Chapter Four

Result and Discussion

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4.1 Over view:

This chapter covers the results obtained from the design for measuring speed and locating position.

4.2 Simulation result:

Proteus 7.7 professional program was used for simulating components and Arduino IDE for writing code.

4.2.1 Results of locating position and speed:

After receiving latitude and longitude form satellite, The GSM/GPRS antenna receives these data and sending it to the server and it can be visualized on digital map using android application.

The figures below represents location and speed of vehicle when its move. The owner can turn off the vehicle by the controller button in an android application.

Figure 4.1 represent simulation of location and speed sending by GPS when vehicle don't move, whereas figure 4.2 represent simulation of location and speed sending by GPS when vehicle moves.

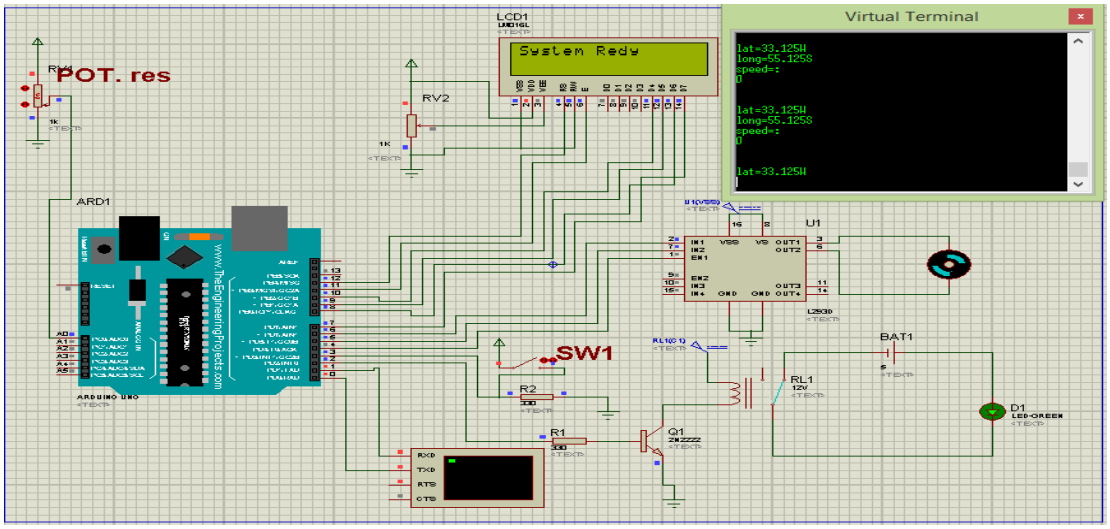

Figure 4.1:GPS location and speed when vehicle don't move.

As shown in the figure 4.1 above the speed is zero mile/hour illustrated in the virtual terminal proportional to the potentiometer.

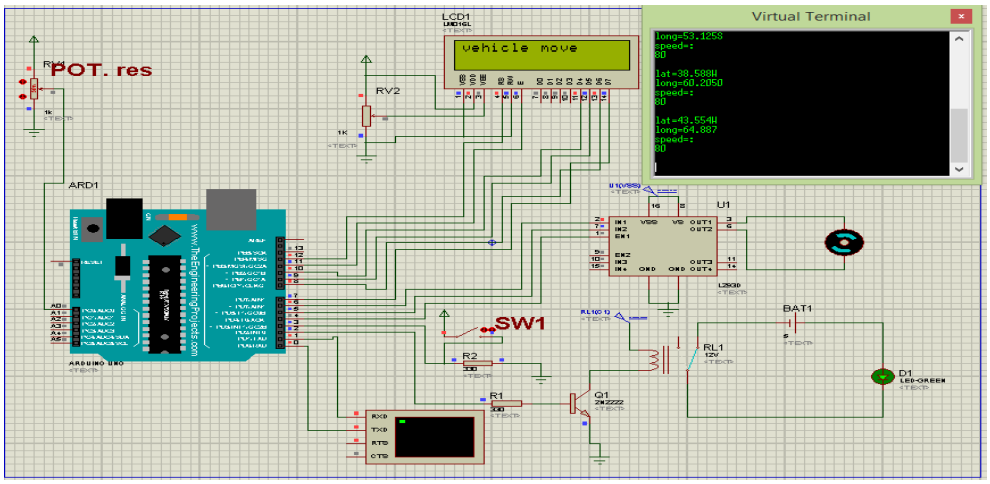

Figure 4.2: GPS location and speed when vehicle move.

