Mapúa University

School of Electrical, Electronics and Computer Engineering

Introduction to Embedded Systems

COE185P/ E01

Seven-Segment Display

Experiment No.2

Submitted By:

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Submitted To:

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I. Introduction

This experiment is about seven-segment display it is a form of an electronic display device for display numbers it has 7 LED inside which are named a,b,c,d,e,f,g, and dp. This display are mainly used for devices that need numbers like clocks, meter, calculator and etc. There are two types of seven-segment display these are common anode and common cathode, common anode LED lights up only when it is LOW and common cathode lights up only the it is HIGH.

II. Objectives

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

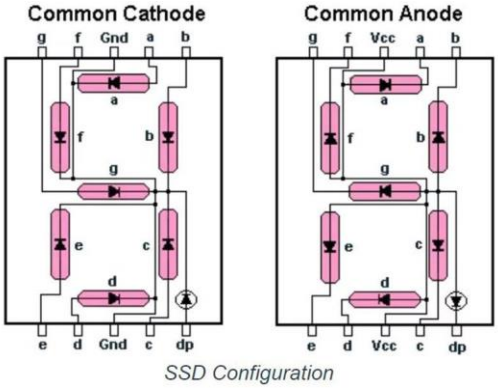
- Describe the array of LEDs wired with a common-anode connection,
- Design the interface circuit by applying knowledge of the DIO output resistance, source voltage, LED voltage-current characteristic, and
- Recognize that blue LEDs may be directly connected to the NI myRIO DIO without current-limiting resistors.

III. Materials and Components

- 10 jumper wires
- Seven Segment LED display
- NI myRio kit
- MXP(myRio expansion port)
- 1 static watches
- breadboard

IV. PROCEDURE

Step 1. Connect the wires to the seven-segment display use Figure 1 to 3 for connections.



Pin	MXP Terminal	
a	B/DIOØ	11
b	B/DIO1	13
c	B/DIO2	15
d	B/DIO3	17
e	B/DIO4	19
f	B/DIO5	21
g	B/DIO6	23
dp	B/DIO7	25
CA	B/+3.3V	33

Figure 1. Seven-Segment Display Pins ***Figure 2. Connections***

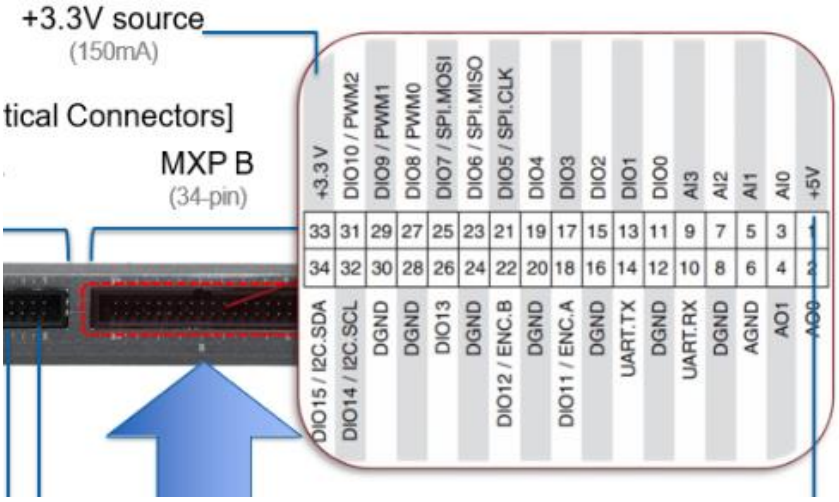


Figure 3. myRIO pins

Step 2. Open the LabVIEW then open the DEMO for the Seven-segment display.

