

Coding Development LMS Requirements – Part I

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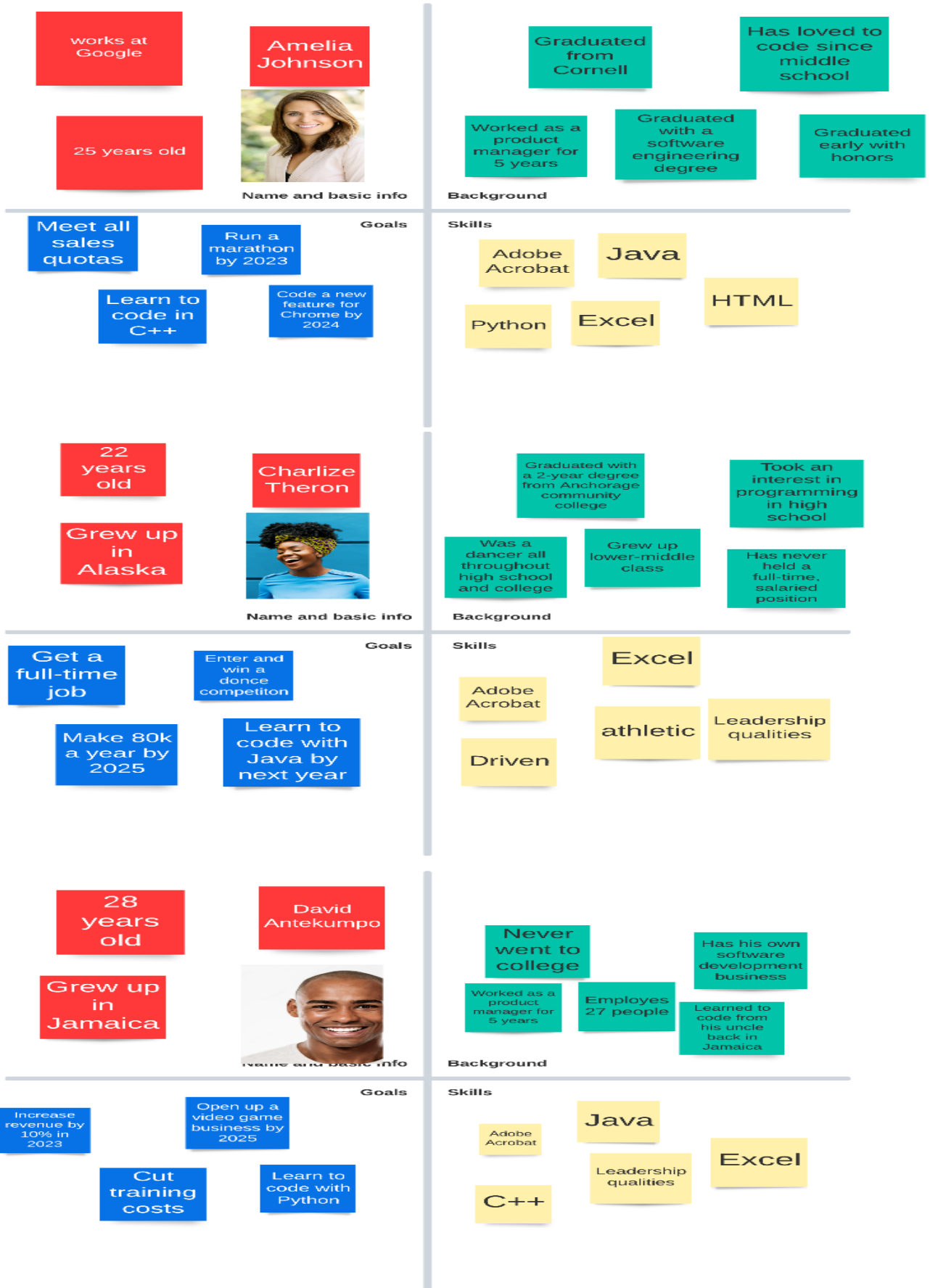
Version 1

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Introduction

The purpose of this project is to build an LMS that streamlines learning for certain coding languages. The goal of this project is to create a system that effectively teaches the user the ins and outs of coding in several languages, tracks their learning, and provides useful feedback on their education process. This software can be used by a casual user who wants to learn more about computers or a firm looking to cut down on training costs. Firms who operate in software development or cybersecurity fields usually have lengthy training programs for new recruits. These industries come with a high risk; the smallest errors could result in casualty. We hope to lower the cost and time commitment it takes to train developers, as well as improve the quality of education.