As shown in figure 4.2 above, the speed of vehicle illustrated in the virtual terminal changes proportional to the potentiometer.

4.2.2 Result of detecting speed:

Potentiometer resistor in the figurer 4.3 represent eqivalent circuit of speed value calculting from two coordinates received from GPS.

The speed value changing with value of potentiometer resistor illustrated in figure 4.3 and figure 4.4 bellow.

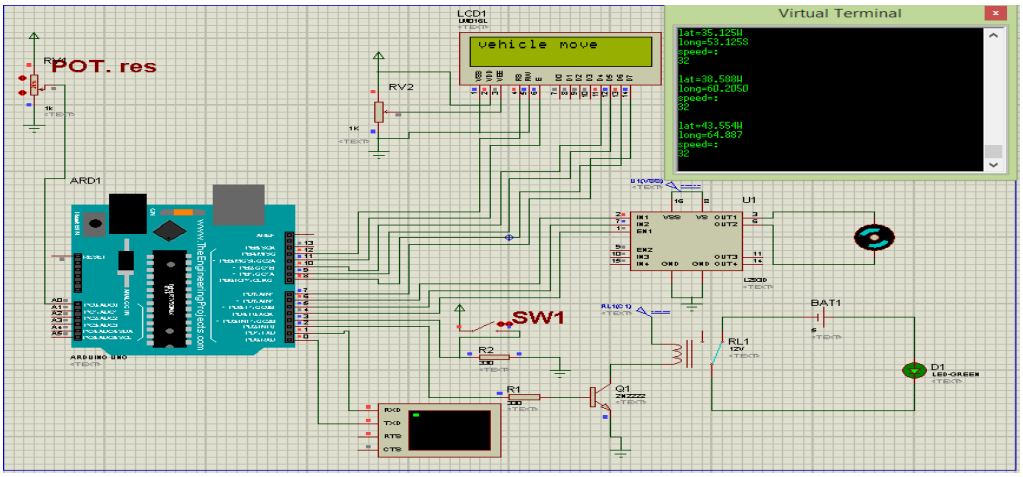

Figure 4.3: speed of vehicle change with resistor.

As it shown above _in the virtual monitor_ the speed reduced from 80Mph to 32Mph.

