Learning Management System

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Version 2.0

STEM Cookies

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Introduction

Purpose

  This product is designed to provide certification in proficiency for computer programming languages. Our product accomplishes this goal by providing users with courses whose curriculum is designed to teach the user the specifics of many programming languages. Proficiency certification provides both job applicants and hiring managers with a means to ensure their ability to perform well in the computer programming industry. While certification courses already exist for computer programming, we aim to deliver to the software engineering community a benchmark status for computer programmers through certification. We hope to achieve this goal by ensuring the course curriculum is thorough, though easily understood by our users, and we are able to improve understanding of software to users of any background and language.

Scope

  This document will include:

- Stakeholders involved in process of creation

- Persona for our average user and target demographic

- Important constraints and possible issues as well as solutions to both

- Detailed description of software and function

- Requirements of the system, both functional and non-functional

- Competitive analysis to indicate unique characteristics of our product

Stakeholders

A list of general stakeholders include but are not limited to:

- College/university students

- People who have never coded before

- People with coding experience wanting to learn a new language

- Businesses looking for training opportunities

- Software developers looking to obtain certifications

Kehlani Brooks

age: **20**

residence: **Columbia, South Carolina**

education: **Undergraduate at the University of South Carolina**

occupation: **Waitress**

marital status: **Single**

"Life does not come with a book, you have to write your own."

Kehlani is a junior at the University of South Carolina studying English with a Writing concentration . As a self-taught developer, Kehlani has had trouble finding a service to learn knew programming languages, as they seem to all be tailored towards beginners. Her hobbies include reading, coding, and exploring.

Comfort With Technology
INTERNET

SOFTWARE

MOBILE APPS

SOCIAL NETWORK

Criteria For Success:
A place where she can brush up on her learned skills while taking on new challenges in similar fields

Needs
- A service to allow seasoned developers learn new languages
- A personalized learning experience

Wants
- An uncomplicated method to learn coding
- Quicker feedback response from programmers

Values
- Creativity
- Personality
- Honesty

Fears
- Losing her passions
- Not being able to learn new things due to lack of time

MOBILITY LABS

Scenario 1:
Kehlani has been having trouble finding an app for urban exploring, so she decides to make one herself. The learning systems she has tried using in the past assume that she is a complete beginner, and she does not have time to go through the basics step by step. She signs up for a service that allows her to set her level of coding experience and filter out beginner courses. After answering a few questions, she was able to get some exercises to help refresh her memory.

Scenario 2:
Kehlani has been asked by her boss to help remake the restaurant's website. Kehlani has tried to explain to her boss that she "doesn't know HTML," she accepts the assignment after several "I thought you could code"s comments. Kehlani signs up for a service and filters her search to courses focused on website development. In minutes, she is able to get a crash course on the core languages she needs and is able to overhaul the website along the way.

Scenario 3:
After learning about a new app, Kehlani decides that she wants to write an article about its development on her tech blog. Not one to skip on research, Kehlani looks into the languages that the app is being developed in, and finds that some of the open source code is in a language she's very familiar with, but when searching for a course on the language for her readers to look into, she was not able to find anything. Kehlani decides that she will work on a crash course on the language to help others understand her writing and the language as a whole.

George Vesper

age: **17**
residence: **Reno, Nevada**
education: **High School Diploma**
occupation: **Full-Time Student**
marital status: **Single**

"Opportunity is the intersection of luck and preparation."

George spends most of his day on the internet on his computer or phone when he is not in school. George's internet activities include watching videos, reading on various websites, and any school work he has. School for George is a normal bus ride, going to classes, then going home or hanging out with friends.
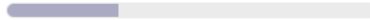
Comfort With Technology

INTERNET

SOFTWARE

MOBILE APPS

SOCIAL NETWORK

Criteria For Success:

Tangible skills that George can see in order to feel secure about his future career.

Needs

- A service that can let him learn skills that interest him
- A service that offers skills to learn that are applicable in a career
- A service that is not too expensive to use

Wants

- A service that is easy to navigate around
- A service that is flexible in time commitment
- A way to apply the skills learned

Values

- A clear path or progression
- Beginner friendly content

Fears

- Not having employable skills
- Not being able to get a job or get into college after high school

MOBILITY LABS

Scenario 1:

George has been watching videos of indie games on YouTube, and decides he wants to make a game of his own. He does some research and finds the most common languages for game development. He makes an account on a service and, with answering a few questions, he is able to get started with an introduction course on the programming language with an emphasis on game development.

Scenario 2:

After talking with his high school counselor, George decides to learn a programming language to boost his college application. He searches "Best programming languages for colleges" and has only found clickbait articles with no actual substance. He gets frustrated after finding no clear answer and decides to just dive into the content. He creates an account and starts searching for courses, and is relieved to find that he is able to filter the courses by what his needs are.

