



# Design Document

*V4.0*

*5/4/2015*

# JUDGE FROG

## Revision History

Version	Changes	Edited
1.0	<ul style="list-style-type: none"> <li>Initial Draft</li> </ul>	November 25, 2014
1.1	<ul style="list-style-type: none"> <li>Database Schema Updated</li> <li>Modified Development Environment</li> </ul>	January 16, 2015
2.0	<ul style="list-style-type: none"> <li>Updated Prototypes</li> <li>Updated Database schema</li> </ul>	February 15, 2015
2.1	<ul style="list-style-type: none"> <li>Updated Glossary of Terms</li> <li>Updated Prototypes</li> <li>Updated Database description</li> </ul>	February 16, 2015
2.2	<ul style="list-style-type: none"> <li>Database Hierarchy Model Added</li> <li>Database Table Descriptions Updated</li> <li>Data Flow Model Added</li> </ul>	February 19, 2015
3.0	<ul style="list-style-type: none"> <li>Updated database tables, prototypes, glossary</li> </ul>	April 26, 2015
4.0	<ul style="list-style-type: none"> <li>Fixed fonts</li> <li>Changed Database section</li> </ul>	May, 4 2015

## Revision Sign-Off

By signing the following, the team member is stating that he has read the entire document and has concluded that the information contained within this document is accurate, relevant to the project, and void of errors.

Name	Signature	Date Signed
Brice Boula		
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# 1. Introduction

## 1.1 Purpose

This document provides a complete description of the Judge Frog system design. Included in this document are design constraints, system architecture, user interface design, and Unified Modeling Language (UML) diagrams (state, class, and sequence).

## 1.2 Project Background

Judge Frog is designed to be a fully functional web application with a user-friendly user interface. The application shall provide an efficient database containing significant human trafficking data inserted by the client. The end user shall be presented with visual graphs and charts to sort and analyze the data using various filters. Concluding the user's data analysis, the user shall have the option of exporting the visual data.

## 1.3 Section Overview

**Section 2 – Design Constraints:** Describes assumptions and dependencies, general constraints, and developmental methods for the Judge Frog web application.

**Section 3 – System Architecture:** Displays a model of the architecture and major component descriptions.

**Section 4 – Database Design:** Models the design of the database and describes the attributes of each table in the database.

**Section 5 – UML Models:** Displays the state, class and sequence diagrams.

**Section 6 – User Interface:** Gives screenshots from the prototype of the smartphone application.

**Section 7 – Glossary of Terms:** Defines technical and project-specific terms used in this document.

## 2. Design Constraints

### 2.1 Assumptions and Dependencies

The Judge Frog Web application will assume the following:

- The user shall access the Web application from a desktop computer
- The user can use the Web application after instruction

### 2.2 General Constraints

- Time
  - Development must be completed by the end of the school year in May 2015.
- Data storage
  - Finite amount of storage space on server used for storage
- Communication
  - Requires continuous Internet access to use the application
- Browser
  - Internet Explorer version 9 or higher
  - Google Chrome version 40 or higher
  - Mozilla Firefox version 33 or higher
  - Safari version 5 or higher

