TIOGA TAE KWON DO STUDENT MANAGEMENT SYSTEM

Team: Team Kwondo
Team Members: Curtis Cali, Nicholas Coriale, Andrew Deck, Andrew Vogler, Michael Washburn
Project Sponsor: Paul Mittan, owner of Tioga Tae Kwon Do in Waverly, NY
Faculty Coach: Dr. Scott Hawker
Senior Project - Spring 2017

Problem

The Tioga Tae Kwon Do studio wants a simpler way to manage classes, student attendance, and information. Tasks such as taking attendance, registering students, tracking waivers, and saving emergency contact information are usually done with paperwork and filing cabinets.

The sponsor would like to reduce the information kept on paper and the effort of completing these tasks. A previous attempt at implementing the system left the sponsor unsatisfied, and offered little advantage to using it. The main areas of improvement are:

- Attendance tracking is difficult for instructors to do while managing the class
- Paperwork for students must be stored and organized for future reference
- Emergency contact information must be easily accessible in case a student is injured
- Tracking student progression would be difficult to do manually but would be very helpful for the planning of belt testing
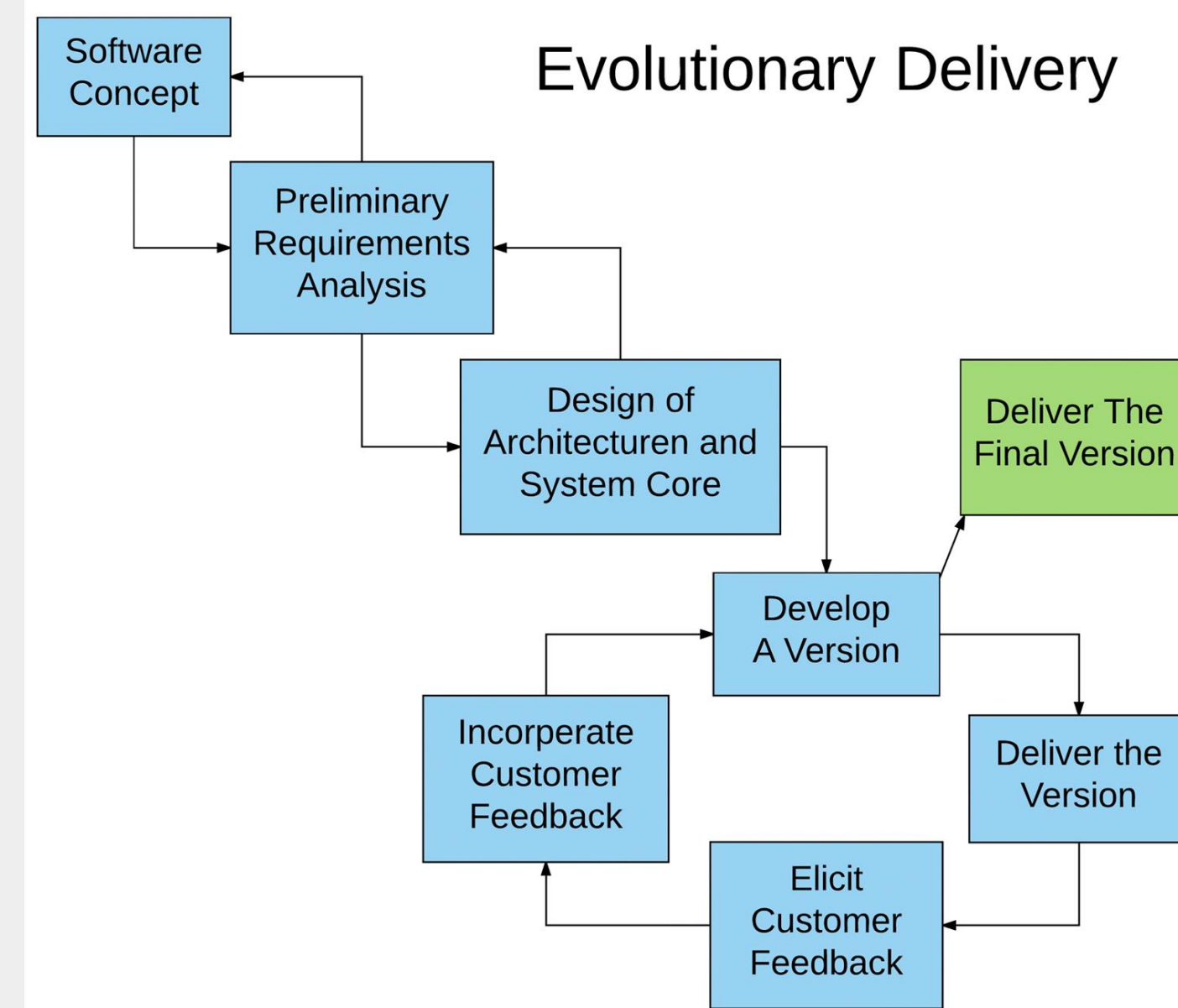
Process

