ECE271: Microcomputer Architecture and Applications — University of Maine

Prelab for Lab #3: Keypad Scanning in C

Week of 7 February 2022

Pre-lab

Part A – Textbook Readings

1. Textbook `Chapter 14.9` to review keypad scanning

Part B – Gitlab

We hopefully will have gitlab going for this lab. We will notify you once we have directions posted on how to use it.

If you have not used gitlab in a previous ECE class, you will need to log into the gitlab server at least once before we can assign your repository to you. To do this, just go to
`https://gitlab.eece.maine.edu`
and with the "LDAP" option log in with your UMaine account/password. Note: you have to do this from an on-campus network (or via the UMaine VPN) for this to work.

Part C – Prelab assignment

For this lab we will be interfacing with a keypad, which will be provided. You will need a breadboard for this lab. If you have a breadboard from a previous class, please bring it with you. We will also be handing out one breadboard per person for use in the lab, but it can be helpful to have an additional breadboard.
The prelab for this is fairly quick. We will be using some pins on GPIOA as inputs and GPIOE as outputs.

1. Configure Port A

We want to put Port A pins 1, 2, 3 and 5 as digital inputs. Note that these are also used by the joystick, but we will be using them as external connections. Set the GPIOA MODER register; remember that '00' indicates a digital input.

Register	31 30	29 28	27 26	25 24	23 22	21 20	19 18	17 16	15 14	13 12	11 10	9 8	7 6	5 4	3 2	1 0
GPIOA MODER	MODER15	MODER14	MODER13	MODER12	MODER11	MODER10	MODER9	MODER8	MODER7	MODER6	MODER5	MODER4	MODER3	MODER2	MODER1	MODER0
Mask																
Value																

Mask in hex:_____ Value in hex:_____

2. Configure Port E

We want to put Port E pins 10, 11, 12, and 13 as Digital Outputs. This is done in the GPIOE MODER register. Again, set this to binary 01 (digital output).

Register	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
GPIOE MODER	MODER15		MODER14		MODER13		MODER12		MODER11		MODER10		MODER9		MODER8		MODER7		MODER6		MODER5		MODER4		MODER3		MODER2		MODER1		MODER0	
Mask																																
Value																																

Mask in hex:_____ Value in hex:_____