Restrains

We have a budget of \$0. We have a time constraint of about 2-3 months, and we have to juggle other projects while working on this one. We have never worked on an LMS before, so we may have to take some liberties in interpreting the specifications.

Overall Description

Users will be able to access our LMS by downloading the program onto their local devices.

The user will be able to access multiple learning courses for popular programming languages such as Java, Python, C, and C++. Learning courses will have a course curriculum which gives the user access to information and education about the programming language as well various assessments to test the users knowledge. Users will only be able to move on in a course if they are able to pass the assessment. The program will be able to store and access data collected on the users current learning progress in different courses.

Competitive Analysis

Competitor 1: Pluralsight

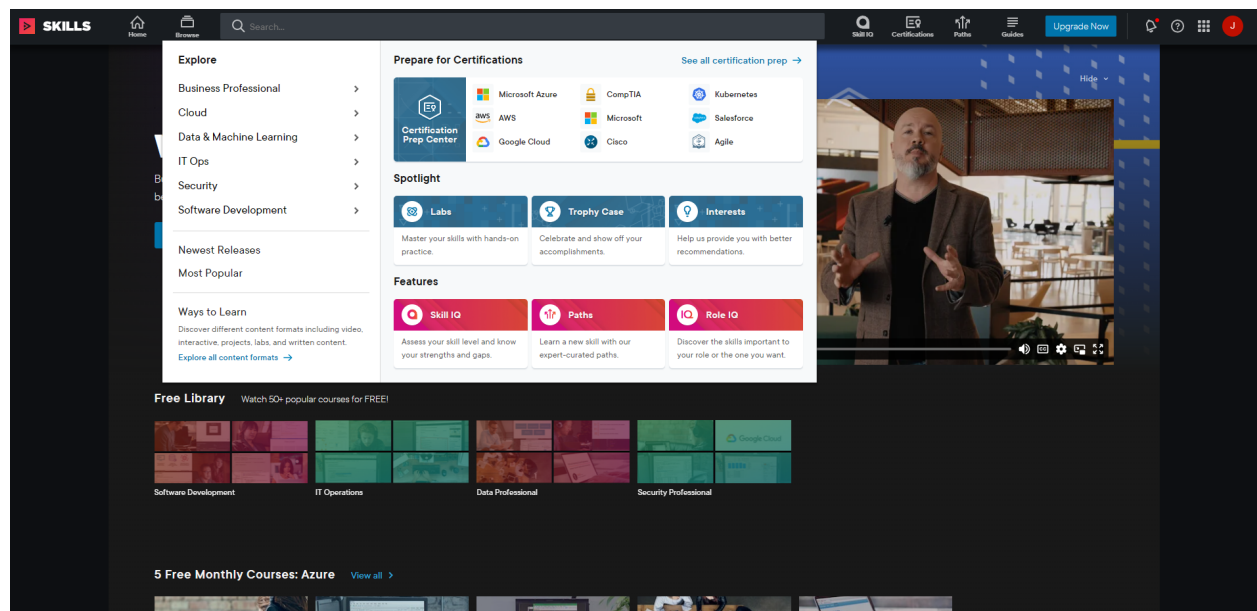
<https://www.pluralsight.com/>

“The technology workforce development company”

