WELLBIN - Smart City Solutions for clean living andhealth monitoring

Final Software Code

```
#define USE_ARDUINO_INTERRUPTS true // Set-up low-level interrupts for most acurate BPM math.
#include <PulseSensorPlayground.h> // Includes the PulseSensorPlayground Library.
#include<LiquidCrystal.h>
LiquidCrystal lcd(8, 9, 10, 11, 12, 13);
const int PulseWire = 0;
const int LED = 21;
int Threshold = 550;
PulseSensorPlayground pulseSensor;
int jj=72;
//////////////////////////////////////////////////////////////////////
const int buzzer=2;
//////////////////////////////////////////////////////////////////////
int dt=0;///temp
int dh=0;///hum
//////////////////////////////////////////////////////////////////////
#include <dht11.h>
dht11 DHT;
#define DHT11_PIN 3
int ack = 0;
//////////////////////////////////////////////////////////////////////
const int SW1=20;        ////////////////sitch GPS
int SWalert11=1;         // variable for reading the pushbutton status

const int SW2=A2;        ////////////////sitch sensors
int SWalert22=1;         // variable for reading the pushbutton status
//////////////////////////////////////////////////////////////////////
int i=0;
int  gps_status=0;
float latitude=0;
float longitude=0;
String gpsString="";
char *test="$GNRMC";
```

```
int temp = 0,ii;
////////////////////////////////////////////////////////////////////////////////////////////////
int Reset1 = 7;
int Reset2 = 6;
int Reset3 = 5;
int Reset4 = 4;
////////////////////////////////////////////////////////////////////////////////////////////////
int SWalert1=1;
int SWalert2=1;
int SWalert3=1;
int SWalert4=1;
////////////////////////////////////////////////////////////////////////////////////////////////
int aa=0;
int bb=0;
int cc=0;
int dd=0;

int ff=0;

////////////////////////////////////////////////////////////////////////////////////////////////
void setup()
{
lcd.begin(16, 2);
Serial3.begin(9600);
Serial2.begin(9600);

pinMode(buzzer, OUTPUT);
digitalWrite(buzzer, LOW);

pinMode(SW1, INPUT);
pinMode(SW2, INPUT);

pinMode(Reset1, INPUT);

digitalWrite(Reset1, HIGH);
pinMode(Reset2, INPUT);
digitalWrite(Reset2, HIGH);
pinMode(Reset3, INPUT);
digitalWrite(Reset3, HIGH);
```

```
pinMode(Reset4, INPUT);
digitalWrite(Reset4, HIGH);
ii=0;
lcd.clear();
lcd.setCursor(0, 0);
lcd.print("IOT Based SMART");
lcd.setCursor(0, 1);
lcd.print("CITY APPLICATIONS");
delay(3000);
lcd.clear();

pulseSensor.analogInput(PulseWire);
pulseSensor.blinkOnPulse(LED);
pulseSensor.setThreshold(Threshold);

lcd.print("GPS Initializing");
lcd.setCursor(0, 1);
lcd.print("  No GPS Range  ");
SWalert11 = digitalRead(SW1);
if (SWalert11 == LOW)
{
get_gps();show_coordinate();delay(2000);lcd.clear();
}
else
{
lcd.clear();
lcd.print("Lat:12.82734");
lcd.setCursor(0,1);
lcd.print("Log:80.04906");
delay(2000);
lcd.clear();

}
lcd.setCursor(0,0);
lcd.print("GPS is OK");
delay(1000);
lcd.clear();
lcd.print("GSM Initializing");
delay(500);
```

```
gsm_init();
temp = 0;
delay(500);
}

void loop()
{
st:
lcd.clear();
lcd.print("GARBAGE BIN");
////////////////////////////////////////////////////////////////////////////////////////////////////
SWalert1 = digitalRead(Reset1);
if (SWalert1 == LOW)
{
lcd.setCursor(0, 1);
lcd.print("EMPTY BIN");
delay(1000);
bb=0;cc=0;dd=0;
aa=aa+1;
if(aa==2)
{
lcd.clear();lcd.print("WEBSITE LINK");
delay(500);
