İzmir Katip Çelebi University

Department of Electrical and Electronics Engineering

EEE316 Microprocessors

Spring 2020

Experiment VII

LCD and KEYPAD INTERFACING

Pre-Lab Report

- Please study related topics in reference notes.
- Answer the questions under the lab activities. Prepare report in the specified format.
- Send e-mail to research assistants' mail address until May 13, 23:59.
- Your .rar file must include source files, prelab report and video presentation.

Experimental Work

- Please explain your code step by step in video presentation.

Lab Objectives

- Embedded programming with C language
- To understand how to use LCD screen
- To understand how to use Keypad

References

- Lecture notes
- Mazidi, McKinlay, Causey "PIC Microcontroller and Embedded Systems," Chapter 12

Lab Activities

1. Write a code in C to display your name and surname at the first line and your student ID at the second line in 16x2 LCD (The LCD is connected to PORT B pins). Then, scroll the first line to the right and the second line to the left, wait for 5 seconds, and then scroll the first line to the left and the second line to the right for 4 times. Use Proteus to simulate your code.

2. Write a code in C to display a countdown timer for 2 minutes in the middle of the 16x2 LCD (The LCD is connected to PORT B pins). User should see four digits on the screen (02:00) without cursor. Use Proteus to simulate your code.

3. Using a 4x4 keypad, repeat Activity 2. User should enter four digits via keypad (Assume that the first two digits are minutes and last two digits are seconds). A countdown timer counts for entered four digits and it should be displayed in LCD (The LCD is connected to

PORT B pins and 4x4 keypad is connected to PORT D pins). Use Proteus to simulate your code.

4. Design a Decimal to Binary converter using 4x4 keypad and 16x2 LCD (The LCD is connected to PORT B pins and 4x4 keypad is connected to PORT D pins). The decimal number should be entered by user via keypad and should be written in the first line on LCD and the binary result should be shown in the second line. When power is applied to the system, the LCD displays text “Decimal to Binary Converter” for 2 seconds. Then, user is expected to type the decimal number and after press ENTER key, the binary result should be displayed for five seconds. Then, the LCD should be cleared, ready for next conversion.