Language Learning Software

Software Requirements Specification

CSCE 247: Software Engineering

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Hello Worlders

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1. Introduction

1.1 Purpose

The goal of our project is to create user-friendly software that supports interactive language learning. The software will be geared towards children, educators, and adults interested in engaging with a kid-friendly platform to learn Filipino (Latin-based Tagalog). The software will offer tools that make language learning fun and effective, helping users build foundational language knowledge.

1.2 Scope

This document covers:

- The personas of potential users and stakeholders involved in the project.
- Brief overview of constraints on the project.
- A detailed description of the software and its use cases.
- Functional and nonfunctional requirements of the software.
- A competitive analysis of learning tools.
- A final summary and breakdown of the competitive analysis.

2. Stakeholders

- **Children**: Primary users who are learning Filipino (Tagalog) through interactive and fun activities.
- **Educators**: Teachers and instructors looking for engaging tools to teach Filipino to children.
- **Adults**: Adults, particularly those who enjoy playful learning methods, interested in learning basic Filipino in a unique environment.

2.1 Personas

Examples of potential stakeholders:

Cheryl

Age: 44
Hometown: Orlando, FL
Education: Master's Degree
Work: Elementary Teacher
Character: Outgoing

Bio: Cheryl Dixon is a passionate and dedicated black elementary school teacher who has been teaching for over 10 years. She is fluent in multiple languages and enjoys when she share her love for languages with her students.

Personality

- Passionate
- Wise
- Spiritual
- Selfless

Motivation

- Social Impact
- Helping Others
- Gaining Knowledge
- Supporting her family

Goals: To inspire her students to embrace diversity and cultural understanding through language learning. She is looking to integrate an effective and engaging language learning tools into their curriculum.

Frustrations: She has a hard time connecting with students that she just feels like don't want to be there.

Brands and Influences: Duolingo, Facebook, Maya Angelou

2.1 Personas

Mason

Age: 8
Hometown: Santa Monica, CA
Student: Elementary School
Top Subject: Math
Character: Imaginative

Bio: Mason enjoys learning through games and interactive experiences. His favorite time of the week is when he gets to play math games on the school computer. He prefers activities that are entertaining and engaging rather than conventional classroom methods.

Personality

- Energetic
- Competitive
- Learner
- Silly

Motivation

- Achievement
- Approval
- Rewards
- Discovery

Goals: Always want to get all A's and have fun while doing it. He plans on becoming the next famous inventor.

Frustrations: He doesn't like homework and when he is given too many writing assignments.

Brands and Influences: YouTube Kids, Roblox, Minecraft

Maria

Age: 28
Hometown: Toronto, Canada
Education: Bachelor's Degree
Work: Public Health
Character: Curious

Bio: Maria is an individual always open to expanding her horizons. She hasn't yet found the time to learn a language, but she has been talking about it for years. She is a busy individual, but when she gets driven to a goal she completes it. Sometimes she just needs a push.

Personality

- Extroverted
- Enthusiastic
- Diligent
- Humble

Motivation

- Growth
- Connection
- Convenience
- Flexibility

Goals: Big into self improvement. Trying to become consistent in the gym. Interested in learning Filipino to better connect with her older relatives.

Frustrations: She hates when she encounters inefficiencies in her daily routine. She finds it challenging to stay motivated with self-improvement goals amidst a busy schedule.

Brands and Influences: Instagram, Duolingo, TikTok

3. Constraints

3.1 Time Constraints

- This project is to be completed within the fall 2024 semester.
- Any due dates set for deliverables for the project must be hit.

3.2 Monetary Constraints

- The development budget for this project is $0.

3.3 Technical Constraints

1. The code will be written in Java.
2. The software will be accessible on Windows and Mac. More platforms will look to be supported if there is time in the development process.
3. The software will have online functionality.