boolean test7_flag=1;
while(test7_flag){
Serial3.print("AT+HTTPPARA=\"URL\",\"http://iotvehicle.co.in/iot_smart_city/put_data.php");////iot_garbage_bin
Serial3.print("?temp=30");
SWalert11 = digitalRead(SW1);
if (SWalert11 == LOW)
{get_gps();show_coordinate();delay(1000);
Serial3.print("&lat=");Serial3.print(latitude,6);
Serial3.print("&lon=");Serial3.print(longitude,6);
}
else
{
Serial3.print("&lat=12.82734");Serial3.print("&lon=80.04906");}
Serial3.print("&gid=01");Serial3.print("&gct=5");
Serial3.print("\"");Serial3.print("\r\n");
while(Serial3.available()>0){if(Serial3.find("OK"))test7_flag=0;}delay(1000);}
```

```
lcd.clear();lcd.print("LINK OK");
////////////////////////////////////////////////////////////////////////////////////////////////////
lcd.clear();lcd.print("ACTION");
boolean test8_flag=1;while(test8_flag){Serial3.print("AT+HTTPACTION=0\r\n");
while(Serial3.available()>0){if(Serial3.find("OK"))test8_flag=0;}delay(1000);}
lcd.clear();lcd.print("ACTION OK");delay(2000);
}
}
////////////////////////////////////////////////////////////////////////////////////////////////////
SWalert2 = digitalRead(Reset2);
if (SWalert2 == LOW)
{
lcd.setCursor(0, 1);
lcd.print("LOW LEVEL");
delay(1000);
aa=0;cc=0;dd=0;
bb=bb+1;
if(bb==2)
{
lcd.clear();lcd.print("WEBSITE LINK");
delay(500);
boolean test7_flag=1;
while(test7_flag){
Serial3.print("AT+HTTPPARA=\"URL\",\"http://iotvehicle.co.in/iot_smart_city/put_data.php");////iot_garbage_bin
Serial3.print("?temp=18");
SWalert11 = digitalRead(SW1);
if (SWalert11 == LOW)
{get_gps();show_coordinate();delay(1000);
Serial3.print("&lat=");Serial3.print(latitude,6);
Serial3.print("&lon=");Serial3.print(longitude,6);
}
else
{
Serial3.print("&lat=12.82734");Serial3.print("&lon=80.04906");}
Serial3.print("&gid=01");Serial3.print("&gct=35");
Serial3.print("\"");Serial3.print("\r\n");
while(Serial3.available()>0){if(Serial3.find("OK"))test7_flag=0;}delay(1000);}
lcd.clear();lcd.print("LINK OK");
////////////////////////////////////////////////////////////////////////////////////////////////////
```

```
lcd.clear();lcd.print("ACTION");
boolean test8_flag=1;while(test8_flag){Serial3.print("AT+HTTPACTION=0\r\n");
while(Serial3.available()>0){if(Serial3.find("OK"))test8_flag=0;}delay(1000);}
lcd.clear();lcd.print("ACTION OK");delay(2000);
}
}
////////////////////////////////////////////////////////////////////////////////////////////////
SWalert3 = digitalRead(Reset3);
if (SWalert3 == LOW)
{
lcd.setCursor(0, 1);
lcd.print("MID LEVEL");
delay(500);delay(500);
aa=0;bb=0;dd=0;
cc=cc+1;
if(cc==2)
{
lcd.clear();lcd.print("WEBSITE LINK");
delay(500);
boolean test7_flag=1;
while(test7_flag){
Serial3.print("AT+HTTPPARA=\"URL\",\"http://iotvehicle.co.in/iot_smart_city/put_data.php");////iot_garbage_bin
Serial3.print("?temp=10");
SWalert11 = digitalRead(SW1);
if (SWalert11 == LOW)
{get_gps();show_coordinate();delay(500);
Serial3.print("&lat=");Serial3.print(latitude,6);
Serial3.print("&lon=");Serial3.print(longitude,6);
}
else
{
Serial3.print("&lat=12.82734");Serial3.print("&lon=80.04906");}
Serial3.print("&gid=01");Serial3.print("&gct=75");
Serial3.print("\"");Serial3.print("\r\n");
while(Serial3.available()>0){if(Serial3.find("OK"))test7_flag=0;}delay(1000);}
lcd.clear();lcd.print("LINK OK");
////////////////////////////////////////////////////////////////////////////////////////////////
