DLD PROJECT PROPOSAL

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Project Title: Habib Quest

Project Description:

This project involves the creation of a quest-style arcade game. Players will progress through multiple minigames, with a more dramatic final level to win the game.

The game will be single-player, with user interaction via a joystick controlling game elements displayed via a VGA screen.

Here is a flowchart indicating the plan of action.

1. Input via Joystick

We will interface the joystick with the FPGA. Depending on the joystick used, we might have to use an ADC (Analog-to-Digital Converter) to reduce the complexity of commands to a simpler-to-handle on/off state. For example, the command "move right at 0.6 m/s" would be reduced to "move right."

2. FPGA Logic

Here is where we will implement the FSM (Finite State Machine). Generally, the idea is that we have a master FSM that controls level progression. Each level will have its own FSM specific to the gameplay and input required. Once the player completes every level, a victory message is displayed.

3. VGA controller

The controller will handle interfacing between the monitor and the FPGA so that humans can interact with the game.

Prototype:

These are textual descriptions of what the screens involved are.

"Random" elements are not random; they are scenarios that have been hard coded and then cycled through.

In each level, the player uses a joystick to move around, with a button on the joystick allowing you to interact with objects/attacks. Attacking changes your sprite temporarily. Three hits will eliminate an enemy.

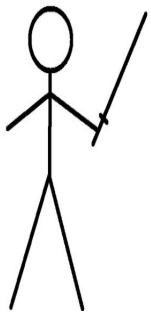
On the start screen, the attack button will initiate the game. Pressing the attack button on the death screen or victory screen will move you to the start screen.

Start screen:

A logo with Habib Quest *is displayed. Here the user can choose a level or play the levels in sequence.*

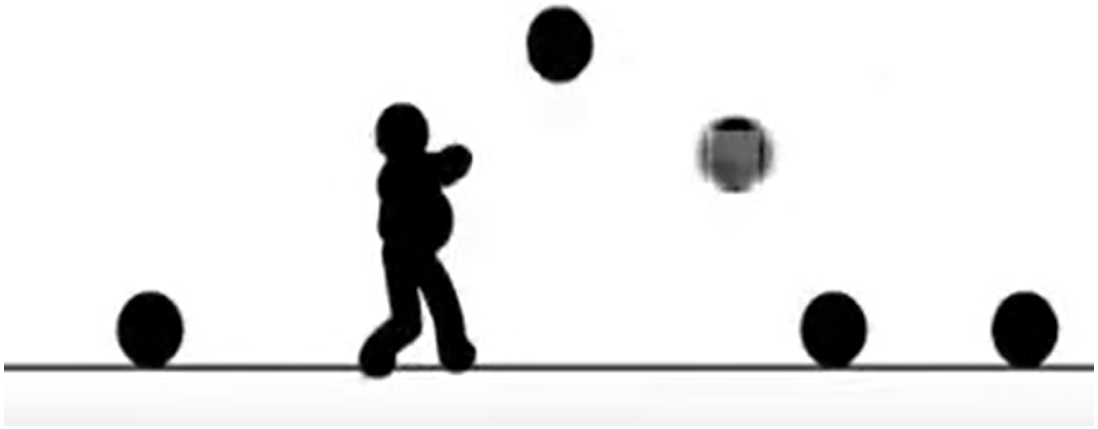
Level 1:

The user goes through a tutorial to the game controls in the form of enrolment. Random course names will appear, and they must move to them to hit them before a timer runs out. If the limit runs out, the loss screen is displayed, suggesting contacting RO. The RO can then assign you a student competitor whom you can beat to get its seat for enrollment, failure to do so will end the game and display the message: "You Lost". If the player makes it in time, a transition is initiated to level 2.