4. Overall Description

4.1 Functional Requirements

- **Interactive Lessons:** Games and activities designed to teach Filipino pronunciation, vocabulary, and grammar in an engaging way.
- **Storybooks:** Interactive storybooks that allow children to practice reading and understanding Filipino.
- **Progress Tracking:** A feature that tracks user progress over time (primarily through gaining cosmetic rewards for a digital avatar).
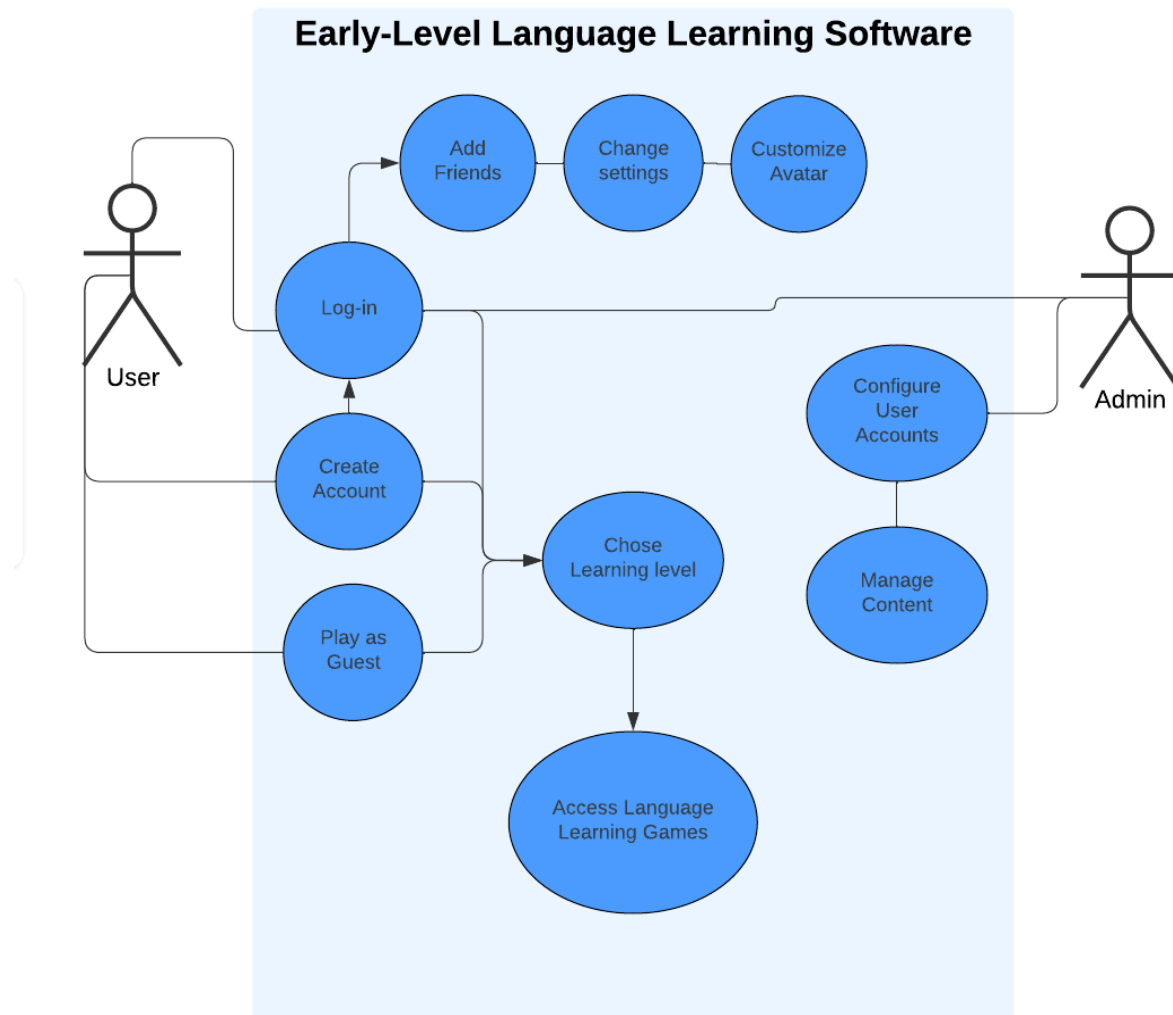- **Customization:** Features such as avatar creation to encourage play.

4.2 Nonfunctional Requirements

- **Usability:** The software shall have an intuitive interface, designed to be accessible for children.
- **Performance:** Lessons and activities shall load and function smoothly.
- **Reliability:** The software shall handle tasks consistently without crashes or data loss.

