6.0 Software Design Description

Outline of Software Development Plan

6.1 Introduction

This document presents the architecture and detailed design for the software for CaseX. The Los Angeles Police Department Homicide Library Unit seeks a database solution for the management of case records dating back to 1960. Case records are currently stored in physical binders. Detectives need a more efficient system to store metadata about the case records, query data, and generate reports. Through CaseX's three main functions: Upload Data, Explore Data, and Generate Reports, users are enabled to effectively manage and understand case data.

6.1.1 System Objectives

This system will be uniquely customized to suit the needs of The Los Angeles Police Department Homicide Library Unit. It will allow the staff to more efficiently store and search case data in order to generate reports. Specifically, the system will eliminate the need to spend human resources on physical document retrieval, allow cases to be accessed concurrently from several users, and enable instant, specific queries.

6.1.2 Hardware, Software, and Human Interfaces

Interface Type	Interface Description
Human Interface	Mouse and Keyboard
Human Interface	Monitor
Hardware Interface	Wireless Networking
Software Interface	Database
Software Interface	Server

6.2 Architectural Design

The CaseX system architecture is comprised of a web browser-based user interface (front-end), a server (backend), and MongoDB as the database. The frontend consists of various webpages which allows users to accomplish the three main functions of CaseX. The server backend and database will be designed to allow for concurrent access, efficient query, and data validation.

6.2.1 Major Software Components

- **Front End CSC**
    - About Page
        - Login module
    - Login Page
        - Login input
        - Login submit button
    - Header
        - Menu
        - User info
            - Username
            - Permissions

        - Current page
        - Logout button
    - Home Dashboard Page
        - Links
    - Input Form Page
        - Form select
        - Manual input
        - Form upload
        - Submit
    - Data Explorer Page
        - Query module
            - Search conditions
        - Table display
            - Display filter
            - Table
        - Graphic display
    - Case Page
        - Case selector
        - Display selector
        - Toggle edit
        - Data display
    - Admin Console Page
        - Users management
        - Case database management
- **Server CSC**
    - Queries
        - Create / Get / Edit / Delete Case(s)
        - Create / Get / Edit / Delete Suspect(s)
        - Create / Get / Edit / Delete Victim(s)
        - Create / Get / Edit / Delete Users(s)
    - Routes
        - API Routes
        - View Routes
- **Database CSC**
    - Collections
        - Cases
        - Suspects
        - Users
        - Victims

6.2.2 Major Software Interactions

The three main software components for CaseX are the web client, server, and database. When a user navigates to CaseX URL endpoints, the server responds with an html page for the web client to render. Through the user interface, the web client is able to create, read, update, and delete data by making jQuery AJAX calls to the RESTful API provided by the server. The server uses mongoose object relational mapping to perform data validation of the payload and establishes a connection to the MongoDB database. The database returns data and a status code, which the server then parses before sending the data back to the web client.

