**<Project Name>  
Software Design Specification [Template]**

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# 1. SDS Revision History

**Date Author Description**

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4-11-2021 ip, tr, jw, xq Created the initial document.

# 2. System Overview

The Vaccine Clinic Information and Scheduling System (VCISS) offers people a way to easily schedule an appointment to receive a vaccine. The user can use the system to determine which clinic is ideal based on which group they fall into, their preferred vaccine type, and distance. The system will be organized into a back-end and a front-end. The back-end will handle communication with partnered clinics to retrieve available appointment and location information, as well as house the logic for determining results based on user search filters and the security implementation for user accounts. The front-end will comprise of the webpages the users are served and the interface by which they will create or log in to an account, perform their clinic search, and schedule appointments.

# 3. Software Architecture

The system will be build in two major components: a front-end and a back-end. The front-end will consist of the Login Module, the User Information Module, the Clinic Module. The components of the Login Module include: a login page, account creation page, and a “Forgot My Password” page. The User Information module will consist of an account information page, and an account modification page. The Clinic module components will consist of a clinic overview page, and a scheduling page.

The back-end will consist of the database, using MySQL, wherein all user and clinic information is stored, the Django-driven API to interface with the front-end, an Account and Security module, a Clinic Search module, and a Scheduling module.

# 4. Software Modules

## 4.1. Login Module (Front-End)

The Login module will provide the account sign up and login pages, let a user create an account, and login to the system. It will coordinate with the back-end to authenticate username and password. It will also check each time a page is loaded for the user’s login state. Key functions are dependent on the user being properly logged in, such as performing a clinic search or scheduling an appointment.

***Rationale***

The VCISS needs this module to recognize the unique user and provide services for logged in users. It will need to perform authentication to protect the system and private user information. All data generated by users will be bound to a unique ID in the database, where their information (such as address and appointments) is stored.

## 4.2. User Information Module (Front-End)

The User Information module will provide the user account information, modification, and appointments pages. If the user is in a logged-in state, it will interface with the database in order to retrieve and serve these pages and their respective data.

***Rationale***

This module is required in order to handle requests made by the user to view or modify their personal information, as well as to serve the results of those requests made.

## 4.3. Clinic Module (Front-End)

The Clinic module will provide the initial search results page that includes the list of clinics returned by the user’s filtered search, and will also provide specific clinic information pages, which will also allow users to schedule an appointment for the clinic being displayed. It will interface with the database to determine relevant clinics and their availability, as well as to determine which clinics to offer as a search result, based not only on the user’s filters but the location data saved to their account.

***Rationale***

This module is required in order to handle all requests and serve all results pertaining to clinics. It makes sense that clinics will require their own module, as user data will require different parameters (as defined in section 4.2), and likely will not be able to be handled or presented in the same manner.

## 4.4. API (Back-End)

The VCISS API will provide a framework for all front-end modules to interface with our back-end modules, such as querying the database as required for various user requests and providing the appropriate data to the front-end module that made the request. It will act as the line of communication between front-end and back-end modules and components.

***Rationale***

Some method is required for the VCISS front-end modules to determine which back-end module will be required by the specific request. The API will handle all such requests.

## 4.5. Account and Security Module (Back-End)

The Account and Security module will handle all back-end logic required for creating or modifying user account information by directly interfacing with the database. It will also handle the user password hashing and verification, and cleaning up the data if necessary, so that no private user information is exposed.

***Rationale***

The need for user account security and methods for modifying or cleaning up user data is paramount. User account information will be stored uniquely from clinic information, and must be handled separately.

## 4.6. Clinic Search Module (Back-End)

This module will house the logic for calculating clinic search results, and serving appropriate data based on distance and filters. It will receive user requests passed via the API and serve the appropriate data once it has been calculated.

***Rationale***

Clinic data within the database will have different attributes than user data and in most cases will require the data to be filtered before returning, so a module to perform those calculations and make those determinations is required.

## 4.7. Scheduling Module (Back-End)

The Scheduling module will house the logic for determining what appointment times are available for individual clinics. It will interface with the front-end via API, as well as the database to retrieve both clinic scheduling information and user appointment data.

***Rationale***

In order to build and maintain a robust scheduling system, it makes sense to create a unique module for it. It is the heart of the VCISS and should be maintainable as a standalone service to manage scalability and re

# 5. Dynamic Models of Operational Scenarios (Use Cases)

# 7. Acknowledgements

Acknowledge any sources used in your document and your project.

This template builds slightly on a similar document produced by Stuart Faulk in 2017, and heavily on the publications cited within the document, such as IEEE Std 1016-2009.