Project Start:
- 1 week to build the system concept
- 2 weeks of requirement analysis
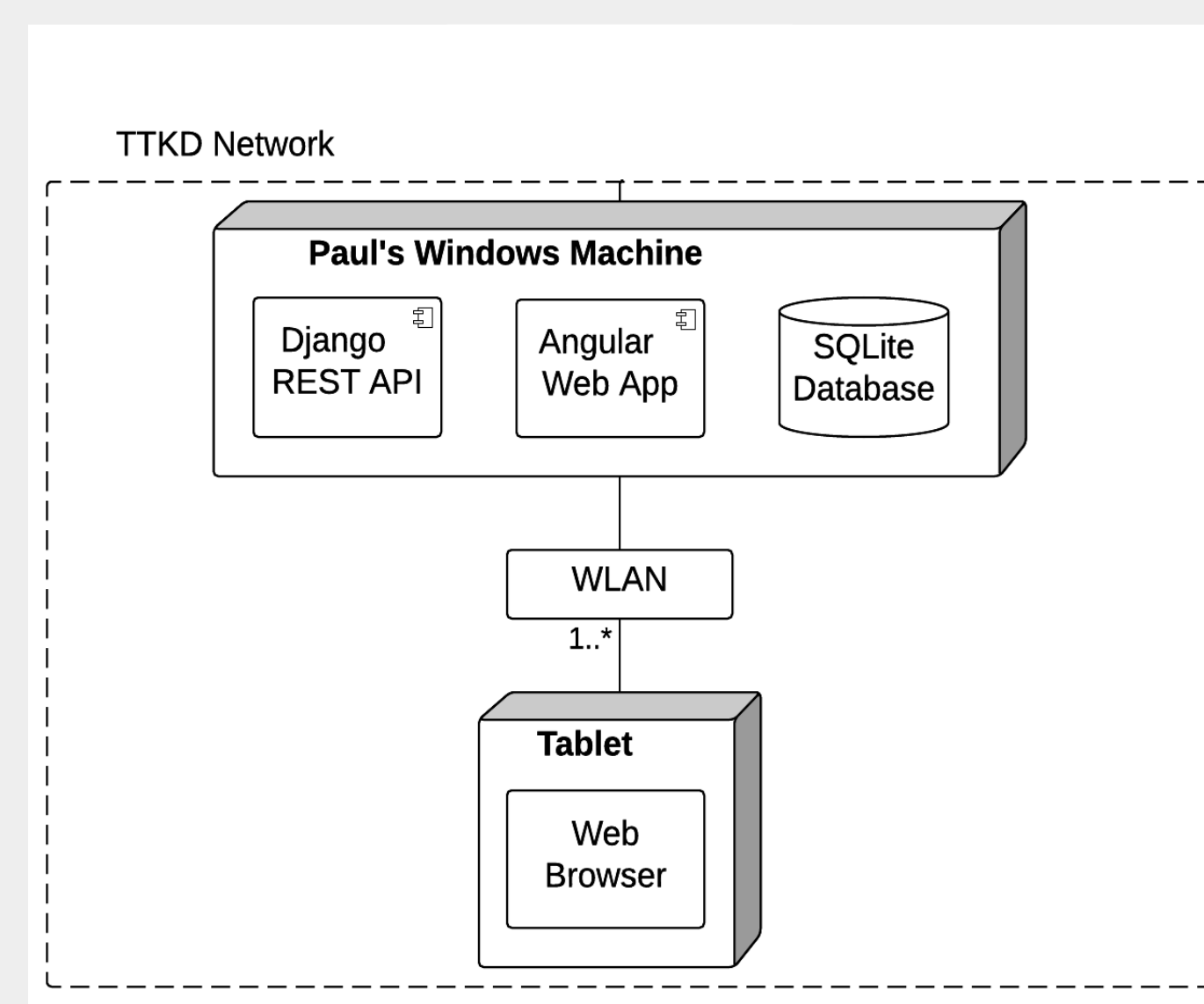- 2 weeks of system design