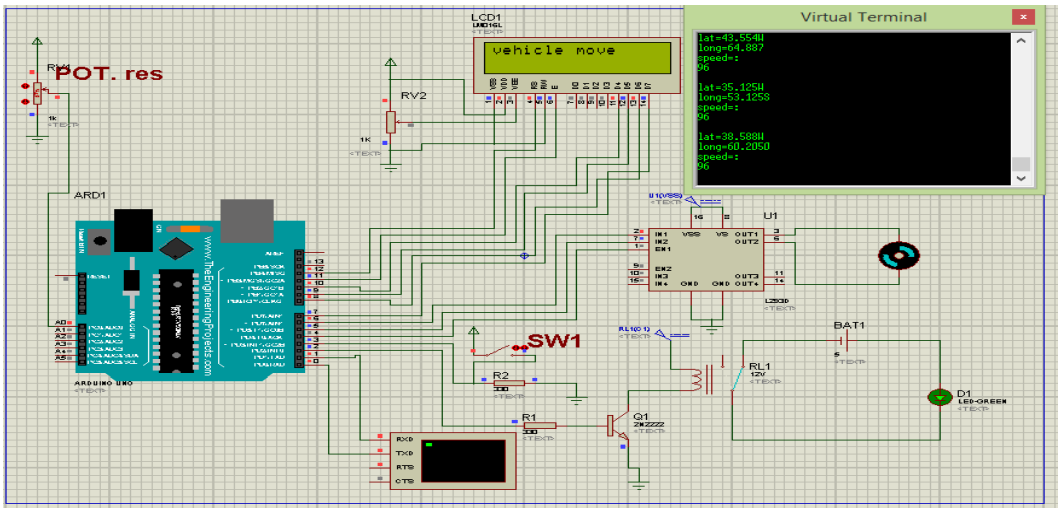

Figure 4.4: speed of vehicle change with resistor.

As shown above in the virtual terminal monitor the speed increased form 32Mph to 96Mp.

4.2.3 Result of relay control circuit:

As shown in figure bellow relay circuit (as explained in chapter three) is used for controlling main power line of vehicle's battery, it will receive a control signal from the application illustrated in Figure 4.9.

The switch in figure 4.5 and 4.6 represents the equivalent circuit of controlling relay. The LED in this circuit represents the power line to the vehicle's battery, and the transistor work as switch.

Figure 4.5 below show the turning ON the vehicle after changing Relay status through SW1.

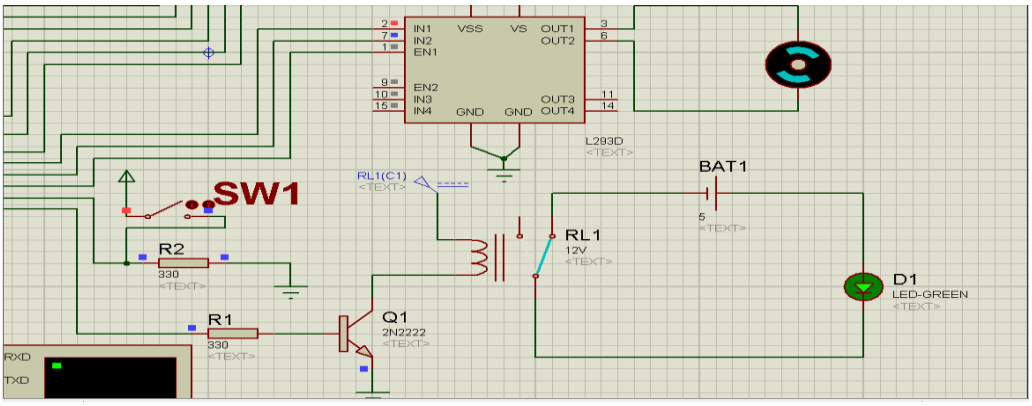

Figure 4.5 turn on vehicle.

Figure 4.6 below show the turning OFF the vehicle after changing Relay status through SW1.

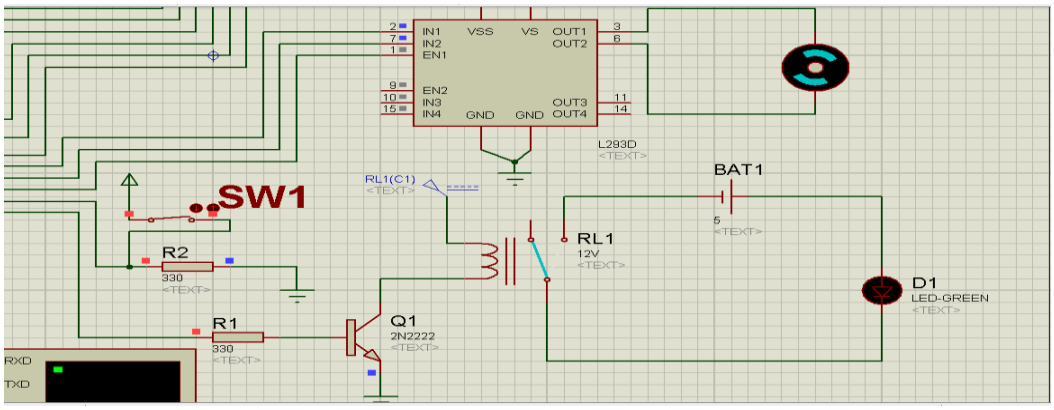

Figure 4.6: turn off vehicle.

