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(Wong Ze Min) (Fung Jie Deng) (Tan Yi Ying) (Chee Ka Yen)

Date: 25/12/2021

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Working person in charge

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AppointmentDao • Appointment- *Pojo*-	Chee Ka Yen Tan Yi Ying Wong Ze Min
Applicant_vacc_statusDao • Applicant_vacc_status- *Pojo*-	Chee Ka Yen Tan Yi Ying Wong Ze Min
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Requirement analysis and design • Apply vaccination- *user story-* • Check personal vaccination- *user story-* • Manage vaccination- *user story-* • Manage vaccination spot- *user story-* • MY_Vaccine portal package user requirements • MY_Vaccine admin portal package user requirements • System use case diagram • Apply vaccination sequence diagram • Check personal vaccination sequence diagram • Manage vaccination sequence diagram • Manage vaccination spot sequence diagram • Database design • Low-fidelity UX design/Low-fidelity wireframes	Fung Jie Deng- *ALL except:-* • Wong Ze Min- *Manage vaccination user story-* • Tan Yi Ying- *MY_Vaccine admin portal package Low-fidelity UX design-* • Chee Ka Yen- *MY_Vaccine portal package Low-fidelity UX design-*

Recommendation and conclusion	Wong Ze Min Fung Jie Deng

Abstract

Project overview

Project MY_Vaccine undertakes the interest in developing a dynamic web application system consisting two packages namely MY_Vaccine Portal and MY_Vaccine Admin Portal. The aim of MY_Vaccine is through the web application system to improve the high-level business process manifested in the appointment of COVID-19 vaccination.

Project deliverables

Dynamic web application system package

System package	Package description
MY_Vaccine Portal	The anticipated outcome of the MY_Vaccine Portal package is to provide a portal where the end user- *target user: vaccination applicant*- can apply for vaccination appointment, check personal vaccination appointment, and check personal vaccination status, thereby enhanced effectiveness in the COVID-19 vaccination appointment.
MY_Vaccine Admin Portal	The anticipated outcome of the MY_Vaccine Admin Portal package is to provide a portal where the admin can manage applicants' vaccination and manage vaccination spots, thereby enhanced effectiveness in the vaccination applicant and vaccination appointment management.

Project deliverables log

ID	Due-date	Project deliverable
PD_01	25/12/2021	First release of a working prototype of the dynamic web application system
…	…	…

Project Scope

The required tasks and task deliverables for achieving PD_01 are as follows:

- Task A- Agile project management
- Task B- Agile development

Task A- Scrum agile method/Agile project management

Task A consists of a disciplined approach of Scrum Agile method to be performed to manage the work and the implementation of Agile development- *Task B*-.

- TA_1.1- Kick-off meeting
- TA_1.2- Sprint meeting and project set up
- TA_1.3- Agile documentation- *Sprint closing*-

TA_1.1- Kick-off meeting

The kick-off meeting is for the project team to understand the domain problems and brainstorm the solution of the project. The meeting aims to define a common and mutual understanding of the project's- *MY_Vaccine*- domain concepts.

Deliverable items

- Project brainstorming outline

TA_1.2- Sprint meeting and project set up

The sprint meeting is for the project team to understand the needs and gather the requirements of the project. The meeting aims to define a common and mutual understanding of the software project while discussing and identifying the software requirements, user stories- *brief/outline*-, or descriptions of supplementary tasks that are needed, such as architecture definition- *brief /outline*-. The project team shall set up initial project files and the database that will be distributed and used among team members for development.

Deliverable items

- Product backlog- *Refer to Appendix_01*-
- Initial project files- *dynamic web application project file*- ×2- *two package*-
- Initial database

TA_1.3- Agile documentation- *Sprint closing*-

The project team shall document the implementation implemented throughout the development process. Which, artefacts user story, user requirements, and system architectural baseline /executable architecture shall be provided.

Deliverable items

- Agile documentation

Task B- Agile development

Task B consists of Agile development techniques of Agile method to be performed and implemented to develop the dynamic web application system.

- TB_1.0- Sprint- *Agile development iteration*-
    - TB_1.1.0- Parallel pair programming- *MY_Vaccine Admin Portal package*-
        - TB_1.1.1- Parallel increment development- *Functionality/User story: Manage vaccination*-
        - TB_1.1.2- Parallel increment development- *Functionality/User story: Manage vaccination spots*-
        - TB_1.1.3- System/Increments integration and refactoring
    - TB_1.2.0- Parallel pair programming- *MY_Vaccine Portal package*-
        - TB_1.2.1- Parallel increment development- *Functionality/User story: Apply vaccination*-
        - TB_1.2.2- Parallel increment development- *Functionality/User story: Check personal vaccination*-
        - TB_1.2.3- System/Increments integration and refactoring
    - TB_1.3- Integration testing- *system testing*-

TB_1.0- Sprint

The project team begin the undertaking of the development iteration. The estimated time of the Sprint is 2 to 3 weeks long.

Deliverable items

- Potentially shippable product increment- *the working prototype of the dynamic web application system*-

TB_1.1.0/TB_1.2.0- Parallel pair programming

The project team members work in pairs- *two members per pair*- to begin the undertaking of the development of the allocated system package.