Remainder of project:
- 2 week iterations, for a total of 10
- Deployment every iteration
- Elicit feedback and incorporate it

Evolutionary Delivery

Software Concept → Preliminary Requirements Analysis → Design of Architecture and System Core → Develop A Version → Deliver the Version → Elicit Customer Feedback → Incorporate Customer Feedback → Deliver The Final Version

Design

Requirements influencing design:
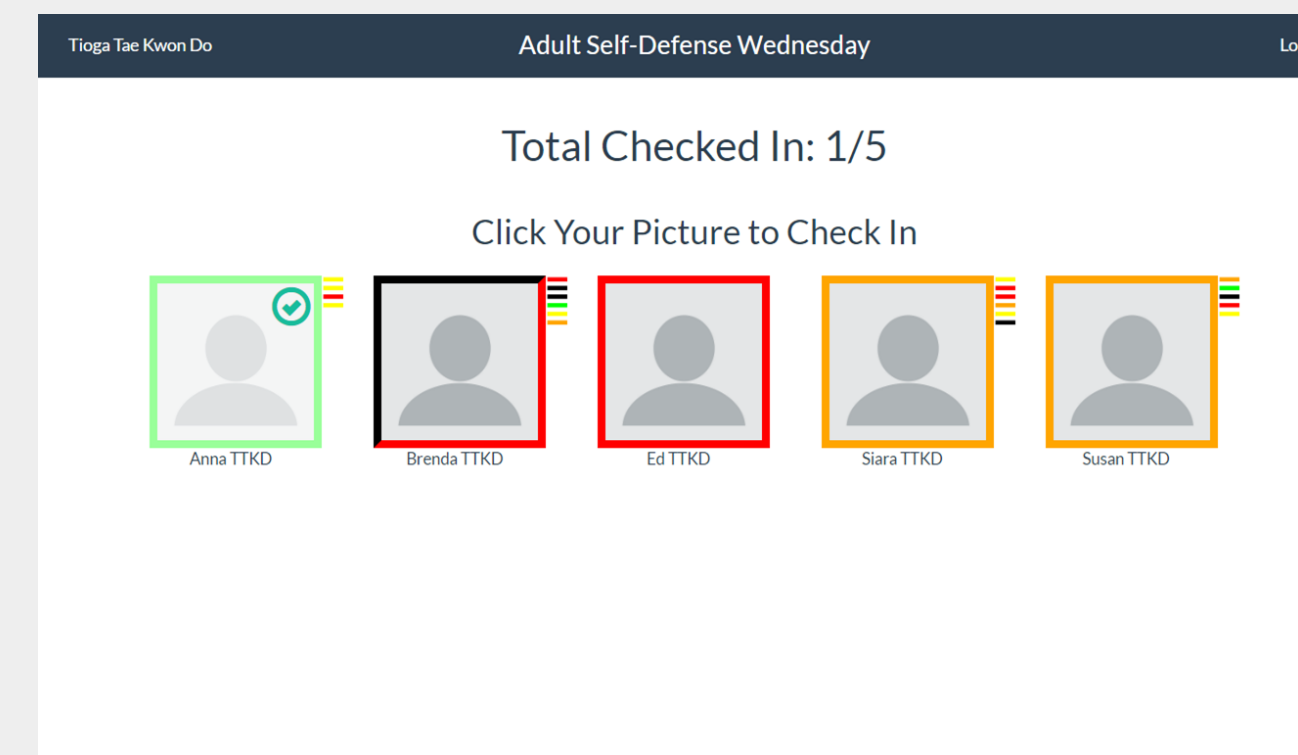
- Entirely contained within the TTKD network
- Needs to be easy to install
- Hosted on a Windows 10 PC
- Multiple tablets will connect over the WLAN

