



Engineering
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School of Computing & Information Sciences

Spring 2019 Senior Design Project



Windows

APACHE
HTTP SERVER PROJECT



MySQL

php



CodeIgniter

Patrol Shift Bid Scheduler

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Problem

Scheduling at police stations is a very manual, and tedious process, requiring significant oversight from the officers in charge of it.

An online replacement for the current system would greatly simplify things for the officers tasked with scheduling, being more efficient and less wasteful in the process.

Current System

Scheduling at many police departments is currently done manually using tools such as: spreadsheets, paper, pencil, binders, whiteboards, etc.

- Patrol officers are asked to bid for their time slots based on seniority. They fill out forms for this purpose.
- Once collected, the bids are compiled into a schedule using spreadsheets, to ensure minimum staffing requirements are met.
- Vacation/sick days are tracked separately using whiteboards.

The tedium involved in this process warrants a more automated solution.

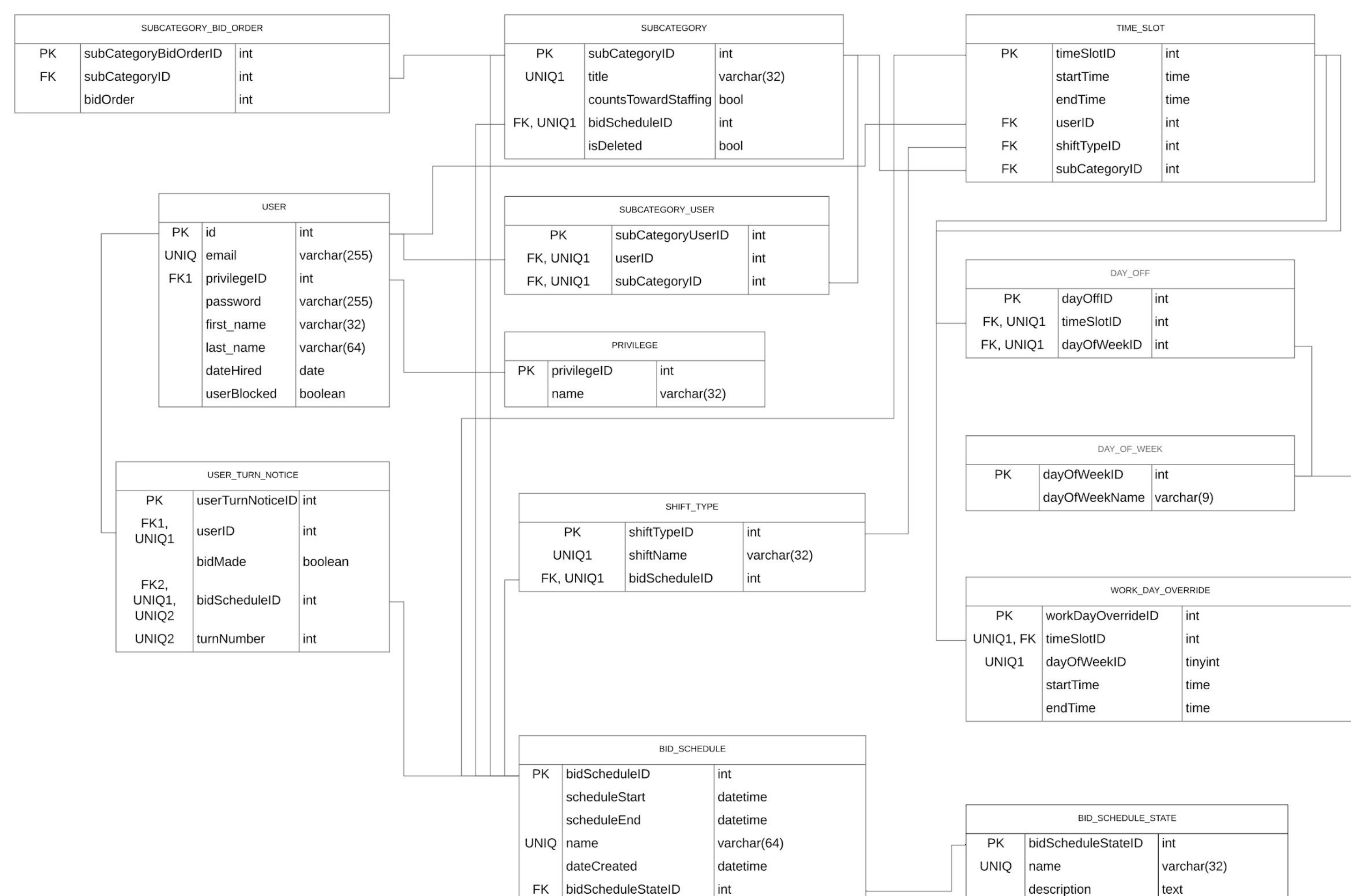
Requirements

Use of a WAMP stack was required, since existing infrastructure was in place.