Deliverable items

- Shippable Working prototype of a system package

TB_1.1.1/TB_1.1.2/TB_1.2.1/TB_1.2.2- Parallel increment development

The pair programmers work individually for the implementation and development of an increment/a functionality for the package.

Deliverable items

- Increment functionality

TB_1.1.3/TB_1.2.3- System/Increments integration and refactoring

The pair programmers come together and integrate their completed increment functionality, in which code refactoring and integration testing will be carried out to complete the package.

Deliverable items

- Completed working prototype of a system package

TB_1.3- Integration testing- system testing-

The project team/pairs come together and integrate their completed system package, in which code refactoring and integration testing- *system package*- will be carried out to complete the package.

Deliverable items

- Completed working prototype of the dynamic web application system

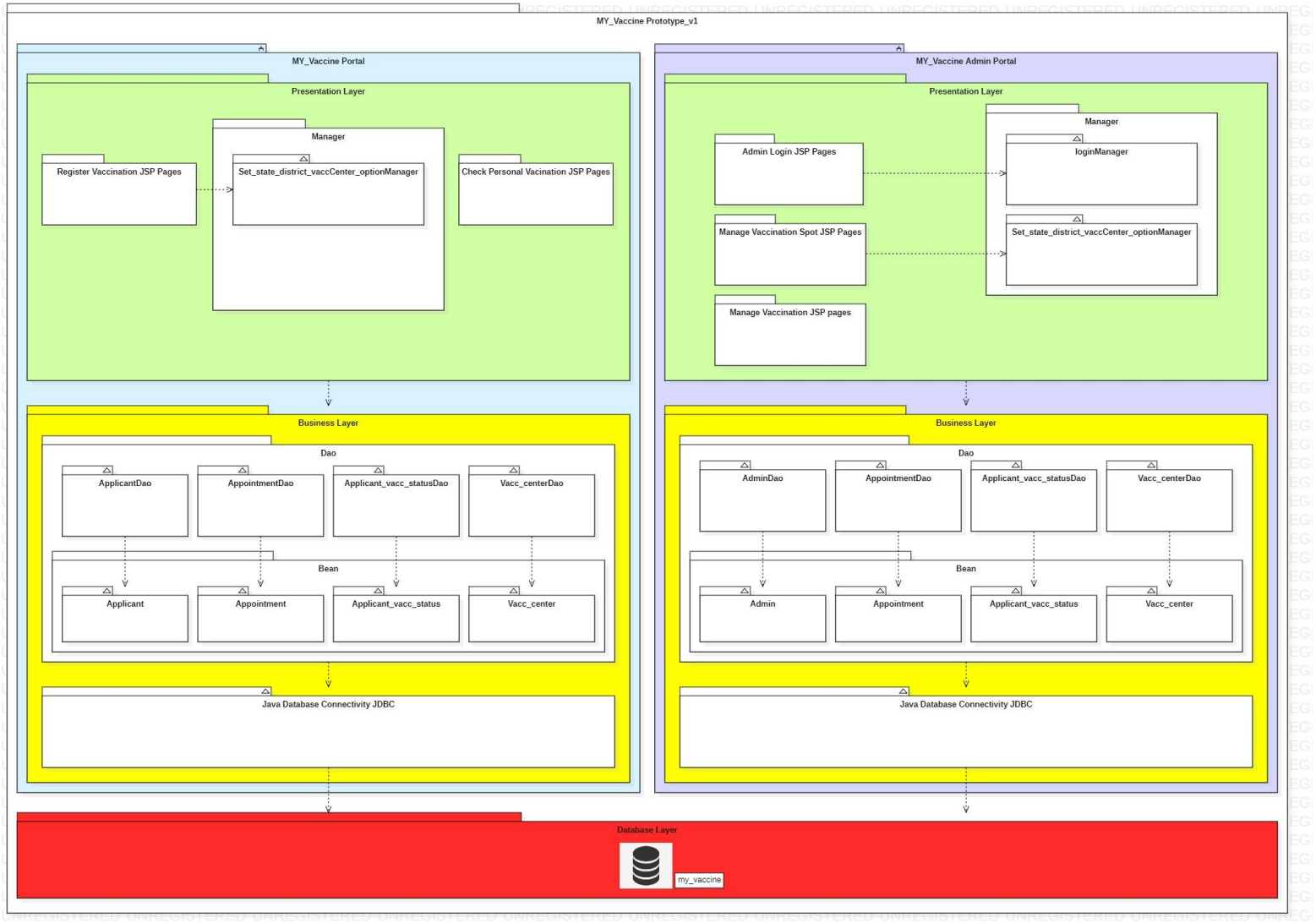
Introduction

As in response to the recently emerging infectious pandemic that increases the geographic range and changes the situation rapidly, the country aims to manage these outbreaks by achieving herd immunity as quickly as possible to accelerate a safe return to the 'new normal' at speed. Therefore, the project "My_Vaccine" vaccination reservation system is being introduced. The development of this system is dedicated to facilitating mass public access to vaccination appointment booking portals by providing highly convenient digital processes to optimize the delivery of vaccines. Thus, herd immunity can be reached in the soonest possible when people in the population have developed protective antibodies against the infection.