## 2.3 Development Environment

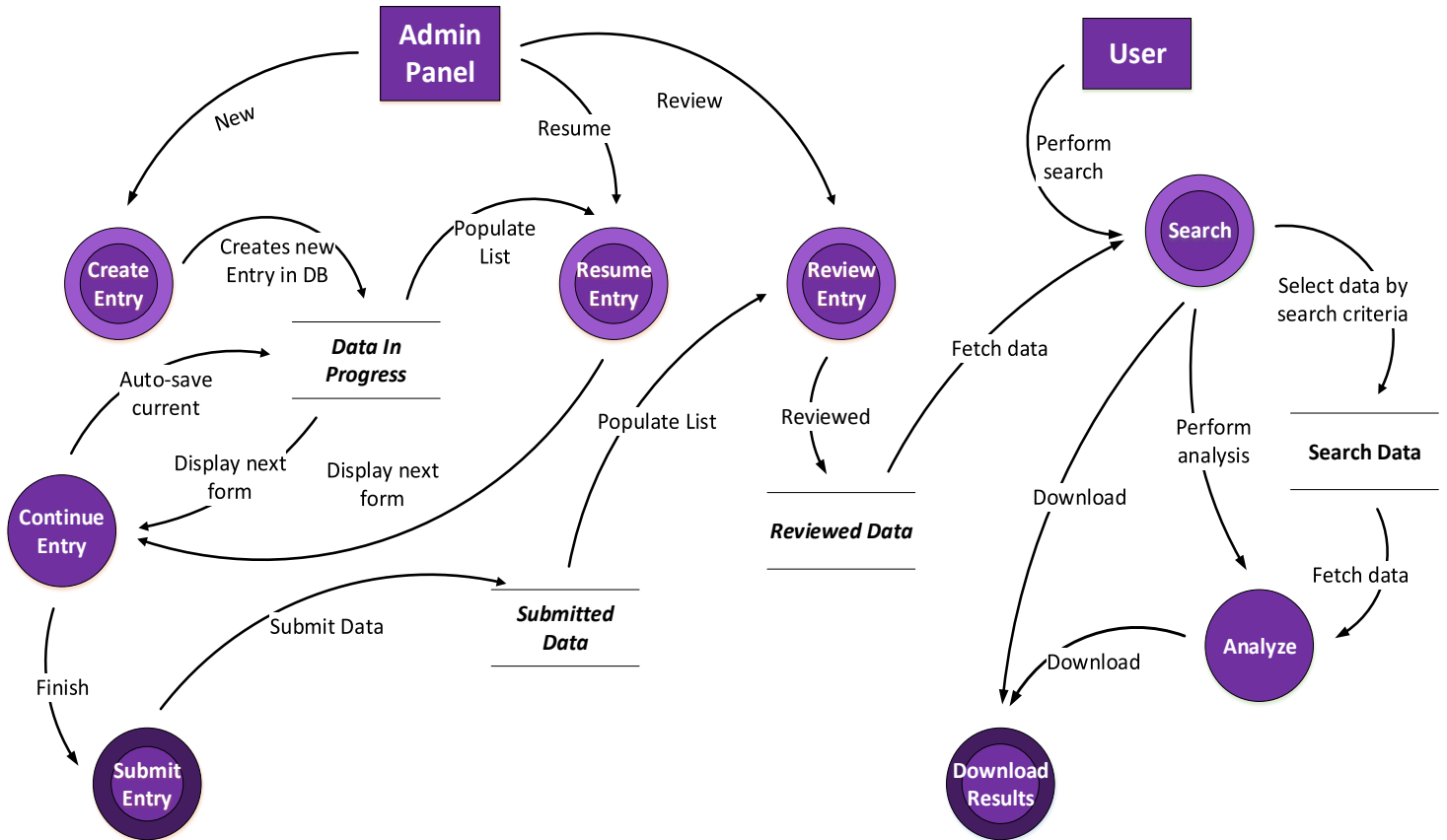
### Programming Utilities

- MySQLWorkbench 6.2 CE
- PHP 5.5
- CakePHP 2.5.1
- GitHub
- phpMyAdmin 4.0.4.2
- MySQL 5.6.14
- Apache 2.2
- Bootstrap 3.1.1

### General Utilities

- Microsoft Word
- Microsoft PowerPoint
- Google Drive
- Notepad++ 6.7.4
- Sublime Text Editor 2
- CoreFTP 2.2

### 3. Data Flow





### 3.1 Database

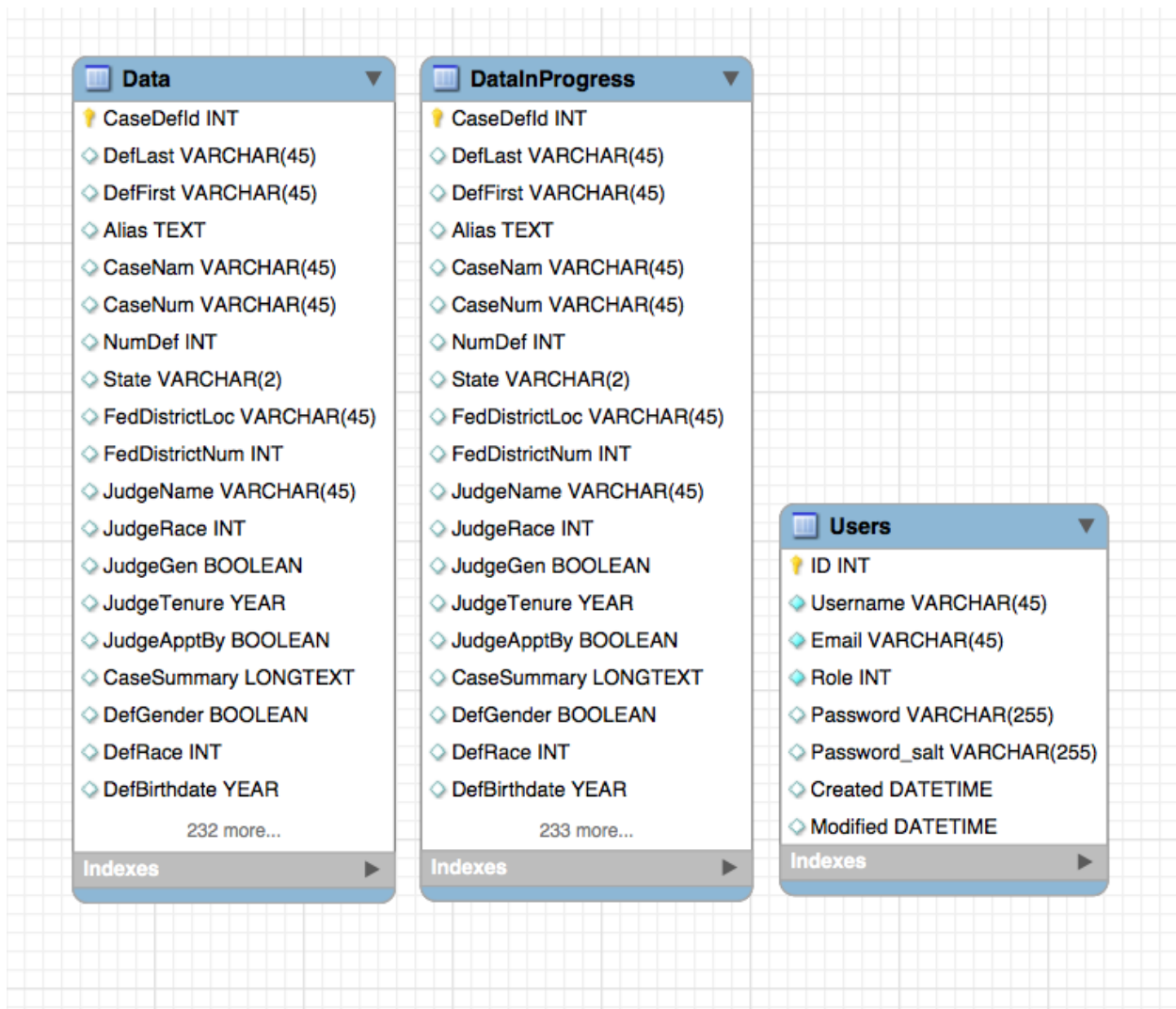
Our database stores human trafficking data collected by the National Institute of Justice. The well-designed database is stored on our server to be interacted with the web application. The database is developed with the Extended Entity-Relationship model using MySQL Workbench.

