# Florida International University School of Computing and Information Sciences

# CIS 4911 - Senior Capstone Project Software Engineering Focus

# Final Deliverable

Project Title: Contest Registration System 1.0

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#### Abstract

The Ultimate Software Academy for Computer Science Education holds programming competitions for high school student teams. However with the competitions growing every year the current process of organization such a large event has become inefficente and time consuming for both project organizers and coaches of teams. This project set out to create an interactive website that makes it easy for coaches and contest administrators to collaborate on the registration process.

This document describes the approach taken to complete the requirements set by the project owner. The Registration System v1.0 is an interactive website to allow for a coach and administrator to have centralized source of information about the programming competition. The application makes it easy for coaches to register and manage their teams and allows administrators to monitor the registration information and send notifications to teams.

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# Introduction

In this chapter will detail the current system in place for the organization of high school programming competitions. It will also explain the new system that was to created to remove the inefficiencies of the current system. The User Stories chapter will describe the user stories that were created from our initial requirements document and which of those were implemented. The Project Plan chapter will describe the hardware and software requirements for the system. It will also provide an explanation of each sprint and its completed user stories and tasks. The System Design chapter will provide visual representations of the system design and patterns that are used. The System Validation chapter will describe the testing approach taken during and after development. Any technology specific terms will be defined in the Glossary chapter. UML Diagrams, UI design, and Sprint Retrospective/Review reports will be given in the Appendix.

# **Current System**

The programming competition put on by Ultimate Software and Florida International University has the bulk of its work structured around the contest organizers. Currently the programing competition website gives information about current and previous competitions and the ability for coaches so sign up there team for an upcoming competition. The teams are then placed in a database and will be extracted in excel format for the competition organizer/administrator to review.

The current limitations on the system are based on the fact that once a coach submits his team for the competition, their interaction with the system is over. If any changes need to be made to the teams the coach needs to contact the administrator to make updates on his behalf, and the administrator must then search through an excel sheet for a particular team to make the updates. With over 100 students and 12 schools from around Florida competing in the 2016 competition, it can get very overwhelming for an administrator to manage.

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# **Purpose of New System**

Registration System v1.0 is an interactive website for coaches and administrators to collaborate in the creation and updating competition information. In the newly introduced system, a multiple role system has been added that allows for a coach and an administrator to have separate views of information that they can interact with. A coach can now create an account within the system for easier access to information that pertains to their role. Originally a coach would sign up a team on a form, then submit it to the administrator for review. In the new system a coach will still be able to create a team and add participants, but it will also give a detailed view of all the teams a coach has created. A coach can also modify any information about the participants he has added to a team.

The administrator also has the ability to log into the system, but has access to more detailed information about the teams participating in the competitions. The administrator now gets a easy to navigate view of all schools/coaches participating, and is now able to search for a particular school/coach and get that information in a tabular format. The administrator also now has the ability to remove schools from a competition at the click of a button instead of having to remove them through excel. The administrator can now take all the information about a contest(participants, schools, coaches) and archive them for a later viewing with the same ease as the other features.

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# USER STORIES

The Contest Registration System used the agile process of Scrum for software development. This chapter contains a comprehensive list of all the user stories gathered from the product owner. They are separated into implemented user stories that were completed and pending user stories to be carried over into the next version of the system.

# **Implemented User Stories**

# **User Story #678 - Modify Teams as Coach**

As a coach, I would like to be able to view, select, modify or delete a single team.

#### **User Story #676 - Create Account for Coaches(Required)**

As a coach, I would like to be able to create accounts, so I may register teams for the competition.

# **User Story #687 - Create Teams as Coach(Required)**

As a coach, I would like to create a team, so I may register my participants for the contests.

#### User Story #688 - Login for Coach/Admin(Required)

As a coach/admin, I would like to be able to sign in, so I can access my customized pages.

# **User Story #679 - Add a Participant(Required)**

As a coach, I would like to be able to add a new participant, so I may register my participants for the contests.

### **User Story #677 - Modify Account(Required)**

As a coach, I would like to be able to modify my account, so that I may edit my information.

# **User Story #681 - View Teams as Administrator(Required)**

As an administrator, I would like to view all registered teams, so that I may see all teams participating in contests.

#### User Story #685 - View List of Schools as Administrator(Required)

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As an administrator, I would like to view and sort the list of all schools, so I may know all participating schools and coaches.

#### User Story #694 - View Active Contests as Administrator(Required)

As an administrator, I would like to view all active contests, so I may manage them.

# **User Story #695 - View Stored Contests as Administrator(Required)**

As an administrator, I would like to see all stored contests, so that I may review the information of previous contests.

# **User Story #696 - Create Contest(Required)**

As an administrator, I would like to create contests, so that coaches and their teams may register for them.

# **User Story #684 - View Teams as Administrator(Required)**

As an administrator, I would like to view the list of all team member, so I may manage the participants of the contests.

# **User Story #683 - View Other Administrators(Required)**

As an administrator, I would like to view a list of all administrators, so I may manage all super-users of the system.

### **User Story #718 - Delete Administrators(Required)**

As an administrator, I would like to be able to delete other administrators, so I may manage all super-users of the system.

# **User Story #680 - Create an Administrator Account(Required)**

As an administrator, I would like to be able to create an administrator account, so I add another person to help with management of contests.

# **User Story #686 - Store Contest List(Required)**

As an administrator, I would like to store all registration data for a contest, so that the participation data can later be reviewed.

#### **User Story #709 - Remove Coach (Discarded)**

As an administrator, I would like to delete coaches, so I may remove them from the website once they are no longer participating.

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# **User Story #721 - Search a Team as Administrator(Required)**

As an Administrator, I would like to search for a team, so I may see the specifics of that team.

# **User Story #727 - Delete Schools(Required)**

As an administrator, I would like to remove schools, so I may better manage the users on the system.

# **Pending User Stories**

# **User Story #682 - Send Email Notifications as Admin**

As an administrator, I would like to view the list of all coaches so that I may send them an email.

# **User Story #689 - Recover Password**

As a coach, I would like to be able to recover my password, so I may continue logging in to the site.

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# PROJECT PLAN

The Contest Registration System was the first iteration of this project, so the first two sprints were dedicated to the setup and design of the system. The coach and administrator side of the functionality were developed concurrently by Wayne Curling and Eduardo Guerra respectively, starting on the third sprint. There were changes made to both ongoing stories and the original requirements, which were handled according to Agile methodology.

#### Hardware and Software Resources

Operating System: Linux - Requested by Product Owner. Server: Apache Tomcat - Requested by Product Owner Database: MySQL - Requested by Product Owner

Application Logic: Java/JSP - User familiarity with the language.

# **Sprints Plan**

# Sprint 1

(01/16/2016 - 01/29/2016)

#### Tasks

- Concept review
- User Story Creation
- Server Setup
- Database Setup

#### Sprint 2

(01/30/2016 - 02/12/2016)

#### Tasks

- System Prototyping
- Front End Development
- Tomcat Setup

# Sprint 3

(02/13/2016 - 2/26/2016)

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# **User Story #678 - Modify Teams as Coach**

#### Tasks

- Documentation
- Create page to display teams
- Create form to modify team information
- Create logic to modify team information in database.

# Acceptance Criteria

- Deletion of the team must result in the members of the team having being deleted.
- A team can have no more than 5 members.
- Only participants created by the coach can be added to the team.

# Modeling

```
Appendix A - Figure #2 - User Story #678 Use Case Diagram Appendix A - Figure #2 - User Story #678 Sequence Diagram Appendix A - Figure #2 - User Story #678 Class Diagram
```

# **User Story #676 - Create Account for Coach**

#### Tasks

- Documentation
- Create form for registration data input
- Create logic to processing coach information and insertion into database.

#### Acceptance Criteria

- Coach must be able to create an account with the first name, last name, email, password, and school name.
- Validation: First name, last name, email, password, and school name must be required, and the system must prompt the coach with a specific message if any field is left empty.
- Security: Input fields must be protected against SQL injection.

#### Modeling

```
Appendix A - Figure #1 - User Story #676 Use Case Diagram
Appendix A - Figure #1 - User Story #676 Sequence Diagram
Appendix A - Figure #1 - User Story #676 Class Diagram
```

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# **User Story #687 - Create Team as Coach**

# Tasks

- Documentation
- Create form to enter team information.
- Create logic to process entered team information and database insertion.

### Acceptance Criteria

- Coach must be able to create a team with an unique team name.
- Validation: Team name is required and the system must prompt the coach with a specific message if the field is left empty.
- Security: Input fields must be protected against SQL injection.

#### Modeling

```
Appendix A - Figure #3 - User Story #687 Use Case Diagram Appendix A - Figure #3 - User Story #687 Sequence Diagram
```

Appendix A - Figure #3 - User Story #687 Class Diagram

# **User Story #688 - Login for Coach/Admin**

#### Tasks

- Documentation
- Create page with login form
- Create logic to determine whether user is administrator or coach.
- Create logic to create session and session parameters.

#### Acceptance Criteria

- Coach/admin must be able to login with the email and password of a registered account.
- Validation: Email and password are required.
- Security: All fields must be protected against SQL injection.

# Modeling

```
Appendix A - Figure #4 - User Story #688 Use Case Diagram
Appendix A - Figure #4 - User Story #688 Sequence Diagram
Appendix A - Figure #4 - User Story #688 Class Diagram
```

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# Sprint 4

(02/27/2016 - 03/11/2016)

### User Story #679 - Add a Participant as Coach

#### Tasks

- Documentation
- Create form to add a new participant
- Create logic to process participant information and database insertion.

# Acceptance Criteria

- Created participant must be linked to the coach that created it.
- Participants must have a first name, last name, and email.
- Validation: All input fields are required.
- Security: All fields must prevent SQL injection

# Modeling

Appendix A - Figure #5 - User Story #679 Use Case Diagram

Appendix A - Figure #5 - User Story #679 Sequence Diagram

Appendix A - Figure #5 - User Story #679 Class Diagram

# **User Story #677 - Modify Account as Coach**

#### Tasks

- Documentation
- Create page to display current information for coach.
- Create form to allow information editing.
- Create logic to process changes

#### Acceptance Criteria

- Coach must be able to modify their first name, last name, email, password and school name
- Coach should only be able modify the teams he/she created.
- Validation: Required fields will prompt the coach for correct input if validation is not met.
- Security: All Input fields must be protected against SQL injection.

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# Modeling

```
Appendix A - Figure #6 - User Story #677 Use Case Diagram
Appendix A - Figure #6 - User Story #677 Sequence Diagram
Appendix A - Figure #6 - User Story #677 Class Diagram
```

# **User Story #681 - View Teams as Administrator**

#### Tasks

- Documentation
- Create page to display team information

# Acceptance Criteria

• Administrator must be able to view all registered teams.

