#include<SoftwareSerial.h>

//make RX arduino line is pin 2, make TX arduino line is pin 3.

SoftwareSerial gps(7,8);// 7 rx 8 tx

#include<LiquidCrystal.h>

//LiquidCrystal lcd(4,5,6,7,8,9);

LiquidCrystal lcd(12,11,2,3,4,5);

//String str="";

#define acc A0

#define vib A1

#define trigger A4

#define echo A5

float time = 0, distance = 0;

float tempc;

float vout;

String buffer;

int gps\_status=0;

float latitude=0;

float logitude=0;

String Speed="";

String gpsString="";

char \*test="$GPRMC";

int temp=0;

int i=0,k=0;

int x1;

int s1p=0,state=0;

#define buz 13

#define MOTOR 6

int temperature;

void setup()

{

lcd.begin(16,2);

Serial.begin(9600);

gps.begin(9600);

lcd.print("Accident alert");

lcd.setCursor(0,1);

lcd.print(" system ");

delay(5000);

gsm\_init();

delay(2000);

lcd.clear();

//Serial.println("AT+CNMI=2,2,0,0,0");

lcd.print("GPS Initializing");

lcd.setCursor(0,1);

lcd.print(" No GPS Range ");

get\_gps();

delay(2000);

lcd.clear();

lcd.print("GPS Range Found");

lcd.setCursor(0,1);

lcd.print("GPS is Ready");

delay(2000);

lcd.clear();

lcd.print("System Ready");

temp=0;

pinMode(buz,OUTPUT);

pinMode(MOTOR,OUTPUT);

pinMode(vib,INPUT);

delay(2000);

pinMode(trigger,OUTPUT);

pinMode(echo,INPUT);

digitalWrite(MOTOR,LOW);

digitalWrite(vib,HIGH);

//digitalWrite(echo,HIGH);

}

//#####################################

void loop()

{

x1=analogRead(acc);

s1p=digitalRead(vib);

//-------------------------

lcd.setCursor(0,0);

lcd.print("acc.VAL: ");

lcd.setCursor(0,1);

lcd.print("DISTAN: ");

GET\_DISTANCE();

if(distance>20)

{

lcd.setCursor(9,0);

lcd.print(x1);

lcd.setCursor(8,1);

lcd.print(distance);

if(distance>250)

{

analogWrite(MOTOR,250);

}

else

{

analogWrite(MOTOR,distance);

}

delay(1000);

//-------------------------

}

if ((x1<300)||(x1>365)||(s1p==0))

{

digitalWrite(MOTOR,LOW);

digitalWrite(buz,HIGH);

delay(5000);

lcd.clear();

lcd.setCursor(0,0);

lcd.print("Accident ");

lcd.setCursor(0,1);

lcd.print("detected ");

digitalWrite(MOTOR,LOW);

digitalWrite(buz,HIGH);

delay(4000);

get\_gps();

tracking();

delay(1000);

}

}

//#################################

void GET\_DISTANCE()

{

digitalWrite(trigger, LOW);

delayMicroseconds(2);

digitalWrite(trigger, HIGH);

delayMicroseconds(10);

digitalWrite(trigger, LOW);

delayMicroseconds(2);

time = pulseIn(echo, HIGH);

distance = time \* 340 / 20000;

delay(1000);

}

//----------------------

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void serialEvent()

{

while(Serial.available())

{ buffer = readSIM900A();

if (buffer.startsWith("\r\n+CMT: "))

{

buffer.remove(0, 51);

int len = buffer.length();

buffer.remove(len - 2, 2);

Serial.println(buffer);

}

if(buffer=="TEMPERATURE")

{

temp=2;

break;

}

if(buffer=="LOCATION")

{

temp=1;

break;

}

if(buffer=="BUZZ")

{

temp=3;

break;

}

if(buffer=="SOS")

{

temp=4;

break;

}

else

temp=0;

}

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

String readSIM900A()

{

String buffer;

while (Serial.available())

{

char c = Serial.read();

buffer.concat(c);

delay(10);

}

return buffer;

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void gpsEvent()

