Course Name: EMBEDDED SYSTEMS II

Course Number and Section: 14:332:493:10

Year: Fall 2021

Lab Report #: Final Project

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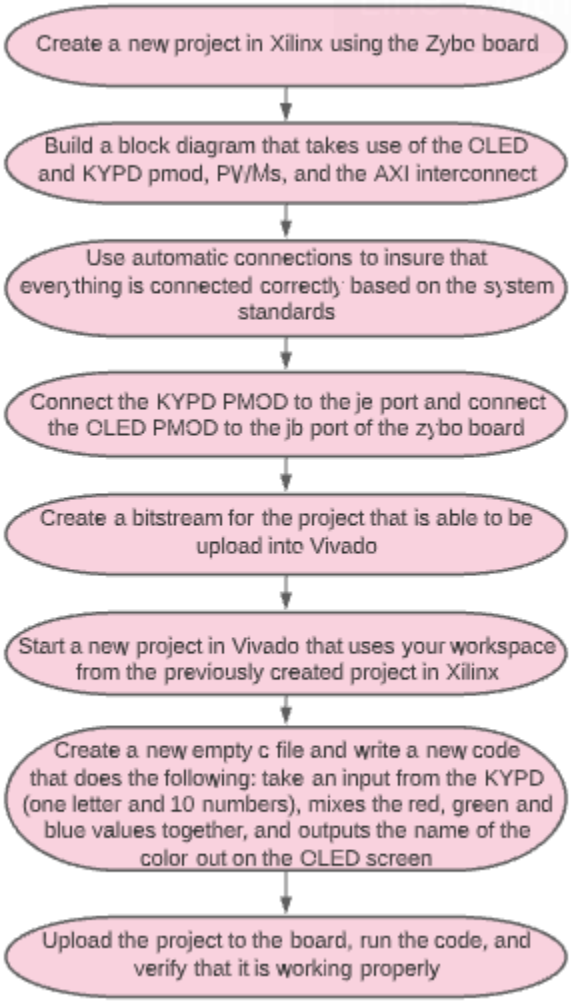
Date Submitted: December 16th, 2021

GitHub Link: https://github.com/lindsaywisner/EmbeddedFinalProject

Purpose/Objective:

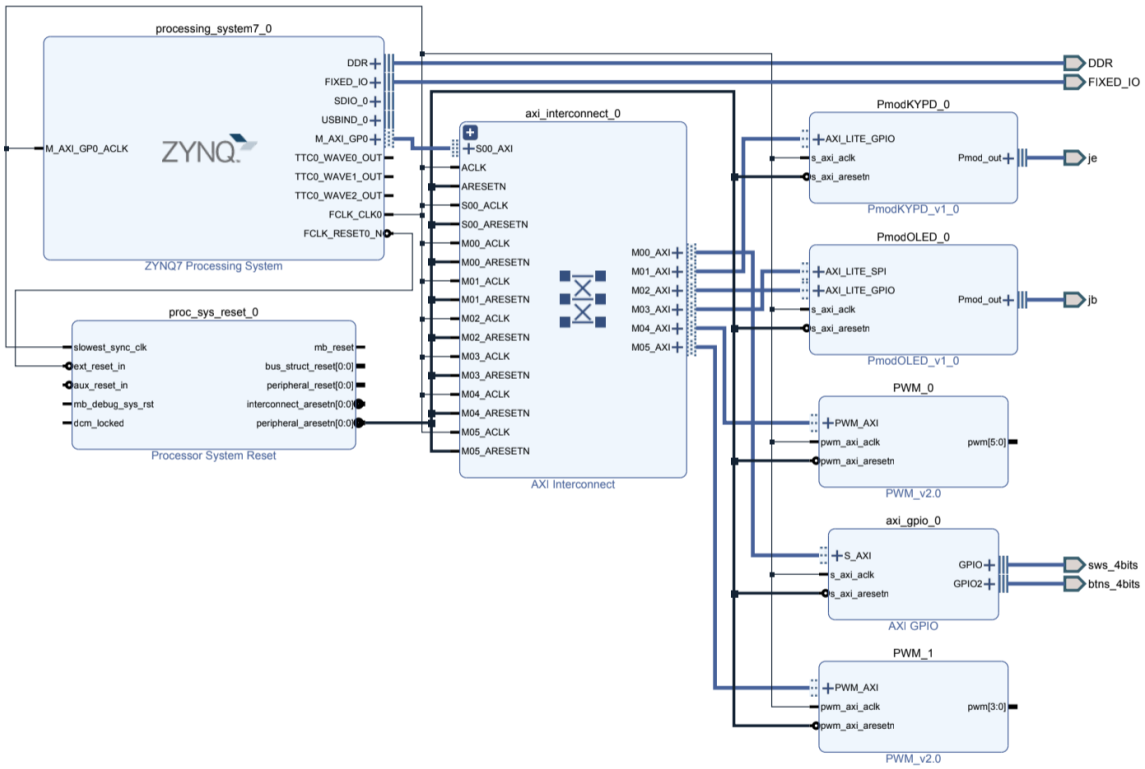
This project was conducted in hopes to create a system that would allow users to input a letter followed by 11 digits that would then print out a color after mixing three colors together. This would be done by using knowledge learned throughout the semester, including how to build and compile a block diagram, as well as write code for the diagram and upload everything to the embedded system. This specific project will expand one's knowledge of PMODs including the OLED PMOD and the KYPD PMOD. These will work together in order to take an input for the KYPD, process the information, and display it on the OLED.

