Learning Management System

Software Requirements Specification

PREPARED BY

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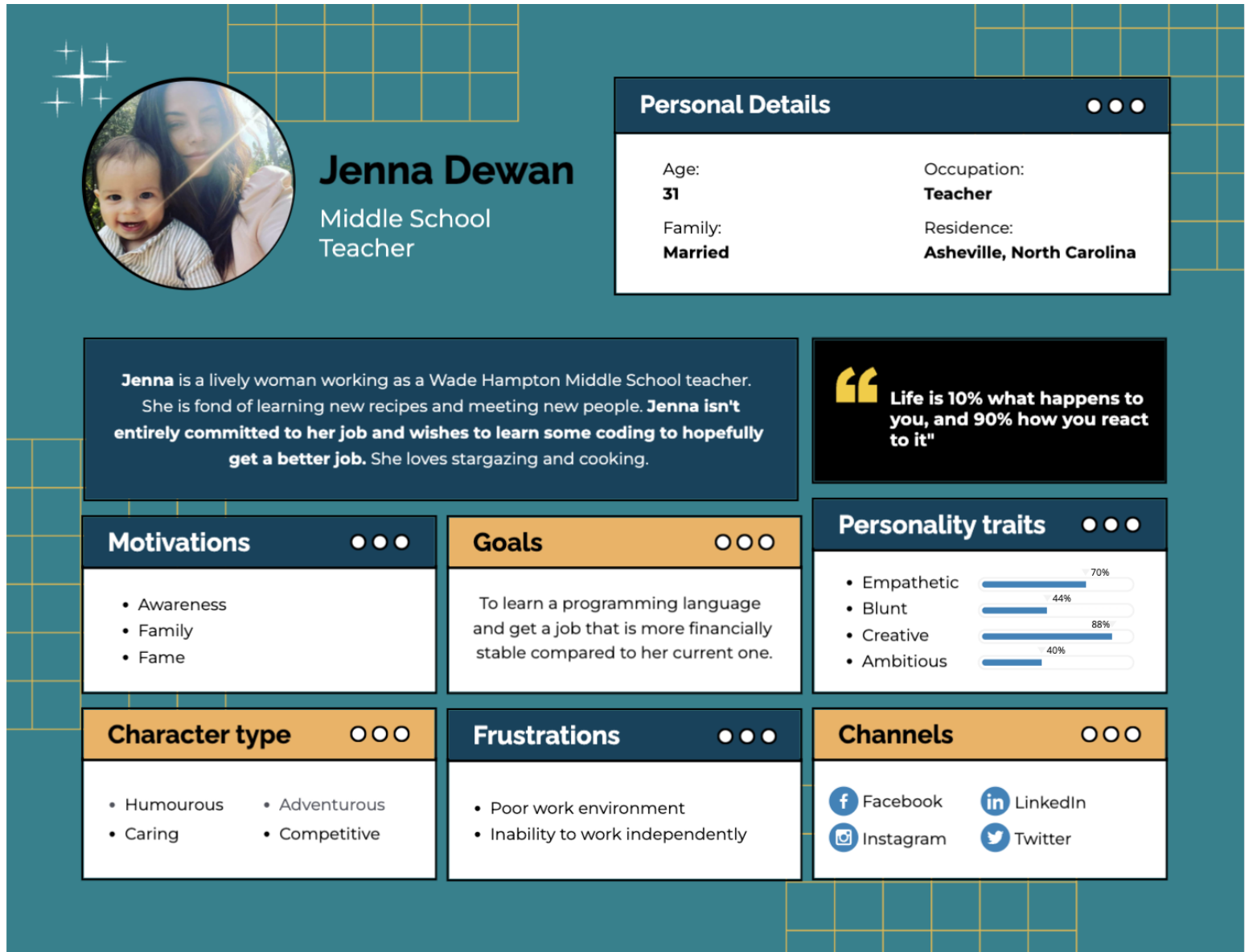# Table of Contents

1. Introduction

Purpose

       Programmers comprise only 0.5% of the population, and within the last two years, there has been a 10% decline in programmers, making it difficult to find programmers. Additionally, with today's modern society vastly expanding in technology and companies demanding more programmers, it is only natural for people to start learning how to code and find jobs in this field. That is why creating a program to help provide a learning platform for individuals interested in learning or reviewing a programming language is beneficial. The program will be beginner-friendly for those looking to learn and understand the basics of coding while also helping established programmers expand on their skills and be a great source of review.