Scenario 3:

George creates music with his friends and posts it online. He wants to create a website for his band, but all of the "quick and easy" options bombard him with paywalls and pop-ups to give them his personal information. He decides to create the website himself. He signs up to a service to learn the basics of HTML and other tools for website development, and is able to work through the content at his own pace.

Brian Sweeney

age: **42**

residence: **Staten Island, New York**

education: **MBA**

occupation: **CEO of Digital Solutions**

marital status: **Married**

"High expectations are the key to absolutely everything."

Brian is a true businessman at heart. He joined on the local tech start-up with a friend of his out of college. Business has been successful, and he has an amazing staff, but Brian has trouble trouble connecting with them and the work that they do, since the most he uses his technology for is social networking. Brian spends his free time either with his family, watching tv, or going out to the bar with his friends.
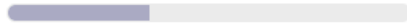
Comfort With Technology

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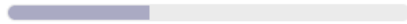
SOFTWARE

MOBILE APPS

SOCIAL NETWORK

Criteria For Success:

A better understanding of his employees' work, as well as a way for them to better their skills

Needs

- A service with an easy to understand interface
- A service that allows him to filter courses based on knowledge level

Wants

- A service that allows him to pick up a programming language with little prior knowledge
- A service that allows his employees to learn a new language or improve on a known language with out having to "go back to basics"

Values

- Self-Determination
- Teamwork

Fears

- Having a lack of understanding of his employees' work and causing conflict
- Professional development in his workplace becoming stagnant

MOBILITY LABS

Scenario 1:

Brian needs to port a software provided by the company from one language to another, but many of the employees are not trained in both languages. Brian is able to find a way to set his employees up with a self-paced training in the new language and are able to convert the code before the deadline.

Scenario 2:

To better understand the workflow of his employees, Brian decides to learn the programming language his employees use most at work. By answering a few questions, he's able to find a beginner programming course without being overwhelmed.

Scenario 3:

Brian has hired a software developer, but he does not have a language commonly used at the company in his skill set. Brian is able to set the new hire up with training for the new hire that does not take him through material he already knows.

Constraints

Functional

Program must be written and compiled in java.

Schedule

Product must be completed within allotted amount of time (TBD).

Monetary

Project budget is $0

Overall Description

Our product must provide both knowledge of function and instructions for programming in a variety of languages for both beginner and intermediate computer programmers. Thus, the product's curriculum must be compiled from a variety of outlets of information on programming languages.

The product must be easily accessible to users and recognized by software engineers as reliable in providing quality education to users. The product must be able to evaluate a user's experience in coding and suggest courses according to said user's ability. Lastly, the product must store a user's work and certifications under their account.