### 3.2 Web Application

The developed Web application connects to the database to insert and retrieve human trafficking data to create analysis for the user. The Web application provides a detailed tutorial on the functionality and navigation present in the application. There is a separate portal for administrative access to database functions.

## 4. Database Design

The diagram below shows a screenshot of the MySQL workbench as it views the models. Below this is a description of all of the columns included in the models for reference.



## 4.1 Database Tables

The **schema** for the **MySQL database** used in the current version of this project will be represented below in a table showing the: **name**, **type**, **attributes**, **default**, and **description** of each **column** for each **table** in the **database**. The **attributes** column will contain abbreviations which correspond to **MySQL Workbench** abbreviations: **PK** is **primary key**; **NN** is **not null**, **UQ** is **unique**, **BIN** is **binary**, **UN** is **unsigned**, **ZF** is **zero-fill**, **AI** is **auto-increment** (<http://dev.mysql.com/doc/workbench/en/wb-table-editor-columns-tab.html>).

**Users table:**

Name	Type	Attributes	Default	Description
<b>Id</b>	INTEGER	PK, NN, UQ, AI		ID given to each user to uniquely identify them.
<b>Username</b>	VARCHAR(45)	NN, UQ		Username for the given user.
<b>Email</b>	VARCHAR(45)	NN		Email address for the given user.
<b>Role</b>	VARCHAR(16)	NN	'ra'	The role of the given user. The value 'admin' gives the user administrative permissions and any other value gives them research assistant permissions.
<b>Password</b>	VARCHAR(255)	NN		Salted and hashed password for the given user.
<b>Created</b>	DATETIME			Timestamp of when the user was created.
<b>Modified</b>	DATETIME		Null	Timestamp of when the user was modified.
<b>First_name</b>	VARCHAR(45)			First name of the user.
<b>Last_name</b>	VARCHAR(45)			Last name of the user.

### Data table:

The value '[statute]' in the **Data** table represents a value for one of the recognized statutes within our application. These statutes are: 1961 – 1968, 1028, 1351, 1425, 1512, 1546, 1581 – 1588, 1589, 1590, 1591, 1592, 2252, 2260, 2421 – 2424, 1324, and 1328. They are also listed in more detail on our website: <http://humantraffickingdata.org/description> (under Statutes tab).

Name	Type	Attributes	Description
<b>Id</b>	INTEGER	PK, NN, AI	ID given to each record to uniquely identify it.
<b>Author</b>	VARCHAR(45)	NN	User who published this record.
<b>Created</b>	DATETIME		Timestamp of when the record was published.
<b>Modified</b>	DATETIME		Timestamp of when the record was last modified.
<b>CaseDefId</b>	INTEGER		
<b>CaseNam</b>	VARCHAR(45)		The official name of the case.
<b>CaseNum</b>	VARCHAR(45)		The official number of the case.
<b>NumDef</b>	INTEGER		The total number of defendants in this case.
<b>State</b>	VARCHAR(2)		The state in which the case was held.
<b>FedDistrictLoc</b>	VARCHAR(45)		The location within the federal district (North, Central, South, etc.)
<b>FedDistrictNum</b>	INTEGER		The number of the federal district where this case was located (1-13).
<b>JudgeName</b>	VARCHAR(45)		The name of the last judge involved in the case.
<b>JudgeRace</b>	INTEGER		The race of the last judge involved in the case. The values are as defined: 0 is white; 1 is black; 2 is Hispanic; 3 is Asian; 4 is Indian.
<b>JudgeGen</b>	BOOLEAN		The gender of the last judge involved in the case. True corresponds with female and false corresponds with male.
<b>JudgeTenure</b>	YEAR		The tenure of the last judge involved in the case.
<b>JudgeApptBy</b>	BOOLEAN		The political party who appointed the judge. True corresponds with Democrat and false corresponds with Republican.
<b>CaseSummary</b>	LONGTEXT		A summary of the case.
<b>DefLast</b>	VARCHAR(45)	NN	The last name of this defendant.
<b>DefFirst</b>	VARCHAR(45)	NN	The first name of this defendant.
<b>Alias</b>	TEXT		A list of aliases of the defendant separated by ','.
<b>DefGender</b>	BOOLEAN		The gender of the defender. True

			designates female and false designates male.
<b>DefRace</b>	INTEGER		The race of the defendant. 0 represents white; 1 represents black; 2 represents Hispanic; 3 represents Asian; 4 represents other.
<b>DefBirthdate</b>	YEAR	NN	The year of the defendant's birth.
<b>DefArrestAge</b>	INTEGER		The age at arrest of the defendant.
<b>ChargeDate</b>	DATE		The date the defendant was charged.
<b>ArrestDate</b>	DATE		The date the defendant was arrested.
<b>Detained</b>	BOOLEAN		Value representing whether defendant was detained.
<b>BailType</b>	INTEGER		The type of bail given to defendant. 0 represents none, 1 represents surety, 2 represents non-surety.
<b>BailAmount</b>	DOUBLE		The amount of bail to be paid by the defendant.
<b>LaborTraf</b>	BOOLEAN		Value representing whether this case contained labor trafficking charges.
<b>AdultSexTraf</b>	BOOLEAN		Value representing whether this case contained adult sex trafficking charges.
<b>MinorSexTraf</b>	BOOLEAN		Value representing whether this case contained minor sex trafficking charges.
<b>FelCharged</b>	INTEGER		The total number of felonies charged against the defendant.
<b>FelSentenced</b>	INTEGER		The total number of felonies sentenced against the defendants.
<b>S[statute]</b>	BOOLEAN		Value representing whether this particular statute, [statute], was charged in the given case for this defendant.
<b>Counts[statute]</b>	INTEGER		Number of counts charged against defendant for this particular statute.
<b>CountsNP[statute]</b>	INTEGER		Number of counts nolle prossed for this defendant for this particular statute.
<b>PleaDismissed[statute]</b>	INTEGER		Number of pleas dismissed for this defendant for this particular statute.
<b>PleaGuilty[statute]</b>	INTEGER		Number of times plead guilty for this defendant for this particular statute.
<b>TrialGuilty[statute]</b>	INTEGER		Number of trials found guilty for this defendant for this particular statute.
<b>TrialNG[statute]</b>	INTEGER		Number of trials found not guilty for this defendant for this particular statute.
<b>Fines[statute]</b>	INTEGER		Amount of fines levied against defendant for this particular statute.
<b>Sent[statute]</b>	INTEGER		Number of months sentenced against this defendant for this particular statute.
<b>Prob[statute]</b>	INTEGER		Number of months of probation required for this defendant for this particular statute.

