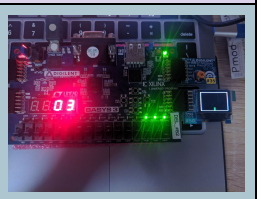
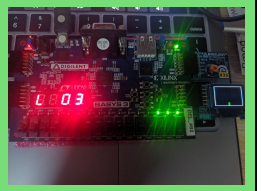
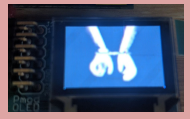
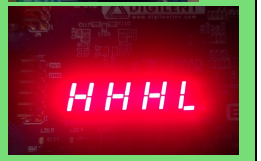
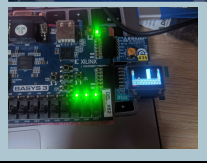
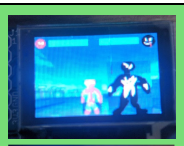
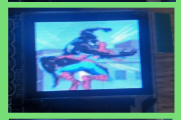
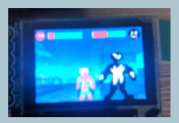
EE2026 Project Report

Feature	Feature Marks	For Input Devices	Feature Description	Images/Photos
Real-time audio volume indicator	Vishal	SW[0], SW[11]	SW[0] is 0: mic_in is shown on 16 leds SW[0] is 1: Peak intensity is shown on 16 leds S[11] is 0: Alphabets 'L', 'M', 'H' for low, medium, and high volume ranges is not shown. S[11] is 1: Alphabets 'L', 'M', 'H' for low, medium, and high volume ranges is shown.	
Graphical visualisations and configurations	Arvind	SW[12],SW[13], SW[14],SW[15]	SW[12] is zero: border is 1px SW[12] is one: border is 1px SW[13] is zero: original color theme SW[13] is one: complementary color theme SW[14] is zero: Border is shown SW[14] is one: Hide border SW[15] is zero: Volume bar is shown SW[15] is one: Hide volume bar	
Menu	Team	btnR, btnL, btnC, SW[1]	btnR, btnL: used to switch between the two modes btnC: go to selected mode SW[1] is 1: Global reset, reset back to menu screen. This can be used at any point in the program	
Handcuff game	Team	btnR, btnL,btnU, btnD,btnC,	btnR, btnL btnD, btnU: Press to release the character from handcuffs, if the required number of presses aren't enough, the game will reset back to the beginning btnC: reset the stage	 
Corridor	Arvind	PmodMIC3 , btnC	PmodMIC3: If the input of the mic is from 3 to 7, it is considered low. If the input of the mic is from 8 to 16, it is considered high. These inputs will be taken as a password to activate a trap door. btnC: reset the stage When the stage begins, there will be a random password displayed on the seven segment display, that is a combination of highs and lows. This password must be played when the guard walks over the trapdoor to make the guard fall and let the character walk on and proceed to the next level. If the password is not played during the time interval when the guard is walking on the trap door, the guard will eventually reach the main character and kill him.	   
Glass	Vishal	PmodMIC3, btnR, btnC	PmodMIC3: To break the glass wall there are two parts, part one is to play a sound of gradually increasing intensity to crack the glass, that is, it must increase from level 0-16. btnR: Once the glass is cracked, the character must be moved with btnR to run right into the glass and destroy it. He can then move off the screen to proceed to the next level btnC: reset the stage The main character needs to walk past the room to get to the next level. However, obstructing his path is a tall glass wall. In order to break the glass wall, the main character needs to play a sound that will light up each led, one by one, starting from the first one. Once all the leds have been lit, the glass cracks slightly. Once the main character moves to the right and comes into contact with the cracked glass, it will completely shatter and break into smithereens. Then, the main character can continue moving right and proceed to the next level.	   

Fighting movements and attacks	Arvind	btnR, btnU, btnL, btnD, btnC, SW[2], SW[10]	btnL: To move Spider-Man left btnU: To move Spider-Man right btnD: To move Venom left btnR: To move Venom right SW[10]: To attack Venom with Spider-Man SW[2]: To attack Spider-Man with Venom btnC: reset the stage This is a two-player game. One player assumes control of Spider-Man while the other assumes control of Venom. The players can attack one another when nearby each other by quickly switching off and on their respective switches.	  
Fighting Healthbars and Sound inputs	Vishal	PmodMIC3, btnC	PmodMIC3: If a sound greater than a certain level, something will happen to one of the combatants. btnC: reset the stage If one of the players manages to land a successful attack, the other player's health decreases. Once either player's health decreases to zero, another screen loads up which spells "KO". The Marvel Comics character Venom is an amalgamation of Eddie Brock and the Venom Symbiote. The latter's unique weakness is something that Spider-Man usually attempts to exploit in a fight. That is something that can be done in our game as well.	 

References:
Image to verilog conversion was done through a python script using imageio module
https://pypi.org/project/imageio/

Feedback:

- The open ended improvements concept was quite nice as it gave us freedom to do whatever we wanted.
- Working on the OLED display was really hard if you didn't have the display at hand as it made debugging very tedious. Thus it would be better if every student had access to one set of devices to facilitate working on the project in their free time.
- Also, it would have been more effective if both students A and B were exposed to both the OLED display and the mic from the beginning, even before the commencement of the project, to ensure that each student at least had a rudimentary idea of how the other student's device functioned. This would have also allowed them to make an informed decision about which role they wished to fulfill.

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Official lab session: Monday P.M
Group I.D: S1_20