Mapúa University

School of Electrical, Electronics and Computer Engineering

Introduction to Embedded Systems

COE185P/ E01

LED Matrix

Experiment #9

Submitted By:

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Submitted To:

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I. Introduction

LED matrix is a device that is composed of LEDs or dot matrix of large display but low resolution. In a matrox format LEDs are arranged in rows and columns. LED matrix are also used in electronic display panels. In this experiment, an 8x8 matrix will be used and the purpose of this experiment is to display different patterns on the LED matrix.

The LED matrix can be driven two ways: parallel or serial. We usually drive it in the serial manner in order to save interface.

II. Objectives

After completing the activities in this chapter, you will be able to:

1. Describe the LED matrix wiring diagram.
2. Explain the raster display technique to display arbitrary patterns,
3. Describe the need to alternately activate the green and red LEDs, and
4. Design an animation sequence

III. Materials and Components

- Breadboard
- Jumper Wires
- LED Matrix
- NI myRio kit
- MXP

IV. PROCEDURE

Step 1. Follow the instructions in the manual and connect the wires.

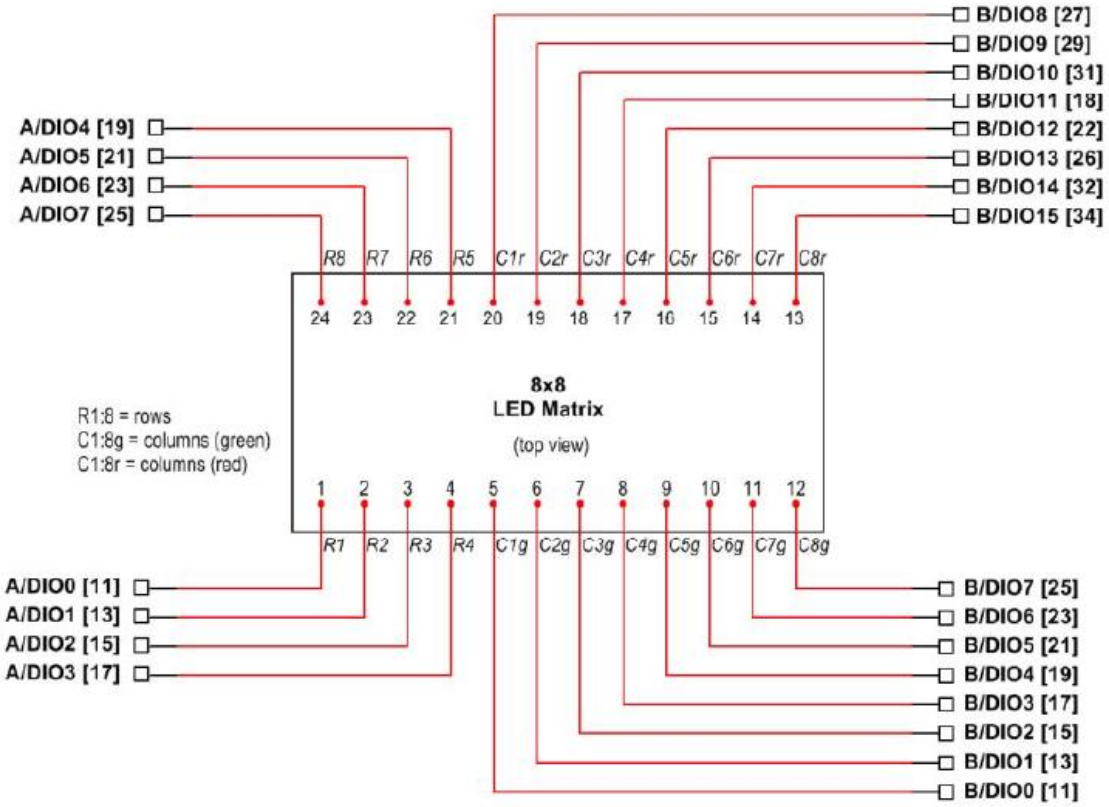


Figure 1. LED Matrix Connection Diagram

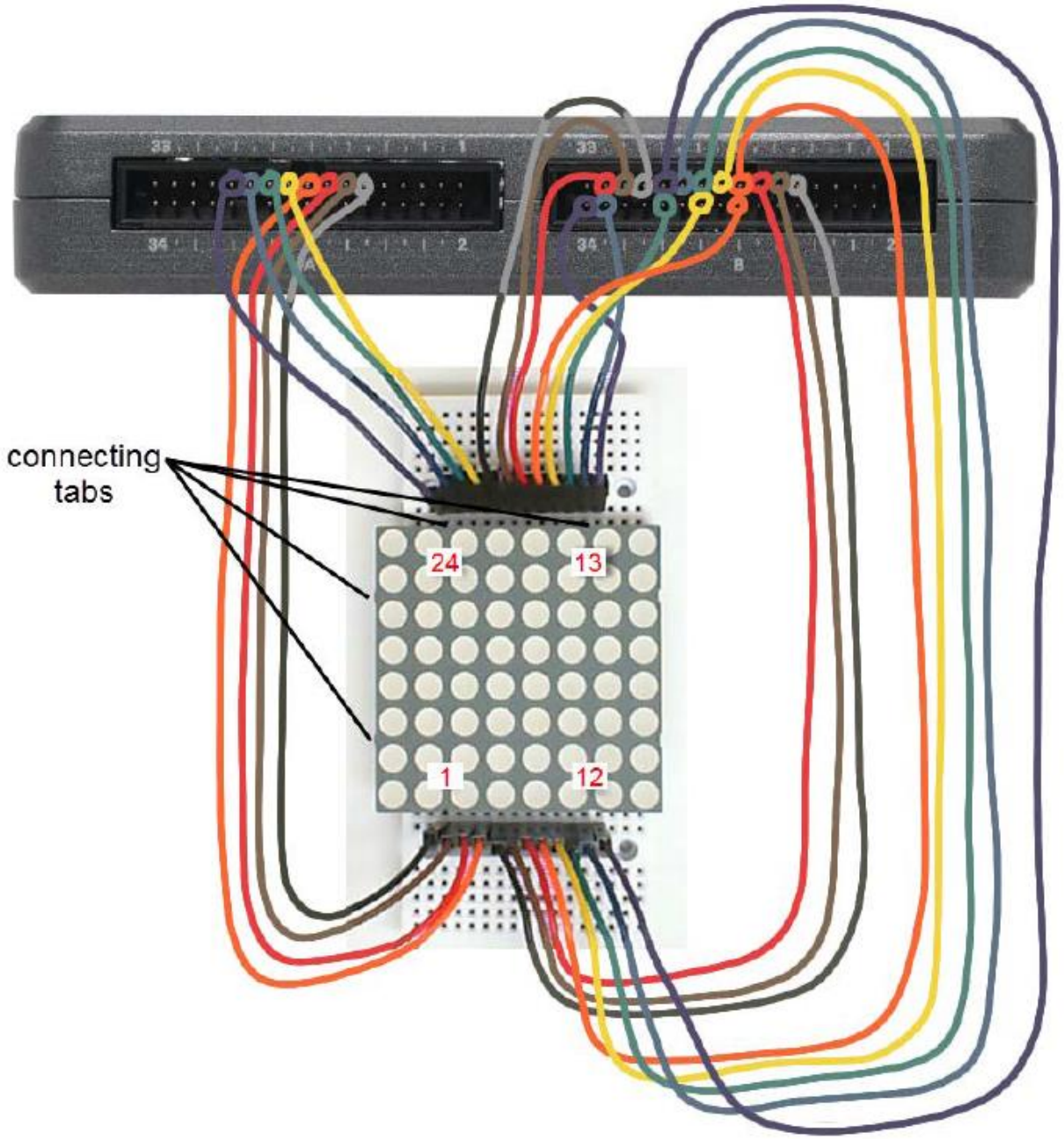


Figure 2. NI myRIO connection diagram

Step 2. Open LabView and the LED Matrix Demo

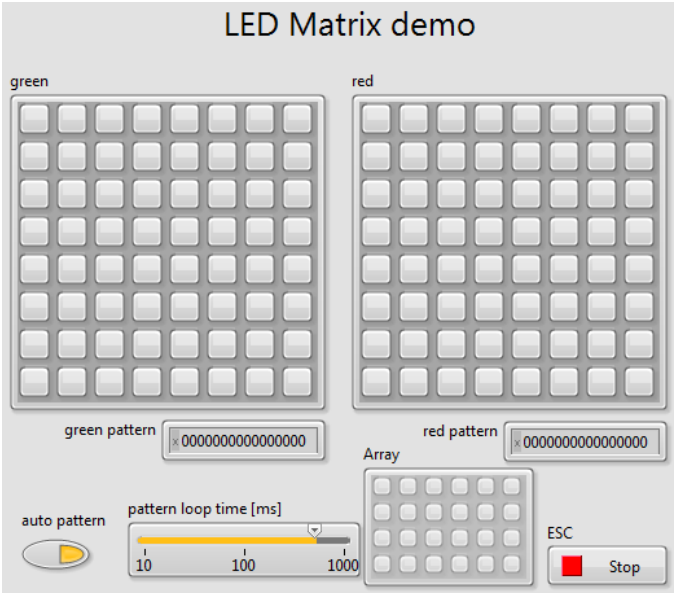


Figure 3. LED Matrix Demo front panel

Step 3. Run the Demo

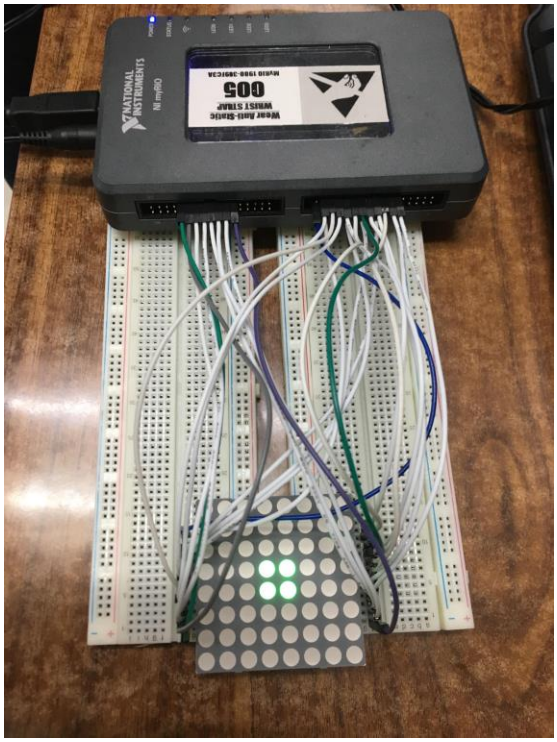
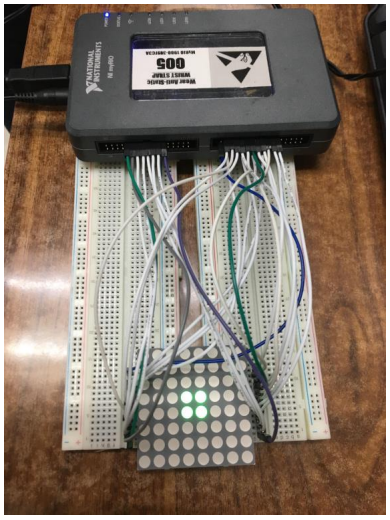