# Modeling

```
Appendix A - Figure #7 - User Story #681 Use Case Diagram
Appendix A - Figure #7 - User Story #681 Sequence Diagram
Appendix A - Figure #7 - User Story #681 Class Diagram
```

# **User Story #685 - View List of Schools as Administrators**

#### Tasks

- Documentation
- Create page to display school information

# Acceptance Criteria

• Each record must display the school name, coach name, email and list of team names.

# Modeling

```
Appendix A - Figure #8 - User Story #685 Use Case Diagram
Appendix A - Figure #8 - User Story #685 Sequence Diagram
Appendix A - Figure #8 - User Story #685 Class Diagram
```

# **User Story #694 - View Active Contests as Administrator**

#### Tasks

- Documentation
- Create page to display active contests information

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# Acceptance Criteria

• The name, time, date, location, creator, and description of all active contest must be visible

# Modeling

```
Appendix A - Figure #9 - User Story #694 Use Case Diagram
Appendix A - Figure #9 - User Story #694 Sequence Diagram
Appendix A - Figure #9 - User Story #694 Class Diagram
```

# **User Story #695 - View Stored Contests as Administrator**

#### Tasks

- Documentation
- Create page to view stored contest information

# Acceptance Criteria

• The name, time, date, location, creator, and description of all stored contest must be visible

## Modeling

```
Appendix A - Figure #10 - User Story #695 Use Case Diagram
Appendix A - Figure #10 - User Story #695 Sequence Diagram
Appendix A - Figure #10 - User Story #695 Class Diagram
```

# **User Story #696 - Create Contest**

#### Tasks

- Documentation
- Create logic to switch contest from active to inactive.

#### Acceptance Criteria

- A contest is created with the name, date, time, location, and description entered by the administrator
- All contests will be active by default.
- Validation: Name, date, time, location, and description are required.
- Security: All input fields must be protected against SQL injection.

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# Modeling

Appendix A - Figure #11 - User Story #696 Use Case Diagram Appendix A - Figure #11 - User Story #696 Sequence Diagram Appendix A - Figure #11 - User Story #696 Class Diagram

# Sprint 5

(03/19/2016 - 04/01/2016)

# **User Story #684 - View Teams as Administrator**

#### Tasks

- Documentation
- Create a page to display all team information

#### Acceptance Criteria

- All records must show a team member's name, email, t-shirt size and team name.
- All records must be able to be sorted in ascending order.

# Modeling

Appendix A - Figure #13 - User Story #684 Use Case Diagram Appendix A - Figure #13 - User Story #684 Sequence Diagram Appendix A - Figure #13 - User Story #684 Class Diagram

# **User Story #683 - View Other Administrators**

#### Tasks

- Documentation
- Create a page to display all administrator information.

#### Acceptance Criteria

- All records must show the administrator's
- All records must be sorted in ascending order.

#### Modeling

Appendix A - Figure #12 - User Story #683 Use Case Diagram Appendix A - Figure #12 - User Story #683 Sequence Diagram Appendix A - Figure #12 - User Story #683 Class Diagram

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# **User Story #718 - Delete Administrators**

#### Tasks

- Documentation
- Create logic to remove administrator from database.

# Acceptance Criteria

• Administrator is removed from the database

# Modeling

```
Appendix A - Figure #14 - User Story #718 Use Case Diagram
Appendix A - Figure #14 - User Story #718 Sequence Diagram
Appendix A - Figure #14 - User Story #718 Class Diagram
```

# **User Story #680 - Create an Administrator Account**

#### Tasks

- Documentation
- Create form to allow administrator to create a new administrator
- Create logic to process administrator information and database insertion.

# Acceptance Criteria

- Administrator must be able to create an account with first name, last name, email, and password.
- Validation: All input fields are required.
- Security: Input fields must be protected against SQL injection.

# Modeling

```
Appendix A - Figure #15 - User Story #680 Use Case Diagram
Appendix A - Figure #15 - User Story #680 Sequence Diagram
Appendix A - Figure #15 - User Story #680 Class Diagram
```

# **User Story #686 - Store Contest**

#### Tasks

- Documentation
- Create logic to set a contest from active to stored.

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# Acceptance Criteria

• Data, time, event creator, and participants must be stored in the database and displayed.

# Modeling

```
Appendix A - Figure #16 - User Story #686 Use Case Diagram
Appendix A - Figure #16 - User Story #686 Sequence Diagram
Appendix A - Figure #16 - User Story #686 Class Diagram
```

# **User Story #709 - Remove Coach (Discarded)**

#### Tasks

- Documentation
- Create logic to remove coach from database.

# Acceptance Criteria

• The selected coach is removed from the database.

# Modeling

```
Appendix A - Figure #17 - User Story #709 Use Case Diagram
Appendix A - Figure #17 - User Story #709 Sequence Diagram
Appendix A - Figure #17 - User Story #709 Class Diagram
```

# **Sprint 6** (04/02/2016 - 04/15/2016)

# **User Story #721 - Search a Team as Administrator**

#### Tasks

- Documentation
- Create logic to filter team data based on user input.

# Acceptance Criteria

- Team/Teams are displayed alongside coach and school name.
- Validation: The system must prompt the coach with a specific message if any field is left empty.
- Security: Input fields must be protected against SQL injection.

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# Modeling

Appendix A - Figure #18 - User Story #721 Use Case Diagram Appendix A - Figure #18 - User Story #721 Sequence Diagram Appendix A - Figure #18 - User Story #721 Class Diagram

# **User Story #727 - Delete Schools**

#### Tasks

- Documentation
- Create logic for cascading delete of schools and related teams, coaches, and participants.

#### Acceptance Criteria

• The selected school and related teams, coaches, and participants are deleted.

# Modeling

Appendix A - Figure #19 - User Story #727 Use Case Diagram Appendix A - Figure #19 - User Story #727 Sequence Diagram Appendix A - Figure #19 - User Story #727 Class Diagram

# **Sprint 7** (04/16/2016 - 04/29/2016)

# **User Story #682 - Send Email Notifications**

#### Tasks

- Documentation
- Create a page to select coaches to receive the mail.
- Create logic to send email to selected recipients.

#### Acceptance Criteria

• Selected recipients receive the email.

#### Modeling

Discarded since story was put back to the product backlog.

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# System Design

This chapter includes the architectural pattern used to develop the system on top of. The system and subsystem decomposition will be described through the use of a UML package diagram and a Deployment diagram. This chapter will also explain the design patterns used during the development of each user story.

### **Architectural Patterns**

The Contest Registration System uses a 3-Tier architecture. The Contest Registration System queries a lot of information from the database and the 3-tier architecture allows for a protection any potential misuse of the system due to the interface never making direct calls to the database. This architecture was perfect for a group project because since the tiers aren't connected it allows for different people to be working in a different tier at the same time. Most importantly if one tier fails no data is lost which is extremely important when dealing with user information.

# **System and Subsystem Decomposition**

The Contest Registration System is composed of two subsystems, one for administrator and one for coach, which are the two actors of the system. The coach subsystem consists of creating and editing teams for competitions, and editing of personal information, for both participants and coaches. The admin subsystem consists of the management of all users in the system, including teams, coaches, participants, and administrators, as well as creation and storage of contests. The two subsystems are mostly independent, except for participants. The administrator's view of all participants depends on whether coaches have registered for the system and created teams and participants.

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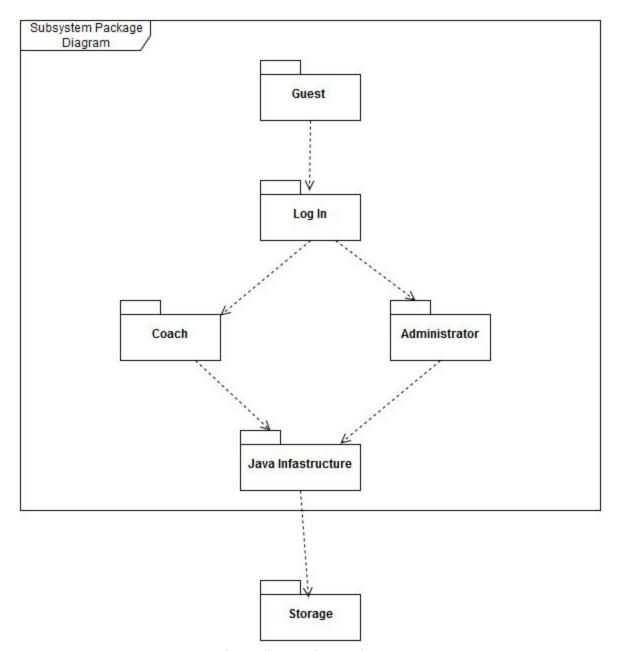
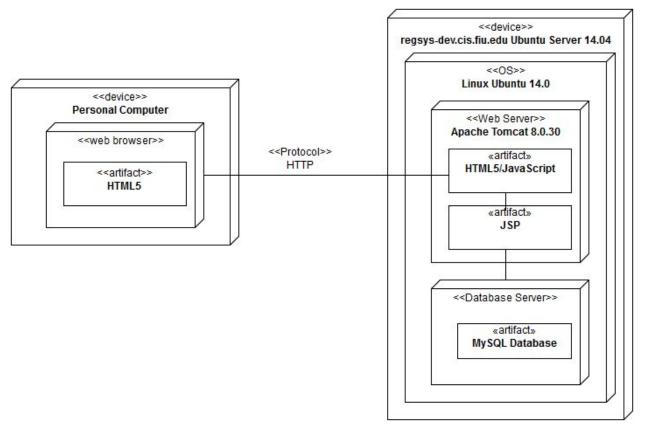


Figure #1 - Package Diagram

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# **Deployment Diagram**



Deployment Diagram

# **Design Patterns**

The design pattern used throughout development of the system was the Model View Controller pattern. We chose this pattern for similar reasons to the 3-tier architecture. The MVC pattern is great for group projects because of the ability for different members of the project to be simultaneously be working on the project without worrying about interdependency issues. The pattern also allows for multiple user interfaces using the same business logic to allow for future development on phones, tablets, etc.

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Identify the design patterns used and briefly explained why they were selected. You should not provide a definition of the pattern here, but rather explain its pertinence.

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# SYSTEM VALIDATION

This chapter will introduce all of the test cases done during the development of the system. Unit and Subsystem tests were done with satisfactory results. System testing was also done manually using the Big Bang method. Due to time constraints the Big Bang method was the only viable method to complete the amount of testing needed.

