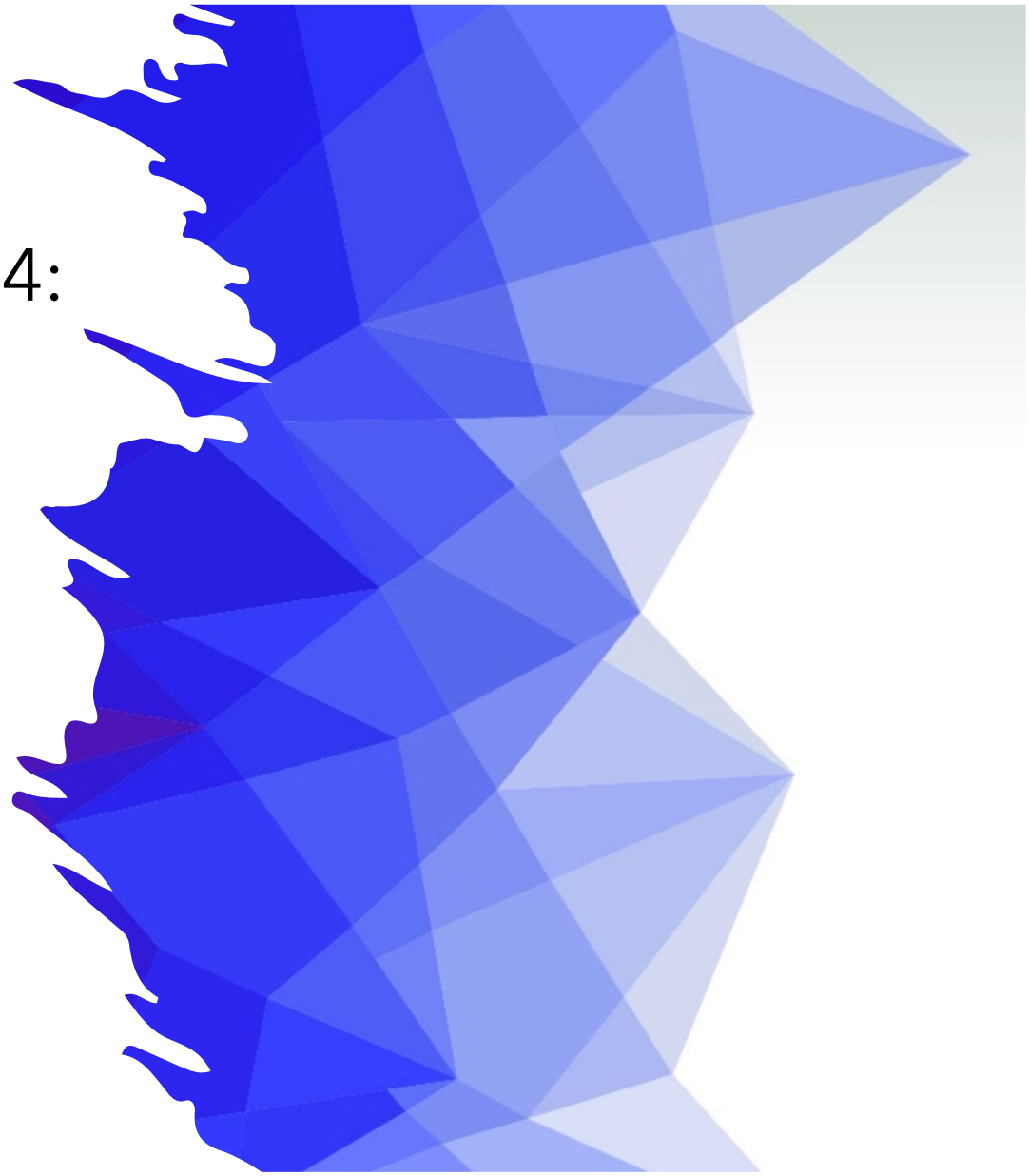
ECE3520 Lab Session 13&14:

Multiplexed Display

Look-up Table Stored in the Program Memory



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Step1: Lab Preparation

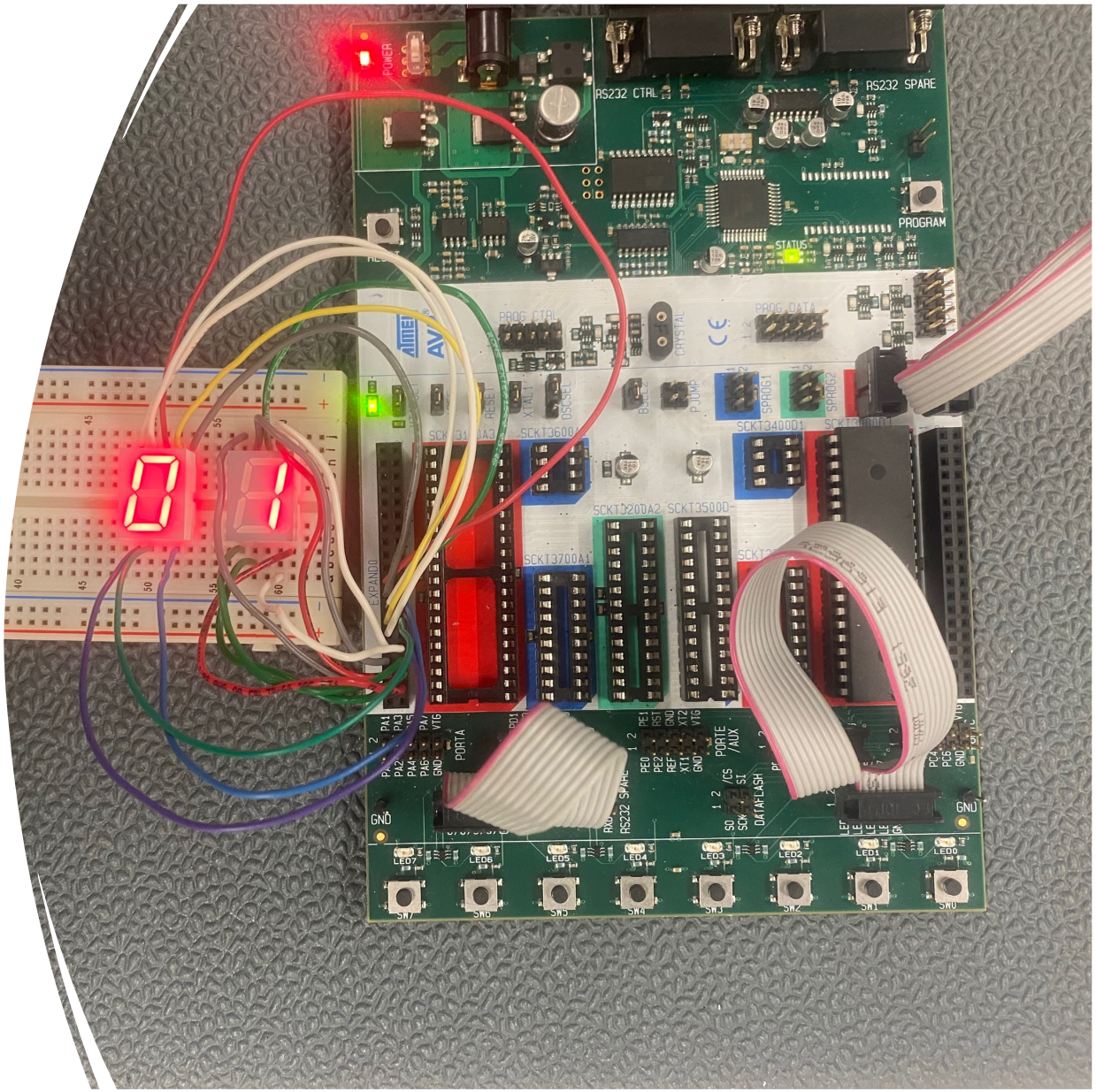
- Lab13: Write First C program for STK500
  - implements 2-digit seven-segment display
  - use Port A for seven-segment displays
  - use Port C for digit selection
  - modify the value shifting program in Experiment 11 using multiplexed display
  - modify the stopwatch program in Experiment 12 using multiplexed display