When switch turn on it will send a five volt signal to the main controller to change the relay from normal close to normal open and stop the vehicle.

When its turn off it will send zero volt to the main controller to change the relay from normal open to the normal close and turn ON the vehicle.

4.3 Serial Monitor Result:

When the Arduino is attached to a computer, it can use the computer screen as a way to show its data (serial monitor), figure 4.7 shows the data uploading process to the web server in the serial monitor.

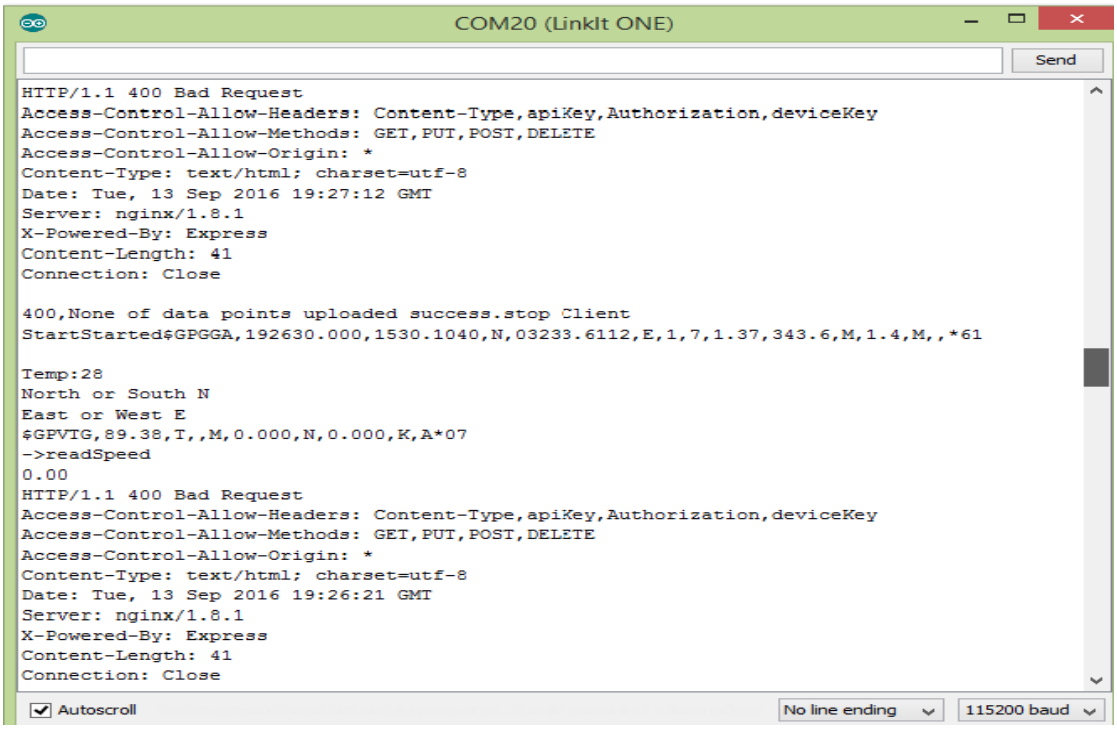

Figure 4.7: the data uploading process to the web server in the serial monitor.

4.4 Result of android application page:

Application of tracking system has six icons or templates used for tracking and control as shown in figure 4.8 below.