Target Audience

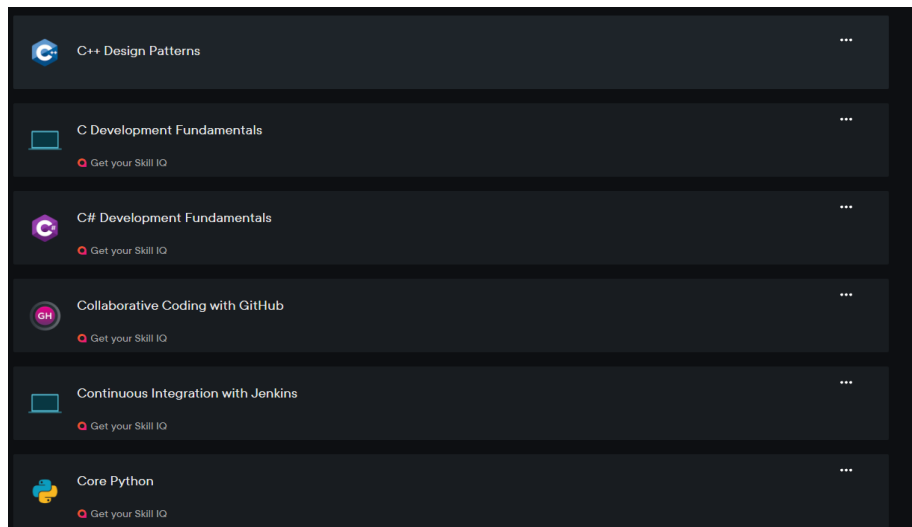
- Primarily targeting enterprise audience
- Software development teams
- Businesses
- University Students

User Home Page



The home page for a user contains a browse button where the user is able to look through available course paths and certifications. For the software development tab, it is organized by use case, including examples such as game development, web development, and general languages. They also include popular course paths, as well as new releases, which may be appealing to users.

Learning Paths



One of the main selling points of Pluralsight is their Learning Paths. These paths are curated for specific goals such as developing api's with ASP.NET or learning C# development fundamentals. A potential problem with pluralsight's learning paths is the sheer volume of paths to choose from. It may be too difficult for the end user to find a course that fits their needs with the amount of options present.

Course View

C# Fundamentals
by Scott Allen

This course gives you everything you need to become a productive C# developer on any platform. Learn the basics of reading and writing C# code in your own applications.

[Resume Course](#) [Bookmark](#) [Add to Channel](#) [Download Course](#) [Schedule Reminder](#)

Table of contents	Description	Transcript	Exercise files	Discussion	Learning Check	Related Courses
Course Overview						1m 27s
Introducing C# and .NET						46m 3s
Learning the C# Syntax						35m 39s
Working with Classes and Objects						45m 7s
Testing Your Code						35m 13s
Working with Reference Types and Value Types						45m 20s
Controlling the Flow of Execution						43m 46s

Course author
Scott Allen
Scott has worked on everything from 8-bit embedded devices to large scale web sites during his 15+ years in commercial software development. Since 2001, Scott has focused on server-side and web.

Course info
Level: Beginner
Rating: ★★★★★ (1409)
My rating: ★★★★★
Duration: 6h 5m
Released: 15 Apr 2019

Share course
[f](#) [t](#) [in](#)

The main course view provides information about the course author, rating of the course, estimated completion time, and more. The course is cleanly organized and provides a table of contents, description, exercise files, and practice questions to test the user's skills.

Course Features

[Bookmark](#) [Add to Channel](#) [Download Course](#) [Schedule Reminder](#)

Each course has a few accessibility features to help improve the user's learning experience. The user can bookmark a course to show up on their homepage, download the course for their offline course viewer, and even schedule reminders for tasks that will integrate with outlook and google calendars. The add to channel feature allows the user to add content in a personalized group to share with others who may be interested in following the same path.

Course Video View

The view when selecting a video provides a table of contents with timestamps to navigate through the section in the video.

