The Lighthouse for the Blind is a non-profit organization which provides opportunities for people who are blind, Deafblind, and blind with other disabilities. One way this mission is accomplished is by sponsoring a one week retreat to provide recreation, training and networking opportunities in a fully accessible environment for 60-90 Deafblind people and 100-150 interpreters.

TEAM

Team Members:
Frank Fuentes          Crystal Nguyen
Chris Trent            Alan Yu

Faculty Advisor: Dr. Khadivi
Sponsor: Amy Koehl and Antonio Rosier

COMPANY BACKGROUND

The Lighthouse for the Blind is a non-profit organization which provides opportunities for people who are blind, Deafblind, and blind with other disabilities. One way this mission is accomplished is by sponsoring a one week retreat to provide recreation, training and networking opportunities in a fully accessible environment for 60-90 Deafblind people and 100-150 interpreters.

PROBLEM

Current application process is too slow and insecure!

VISION STATEMENT

Creating a fast, secure, and convenient web solution for the Lighthouse of the Blind community that will be a sustainable platform for future growth.

ADVANTAGES OF WEB-BASED SYSTEM

- Remove unreliable paper forms
- Improve accessibility functionality for deaf and blind users
- Run queries to select, create, update, and delete
- Secure data
- Maintain history of past retreats easily

SOLUTION OVERVIEW

- Campers
- Online Form
- SQL Database
- Admin Portal
- Lighthouse Staff
- Volunteers

SOFTWARE ENVIRONMENT

Local

- Visual Studio
  - View
  - Controller (C)
  - Model (M)

Offline Database

Microsoft Azure

- Visual Studio Team Services
- SQL Azure

AGILE DEVELOPMENT PROCESS

- Next Iteration
- Write Code
- Integrate and Test
- System Testing
- Make Changes
- Client Feedback
- Release

MATCHING ALGORITHM

A unique solution we implemented is to auto-match campers for roommate assignments and to match with volunteers. This involves a forward-checking algorithm to find the best match based on data analytics.

The above figure shows the forward checking algorithm assigning camper $x_1$ with room $r_{11}$. Next it assigns camper $x_2$ with room $r_{12}$, camper $x_3$ with room $r_{13}$ and camper $x_4$ with room $r_{41}$.

ACCESSIBILITY

- Integrated with JAWS screen reader
- Follows W3C Web Accessibility Standards
- Thoroughly tested by deaf and blind end users

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