<b>DateTerm</b>	DATE		The date when the sentence was terminated.
<b>SentDate</b>	DATE		The date when the sentencing began.
<b>TotalSentence</b>	INTEGER		The total number of months sentenced for this defendant.
<b>Restitution</b>	DOUBLE		The amount of restitution required to pay by the defendant.
<b>AssetForfeit</b>	BOOLEAN		Value representing whether the defendant had to forfeit various assets.
<b>SupRelease</b>	BOOLEAN		Value representing whether the defendant had supervised release.
<b>Probation</b>	INTEGER		The total number of months of probation required by this defendant.
<b>NumVic</b>	INTEGER		Total number of victims involved in this case.
<b>NumVicMinor</b>	INTEGER		Total number of minor victims involved in this case.
<b>NumVicForeign</b>	INTEGER		Total number of foreign victims involved in this case.
<b>NumVicFemale</b>	INTEGER		Total number of female victims involved in this case.
<b>OCName1</b>	VARCHAR(45)		The name of the first organized crime group that this defendant was involved in.
<b>OCType1</b>	INTEGER		The size of the first organized crime group that this defendant was involved in. 1 represents 'Mom & Pop', 2 represents 'Street Gang', 3 represents 'Cartel/Syndicate/Mafia', 5 represents 'Prison Gang', 6 represents 'Other'.
<b>OCRace1</b>	INTEGER		The race of the first organized crime group that this defendant was involved in. 0 represents 'None', 1 represents 'Black', 2 represents 'White', 3 represents 'Hispanic', 4 represents 'Asian', 5 represents 'Other'.
<b>OCScope1</b>	INTEGER		The scope of the first organized crime group that this defendant was involved in. 0 represents 'Other', 1 represents 'Local Only', 2 represents 'Trans-State', 3 represents 'Trans-National'.
<b>OCName2</b>	VARCHAR(45)		The size of the second organized crime group that this defendant was involved in. 1 represents 'Mom & Pop', 2 represents 'Street Gang', 3 represents 'Cartel/Syndicate/Mafia', 5 represents 'Prison Gang', 6 represents 'Other'.
<b>OCType2</b>	INTEGER		The race of the second organized crime group that this defendant was involved

			in. 0 represents 'None', 1 represents 'Black', 2 represents 'White', 3 represents 'Hispanic', 4 represents 'Asian', 5 represents 'Other'.
<b>OCRace2</b>	INTEGER		The scope of the second organized crime group that this defendant was involved in. 0 represents 'Other', 1 represents 'Local Only', 2 represents 'Trans-State', 3 represents 'Trans-National'.
<b>OCScope2</b>	INTEGER		The size of the second organized crime group that this defendant was involved in. 1 represents 'Mom & Pop', 2 represents 'Street Gang', 3 represents 'Cartel/Syndicate/Mafia', 5 represents 'Prison Gang', 6 represents 'Other'.

