



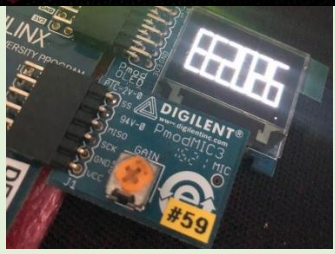
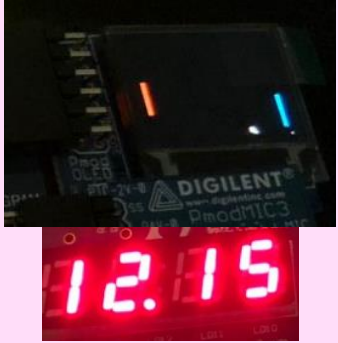
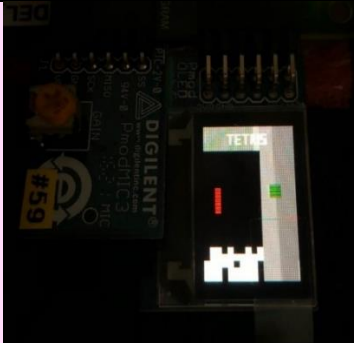


Feature	Input Devices	Feature Description	Images
Real Time Audio Volume Indicator (RTAVI)	BTNC, SW0	Shown with GV&C. SW0 is off: Peak intensity shown on 15 LEDs, and 7-segment display as 0-15. SW0 is on: mic_in shown on 12 LEDs	
Audio Wave Visualizer	BTNC, SW0, SW1	BTNC brings it back to Menu Screen. Toggle SW0 to display the two different types of audio reactor/wave. SW0 on: shows audio values above 2048 only SW0 off: shows all audio values around a middle value of 2048 SW1 off: continuous updated wave. SW1 on: freeze waveforms	
Graphical Visualizations & Configurations (GV&C)	BTNC, SW1, SW2, SW3, SW4, SW5, SW6	Shown together with RTAVI BTNC brings it back to Menu Screen. SW1 on: 1px border; SW2 on: 3px border (SW1 has priority if both turned on). SW1 and SW2 off to turn off border. SW3 to show another colour scheme; SW4 and SW3 for the third colour scheme. SW4 and SW3 off to turn off vol display. Turn on SW5 to freeze vol bar	 <i>Figure 1: Original colour scheme</i>
Menu Screen	BTNC, BTNU, BTND, BTNL, SW0	Menu screen (acts as a home screen) to switch between applications / features. BTNU & BTND to move between options and BTNC to select which feature to go to. Toggling SW0 will invert the colour scheme.	
Passcode Lock	BTNC, BTNU, BTND, BTNL, BTNR	Acts as a lock screen (Initial display). Need to input the password in the correct order (BtnU → BtnD → BtnL → BtnR) and while pressing BtnR if mic_in records something at a level of ≥ 13 it will unlock and display the menu screen. If the mic records a volume of ≥ 13 , regardless of button pressed, it will display a secret text (EE2026). To lock the "device", just press BtnL on the menu screen.	 <i>Figure 2: Secret text whenever mic_in ≥ 13</i>

Ping Pong	BTNC, BTNU, BTND, SW0, SW1, SW2	BTNC brings it back to Menu Screen. SW0 on: begin game. SW0 off: stop and reset game. Left paddle controlled by BTNU and BTND. Right paddle controlled by volume. The louder you are the higher the paddle will appear on the screen. No sound leaves paddle at bottom. BTNC will bring you back to main menu screen. SW[2:1] is 00: Normal change in x and y at 1 each, 01: x changes 2 for every y change 1, 10: x changes 3 for every y change 1, clock is slowed to ensure every unit x change takes the same time (same difficulty). Score recorded on the 7SEG display split by the decimal point.	
Tetris	BTNC, BTNU, BTND, BTNL, BTNR, SW0, SW1	BTNC brings it back to Menu Screen. Rotate board 90 degrees clockwise, BTNs are all oriented to make sure it is intuitive to play (i.e. BTNU → BTNR, BTND → BTNL). SW0 off: Normal gameplay, rotate, down, left, right using corresponding buttons. BTNL/BTNR (Tetris) (originally BTND/BTNU) to move Tetris left and right. BTNU (Tetris) to rotate Tetris. SW0 on: Pressing BTND (Tetris) will instant drop the block. Audio (e.g. clap) to make block fall faster, next block shown at the side. SW1 on/off: pause/unpause When game is over (when the player loses) a game over screen appears and asks if user wants to restart the game. To select no, can just use the new BTND/BTNU to move to that option, and BTNC to select it. To select yes however, use BTNU/BTND to hover over it and select it by saying something loudly. Pressing BTNC will not work and will bring you to the main menu.	

References

Ping-Pong: https://github.com/Asfagus/Pong_game#readme

Tetris: <https://github.com/lavingiasa/verilogTetris>

<https://github.com/rfotino/verilog-tetris>