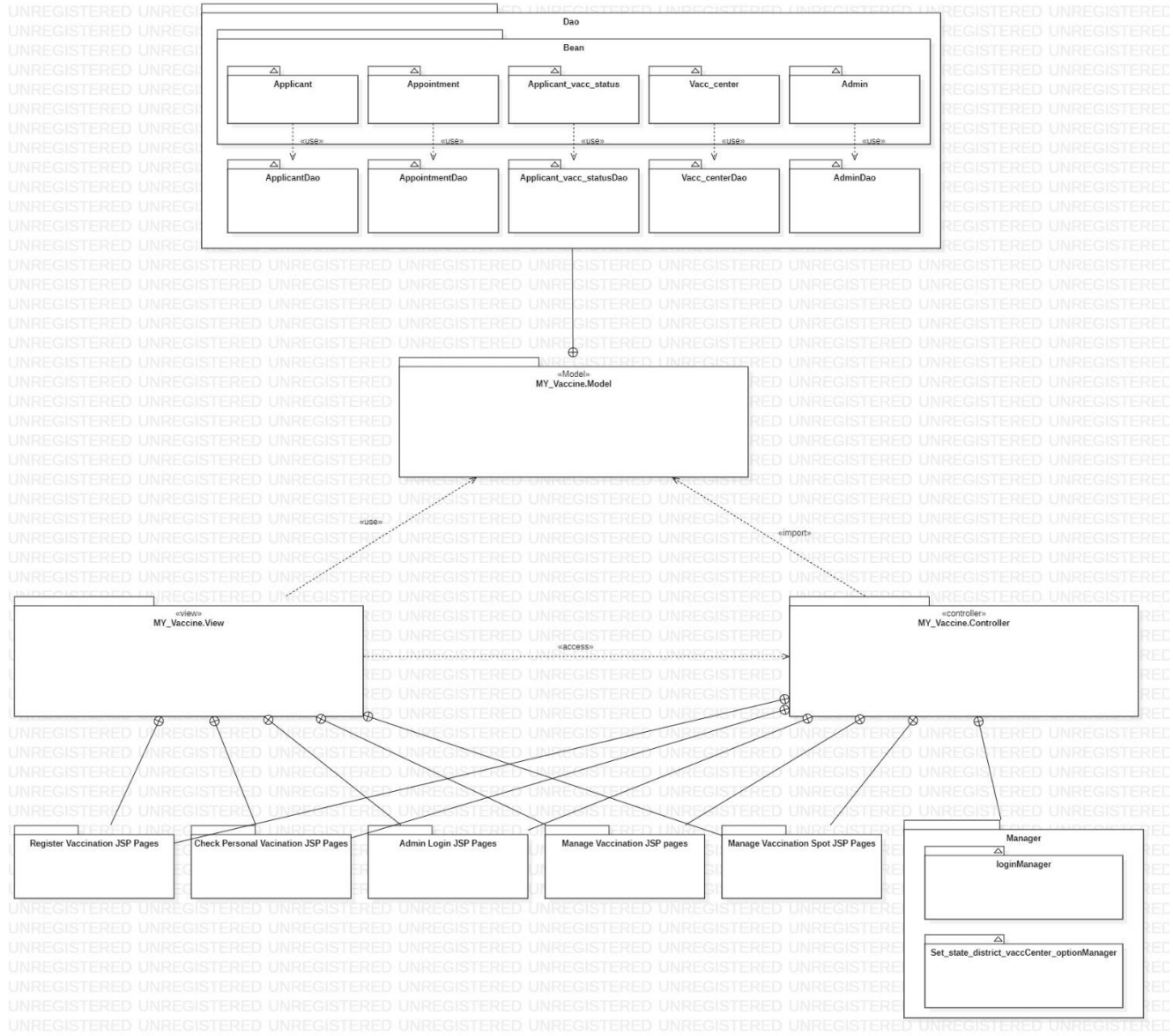
This vaccination reservation system provides a simple registration and appointment booking step to ease applicants in the procedure of registration or appointment booking in which, the applicant is only required to provide some basic personal information upon registration. Vaccination appointments can be made through this platform or through contacting the hotline or email provided whenever it is necessary. This vaccination reservation online services are provided all over the country whereby the applicant is allowed to select the vaccination location, vaccination date, and vaccine type at their preferences and details for any vaccination appointments made will be sent to the applicant. Hence, providing an easy tracking appointment and as well as it eases the procedures of making amendments on the appointment schedule assigned.