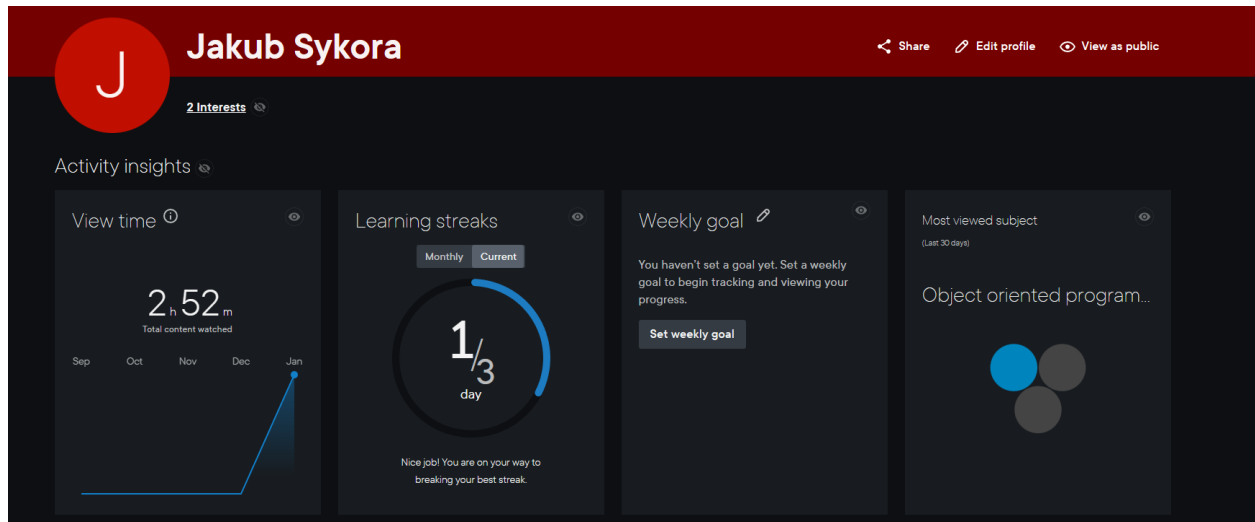
Additionally, there is a notes tab for the user to write important information they might want to study or keep track of.

C# Fundamentals
By Scott Allen

Table of Contents **Notes**

- 1 Course Overview 1m 27s
- 2 Introducing C# and .NET 46m 3s
- Introduction 1m 0s
- Downloading .NET for Window... 2m 34s
- Understanding .NET and .NET ... 1m 43s
- Understanding the .NET Runti... 2m 37s

User Profile



The user profile page contains statistics about your learning such as view time, most viewed subject, as well as badges the user has earned from progressing through a course. On this page, the user can set a weekly goal for time spent learning on the service.

