Computer Science & Computer Engineering

Car Dismissal App For Schools

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Abstract

School dismissal is a stressful activity for both parents and teachers of young students. Our application aims to streamline this process by helping teachers to dismiss students to the correct mode of transportation and notifying parents when their child has been dismissed. With this project, we intend to have students leave school safely and efficiently. The system aids both the instructors and parents in the dismissal process.

Purpose

School dismissal from elementary and middle schools is often a chaotic ordeal. Numerous safety issues need to be closely monitored by staff during this time. The teachers on duty are responsible for keeping the children away from moving vehicles while also ensuring that the car they are entering is the correct vehicle. Students riding the bus may not know the procedure or bus number they need to ride, and it's difficult for teachers to ensure student safety while also ensuring an orderly exit from the facility. Delays anywhere in the process frustrate parents and keep teachers at work longer than necessary.

While safety concerns are paramount at schools for young children, good safety protocols inevitably come at a cost to efficiency. By having an app that any teacher with a smartphone can use, we can reduce the burden of these protocols and improve the efficiency of the dismissal process. If the teacher has access to the correct mode of transportation and particular car or bus for each student at their fingertips, they can focus more on keeping children out of immediate danger and keep the lines moving. Teachers will have dynamic access to the location of each student and their current stage in the dismissal process without scanning printed roster sheets or relying on students often providing incorrect information on where they are going that day.

System Components

Database: Our database is a cloud-based MongoDB instance. We chose this as it is a scalable and widely used NoSQL database solution.

API: We created a RESTful backend API using Spring Boot. Spring Boot is an enterprise-grade dependency injection framework that is great for creating RESTful web services. The application was deployed to Heroku and it allows our front end applications to modify the DB as needed over HTTP.

Website: We created a web application with the React framework that allows teachers to make changes to the student database. The idea was to allow teachers and school administrators to easily make edits to student data.

Mobile application: We used the React Native UI framework for our smartphone application. The primary benefit was that our application can run on Android or iOS while maintaining only one codebase.

Results

We believe that our project would benefit many schools and parents during school dismissal. In addition to speeding up queues and helping to ensure student safety, each dismissal is logged. Thus, there is a record of the time and mode of each student's dismissal for later review or future data analysis.

The database logic is abstracted away by the website and the mobile application, and just by using our services a school is able to maintain and edit its student data without any IT support.
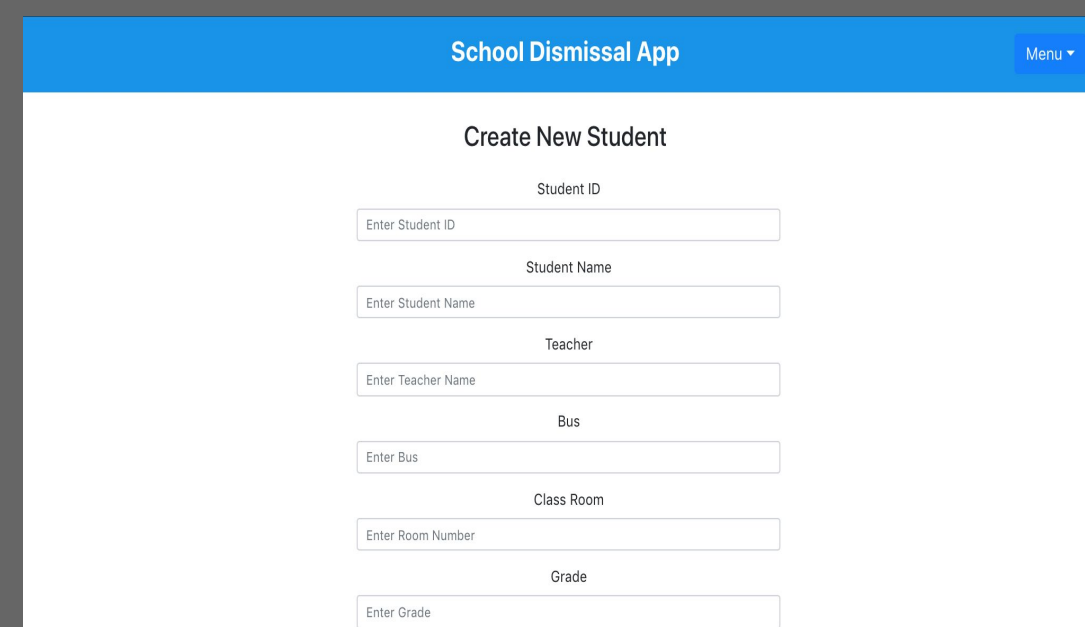
Conclusion