**DataInProgress table:**

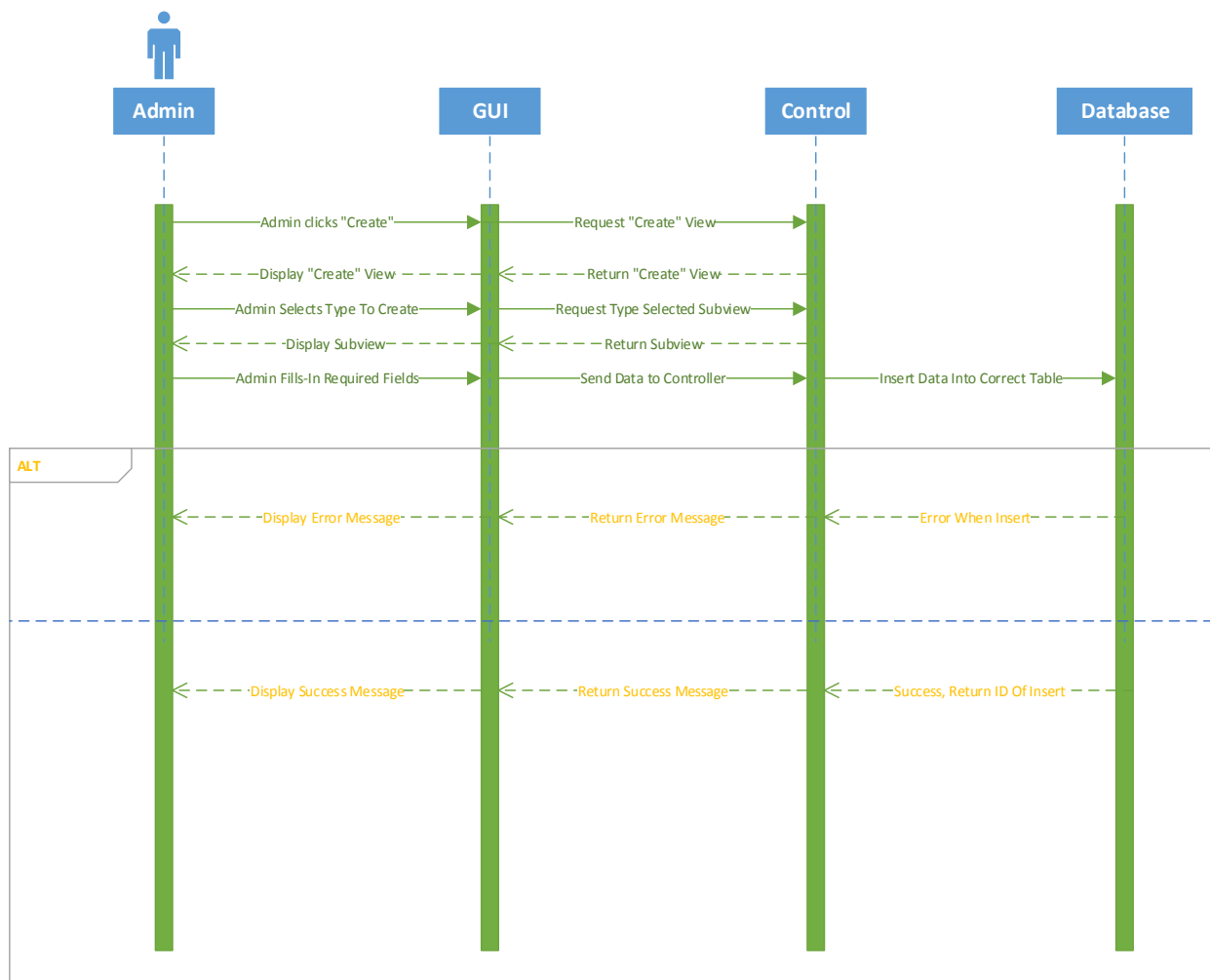
The **DataInProgress** table features exactly the same information as the **Data** table. However, our client wanted to separate the data into two tables with one being for finalized information and one being for information still in progress. The only additional field in **DataInProgress** is:

Name	Type	Description
<b>SubmittedForReview</b>	BOOLEAN	If true, this case will be displayed for administrators to publish to <b>Data</b> . If false, the case is still being revised.

