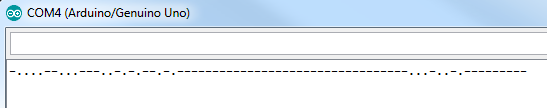
Sarah Wood

Embedded Programming

C4-A2

Screen Caps



Source Code (only telegraph.cpp is changed)

Main

#include "telegraph.h"

const unsigned int OUTPUT\_PIN = 13;

const unsigned int DIT\_LENGTH = 200;

const unsigned int MAX\_MESSAGE\_LEN = 128;

const unsigned int BAUD\_RATE = 9600;

const int LINE\_FEED = 13;

char message\_text[MAX\_MESSAGE\_LEN];

int index = 0;

Telegraph telegraph(OUTPUT\_PIN, DIT\_LENGTH);

void setup() {

Serial.begin(BAUD\_RATE);

}

void loop() {

if (Serial.available() > 0) {

int current\_char = Serial.read();

if (current\_char == LINE\_FEED || index == MAX\_MESSAGE\_LEN - 1) {

message\_text[index] = 0;

index = 0;

telegraph.send\_message(message\_text);

} else {

message\_text[index++] = current\_char;

}

}

}

Telegraph.h

#ifndef \_\_TELEGRAPH\_H\_\_

#define \_\_TELEGRAPH\_H\_\_

class Telegraph {

public:

Telegraph(const int output\_pin, const int dit\_length);

void send\_message(const char\* message);

private:

void dit();

void dah();

void output\_code(const char\* code);

void output\_symbol(const int length);

int \_output\_pin;

int \_dit\_length;

int \_dah\_length;

};

#endif

Telegraph.cpp

// START:init

#include <ctype.h>

#include <Arduino.h>

#include "telegraph.h"

char\* LETTERS[] = {

".-", "-...", "-.-.", "-..", ".", // A-E

"..-.", "--.", "....", "..", ".---", // F-J

"-.-", ".-..", "--", "-.", "---", // K-O

".--.", "--.-", ".-.", "...", "-", // P-T

"..-", "...-", ".--", "-..-", "-.--", // U-Y

"--.." // Z

};

char\* DIGITS[] = {

"-----", ".----", "..---", "...--", // 0-3

"....-", ".....", "-....", "--...", // 4-7

"---..", "----." // 8-9

};

// END:init

char\* SPECIALS[] = {

".-.-.-", "--..--", "..--..", ".---.", // .,?'

"-.-.--", "-..-.", "-.--.", "-.--.-", // !/()

".-...", "---...", "-.-.-.", "-...-", // &:;=

".-.-.", "-....-", "..--.-", ".-..-.", //+-\_"

"...-..-", ".--.-." //$@

};

// START:constructor

Telegraph::Telegraph(const int output\_pin, const int dit\_length) {

\_output\_pin = output\_pin;

\_dit\_length = dit\_length;

\_dah\_length = dit\_length \* 3;

pinMode(\_output\_pin, OUTPUT);

}

// END:constructor

// START:send\_message

void Telegraph::send\_message(const char\* message) {

for (int i = 0; i < strlen(message); i++) {

const char current\_char = toupper(message[i]); // <label id="code.welcome.toupper"/>

if (isalpha(current\_char)) {

output\_code(LETTERS[current\_char - 'A']);

delay(\_dah\_length);

} else if (isdigit(current\_char)) {

output\_code(DIGITS[current\_char - '0']);

delay(\_dah\_length);

}

else if (ispunct(current\_char))

{

output\_code(SPECIALS[current\_char - '!']);

delay(\_dah\_length);

}

else if (current\_char == ' ') { // <label id="code.welcome.blank"/>

Serial.print(" ");

delay(\_dit\_length \* 7);

}

}

Serial.println();

}

// END:send\_message

// START:output\_helper

void Telegraph::output\_code(const char\* code) {

const unsigned int code\_length = strlen(code);

for (int i = 0; i < code\_length; i++) {

if (code[i] == '.')

dit();

else

dah();

if (i != code\_length - 1)

delay(\_dit\_length);

}

}

void Telegraph::dit() {

Serial.print(".");

output\_symbol(\_dit\_length);

}

void Telegraph::dah() {

Serial.print("-");

output\_symbol(\_dah\_length);

}

void Telegraph::output\_symbol(const int length) {

digitalWrite(\_output\_pin, HIGH);

delay(length);

digitalWrite(\_output\_pin, LOW);

}

// END:output\_helper