Business Case Diagram
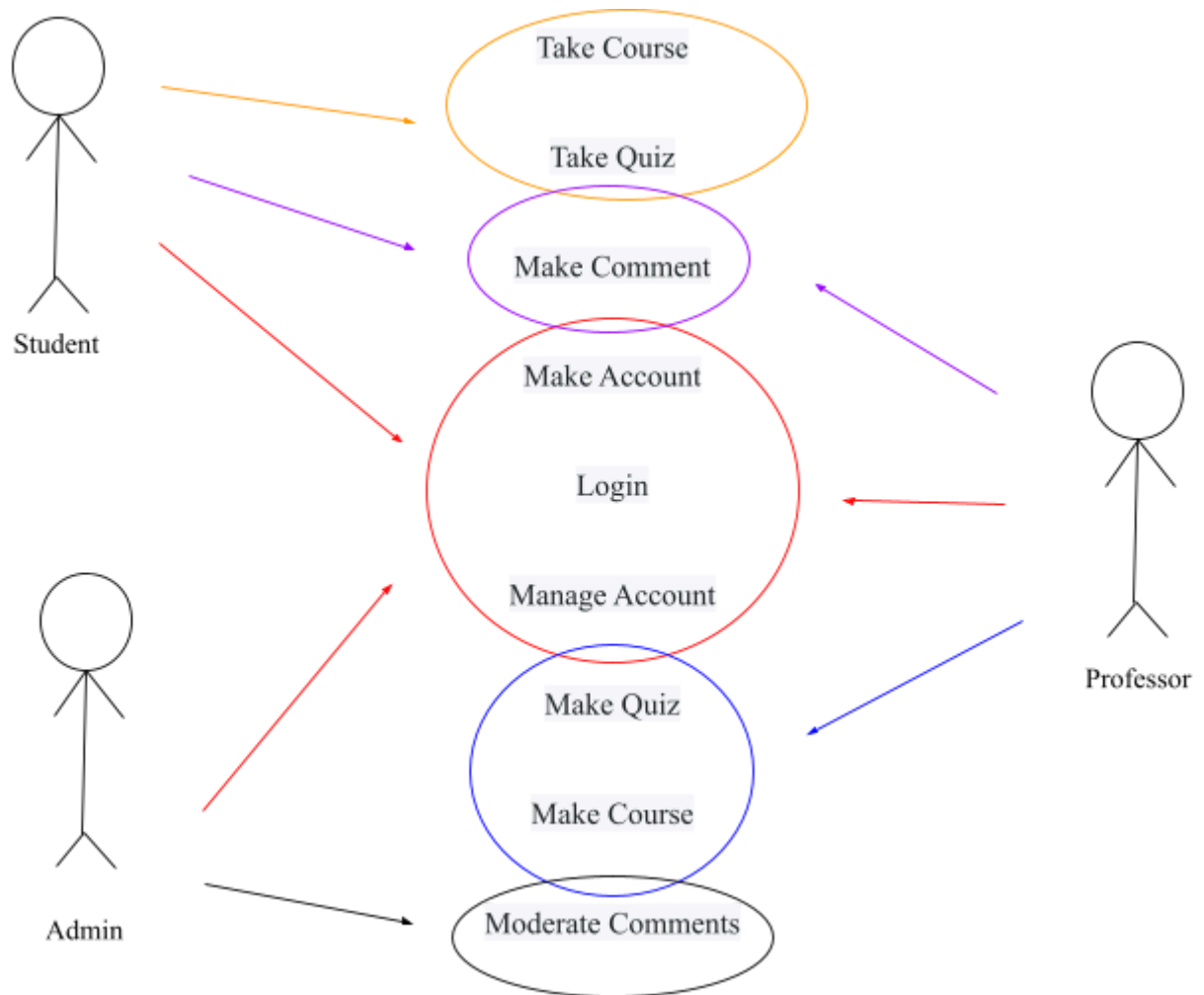
Functional Requirements

1. **Account Specifications:**
   1.1. Users shall have a unique login for their account using an email and password.
   1.2. Users without a user login shall be prompted to create an account.
   1.2.1. The user shall provide an email and password.
   1.2.2. The user shall complete an initial assessment to assess skill level.
   1.2.3. The user shall have course creator permissions after being vetted by an administrator.
   1.3. Passwords shall be created when a user creates an account.
   1.3.1. passwords must:
      - be at least 8 characters in length
      - include a capital letter
      - include a lowercase letter
      - include a non character symbol
   1.4. New users shall be required to complete a questionnaire in order to assess their current coding skill level.

2. **Course Creation:**
   2.1. Courses shall be created by accounts with course creator permissions.
   2.1.1. Course curriculum shall be dictated by the teacher.
   2.1.2. Courses shall have a:
   2.1.3. Name
   2.1.4. Course Description
   2.1.5. At least 1 module
   2.2. The user shall be able to create a module for their course.
   2.2.1. Modules shall have a:
      - Name
      - Module Description
      - At least 1 Section of Course Content
      - An end-of-module Quiz
   2.3. Quizzes shall be created by teachers.
   2.3.1. Quizzes shall be given at specific milestones within the course.

3. Course Taking:
- 3.1.   Quizzes shall stand as milestones of completion for courses.
  - 3.1.1.   Users shall be able to exit and return to a course, resuming progress from their last completed quiz.
  - 3.1.2.   Quizzes shall require a minimum score of 80 percent to be passed.
  - 3.1.3.   Users shall be given three opportunities to retake and pass a quiz.
- 3.2.   Users shall be able to see what has been accomplished and what remains of their education program to be completed.
- 3.3.   The system shall report the percentage of the course completed to the user.
- 3.4.   Users shall have access to previously completed certificates and history of their work.
- 3.5.   Certification in courses shall be given to users who:
  - 3.5.1.   complete the entirety of the coursework for their given course
  - 3.5.2.   pass all quizzes within the course.
  - 3.5.3.   pass a final cumulative examination of the course.
- 3.6.   Teachers shall have access to the course progress of users taking his/her created course.

4. Comment Section:
- 4.1.   Users shall be able to leave comments on courses to improve course quality and provide feedback to the teacher/creator of the course.
- 4.2.   Comments containing explicit language, threats, and bullying shall not be tolerated and shall result in deletion of the comment and a suspension of the user. This includes:
  - Profanity
  - Sexually explicit or suggestive comments
  - Threats of violence
  - Comments meant to target a marginalized group (Racism, Sexism, Homophobia, Transphobia, etc.)
- 4.3.   Administrative users shall be able to moderate comment sections on the modules of courses.
- 4.4.   Users shall be able to leave replies to comments.

