WWU Nursing Simulation

Medicheck App

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ABSTRACT

In the healthcare industry, patient safety is crucial during medication administration. To address the lack of equipment for nursing students at Walla Walla University, an application is sought that would provide realistic simulations, enhance clinical skills, and optimize grant funds. This application was built utilizing Dart as our programming language, Flutter as our UI framework, and Shelf as our backend framework.

INTRODUCTION

Shelley Franco & Margaret Carman, assistant professors for the Nursing Department at Walla Walla University, requested an application that streamlines medication management and enhances patient care for nursing students and professors. The application aims to provide the ability to scan medication from inventory and associate it with specific patients, ensuring accurate administration.

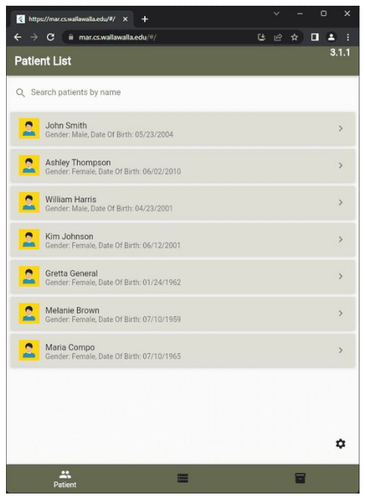
Users can access patient data and medical history, allowing for informed decision-making. Additionally, the application offers features such as adding/removing/editing patients, implementing single sign-on authorization, creating appointments, and generating patient profiles.

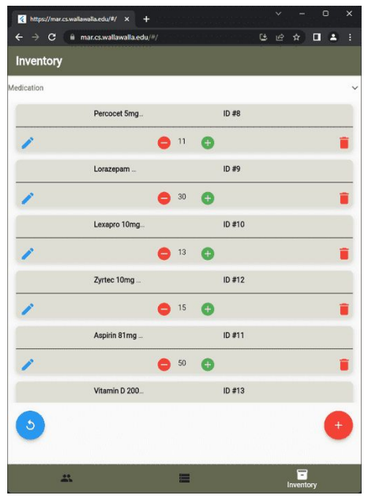
By meeting performance thresholds and incorporating user-friendly functionalities like simultaneous device usage and barcode creation, our application simplifies medication administration while improving overall efficiency and patient safety.

IMPLEMENTATION

The frontend application was built in Dart using the Flutter framework, and the backend was built in Dart and used the Shelf framework.

The frontend is responsible for an intuitive user interface that will simulate a nurse's duty to administer medication to patients, create new medications, add appointments, create patients, etc. The backend is responsible for serving endpoints the frontend can use to save/retrieve information about appointments, patients, allergies, etc.





The backend also ensures that only authenticated users can access this information. Azure AD is the identity provider for this application which streamlines the login process through single-sign-on.

Both the frontend and backend are being served using a virtual machine on nginx. We configured nginx to create a reverse proxy on port 8080 for the backend and serve static files on port 80 for the frontend.

CHALLENGES

During the development, we encountered several challenges that slowed progress. One significant hurdle involved the limited documentation available for the backend framework, Shelf, which resulted in a substantial amount of trial and error. Getting our application hosted on HTTPS was a requirement for Azure AD single-sign-on. This required an SSL certificate which caused a hiccup in deployment. Numerous bugs and issues with test coverage also slowed development.

SUMMARY

By developing a responsive nursing administration simulation application using Dart, Flutter, and Shelf, we have provided our customers with a convenient and accessible learning tool. The responsive design allows users to access the application on various devices, ensuring flexibility and convenience. With a realistic interface, we have created an environment that simulates an aspect of a nurse's job. Overall, the responsive application enhances accessibility, and learning outcomes, making it a valuable tool for nursing students and faculty.

REFERENCES

- Flutter Documentation: https://docs.flutter.dev/get-started/codelab
- Shelf Documentation: https://pub.dev/documentation/shelf/latest/
- Repository: https://gitlab.cs.wallawalla.edu/benkma/nursing-simulation

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