4.3 Use Cases

1. A child uses the software during free time at school, engaging with vocabulary games and matching words to images, making learning enjoyable and interactive.
2. A teacher incorporates the software into the class curriculum, assigning class time for the students to go through portions of the software to enhance language learning in the classroom.
3. An adult uses the software at home, practicing Filipino vocabulary and pronunciation through interactive storybooks and quizzes in a light-hearted, fun environment.

5. Business Use Cases

Early-Level Language Learning Software

User

- Add Friends
- Change settings
- Customize Avatar
- Log-in
- Create Account
- Play as Guest
- Chose Learning level
- Access Language Learning Games
- Configure User Accounts
- Manage Content

Admin

6. Functional Requirements

- Link to an in-depth look at the system's functional requirements.

https://docs.google.com/spreadsheets/d/1iaiZC8j9It-UqlcvzJkuXKxBxMv9nrWHY80GpC3Qiqo/edit?usp=sharing

7. Competitive Analysis

	Duolingo
Strengths	- Free to use, making it open to anyone wanting to learn a new language. - Free to use with many languages available. - Gamified elements like streaks and levels. - Short lessons that are easy to fit into a busy schedule. - Instant feedback helps reinforce correct answers. - Progress tracking encourages daily learning habits. - Available on desktop and mobile for flexible learning. - Lessons are made to be short and manageable, making learning accessible. - Adjusts the level of difficulty based on your performance, providing a personalized learning experience. - The app sends reminders to practice everyday, helping users to be consistent in their learning
Weaknesses	- Some features are locked behind a subscription service. - Reliance on in-app purchases and ads can annoy users and interrupt their learning. - The app often repeats the same exercises and lessons which can get boring over time. - There is an overemphasis on vocabulary and less emphasis on grammar. - Many do not provide the depth needed for advanced language learning or fluency. - No actual game elements - Not very accessible to young elementary kids
Audience/Focus	This is an extremely popular learning service for highschool aged students and beyond. Designed for all ages, looking to improve their skills and knowledge. It is more tailored to beginners though as it puts an emphasis on vocabulary. It's often viewed as a great supplemental tool for language learning.

	Starfall
Strengths	- Designed for young children with bright visuals and songs. - Focuses on early education basics like reading and math. - Easy for kids to navigate independently. - Mix of free and premium content, with no ads. - Encourages interactive and self-paced learning. - Used widely by parents and educators for foundational skills. - Uses unique sound design and UI elements to make the system standout. - Variety of games and lessons. - Character customizer integrated in the learning.
Weaknesses	- No foreign language learning elements. - Primarily focuses on early learning, not suited for older children. - Limited language options compared to other platforms. - Subscription required for full content access. - Lacks content for advanced learners.
Audience/Focus	Starfall targets young children, younger elementary schoolers in particular, with their software. It's widely used by parents and educators seeking interactive tools for early foundational learning. It focuses on making education fun and accessible, helping kids build essential skills through songs, games, and engaging visuals.

	KidsLingo
Strengths	- Fun, immersive language learning for young kids. - Uses songs, games, and stories to engage children. - Offers both in-person and online learning options. - Covers multiple languages, including popular ones like Spanish and French. - Play-based approach makes learning feel natural. - Classes encourage social interaction and group learning.
Weaknesses	- In-person classes limit accessibility to certain areas. - Online content is less extensive than other digital platforms. - Mainly targets younger children, not ideal for older learners. - Lacks structured learning paths for those seeking a formal curriculum.
Audience/Focus	KidsLingo is designed for young children, pre-k to older elementary, and appeals to parents and educators seeking a playful, immersive language learning experience. It focuses on making language acquisition fun through songs, stories, and games, and encourages social learning in a group environment.

Summary

	Strengths	Weaknesses	Focus
Duolingo	+ Variety + Accessible + Learning potential	- No games - Paid subscription features	• All ages • Learners • Teachers
Starfall	+ Gamified + Early education + Sound Design + User Interface	- No foreign language learning - Only aims at younger kids	• Elementary school students • Any ages with learning disabilities
KidsLingo	+ Play-based learning + Multiple languages	- Limited availability - Unstructured content	• Elementary school students • Teachers

Our software focuses on providing a child-friendly platform for learning Filipino (Latin-based Tagalog) through interactive games, storybooks, and more. Unlike competitors, our software uniquely targets younger learners while still being accessible to adults who are open to playful learning experiences. By offering various methods of play, we aim to provide an engaging and effective tool for language acquisition.

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