## 5. UML Models

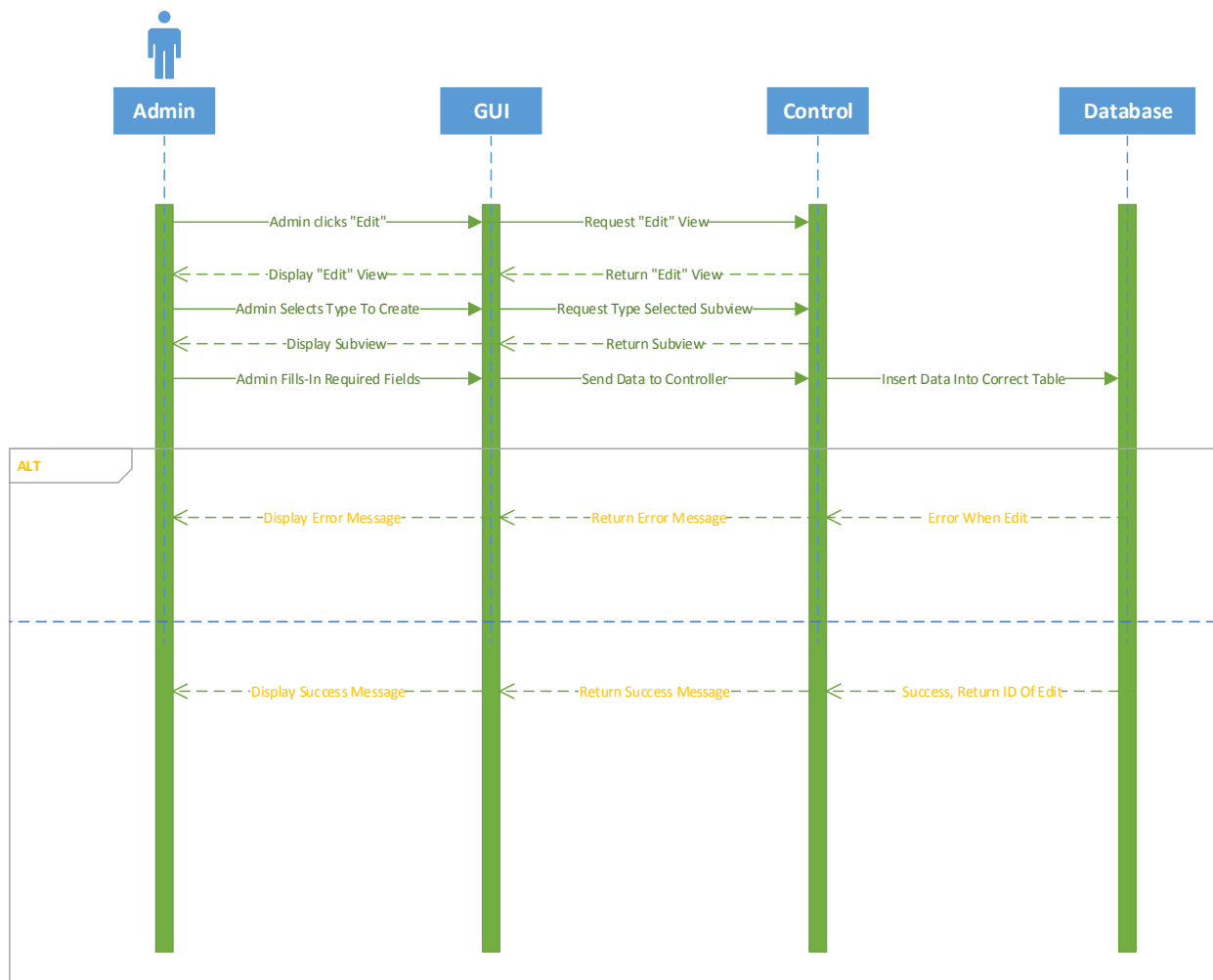
### 5.1 Sequence Diagrams

#### 5.1.1 Admin Create Sequence

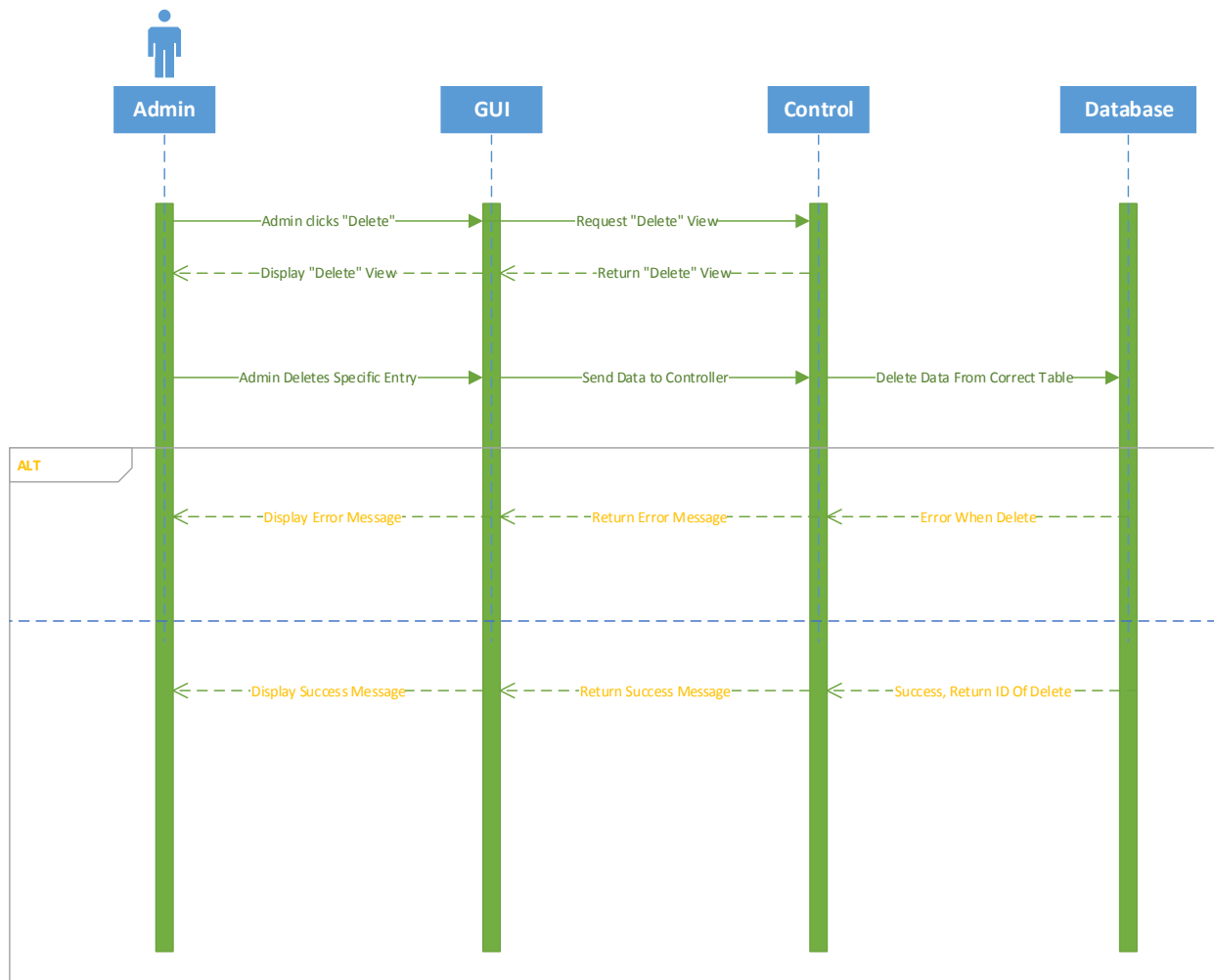




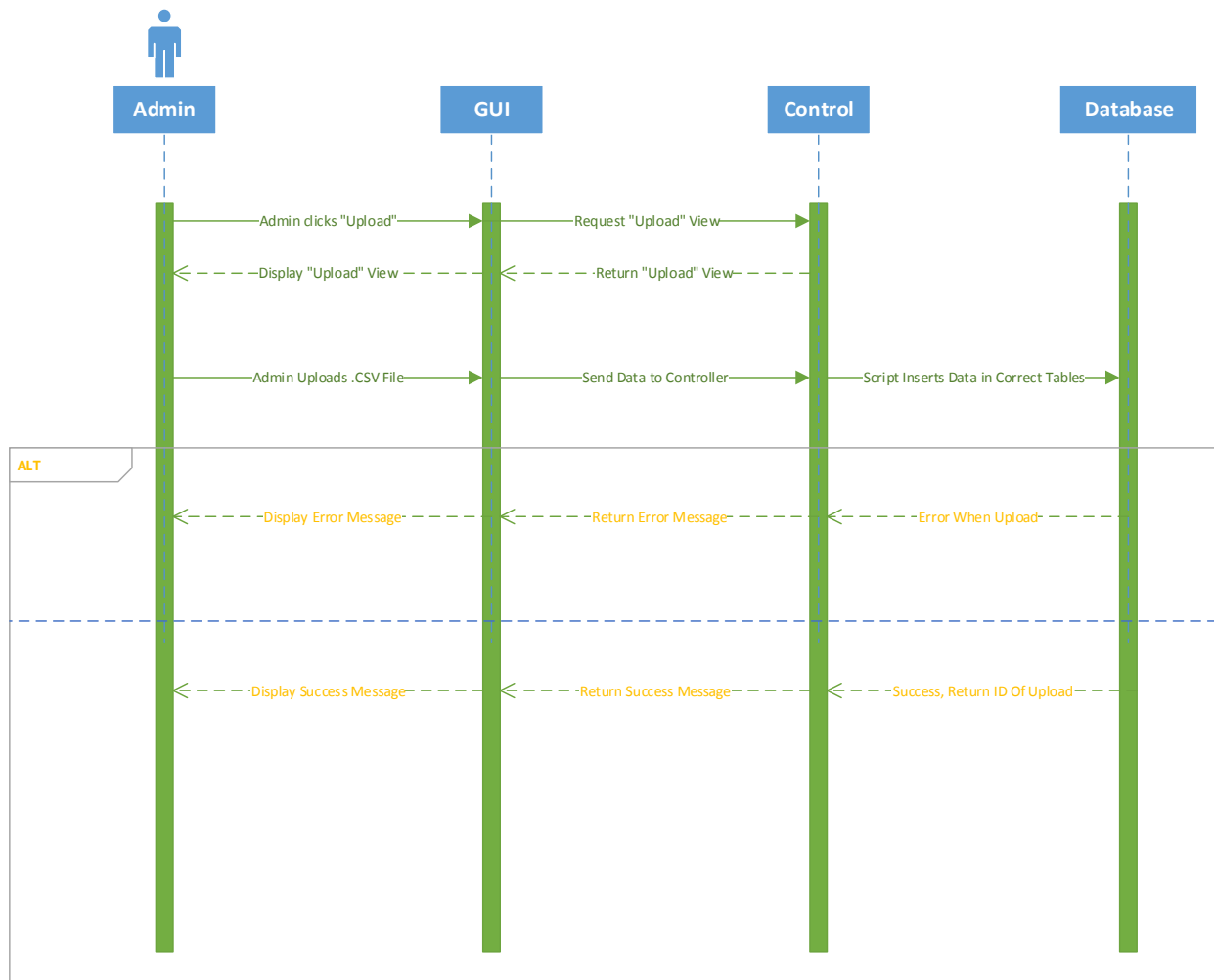
## 5.1.2 Admin Edit Sequence



### 5.1.3 Admin Delete Sequence



### 5.1.4 Admin Uploads Sequence



## 6. User Interface Prototype

### 6.1 Search Interface

SEARCH BY

Case +

Type of Trafficking +

Defendant +

Judge +

Organized Crime Group +

Victims +

Arrest Details +

Charge Details +

Sentencing Details +

SEARCH DASHBOARD

Case Name	Case Number	Year	Type of Case	# of Defendants
USA v. Bell et al	5:12-cr-00057-VAP	2012	AM	8
USA v. Hill	5:05-cr-00111-L	2005	AM	1
USA v. Ding et al	4:09-CR-00573-SBA	2009	L	3
USA v. Monsalve	4:07-cr-00056-RH-CAS	2007	A	6
USA v. Mondragon et al	4:05-cr-00468	2005	L	8
USA v. Evans	4:00-cr-00003-JCH	2000	AM	15
USA v. Pittman et al	3:13-cr-04510-JAH	2013	AM	24
USA v. Maldonado	3:07-cr005556-BHS-1	2007	L	1
USA v. Leon-Aldana et al	3:07-cr-00035-L	2007	L	4