Level 2:

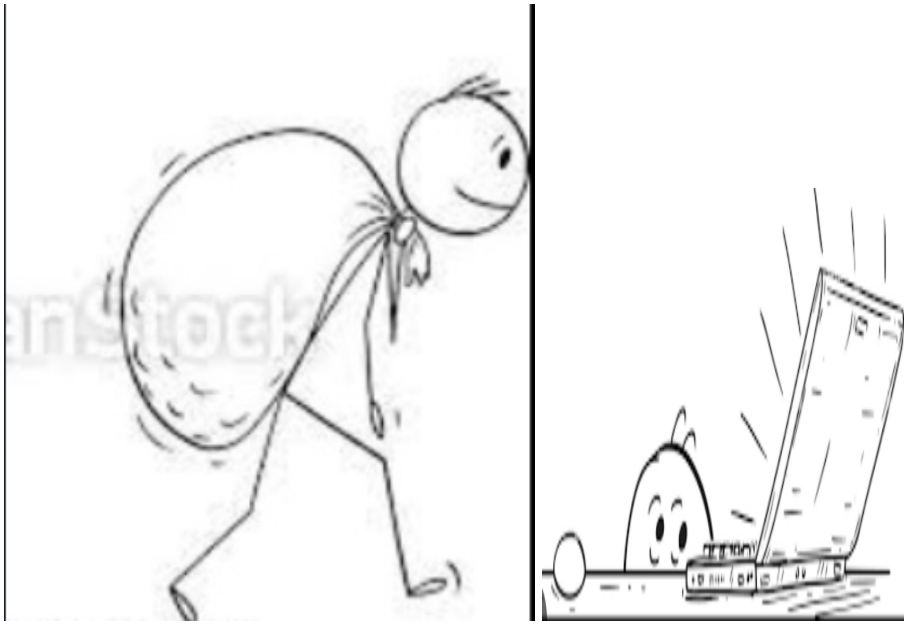
At this level, the user has to make it to class on time. The player must dodge moving balls and make it to the end of the screen before the time for attendance runs out. Once you are out of time or a ball hits you, the death screen is displayed. If you reach the end, a transition is initiated to level 3.



Level 3:

Because you have procrastinated for so long, you must get to Yohsin hall and finish your assignment in one go. However, you require your bag to be with you, so you must sneak past the librarian staff and deposit a bag in Yohsin Hall. If you cannot do it,

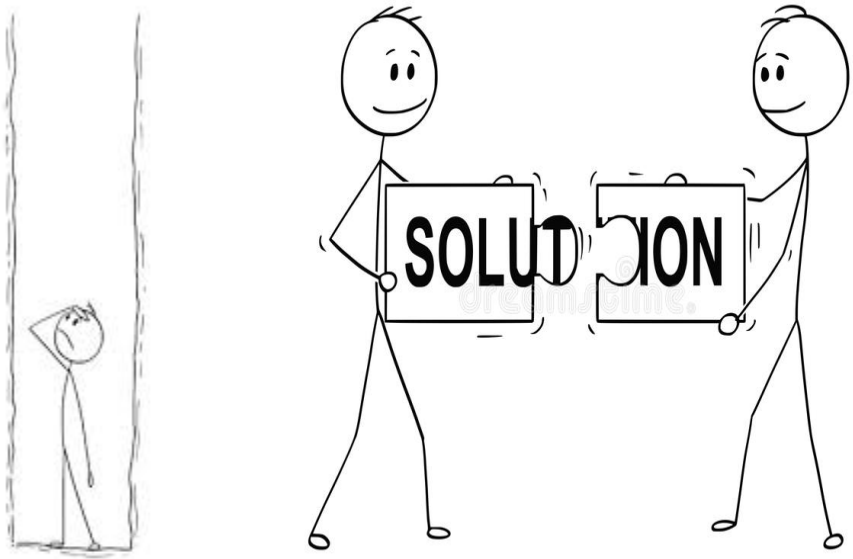
the librarian will ban you from the library, leaving your assignment incomplete. If you succeed, a transition is initiated to level 4.



Level 4:

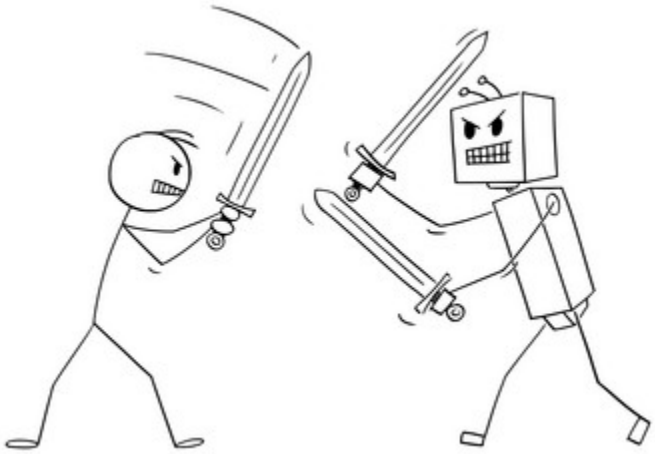
When the player reaches level 4, the screen starts to shrink with every second, leaving the finish point unreachable because the deadline is coming near with time. To get to the end, the player must complete the project before the deadline; failure will cause the screen to shrink completely, losing the game.