The project is an all in one functioning student dismissal manager. Although we were unable to build all the features we intended, the project in its current state is a useful school dismissal solution which was our primary goal.
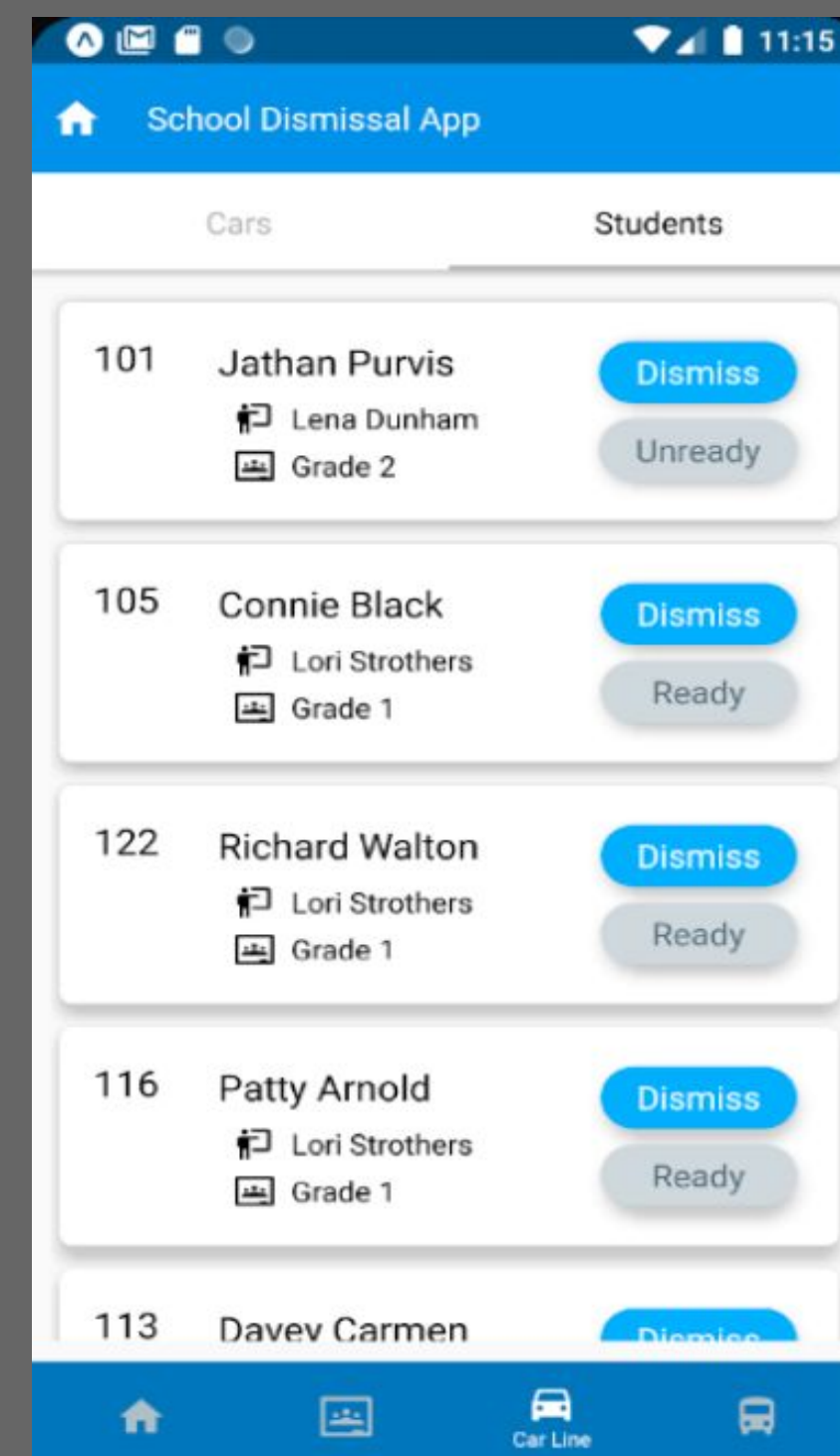
To add onto what we have built, we would like to incorporate some more features, such as a QR system to allow the teachers to scan cars without manually entering the student IDs.