Competitor 2: Coursera

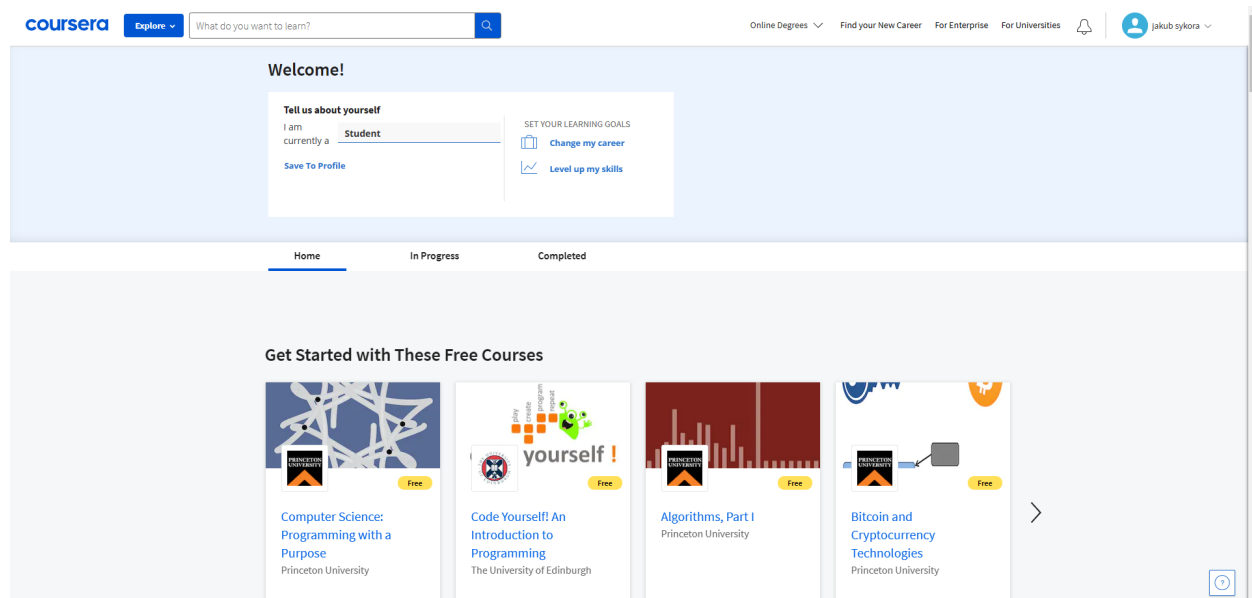
<https://www.coursera.org/>

“We envision a world where anyone, anywhere has the power to transform their life through learning.”

Target Audience

- Primarily targeting individuals
- Students
- People looking for a career change
- Businesses

User Home Page



The main user homepage has a simple UI with recommended courses at the bottom along with a search bar at the top to search for published courses. The UI is easy to navigate and isn't cluttered with too much information.

Course Paths

The find your new career button along the top, along with the search bar, are the main methods for searching for a learning path to follow. There aren't a great deal of options, however many of the options provide multiple different courses that fit the career path. The main course search bar allows the user to search for individual topics

Course View



Introduction to User Experience Design
Georgia Institute of Technology

Course Material

- Week 1
- Week 2
- Week 3
- Week 4
- Week 5

Grades

Notes

Discussion Forums

Messages 2

Course Info

Welcome

1h 10m of readings left

What you should know before you start this course

Introduction and Course Overview

Focus of this course
Reading • 10 min

Syllabus
Reading • 10 min

Consent Form
Reading • 10 min

4 Step Design Process
Reading • 10 min

Outcomes
Reading • 10 min

FAQs
Reading • 10 min

Get More from Georgia Tech
Reading • 10 min

Get started

Overview of User Experience Design

15 min of videos left 10 min of readings left 1 graded assignment left

Schedule

Start date: January 22, 2023 PST

Estimated end date: February 26, 2023 PST

Upcoming

Overview of User Experience Design

Due Jan 29, 11:59 PM PST Graded Quiz

Elements of Requirement Gathering

Due Feb 5, 11:59 PM PST Graded Quiz

Let's set a weekly goal

Learners who set a goal are 75% more likely to complete the course. We'll help you track your progress.

Set goal

Inside of a course, as seen above, there is a course material tab that displays content by week. There are additional tabs for grades, notes, discussion forums, messages, and information about the course. The right side column shows estimated end date for the course along with upcoming assignments or quizzes and a button to set a weekly goal. Many of these features may be appealing to end users.

User Profile

Details About You

Introduce yourself to the Coursera community. Connect with learners like you to grow your network.

About Me

Tell us about yourself, such as what you do, what your interests are, and what you hope to get out of your courses.

Location

Tell us the city, state, or country you currently live in

Top Skills

Tell us about your top skills (e.g., Machine Learning)

Website URL


LinkedIn


*Optional

+ Add website

Work Experience and Education

Tell us about your experience and education to get a personalized learning experience with course recommendations.

Employment Status Select your current status 

Industry If employed, tell us what industry you work in 

Employer If employed, tell us where you work 

Occupation Student 

Experience Level Intern / Trainee 

Is it your current employer? ☐

Highest Degree Select your highest level of education 

University Ex: New York University 

The user profile page on coursera has unique benefits when used. The user can enter information such as work experience, education, and career goals to allow the service to find courses that may fit the user's needs. Additionally, the user can connect with others who may be learning similar topics by filling out the information on the user page.

