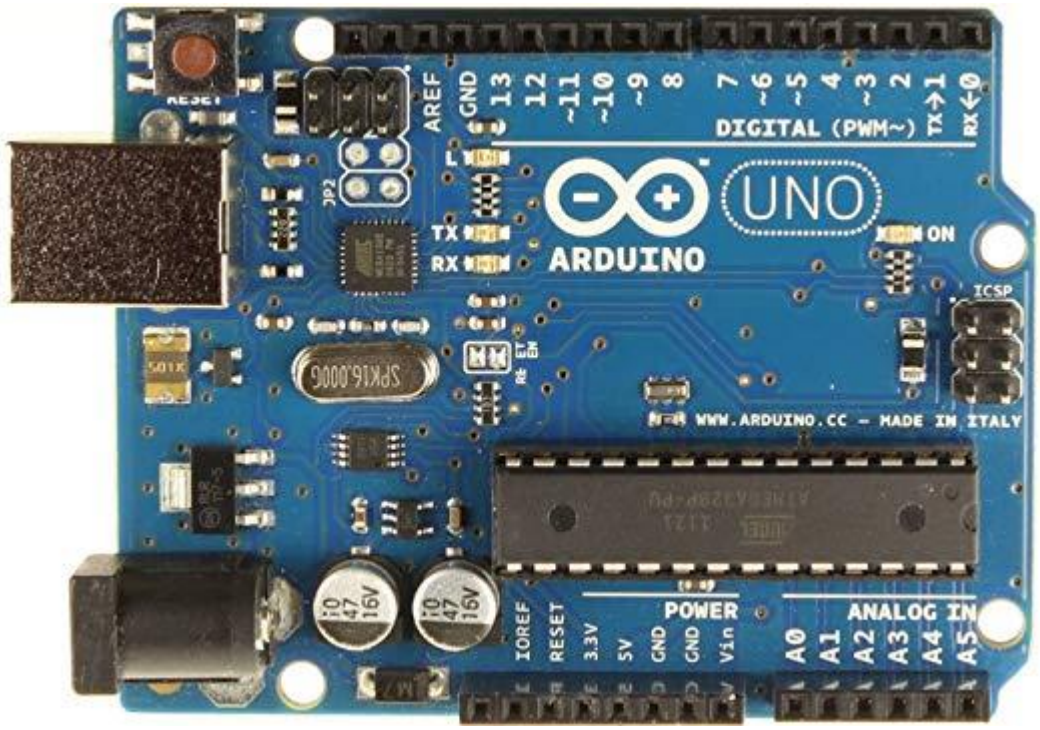
1. Mainline function
2. Basic usability
3. Accessibility
4. Error conditions

In order to perform functional testing, the following steps must be observed.

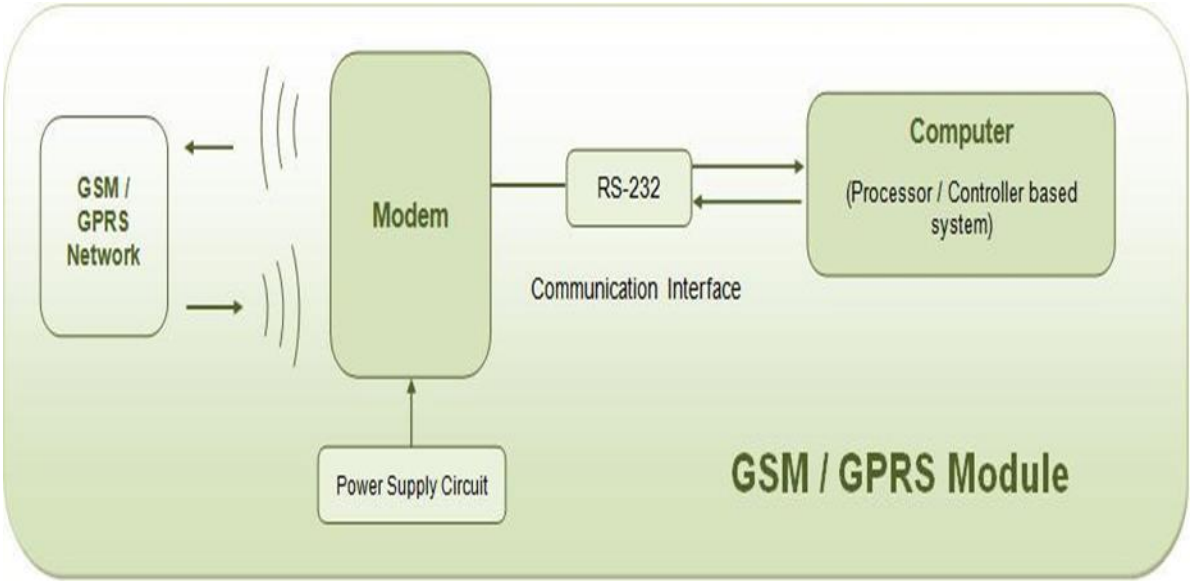
- Identify test input
- Compute the expected outcomes
- Execute test cases
- Comparison of expected and actual result