Architecture design

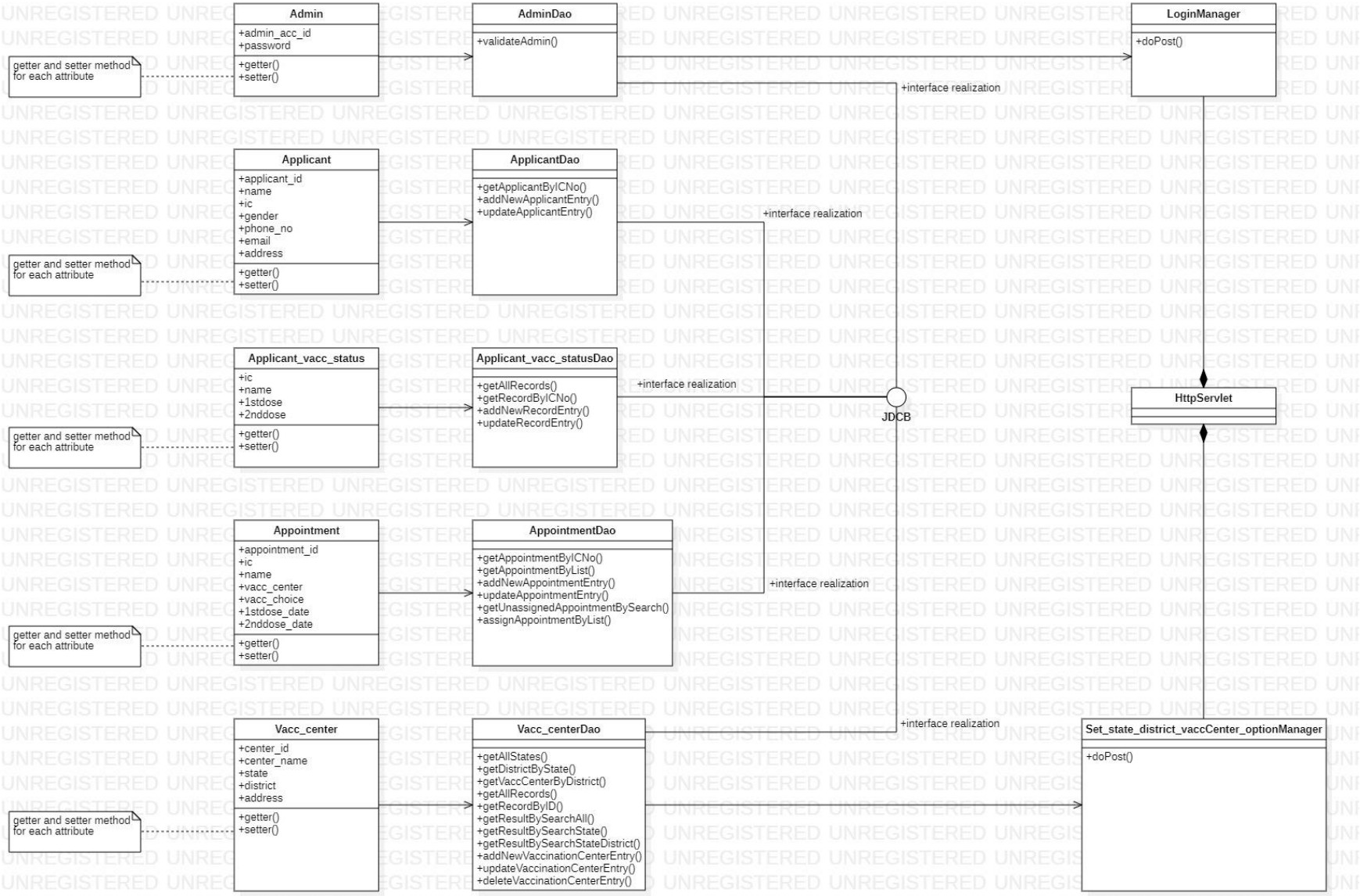
Architecture Viewpoint



Design Viewpoint

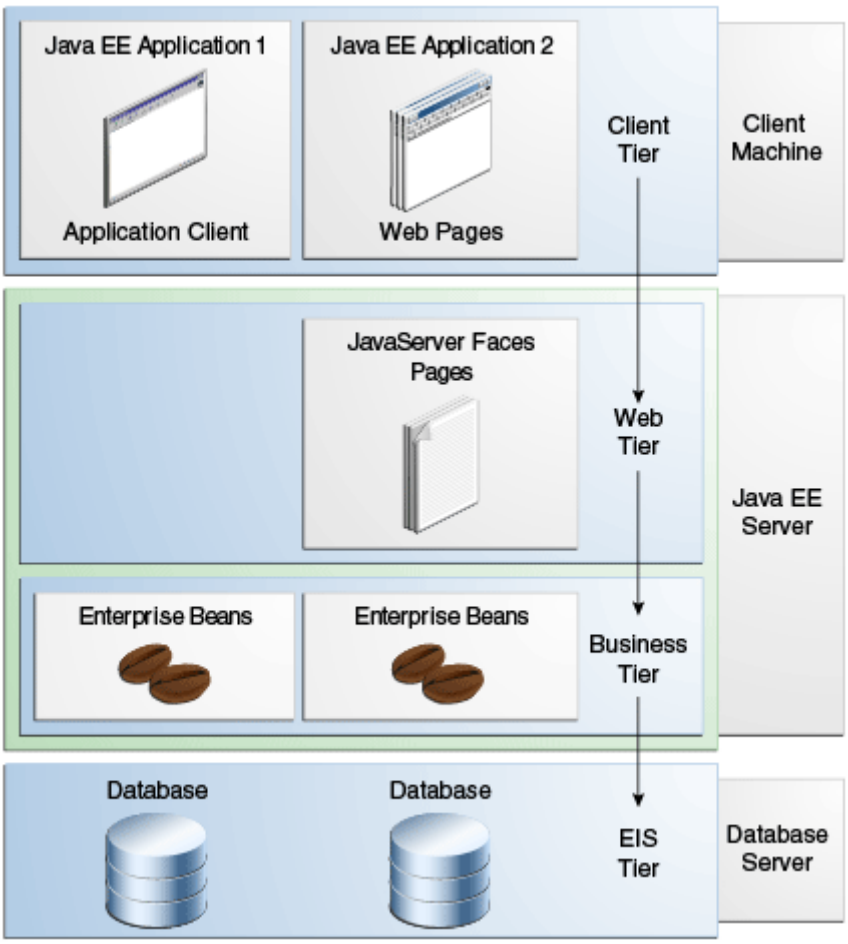


Domain Model



Architecture Design Criteria

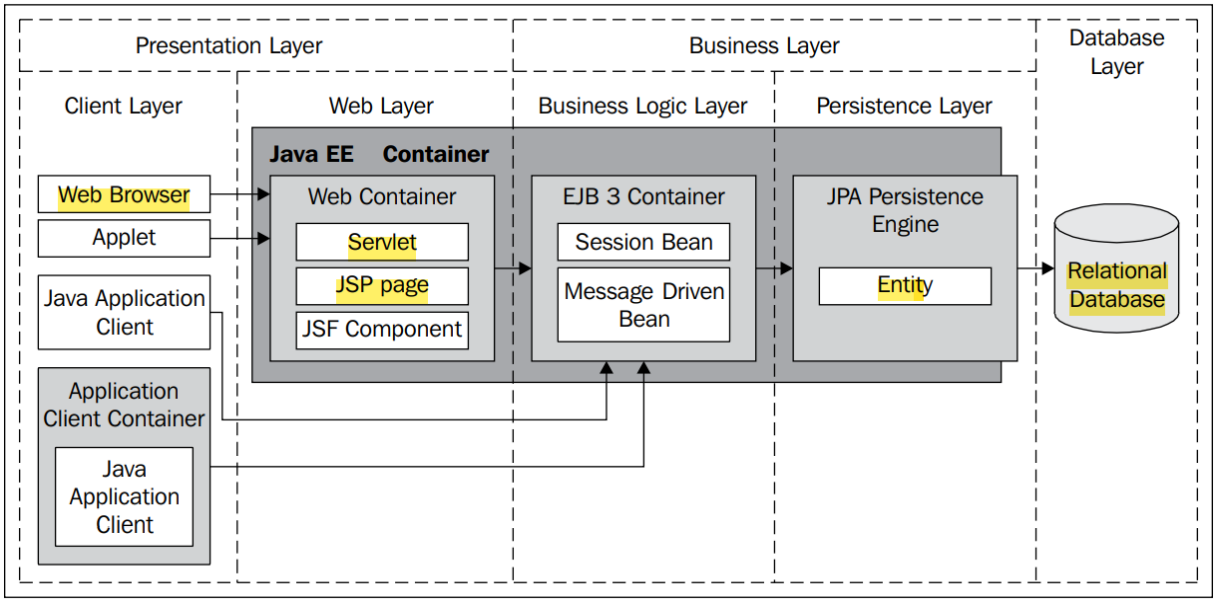
Deployment of MY_Vaccine application prototype system



("1.3 Distributed Multitiered Applications - Java Platform, Enterprise Edition: The Java EE Tutorial (Release 7)", n.d.)

The implementation and deployment of MY_Vaccine application prototype system adheres the Java Platform Enterprise Edition (Java EE) standard/framework of distributed multitiered application model, where spanning over three distributed locations namely client machines, the Java EE server machine, and the database server machine. In which, encompassing 4 tiers of application components, namely client-tier components, web-tier components, business-tier components, and Enterprise Information System (EIS)-tier components.

Jave EE architecture framework



(Sikora et al., 2008)

The deployment of the distributed multitiered application model was realized through the multi-layer architecture as presented above. The architecture of Java EE mainly manifests three essential abstract layers, namely the presentation layer, business/domain layer, and database layer. Through the architecture pattern, the responsibilities of application components are divided and distributed, where accountable for providing different services and facilities. Where the lower layers are low-level and general services, and the higher layers are more application specific; which higher level layers are dependent to be served by lower layers. In general, each layer is responsible for:

- Presentation layer

  Accountable for concerns such as user interface facilities and user interface management, namely displaying and presenting user interfaces and handling interactions with the end user