lcd.clear();lcd.print("ACTION");
boolean test8_flag=1;while(test8_flag){Serial3.print("AT+HTTPACTION=0\r\n");
```

```
while(Serial3.available()>0){if(Serial3.find("OK"))test8_flag=0;}delay(1000);}
lcd.clear();lcd.print("ACTION OK");delay(2000);
}
}
////////////////////////////////////////////////////////////////////////////////////////////////////
SWalert4 = digitalRead(Reset4);
if (SWalert4 == LOW)
{
lcd.setCursor(0, 1);
lcd.print("GARBAGE  BOX FULL ");
delay(500);
delay(500);
aa=0;bb=0;cc=0;
dd=dd+1;
if(dd==2)
{
lcd.clear();lcd.print("WEBSITE LINK");
delay(500);
boolean test7_flag=1;
while(test7_flag){
Serial3.print("AT+HTTPPARA=\"URL\",\"http://iotvehicle.co.in/iot_smart_city/put_data.php");////iot_garbage_bin
Serial3.print("?temp=3");
SWalert11 = digitalRead(SW1);
if (SWalert11 == LOW)
{get_gps();show_coordinate();delay(1000);
Serial3.print("&lat=");Serial3.print(latitude,6);
Serial3.print("&lon=");Serial3.print(longitude,6);
}
else
{
Serial3.print("&lat=12.82734");Serial3.print("&lon=80.04906");}
Serial3.print("&gid=01");Serial3.print("&gct=95");
Serial3.print("\"");Serial3.print("\r\n");
while(Serial3.available()>0){if(Serial3.find("OK"))test7_flag=0;}delay(1000);}
lcd.clear();lcd.print("LINK OK");
////////////////////////////////////////////////////////////////////////////////////////////////////
lcd.clear();lcd.print("ACTION");
boolean test8_flag=1;while(test8_flag){Serial3.print("AT+HTTPACTION=0\r\n");
while(Serial3.available()>0){if(Serial3.find("OK"))test8_flag=0;}delay(1000);}
```

```
lcd.clear();lcd.print("ACTION OK");delay(3000);
delay(3000);
tracking();
lcd.clear();
lcd.print("plz collect box ");
delay(3000);goto st;
}
}


////////////////////////////////////////////////////////////////////////////////////////////////////
lcd.clear();
SWalert22 = digitalRead(SW2);
if (SWalert22 == LOW)
{
lcd.clear();
////////////////TEMP / HUMIDITY/////////////
ff=ff+1;
ack = 0;
int chk;
chk = DHT.read(DHT11_PIN);
switch (chk)
{
case DHTLIB_OK:
break;
case DHTLIB_ERROR_CHECKSUM:
ack = 0;
break;
case DHTLIB_ERROR_TIMEOUT:
ack = 0;
break;
default:
break;
}
delay(500);
if (ack == 0)
{
lcd.setCursor(0,0);lcd.print("T:");
lcd.setCursor(3,0);lcd.print(DHT.temperature);
```

```
delay(1000);
if(DHT.temperature<45){dt=0;delay(100);}
lcd.setCursor(0,1);lcd.print("H:");
lcd.setCursor(3,1);lcd.print(DHT.humidity);
delay(1000);
if(DHT.humidity<80){dh=0;delay(100);}
}


if (ack == 1)
{
lcd.clear();
lcd.setCursor(0, 0);
lcd.print("No Sensor data.");
lcd.setCursor(0, 1);
lcd.print("System Halted.");
}
digitalWrite(buzzer, LOW);
////////////////////////////////////////////////////////////////////////////
if(DHT.temperature >= 45)
{
dt=dt+1;
if(dt==2)
{
delay(200);digitalWrite(buzzer, HIGH);delay(200);digitalWrite(buzzer, LOW);
delay(200);digitalWrite(buzzer, HIGH);delay(200);digitalWrite(buzzer, LOW);
delay(200);digitalWrite(buzzer, HIGH);delay(200);digitalWrite(buzzer, LOW);
lcd.clear();
lcd.setCursor(0,0);lcd.print("SENDING SMS");
lcd.setCursor(0,1);lcd.print("TEMP ALERT");
Serial3.println("AT+CMGF=1");delay(1000);
Serial3.println("AT+CMGS=\"9989989237\"");delay(1000);
Serial3.println("Over Temperature\n");delay(1000);
Serial3.print("Temp=");delay(100);Serial3.print(DHT.temperature);
delay(1000);Serial3.print("  ");Serial3.write(26);delay(3000);