Competitor 3: Codecademy

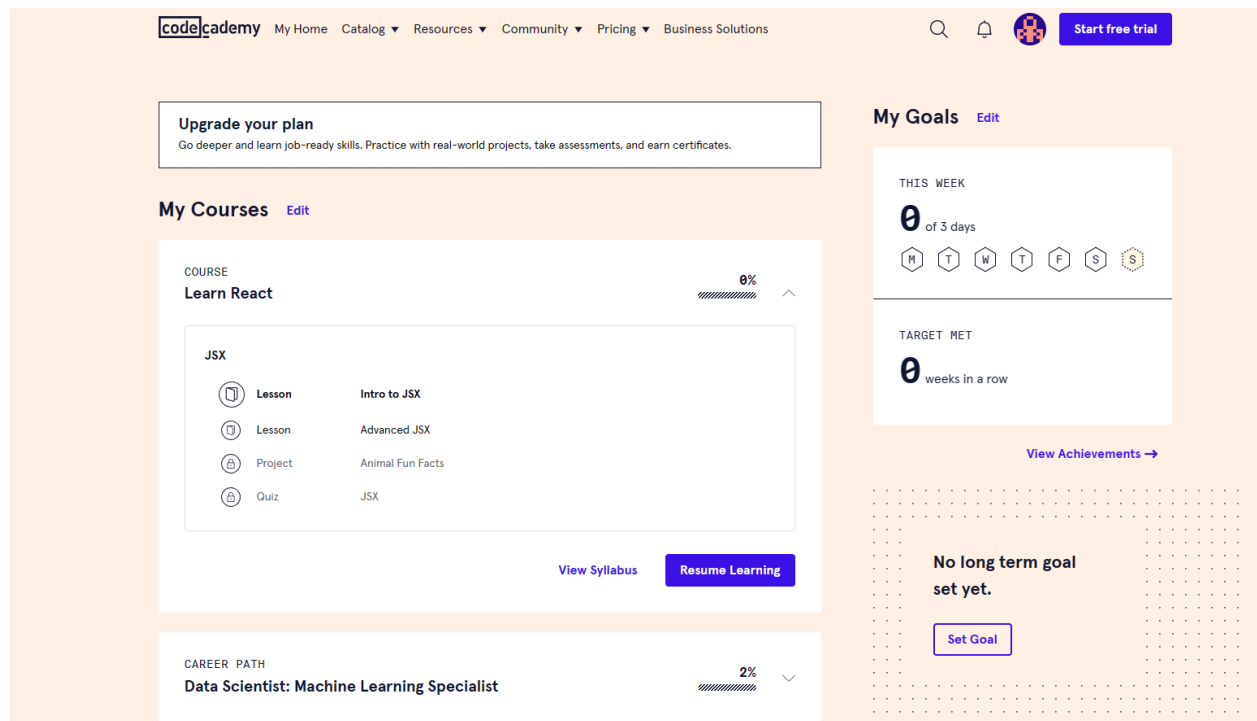
<https://www.codecademy.com/>

“Come help us build the education the world deserves.”

Target Audience

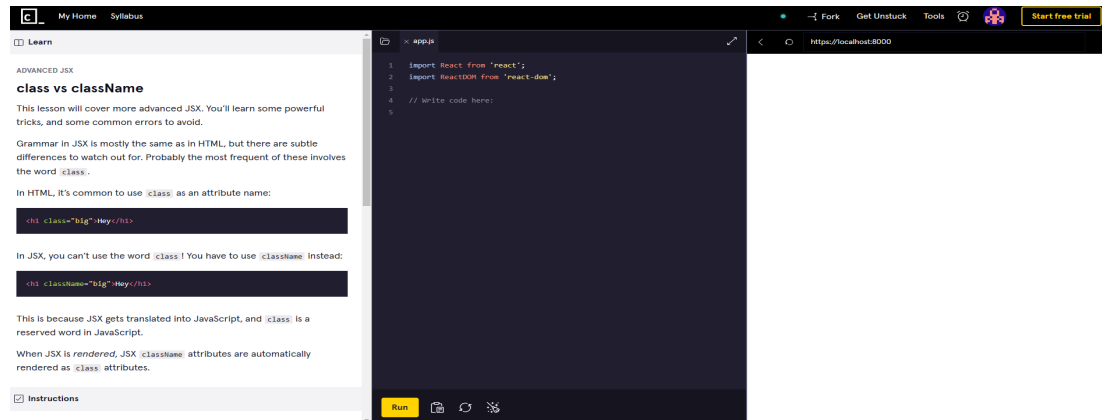
- Primarily students and individuals
- Individuals with little to no coding experience
- Small teams

User Home Page



The user home page has a clean UI with the user's courses listed along with some upcoming topics. Below the courses is the selected career path along with a progress bar showing how far into the path the user has progressed. The right side displays goals for the week along with how many of them were met. Below is a button to set a goal that will display in the My Goals section.

