PG5100 - Embedded Systems

Assignment 1 - Eivind Vegsundvåg

Introduction

The solution has the following features:

- Scrolling text over 8x8 LED Matrix
- LCD Status panel
- Button controlling speed
- Support for special Norwegian characters

A video of the solution in action can be seen here:
https://www.youtube.com/watch?v=w3QQ6EJJAco
Wire colours stopped making sense after the fifth wire was placed. They're still neatly grouped in colour by function.

Wiring

The connections are available as a Fritzing(http://fritzing.org/home/) sketch. Due to the 8x8 LED Matrix not being available in correct sizes in the software. Pin 1 is connected to position i1 of the rightmost(according to the sketch, note that all components are upside down) bread board

LED Matrix

The LED matrix scrolls single characters right-to-left. I did not retrieve a short shift register, so I have not implemented a multi-colour matrix. The LED matrix scrolls the character at a variable speed which can be set by pressing the button connected to pin 13 while the system is in the READY state.

Serial input

The system accepts input through the Serial interface. It reads once character at a time.

LCD Status Panel

I've used the 16x2 character LCD panel in our kit to display the following information:

Status

When the system is writing text over the 8x8 LED matrix, the status field is set to “DRAWING”. During this time, the system is not accepting speed change input. Otherwise, the status field displays “READY”.

Speed

This field displays the speed(1-8) that the system is drawing at.