Step2: Lab Preparation

- Lab14: Write Second C program by using Look-up Table Stored in the Program Memory
  - modify two decoder functions (BCD to seven segment conversion, and Digit selection) used in Experiment 13 by using Look-up Table method
  - implement two decoder functions using tables stored in the program memory
  - modify the program in Experiment 11 using multiplexed display with the above functions
  - modify the stopwatch program in Experiment 12 using multiplexed display with the functions implemented above

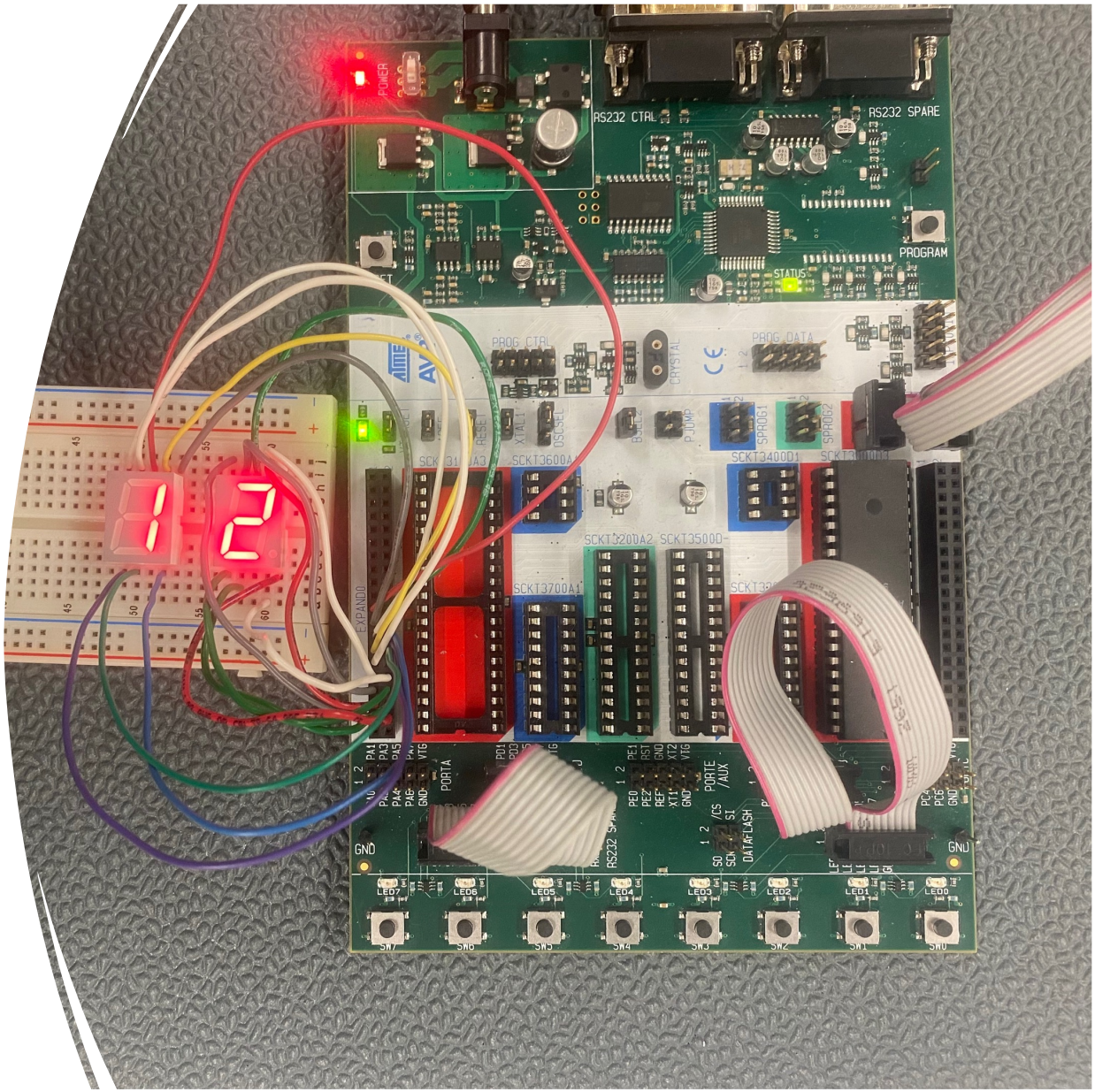
Step3: Configure Experiment

- Set up the STK500 board as in Experiment 4
- Write programs for AT90S4414 using C language
- Download the Hex files onto board after compiling your C code



