VIP-ITS Spring 2023 Project Proposal - QuizApp IOS

Group Membership:

Member		
Justin Kim	Skills	Java, Python, C, SQL
	Credits	1
	Responsibility	● Coding the backend, especially editing data in databases. ● Researching how algorithms are used in backend servers. ● Implementing algorithms that need to be used in API
Dongzhao Song	Skills	Java, JS, C, SQL, Python
	Credits	2
	Responsibility	● Working on either the front end or server side; whichever needs help. ● Searching and improving existing algorithms. ● Help Justin implement algorithms that are needed ● Set up the backend Server API that will call appropriate functions and send return values to the front end. ● managing the progress, and communicating with another subteam in need.
Xinyi Wang	Skills	Java, C, Python, C++
	Credits	1
	Responsibility	● Coding the front end makes sure the backend functionality is connected to the UI. ● Make sure QuizApp can communicate with the backend server appropriately. ● If possible, also add a few demo UI inside QuizApp.

Project Timeline:

Week 1-3: Team formation, proposing project ideas, planning the project.
Week 4-5: Google and set up the development environment. Research the existing QuizApp iOS code and identify what is missing, underdeveloped, and what could be added. Ensure that the repo can run locally.
Week 6-7: Justin will research appropriate algorithms to be used within the project, and Dongzhao will set up APIs in the backend server. Xinyi will learn how to create function call through the internet..
Week 8-10: Till this point, some basic component of the project should have some done. We will work together to assemble them together. Implementing textbook suggestion algorithms from last semester into the server. If possible, also make connections between QuizApp and the API.
Week 11-14: If we have enough time, creating and implementing a question ranking algorithm into QuizApp iOS and backend.
Week 15: Testing and optimizing
Week 16-17: Final Presentation

Project Goals and Responsibilities:

Our main focus is to improve QuizApp (iOS) by providing a backend server that supports various algorithms. We hope to make APIs that QuizApp can use and show results to users. There are a few draft algorithms but they have not been integrated into QuizApp yet, so we want to allow Quiz apps to have some backend functions to interact with those algorithms. If we have enough time, we also want to make a few UIs for those functionalities. In the final presentation, we hope the Quiz app can have a method to interact with the backend and existing algorithm through the internet.

Besides this main goal, we will also try to make time to add up functions left undone from the previous semester.

The UI will be somehow simple just for the demo, our main focus will be on algorithms and setting up a server to support those algorithms. However, we still want to implement some interactions between QuizApp and the backend server.

Algorithm Goals

The goal of implementing the textbook suggestion algorithm is to provide the user with a better option to relearn missed content rather than simply revealing the answer. Allowing the user to view textbook excerpts relating to questions will increase interactivity and contribute to a deeper and more complete understanding of the material.

The goal of implementing the question ranking algorithm is to optimize the user’s learning experience. Prioritizing the most relevant questions during quiz sessions will not only allow the

user to cover the most important material faster but also ensure that foundational questions for each chapter will be given before more derived questions.

Responsibilities

Justin will primarily be researching and developing the question ranking algorithm as well as modifying the databases for the algorithms. Dongzhao will be working on the backend server APIs to implement and connect the two algorithms with the frontend, as well as acting as an overall leader and overseer of the project. Xinyi will additionally be working to develop the frontend and guarantee that the frontend and backend are connected and function appropriately.

Project Description:

Problem and Research Ideas

The primary focus of our project is to optimize the learning experience for our users. The textbook suggestion algorithm that was developed last semester has not been implemented into QuizApp iOS, but including it would provide users that have missed or do not know questions with an efficient way to relearn the content. Additionally, there is currently no way for users to identify which information is the most important that they should prioritize learning. We could address this by developing and implementing question ranking algorithms that sort questions based on the occurrence of their key words and their relevance within sections. Finally, polishing other backend functionalities would also improve the user experience.

Foreseeable Problems and Potential Pitfalls

None of us have experience using SWIFT and we have Windows operating systems, meaning we will have to spend a significant period getting familiar with the environment and might have initial difficulties setting up the environment. We are also unsure of the estimated time it will take to implement both algorithms, so there is a possibility that we will not have enough time to perfect our additions.

Implementation, Tools, Resources, and Collaboration

This project will use Swift for iOS and Python for algorithm development. We will fork the Fall 2022 ITS Swift Team repository and utilize code from the Question Reference folder in the Fall 2022 QuizApp repository. Each member will create their own branches and commit their individual contributions to their respective branches. We will communicate on Microsoft Teams and will organize a weekly meeting on Friday 3:30 PM to ask questions, solve problems, and discuss contributions. These meetings should last around 30 minutes.