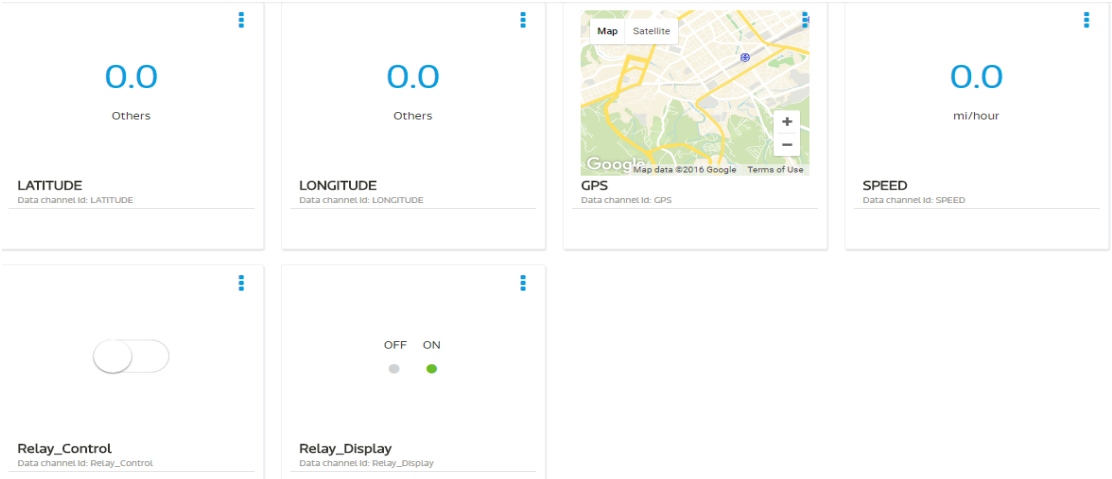

Figure4.8 Figure application template.

The templates as shown in figure 4.8 are used to visualize the data acquired from the vehicle, and enable of control the vehicle through RELAY_CONTROL template.

4.5 Result of GPS location:

Show latitude and longitude of the vehicle on a digital map as shown in the figure 3.4.

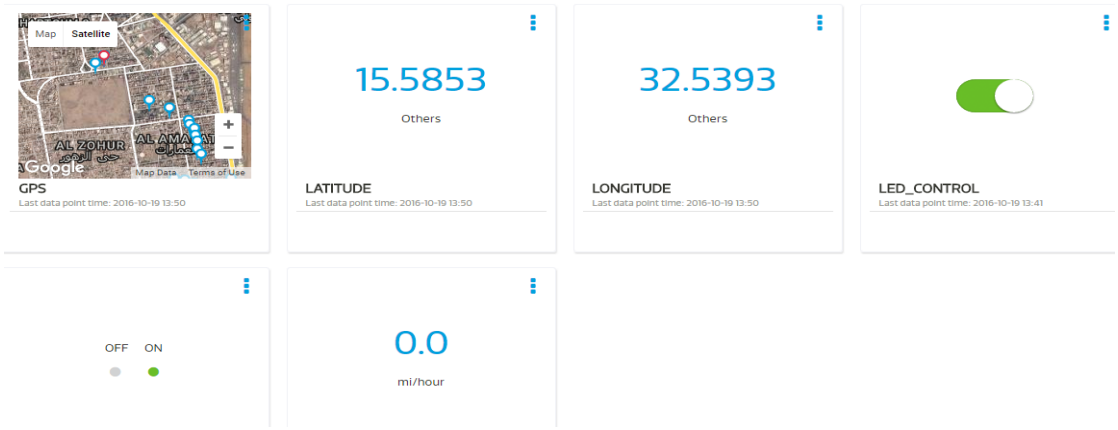

Figure 4.9 location of vehicle on digital map.

Location of vehicle appears on the map, and red point in the map above explains the last update location of the vehicle.

4.6 Result of show history on Google map:

Application can save all history of vehicle as database illustrated in figure 4.10 below.