TTKD Network

Paul's Windows Machine
- Django REST API
- Angular Web App
- SQLite Database

WLAN

1..*

Tablet
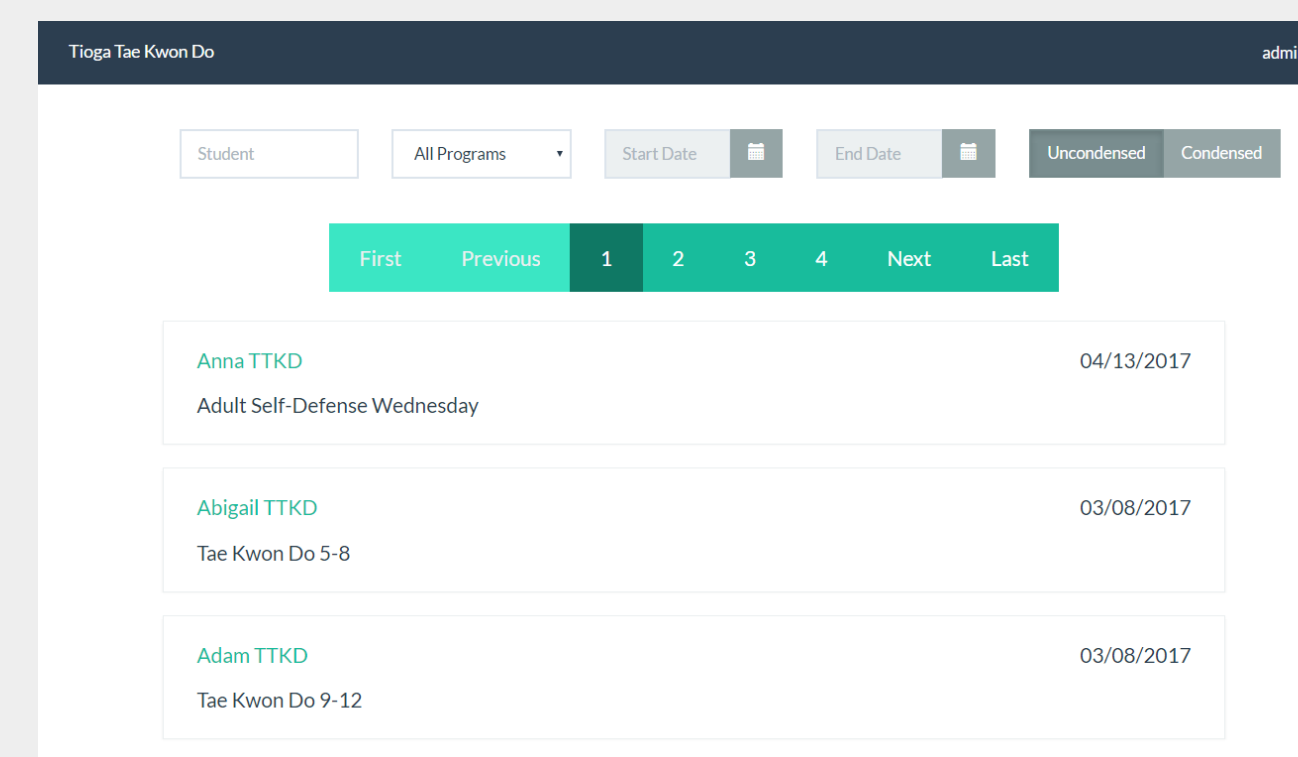- Web Browser

Main Features

Student Check-in
Students can easily check themselves in when they arrive at class. Their current belt color and picture is included so students from age 3 and up can find themselves and check in.
