Universal Chip Programmer Project Summary

Bryson Flint, Darius Salagean and Elizabeth Lindsay

The goal of this project was to create a system that can read and record data from a chosen microcontroller. The purpose of this project is to provide a device to the project partner that can read memory of devices while showing the lack of security in these devices. The future of this project is going to be improving the system to allow different devices to be read as well to create a universal solution to security of the devices. The final version of this project will be able to read any microcontroller and provide an easy user experience through the use of a Jupyter Notebook. While all of this being done with the use of a Glasgow Explorer.

When beginning the project, the first thing established was the group's skills and preferences, then breaking up the project into different portions. One portion of the project was to inspect the data from the device and create a carrier board that easily connects the Glasgow Explorer and PIC16. The second portion is the coding using Amaranth of the Glasgow Explorer and operating the Glasgow Explorer itself. The last portion of the project was to create a GUI using Jupyter Notebook and implement libraries into the Jupyter. Once these portions of the projects were divided based on preferences and skill sets, the team met twice a week to report progress and work on problems. This ultimately allowed a healthy pattern of communication and progress on the project.

After completing the project, a few lessons were learned as a team. The biggest lesson learned is to reach out early. The Glasgow Explorer and the language it uses is relatively new, this caused for a large learning curve and required outside assistance often to provide guidance. Beyond this lesson, ordering parts early and reaching out to the team members for help is always good practice. The team honestly did not run into very many issues working together. Communication was on point and making sure the objective was clear between everyone involved. One area of improvement for the project would be to attempt a universal carrier board as well when improving the Glasgow Explorer to be Universal.

ECE Team 5 GANTT CHART

PROJECT TITLE	Universal Chip Programmer	COMPANY NAME	ECE Senior Design 1-3
PROJECT MANAGER	Elizabeth Lindsay, Bryson Flint, Darius Salagean	DATE	9/26/22

WBS NUMBER	TASK TITLE	TASK OWNER	START DATE	DUE DATE	DURATION	PCT OF TASK COMPLETE
1	**Project Initiation**					
1.1	Project Selection	Everyone	9/26/22	10/7/22	2	100%
1.2	Meet With Project Partner	Everyone	10/2/22	10/2/22	1	100%
1.3	Choose Project Options and Goals	Everyone	10/2/2022	10/14/22	1	100%
1.4	Project Document Section 1 Draft	Everyone	10/10/22	10/14/22	1	100%
1.5	Project Research (Glasgow, Jupyter)	Everyone	10/14/22	10/28/22	2	100%
2	**Initial Data Collection**					
2.1	Project Document Section 2 Draft	Everyone	11/1/22	11/4/22	1	100%
2.2	Record PIC commands	Bryson	11/15/22	11/21/22	1	100%
2.3	Make Amaranth test code	Darius	11/15/22	11/21/22	2	100%
2.4	Install and Learn Jupyter Notebook	Elizabeth	11/15/22	11/21/22	2	100%
2.5	Ordering of Glasgow Explorer	Bryson	11/21/22	11/21/22	1	100%
2.6	Final System Design	Everyone	12/2/22	12/2/22	1	100%
3	**System Verification 1**					
3.1	Draft Block Validation	Everyone	1/9/23	1/20/23	2	100%
3.2	Blocks and Interface Meeting	Everyone	1/23/23	1/23/23	1	100%
3.3	Submit PCB for manufacturing	Bryson	2/1/23	2/10/23	2	100%
3.4	Block Verification and Validation	Everyone	2/11/23	2/13/23	1	100%
3.5	Block Verification 2	Everyone	2/22/23	2/22/23	1	100%
3.6	Glasgow Training Meeting 1	Everyone	3/3/23	3/3/23	1	100%
3.7	System Verification 1	Everyone	3/8/23	3/8/23	1	100%
3.8	Glasgow Training Meeting 2	Everyone	3/17/23	3/17/23	1	100%
3.9	Make Jupyter Code Outline	Elizabeth	3/13/23	3/25/23	2	100%
4	**Final System Verification**					
4.1	Glasgow Training Meeting 3	Darius	3/31/23	3/31/23	1	100%
4.2	Document Pic commands	Bryson	4/3/23	4/14/23	2	100%
4.3	Finish Amaranth Code	Darius	4/21/23	5/5/23	2	100%
4.4	Finish Jupyter Code	Elizabeth	4/21/23	5/5/23	2	100%
4.5	Final System Implementation	Everyone	5/8/23	5/10/23	1	100%
4.6	Final System Verification	Everyone	5/10/23	5/10/23	1	100%
5	**Project Presentation**					
5.1	Finialize Poster	Everyone	5/10/23	5/12/23	1	100%
5.2	Finialize Documentation	Everyone	5/10/23	5/19/23	2	100%
5.3	Presentation Video	Everyone	5/19/23	5/23/23	2	100%
5.4	Expo	Everyone	6/9/23	6/9/23	1	100%