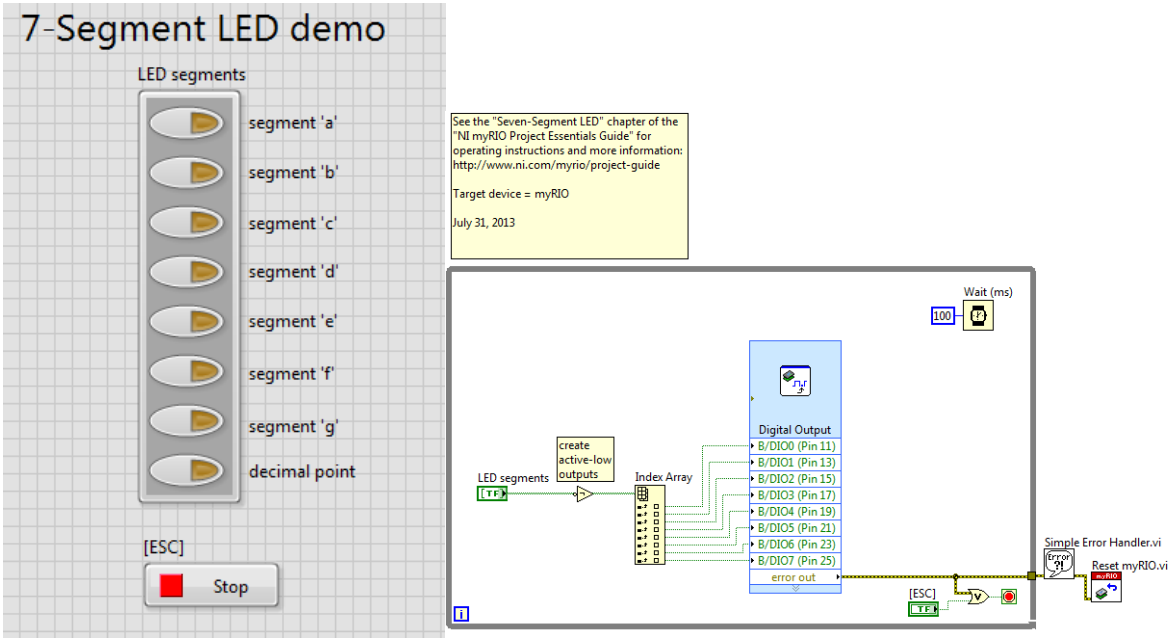


Figure 4-5. 7-Segment LED Demo Schematic

Step 3. Test the 7-Segment if working

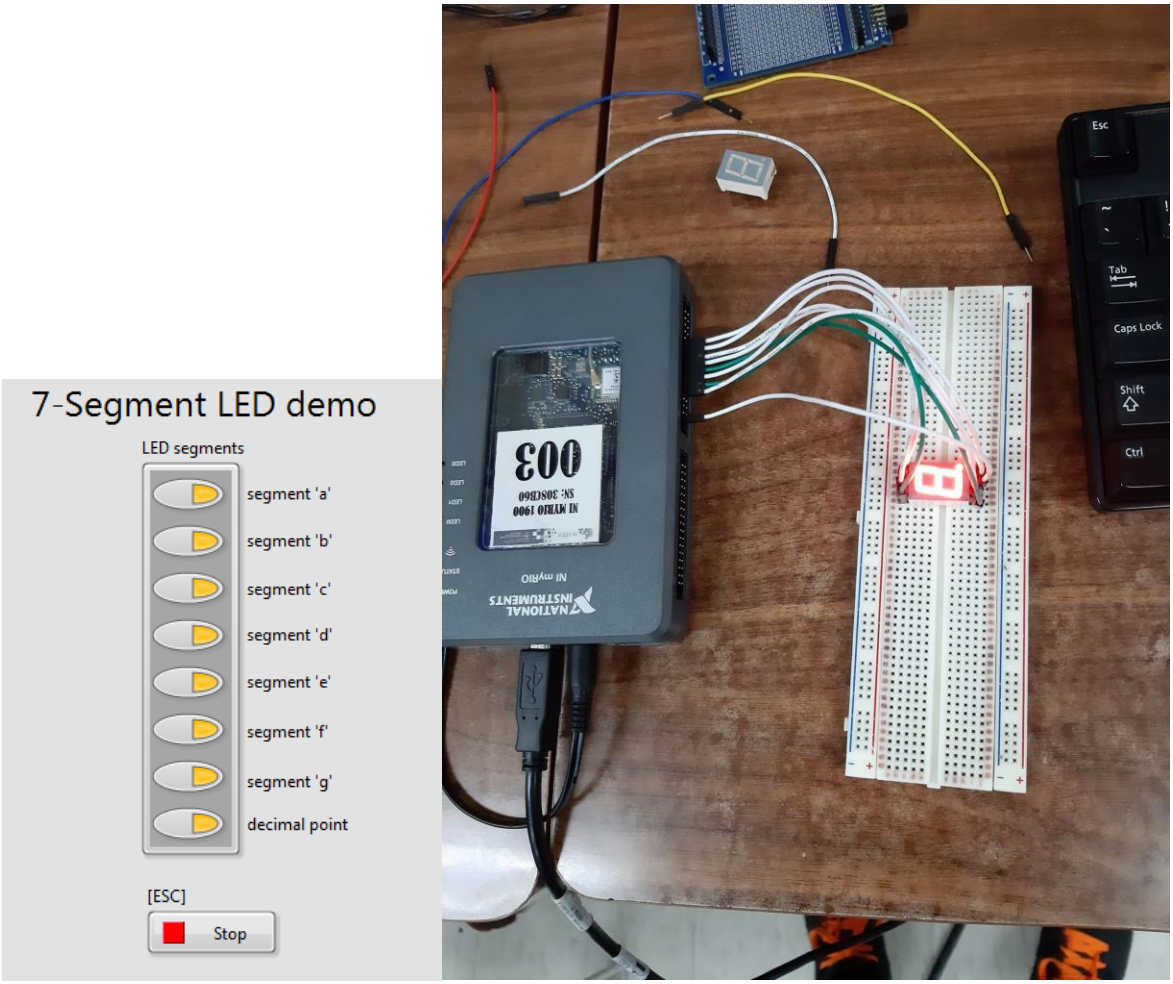


Figure 6-7. 7-segment testing

Basic Modifications

Step 1. Delete the index array then create an case structure.