# User Story #688 - Login for Coach/Admin

#### **System Tests**

- IT688\_01: To test the successful sequence for an administrator to log in.
- IT688 02: To test the successful sequence for a coach to log in.
- IT688 03: To test the failed sequence for an administrator to log in.
- IT688 04: To test the failed sequence for a coach to log in.

#### Subsystem Tests

- UC688 01: To test a failed login to RegSys due to empty fields
- UC688 02: To test a failed login to RegSys due to invalid credentials.
- UC688 03: To test a failed login to RegSys due to invalid password.
- UC688\_04: To test a successful login to RegSys as a coach.
- UC688 05: To test a successful login to RegSys as an admin

#### **User Story #676 - Create account for coach**

# System Tests

- IT676 01: To test the successful sequence for a coach to create an account.
- IT676 02: To test the failed sequence for a coach to create an account

#### Subsystem Tests

- UC688 01: To test a failed registration attempt on RegSys with empty fields.
- UC688 02: To test a failed registration attempt on RegSys with an invalid email.
- UC688 03: To test a failed registration attempt on RegSys with non-matching passwords.
- UC688 04: To test a successful registration attempt on RegSys with valid input.

# **User Story #681 - View Participants as Administrators**

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# System Tests

- IT681 01: To test the successful sequence for an administrator to view participants
- IT681 02: To test the failed sequence for an administrator to view participants.

# Subsystem Tests

- UC681 01: To test the display of all current participants.
- UC681 02: To test the display of all current participants by adding a new participant.
- UC681\_03: To test the display of all current participants by removing an existing participant.

# **User Story #685 - View List of Schools as Administrators**

#### **System Tests**

- IT685 01: To test the successful sequence for an administrator to view schools.
- IT685 02: To test the failed sequence for an administrator to view schools.

#### Subsystem Tests

- UC685 01: To test the display of all current schools.
- UC685 02: To test the display of all current schools by adding a new school.
- UC685 03: To test the display of all current school by removing an existing school.

### **User Story #694 - View Active Contests as Administrators**

#### **System Tests**

- IT694 01: To test the successful sequence for an administrator to view active contests.
- IT694 02: To test the failed sequence for an administrator to view active contests.

#### Subsystem Tests

- UC694 01: To test the display of all active contests.
- UC694\_02: To test the display of all current active contests by adding a new active contest.
- UC694\_03: To test the display of all current active contests by removing an active contest.

# **User Story #695 - View Stored Contests as Administrators**

#### **System Tests**

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- IT695 01: To test the successful sequence for an administrator to view stored contests.
- IT695 02: To test the failed sequence for an administrator to view stored contests.

#### Subsystem Tests

- UC695 01: To test the display of all stored contests.
- UC695\_02: To test the display of all current stored contests by adding a new stored contest.
- UC695 03: To test the display of all current stored contests by removing a stored contest.

# **User Story #696 - Create Contest**

# **System Tests**

- IT696 01: To test the successful sequence for an administrator to create a contest.
- IT696\_02: To test the failed sequence for an administrator to create a contest.

# Subsystem Tests

- UC696 01: To test a failed contest creation on RegSys with an invalid date.
- UC696 02: To test a successful contest creation on RegSys with a valid date.

# User Story #680 - Create an Administrator Account

#### System Tests

- IT680\_01: To test the successful sequence for an administrator to create an administrator account.
- IT680\_02: To test the failed sequence for an administrator to create an administrator account.

### Subsystem Tests

- UC680 01: To test a failed admin creation on RegSys with empty fields.
- UC680 02: To test a failed admin creation on RegSys with an invalid email.
- UC680 03: To test a failed admin creation on RegSys with non-matching passwords
- UC680 04: To test a successful admin creation on RegSys with valid input.

# User Story #686 - Store Contest Data

# System Tests

- IT686 01: To test the successful sequence for an administrator to store a contest.
- IT686 02: To test the failed sequence for an administrator to store a contest.

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# Subsystem Tests

- UC686 01: To test the storing function of RegSys by setting a contest to inactive.
- UC686 02: To test the storing function of RegSys by calling the store function twice.

# **User Story #709 - Remove Coach**

#### **System Tests**

- IT709 01: To test the successful sequence for an administrator to remove a coach
- IT709 02: To test the failed sequence for an administrator to remove a coach.

# Subsystem Tests

- UC709 01: To test the removal of coaches by pressing the delete button.
- UC709 02: To test the removal of coaches by attempting to delete a nonexistent coach.

# **User Story #727 - Remove School**

#### **System Tests**

- IT727\_01: To test the successful sequence for an administrator to log in and remove a school.
- IT727 02: To test the failed sequence for an administrator to log in and remove a school.

### Subsystem Tests

- UC727 01: To test the successful deletion of a school that exists.
- UC727 02: To test the failed deletion of a school that does not exist.

#### **User Story #678 - Coach Modifies**

#### **System Tests**

- IT678 01: To test the successful modification of a participant on a team
- IT678 02: To test the successful modification of a participant on a team
- IT678 03: To test the successful modification of a participant on a team
- IT678 04: To test the failed modification of a participant on a team
- IT678 05: To test the failed modification of a participant on a team
- IT678 06:To test the failed modification of a participant on a team

#### Subsystem Tests

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- UC678\_01: To test the successful sequence for a coach to log in, create a team and modify that team's participants.
- UC678\_02: To test the successful sequence for a coach to log in, create a team and modify that team's participants.
- UC678\_03: To test the successful sequence for a coach to log in, create a team and modify that team's participants.
- UC678\_04: To test the failed sequence for a coach to log in, create a team and modify that team's participants.
- UC678\_05: To test the failed sequence for a coach to log in, create a team and modify that team's participants.
- UC678\_06: To test the failed sequence for a coach to log in, create a team and modify that team's participants.

#### User Story #687 - Coach Creates a Team

# System Tests

- IT687 01: To test the successful sequence for a coach to log in and create a team
- IT687 02: To test the successful sequence for a coach to log in and create a team
- IT687 03: To test the successful sequence for a coach to log in and create a team
- IT687 04: To test the failed sequence for a coach to log in and create a team
- IT687 05: To test the failed sequence for a coach to log in and create a team
- IT687 06:To test the failed sequence for a coach to log in and create a team

#### Subsystem Tests

- UC687 01: To test the successful creation of a team.
- UC687 02: To test the successful creation of a team.
- UC687 03: To test the successful creation of a team.
- UC687 04: To test the failed creation of a team.
- UC687 05: To test the failed creation of a team.
- UC687 06:To test the failed creation of a team.

#### **User Story #679 - Coach Adds Participant to Team**

#### **System Tests**

- IT679\_01: To test the successful sequence for a coach to log in, create a team and adding a participant.
- IT679\_02: To test the successful sequence for a coach to log in, create a team and adding a participant.

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- IT679\_03: To test the successful sequence for a coach to log in, create a team and adding a participant.
- IT679\_04: To test the failed sequence for a coach to log in, create a team and adding a participant.
- IT679\_05: To test the failed sequence for a coach to log in, create a team and adding a participant.
- IT679\_06: To test the failed sequence for a coach to log in, create a team and adding a participant.

# Subsystem Tests

- UC679 01: To test the successful addition of a participant to a team.
- UC679 02: To test the successful addition of a participant to a team.
- UC679 03: To test the successful addition of a participant to a team.
- UC679 04: To test the failed addition of a participant to a team.
- UC679 05: To test the failed addition of a participant to a team.
- UC679 06: To test the failed addition of a participant to a team.

# **User Story #677 - Coach Modifies Account**

#### System Tests

- IT677 01: To test the successful sequence for a coach to log in and modify his account.
- IT677 02: To test the successful sequence for a coach to log in and modify his account
- IT677 03: To test the successful sequence for a coach to log in and modify his account
- IT677 04: To test the failed sequence for a coach to log in and modify his account
- IT677 05: To test the failed sequence for a coach to log in and modify his account
- IT677 06: To test the failed sequence for a coach to log in and modify his account

### Subsystem Tests

- UC677 01: To test the successful modification of a coach's account.
- UC677 02: To test the successful modification of a coach's account.
- UC677 03: To test the successful modification of a coach's account.
- UC677 04: To test the failed modification of a coach's account.
- UC677 05: To test the failed modification of a coach's account.
- UC677 06:To test the failed modification of a coach's account.

# **User Story #684 - Administrator Views Teams**

**System Tests** 

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- IT684 01: To test the successful sequence for an administrator to log in and view teams
- IT684 02: To test the successful sequence for an administrator to log in and view teams
- IT684 03: To test the successful sequence for an administrator to log in and view teams
- IT684 04: To test the failed sequence for an administrator to log in and view teams
- IT684 05: To test the failed sequence for an administrator to log in and view teams
- IT684\_06:To test the failed sequence for an administrator to log in and view teams

#### Subsystem Tests

- UC684 01: To test the successful display of teams.
- UC684 02: To test the successful display of teams.
- UC684 03: To test the successful display of teams.
- UC684 04: To test the failed display of teams.
- UC684 05: To test the failed display of teams.
- UC684\_06: To test the failed display of teams.

# **User Story #683 - Administrator Views Administrators**

#### **System Tests**

- IT683\_01: To test the successful sequence for an administrator to log in and view other administrators
- IT683\_02: To test the successful sequence for an administrator to log in and view other administrators.
- IT683\_03: To test the successful sequence for an administrator to log in and view other administrators.
- IT683\_04: To test the failed sequence for an administrator to log in and view other administrators.
- IT683\_05: To test the failed sequence for an administrator to log in and view other administrators

#### Subsystem Tests

- UC683 01: To test the successful display of administrators.
- UC683 02: To test the successful display of administrators.
- UC683 03: To test the successful display of administrators.
- UC683 04: To test the failed display of administrators.
- UC683 05: To test the failed display of administrators.
- UC683 06: To test the failed display of administrators.

#### **User Story #718 - Administrator Deletes Administrator**

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# System Tests

- IT718\_01: To test the successful sequence for an administrator to log in, create and administrator and delete that administrator.
- IT718\_02: To test the successful sequence for an administrator to log in, create and administrator and delete that administrator.
- IT718\_03: To test the successful sequence for an administrator to log in, create and administrator and delete that administrator.
- IT718\_04: To test the failed sequence for an administrator to log in, create and administrator and delete that administrator.
- IT718\_05: To test the failed sequence for an administrator to log in, create and administrator and delete that administrator.
- IT718\_06: To test the failed sequence for an administrator to log in, create and administrator and delete that administrator.