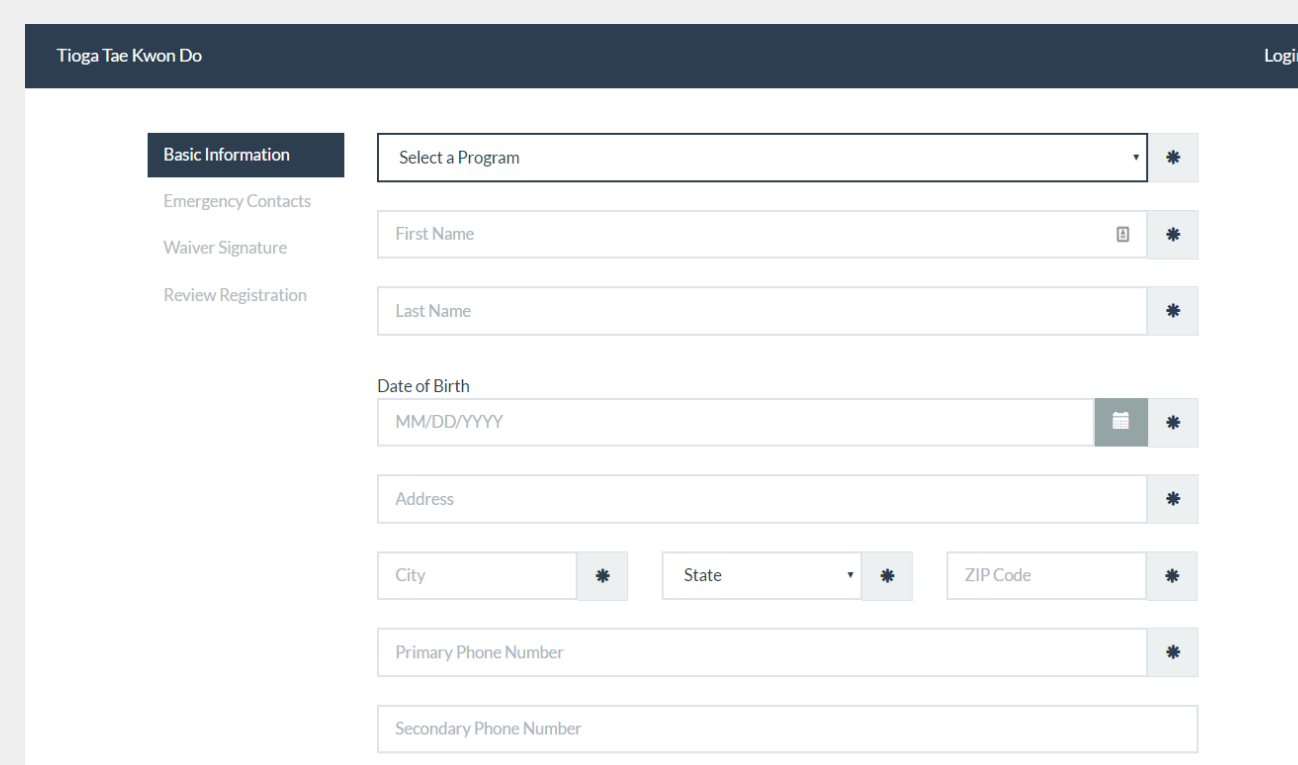
Tioga Tae Kwon Do — Adult Self-Defense Wednesday — Login
Total Checked In: 1/5
Click Your Picture to Check In
Anna TTKD, Brenda TTKD, Ed TTKD, Sara TTKD, Susan TTKD

Attendance Tracking
Administrators and instructors can view program attendance, and have the ability to filter by program, date, and name.