6.2.3 Architectural Design Diagrams

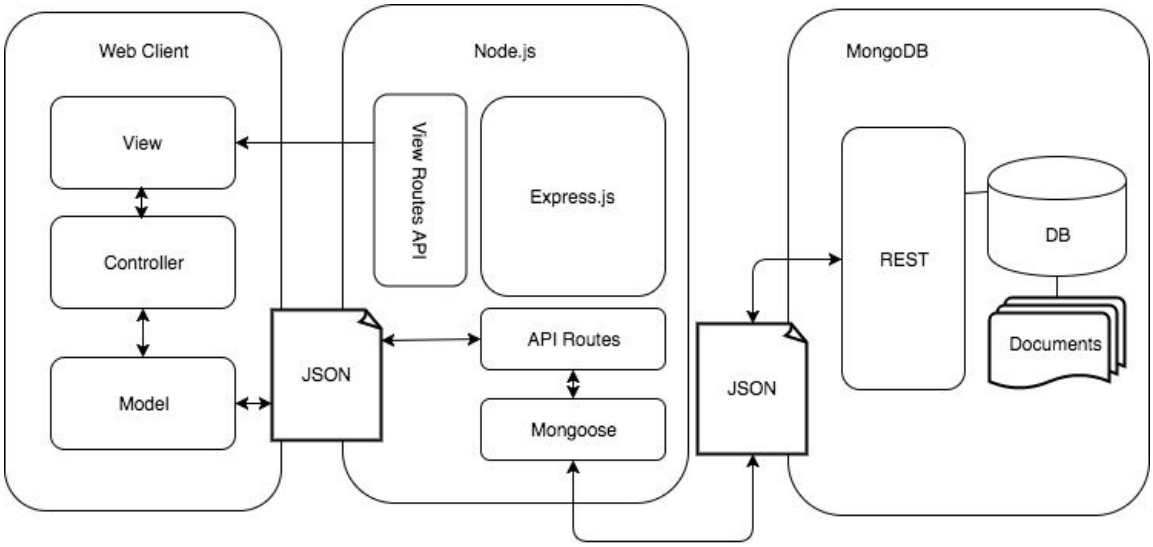

Figure 1: CaseX Software Architectural Diagram

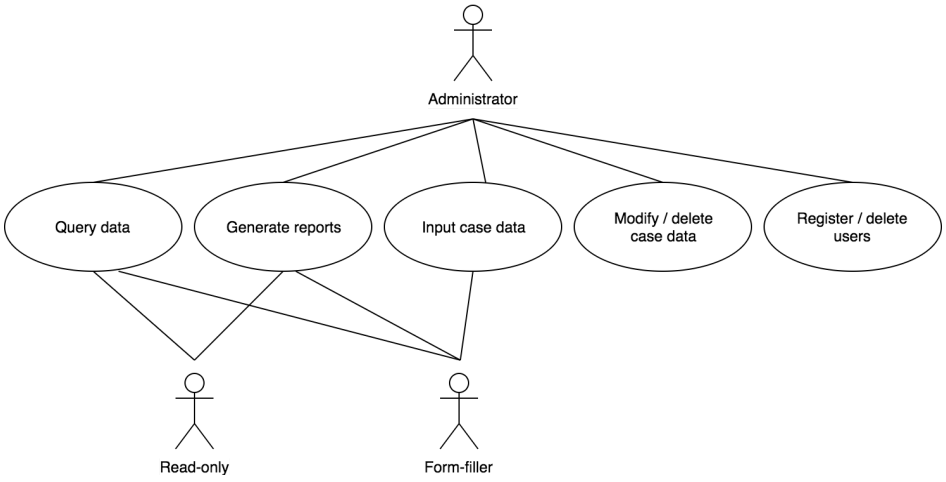

Figure 2: CaseX Use Case Diagram

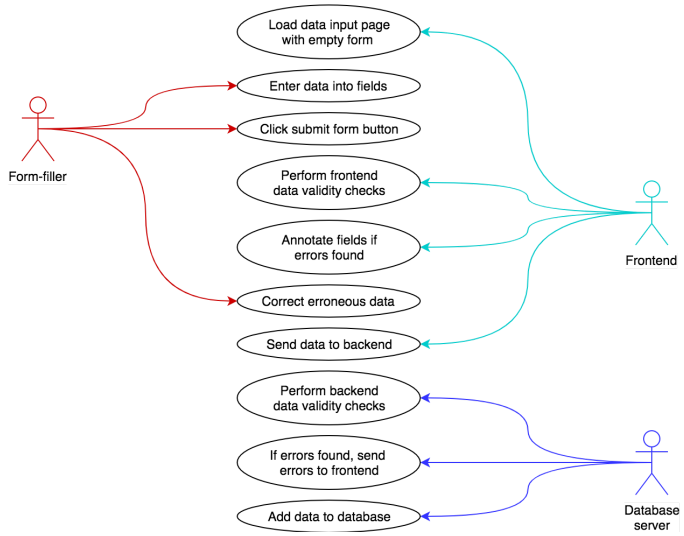

Figure 3: Data Submission Use Case Diagram

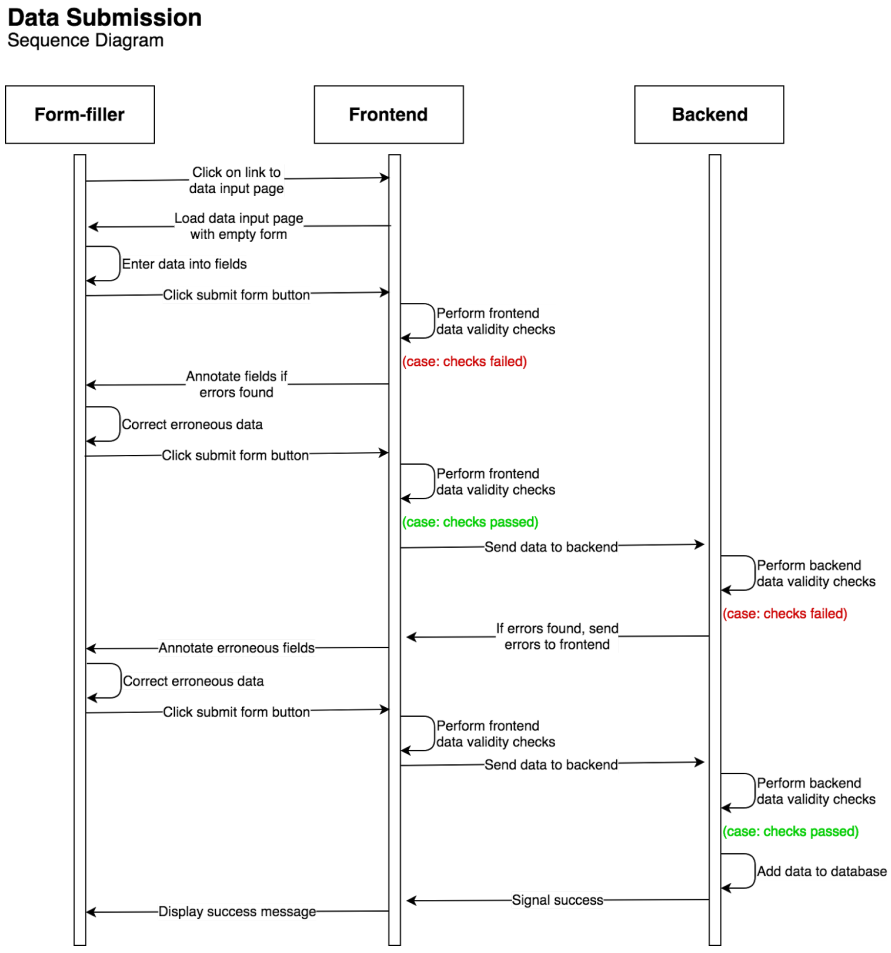

Figure 4: Data Submission Sequence Diagram