To complete it, the player has to team up with all of their buddies, and since there are four members in the team, the work is assigned equally to each member. The player has to get an update on how much of the work has been done by solving puzzles for each member to bring the wall back to its original state.



Final Boss:

To win, the player needs to fight the final boss who is evaluating the project. If the evaluator is defeated, the team obtains 90% of the marks on their project. If not, you fail the course and let down your teammates.



Victory screen:

A screen displaying the message You Win!

Loss screen:

A screen displaying the message You Lose.

Project Idea B: Backup Idea

Project Title: The Habibi Showdown

Project Description:

One of the most enthralling genres of video games is action games, and within its many subgenres, the one that stands out in Gen-Z nostalgia is the fighting game. With many feathers – Street Fighter, Mortal Kombat, *and* Tekken *to name a few examples – in its cap, this is possibly the most competitive and exciting subgenre we recall spending hours upon hours on, especially when we faced off against each other. And to pay tribute to the classics, that is what we intend to create as our project.*

We plan to make a Player versus Player fighting game.

Firstly, users will go through an optional tutorial to understand the game mechanics, which may include movement through a joystick, punching and kicking through separate buttons, and a special move utilized once a skill bar fills; this skill bar increases over time and through successful attacks.

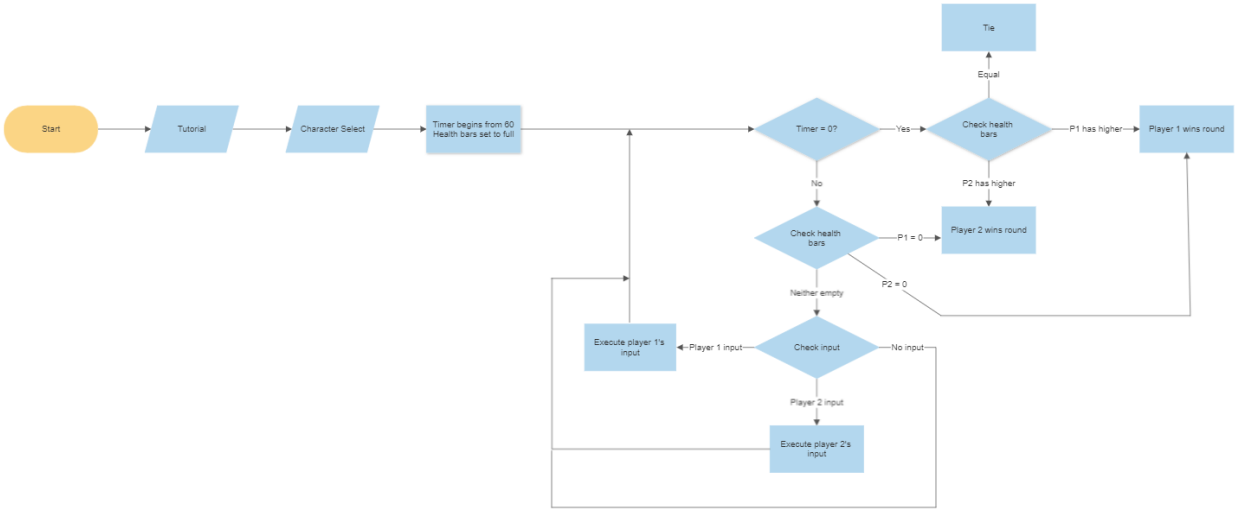
Then, from a selection of characters, users can choose their favorite one and fight each other using them. The first one who finishes off the health bar of their rival within a timer will obtain a point, and the first to get two points will be declared the winner.