# Subsystem Tests

- UC718 01: To test the successful deletion of an administrator.
- UC718 02: To test the successful deletion of an administrator.
- UC718 03: To test the successful deletion of an administrator.
- UC718 04: To test the failed deletion of an administrator.
- UC718 05: To test the failed deletion of an administrator.
- UC718 06: To test the failed deletion of an administrator.

# **User Story #721 - Administrator Searches for a Team**

#### **System Tests**

- IT721\_01: To test the successful sequence for an administrator to log in and search for a team
- IT721\_02: To test the successful sequence for an administrator to log in and search for a team
- IT721\_03: To test the successful sequence for an administrator to log in and search for a team
- IT721 04: To test the failed sequence for an administrator to log in and search for a team
- IT721 05: To test the failed sequence for an administrator to log in and search for a team
- IT721 06: To test the failed sequence for an administrator to log in and search for a team

#### Subsystem Tests

• UC721 01: To test the successful search for a team that exists

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- UC721 02: To test the successful search for a team that exists
- UC721 03: To test the successful search for a team that exists
- UC721 04: To test the failed search for a team that exists
- UC721 05: To test the failed search for a team that exists
- UC721\_06: To test the failed search for a team that exists

# **G**LOSSARY

Active Contest: A competition that is currently open for registration.

Stored Contest: A competition that has already occurred.

Participant: A high school student that is a member of a team.

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# **APPENDIX**

# **Appendix A - UML Diagrams**

# Static UML Diagrams

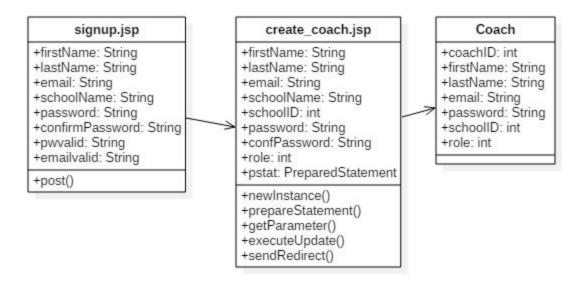


Figure #1 - User Story #676 Class Diagram

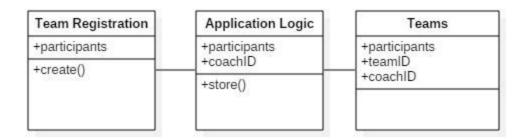


Figure #2 - User Story #678 Class Diagram

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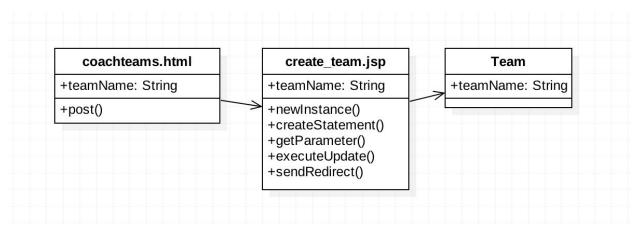


Figure #3 - User Story #687 Class Diagram

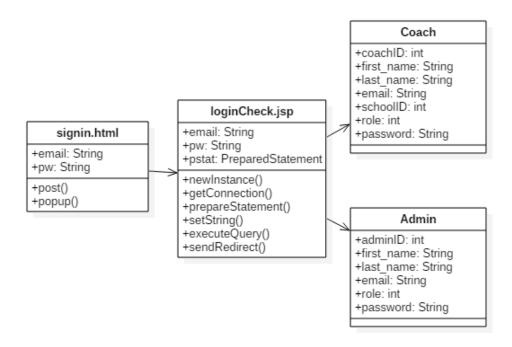


Figure #4 - User Story #688 Class Diagram

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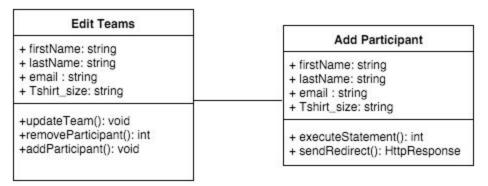


Figure #5 - User Story #679 Class Diagram

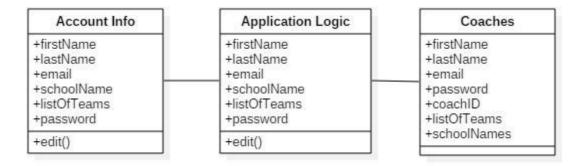


Figure #6 - User Story #677 Class Diagram

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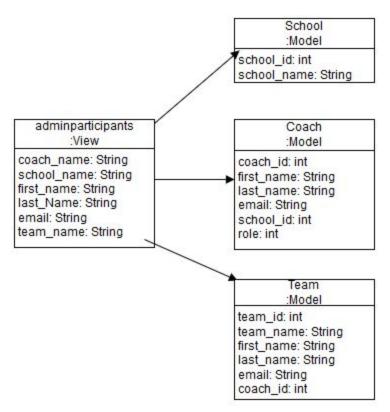


Figure #7 - User Story #681 Class Diagram

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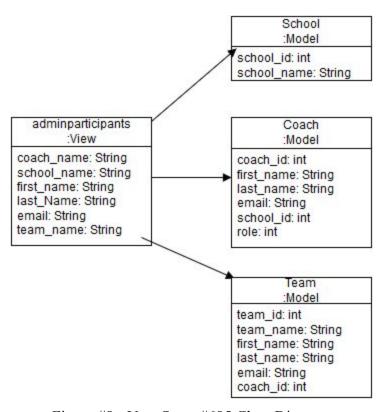


Figure #8 - User Story #685 Class Diagram

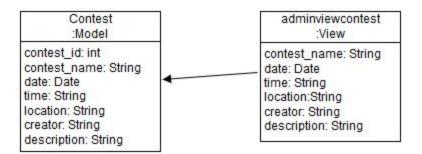


Figure #9 - User Story #694 Class Diagram

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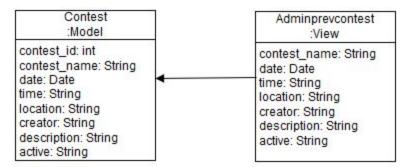


Figure #10 - User Story #695 Class Diagram

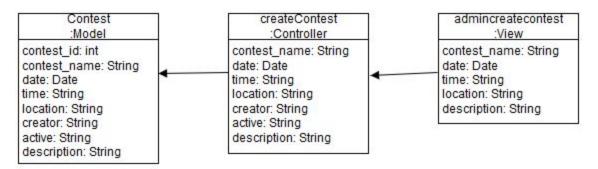


Figure #11 - User Story #696 Class Diagram

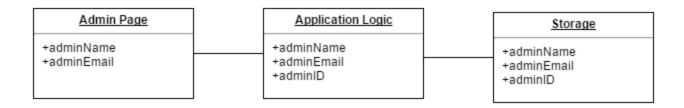


Figure #12 - User Story #683 Class Diagram

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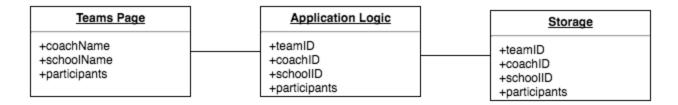


Figure #13 - User Story #684 Class Diagram

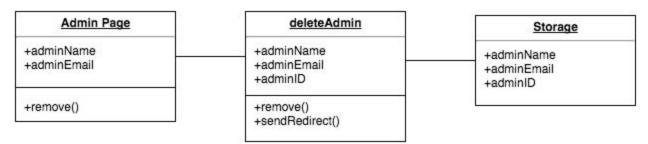


Figure #14 - User Story #718 Class Diagram

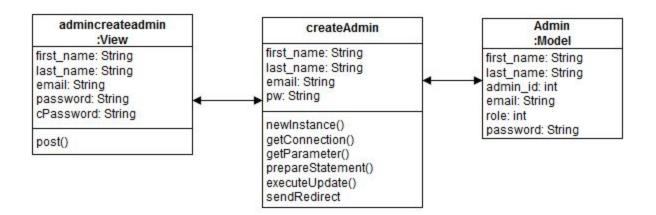


Figure #15 - User Story #680 Class Diagram

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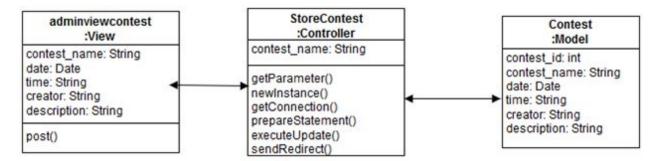


Figure #16 - User Story #686 Class Diagram

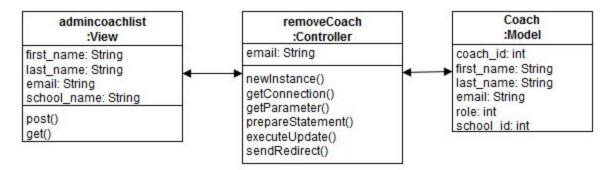
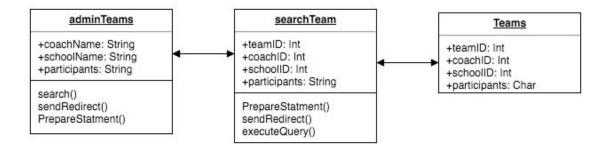


Figure #17 - User Story #709 Class Diagram



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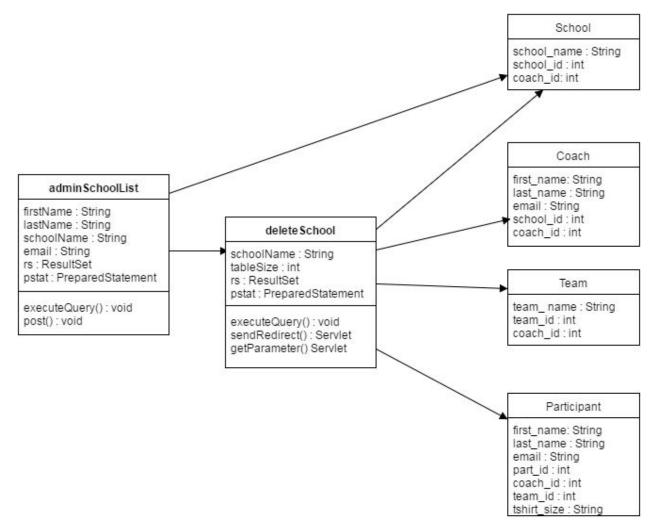


