AGH University of Science and Technology

Faculty: Computer Science, Electronics and Telecommunications

Field: Electronics & Telecommunications

MT2 FINAL PROJECT - TWEET MACHINE

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Introduction

My project consist of a tweeting machine. At first, it was designed as a simple text editor, the twitter part was added as an extra feature so that it can be more appealing and more “modern” so to say. For the hardware, I used the FRDM-KL05Z board (which has a M0+ microprocessor and some peripherals added to it), a 4x4 keypad and, a 16X2 LCD screen.

Codes, Schematics and Workflow

Here it is a list with all the codes used for this project. Everything is uploaded to the GitHub repository dedicated to the project:

C language:

- main.c (by Gregório da Luz)
    - here it is located program itself, special buttons from the keypad, and the tweeting/UART part;
- keyboard.c, keyboard.h (by Gregório da Luz)
    - here it is where the logic for reading the keyboard and selecting the character is located;
- uart.c, uart.h (by Mr. Koryciak and small adaptations by Gregório)
- lcd1602.c, lcd1602.h (by Mr. Koryciak and small adaptions by Gregório)
- i2c.c, i2c.h (by Mr. Koryciak)
- frdm_bsp.h (by Mr. Koryciak)

Python script:

- tweeting_ucontroller.py (by Gregório da Luz)
    - 2 libraries were used: serial and tweepy;

4x4 keypad buttons schematics:

“*Here, it is where the pins are located*”

(1, a, b, c)	(2, d, e, f)	(3, g, h, i)	(delete character)
(4, j, k, l)	(5, m, n, o)	(6, p, q, r)	(send tweet)
(7, s, t, u)	(8, v, w, x)	(9, y , z, .)	(0, ?, ‘ ’, !)
(not used)	(not used)	(not used)	(not used)

The keypad works in a very simple manner: you pick a character and to get it on the screen you simply need to keep the button pressed until you reach the character. Once your character appear on the screen you must release the button.

If you typed something by mistake, no problem, there's a "*delete character*" button. Once you are done typing you can press the "*send tweet*" button. Otherwise, when you reach the end of the LCD screen, the program will automatically send your text to the laptop and if the Python script is running, it will tweet it.

LCD pins configuration:

SCL -> PTB3
SDA -> PTB4
VCC -> 5V
GND -> GND

Keypad pins configuration:

R1 connected to PTA12
R2 connected to PTA7
R3 connected to PTA11
R4 connected to PTA6

C1 connected to PTB0
C2 connected to PTB7
C3 connected to PTB6
C4 connected to PTB11

Last Remarks

When using it as tweet machine, you just need to run the Python script present in the GitHub repository and change the 4 keys present in the beginning of the script for the authentication of your own twitter account(developer account).

GitHub Link:
https://github.com/gregorio1212/tweet-machine