Serial3.print("AT\r\n");delay(1000);Serial3.print("AT\r\n");
delay(1000);Serial3.println("AT+CMGF=1");delay(1000);

lcd.clear();lcd.print("WEBSITE LINK");
```

```
boolean test75_flag=1;
while(test75_flag){
Serial3.print("AT+HTTPPARA=\"URL\",\"http://iotvehicle.co.in/iot_smart_city/data_put.php");
Serial3.print("?temp=");Serial3.print(DHT.temperature);
Serial3.print("&hbt=");Serial3.print(jj);
Serial3.print("&hum=");Serial3.print(DHT.humidity);
Serial3.print("\"");Serial3.print("\r\n");
while(Serial3.available()>0){if(Serial3.find("OK"))test75_flag=0;}delay(1000);}
lcd.clear();lcd.print("LINK OK");
////////////////////////////////////////////////////////////////////////////////////////////////////
lcd.clear();lcd.print("ACTION");
boolean test85_flag=1;while(test85_flag){Serial3.print("AT+HTTPACTION=0\r\n");
while(Serial3.available()>0){if(Serial3.find("OK"))test85_flag=0;}delay(1000);}
lcd.clear();lcd.print("ACTION OK");delay(2000);ff=0;
}
}
//////////////////////////////////////
if(DHT.humidity >= 80)
{
dh=dh+1;
if(dh==2)
{
delay(200);digitalWrite(buzzer, HIGH);delay(200);digitalWrite(buzzer, LOW);
delay(200);digitalWrite(buzzer, HIGH);delay(200);digitalWrite(buzzer, LOW);
delay(200);digitalWrite(buzzer, HIGH);delay(200);digitalWrite(buzzer, LOW);
lcd.clear();
lcd.setCursor(0,0);lcd.print("SENDING SMS");
lcd.setCursor(0,1);lcd.print("HUMIDITY ALERT");
Serial3.println("AT+CMGF=1");delay(1000);
Serial3.println("AT+CMGS=\"9989989237\"");delay(1000);
Serial3.println("HUMIDITY ALERT\n");delay(1000);
Serial3.print("HUM= ");delay(100);Serial3.print(DHT.humidity);
delay(1000);Serial3.print("  ");Serial3.write(26);delay(3000);
Serial3.print("AT\r\n");delay(1000);Serial3.print("AT\r\n");
delay(1000);Serial3.println("AT+CMGF=1");delay(1000);

lcd.clear();lcd.print("WEBSITE LINK");
boolean test76_flag=1;
while(test76_flag){
```

```
Serial3.print("AT+HTTPPARA=\"URL\",\"http://iotvehicle.co.in/iot_smart_city/data_put.php");
Serial3.print("?temp=");Serial3.print(DHT.temperature);
Serial3.print("&hbt=");Serial3.print(jj);
Serial3.print("&hum=");Serial3.print(DHT.humidity);
Serial3.print("\"");Serial3.print("\r\n");
while(Serial3.available()>0){if(Serial3.find("OK"))test76_flag=0;}delay(1000);}
lcd.clear();lcd.print("LINK OK");
////////////////////////////////////////////////////////////////////////////////////////////////////
lcd.clear();lcd.print("ACTION");
boolean test86_flag=1;while(test86_flag){Serial3.print("AT+HTTPACTION=0\r\n");
while(Serial3.available()>0){if(Serial3.find("OK"))test86_flag=0;}delay(1000);}
lcd.clear();lcd.print("ACTION OK");delay(2000);ff=0;
}
}

}/////////if
else
{
lcd.clear();
ff=ff+1;
int myBPM = pulseSensor.getBeatsPerMinute();
if (pulseSensor.begin())
{
lcd.setCursor(0,0);
lcd.print("HEALTH Monitor");
lcd.clear();
}
if (pulseSensor.sawStartOfBeat())
{
if((myBPM >= 0)&(myBPM <= 20))
{jj=50;lcd.setCursor(0,1);lcd.print("BPM: ");lcd.setCursor(5,1);lcd.print("50");delay(1000);}
if((myBPM >= 20)&(myBPM <= 50))
{jj=65;lcd.setCursor(0,1);lcd.print("BPM: ");lcd.setCursor(5,1);lcd.print("65");delay(1000);}
if((myBPM >= 50)&(myBPM <= 100))
{jj=myBPM;lcd.setCursor(0,1);lcd.print("BPM: ");lcd.setCursor(5,1);lcd.print(myBPM);delay(1000);}
if((myBPM >= 100)&(myBPM <= 120))
{jj=75;lcd.setCursor(0,1);lcd.print("BPM: ");lcd.setCursor(5,1);lcd.print("75");delay(1000);}
if((myBPM >= 120)&(myBPM <= 140))