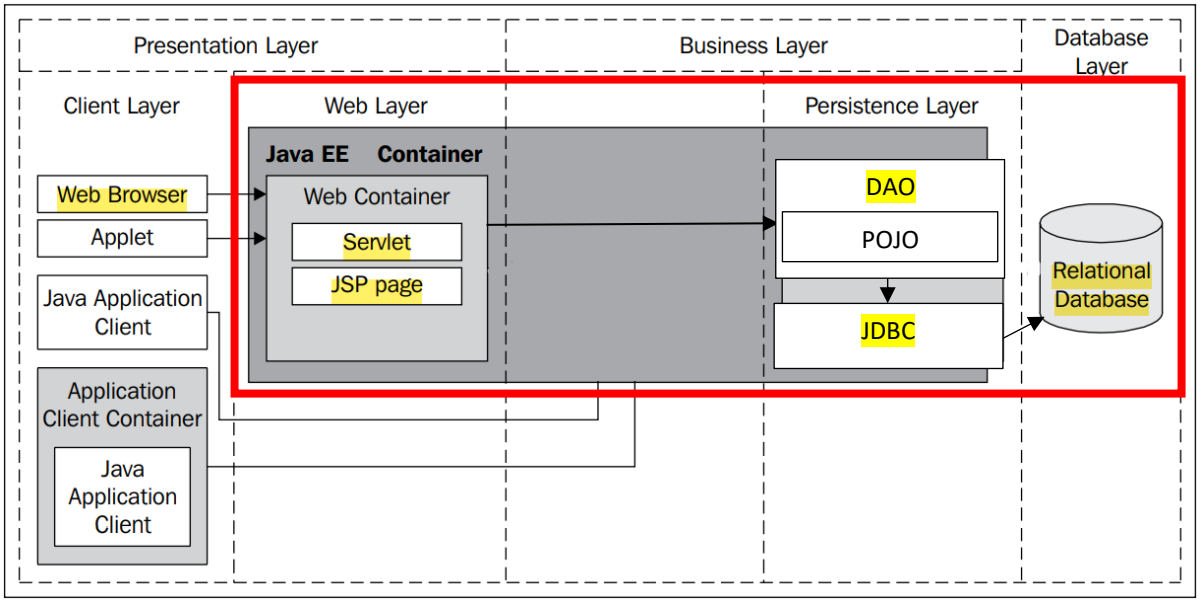
- Business/Domain layer

  Accountable for concerns such as application functionalities and utility components used by other application components- *that reside at upper layers*- with providing the realization of the implementation and execution of business process/logic.

- Database layer

  Accountable for concerns such as the database support- *such as the relational database management system*- for the storage of business data.

Architecture of MY_Vaccine application prototype system



(Sikora et al., 2008)

The above adaptation is the architecture of the MY_Vaccine application prototype system looking to strive for, with the necessary configuration and adoption of Java EE components based on the architecture framework of Java EE. In which, the unnecessary layers and components are minimized, and the outcome is substantial enough for the first release of a working prototype. The properties of the architecture are as follow:

Architecture	Layer	Functionalities	Realizing component and technology
Presentation layer	Client layer (Presentation)	• Display GUI	• HTML
	Web layer (Application)	• Handles client layer requests and responses • Control workflow • Handle session state/instances- *servlet attributes and parameters*- • Webpage transitions • Consolidation and transformation of	• JSP • Servlet

		disparate data for presentation	
Business layer	Persistence layer	• Handles web layer accesses • Provides the implementation of domain rules • Executes domain services- *DAO, JDBC*-	• Data persistence with JDBC
Database layer	Relational database	• Business data storage	–

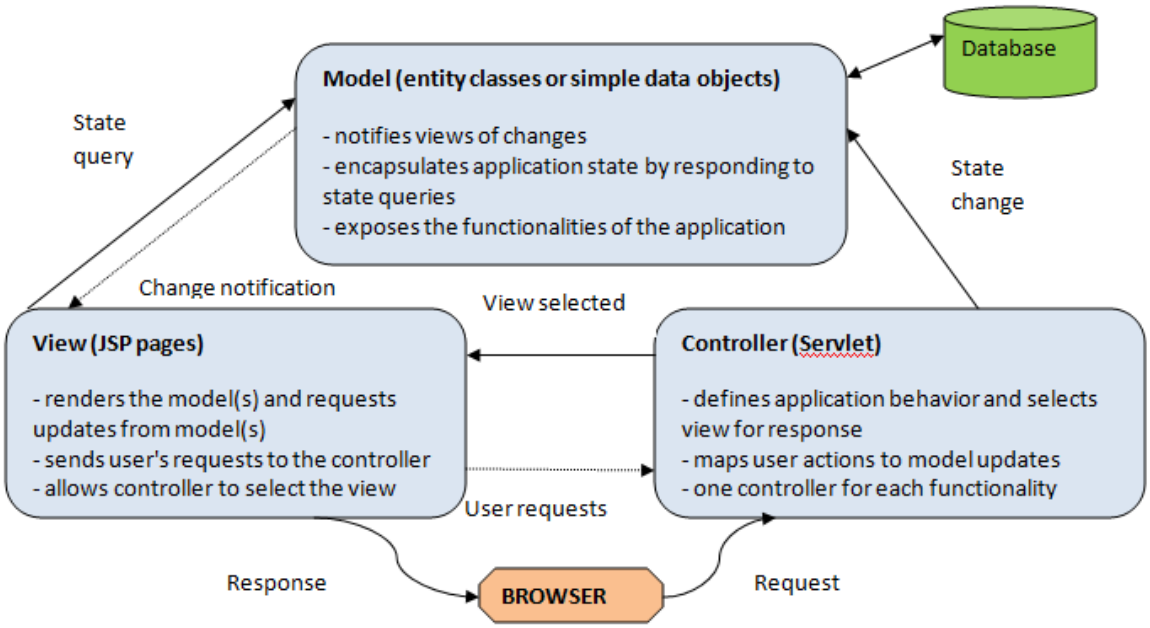
Realizing/Adopting Java EE components/technologies description

As above listed, the main adopted components/technologies in realizing the implementation of the architecture of the MY_Vaccine application prototype system are JSP, SERVLET, and JDBC.