Anna TTKD — Adult Self-Defense Wednesday — 04/13/2017
Abigail TTKD — Tae Kwon Do 5-8 — 03/08/2017
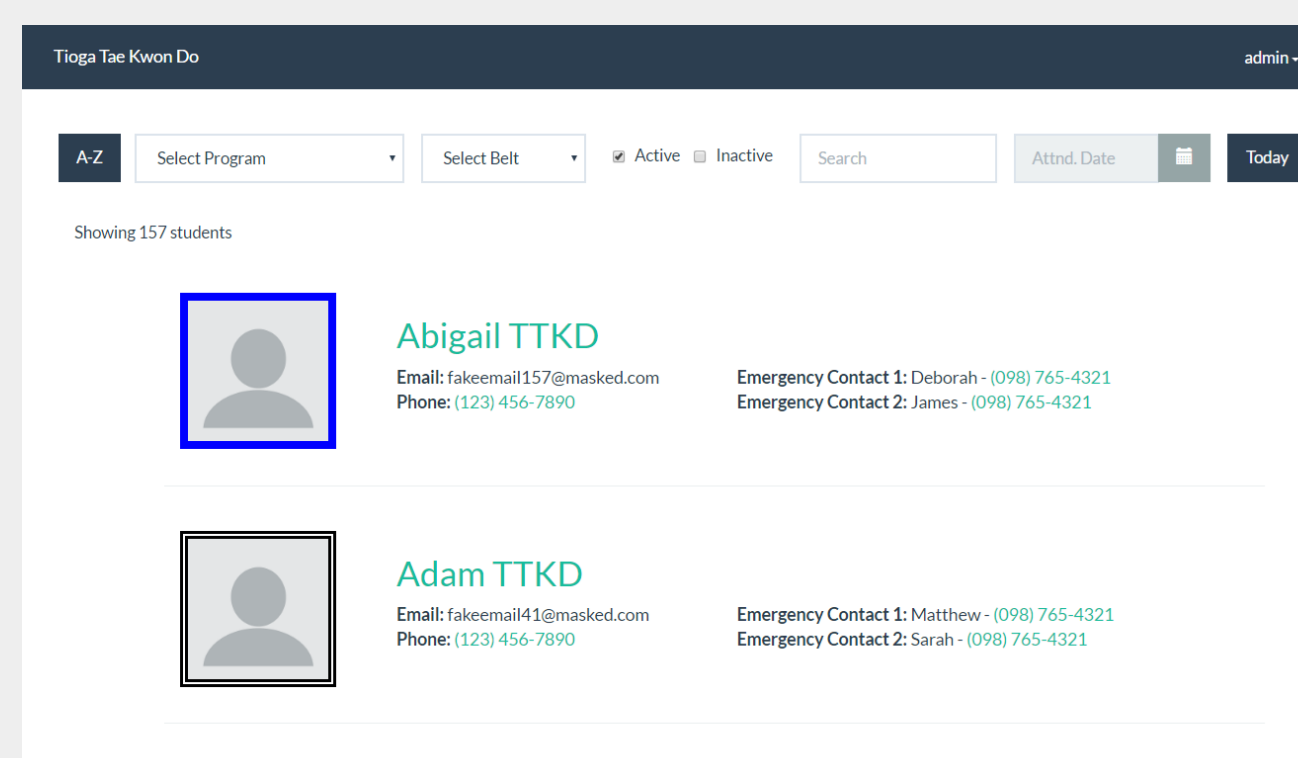Adam TTKD — Tae Kwon Do 9-12 — 03/08/2017