2. Stakeholders

- Teachers/Professors
- Students
    - High school
    - Undergraduate
    - Graduate
    - Professional
- Developers
    - Front-end Programmers
    - Back-end Programmers
    - Full-Stack Developers
- Companies using it for training employees
- Newcomers to programing languages

Personas

Jenna Dewan
Middle School Teacher

Personal Details

Age: **31**	Occupation: **Teacher**
Family: **Married**	Residence: **Asheville, North Carolina**

Jenna is a lively woman working as a Wade Hampton Middle School teacher. She is fond of learning new recipes and meeting new people. **Jenna isn't entirely committed to her job and wishes to learn some coding to hopefully get a better job.** She loves stargazing and cooking.

> Life is 10% what happens to you, and 90% how you react to it"

Motivations

- Awareness
- Family
- Fame

Goals

To learn a programming language and get a job that is more financially stable compared to her current one.

Personality traits

- Empathetic — 70%
- Blunt — 44%
- Creative — 88%
- Ambitious — 40%

Character type

- Humourous
- Caring
- Adventurous
- Competitive

Frustrations

- Poor work environment
- Inability to work independently

Channels

- Facebook
- Instagram
- LinkedIn
- Twitter

Lisa Manobal

College Student

Personal Details

Age:
20

Major:
Comupter Science

Family:
Single

Residence:
New York, New York

Lisa is a lively woman attending NYU and majoring in Computer Science. She is fond of exploring places and singing. **Lisa is trying to land an internship this summer, and is looking to learn more coding skills.** She loves reading books and going shopping.

> " Never give up on your dreams, no matter **how painful and difficult your journey is.**

Motivations

- Awareness
- Influence
- Knowledge

Goals

To broaden her skill set so that she can differentiate herself during internship interviews.

Personality traits

- Empathetic — 20%
- Blunt — 70%
- Creative — 80%
- Ambitious — 60%

Character type

- Humourous
- Caring
- Adventurous
- Competitive

Frustrations

- Bossy environment
- Inability to work independently

Channels

- Facebook
- LinkedIn
- Instagram
- Twitter

George Clooney

Retired Actor

Personal Details

Age:
70

Employment:
Retired

Family:
Married

Residence:
Buford, Georgia

George is a older man who has retired from a long, successful career in acting. He is fond of traveling and singing. **George is trying to passing his new found free time by catching up on the new technology.** He loves reading books and watching movies.

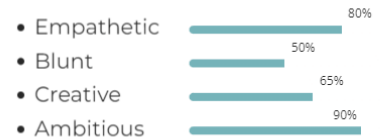> You never really learn much from **hearing yourself talk**.

Motivations

- Awareness
- Influence
- Knowledge

Goals

To learn new skills reguarding technology and to pass time, because he is now retired.

Personality traits

- Empathetic — 80%
- Blunt — 50%
- Creative — 65%
- Ambitious — 90%

Character type

- Humourous
- Caring
- Adventurous
- Competitive

Frustrations

- Bossy environment
- Inability to work independently

Channels

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3. Constraints

Time Constraints

- This project shall be fully operational and implemented within the span of 12 weeks.