USA v. Davis et al	3:07-cr-00011-JCH-1	2007	AM	2
USA v. Farquharson	3:06-cr-00126-MOC-DSC-1	2006	L	1
USA v. Paris et al	3:06-cr-00064-CFD	2006	AM	10
USA v. Howard	32-31:35-q	2007	LM	1
USA v. Veerapol	2:98-cr-00334-CM-1	1998	L	1
USA v. Weston	2:13-cr-00025-CMR	2013	LAM	5
USA v. Afolabi et al	2:07-cr-00785-JLL	2007	LM	4
USA v. McGlover	2:06-cr-00393-JLR	2006	M	3
USA v. Djoumessi et al	2:05-cr-80110-AJT-MKM-1	2005	LM	2
USA v. Mesfun et al	2:05-cr-00858-WHW	2005	L	2
USA v. Zavala et al	2:04-CR-00962-SJF-1	2004	L	2

Prev
Next
1
2

SEARCH BY

Case

Name (e.g. USA v. Jones)

Number (e.g. 00-cu-)

Number of Defendants

0
100+

State

Federal District

Case Details

All Results

Case Basic Information

Case Name	Case Number	# Defendants	State	Federal District	Year
USA v. Bell et al	5:12-cr-00057-VAP	8	CA	9-Central	2012

Case Summary

Defendants, who were members of the Rolling 60s Crips Gang, recruited underage girls from Inland Empire schools and took them to areas in Compton and Lynwood where they were forced to engage in commercial sexual acts.

