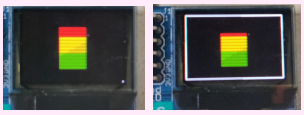
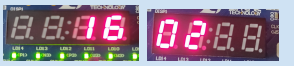
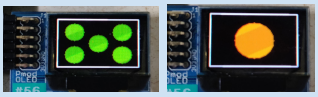
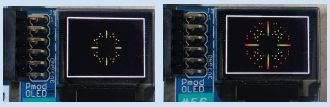
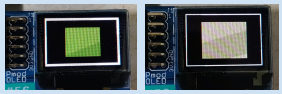
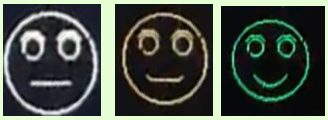
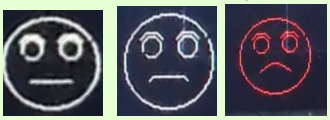
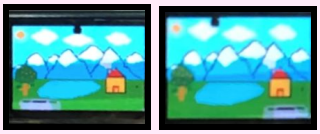
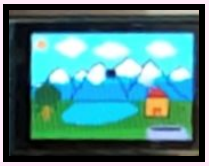
EE 2026 Project User Guide

Feature	Feature Marks For	Input Devices	Feature Description	Images
Real-Time Audio Volume Indicator	Team	SW0,SW1, SW2	**Activation:** When Switch 1 is on **LEDs:** Depending on the MIC input, if Switch 1 is on they flutter, otherwise they light up according to the sound level. **Seven Segment Display:** If switch 1 is on and switch 2 is off, they display the volume intensity.	 7-Segment in use for sound level
Graphical Visualisations and Configurations	Team	SW4, SW5, SW6 SW7, SW8, SW9	**Graphical Visualizations :** The signals from our mic are taken and processed by our oled modules so that we are able to get a segmented volume bar on the oled display. This oled changes its frame everytime the sound level of the signal changes. **Background Colour and borders** : Different combinations of switches 4 and 5 changes the background colour and also the colours of the segmented volume bar of the oled display. When switch 6 is on and switch 7 is off a thin border is displayed on the oled and when switch 6 is off and switch 7 is on a thick border is displayed on the oled. **Freeze Algorithm:** When switch 9 is on it causes the oled to freeze at the current frame it is at for the respective input it was given at that instance.	 Vertical sound bar  Vertical sound bar with different background
Sound Graphic Visualiser: Circle, Dots, Firecracker	Gunit	SW14, SW13, SW12, SW11, SW10,SW9, SW7,SW6, SW5,SW4, SW2,SW1, SW0, MIC	The mode transition between different visualizers occurs through the use of different combinations of SW15, SW14, SW13,SW12. Combinations of SW2 and SW1 switches on different anodes of the seven segment and shows the sound level at that point. **Circle** (sw[15:12] = 0010) sw[11:10] == 2'b01 shows a circle in the centre, growing according to the sound level, having 5 different colours. sw[11:110] == 2'b10 generates 5 circles, 4 at each corner and one at the centre. Each of them grows according to the surrounding volume level. SW[2:1] =11 switch on an0 and an1 **Dots** (sw[15:12] = 0011) This visualizer shows dots on the circumference of a circle, whose diameter increases with the sound level inputted by the microphone.The colour of these dots also changes with the sound level detected. **Firecracker** (sw[15:12] =0101) This visualizer shows a pattern which grows in size, and changes colour at the same time with increasing sound level.	 7-segment to display different sound levels  Different coloured circular sound visualizers  Different coloured circular dot sound visualizers  Firecracker sound visualizer 

			Square (sw[15:12] = 0110) The visualizer shows a growing square, which covers the entire oled screen at maximum sound level. SW[2:1] =11 switch on an0 and an1.	Square shape sound visualizer
Sound Emoji Reactor	Shreyas	SW15, MIC	The emoji is shown by oled display and works according to the inputs given to the microphone. If the amplitude of the signal supplied to the microphone is of an optimal level (not too loud and not too soft) then the emoji starts to change from a dull face to a smiling face. However, if the amplitude of the signal supplied to the microphone is of a high level (too loud) the emoji face changes from its current expression to a frowning face. When the emoji is happy and is in green colour, the words “nice” followed by the word “tune” are displayed on the seven segments. When the emoji is disappointed and is in red in colour, the word “too” followed by the word “loud” is displayed by the seven segments. When the emoji has a dull face no words are displayed on the seven segments and the anodes of each seven segment are at the off state.	 Transition from dull to happy face When volume level is optimal  Transition from dull face to sad face when volume is too high
The Sky Is Falling (Game)	Team	SW14, SW9 ,PBL, PBR, PBD, MIC	The name of our game is called the “The Sky Is Falling”. When SW14 is turned ON and SW9 is off the oled display presents the title screen of our game. When SW14 is ON and SW9 is ON the oled screen the oled display showcases our game environment. **Basic Controls**:The objective of our game is straightforward, there is a catcher that moves fast and continuously from left to right and you are supposed to to throw a ball from the sky such that it lands inside the container. As a player you are capable of moving the ball left and right with the help of the left and right push buttons on the basys board. In order to release the ball so that it is able to descend downwards you are required to press the down push button. When the ball is released from the sky the left and right push buttons will be disabled and you will not be able to shift the orientation of the ball while it is descending. After the ball reaches the container or the ground it will respawn back again to the top where you can attempt to aim at the container again. **Game Timer** : In order to make our game more challenging we have introduced a countdown timer.You will have to score as many points as you can in a limited time frame. We have also considered the situation that it will be difficult to focus on the game in a noisy environment. Our solution to this problem is by using our mic to detect any external sounds and using this as our input we are able to decrease the speed of our timer in loud environments making it a more fair game to play by our user. **Score Board and Result Message:** As we have stated earlier, a point is earned by the player if they manage to aim the ball into the container. The points collected by the user are displayed on the two seven segment displays. If the user manages to score 7 or more points or manages to score 10 points in the game before the timer runs out, the words “Good	 Title Screen  Shifting ball left and right  Releasing the ball  Incrementing Point System  Result Message if points < 7  Result Message if points >7 or points = 10

			Job” is displayed on the seven segments. However if the user scores less than seven points before the timer runs out, the words “nice try” is displayed on the seven segments at the end of the game. **Restart**: In order to restart the game you turn on and off SW9.	