Figure #18 - User Story #721 Class Diagram

Figure #19 - User Story #727 Class Diagram

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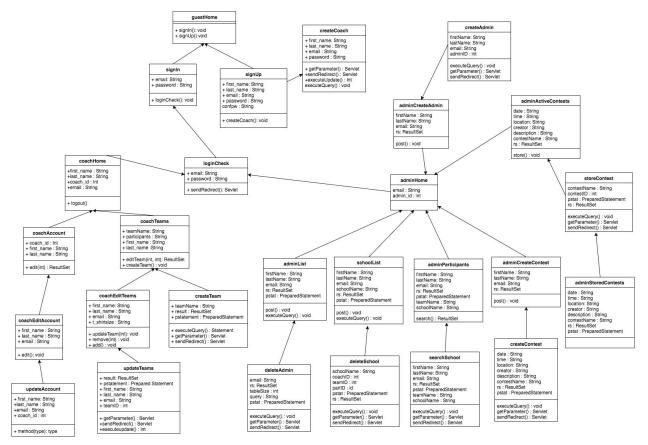


Figure #20 - Object Diagram

## Dynamic UML Diagrams

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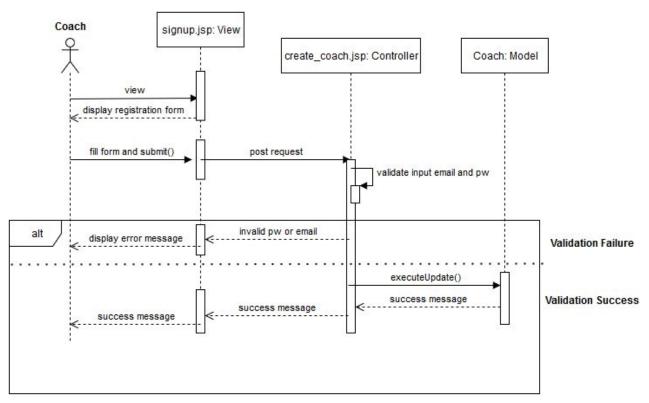


Figure #1 - User Story #676 Sequence Diagram

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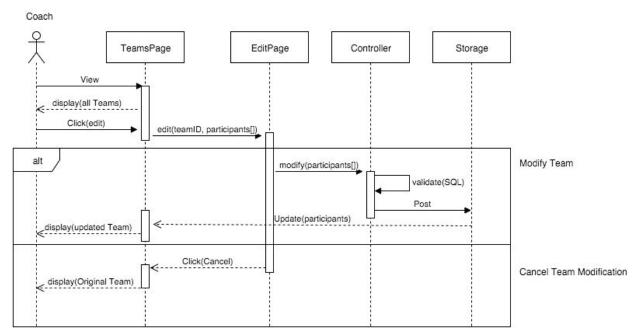


Figure #2 - User Story #678 Sequence Diagram

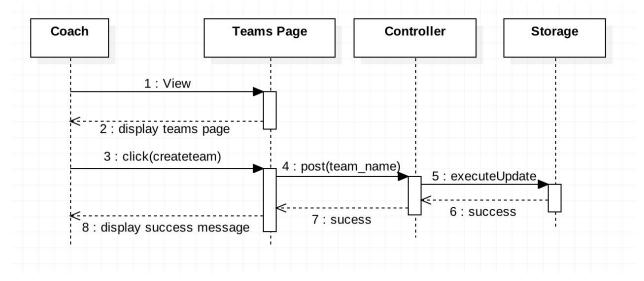


Figure #3 - User Story #687 Sequence Diagram

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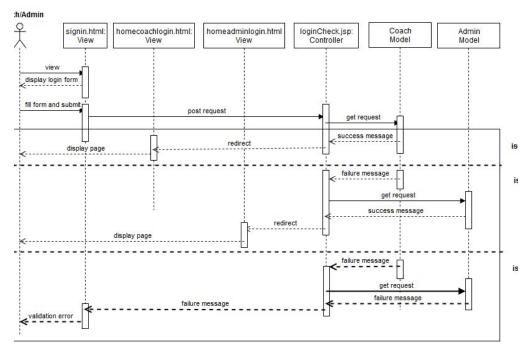


Figure #4 - User Story #688 Sequence Diagram

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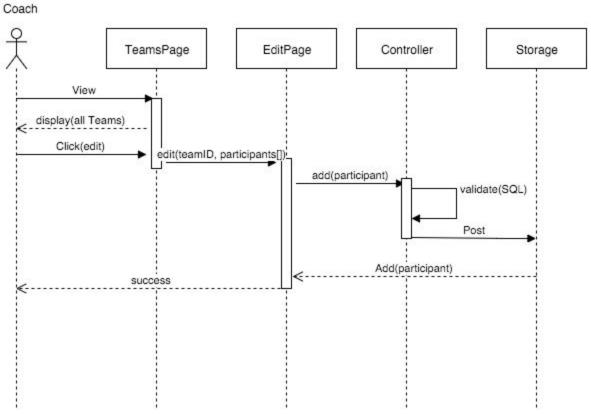


Figure #5 - User Story #679 Sequence Diagram

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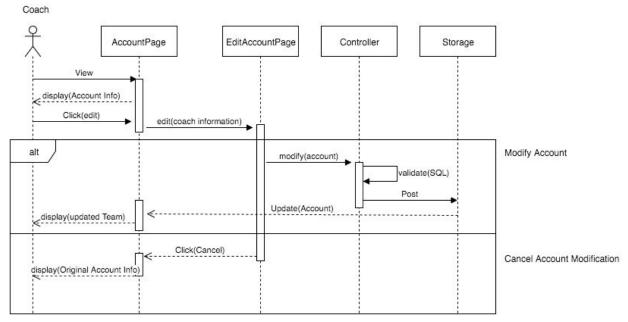


Figure #6 - User Story #677 Sequence Diagram

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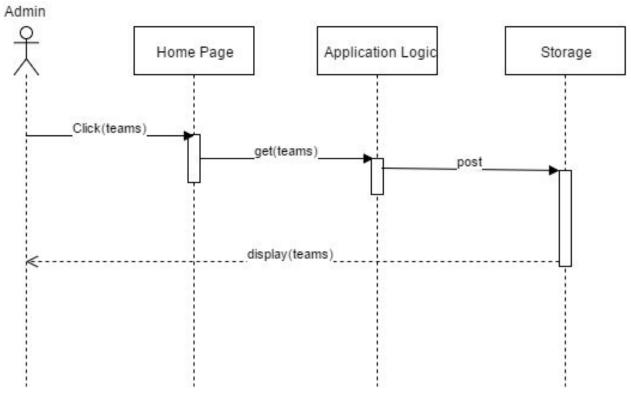


Figure #7 - User Story #681 Sequence Diagram

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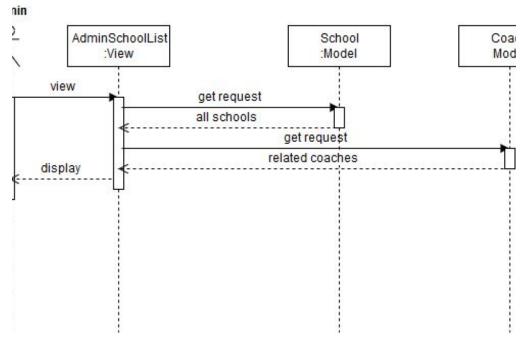


Figure #8 - User Story #685 Sequence Diagram

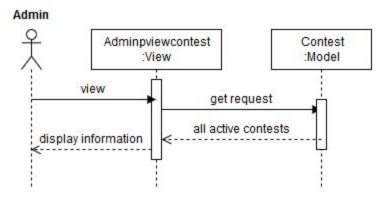


Figure #9 - User Story #694 Sequence Diagram

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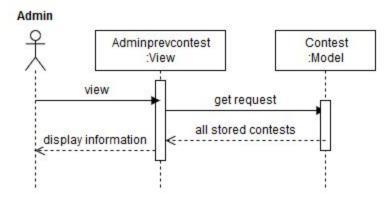


Figure #10 - User Story #695 Sequence Diagram

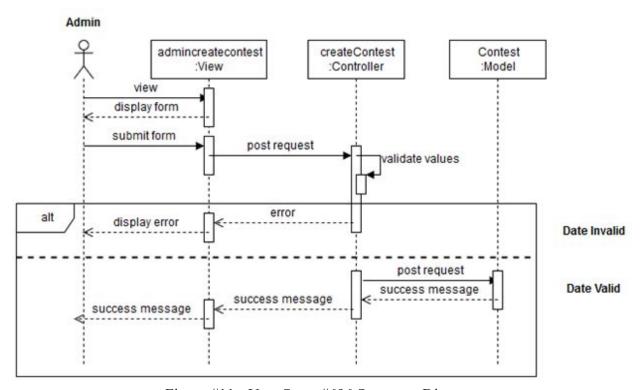


Figure #11 - User Story #696 Sequence Diagram

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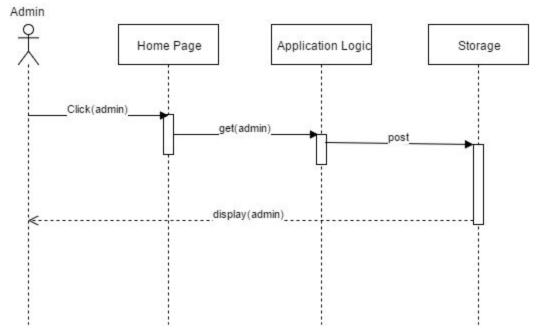


Figure #12 - User Story #683 Sequence Diagram

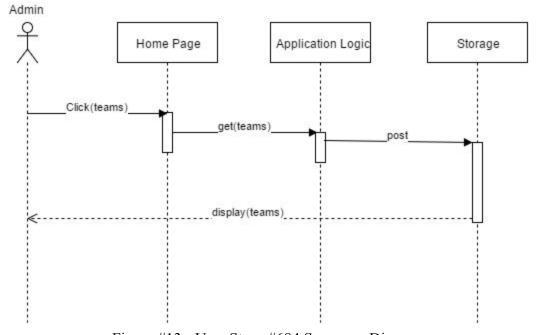


Figure #13 - User Story #684 Sequence Diagram

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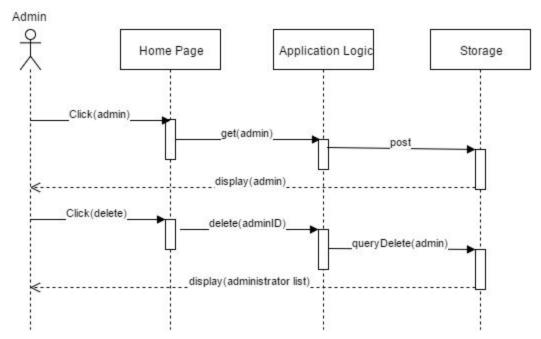