Monetary Constraints

- This project's development has been allocated a budget of $0.
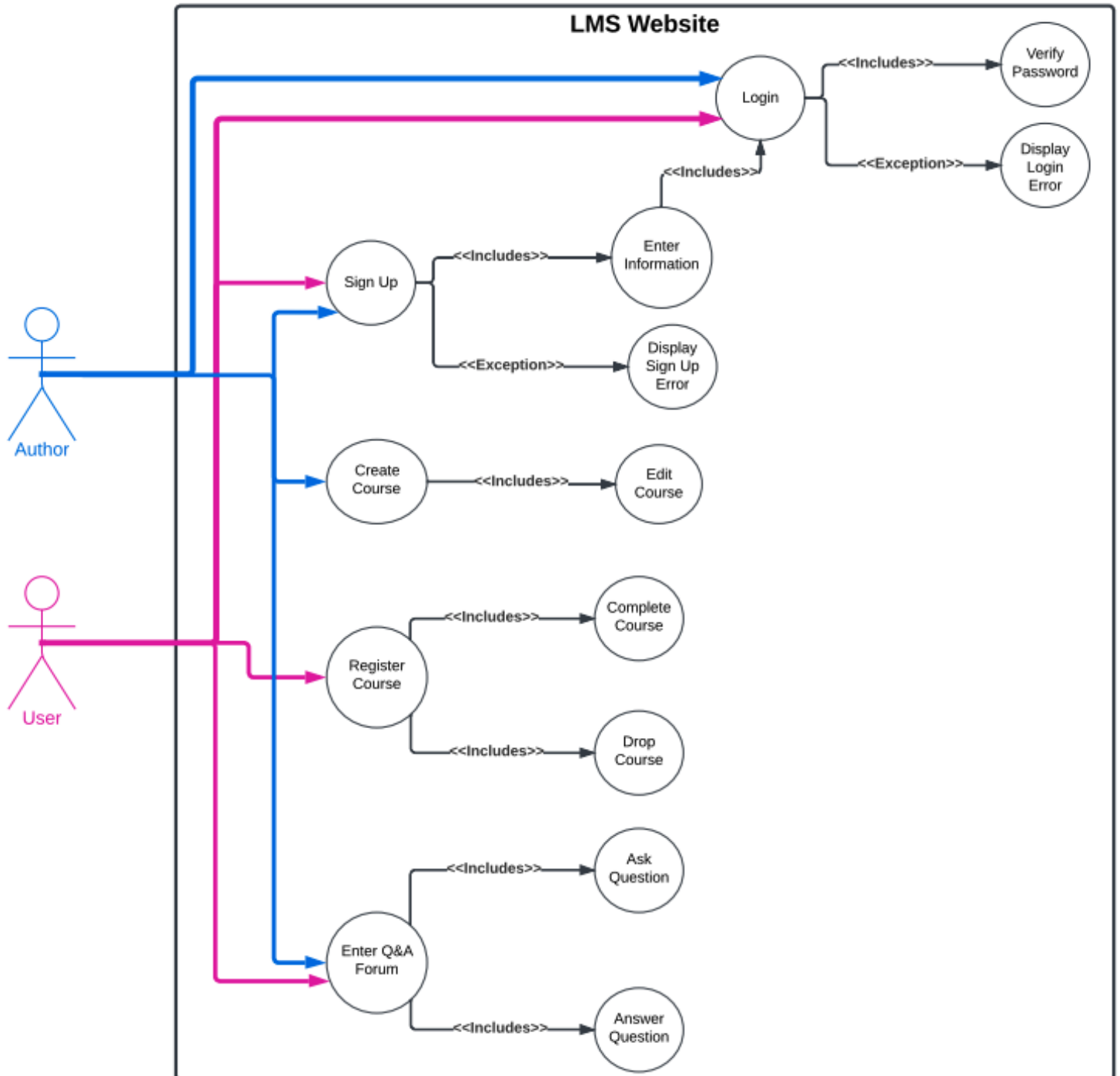
Technical Constraints

- The program must be written entirely in Java
- The program must be accessible on various devices such as a laptop and/or mobile device.

4. Overall Description

This LMS program must be available to users throughout the country. This website will be accessible to users from any device that can connect to the internet. The website will assist users in learning and applying a variety of programming languages. The user will be able to register for free and have full access to all courses (progress will be saved automatically). The website will include a database of reviews left on the website as well as other websites, allowing visitors to learn about other users' experiences.

5. Business Use Cases

6. Functional Requirements

[Requirements Spreadsheet](#)

7. Non-Functional Requirements

Look and Feel Requirements

- The user interface of the system shall be implemented in a way for the beginner users to understand what they are looking at.

Usability Requirements

- The system shall be used by users with a wide range of capabilities.

Performance Requirements

- The system shall be able to run on any device that is connected to the internet.

Maintainability and support requirements

- The system shall be able to run on Window, Linux, and Mac systems.

Security requirements

- The user's information shall be stored in a secure manner.

Legal Requirements

- The system shall comply with all state and local law.

