TutorU

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Executive Summary

With online learning becoming mainstream in the recent years, there is a need for new programs that can assist with learning through an online environment. One of the most successful learning assistance programs is tutoring. Many students use tutoring as way to learn about topics they are struggling with by getting an outside point of view from an individual that's not in the same class as them. As students going through university, we have seen two issues with tutoring that we have attempted to improve upon. The first is that as you start to complete your degree, and move onto upper-level courses, there are not many tutors that have the experience needed to help with the topics in the upper-level courses. The other issue is that tutors are not always available for students and with the learning environment moving toward online education; it's getting increasingly harder for students to meet with tutors. Our application attempts to connect a user with a qualified tutor with a chat room in the hope of improving upon the current tutoring situation.

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1 Final Requirements vs Initial Requirements

As a whole, we did not fully realize our initial requirements. Between varying schedules and the inability to come together to make enough progress in time we were unable to complete our project after making a decisions to switch front end design methods late in the semester. What we were able to realize was a base functionality and proof of concept, which we would be able to build upon in a real world setting.

We were able to complete a working GUI using Electron JS, as well as a working database connection. The servlet and connectivity should all be functional as well. The portion of our project that we were unable to complete includes true user accounts and the ability to track actual connection sessions.

2 Final Timeline vs Initial Timeline

In accordance with our original timeline, we were on track through roughly week 4 of the project's development. During week 1 we were able to complete our original proof of concept and by week 3 we had a working GUI (albeit not our final GUI). By the end of week 4 our database was working. Unfortunately that was when the trouble began for us; When programming our backend Java Servlet we came to the realization of how difficult it was going to be to manipulate a JavaFX UI with HTTP Requests.

We made the late decision to change to Electron JS for our UI which allowed us to provide UI manipulation with HTTP Requests as required, but unfortunately the change came to late to make any real difference.

2.1 Initial Timeline

Week 1: Project Plan Completed

Week 2: Presentation 1, Proof of Concept, Framework

Week 3: GUI running with minimal functions

Week 4: Database working and connected to application

Week 5: Two features completed

Week 6: Presentation 2, Three features completed

----------Spring Break----------

Week 7: Five features completed

Week 8: Six features completed

Week 9: Components are mostly completed

Week 10: Components are integrated together

Week 11: Application is in user testing phase

Week 12: Final Presentations

2.2 Final Timeline

Week 1: Project Plan Completed

Week 2: Presentation 1 Given, Proof of Concept App Completed

Week 3: JavaFX GUI Working

Week 4: MongoDB Database Working

Week 5: DB Connectivity with Java Servlet Working

Week 6: Presentation 2 Given

Week 7: GUI Beautified / Attempts Were Made To Get Frontend and Backend Talking

Week 8: Further Attempts Were Made

Week 9: Further Attempts Still…

Week 10: Decision Was Made to Switch to Electron / Electron UI Written

Week 11: Electron HTTP Requests Were Working

Week 12: Present

3 Results vs Expectations

When it comes to our actual results, we fell short of our original expectations by far. We were able to complete a working 3-tier piece of software, but our original design was never truly completed. We expected to have a working tutor-student connection along with the ability to chat and work with the tutor. In the end, what we managed to complete was a simple connection to the servlet and some UI manipulation using HTTP Requests.

4 Software Evaluation

Originally, our methods for software evaluation included source code quality, UI design and security. We did maintain relatively decent source code quality throughout and our UI design was probably our best aspect. Our security never came to the forefront as a concern, as we did not make it far enough along in the development process to realize a security issue. If we were to continue work on this project, security would be brought more to our attention after user accounts were truly implemented. We would need to protect user credentials and information as it is being transferred via HTTP requests and we would need to concern ourselves with the storage of this same information.

We did manage to use the occasional Unit Test in testing the design of the Servlet.

5 Work To Be Done

Were we to continue to work on this project further, we would need to finish fleshing out our connectivity between front and back end. User accounts would need to be created and saved properly and the connections between the students and the tutors handled properly likewise. We would need to implement functionality for chat as well as the session list, filtering and session settings editor. The skeleton of our project is there, but it would need the flesh and skin in order to be complete.