

**ProLang Learning & Applications: Accessible Programming Made Easy**

**Project Requirement Document**

**Andy Chow, Braceland Degenhart, Nathaniel Nguyen, Mathew Tully Moser**

**Team Chair**

**1/22/2023**

**Version 1.0**

## **Table of Contents**

1. Introduction and Purpose statement
2. Stakeholders and persona clients
3. Project Constraints
4. Overall Description
5. Business Use Cases
6. Functional Requirements
7. Non-Functional Requirements
8. Definitions and Acronyms
9. Competitive Analysis
10. References

# 1. Introduction

## **Purpose**

ProLang Learning & Applications (name tentative) is a project that aims to provide a website with information and ways to provide an accessible site with multiple languages clients can learn and practice with.

This project will make a website which contains resources and tools to provide for clients who shall use it to learn and practice their coding skills and have it be accredited to their account. It will provide information and learning tools such as articles, example questions, and various information for multiple languages that are valued within coding that were uploaded by other users.

The goal of this product is to create a website that will give an effective understanding of the coding language that the user wants to learn and give resources to do so. The product will be able to provide it in a simple and efficient way.

With the rise of a need in coding knowledge and efficiency, businesses and those looking for work, having a website that can help provide tools and resources to help learn is a resource and investment worthy product on this new and innovative product.

## 2. Stakeholders

Potential individuals who would have interest and investment in this project have been put in personas in the page below



“ I want to learn all that I can inside and outside of class ”

#### Bio

Joseph Johns is a computer science student at the University of South Carolina. He is currently in his sophomore year, and he wants to get ahead and learn more languages.

## Joseph Johns

20 • Student • Gamer

Technological Aptitude \*\*\*

#### Goals

- to learn different languages of coding
- to get ahead in school
- to become proficient in multiple languages
- get better grades in class

#### Pain Points

- lack of knowledge of languages
- lack of knowledge of programming techniques
- weak in programming
- lack of tools and tricks when programming



“ Improving the efficiency of my team by teaching them new skills is what I'm all about. ”

#### Bio

Carl is the COO of a major tech company. It's his job to improve productivity in the workplace, and he feels that by ensuring every tech employee knows the same base programming languages, miscommunication can be avoided.

## Carl Skarsgard

38 • COO at Random-Corp

Technological Aptitude \*\*\*\*\*

#### Goals

- Educate a large group at once.
- Find a price point that is on budget for his team.
- Ease of use for a variety of people.
- Quality material and effective style of education.

#### Pain Points

- Lack of ability to manage multiple users at once.
- On a timed schedule requiring users progress at similar rates.
- Cost of educating staff vs effectiveness of cost in productivity.
- Staff with prior knowledge of the material not taking it seriously vs staff with none being hung out to dry.



“ I want to learn how to code for my work and the future of me in the workspace ”

#### Bio

Chris is a person who wanted to go to college but could not afford it. He took up coding as a hobby and wanted a cheap and accessible way to learn to program so he can have those skills for future work opportunities.

## Chris Miller

22 - Aspiring Programmer

Technological Aptitude \*\*\*\*

#### Goals

- to learn information on multiple languages on a singular site
- to have a simple way to see what he is needing to correct should an error persist
- to learn how to code efficiently
- learn multiple languages in a simple way

#### Pain Points

- on a tight budget
- lack of long term time for sitting down and programming
- lack of knowledge in where to find programming resources
- a need to have a way to store what he has learned on this project

### 3. Constraints

Server availability and budgetary constraints for website hosting for this project as costs add up without investment and financial resources.

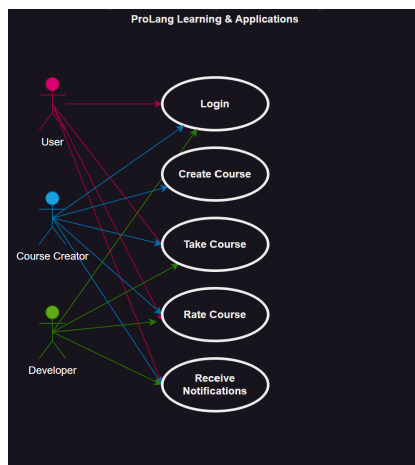
Time restraints to implement as many programming languages as possible for the website.

Time restraints and knowledge to include all information and to create practice questions and coding projects for each language provided on the site.

### 4. Overall Description

This system must operate on a computer or device that has access to a web browser, and provide a website interface that contains and hosts information on programming languages, split into separate languages. They will contain things such as keywords, questions and examples. Users can easily scroll through an easy to read and accessible interface.

