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**Tic-Tac-Toe**

**Mid-Project Progress Report**

**Fall 2021**

**11/2/2021**

**College of Engineering and Computing**

**Department of Electrical and Computer Engineering**

**ECE 287: Digital Systems**

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**Project Status**

We have decided to work with code we found on DigiKey for getting the VGA to start working. For it to work we needed to change a few things in their schematic which included the screen resolution and pixel clock speed. After figuring out how the code worked and was structured, we have completed a large portion of the VGA part of the code. This progress includes the VGA working on screen with the standard tic-tac-toe game board visible. Finally, for the VGA, we have discovered different ways of changing colors of both the background and our board lines. We are only slightly behind on our implementation of the game code.

**Challenges Faced**

So far, the hardest challenge of the project was getting the VGA to correctly display on-screen. Figuring out the syntax of the code along with dimensions of the screen was also a major challenge. Through trial and error, we got it to fully work the way we wanted it to. We decided it was best for us to create a structural drawing on paper to properly fit the board according to the screen pixels to improve the user experience. Figuring out the correct dimensions to perfectly fit the screen took a bit of time and math.

**[insert picture of schematic/Structural drawing]**

**Challenges Ahead**

Our next big challenge will be to implement the state machine Zack had created into VHDL code. This must be done together with the VGA code in order for us to get visuals to make the game playable. We will have to decide on what game pieces we will want to use; the easiest route will be to just make blocks with different colors to decipher between the two players. Time permitting, we will try to implement x’s and o’s for the pieces to further mimic actual tic-tac-toe. Lastly, once we are finished with those steps and getting the game to work correctly, we will add an option to expand the game board to a 5x5. When this happens, we will need to expand our code to work with this additional change.

**Updated Code Repository and Gantt Chart**

Our Gitlab code repository has been updated now fully including the following:

* Gantt chart with % status of completion
* VGA VHDL code
* Final Project proposal
* Project mid-progress proposal

**[insert updated gantt chart]**