CS157A Database Project

A Web Application for Study Materials

Team 29

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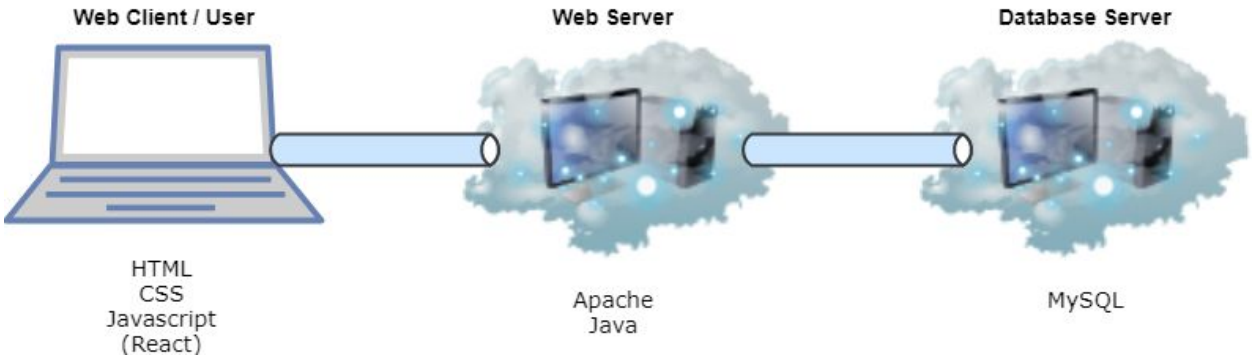
1. Project Description
    - For our project, we will be making a web application that allows users to easily create, use, and organize study materials. These study materials will include tools like flashcards, quizzes, or even graphs.
    - The goal of this project is to use a database management system to create something useful and powerful. As a result of this, team members can expect to learn more about using databases to create useful applications. This is a skill useful to all who will work with software and databases. A secondary goal is to create an application that enables users to create new and engaging methods to review content. Perhaps this application can even be used to study for CS157A quizzes and exams.
    - The stakeholders of this project will primarily comprise of students across all levels of education who are looking for different methods to study.
2. System Environment
    - The program is meant to run within a client's browser. The GUI interface will thus be made using HTML, CSS, and Javascript (using the React library). This will then connect to a web server made using

Apache Tomcat. This web server will provide the client with the code necessary to run the program, including java code within a JSP file that will assist in delivering content from the database. This server will thus be responsible for connecting the client with the database. The database will be managed using MySQL version 8. This can all be seen in the following diagram.



3. Functional Requirements
    - List of detailed descriptions of users and how users interact with your applications
4. Non- Functional Issues
    - Graphical User Interface (GUI) - The Graphical User Interface will be hosted on a web application using ReactJS that the user will be able to directly interact with, including editing and viewing the terms/definitions in different forms to enhance the learning

experience. Diagram labeling will make use interactive image JavaScript libraries.

Our GUI will feature many of the generally accepted Graphical User Interface Design principles including but not limited to, clarity, comprehensibility, configurability, consistency, control, simplicity, and efficiency. Clarity and comprehensibility will be seen through user controlled functions, visual elements, and text that will allow the user to implicitly know what actions to do next. Configurability will be demonstrated through the nature of the application as the user will be able to create their own study set with their own terms and diagrams. With these study terms, the user will be able to use a variety of learning methods and tools to study the set. The User Interface will be simple and consistent across screens with a simple, similar look and use such that when the same function is invoked multiple times, it will yield the same result. With simplicity, we will incorporate efficiency such that the user does not need to go through multiple actions or screens in order to complete a task. Lastly, the user will control all interactions with the interface in a manner that all actions will result from a user request in a quick manner.

- Security - Each user account will be protected by a username and password created by the user. All data and study sets will be associated with the respective user with access controls specified in the next section. All user account information will be stored on the server and logins will only take place when the user provides an email and password that exists for an associated account in the application. An encrypted https connection will be implemented between the user and server.
- Access Control - Users will have view access to all publicly available flashcard sets regardless if the user is logged in or not. Write and edit access will be limited to the author of the study set using login credentials to verify so. From a high level, the user that creates the study set is the administrator of the study set while everyone else is a consumer and/or viewer of it.