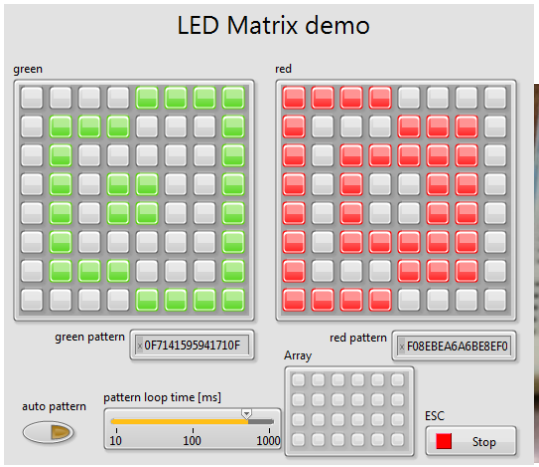
Figure 4. Running LED Matrix

V. Results and Discussion

The first part of the experiment, the breadboard was built. When we run the demo, the demo runs a pattern which is coded in the schematic and showing a converging square animation.



I change the pattern in the front panel and it display the LED accurately.



VI. Conclusion

After this experiments, I have successfully achieved most of the objectives. The LED matrix wire diagram is the same with the wiring scheme of the keypad we performed previously. The wiring diagram of the LED matrix, it contains a 2-D diode matrix which have the cathode joined in rows and anode in columns. In LED matrix each can be controlled individually by controlling the voltages through each pair of column and row diodes.