{

gpsString="";

while(1)

{

while (gps.available()>0) //Serial incoming data from GPS

{

char inChar = (char)gps.read();

gpsString+= inChar; //store incoming data from GPS to temparary string str[]

i++;

// Serial.print(inChar);

if (i < 7)

{

if(gpsString[i-1] != test[i-1]) //check for right string

{

i=0;

gpsString="";

}

}

if(inChar=='\r')

{

if(i>60)

{

gps\_status=1;

break;

}

else

{

i=0;

}

}

}

if(gps\_status)

break;

}

Serial.println(gpsString);

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void gsm\_init()

{

lcd.clear();

lcd.print("Finding Module..");

boolean at\_flag=1;

while(at\_flag)

{

Serial.println("AT");

while(Serial.available()>0)

{

if(Serial.find("OK"))

at\_flag=0;

}

delay(1000);

}

lcd.clear();

lcd.print("Module Connected..");

delay(1000);

lcd.clear();

lcd.print("Disabling ECHO");

boolean echo\_flag=1;

while(echo\_flag)

{

Serial.println("ATE0");

while(Serial.available()>0)

{

if(Serial.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)

{

Serial.println("AT+CPIN?");

while(Serial.available()>0)

{

if(Serial.find("+CPIN: READY"))

net\_flag=0;

}

delay(1000);

}

lcd.clear();

lcd.print("Network Found..");

delay(1000);

lcd.clear();

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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();

delay(2000);

int str\_lenth=i;

coordinate2dec();

delay(2000);

show\_coordinate();

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(logitude);

Serial.print("Latitude:");

Serial.println(latitude);

Serial.print("Longitude:");

Serial.println(logitude);

delay(2000);

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void coordinate2dec()

{

String lat\_degree="";

for(i=19;i<=20;i++)

lat\_degree+=gpsString[i];

Serial.println(lat\_degree);

String lat\_minut="";

for(i=21;i<=27;i++)

lat\_minut+=gpsString[i];

Serial.println(lat\_minut);

String log\_degree="";

for(i=32;i<=34;i++)

log\_degree+=gpsString[i];

String log\_minut="";

for(i=35;i<=41;i++)

log\_minut+=gpsString[i];

Speed="";

for(i=45;i<48;i++) //extract longitude from string

Speed+=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();

logitude=degree+minut;

Serial.println(latitude,6);

Serial.println(logitude,6);

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void init\_sms()

{

Serial.println("AT+CMGF=1");

delay(2000);

Serial.println("AT+CMGS=\"+919347090823\""); // use 10 digit cell no. here

delay(2000);

}

void init\_sms2()

{

Serial.println("AT+CMGF=1");

delay(2000);

Serial.println("AT+CMGS=\"+918185023292\""); // use 10 digit cell no. here

delay(2000);

}

void send\_data(String message)

{

Serial.println(message);

delay(1000);

}

void send\_sms()

{

Serial.write(26);

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void lcd\_status()

{

lcd.clear();

lcd.print("Message Sending.");

delay(2000);

lcd.clear();

lcd.print("Message Sent");

delay(2000);

lcd.clear();

lcd.print("System Ready");

return;

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void tracking()

{

init\_sms();

delay(2000);

//send\_data("Child Tracking:");

send\_data("ACCIDENT FOR YOUR VEHICLEAP16EF 8899 AT: ");

Serial.print("http://maps.google.com/?q=");

Serial.print(latitude,6);

Serial.print(",");

Serial.print(logitude,6);

//Serial.println();

//send\_data("Please take some action soon..\nThankyou");

delay(2000);

send\_sms();

delay(2000);

init\_sms2();

delay(2000);

//send\_data("Child Tracking:");

send\_data("ACCIDENT FOR YOUR VEHICLE AP16EF 8899 AT: ");

Serial.print("http://maps.google.com/?q=");

Serial.print(latitude,6);

Serial.print(",");

Serial.print(logitude,6);

//Serial.println();

//send\_data("Please take some action soon..\nThankyou");

delay(2000);

send\_sms();

lcd\_status();

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*