Functionalities	Realizing component/technology
• Handles client layer requests and responses • Control workflow • Handle session state/instances- *servlet attributes and parameters*- • Webpage transitions • Consolidation and transformation of disparate data for presentation	• Servlet A Java EE component/technology that is being used and implemented to process requests and construct responses dynamically. • Java Server Pages (JSP) A Java EE component/technology that is being used to create text-based documents- *such as HTML*- and together through the accessibility to the servlet technology to implement servlet execution.
• Handles web layer accesses • Provides the implementation of domain rules • Executes domain services- *DAO, JDBC*-	• Data persistence with Java Database Connectivity (JDBC) An Application Programming Interface for Java programs in accessing the Database Management System (DBMS). Which, JDBC is being used to implement the connection to

	databases, send Structured Query Language (SQL) written queries, and process the results.

Design of MY_Vaccine application prototype system



(Mihalceanu, 2014)

The architecture of the MY_Vaccine application prototype system in detail manifests the Model-View-Controller (MVC) pattern defining a separated presentation and interaction of system data. As the design pattern demonstrated above, the VCM pattern incorporates three logical components interacting with each other, namely model component, controller component, view component. Where each logical component has a dedicated responsibility /facet in the handling for system data, which as follows:

Logical component	Facet	Manifested realization
Model	Responsible for the concerns in the management of the system data and associated data operations.	• *"Notifies views of changes"* • *"Encapsulates application state by responding to state queries"* • *"Exposes the functionalities of the application"*
Controller	Responsible for the concerns in the management of the interactions from	• *"Defines application behavior and selects view for response"*

	the user and the undertaking of the passing of interactions to the View and Model.	• *"Maps user actions to model updates"* • Controller providing access to model functionalities
View	Responsible for the concerns in the display and presentation of the data to the user.	• *"Renders the model(s) and requests updates from model(s)"* • *"Sends user requests to the controller"* • *"Allows controller to select the view"*

Manifested dependencies of the logical components- *VCM*- of the MY_Vaccine application prototype system

Dependency	Stereotype	Dependency description
MY_Vaccine.View → MY_Vaccine.Controller	<<access>>	Allows MY_Vaccine.View to access all of the public contents of MY_Vaccine.Controller, in which both namespaces remain separated.
MY_Vaccine.View → MY_Vaccine.Model	<<use>>	Allows MY_Vaccine.View to use objects- *namely parameters*- of MY_Vaccine.Model.
MY_Vaccine.Controller → MY_Vaccine.Model	<<import>>	Allows elements in the MY_Vaccine.View to access elements in the MY_Vaccine.Model without having to qualify element names with the package name, which the namespace of the MY_Vaccine.Model is merged into the name space of the MY_Vaccine.View.

Manifested implementation of the logical components- *VCM*- of the MY_Vaccine application prototype system

Logical component	Components
View	Register Vaccination JSP Pages
	Check Personal Vaccination JSP Pages
	Admin Login JSP Pages
	Manage Vaccination JSP Pages

	Manage Vaccination Spot JSP Pages
Controller	Register Vaccination JSP Pages- *implement servlet execution inside-*
	Check Personal Vaccination JSP Pages- *implement servlet execution inside-*
	Admin Login JSP Pages- *implement servlet execution inside-*
	Manage Vaccination JSP Pages- *implement servlet execution inside-*
	Manage Vaccination Spot JSP Pages- *implement servlet execution inside-*
	Manager- *Servlet-*
Model	Dao

Domain model of MY_Vaccine application prototype system

The domain model of MY_Vaccine application prototype system is the implementation of data persistence- *with JDBC*- of the business domain of MY_Vaccine. In which, it is composed of a series of Data Access Object components (DAO) that use/rely on Plain Old Java Object components (POJO) to implement atomic operations such as database creation, query, update, and delete (CRUD) through JDBC.

Requirement Analysis and Design

Requirement Specifications- *User Requirement Specifications*-

MY_Vaccine Portal package

User Story

Kate is a user who wishes to sign up for a Covid-19 Vaccine shot, she decided to register it through the MY_Vaccine user portal, where most people recommended about. Upon accessing the MY_Vaccine user portal, she is first met with a Home Page with two options, which is either "Registration" to register as vaccine applicant, or "Search applicant" to view upon the personal registered details.

Apply Vaccination

Since Kate wishes to register, she chose on the "Registration" option. She will be directed to a registration page which first prompts her for her IC number, if she registered before, an error will be presented that states upon duplicate registrations. If she freshly registered, she will be redirected to a registration form that prompts for her Name, Gender, Phone Number, Email, Address, choice for vaccination center, Vaccination choice, and her preferred appointment date. Once she filled everything up, she has two choices, which is to either submit, or cancel. Choosing upon submit redirects Kate back to the MY_Vaccine Home Page, while choosing upon submit will complete her registration, and her registration will be added to the system. She will then be directed to a page where her registered info's are presented.

Check Personal Vaccination

Kate later on took her first dose of her vaccine, she then wanted to check on her vaccination status from the MY_Vaccine user portal. She needs to choose upon the "Search Applicant" option on the MY_Vaccine user portal Home Page, where she will be prompted for her Name and IC number. Filling in a registered Name and IC number will redirect her to a page where all her registered details are displayed. On here she has three choices, which is to either "Edit Applicant" *–to edit upon her registered details*, to "View Appointment" *–view upon any upcoming vaccine appointments with the option to cancel*, or to "View Applicant Vaccination Status" *–view upon vaccination dosage count of the applicant*.