Additionally, development required:

- Database schemas accounting for all information in the current systems.
- User authentication with role-based access control.
- Forms to manage users, roles, schedules, and bidding.
- Email notifications using SMTP.
- A way to view historical schedules, even as the database changes.

Design



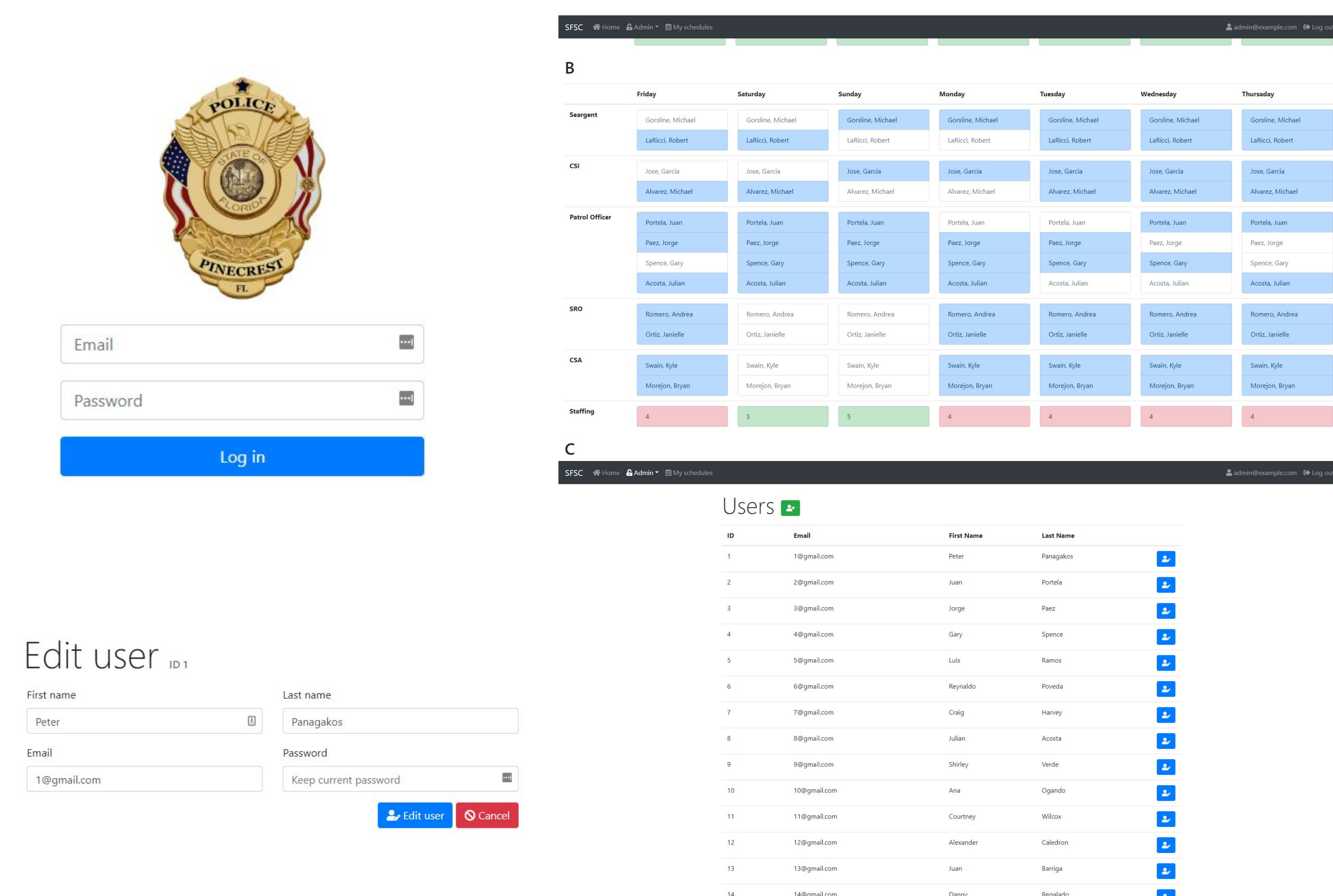
Implementation

Given the MySQL and PHP version constraints, the CodeIgniter framework was selected for its compatibility. Many of its features were used extensively in the scheduler's design:

- MVC structure matched the scheduler's design philosophy.
- Query builder helped avoid writing raw SQL queries whenever possible.
- Database migrations, as changes to the schema are an inevitability.
- Other various facilities; namely, form validation and email-sending.

For the frontend, Bootstrap 4 was used for its familiarity.

Screenshots



Summary

A web-based scheduling system was designed to replace the old paper-based solutions currently being used by police departments.

Features:

- User authentication.
- Management forms and views for users, schedules, and bidding.
- Schedule view allowing users to see schedules past, present, and future.
- Email notifications for users when it is their turn to bid on the schedule.

Acknowledgement

The material presented in this poster is based upon the work supported by Chief Samuel Ceballos Jr. and Sgt. Heather Schry, from the Pinecrest Department of Police. I also thank my teammate Jorge Costafreda, for assistance, and cooperation that I received throughout this process.