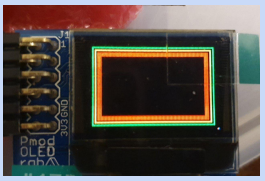
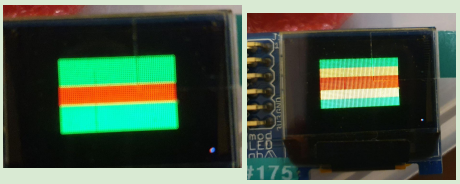
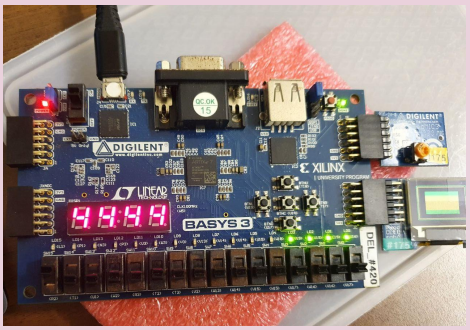
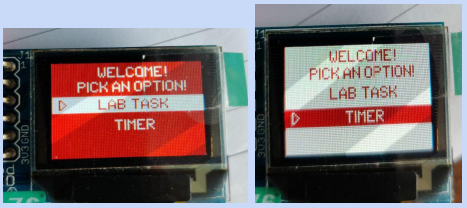
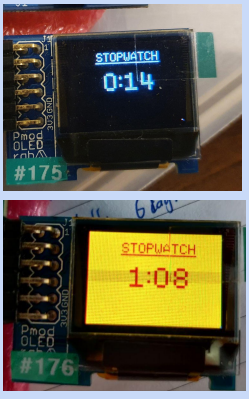
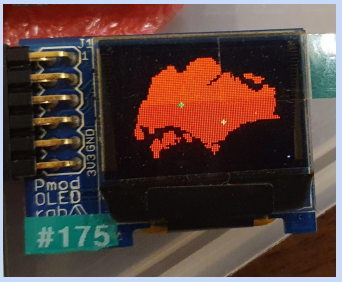
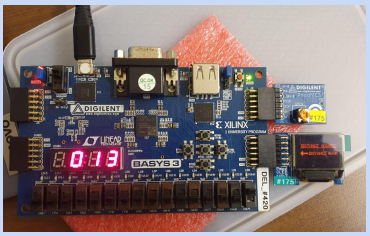
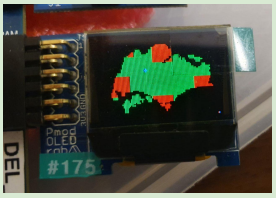
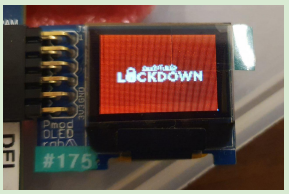
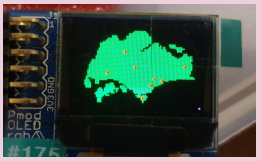
Lab session: Thursday A.M (S1_02)
Student A: Chien Jing Wei
Student B: Karthikeyan Vigneshram (A0230109W)

Feature	Feature Description	Images
Student A: Chien Jing Wei Oled Task A Borders + AVI2A	1) PBD & PBU: Navigate the menu to lab task option 2) PBC: Enter lab task function 3) SW[0] = 1 : Borders shown 4) SW[0] = 0 : Borders hidden 5) SW[14] = 1 for 2s: Return to main menu.	
Student B: Karthikeyan Vigneshram Oled Task B	1) Press PBD to navigate the menu to lab_task 2)Press PBC once lab task is reached 3) Turn on SW1 to see Oled task B 4) Turn on SW2 to hide the Orange bar and turn it off to show the Orange bar 5) Switch on SW14 for 2 seconds and turn it off again to return to the main menu.	
Team: Audio Volume Indicator	1) PBD & PBU: Navigate the menu to lab task option 2) PBC: Enter lab task function 3) SW[3] = 1 : Sound calibration - When a single bar is displayed on the 7 segment display, leave the FPGA alone to record ambient noise. - When double bars are displayed, immediately emit a loud sound from your phone near the mic to record max volume. 4) Switch on and off SW[14] quickly to redo calibration 5) SW[3] = 0 & SW[15] = 1: Display volume indicator 6) SW[14] = 1 for 2s: Return to main menu.	
Student A: Chien Jing Wei Main menu	1) Once the FPGA is programmed, the menu page will be displayed on the OLED. 2) PBD & PBU: Navigate the menu 3) PBC: Enter the selected function 4) SW[0] = 0 or 1 : Invert menu colours!	
Student A: Chien Jing Wei Stopwatch	1) PBD & PBU: Navigate the menu to stopwatch 2) PBC: Enter stopwatch function 3) SW[0] = 1, SW[1] = 0: Start the stopwatch 4) SW[0] = 0: Start the stopwatch 5) SW[1] = 1: Reset the stopwatch 6) SW[2/3/4] = 1 : Change stopwatch colour 7) SW[14] = 1 for 2s: Return to main menu. Note: Stopwatch continues even if you leave the function!	

Student A: Chien Jing Wei Distance Finder	1) PBD & PBU: Navigate the menu to distance finder option 2) PBC : Enter distance finder function 3) SW[0] = 0 : Precise cursor movement. 4) SW[0] = 1 : Fast cursor movement. 5) PBL, PBU, PBR, PBL : Move cursor. 6) PBC: lock cursor. Note: repeat step 5 and 6 for second cursor 7) PBC : Display the distance between the 2 points on the 7 segment display 8) PBC : Return to the map, replot 2 cursors 9) SW[1] = 1 : Display Singapore flag! 10) SW[14] = 1 for 2s: Return to main menu. Note: If you plotted the cursor wrongly, toggle SW[14] quickly to reset the cursors and replot the cursor positions.	 
Student B: Trace together	1) Use PBU AND PBD to navigate the menu and use PBC to select the Trace together option 2) Switch on SW0 to move the cursor around 3)Press PBC to select an area of hotspot 4) Immediately, use the mic_in to increase the size of the red hotspot 5) Once the area of hotspots combined exceeds roughly half of the area of the Singapore map, the Oled display shows that lockdown should be put in place 6) Turn on SW14 for 2 seconds and turn it off again to return to the main menu.	 
Team: Landmarks	1) PBU & PBD: Navigate the menu to Landmarks option 2) PBC : Enter Landmarks function 3) PBU, PBD, PBL and PBR: Navigate to the different landmarks 4) PBC : Display landmark on Oled screen 5) PBC: Return to the map with landmarks 6) Turn on SW14 for 2 seconds and turn it off again to return to the main menu.	 

Feedback:

- Learnt a lot about verilog from this project
- There is a steep learning curve and little guidance for more complex implementations
- Reduce the complexity of the project, or grade less strictly
- Bell curve should not be used to grade this module due to the small cohort size with the class having a higher CAP profile so at the very least grade distribution should be skewed higher.

References:

- https://github.com/nus-wira/EE2026-FPGA-Project
- https://verilogcodes.blogspot.com/2020/12/synthesizable-clocked-square-root.html
- https://www.youtube.com/watch?v=v2CM8RaEeQU&t=382s&ab_channel=SimplyEmbedded