So in this we have used many functional applications such as Transistor BC 547, Bluetooth module, Diode , Buzzer , Resisitor and Arduino.

So Firstly to start the project we need to access the Arduino board , we have checked the Arduino board and made the connections required to work the module through GSM module and Bluetooth etc.



Now we check the gsm module, which is used to establish the communication between a computer and a GSM – GPRS system. Global system for mobile communication is an architecture used for mobile communication .



GSM/GPRS MODEM

GSM/GPRS MODEM is a class of wireless MODEM devices that are designed for communication of a computer with the GSM and GPRS network. It requires a **SIM (Subscriber Identity Module)** card just like mobile phones to activate communication with the network. Also they have **IMEI** (International Mobile Equipment Identity) number similar to mobile phones for their identification. A GSM/GPRS MODEM can perform the following operations:

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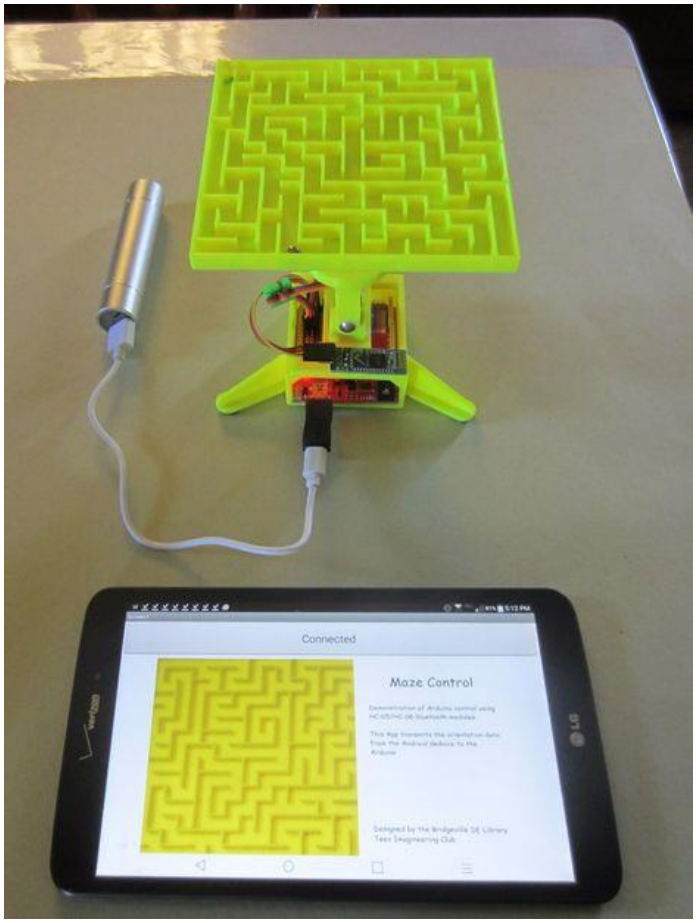
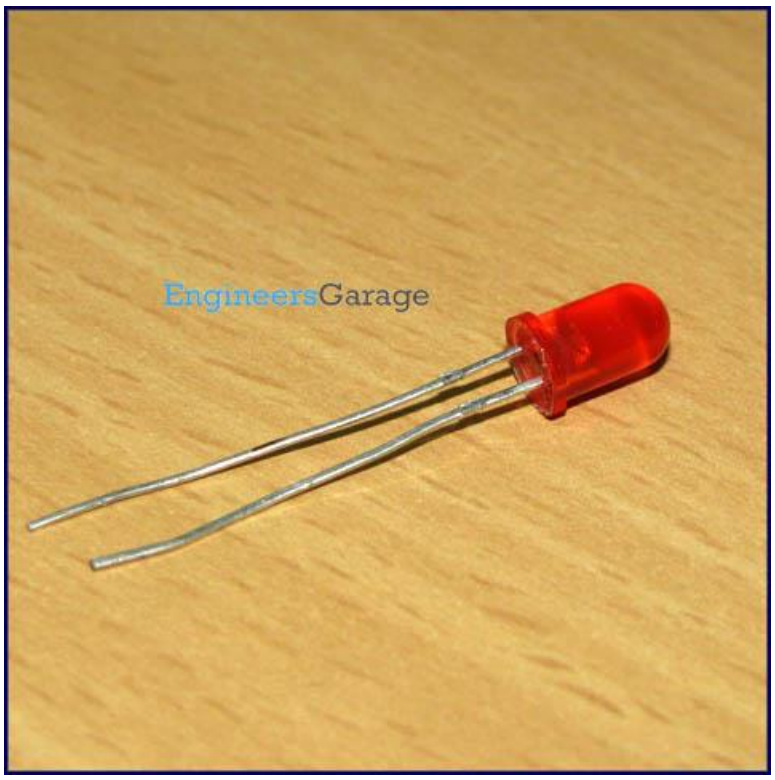
Now coming to Bluetooth module:



Now lets come to LED module:



Light emitting diodes (**LEDs**) are semiconductor light sources. The light emitted from **LED**s varies from visible to infrared and ultraviolet regions. They operate on low voltage and power. LEDs are one of the most common electronic components and are mostly used as indicators in circuits. They are also used for luminance and optoelectronic applications.

Based on semiconductor diode, **LED**s emit photons when electrons recombine with holes on forward biasing. The two terminals of LEDs are anode (+) and cathode (-) and can be identified by their size. The longer leg is the positive terminal or anode and shorter one is negative terminal.

7.2 Structural testing

Structural testing is the type of testing carried out to test the structure of code. It is also known as White Box testing or Glass Box testing. This type of testing requires knowledge of the code, so, it is mostly done by the developers. It is more concerned with how system does it rather than the functionality of the system. It provides more coverage to the testing. For ex, to test certain error message in an application, we need to test the trigger condition for it, but there must be many trigger for it. It is possible to miss out one while testing the requirements drafted in SRS. But using this testing, the trigger is most likely to be covered since structural testing aims to cover all the nodes and paths in the structure of code.

So our fuel monitoring system basically works through Ardutooth app , by which we will get to know the fuel level in the tank .So here we follow white box testing , in this we will do the testing purely knowing to the system or hardware by which we don’t fool the software to test it. Because we have used white box testing here , if whereas in black box testing we may find such things like performing testing without knowing to the software or the hardware .

- Levels of Testing

There are usually four types of testing , they are unit testing , integration testing , system testing and acceptance testing .

1. Unit/component testing

The most basic type of testing is unit, or component, testing.
Unit testing aims to verify each part of the software by isolating it and then perform tests to demonstrate that each individual component is correct in terms of fulfilling requirements and the desired functionality.
This type of testing is performed at the earliest stages of the development process, and in many cases it is executed by the developers themselves before handing the software over to the testing team.
The advantage of detecting any errors in the software early in the day is that by doing so the team minimises software development risks, as well as time and money wasted in having to go back and undo fundamental problems in the program once it is nearly completed.
So in our fuel monitoring system we have tested the components thoroughly , we have many components like Bluetooth module , transistor , resistor , diode , LED , and a petrol tank .

2. Integration testing

Integration testing aims to test different parts of the system in combination in order to assess if they work correctly together. By testing the units in groups, any faults in the way they interact together can be identified.
There are many ways to test how different components of the system function at their interface; testers can adopt either a bottom-up or a top-down integration method.

In bottom-up integration testing, testing builds on the results of unit testing by testing higher-level combination of units (called modules) in successively more complex scenarios.
It is recommended that testers start with this approach first, before applying the top-down approach which tests higher-level modules first and studies simpler ones later.
We have tested the modules in many ways by inserting sim cards in both the modules and by decreasing of the water level it sends a message to the user that the fuel is below average or it is high or it is purely empty , so like this we have tested the module in different ways and its totally working .