Registration
Allows for new members of the studio to add their data to the system so that it can be tracked. Administrators can also start a partial registration to later be completed by a student/parent.
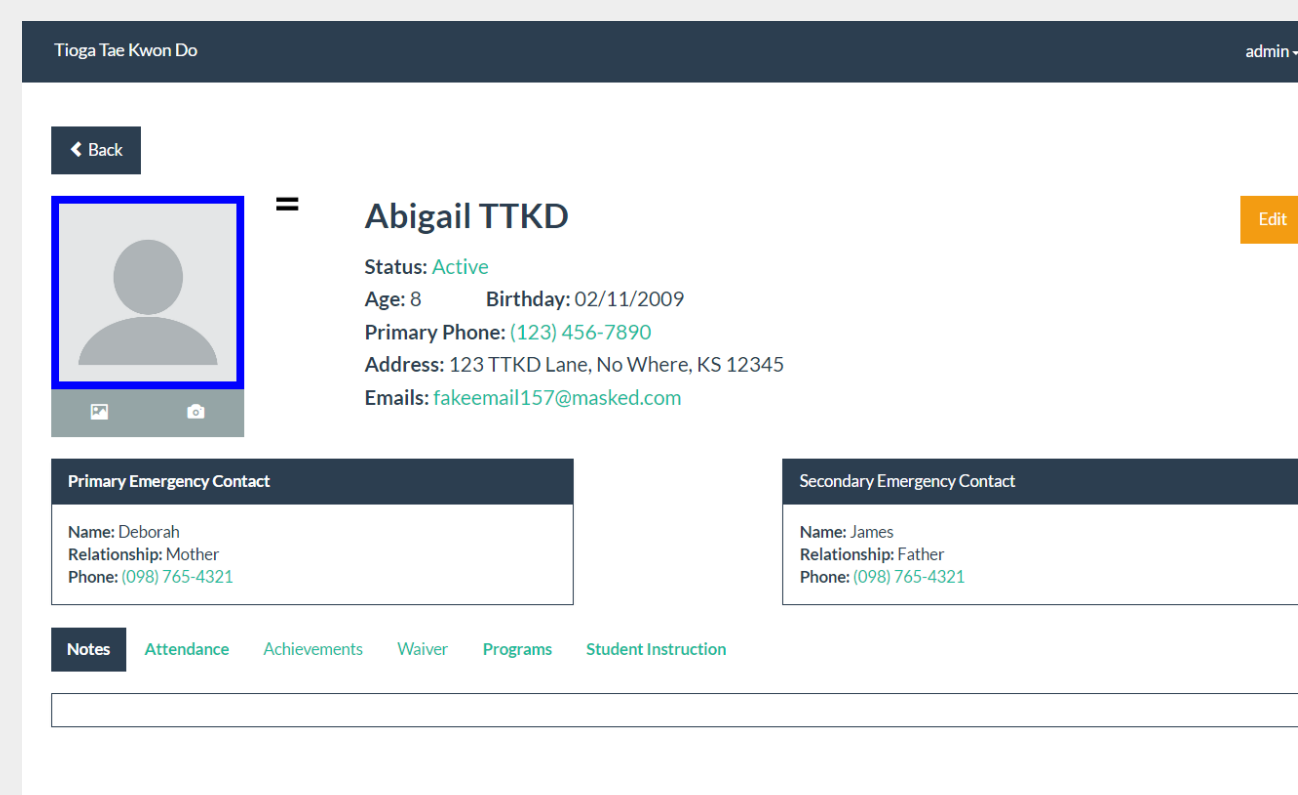
Student Search
Instructors and admins can view a list of all students and can search based on program, belt, or dates attended. The user can also search based on the student information displayed on this page.

Abigail TTKD
Adam TTKD

Student Profiles
Shows all relevant data about a specific student which can be viewed and modified by both instructors and admins.

Abigail TTKD

Implementation

- Angular
  - Ideal for dynamic web applications
  - Access to extensive number of JS libraries
- Django
  - Lightweight, easy to implement
  - Simple deployment
  - Streamlined data model creation
- SQLite
  - Serverless database
  - Compact and efficient

Testing

Automated Testing With Protractor:
- Testing framework built on top of Selenium for Angular web applications
- Simulates user interaction with the UI
- We developed numerous robust automated tests for the application with a focus on the most important features

Live User Testing:
From the start of the project the team wanted to do live user testing. However, the team decided to wait until the application's core functionality was complete before doing so. In the first week of iteration 9, two team members traveled to Paul's TKD Studio to observe multiple classes using the system. This was a very successful endeavor, even we came back with a few issues. Overall the system performed very well and Paul was both happy and grateful that we made the trip.

Results

- Sponsor is very happy with the completed system
- All requested features were successfully implemented
- Evolutionary delivery was a good choice, significantly improved the quality of the application
- Deployed final version mid April to give our sponsor multiple weeks to use the system before the end of the project