//Created August 15 2006

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//http://www.arduino.cc

//reworked to GPS reader

//Dirk, december 2006

#include <ctype.h>

#include <string.h>

#define bit9600Delay 84

#define halfBit9600Delay 42

#define bit4800Delay 188

#define halfBit4800Delay 94

byte rx = 6;

byte tx = 7;

byte SWval;

char dataformat[7] = "$GPRMC";

char messageline[80] = "";

int i= 0;

void setup() {

pinMode(rx,INPUT);

pinMode(tx,OUTPUT);

digitalWrite(tx,HIGH);

digitalWrite(13,HIGH); //turn on debugging LED

SWprint('h'); //debugging hello

SWprint('i');

SWprint(10); //carriage return

Serial.begin(9600);

}

void SWprint(int data)

{

byte mask;

//startbit

digitalWrite(tx,LOW);

delayMicroseconds(bit4800Delay);

for (mask = 0x01; mask>0; mask <<= 1) {

if (data & mask){ // choose bit

digitalWrite(tx,HIGH); // send 1

}

else{

digitalWrite(tx,LOW); // send 0

}

delayMicroseconds(bit4800Delay);

}

//stop bit

digitalWrite(tx, HIGH);

delayMicroseconds(bit4800Delay);

}

char SWread()

{

byte val = 0;

while (digitalRead(rx));

//wait for start bit

if (digitalRead(rx) == LOW) {

delayMicroseconds(halfBit4800Delay);

for (int offset = 0; offset < 8; offset++) {

delayMicroseconds(bit4800Delay);

val |= digitalRead(rx) << offset;

}

//wait for stop bit + extra

delayMicroseconds(bit4800Delay);

delayMicroseconds(bit4800Delay);

return val;

}

}

void char2string()

{

i = 0;

messageline[0] = SWread();

if (messageline[0] == 36) //string starts with $

{

i++;

messageline[i] = SWread();

while(messageline[i] != 13 & i<80) //carriage return or max size

{

i++;

messageline[i] = SWread();

}

messageline[i+1] = 0; //make end to string

}

}

void loop()

{

digitalWrite(13,HIGH);

//only print string with the right dataformat

char2string();

if (strncmp(messageline, dataformat, 6) == 0 & i>4)

{

for (int i=0;i<strlen(messageline);i++)

{

Serial.print(messageline[i], BYTE);

}

}

//Serial.print(SWread(),BYTE); //use this to get all GPS output, comment out from char2string till here

}