3. System testing

The next level of testing is system testing. As the name implies, all the components of the software are tested as a whole in order to ensure that the overall product meets the requirements specified.
System testing is a very important step as the software is almost ready to ship and it can be tested in an environment which is very close to that which the user will experience once it is deployed.
System testing enables testers to ensure that the product meets business requirements, as well as determine that it runs smoothly within its operating environment. This type of testing is typically performed by a specialized testing team.

4. Acceptance testing

Finally, acceptance testing is the level in the software testing process where a product is given the green light or not. The aim of this type of testing is to evaluate whether the system complies with the end-user requirements and if it is ready for deployment.
The testing team will utilise a variety of methods, such as pre-written scenarios and test cases to test the software and use the

results obtained from these tools to find ways in which the system can be improved.
The scope of acceptance testing ranges from simply finding spelling mistakes and cosmetic errors, to uncovering bugs that could cause a major error in the application.
By performing acceptance tests, the testing team can find out how the product will perform when it is installed on the user's system. There are also various legal and contractual reasons why acceptance testing has to be carried out.

7.4 Testing the Project

Software Testing

Software testing is the process of evaluation a software item to detect differences between given input and expected output. Also to assess the feature of A software item. Testing assesses the quality of the product. Software testing is a process that should be done during the development process. In other words software testing is a verification and validation process.

Verification

Verification is the process to make sure the product satisfies the conditions imposed at the start of the development phase. In other words, to make sure the product behaves the way we want it to.

Validation

Validation is the process to make sure the product satisfies the specified requirements at the end of the development phase. In other words, to make sure the product is built as per customer requirements.

Basics of software testing

There are two basics of software testing: blackbox testing and whitebox testing.

1. Blackbox Testing

Black box testing is a testing technique that ignores the internal mechanism of the system and focuses on the output generated against any input and execution of the system. It is also called functional testing.

2. Whitebox Testing

White box testing is a testing technique that takes into account the internal mechanism of a system. It is also called structural testing and glass box testing.

Black box testing is often used for validation and white box testing is often used for verification.

In this software testing module we have a handsome code which is finely being executed , by which we have two GSM modules and we have two sim card slots available to get the message from the tanker that the petrol is getting empty or below average or full .

8. IMPLEMENTATION

8.1 Implemetation Of The Project:

Nowadays if u see regarding the petrol bunks , we don't find any monitoring system displayed out side or the employee or the boss does'nt know the level of petrol in the tanks and this has become merely a great problem but which is not known to the society . So what we have done is with the help of two GSM modules we have given the slots of two sim cards and whenever the fuel is decreasing or increasing or emptied it turns on the message to the owners device by which he is comfortable enough to close his eyes when he is not near to the petrol bunk and he can happily step out of the petrol bunk by not thinking of how come I know if petrol gets emptied like that . There is also another great advantage in this if anyone steals the petrol from the tank , instantly the GSM module sends the message to the owner that the petrol is being emptied suddenly and sends a message to the owner , so that the owner will be notified that the petrol is getting stealed or leaked and he will be alerted .

Advantages

- Implementation gives the opportunity to see the plans become a reality
- Execution of projects allows end-users to have access to better services and living environment
- Success stories and experiences can be shared with specialists from other cities and towns, encouraging others to adopt similar approaches, which in turn may improve water resources management in the local area.

Disadvantages

- Evidence of corrupt practices in procurement will undermine the entire process and waste precious resources.
- Poor financial planning can lead to budget constraints in the midst of implementation.

- The decision on when a project is complete often causes friction between implementers and the community. Completion for the implementer is quite straightforward. It is defined by contracts, drawings, and statutes. Communities have a more practical approach to completion. Once the project produces the benefits for which they agreed to undertake it they see no reason to spend further time and money on it .

8.2 Conversion Plan

Conversion plan is something a set of strategies involved in converting data from an existing system to another system .

In this fuel monitoring system data is exchanged through the GSM module or else by the Bluetooth module , by which the output is carried out in the form of messages from the module to the owner .

8.3 Post Implementation And Software Maintenance

Post implementation and maintenance is nothing but , for an instance we have used GSM module in our project after performing each and every process and after completion of the project is done we need to maintain or keep a check on the hardware and the software . For an instance all the staff were adjusted to the changes or with the hardware and after that we need to maintain the software and hardware for later purpose so we use post implementation and software maintenance.

