1.1 Problem Statement

What problem is your project trying to solve? Use non-technical jargon as much as possible.

Our project is to make a more intuitive learning experience using the PrarieLearn Framework that allows students to answer questions created through the website, and eventually automatically grade them.

1.2 Requirements & Constraints

List all requirements for your project. This includes functional requirements (specification), resource requirements, qualitative aesthetics requirements, economic/market requirements, environmental requirements, UI requirements, performance requirements, legal requirements, maintainability requirements, testing requirements and any others relevant to your project. When a requirement is also a quantitative constraint, either separate it into a list of constraints, or annotate at the end of requirement as "**(constraint)**". Other requirements can be a single list or can be broken out into multiple lists based on the category.

Have the created problems be autograded accurately in order to make the learning process smooth for the students

Creating questions for exams and homework assignments must be a process that is easy to complete for instructors

Creating courses for students to join and complete assignments filled with questions

Integrate microcontroller emulators into the testing environment to accurately simulate the results of the answers given by the students.

Integrate microcontrollers into the testing environment to accurately simulate the results of the answers given by the students.

1.3 Engineering Standards

What Engineering standards are likely to apply to your project? Some standards might be built into your requirements (Use 802.11 ac wifi standard) and many others might fall out of design. For each standard listed, also provide a brief justification.

IEEE 610 Standard Glossary of Software Engineering Terminology - Having technical terms for ourselves to communicate, as well as future groups to use, will be key in order to speed up certain processes rather than describing what should be known when attempting to further this project

IEEE 830 Software Requirements Specifications - This standard is heavily involved with what we are doing now, finding out the different functional and nonfunctional requirements, as well as the use-cases.

IEEE 1016 Software Design Description - Throughout our process, documenting our designs specifically within the Prairie-Learning work will be critical as the UI look and functionality will need various documentation aspects.

IEEE 1074 Software Development Life Cycle - Going through any of the lifecycle models will be key for the flow of the project. Although we don't have a specific lifecycle model set yet, it will be a decision made soon in order to have a fluid project when software development starts

IEEE 2050 RTOS for embedded systems standard - Using this standard is with the various topics we will need to cover from the CPRE 288 Intro to embedded systems class.

Programming Languages: Python, Javascript, C - These languages will be the main focus of our software development, and being comfortable with all 3 will be vital to success for the team.

1.4 Intended Users and Uses

Who benefits from the results of your project? Who cares that it exists? How will they use it? Enumerating as many "use cases" as possible also helps you make sure that your requirements are complete (each use case may give rise to its own set of requirements).

Professor Jones and the CPR E 288 classes benefit from our project, as they would use our results to have an alternative to their homeworks with the autograder.

An instructor needs to be able to create courses for students to register for. The instructor must be able to add exams and homework assignments. The instructor must be able to create questions for both the exams and homework assignments they create.

A student must be able to register for a course. In this course, a student must be able to complete exams and homeworks assignments assigned to them by the instructor. The student should be able to see the grades they receive on these exams and homework assignments.