If the timer runs out, the winner will be the player with a higher health bar, and if both players have an equal amount of health left, then both players will be given one point each.

Note: the fight will contain many more features than the ones in idea A.

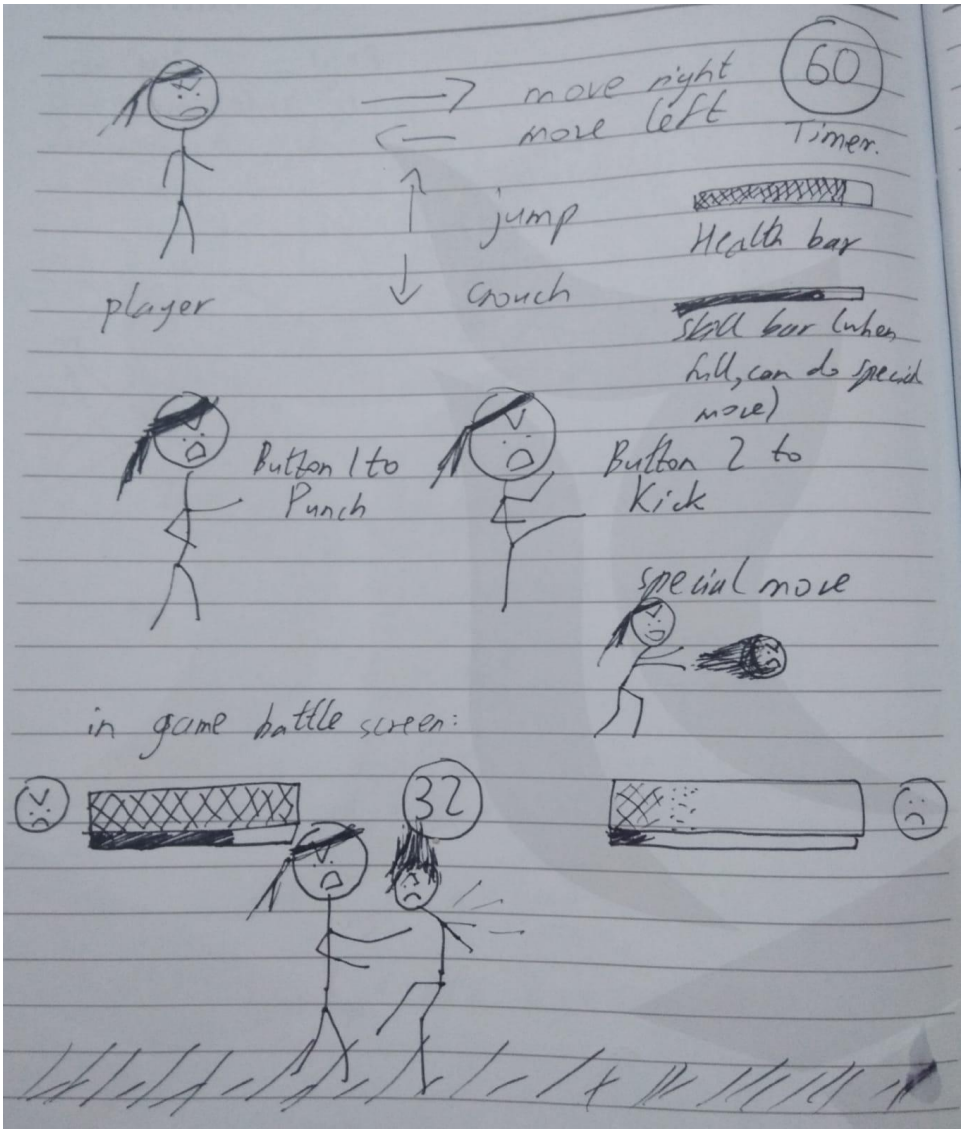
Block Diagram:

Modules flowchart



In-game flowchart

Prototype:



Tentative Division of Work:

We will assign the modules to ourselves so that each member gets equal work. For example, a member can take care of the input, another can perform the implementation, one can write the logic for the FPGA, and the final can handle output on the VGA controller and elsewhere. However, this does not mean each member must solely complete their share. If someone runs into a problem or needs advice on how they will attempt a section, we will work together to resolve the situation. For both project ideas, we will follow a similar division of work.