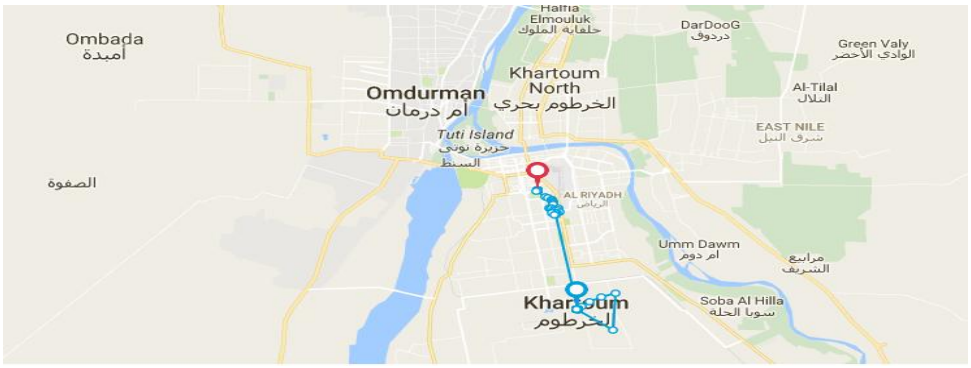

Figure 4.10 history of vehicle locations.

4.7 Result of control button:

Controller button use to switch ON and OFF relay which is connected to pin 13 of Linkit-ONE development board by output logic1 or logic 0 to this pin. Relay is used to control the main power line of vehicle. So that the vehicle can be turned ON and OFF through this control button and LED connected to indicate state of relay.

By clicking switch of the user interface, the controller will be changed to the ON state, then the relay on the development board will switch ON, and a few seconds later, the display type relay data channel will indicate an ON state. Next, click the OFF state, the relay will switch off, and the display type relay data channel state will indicate an OFF state.

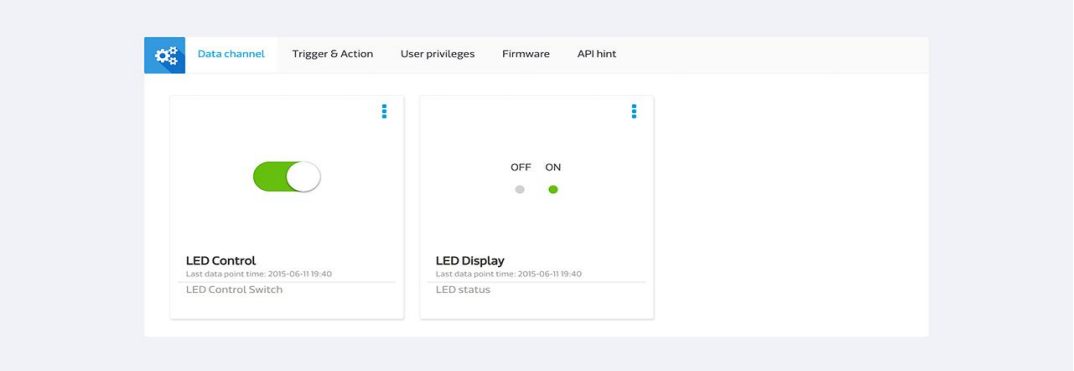

Figure 4.11 clicking ON to change state of relay.

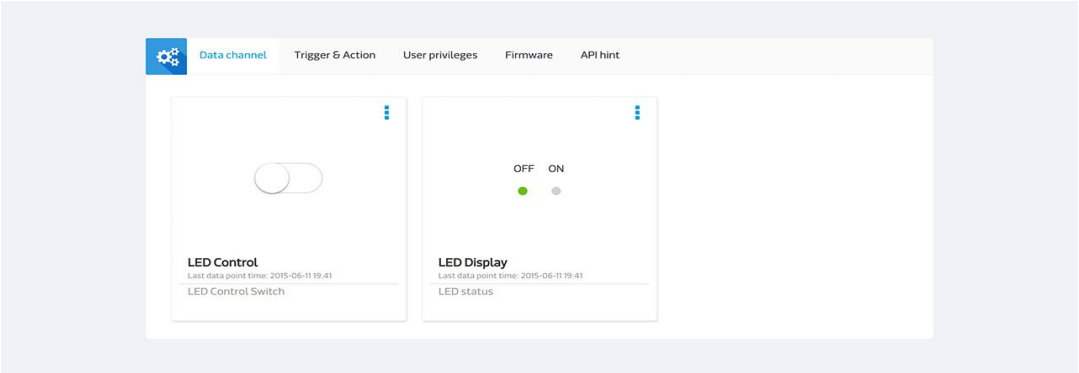

Figure 4.12 clicking OFF to change state of relay.