### 5. Business Use Cases



## 6. Functional Requirements

[https://docs.google.com/spreadsheets/d/17qJRVAG2RAojMVLXehu\\_3f\\_HifiubnOZ00OCjcOvkOw/edit#gid=0](https://docs.google.com/spreadsheets/d/17qJRVAG2RAojMVLXehu_3f_HifiubnOZ00OCjcOvkOw/edit#gid=0)

### **Feature 1: User Account Creation**

- Requirement 1.1: The user shall be able to create their own individual account
- Requirement 1.2: The user shall be able to tie their account to an email
- Requirement 1.3: The user shall be able to input personal information (Names, email, Date of Birth)
- Requirement 1.4: Upon account creation, the system shall ask a questionnaire gauging a user's proficiency in coding
- Requirement 1.5: The user shall be able to view and take other user uploaded courses
- Requirement 1.6: The user shall be given a tutorial on the system upon account creation

### **Feature 2: Course Creation**

- Requirement 2.1: The user shall be able to make a course for the system with a created account
- Requirement 2.2: Course Makers shall have an editing mode and a "push" mode.
- Requirement 2.3: Course Makers shall be able to upload multiple lessons within their created course
- Requirement 2.4: Course Makers shall be able to add video examples within their lessons
- Requirement 2.5: The user shall be able to rate a course submitted by another user on a scale of 1 to 5
- Requirement 2.6: Course Makers shall be able to add image examples within a created course
- Requirement 2.7: Course Makers shall be able to add coding project files within a created course
- Requirement 2.8: The user shall be able to create a course of popular languages
- Requirement 2.9: Course Makers shall be able to put a description for a created course

### **Feature 3: Course Participation**

- Requirement 3.1: The user shall be able to view and take other user uploaded courses
- Requirement 3.2: The user shall be able to rate their course and have that rating be displayed upon it.
- Requirement 3.3: The system shall be implemented in a way which allows users to take any Topic lesson asynchronous to the standard progression path.
- Requirement 3.4: The system shall test users after each Topic with a small multiple choice quiz.

- Requirement 3.5: The system shall be implemented in a way that displays the percent of completion by a user within each course.
- Requirement 3.6: The user shall be able to search for a specific course using filters by rating and name.
- Requirement 3.7: The user shall be able to make comments on each course.
- Requirement 3.8: The system shall produce a sound or visual effect after the completion of a topic.
- Requirement 3.9: The system shall generate a certificate upon course completion for the user holding their name, date of completion, and the company seal.

## 7. Non-Functional Requirements

- **Underage User Protection:**
  - The system shall be implemented in such a way as to protect users under the age of 13 from sensitive content as defined by the FCC.
- **Secure Information:**
  - User Information shall be kept in a safe manner.
- **Operational Requirements:**
  - The system shall be able to run on a Windows Computer as a java file.
- **Notifications:**
  - The system shall be implemented in a way that notifies the user when they have not completed a topic recently.

## 8. Definitions and Acronyms

Course - Class that is specified in a specific programming language with lessons containing information on the specific language.

Topic - One concept at a time (if statement, for/while loop, etc)

Course Upload - Users can upload their own courses and lessons to the site

Course Maker - A user that is certified to create courses on this website.

## 9. Competitive Analysis

Companies:	Pros:	Cons:	What this tells us:
COURSERA	Coursera seems to have an immensely wide breadth of topics allowing for anyone who searches their site for a general topic to most likely be met with a possible course to teach them. Offers free courses.	Coursera's design allows for a wide range of people to add a course to their site, which adds into question the regulatory nature of their courses and how reliable the quality of them is.	Diverse topics targets a wide spread of people but doesn't add competitiveness to training corporations or large groups of people.
CodeAcademy	Instantly offers a new user either a recommended path or the free will to search themselves. This choice instantly lets the user get to what they really want, whether they're browsing at the moment or searching for a specific course and lets them not get delayed by a built in system. Offers Free Courses.	Text based explanation of their courses, which for the analytically minded is good and dandy, but doesn't necessarily draw the attention of the average user to the most important things	A good path towards figuring out what a potential user wants is a great way to get them learning right away. However, just because the user arrives at the location of what they would most likely want, you still need to design it in a way that it looks appealing to the user.
Kenzie Academy	Backed by large corporation Amazon. Offers College course credit for completing the program. Focuses on Java development for software engineering as a sole topic. Certification on completion	Only one language, java, is covered so could be missing potential customers. No free trial.	Kind of the Opposite of Coursera, who has diversified their options to numerous languages and topics beyond just teaching a coding language. College credit transferring over is a huge angle though that should be looked into.



This analysis suggests we cover multiple languages for users with a user friendly interface and allow users to upload classes of multiple languages, but add systems so that top courses remain informative and descriptive with each learning segment and resource. Users should be able to have content available for free, and provide other forms of learning to the format such as video examples or images for a user to interact with and learn hands on with. Users should have a way to interact specifically with what content they need for their goal, and be put on a course to obtain their goal.

## 10. References

Used for competitive market analysis.

Codeacademy: <https://www.codecademy.com/>

Coursera: <https://www.coursera.org/>

Kenzie Academy: <https://go.kenzie.academy/software/engineering/>