Figure #14 - User Story #718 Sequence Diagram

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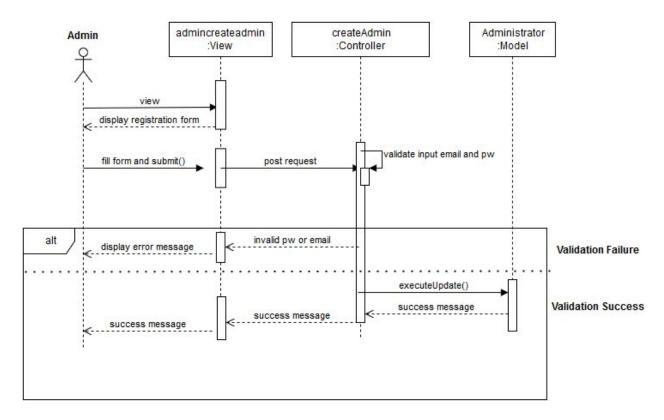


Figure #15 - User Story #680 Sequence Diagram

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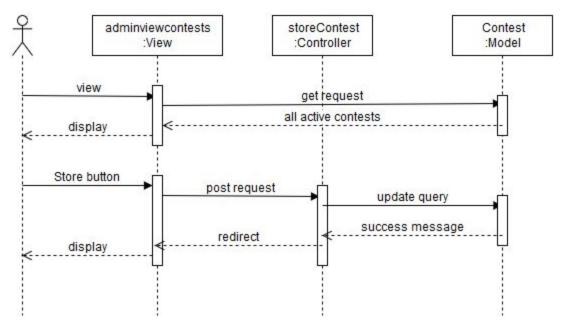


Figure #16 - User Story #686 Sequence Diagram

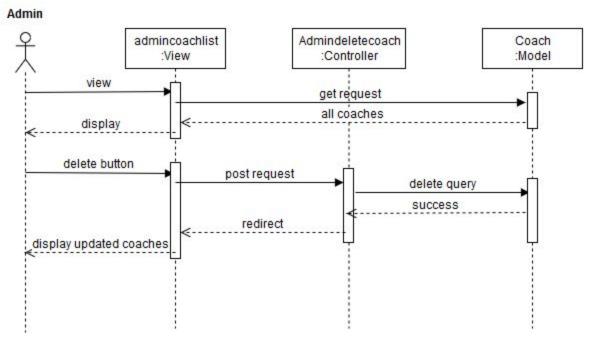


Figure #17 - User Story #709 Sequence Diagram

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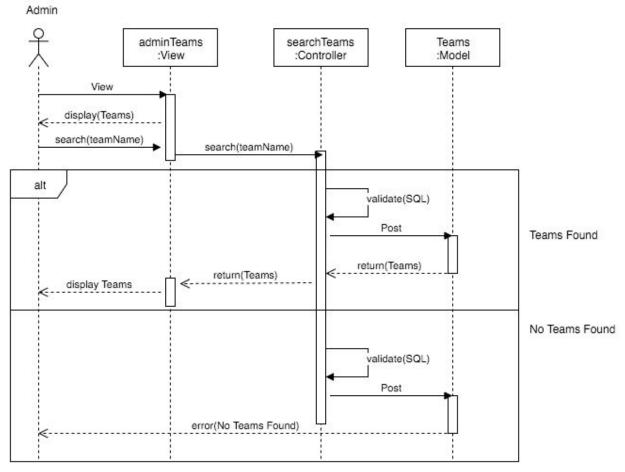


Figure #18 - User Story #721 Sequence Diagram

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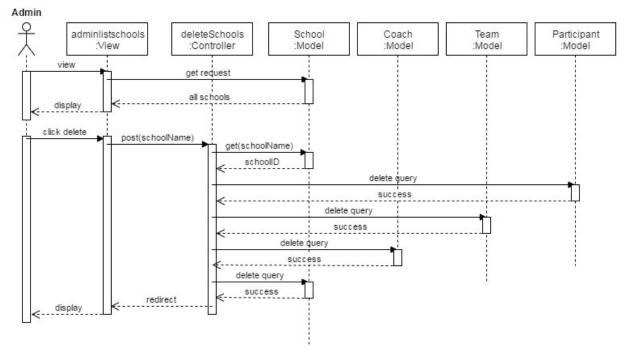


Figure #19 - User Story #727 Sequence Diagram

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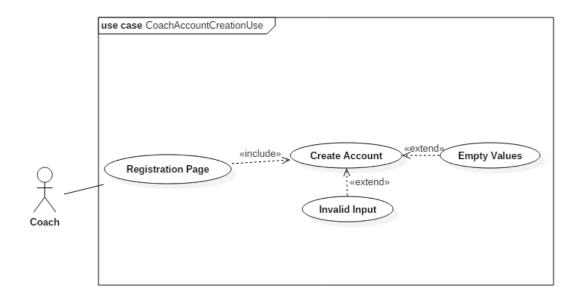


Figure #1 - User Story #676 Use Case Diagram

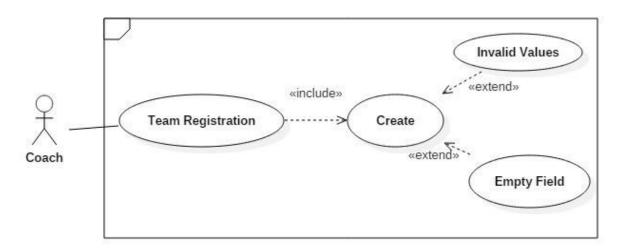


Figure #2 - User Story #678 Use Case Diagram

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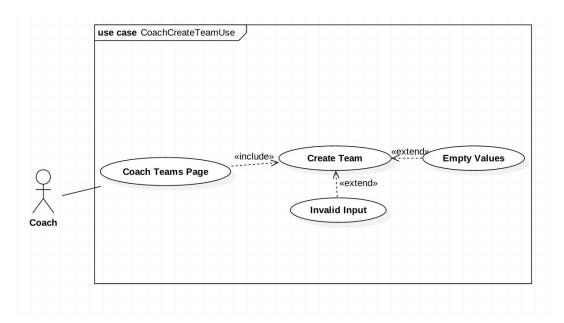


Figure #3 - User Story #687 Use Case Diagram

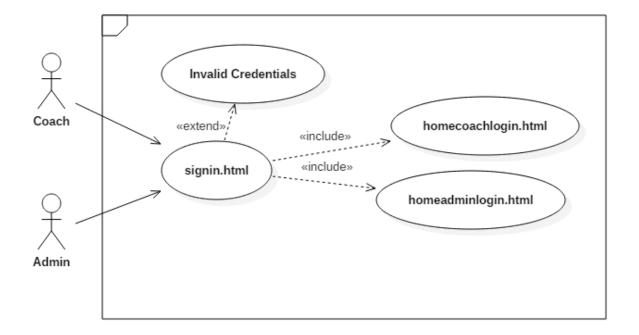


Figure #4 - User Story #688 Use Case Diagram

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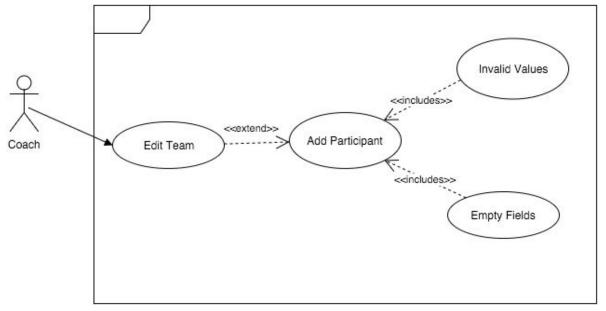


Figure #5 - User Story #679 Use Case Diagram

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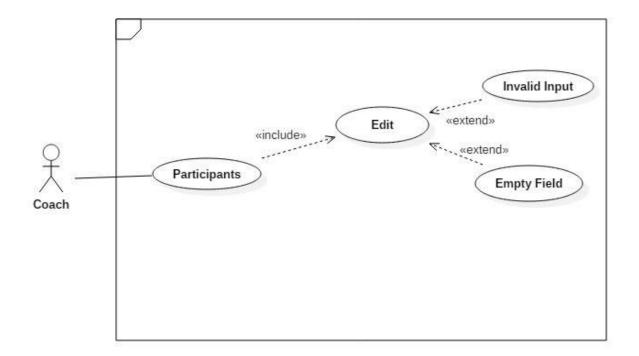


Figure #6 - User Story #677 Use Case Diagram

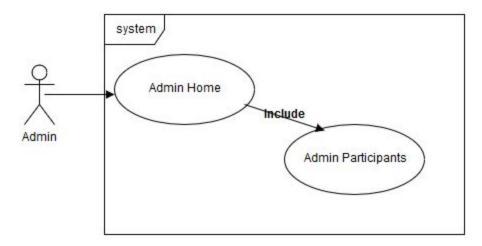


Figure #7 - User Story #681 Use Case Diagram

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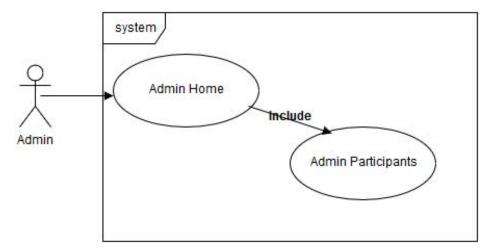


Figure #8 - User Story #685 Use Case Diagram

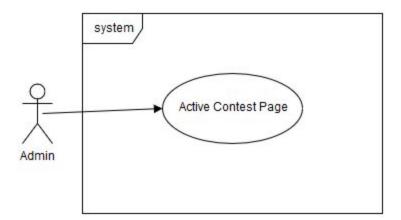


Figure #9 - User Story #694 Use Case Diagram

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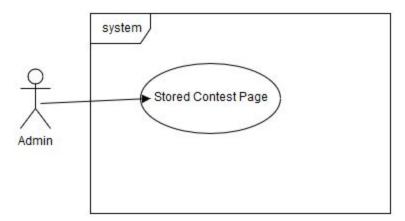


Figure #10 - User Story #695 Use Case Diagram

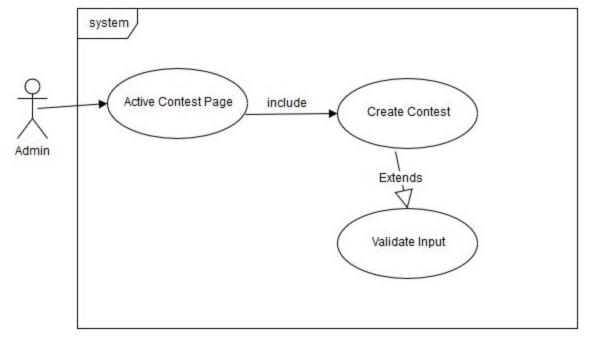


Figure #11 - User Story #696 Use Case Diagram

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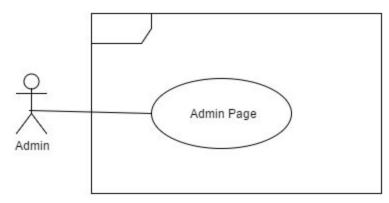


