
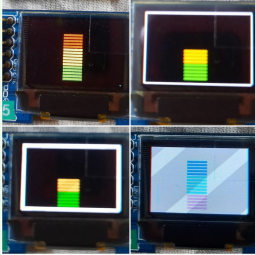

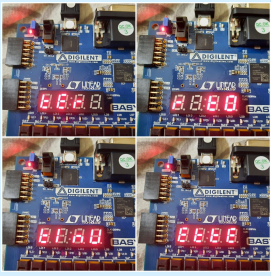



EE2026: USER GUIDE

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Monday PM Session

Feature	Feature Marks For	Input Devices	Feature Description	Images / Photos
Real-time audio volume indicator. (Basic Mode)	Vishruti	JB (mic input), SW0	SW0 is 1: mic_in shown on 12 LEDs SW0 is 0: Peak intensity shown on 16 LEDs and the volume is displayed on AN0 and AN1 of seven segments.	
Graphical visualisations and configurations. (Basic Mode)	Wamika	SW15, SW14, SW13, SW12, SW11, SW10, SW9, BTNC	SW15 is 1: 1 pixel border (colour depends on theme) else none. SW14 is 1: 3 pixel border (colour depends on theme) else none. SW13 is 1: OLED screen freezes else normal. SW12 is 0: Basic operations mode, else improvement mode. SW11 is 1: Colour theme changes to complementary theme 1 else remains normal. SW10 is 1: Colour theme changes to complementary theme 2 else remains normal. SW9 is 1: Volume bar disappears BTNC: When pressed, the OLED resets.	
Displaying HI, ME, LO on seven segments. (Improvement 1)	Vishruti	JB (mic input)	AN2 and AN3 of the seven segments will display high (HI), medium (ME) or low (LO) based on the peak intensities of sounds captured by the mic. It is active in the basic mode, secret mode and farewell mode.	
Welcome/Wait mode. (Improvement 2)	Wamika	SW12, JB (mic input)	SW12 is 1: The welcome-wait mode is activated and all improvements will continue chronologically provided SW12 is 1. Here, we begin our journey with a character named Ben coupled with the duration of the day and night changing with the volume (peak intensities).	
Scrolling Message. (Improvement 3)	Vishruti	-	A scrolling message is displayed on the seven segments in concurrence with the welcome-wait mode. It asks the user to enter a 4 letter password and this message prompts the user to long press SPACEBAR on the keyboard. This message will be displayed indefinitely unless the user presses SPACEBAR or ESC key. (Although, we recommend not to press the ESC key as of yet!)	
Transition Mode (Improvement 4)	Wamika	JB (mic input)	This mode is activated once the user presses SPACEBAR on the keyboard. The OLED displays a very disgruntled Ben in the heavy rain asking the user to get him out. This is running in concurrence with the password mode. Ben also runs faster as peak values of the sounds increase.	

Keyboard Interfacing. (Improvement 5)	Vishruti	USB (keyboard input)	Taking reference from https://github.com/Digilent/Basys-3-Keyboard.git 's code on USB-UART keyboard, enabled us to use keypresses to help enter password and change modes using ESC and SPACEBAR.	
Farewell Mode (Improvement 6)	Wamika	JB (mic input)	This mode is activated when the user long presses ESC. This is the LAST mode after SECRET MODE and if SW12 is 0 after this, the story resets. Moreover, the mode depicts a heart beating with an array of rainbow colours changing frequency according to the loudness of sound. (peak)	
Password Mode (Improvement 7)	Team	USB (keyboard)	On pressing SPACEBAR in wait-welcome mode, the seven segment display enables typing of the password through the keyboard. As displayed before, the password must be a combination of 4 letters. However, there is a catch: NO REPETITION of letters are allowed and NO SPECIAL SYMBOLS are allowed. Moreover one must long press a key to key in the letter. Once the password is entered the user must long press the enter key to enable checking of password. In the event the password is wrong, the system allows one to try indefinitely until they enter the correct password. (The correct password is spelt "v i s h")	
Secret Mode (Improvement 8)	Team	JB (mic input)	The most thrilling mode of all is the secret mode- the e-motion mode. This mode is activated when the password typed in is correct and displays varying degrees of emotions based on loudness of sounds in the surroundings. Here, one can help Ben let his emotions out by changing the intensity of sounds spoken/played into the microphone. On long pressing ESC in this mode, you can transition to farewell mode and to go back to e-motion mode, press SPACEBAR.	

References:

- (1) Digilent, "Digilent/Basys-3-Keyboard," *GitHub*. [Online]. Available: <https://github.com/Digilent/Basys-3-Keyboard.git>. [Accessed: 03-Apr-2020].
- (2) "Basys 3 Keyboard Demo," *Basys 3 Keyboard Demo [Reference.Digilentinc]*. [Online]. Available: <https://reference.digilentinc.com/learn/programmable-logic/tutorials/basys-3-keyboard-demo/start>. [Accessed: 04-Apr-2020].