4.8 Result of speed measuring:

Figure below shows the real-time speed of vehicle at any time.

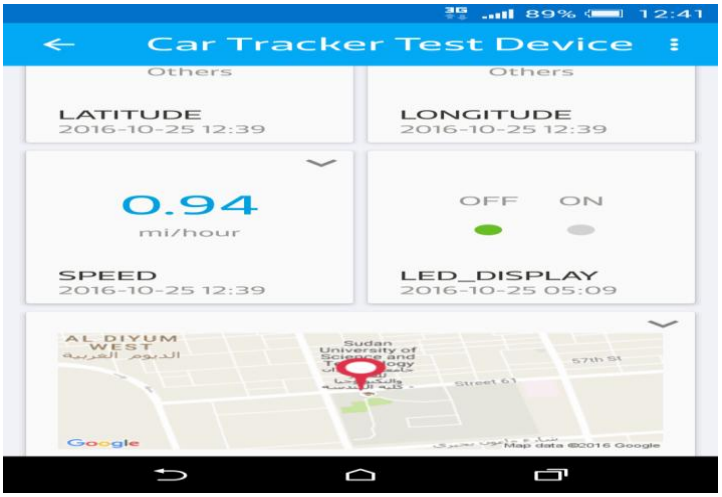

Figure 4.13 Shows real time spead.

4.9 Hardware implementation:

Figure (4.14) shows the hardware implementation of the system which includes the GPS antenna, Wi-Fi antenna, GSM/GPRS antenna, the main controller LinkIt-ONE which is connected to the computer through battery.

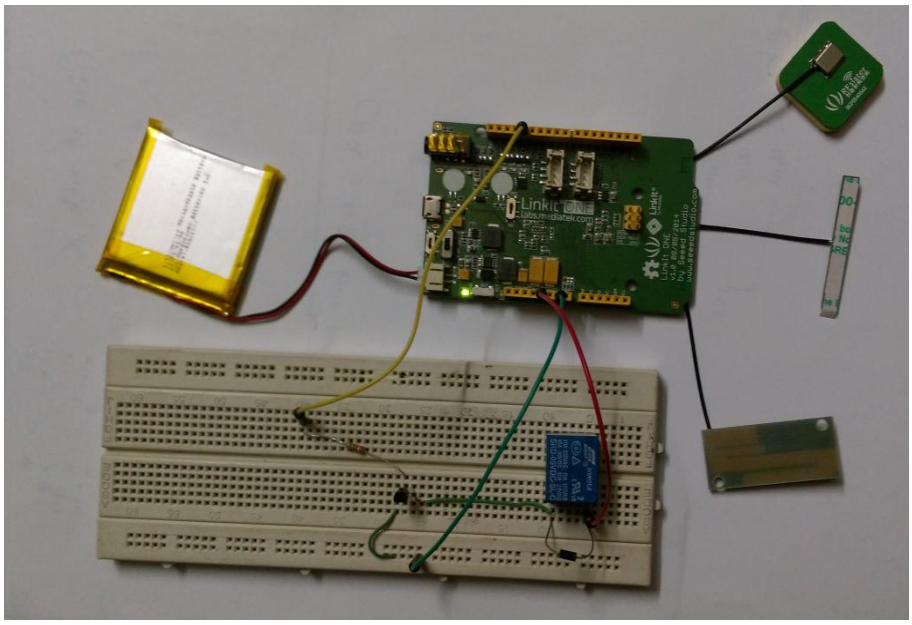

Figure 4.14 shows over all system.