Figure #12 - User Story #683 Use Case Diagram

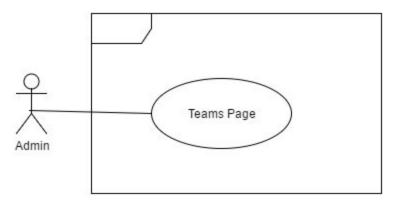


Figure #13 - User Story #684 Use Case Diagram

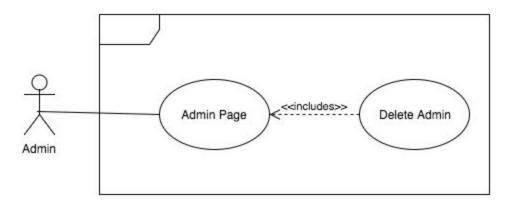


Figure #14 - User Story #718 Use Case Diagram

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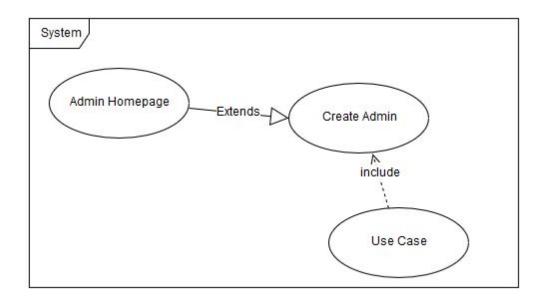


Figure #15 - User Story #680 Use Case Diagram

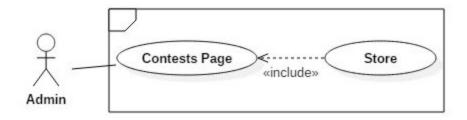


Figure #16 - User Story #686 Use Case Diagram

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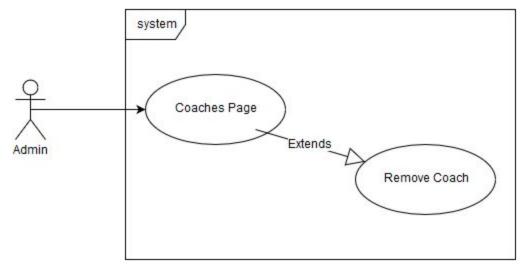


Figure #17 - User Story #709 Use Case Diagram

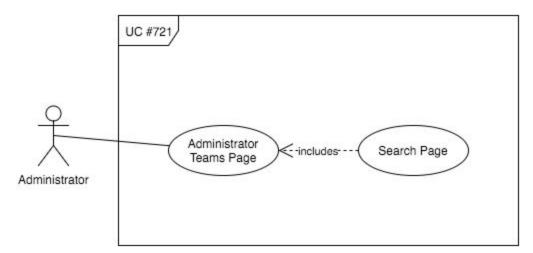


Figure #18 - User Story #721 Use Case Diagram

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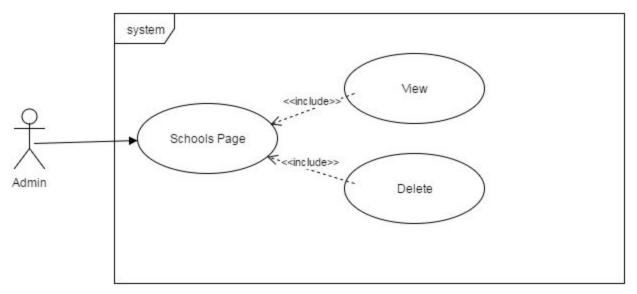


Figure #19 - User Story #727 Use Case Diagram

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## Appendix B - User Interface Design

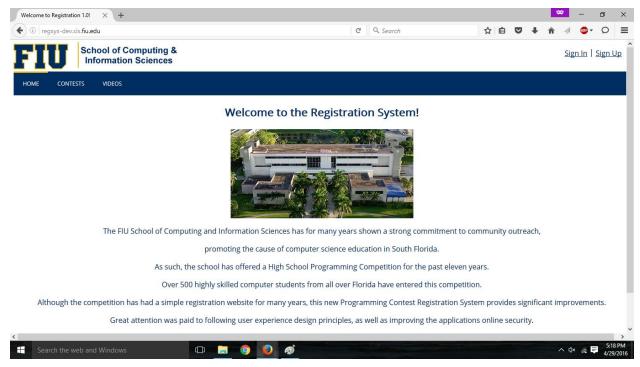


Figure #1 - Home Page

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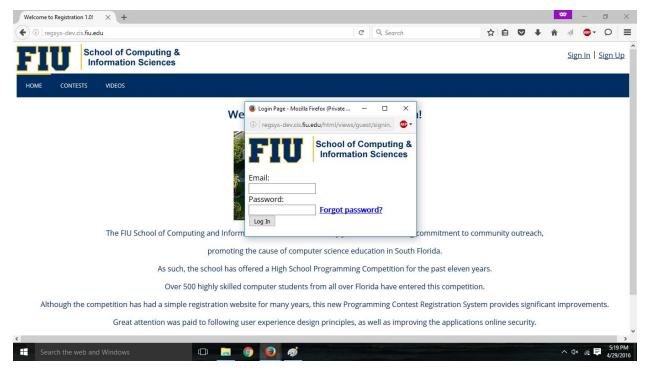


Figure #2 - Login Page

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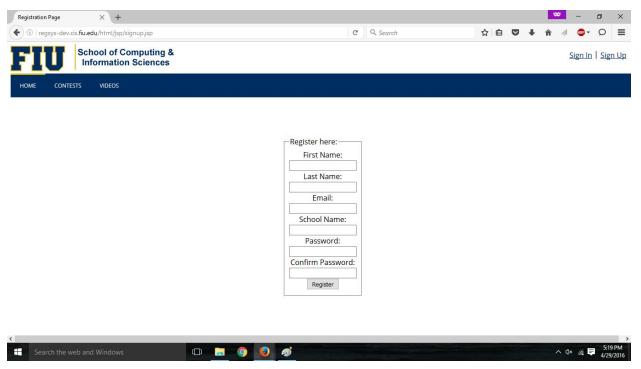


Figure #3 - Registration Page

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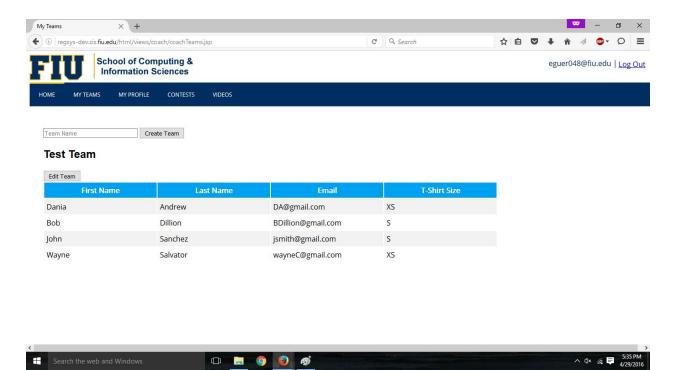


Figure #4 - Coach Views Teams

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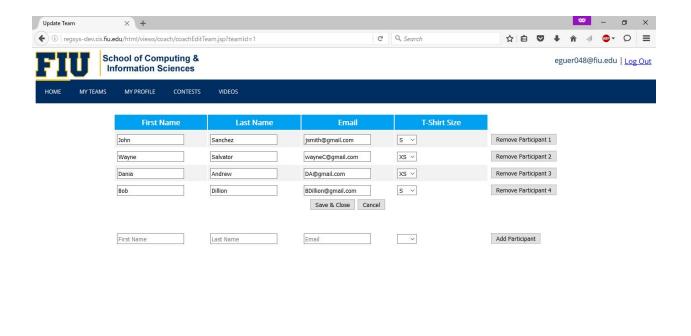


Figure #5 - Coach Modifies a Team

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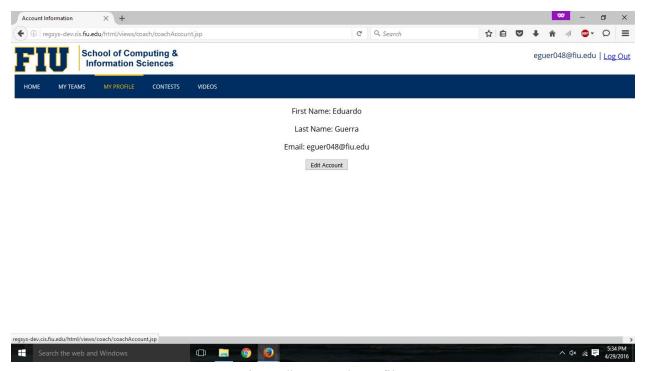


Figure #6 - Coach Profile

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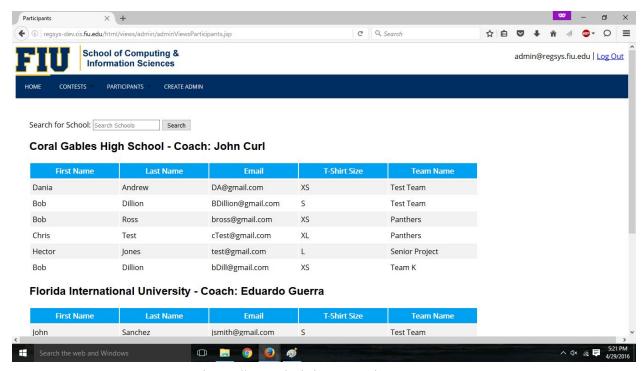


Figure #7 - Administrator Views Teams

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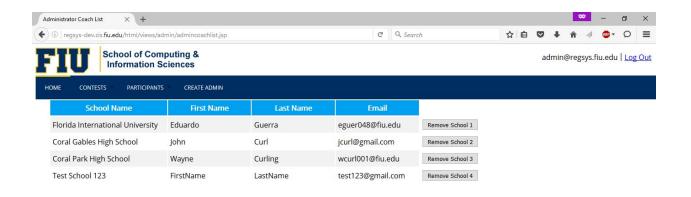