5. Navigation:
- 5.1.   A search tool shall be accessible to all users allowing them to search by course name or teacher.

6. Gamification:
- 6.1. The system shall keep a point score based on the amount of modules completed in a course.
    - 6.1.1. The user shall receive one point upon a module being completed.
- 6.2. The system shall keep track of user progress and award badges on completion of defined milestones
    - 6.2.1. Badges shall be a short description of completed milestone
    - 6.2.2. Milestones shall be set at the discretion of the module creator
- 6.3. The system shall keep track of the days the user has logged on to the system
    - 6.3.1. Log-ins shall be recorded once per day

Non-Functional Requirements

1. Look and Feel   1.1. The system shall have a clean and simple user interface
2. Usability   2.1. The system shall provide accessibility options
3. Performance   3.1. The system shall be able to be run on modern computer hardware.

4. Maintainability and Support
   4.1. The system shall have monthly maintenance on the 3rd Saturday of each month from 2am to 5 am EST.
   4.2. The system shall be able to be run on modern Windows, Linux, and MacOS systems.

5. Security Requirement   5.1. The system shall be keep user information in a secure database

6. Legal
   6.1. The system shall be compliant with any federal laws that are applicable
   6.2. The software shall be compliant with the Children's Online Privacy Protection Rule ("COPPA")

Competitive Analysis

	Udacity
Strengths	Some of the platform's strengths is its ease of use with informative and easily navigable pages along with an intuitive interface. Content on Udacity is backed by quality assurance and has a variety of courses to choose from. While most courses cost money, Udacity also provides many free courses as well. The learning content is varied by having real world projects access to mentors and a network of fellow students.
Weaknesses	Lacks significant support for free courses and prices for courses become high with no in between free and high priced. User interfaces may not be visually appealing to some consumers.
Audience/Focus	Udacity seems to target college students, adults, or anyone preparing for a career. The level of learning material is high and paid courses price out most people who do not have a decent amount of money to spend. Additionally, courses lean towards career focused rather than academically focused.

	Skillshare
Strengths	The main strength of Skillshare is its focus on the variety of courses it offers for both professional and personal endeavors. One of skillshares strengths is its ease of use with user friendly interfaces and concise information on courses with videos. The quality of the content on Skillshare is rated positive by most users. They also include projects to learn the material and some are team based. While quality is up to the instructor of a course, user consensus is that the quality of courses is up to the task.
Weaknesses	A weakness for Skillshare is in its pricing. It does not offer many courses for free users, but the issue really comes in with issues with the company charging the consumer even after they cancel their subscription. Some users may not like some features of the video player involving user comments and timestamps in the timeline of the video.
Audience/Focus	The main target audience for Skillshare is to reach as many people as possible. This is due to no particular focus on any one topic to educate users along with a reasonable monthly subscription.

	The Great Courses Plus
Strengths	One of The Great Courses Plus' strengths is its ease of navigation with its category feature and its interactable menu. The quality of the learning content in The Great Courses Plus is backed by the company hiring professors of various specialties to create courses for the website. The main appeal that The Great Courses Plus pushes is its mobile support with a steady stream of new courses to choose from.
Weaknesses	The user interface may not be visually appealing in some parts of the service. The pricing on The Great Courses Plus has a higher monthly subscription than some other similar services. Only has a video medium to learn from and optional downloadable manual.
Audience/Focus	The target audience is for anyone, particularly mobile users, who wants to learn knowledge or a new skill. No particular focus on any one subject.

	Strengths	Weaknesses	Focus
Udacity	+Ease of use +Quality Assurance +Varied approach in teaching	-Pricing -Visual appeal	Professionals, college students, career preppers
Skillshare	+Variety of courses +Ease of use +Community approved quality	-Lack of free courses -Video player	Appeal to most demographics
The Great Courses Plus	+Ease of use +Professor level quality +Mobile Support	-Visual appeal -Pricing -Single approach to teaching	Most demographics with emphasis on mobile users

Through competitive analysis it is determined that the industry standard in learning management systems is to have ease of use for consumers and have the quality of the material backed by some factor involving community trust or credible content creators. It is also determined that a common issue is the design of the product to be visually appealing to the consumer. Another factor is that competitors either specialize in subjects offered or go for having a variety of subjects to offer. Additionally, competing products have some distinguishing feature or strength to appeal to the consumer. Ideally our product will be easy to use while also being visually engaging and appealing to the user. Additionally, it will also have a distinguishing strength to differentiate from the competition.