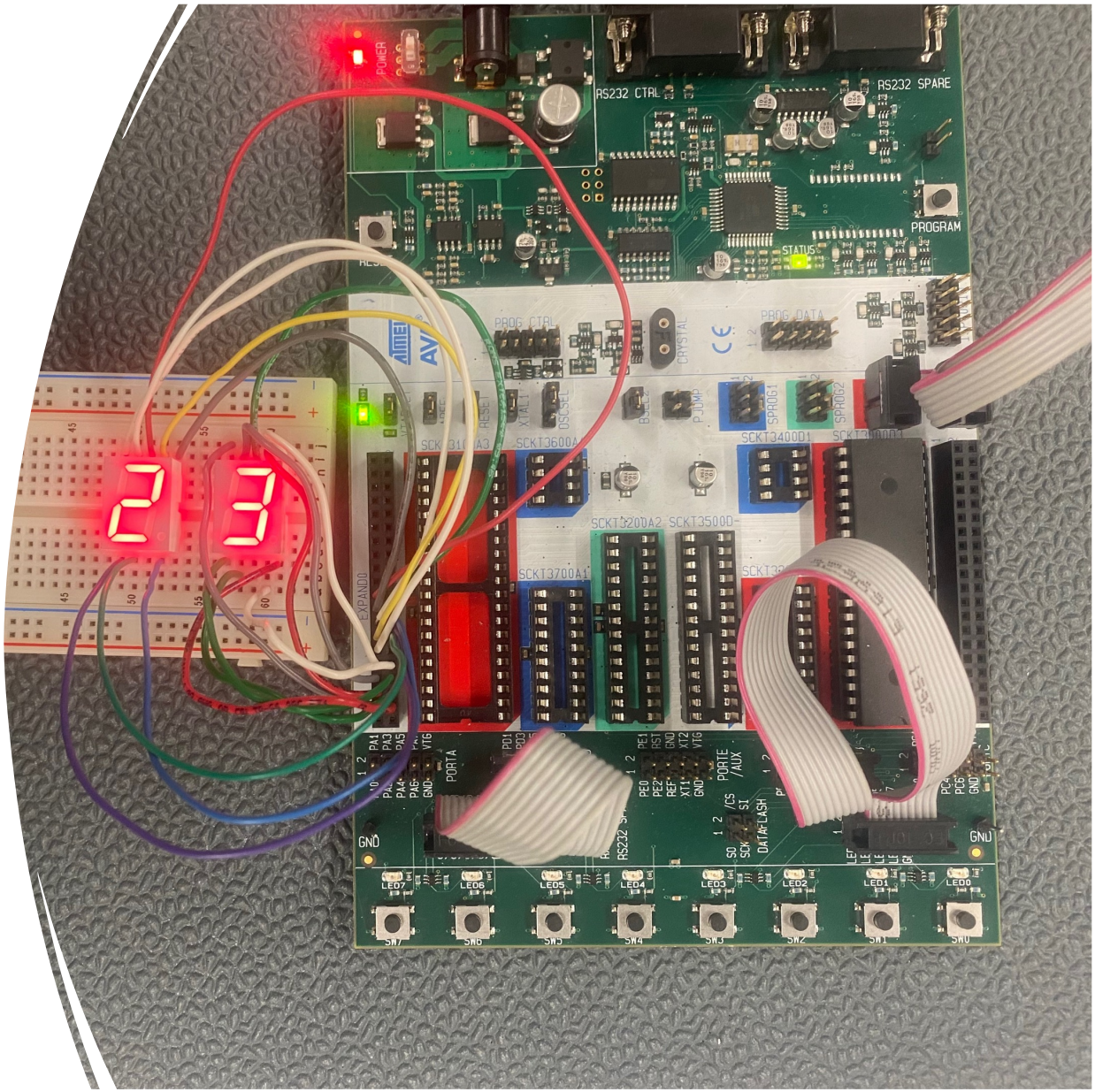
Step4: Test and Observe Experiments 11& 12 After Using Multiplexed Display