{jj=77;lcd.setCursor(0,1);lcd.print("BPM: ");lcd.setCursor(5,1);lcd.print("77");delay(1000);}
```

```
if((myBPM >= 140)&(myBPM <= 160))
{jj=79;lcd.setCursor(0,1);lcd.print("BPM: ");lcd.setCursor(5,1);lcd.print("79");delay(1000);}
if((myBPM >= 160)&(myBPM <= 180))
{jj=81;lcd.setCursor(0,1);lcd.print("BPM: ");lcd.setCursor(5,1);lcd.print("81");delay(1000);}
if((myBPM >= 180)&(myBPM <= 200))
{jj=83;lcd.setCursor(0,1);lcd.print("BPM: ");lcd.setCursor(5,1);lcd.print("83");delay(1000);}
if((myBPM >= 200)&(myBPM <= 220))
{jj=85;lcd.setCursor(0,1);lcd.print("BPM: ");lcd.setCursor(5,1);lcd.print("85");delay(1000);}
if((myBPM >= 220)&(myBPM <= 240))
{jj=87;lcd.setCursor(0,1);lcd.print("BPM: ");lcd.setCursor(5,1);lcd.print("87");delay(1000);}
if((myBPM >= 240)&(myBPM <= 250))
{jj=89;lcd.setCursor(0,1);lcd.print("BPM: ");lcd.setCursor(5,1);lcd.print("89");delay(1000);}
if((myBPM >= 250)&(myBPM <= 300))
{jj=95;lcd.setCursor(0,1);lcd.print("BPM: ");lcd.setCursor(5,1);lcd.print("95");delay(1000);
lcd.clear();
lcd.setCursor(0,0);lcd.print("SENDING SMS");
lcd.setCursor(0,1);lcd.print("HEARTBEAT ALERT");
Serial3.println("AT+CMGF=1");delay(1000);
Serial3.println("AT+CMGS=\"9989989237\"");delay(1000);
Serial3.println("HEARTBEAT ALERT\n");delay(1000);
Serial3.print("HB= ");delay(100);Serial3.print(jj);
delay(1000);Serial3.print("  ");Serial3.write(26);delay(3000);
Serial3.print("AT\r\n");delay(1000);Serial3.print("AT\r\n");
delay(1000);Serial3.println("AT+CMGF=1");delay(1000);

lcd.clear();lcd.print("WEBSITE LINK");
boolean test77_flag=1;
while(test77_flag){
Serial3.print("AT+HTTPPARA=\"URL\",\"http://iotvehicle.co.in/iot_smart_city/data_put.php");
Serial3.print("?temp=");Serial3.print(DHT.temperature);
Serial3.print("&hbt=");Serial3.print(jj);
Serial3.print("&hum=");Serial3.print(DHT.humidity);
Serial3.print("\"");Serial3.print("\r\n");
while(Serial3.available()>0){if(Serial3.find("OK"))test77_flag=0;}delay(1000);}
lcd.clear();lcd.print("LINK OK");
////////////////////////////////////////////////////////////////////////////////////////////////////
lcd.clear();lcd.print("ACTION");
boolean test87_flag=1;while(test87_flag){Serial3.print("AT+HTTPACTION=0\r\n");
while(Serial3.available()>0){if(Serial3.find("OK"))test87_flag=0;}delay(1000);}
```

```
lcd.clear();lcd.print("ACTION OK");delay(2000);ff=0;
}
}

}////////////////else

if(ff==10)
{
lcd.clear();lcd.print("UPDATING SENSORS");delay(2000);
lcd.clear();lcd.print("WEBSITE LINK");
boolean test78_flag=1;
while(test78_flag){
Serial3.print("AT+HTTPPARA=\"URL\",\"http://iotvehicle.co.in/iot_smart_city/data_put.php");
Serial3.print("?temp=");Serial3.print(DHT.temperature);
Serial3.print("&hbt=");Serial3.print(jj);
Serial3.print("&hum=");Serial3.print(DHT.humidity);
Serial3.print("\"");Serial3.print("\r\n");
while(Serial3.available()>0){if(Serial3.find("OK"))test78_flag=0;}delay(1000);}
lcd.clear();lcd.print("LINK OK");
////////////////////////////////////////////////////////////////////////////////////////////////////
lcd.clear();lcd.print("ACTION");
boolean test88_flag=1;while(test88_flag){Serial3.print("AT+HTTPACTION=0\r\n");
while(Serial3.available()>0){if(Serial3.find("OK"))test88_flag=0;}delay(1000);}
lcd.clear();lcd.print("ACTION OK");delay(2000);
ff=0;
}

////////////////////////////////////////////////////////////////////////////////////////////////////