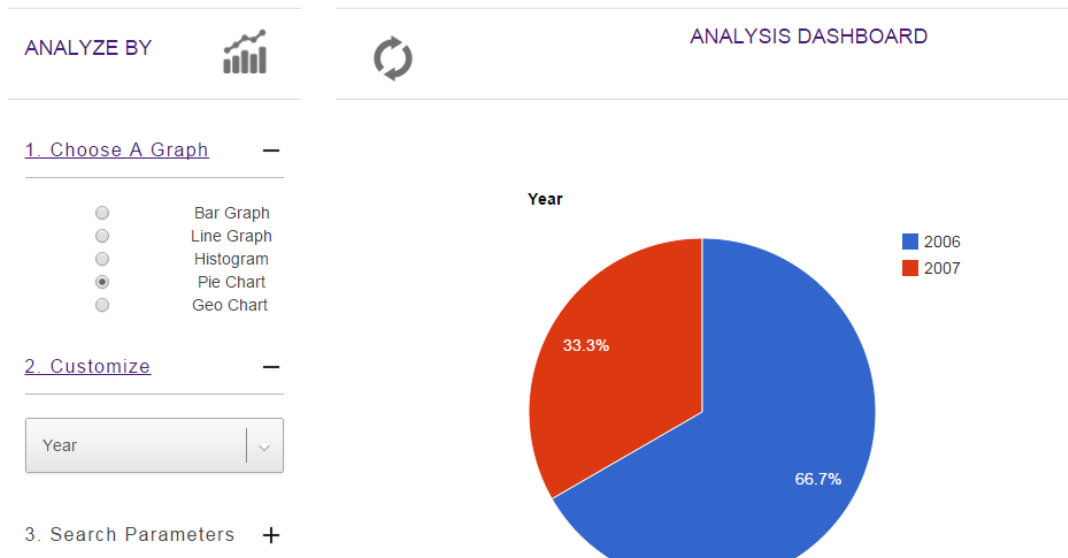
Victim Information

Total Victims	Total Minors	Total Foreigners	Total Females
7	6	0	7

Judge Information

USA v. Zavala et al	2:04-CR-00962-SJF-1	2004	L	2
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## 6.2 Analyze



## 6.3 Admin Panel

Admin Login

User Name

Password

Login

1. Will direct user to begin adding case and defendant information. (Access: Super user and admin)

2. Allows admin to review and submit super user's case creation that has been submitted for approval (Access: admin)

3. Allows user to modify and update previous case data in database (Access: Super User and admin)  
- To be discussed

4. Allows user to resume from a previous state that they had saved their session within a data entry screen. (Access: Super User and admin)  
- To be discussed

Admin Selection

Add Case/Defendant 1

Review/Submit 2

Update Data 3

Resume 4

1. User can add a new judge and will be directed to a new screen.

2. User will be directed to previous page.

3. User will be directed to next page.

Case Information

Case Name

Case Number

Summary

Number of Defendants

1 + Judge

Federal District

State

2 Back

3 Next

1. User can save their current session and data that has been entered is stored in database that can be retrieved later.

2. Saves the judge information the user entered.

New Judge

Name

Race

Gender

Tenure

Appointed By

1 Save & Quit

Cancel

2 Add

Trafficking & Victim Information

Type of Trafficking

☒ Adult Trafficking

☒ Labor Trafficking

☒ Minor Trafficking

Total Victims

Female Victims

Foreigner Victims

Minor Victims

Save & Quit

Back

Next



1. Displays the current case that the user will be inserting defendant information for.

2. Displays which defendant the user will be adding information for.

Defendant

1

Case Name

2

Defendant Number

---

First Name

Last Name

Gender

Birth Date

Race

Alias

Save & Quit

Back

Next

Arrest and Charge Details

Case Name

Defendant Number

---

Defendant's Name

Charge Date

Arrest Date

Detained

Bail Type

Bail Amount

Felony Charge

Felony Sentenced

Save & Quit

Back

Next

Charges

Add Charge Details

Statute 1

Counts

Counts NolleProssed

Pleas Dismissed

Pleas Guilty

Trial Guilty

Trial Not Guilty

Fines

Sentence

Probation

Statute 2

Counts

Counts NolleProssed

Pleas Dismissed

Pleas Guilty

Trial Guilty

Trial Not Guilty

Fines

Sentence

Probation

Statute 3+

Save & Quit

Back

Next

### Aggregate Sentence

#### Sentence Details For Defendant

Date Terminated

Date

Total Months

Restitution

Asset Forfeit

Appeal

Supervised Release

Probation

Save & Quit

Next

1. User will have the option to choose review or Enter information for next defendant. If there are more defendants defendant button will display. If there are no other defendants then review button will display.

### Organized Crime Group

Name

Type

Scope

Race

Nationality

Save & Quit

Review

Enter Next Defendant

Submitted For Approval

Case Information

Trafficking & Victim Information

Defendant

Arrest Charge Details

Charges

Aggregate Sentence

Organized Crime Group

## 7. Glossary of Terms

**Administrator** – Privileged user capable of performing major changes to database.

**Application** – Group of programs designed to supply an end-user with expected functionality.

**CakePHP** – A free, open-source, rapid development framework for PHP.

**Control Panel** – An interface specifically designed to allow administrators to easily perform their tasks.

**CRUD** – Create, read, update, delete operations that query database.

**Database** – A structured set of data held in a computer, accessible in various ways.

**Deliverable** – A product, not necessarily finished, related to the project given to the client.

**End-User** – A person or persons who will be using the web application for the specified purpose of our project.

**Foreign Key** – A field in one table that uniquely identifies a row of another table.

**GitHub** – A Web service for software version control.

**Host** – A website on a server accessible over the Internet.

**Milestone** – A point at which project progress can be assessed.

**PHP** – A general-purpose scripting language that is especially suited to server-side web development.

**Primary Key** – Uniquely identifies each record in the table.

**Prototype** – Simulates only a few aspects of, and may be completely different from, the final product.

**TCU** – Texas Christian University

**UML** – Unified Modeling Language; a modeling language designed to provide a standard way to visualize the design of a system.

**Walk-through** – Points during the project where the team describes significant project components with clients and individuals within the team.

**Web Application** – Application that is accessed by visiting a specific URL.