Figure #8 - Administrator Views Schools

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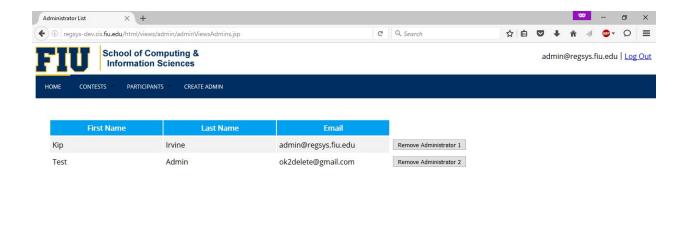




Figure #9 - Administrator Views Administrators

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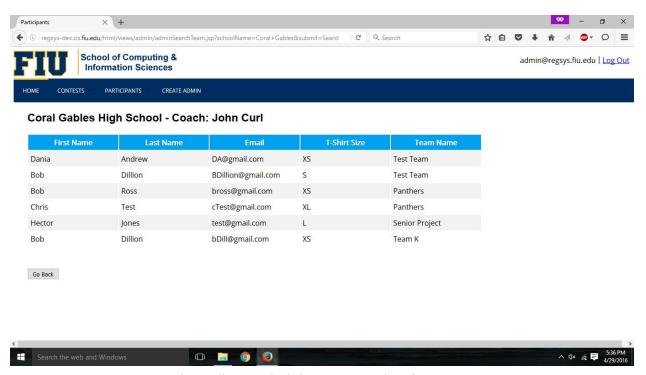


Figure #10 - Administrator Searches for Team

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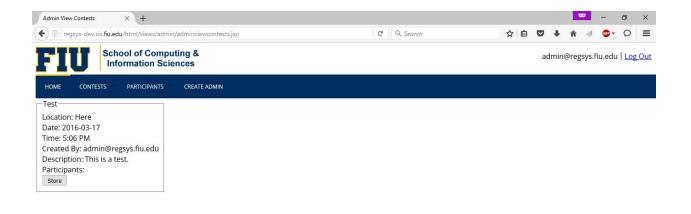




Figure #11 - Administrator View Active Contest

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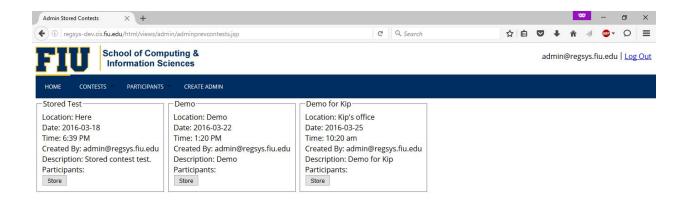




Figure #12 - Admin View Stored Contest

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Search the web and Windows

^ 4× / ₽ 5:23 PM 4/29/2016

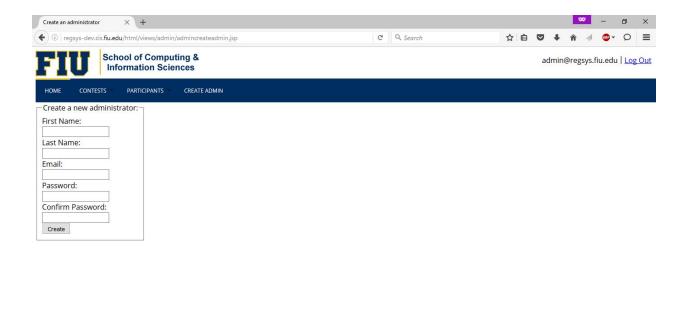


Figure #13 - Create Administrator

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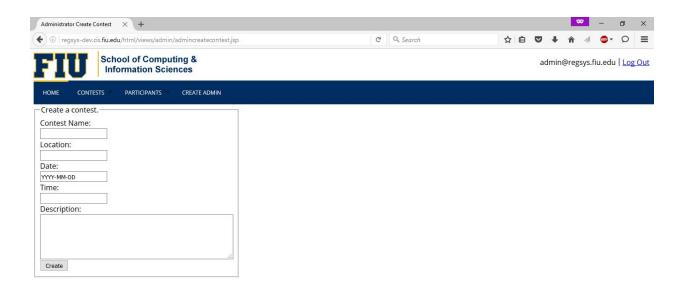




Figure #14 - Create Contest

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## **Appendix C - Sprint Review Reports**

## **Sprint 1 Report**

**Date**: 1/29/2016

Attendees: Eduardo Guerra, Wayne Curling, Kip Irvine

Start time: 10:30 End time: 10:45

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners:

- User Story Documentation
- Coach Storyboards
- System Prototype

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Spring Planning meeting.

- N/A
  - o Reason for rejection:
    - N/A
  - How this should be reflected on the user story definition in Mingle:
    - N/A

## **Sprint 2 Report**

**Date**: 2/12/16

Attendees: Eduardo Guerra, Wayne Curling, Kip Irvine

Start time: 11:00 AM End time: 11:30 AM

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After a show and tell presentation, the implementation of the following user stories were accepted by the product owners:

None

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Spring Planning meeting.

- User Story #678
  - Reason for rejection:
    - Incomplete
    - Dependency on User Story #687
  - How this should be reflected on the user story definition in Mingle:
    - User Story moved to Sprint 3
- User Story #687
  - Reason for rejection:
    - Incomplete
  - How this should be reflected on the user story definition in Mingle:
    - User Story moved to Sprint 3
- User Story #676
  - Reason for rejection:
    - Incomplete
  - How this should be reflected on the user story definition in Mingle:
    - User Story moved to Sprint 3

## **Sprint 3 Report**

**Date**: 2/26/16

Attendees: Eduardo Guerra, Wayne Curling, Kip Irvine

Start time: 10:00 AM

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End time: 10:30 AM

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners:

- User Story #676
- User Story #678
- User Story #687
- User Story #688

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Spring Planning meeting.

• N/A

#### **Sprint 4 Report**

**Date**: 3/11/16

Attendees: Eduardo Guerra, Wayne Curling, Kip Irvine

Start time: 11:00 AM End time: 11:20 AM

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners:

- User Story #679
- User Story #677
- User Story #681
- User Story #685
- User Story #694
- User Story #695
- User Story #696

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The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Spring Planning meeting.

• N/A

## **Sprint 5 Report**

**Date**: 4/1/16

Attendees: Eduardo Guerra, Wayne Curling, Kip Irvine

Start time: 11:00 AM End time: 11:20 AM

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners:

- User Story #684
- User Story #683
- User Story #718
- User Story #680
- User Story #686
- User Story #709

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Spring Planning meeting.

• N/A

#### **Sprint 6 Report**

**Date**: 4/15/16

Attendees: Eduardo Guerra, Wayne Curling, Kip Irvine

Start time: 11:00 AM End time: 11:20 AM

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners:

• User Story #721

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## • User Story #727

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Spring Planning meeting.

• User Story #682. Reason for rejection: Unable to get email system to work.

## **Sprint 6 Report**

**Date**: 4/29/16

Attendees: Eduardo Guerra, Wayne Curling, Kip Irvine

Start time: 11:00 AM End time: 11:20 AM

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners:

None

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Spring Planning meeting.

• User Story #682. Reason for rejection: Unable to get email system to work.

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## **Appendix D - Sprint Retrospective Reports**

## **Sprint 1 Retrospective**

**Date**: 1/29/16

Attendees: Eduardo Guerra, Wayne Curling

Start time: 11:00 AM End time: 11:30 AM

## What went wrong?

- We could have estimated velocity better because we had to research how to build the project
- Too much time spent on prototyping and not enough on documentation and development

## What went right?

- We finished user stories and they were approved, we each picked one user story to work on
- Created storyboards for the website design
- Created documentation for user stories

How to address the issues in the next sprint?

- How to improve the process?
  - Spend more time on product development
- How to improve the product?
  - Stick to approved storyboards for documentation and development

#### **Sprint 2 Retrospective**

**Date**: 2/12/16

**Attendees**: Eduardo Guerra, Wayne Curling

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Start time: 11:00 AM End time: 11:30 AM

#### What went wrong?

- We could have estimated velocity better because we had didn't factor in possible server problems we might run into
- spent too much time on setting up the dev environment and git
- spent too much time on server issues and not on documentation and development

#### What went right?

- We were able to solve server issues
- Created documentation for user stories that were assigned
- began development on user stories

How to address the issues in the next sprint?

- How to improve the process?
  - Spend more time on product development
  - Refine documentation to factor in new server setup
- How to improve the product?
  - N/A

#### **Sprint 3 Retrospective**

**Date**: 2/29/16

Attendees: Eduardo Guerra, Wayne Curling

Start time: 11:00 AM End time: 11:30 AM

## What went wrong?

N/A

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## What went right?

- We were able to complete 4 user stories this sprint
- We were able to complete testing on completed user stories
- We are happy with the progress this sprint

How to address the issues in the next sprint?

- How to improve the process?
  - Continue to maintain development pace
- How to improve the product?
  - N/A

## **Sprint 4 Retrospective**

**Date**: 3/11/16

Attendees: Eduardo Guerra, Wayne Curling

Start time: 11:20 AM End time: 11:30 AM

#### What went wrong?

• N/A

## What went right?

- We were able to complete 7 user stories this sprint
- We were able to complete testing on completed user stories
- We are happy with the progress this sprint

How to address the issues in the next sprint?

- How to improve the process?
  - Continue to maintain development pace
- How to improve the product?
  - o N/A

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## **Sprint 5 Retrospective**

**Date**: 4/1/16

Attendees: Eduardo Guerra, Wayne Curling

Start time: 11:15 AM End time: 11:30 AM

What went wrong?

• N/A

What went right?

- We were able to complete 6 user stories this sprint
- We were able to complete testing on completed user stories
- We are happy with the progress this sprint

How to address the issues in the next sprint?

- How to improve the process?
  - Continue to maintain development pace
- How to improve the product?
  - N/A

## **Sprint 6 Retrospective**

**Date**: 4/15/16

Attendees: Eduardo Guerra, Wayne Curling

Start time: 11:15 AM End time: 11:30 AM

What went wrong?

• Could not get email system to work.

What went right?

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- We were able to complete 2 user stories this sprint and a good amount of debugging.
- We were able to complete testing on completed user stories
- We are happy with the progress this sprint

How to address the issues in the next sprint?

- How to improve the process?
  - Continue to maintain development pace
- How to improve the product?
  - o N/A

#### **Sprint 7 Retrospective**

**Date**: 4/29/16

Attendees: Eduardo Guerra, Wayne Curling

Start time: 11:15 AM End time: 11:30 AM

What went wrong?

• Still could not get email system to work.

What went right?

- We were able to do a lot of UI changes and bug fixing.
- We are happy with the progress this sprint

How to address the issues in the next sprint?

- How to improve the process?
  - Continue to maintain development pace
- How to improve the product?
  - $\circ$  N/A

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# REFERENCES

You must reference any work that is not your own.

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