Course View



The course view is divided into 3 columns. The left side provides the course instruction, the middle section provides a coding environment to test out what the course is instructing, and the right side provides output for the code that is entered. This feature allows the user to immediately compare their code to that of the instruction material.

Code Docs

Topics ^

C

C#

C++

Cloud Computing

Command Line

CSS

Cybersecurity

Docs Community

Emojicode

General

Git

Go

HTML

Java

JavaScript

Kotlin

Markdown

Open Source

PHP

Docs / C++

C++

C++ is a very powerful programming language for performance-critical applications that rely on speed and efficient memory management. It's used in a wide range of industries including software and game development, robotics, microcontrollers, VR/AR, and scientific computing.

The C++ language was created by [Bjarne Stroustrup](#) at Bell Laboratories in 1979. As the name implies, C++ was derived from the [C](#) language; Bjarne's goal was to add [object-oriented programming](#) into C, a language well-respected for its portability and low-level functionality.

C++ Concepts

Arrays	Bitwise Operators	Classes	Comments
Conditionals	Constructors	Data Types	Encapsulation
Enums	Errors	Exceptions	Files
Functions	Inheritance	Loops	Macros
Maps	Math Functions	Methods	Objects
Operators	Pointers	Polymorphism	Queues
Random	References	Sets	Smart Pointers
Stacks	Strings	Structures	Switch
Templates	User Input	Variables	Vectors

Codecademy has a unique feature called Docs, which serves as a coding resource for many different languages and topics. These docs explain different elements of a language such as c++ classes and provide examples of code using them. Docs has an immense amount of information for multiple different languages such as java, C#, SQL,

and more. This feature not only can be used by those learning a new coding language, but can be used as a reference guide by anyone.

Analysis Findings

Pluralsight

- The sheer volume of content on the site can be overwhelming and thus makes it harder to search for topics
- The organizational strategy of putting content into Paths provides an easy to understand direction of instruction for end users
- The statistics on the profile page provide insight into a user's learning which may be valuable to implement
- Inside of a course, the navigation tools are cleanly laid out and allow switching between topics with a simple click
- The course rating feature provides great value for the end user as they can determine which courses are best

Coursera

- The style of coursera is more hands-off rather than guided which may differ from the customer's need in an LMS
- Due to courses being submitted by multiple organizations, some courses may have overlapping content making it harder to determine which course is best, curated courses may be more desired for the LMS
- Organizing content by week provides the user with a sense of pace for progressing through the course
- The goal feature allows setting a time allotment goal, a better implementation may include more options such as utilizing a new concept in a program

Codecademy

- The home page UI provides essential information only: the weekly goals, current course, and current career path
- The code environment alongside the course instruction with code examples would be appealing to users if implemented
- The code docs page is an incredibly valuable resource that could be implemented
- Having badges for learning goals can provide the user with motivation to continue learning

Feature	Pluralsight	Coursera	Codecademy
Code Docs	No	No	Yes, multiple topics/languages
Topic Search	Yes	Yes	Yes
Learning Paths	Yes, hundreds	Yes, 24 career paths	12 career paths
Goals	Yes	Yes	Yes
Teams	Yes	Yes	Yes
User Profile	Yes	Yes	Yes
Embedded Coding Environment	Yes	No	Yes
Curated Content	Courses created with specific content for each learning path	Courses submitted by partnered organization, duplicate content	All content is curated
Course Ratings	Yes	Yes	No
Calendar and integration	Yes, google calendar and outlook calendar	No	No