- Test if your program works correctly



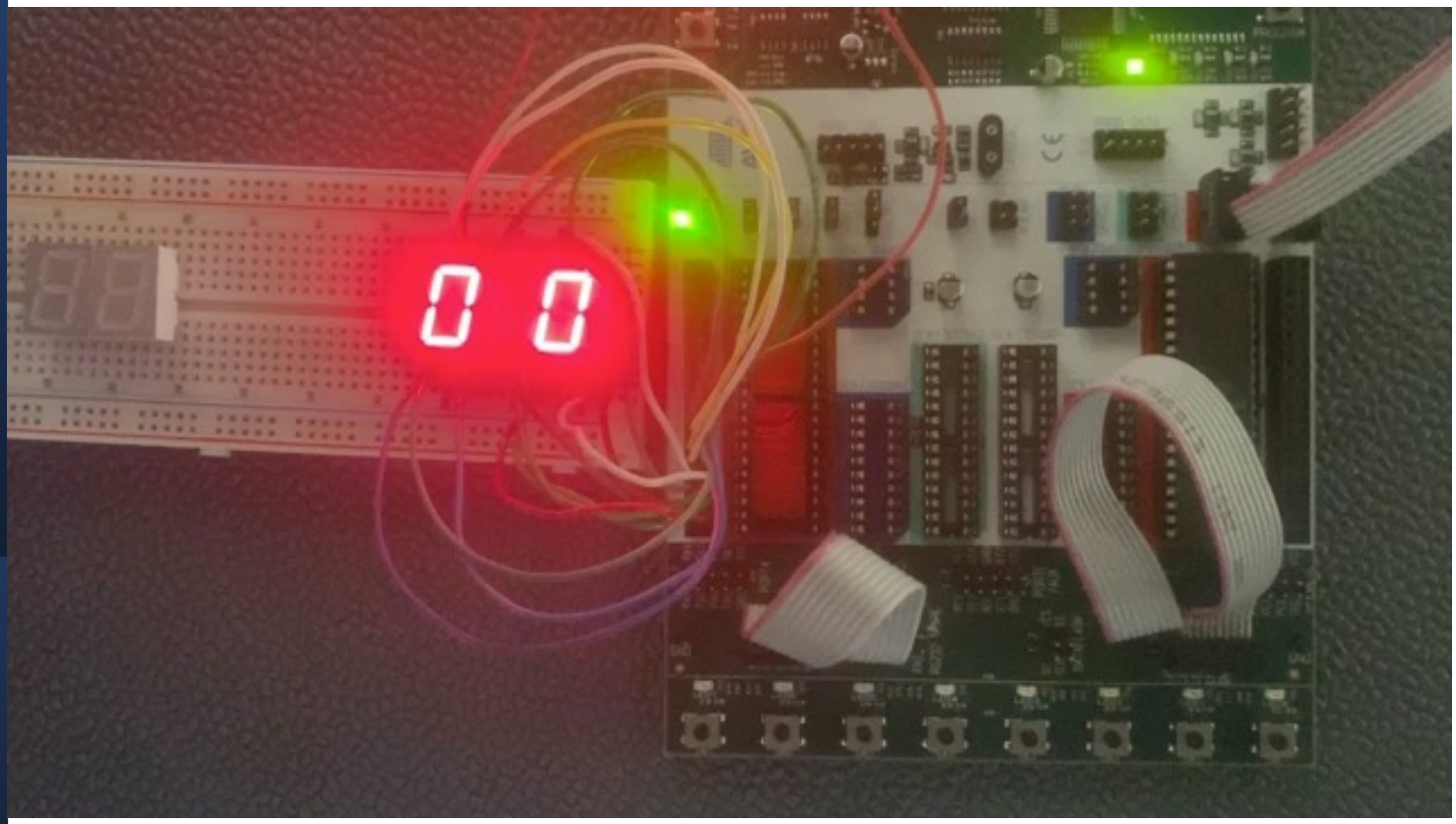
Step5: Test and Observe Experiments 11& 12 After Using Look-Up Table Stored in the Program Memory