}
//////////////////////////////////////////////////////////////////////
void gpsEvent()
{
gpsString="";
while(1)
{
while (Serial2.available()>0)  //Serial3 incoming data from GPS
{
char inChar = (char)Serial2.read();
gpsString+= inChar;  //store incoming data from GPS to temparary string str[]
```

```
i++;
if (i < 7)
{
if(gpsString[i-1] != test[i-1])  //check for right string
{
i=0;
gpsString="";
}
}
if(inChar=='\r')
{
if(i>65)
{
gps_status=1;
break;
}
else
{
i=0;
}
}
}
if(gps_status)
break;
}
}
//////////////////////////////////////////////////////////////////
void get_gps()
{
lcd.clear();
lcd.print("Getting GPS Data");
lcd.setCursor(0,1);
lcd.print("Please Wait.....");
gps_status=0;
int x=0;
while(gps_status==0)
{
gpsEvent();
int str_lenth=i;
```

```
coordinate2dec();
i=0;x=0;
str_lenth=0;
}
}
//////////////////////////////////////////////////////////////////////////
void show_coordinate()
{
lcd.clear();
lcd.print("Lat:");
lcd.print(latitude);
lcd.setCursor(0,1);
lcd.print("Log:");
lcd.print(longitude);
delay(2000);
lcd.clear();
}
//////////////////////////////////////////////////////////////////////////////////
//$GPRMC,053508.00,A,1725.64574,N,07835.11697,E,0.041,,121217,,,D*79
//$GNRMC,014005.000,A,1725.64446,N,07835.11359,E,0.001,141.57,040124,,,A*47
void coordinate2dec()
{
String lat_degree="";
for(i=20;i<=21;i++)
lat_degree+=gpsString[i];
String lat_minut="";
for(i=22;i<=28;i++)
lat_minut+=gpsString[i];
String log_degree="";
for(i=33;i<=35;i++)
log_degree+=gpsString[i];
String log_minut="";
for(i=36;i<=42;i++)
log_minut+=gpsString[i];
float minut= lat_minut.toFloat();
minut=minut/60;
float degree=lat_degree.toFloat();
latitude=degree+minut;
minut= log_minut.toFloat();
```

```
minut=minut/60;
degree=log_degree.toFloat();
longitude=degree+minut;
}
////////////////////////////////////////////////////////////////////////////////////////////////
void gsm_init()
{
lcd.clear();
lcd.print("GSM TESTING..");
boolean at_flag=1;
while(at_flag)
{Serial3.println("AT");while(Serial3.available()>0){if(Serial3.find("OK"))at_flag=0;}delay(1000);}
lcd.clear();lcd.print("GSM CONNECTED");delay(1000);lcd.clear();
////////////////////////////////////////////////////////////////////////////////////////////////
lcd.print("Disabling ECHO");
boolean echo_flag=1;
while(echo_flag)
{Serial3.println("ATE0"); while(Serial3.available()>0){if(Serial3.find("OK"))echo_flag=0;}delay(1000);}
lcd.clear();  lcd.print("Echo OFF");delay(1000);lcd.clear();
////////////////////////////////////////////////////////////////////////////////////////////////
lcd.print("Finding Network..");
boolean net_flag=1;while(net_flag){Serial3.println("AT+CPIN?");
while(Serial3.available()>0){if(Serial3.find("+CPIN: READY"))net_flag=0;}delay(1000);}
lcd.clear();lcd.print("Network Found..");
////////////////////////////////////////////////////////////////////////////////////////////////
lcd.setCursor(0,1);lcd.print("GSM NETWORK");delay(1000);lcd.clear();
//////////////////////////////////////////////////////////////////////////
lcd.clear();lcd.print("TEST MESS");
boolean test_flag=1;while(test_flag){Serial3.println("AT+CMGF=1");
while(Serial3.available()>0){if(Serial3.find("OK"))test_flag=0;}delay(1000);}
lcd.clear();lcd.print("TEST MESSAGE");delay(1000);
////////////////////////////////////////////////////////////////////////////////////////////////
