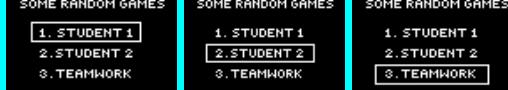
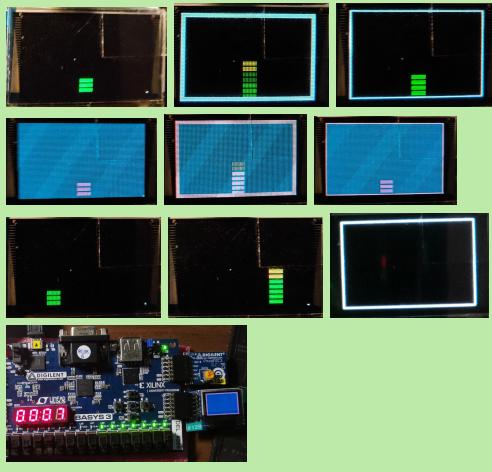


# EE2026: FPGA Design Project: Sight and Sound Entertainment System

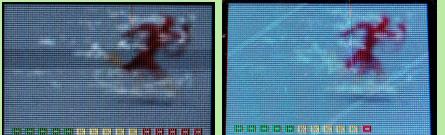
## 1. Administration detail:

	Student A	Student B
Name	Bui Quang Huy	Anderson Leong Ke Sheng
Matriculation number	A0220177M	A0223111E
Official lab session	Tuesday P.M	Tuesday P.M
Group ID	S3_19	S3_19

## 2. User guide

Feature	Feature Marks For	Input Devices	Feature Description	Images/ photos
Real-time audio volume indicator	Huy	SW0, SW1	<b>SW0 is 0:</b> mic_in shown on 12 LEDs <b>SW0 is 1:</b> Peak intensity shown on 15 LEDs (0 level does not show anything) <b>SW1 is 0:</b> sound level in digit shown on the anode <b>SW1 is 0:</b> sound level in letter is shown on the anode (5 level for each level, 0 level is still 0)	
Totoro bus stop (Student 1)	Huy	Mic	4 levels of rain according to mic input: <b>level 0:</b> no rain <b>level 1 - 5:</b> slightly animated raining, slow rain falling speed <b>level 6 - 10:</b> moderate animated raining, moderate rain falling speed <b>level 11 - 15:</b> heavy animated raining, fast rain falling speed All scene have different animation speed	
Menu	Huy	SW8, btnU, btnD, btnC,	<b>SW8 is 0:</b> shown the individual tasks <b>SW8 is 1:</b> shown the menu <b>btnU:</b> move selection up by 1 <b>btnD:</b> move selection down by 1 <b>btnC:</b> go into the mode of choice	
Graphical visualisations and configurations	Anderson	SW15, SW14, SW13, SW12, SW11, btnL, btnR, Mic	<b>SW15, SW14:</b> 3 pixel thick border if 2'b10, 1 pixel thick border if 2'b01 <b>SW13:</b> Force Border off <b>SW12 is 1:</b> Switches on alternate colour scheme <b>SW12 is 0:</b> Switches off alternate colour <b>SW11 is 1:</b> Switches off/ hide volume bar while keeping the borders and background colour the same according to the other switches <b>Mic:</b> There is a volume bar with the same number of level as the volume level. <b>btnL:</b> Volume bar shifts left by 1 pixel <b>btnR:</b> Volume bar shifts right by 1 pixel	
Run Barry Run!! (Student 2)	Anderson	Mic	<b>Level 0:</b> Lowest frame rate <b>Level 1-5:</b> Slow frame rate shows slow run <b>Level 6-10:</b> Faster frame rate for faster running <b>Level 11-15:</b> Even Faster frame with 15 being the highest and the fastest run.	

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Volume level indicator in "Run Barry Run!!" (Student 2)	Anderson	Mic	Horizontal Volume bar to allow visibility of Barry and indicates the current volume level input to user	
Ghost (Teamwork)	Team	btnU, btnD, btnL, btnR,	<b>btnU:</b> Ghost moves up <b>btnD:</b> Ghost moves down <b>btnL:</b> Ghost moves left and start rotating leftwards <b>btnR:</b> Ghost moves right and start rotating rightwards	
Man (teamwork)	Team		Man spawn to the left of the screen. Animated to run rightward. When the ghost is <b>above</b> and <b>behind</b> him, and the <b>wave touches his ear</b> , man turns into a tombstone. When the man runs off the screen, the screen turns into the gameover screen.	
Wave (Teamwork)	Team	Mic	<b>Level X:</b> Sound wave emitted from ghost with radius X	
Tombstone (Teamwork)	Team	Mic	Tombstone spawn and <b>stays still</b> for around <b>2 - 3 seconds</b> before despawning and Man starts running from the left of screen rightwards.	
Score (Teamwork)	Team		On the <b>upper right corner</b> of the screen, whenever the man respawns from the grave, a point is added.	
Gameover screen (Teamwork)	Team		Gameover screen with the total score displayed when the man <b>runs off</b> the screen or the score is <b>99</b> .	
Reset	Anderson	SW7, SW9	<b>SW7 is 1:</b> Game score Resets to <b>00</b> , returns to <b>Main Menu</b> . (Blocks entry into games) <b>SW7 is 0:</b> Allow selection of the Games <b>SW9 is 1:</b> Resets score to <b>00</b> . Position of Man will hover at spawn point at the <b>bottom left</b> , Position of Ghost hovers at <b>top left</b> <b>SW9 is 0:</b> Game <b>starts</b> , Man starts moving right, ghost is able to move according to button press.	

## 3. Feedbacks

- We like the degree of freedom given to us to explore what the OLED and the mic module can do.
- We think the individual improvement features should be assimilated with the team part (giving Q&A more weightage) as it is very hard to split tasks since no one code half a feature.
- The lab assignment could be less lengthy. Harder tasks are better than longer tasks as generating bitstream consumes and understanding tasks take a lot of our time (EE2026 takes up 30% - 50% of total school workload sometimes) and it is very stressful this way.

## 4. References

No open sources code was used