- Test if your program works correctly



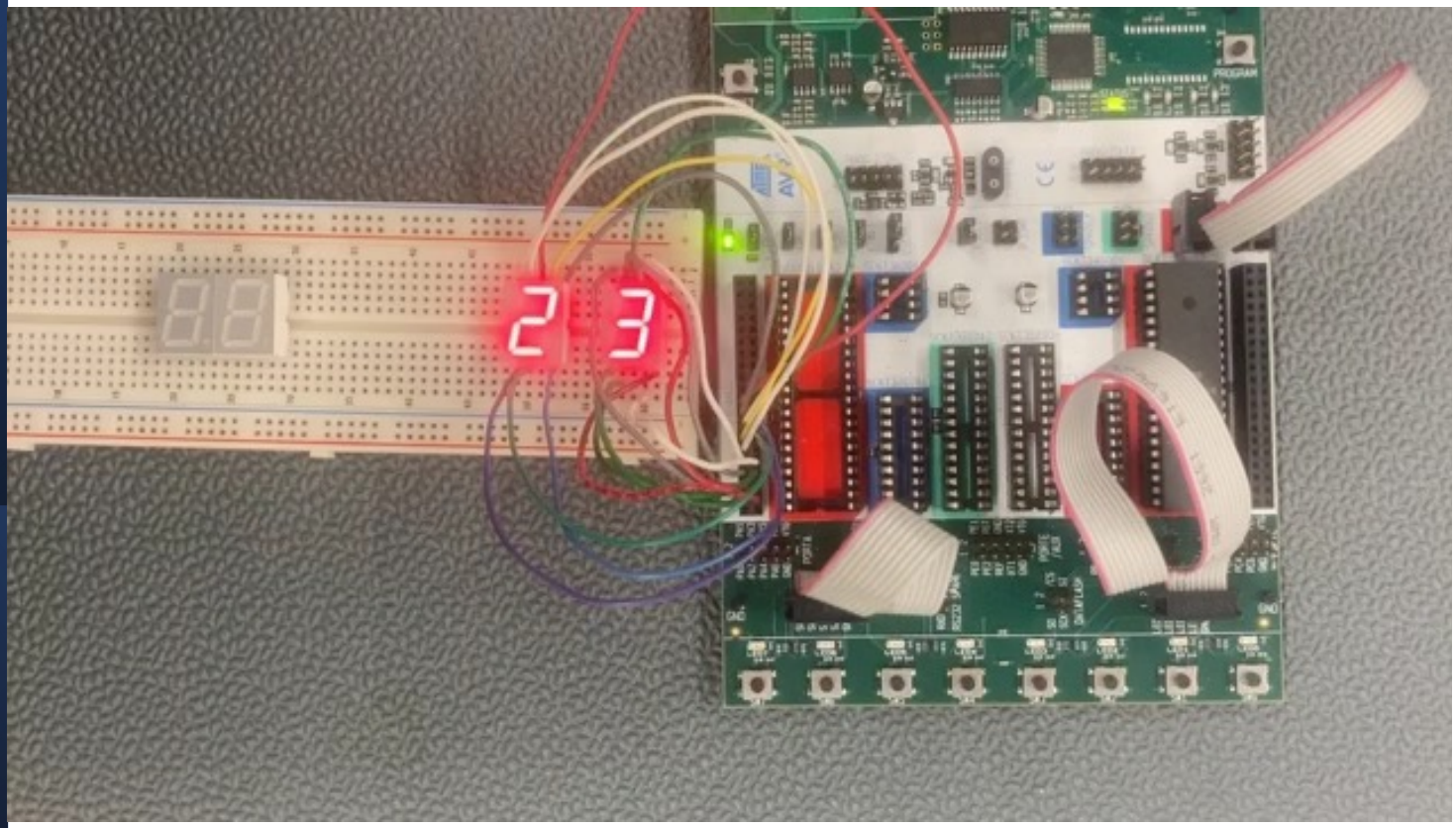
Step6: Demo Video for Experient 11&12, By Using Multiplexed Display

- Please reference the video after you finished the experiment.

