# PrarieLearn

### DESIGN DOCUMENT

Group Number: 33
Client: Philip Jones
Advisor: Philip Jones
Members + Roles
Carter Murawski
Chris Costa
Matt Graham
Tyler Weberski
William Hudson
Andrew Winters

Email: sdmay24-33@iastate.edu

Website: https://sdmay24-33.sd.ece.iastate.edu/

Revised: 9/7/23 Version 1

# **Executive Summary**

## Development Standards & Practices Used

List all standard circuit, hardware, software practices used in this project. List all the Engineering standards that apply to this project that were considered.

•

### **Summary of Requirements**

List all requirements as bullet points in brief.

- Refine the existing interactive questions for student feedback
- Integrate into third-party tool

## Applicable Courses from Iowa State University Curriculum

List all Iowa State University courses whose contents were applicable to your project.

• CPR E 288

# New Skills/Knowledge acquired that was not taught in courses

List all new skills/knowledge that your team acquired which was not part of your Iowa State curriculum in order to complete this project.

- Python programming
- Embedded systems programming

# **Table of Contents**

1	Team	5
1.1	Team Members	5
1.2	Required Skill Sets for Your Project	5
(if	feasible - tie them to the requirements)	5
1.3	Skill Sets covered by the Team	5
(fo	r each skill, state which team member(s) cover it)	5
1.4	Project Management Style Adopted by the team	5
1.5	Initial Project Management Roles	5
2	Introduction	5
2.1	Problem Statement	5
2,2	Requirements & Constraints	5
2.3	Engineering Standards	5
2.4	. Intended Users and Uses	6
3 Project Plan		6
3.1	Project Management/Tracking Procedures	6
3.2	Task Decomposition	6
3.3	Project Proposed Milestones, Metrics, and Evaluation Criteria	6
3.4	Project Timeline/Schedule	6
3.5	Risks And Risk Management/Mitigation	7
3.6	Personnel Effort Requirements	7
3.7	Other Resource Requirements	7
4 De	esign	8
4.1	Design Context	8
4	4.1.1 Broader Context	8
4	4.1.2 User Needs	8
4	4.1.3 Prior Work/Solutions	8
4	4.1.4 Technical Complexity	9
4.2	Design Exploration	9
	4.2.1 Design Decisions	9
4	4.2.2 Ideation	9
4	4.2.3 Decision-Making and Trade-Off	9

	4.3 Proposed Design	9
	4.3.1 Design Visual and Description	10
	4.3.2 Functionality	10
	4.3.3 Areas of Concern and Development	10
	4.4 Technology Considerations	10
	4.5 Design Analysis	10
	4.6 Design Plan	10
5	Testing	11
	5.1 Unit Testing	11
	5.2 Interface Testing	11
	5.3 Integration Testing	11
	5.4 System Testing	11
	5.5 Regression Testing	11
	5.6 Acceptance Testing	11
	5.7 Security Testing (if applicable)	11
	5.8 Results	11
(	Implementation	12
7	Professionalism	12
	7.1 Areas of Responsibility	12
	7.2 Project Specific Professional Responsibility Areas	12
	7.3 Most Applicable Professional Responsibility Area	12
8	Closing Material	12
	8.1 Discussion	12
	8.2 Conclusion	12
	8.3 References	13
	8.4 Appendices	13
	8.4.1 Team Contract	13

List of figures/tables/symbols/definitions (This should project plan)	be the similar to the

### 1 Team

#### 1.1 TEAM MEMBERS

- Carter Murawski
- CHRIS COSTA
- Matt Graham
- Tyler Weberski
- William Hudson
- Andrew Winters

### 1.2 REQUIRED SKILL SETS FOR YOUR PROJECT

**Embedded Systems Programming** 

Python/JS/C Programming Language

### 1.3 SKILL SETS COVERED BY THE TEAM

Embedded Systems Programming - Carter Murawski, Tyler Weberski, Chris Costa, Matt Graham

Python - Mitch Hudson, Carter Murawski, Matt Graham, Chris Costa

JavaScript - Mitch Hudson, Tyler Weberski, Matt Graham, Chris Costa

C - Mitch Hudson, Carter Murawski, Andrew Winters, Tyler Weberski, Matt Graham, Chris Costa

### 1.4 Project Management Style Adopted by the team

GitLab

### 1.5 Initial Project Management Roles

Project Lead: Coordination, Scheduling, assembly, and delivery of products

Customer interface: Single point of contact with the client, communicates the clients needs to team

Domain Expert: Discover and explain what team needs to know about the application area, context, and adjacent systems

Quality Assurance: ensure that delivered products accurately and completely describe/satisfy the requirements