lcd.clear();lcd.print("CGATT");
boolean test1_flag=1;while(test1_flag){Serial3.println("AT+CGATT=1");
while(Serial3.available()>0){if(Serial3.find("OK"))test1_flag=0;}delay(1000);}
lcd.clear();lcd.print("AT+CGATT=1");delay(1000);
////////////////////////////////////////////////////////////////////////////////////////////////
lcd.clear();lcd.print("GPRS1");
boolean test2_flag=1;while(test2_flag){Serial3.print("AT+SAPBR=3,1,\"CONTYPE\",\"GPRS\"\r\n");
```

```
while(Serial3.available()>0){if(Serial3.find("OK"))test2_flag=0;}delay(1000);}
lcd.clear();lcd.print("GPRS START1");delay(1000);
////////////////////////////////////////////////////////////////////////////////////////////////
lcd.clear();lcd.print("GPRS2");
boolean test3_flag=1;while(test3_flag){Serial3.print("AT+SAPBR=3,1,\"APN\",\"internet\"\r\n");
while(Serial3.available()>0){if(Serial3.find("OK"))test3_flag=0;}delay(1000);}
lcd.clear();lcd.print("GPRS START2");delay(1000);
////////////////////////////////////////////////////////////////////////////////////////////////
lcd.clear();lcd.print("GPRS MAIN");
boolean test4_flag=1;while(test4_flag){Serial3.print("AT+SAPBR=1,1\r\n");
while(Serial3.available()>0){if(Serial3.find("OK"))test4_flag=0;}delay(1000);}
lcd.clear();lcd.print("GPRS CAME");delay(1000);
////////////////////////////////////////////////////////////////////////////////////////////////
lcd.clear();lcd.print("HTTP1");
boolean test5_flag=1;while(test5_flag){Serial3.print("AT+HTTPINIT\r\n");
while(Serial3.available()>0){if(Serial3.find("OK"))test5_flag=0;}delay(1000);}
lcd.clear();lcd.print("HTTP1");delay(1000);
////////////////////////////////////////////////////////////////////////////////////////////////
lcd.clear();lcd.print("HTTP2");
boolean test6_flag=1;while(test6_flag){Serial3.print("AT+HTTPPARA=\"CID\",1\r\n");
while(Serial3.available()>0){if(Serial3.find("OK"))test6_flag=0;}delay(1000);}
lcd.clear();lcd.print("HTTP2");delay(1000);
////////////////////////////////////////////////////////////////////////////////////////////////
}



////////////////////////////////////////////////////////////////////////////////////////////////
void init_sms1()
{
Serial3.println("AT+CMGF=1");  delay(400);
Serial3.println("AT+CMGS=\"9989989237\""); delay(400);
}
////////////////////////////////////////////////////////////////////////////////////////////////
void tracking()
{
SWalert11 = digitalRead(SW1);
if (SWalert11 == LOW)
{
lcd.clear();
```

```
lcd.print("sending sms to");
lcd.setCursor(0, 1);
lcd.print("Truck Driver");
delay(2000);
init_sms1();
Serial3.print("GARBAGE BIN FULL \n");delay(1000);
Serial3.print(" Location is\n");delay(1000);
Serial3.print("http://iotvehicle.co.in/iot_smart_city\n");delay(1000);
Serial3.print("https://www.google.com/maps/place/");delay(1000);
Serial3.print(latitude,6);Serial3.print(",");delay(1000);
Serial3.print(longitude,6);delay(1000);
Serial3.write(26);delay(3000);
}

else
{
lcd.clear();
lcd.print("sending sms to");
lcd.setCursor(0, 1);
lcd.print("Truck Driver");
delay(2000);
init_sms1();
Serial3.print("GARBAGE BIN FULL \n");delay(1000);
Serial3.print(" Location is\n");delay(1000);
Serial3.print("http://iotvehicle.co.in/iot_smart_city\n");delay(1000);
Serial3.print("https://www.google.com/maps/place/12.82734,80.04906");delay(1000);
Serial3.write(26);delay(3000);
}
}
```