Theory of Operations:

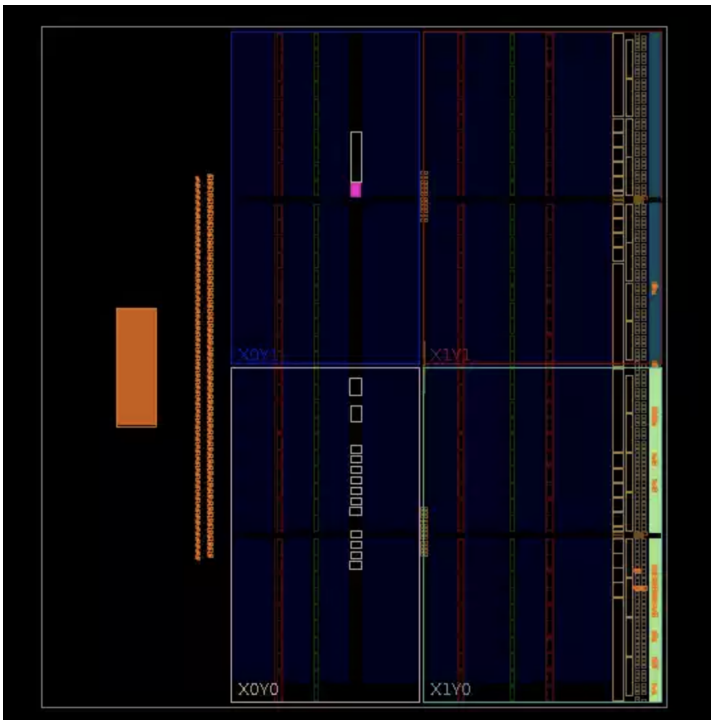


Screenshots:

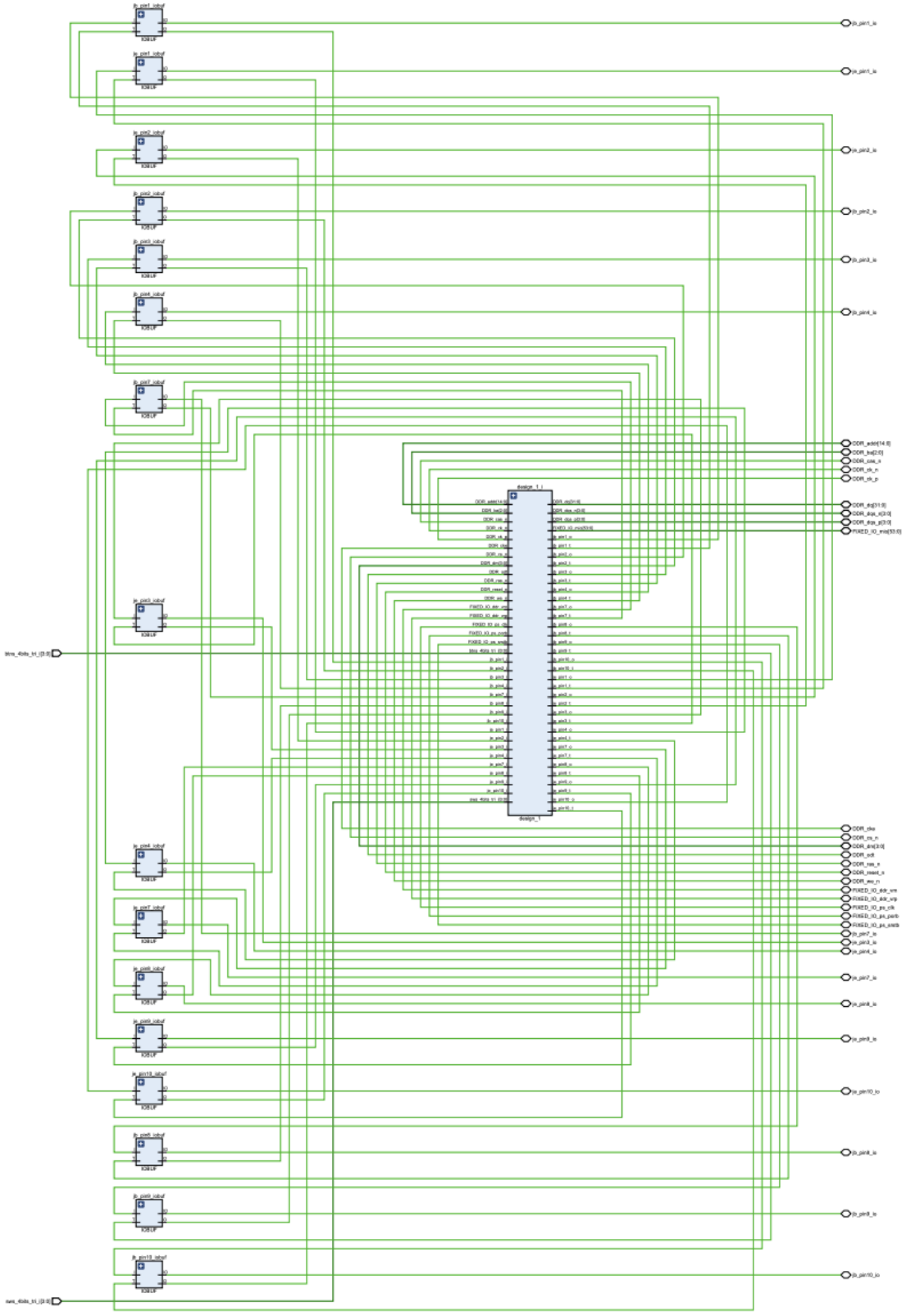
a) Block diagram



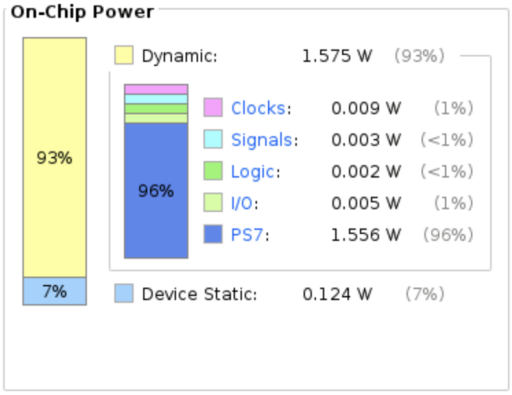
b) Device Layout



c) Elaborated Design



d) Tables


On-Chip Power
93%
7%
Dynamic: 1.575 W (93%)
96%
Clocks: 0.009 W (1%)
Signals: 0.003 W (<1%)
Logic: 0.002 W (<1%)
I/O: 0.005 W (1%)
PS7: 1.556 W (96%)
Device Static: 0.124 W (7%)

Conclusion:

With completion of this project, you will have a program that will take a letter and 11 numbers as input and return a color displayed on the OLED. The basic knowledge about these programs has been used. The creator would have created a working block diagram with PMODS and working ports, created and exported a wrapper, written a c program to compute all of the color mixes, and completed the task by uploading the code and device to the board. This project brings together the basic understandings of embedded systems, the basis of this class.