9. Competitive Analysis

	Udemy
Strengths	Udemy offers a variety of courses that you can choose from based on what you are looking for. With the coding course alone, there are 2,000 results with just searching "coding" in Udemy. Each of the programming courses has quizzes in them to help you understand how to implement what you learned in your code. The courses are also designed for you to go at your own pace in order for you to maximize your learning experience. Udemy instructors are in control of their own courses. They keep the course up to date and offer Q&A features allowing students to read previous answers from instructors.
Weaknesses	Once you are done with the course, you get a certificate saying that you have completed it. The downside is that most companies do not accept these certificates because they can not be sure if you actually understand it. Certificates are only offered in the paid courses. The cost of the course fluctuates from course to course ranging from $11.99 to $199.99, which is not affordable for everyone like students. Udemy sells courses for heavily discounted prices which would make the instructor of the course sell more in order to earn a significant income.
Audience/Focus	The audience of Udemy is a wide variety of individuals who are looking to learn. This website is specifically designed for learning from scratch to help the individual learn the course better.

	Oracle University
Strengths	Oracle University offers many, very focused, programs that are very helpful in differentiating yourself when it comes to jobs in the Cloud and Database management area. All of the courses and certification exams are always free for everyone and have no time limit when attempting to complete/ earn. They offer many detailed "Live Labs" (workshops) to help practice what you have learned in the course. Oracle University has mini quizzes during each section to review what was just discussed.
Weaknesses	About 80% of the certification courses are videos and they are not very interactive until you get to the review section for the exam. It is easy to zone out and not super engaging. The courses offered are not general. Though they may teach about Cloud and Database management, it is about Oracle's software and programs. And even though it still could help, it is very specific and hyper-focused on just Oracle based products. Though the course has mini quizzes, they are often not good reviews for the certification exam and try to persuade the learner to buy Oracle products. For example, the one quiz for a 20 minute video would be, "True or False: Oracle never raises prices if you change the size of your database."
Audience/ Focus	The audience for Oracle University are for individuals who are interested in working at Oracle or using their products. The focus for this website is to train future/ current employees of Oracle to use their system.

	CodeHS
Strengths	Due to the online IDE, there are no downloads needed for any of the programs, including the free ones This allows for less technology requirements for the user. The layout of the course assignments is very guided, neat, and organized. There is a logical progression between assignments, so the users will know what order to take courses in. Includes a dashboard that offers analytics on the user's progress in the courses based on exercises and quizzes. This is helpful to the user to see where they might be struggling and what they need to review. Many "industry-relevant" certifications are available for users to earn. These are recognized by college admissions and employers.
Weaknesses	The program is geared towards students in grades K-12, which makes it unusable for a non-student because a teacher is necessary to facilitate the course. Grading must be done by someone else unless you pay to have an auto-grader. This would not be time efficient for the user because they would possibly have to wait for a grade before moving forward in the course.
Audience/Focus	CodeHS's coding LMS is targeted to school systems and can be implemented on a classroom, school, or district level. It is only to be used in schools with grades K-12. Its focus is on the student's ability to learn in addition to having a variety of tools and resources to assist the teacher with seeing progress and giving feedback.

Summary

	Strength	Weakness	Focus
Udemy	+ Quizzes + Q&A Feature + Simple	- Fluctuating price range - Useless Certificates	Community
Oracle University	+ Affordable + Easy to Use + Specific Lessons	- Not Engaging - Limits User on Too Specific topic - Useless Quizzes	Oracle Workers
Code HS	+ Recognizable certifications + Dashboards that analyze a user's progress + Great organization	- Limited to use with a teacher - Auto grading is not free/users must wait for grades	K-12 School Systems

After completing the competitive analysis above, we have identified several strengths we want our LMS to have and some weaknesses we would like to avoid. Like Udemy, the courses in our LMS will have lots of interaction, like quizzes, to help the users learn, review, and test their knowledge. Additionally, all the LMSs that we analyzed are self-paced and save progress, allowing individuals taking courses in addition to their school or job to have more flexibility. This will be one of the main aspects of our LMS so it can appeal to more people. Our LMS will be free to avoid some of the content limits that Udemy and CodeHS have. Next, our LMS will have a variety of courses to appeal to more people, unlike Oracle University. If possible. Having certificates accepted by employers or colleges is essential to the students using the LMS and will make our LMS more popular for that demographic. Overall, our goal is to base our courses on Udemy's design while including certificates accepted by desired companies or schools and having the courses organized, making it easy for the user to progress.