Step 2. Create a Control then connect it to the sequence structure.

Step 3. Add a Boolean T and F, T for high and F for low.

Step 4. Connect the pins where you want the Led to light up.

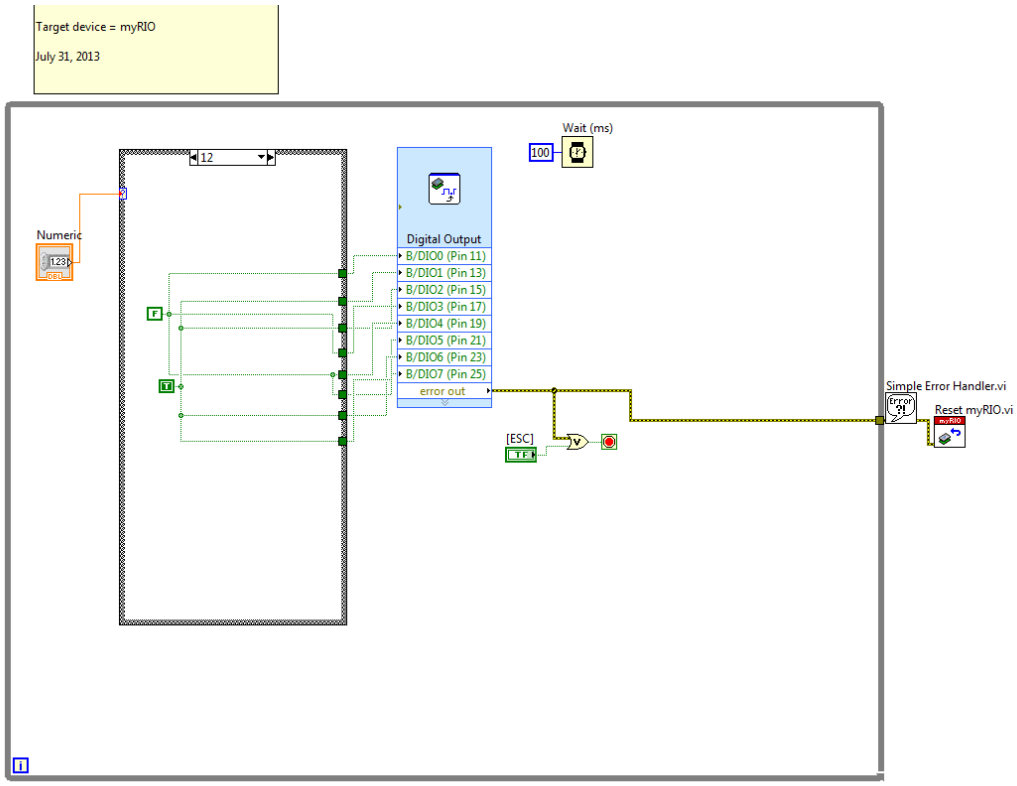


Figure 8. Case Structure Created

Step 5. Test the Front-Panel

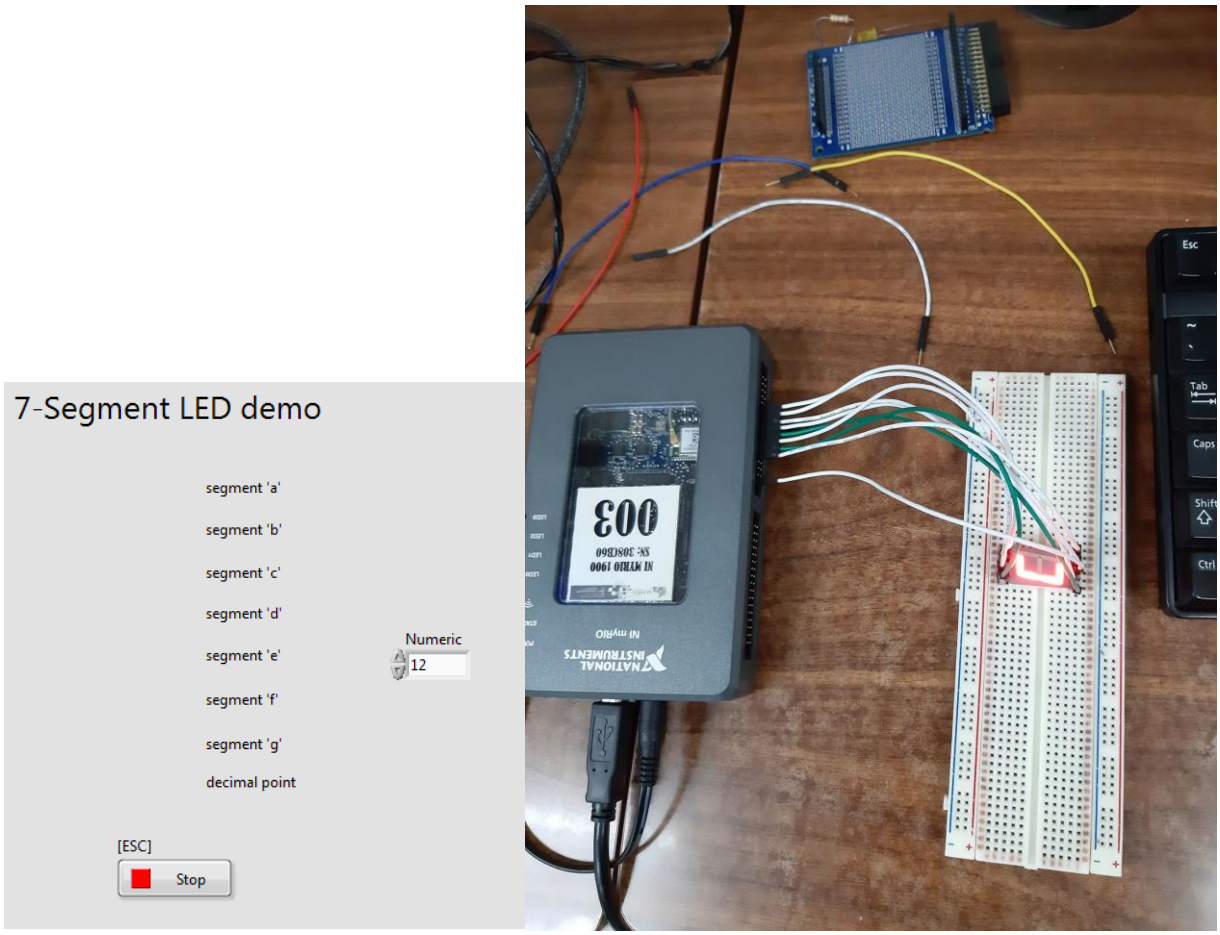


Figure 9-10. Front-Panel Testing

V. Results and Discussion

The Seven-Segment LED were able to illuminate by manually using the buttons in the front-panel. There were modifications since the 7-segment LED given in the lab has different pins from the book.

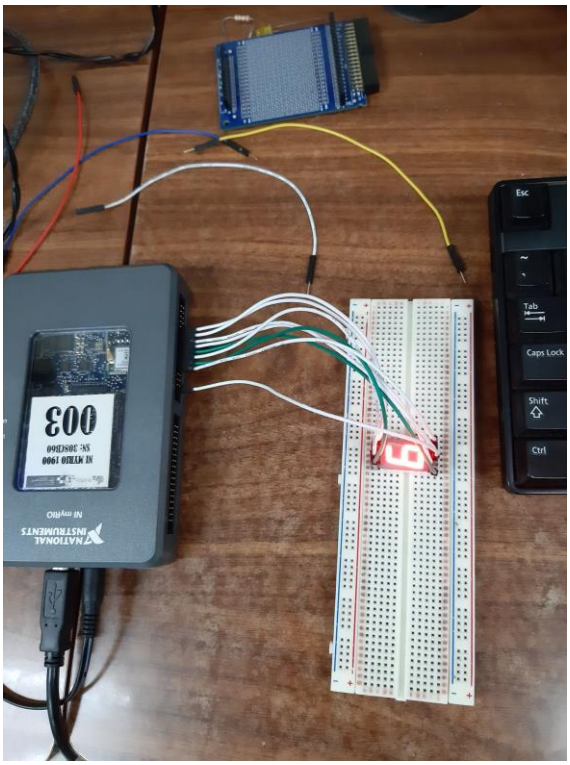


Figure 11. Displaying number 6 manually

In the second part of the experiment we modified the schematic by adding case structure then adding a Boolean T and F. The hexadecimal values from 0-9 and A-F were able to appear on the seven-segment display which were input manually by the user see figure 9-10.

VI. Conclusion

This experiment was about 7-segment display LED and how to manipulate it using myRIO, When applying low signal to a segment it lights up when the display is a common anode and high signal when common cathode. We also modified the given demo schematic by using rotating signal and case structure and using it to move around the display or display the numbers 0-F hexadecimal, Therefore I conclude that this experiment is successfully learned.