9. PROJECT LEGACY

9.1 Current Status of the System

The current status of the project is that it can be used in vehicles with a little bit of work that packing the whole system within a small space. This will make the whole system compressed and ready to be inserted in any small space inside the vehicle. Otherwise the whole system is working and ready to be used.

The other GSM node in the system can be used as supplier of the fuel. This way fuel can be delivered to the vehicle owner. That other GSM node which is inside the Smartphone can be registered as any delivery service number. Thus, helping the people, in need of the fuel.

9.2 Remaining Areas of Concern

The present status of the venture is that it very well may be utilized in vehicles with a smidgen of work that pressing the entire framework inside a little space. This will make the entire framework compacted and fit to be embedded in any little space inside the vehicle. Generally the entire framework is working and fit to be utilized.

The main area left that needs to be sorted and looked upon is the part after sending of the fuel notification to the registered GSM node, which acts as the supplier of the fuel. For this process, tie ups and collaboration need to be done with fuel providers within the country, which is a very large and upscale process.

The other GSM hub in the framework can be utilized as provider of the fuel. Along these lines fuel can be conveyed to the vehicle proprietor. That other GSM hub which is inside the Smartphone can be enrolled as any conveyance administration number. Hence, helping the individuals, needing the fuel.

9.3 Technical and managerial lessons learnt

We found out about Arduino, GSM module, Bluetooth module, transistor BC547, ringer, capacitor, resistor, LED, bridgewave rectifier, diodes and 7805 IC. These were the parts we found out about and contemplated their working. We coded for the Arduino board. We likewise collaborated with Ardutooth application. we dealt with every one of these segments in working of this fuel observing framework. Collaboration was the key in working of this undertaking. Without cooperation, the work isn't done and oversaw viably.