One flaw is the lack of securities measures in place to protect user data. We weren't able to effectively implement this, but realize it would be mandatory for any sort of real life application.
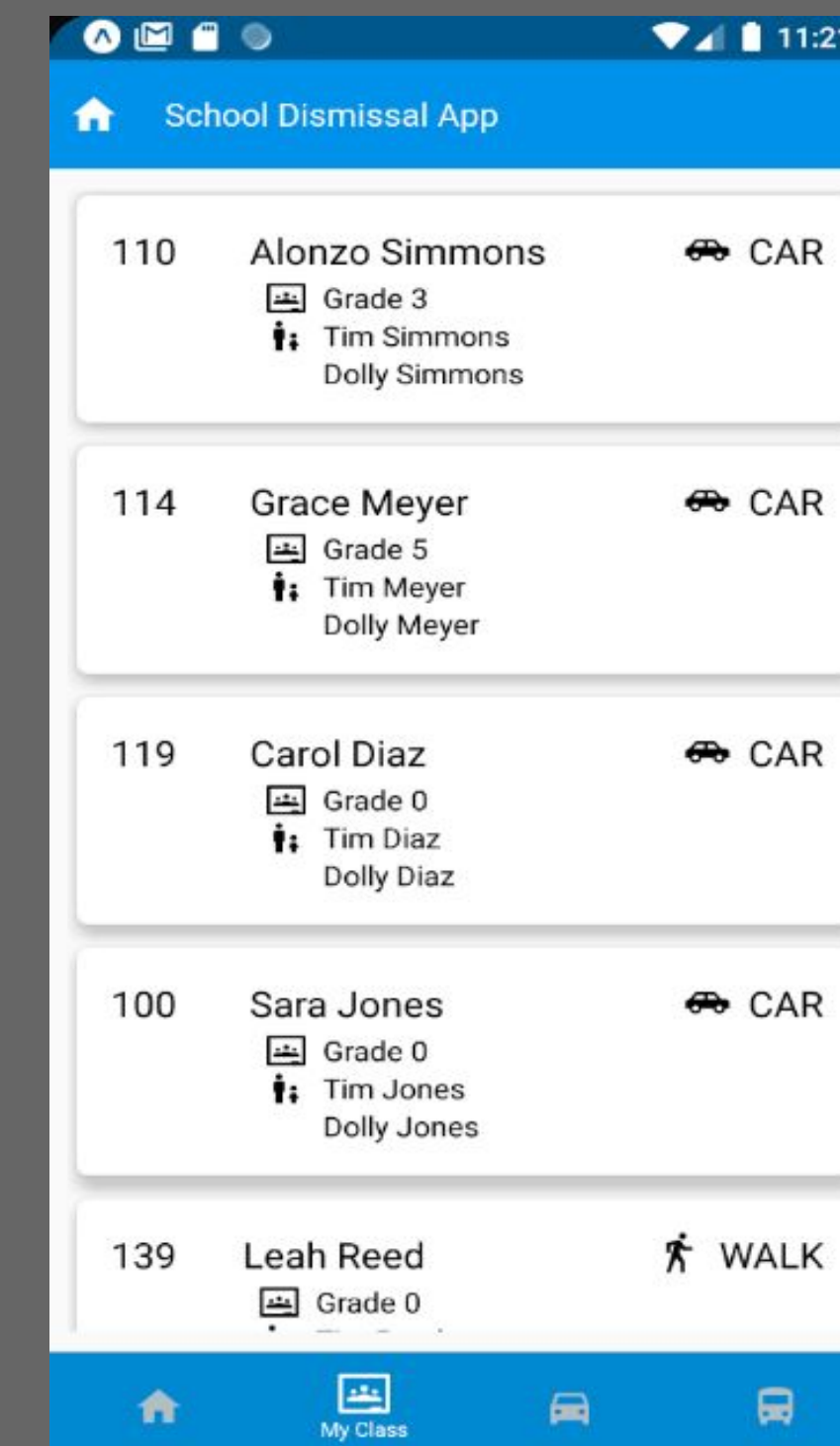
We are proud to present what we have accomplished, and we thank you for your time.

Web application to update database

The student queue assistant feature of the mobile application

MyClass feature of the mobile application