#include <SoftwareSerial.h>

#include <TinyGPS.h>

long lat,lon;

TinyGPS gps;

double homeLat = 11.021020;

double homeLng = 76.937812;

double gctLat = 11.020893;

double gctLng = 76.939142;

int nodeId = 1;

void setup() {

Serial.begin(9600);

pinMode(LED\_BUILTIN, OUTPUT);

pinMode(10, OUTPUT);

}

void loop() {

while(Serial.available()){ // check for gps data

if(gps.encode(Serial.read())){ // encode gps data

gps.get\_position(&lat,&lon); // get latitude and longitude

double vlat = lat;

double dlat = vlat/1000000;

double vlon = lon;

double dlon = vlon/1000000;

int dist = getDistanceFromLatLonInKm(homeLat, homeLng, dlat , dlon);

Serial.println(dist);

if(dist < 30){

digitalWrite(LED\_BUILTIN, 1);

digitalWrite(10, 1);

delay(3000);

digitalWrite(LED\_BUILTIN, 0);

digitalWrite(10, 0);

}

}

}

}

int getDistanceFromLatLonInKm(double lat1,double lon1,double lat2, double lon2) {

double R = 6371; // Radius of the earth in km

double dLat = deg2rad(lat2-lat1); // deg2rad below

double dLon = deg2rad(lon2-lon1);

double a = sin(dLat/2) \* sin(dLat/2) + cos(deg2rad(lat1)) \* cos(deg2rad(lat2)) \* sin(dLon/2) \* sin(dLon/2);

double c = 2 \* atan2(sqrt(a), sqrt(1-a));

int d = R \* c \* 1000; // Distance in m

return d;

}

double deg2rad(double deg) {

return deg \* (PI/180);

}

LoRa GPS

#include <SoftwareSerial.h>

#include <TinyGPS.h>

long lat,lon;

SoftwareSerial loraSerial (2, 3); //rx 2 tx 3

TinyGPS gps;

double homeLat = 11.021020;

double homeLng = 76.937812;

double gctLat = 11.020893;

double gctLng = 76.939142;

int nodeId = 1;

void setup() {

Serial.begin(9600);

loraSerial.begin(57600);

pinMode(LED\_BUILTIN, OUTPUT);

RN2483\_init();

}

void loop() {

/\*

String is = "radio tx AA";

sendmsg(is);

delay(2000);

\*/

while(Serial.available()){ // check for gps data

if(gps.encode(Serial.read())){ // encode gps data

gps.get\_position(&lat,&lon); // get latitude and longitude

double vlat = lat;

double dlat = vlat/1000000;

double vlon = lon;

double dlon = vlon/1000000;

int dist = getDistanceFromLatLonInKm(gctLat, gctLng, dlat , dlon);

/\*

Serial.println(dist);

String is = "radio tx BB";

sendmsg(is);

delay(2000);\*/

String isss = "radio tx " + String(dist);

sendmsg(isss);

delay(2000);

}

}

/\*

String iss = "radio tx CC";

sendmsg(iss);

delay(2000);\*/

}

int getDistanceFromLatLonInKm(double lat1,double lon1,double lat2, double lon2) {

double R = 6371; // Radius of the earth in km

double dLat = deg2rad(lat2-lat1); // deg2rad below

double dLon = deg2rad(lon2-lon1);

double a = sin(dLat/2) \* sin(dLat/2) + cos(deg2rad(lat1)) \* cos(deg2rad(lat2)) \* sin(dLon/2) \* sin(dLon/2);

double c = 2 \* atan2(sqrt(a), sqrt(1-a));

int d = R \* c \* 1000; // Distance in m

return d;

}

double deg2rad(double deg) {

return deg \* (PI/180);

}

void RN2483\_init(){

sendcmd("sys reset");

sendcmd("radio set mod lora");

sendcmd("radio set freq 868100000");

sendcmd("radio set pwr 14");

sendcmd("radio set sf sf12");

sendcmd("radio set afcbw 125");

sendcmd("radio set rxbw 250");

sendcmd("radio set fdev 5000");

sendcmd("radio set prlen 8");

sendcmd("radio set crc on");

sendcmd("radio set cr 4/8");

sendcmd("radio set wdt 0");

sendcmd("radio set sync 12");

sendcmd("radio set bw 250");

sendcmd("sys get hweui");

sendcmd("mac pause");

}

void sendcmd(String data){

digitalWrite(LED\_BUILTIN, HIGH);

Serial.println(data);

loraSerial.println(data);

digitalWrite(LED\_BUILTIN, LOW);

}

void sendmsg(String data){

digitalWrite(LED\_BUILTIN, HIGH);

Serial.println(data);

loraSerial.println(data);

delay(1000);

digitalWrite(LED\_BUILTIN, LOW);

}