10. USER MANUAL

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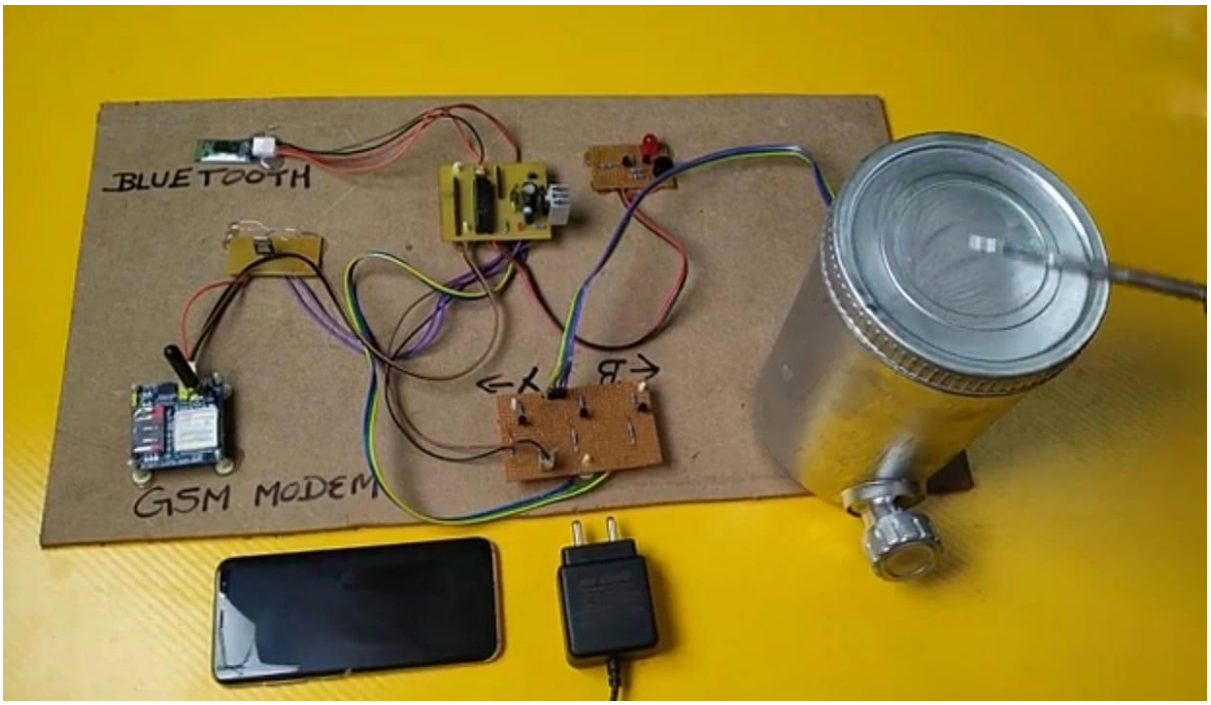
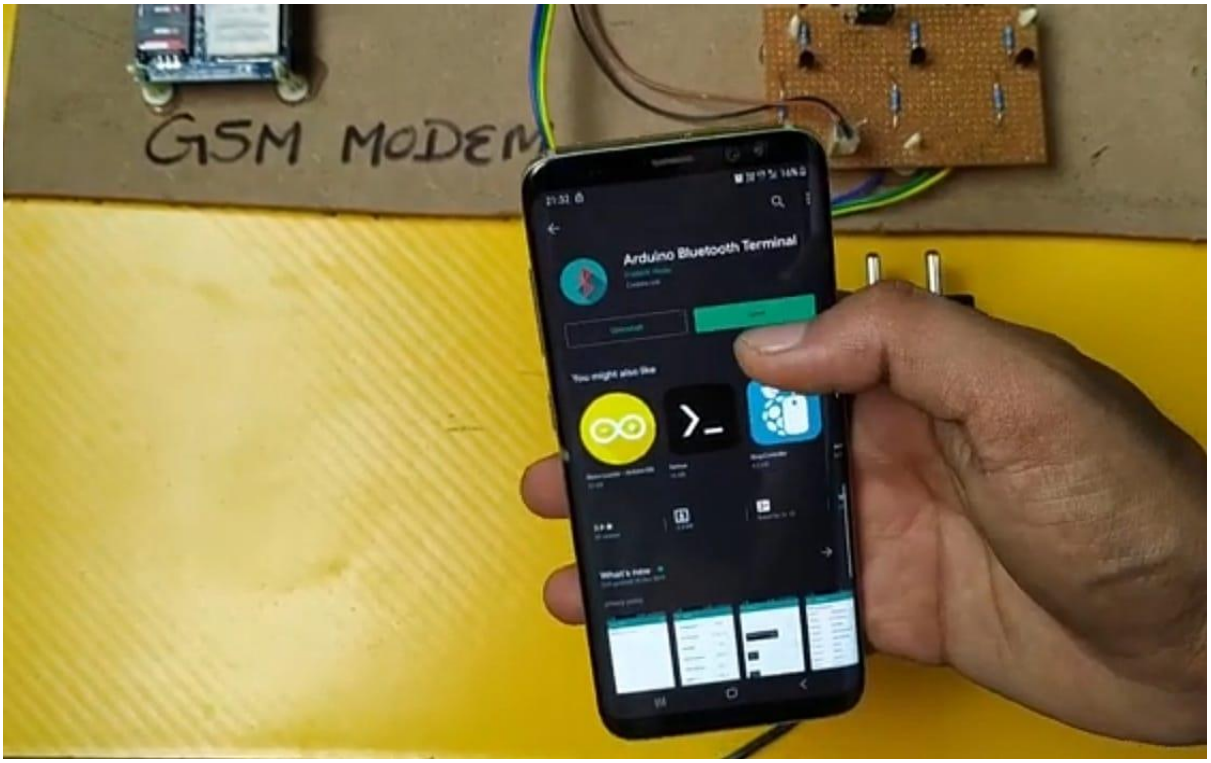
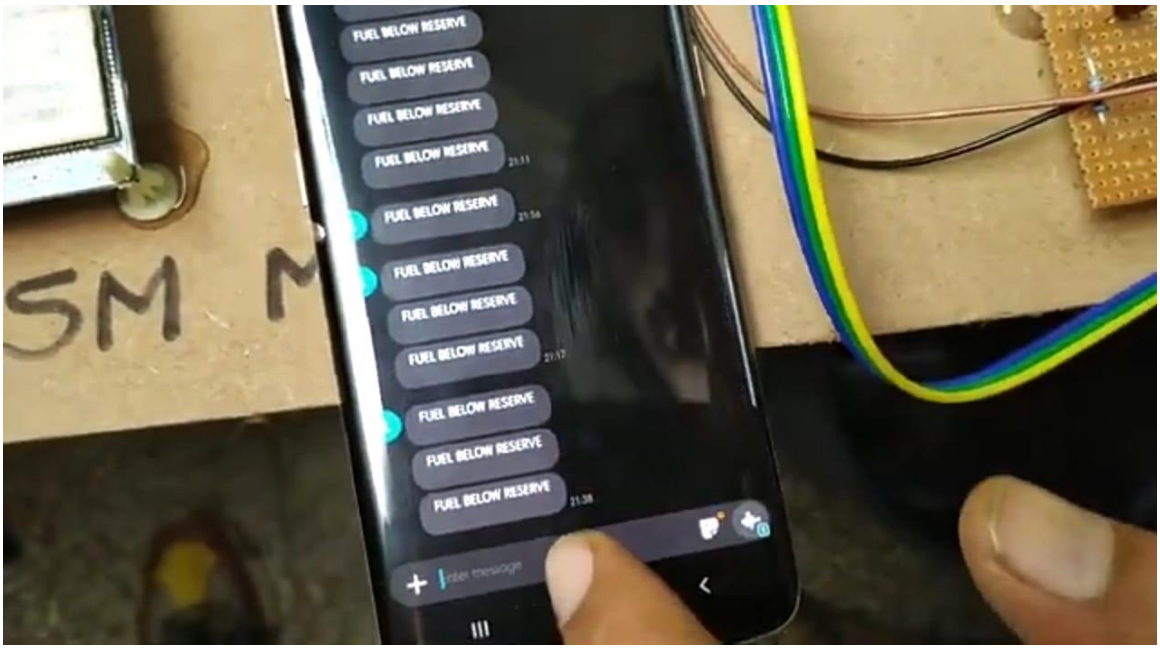
11. SYSTEM SNAPSHOTS