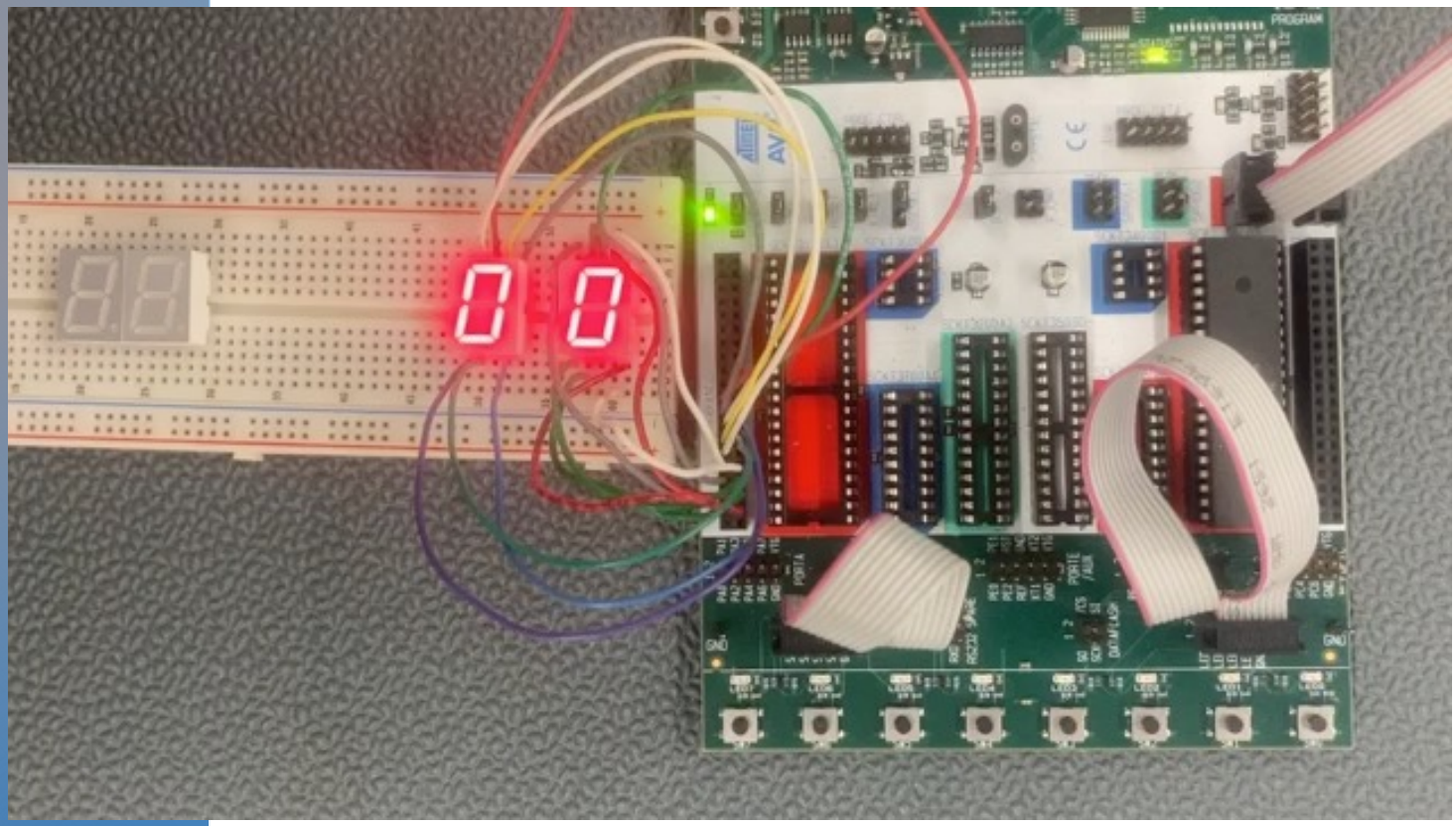


Step7: Demo Video for Experient 11, using Look-up Table Stored in the Program Memory and Multiplexed Display

- Please reference the video after you finished the experiment.



Step8: Demo Video for Experient 12, using Look-up Table Stored in the Program Memory and Multiplexed Display



- Please reference the video after you finished the experiment.

[Reference]: Schematic Diagram for Seven Segment Display

“0” – 1111 1100 -0xFC
“1” – 1100 0000 -0xC0
“2” – 1001 1110 -0x9E
“3” – 1100 1110 -0xCE
“4” – 1110 0010 -0xE2
“5” – 0110 1110 -0x6E
“6” – 0111 1110 -0x7E
“7” – 1100 1000 -0xC8
“8” – 1111 1110 -0xFE
“9” – 1110 1110 -0xEE