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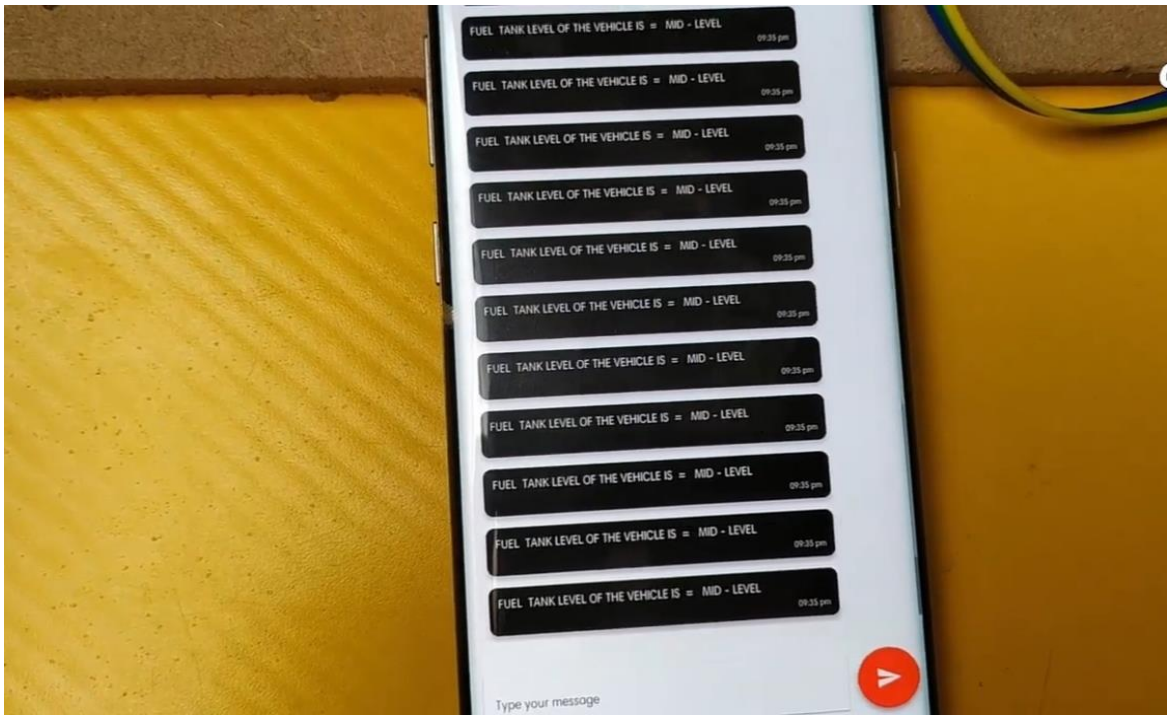
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