Since Kate wanted to check on her vaccination status, she expeditiously chose the third option, which is "View Applicant Vaccination Status". She will be redirected to a page where her

Vaccine dosage (1st dose, 2nd dose) status is displayed, she should see a "True" status on the side of her "1st dose" column.

Kate then wanted to cancel upon her appointment for the 2nd dose, she promptly went back to the "View Appointment" page and click on the "Cancel" button right beside the date of her 2nd appointment. Through this, her appointment date for the 2nd appointment will be deleted from the system.

Right before she closes off, she realized there was a slight mistake on her registered personal details. Thereby, she went on to the "Edit Applicant" page, where an edit form will be provided to correct and mistyped or wrong details. After she corrected upon the details, she has two choices, either to "Submit" or to "Cancel". Cancelling the editing will simply redirect her to the home page, and no change will be done to the system. However, Kate clicks on the "Submit" button and the personal details were edited and changed within the system.

Functional Requirements

Documentation convention

Viewpoint	Colour
User	
System	

ID	User Requirements
UR-01	Users shall be provided with a Web-based UI to perform user-based operation upon the MY_Vaccine system.
UR-02	User shall be provided with the ability to register as a new vaccine applicant. Where user shall be provided with the choice in choosing their preferred: • Vaccination spot • Vaccination choice • 1st vaccination appointment date User shall be allowed to submit the registration, or cancel the vaccine registration mid-operation.
UR-03	The MY_Vaccine user system shall be able to identify upon duplicated vaccine registrations and act accordingly.

UR-04	The MY_Vaccine user system shall conserve the user registered details onto the system's database.
UR-05	Registered user shall be provided with the ability to search upon their personal registration status.
UR-06	Registered user shall be provided with the ability to edit upon their personal registered details.
UR-07	Registered user shall be provided with the ability to view upon their personal vaccination status.
UR-08	Registered user shall be provided with the ability to view and cancel upon their personal vaccination appointment.
UR-09	The MY_Vaccine user system shall be able to take in upon the user's operation in acquiring or make changes upon the system's database.

My_Vaccine admin portal package

User Story

Kate is an admin for the MY_Vaccine Covid-19 vaccination system, she is responsible in managing the overall vaccination, as well as the vaccination spots. In order to do so, she would need to login to the MY_Vaccine admin portal with the correct credentials. A successful login will redirect Kate straight to the Admin Portal Home, where she can choose between the 'Vaccination Manager', or the 'Vaccination Spot Manager'. Kate will be able to logout from the system through the "logout" button on the top right of the portal, it will redirect Kate back to the login menu for revalidations. However, if Kate tried to backtrace to the previous portal interface without entering a correct credential, she will simply encounter an "Invalid User Session" upon operating.

Manage vaccination

Kate is an admin who wishes to manage applicant's vaccination and vaccination appointments. The vaccination manager menu- *table menu*- is already displayed and listed on her computer so she clicks on the options that she can select 'Applicant's vaccination' or 'Applicant vaccination appointment',

Manage applicant's vaccination record

If Kate selects 'Applicant's vaccination', the system displays and lists all records- *applicant's vaccination status record*- in a table. In which the table has table columns "IC No.", "Name",

"1st Dose", and "2nd Dose" and providing respective record data. Kate can scroll and find through the table content to locate the wanted applicant's vaccination record; or alternatively, Kate can fill applicant's IC number in the displayed search bar and click on the 'search' button to query the wanted applicant's vaccination record and the found/matched record will be provided. At the found wanted applicant's vaccination record, Kate can select and click the 'Update' button for updating the record.

If Kate chooses and clicks 'Update' at the wanted applicant's vaccination record, the system displays an editor loaded with the record data- *include IC No., Name, 1st Dose, and 2nd Dose*-. In which, at the fields "1st Dose" and "2nd Dose" a check box is provided respectively- *checked means the dose has been received, while unchecked means the dose has not been received*-. Kate can toggle and click on the checkboxes to alter/edit the applicant's vaccination status- *the status in receiving both vaccine doses*-.

While editing the applicant's vaccination status, Kate can either clicks 'Edit patient register' or 'Cancel'. If Kate clicks on 'Edit patient register' after done editing, the updates/changes to the record are updated to the database and the change result will be displayed. If Kate clicks on 'Cancel', the changes are discarded and she reenters the 'Applicant's vaccination'.

Manage applicant appointment manager

If Kate selects 'Applicant vaccination appointment', the system displays a search box with search fields including "Vaccination center", "Vaccine choice", and "Dose number". Kate fills in the vaccination center name and vaccine choice and selects the dose number to find appointments related to the search options and where the dosing date of the selected dose number has not been assigned. After filling up all the search field, Kate can click the 'Search' button to proceed.

If Kate clicks 'Search' the system queries the appointments related to the search options and where the dosing date of the selected dose number has not been assigned and the found/matched appointments will be displayed and listed. In which, an assignment box with input fields including "Assigning date" and "Assigning number" will be displayed and provided. Kate fills in the assigning dosing date and assigning number to assign dosing date to the specified number of rows of appointments. If Kate clicks on 'Assign', the provided and specified assignment to appointments is updated to the database and the change result will be displayed.

Manage vaccination spots

Kate is an admin who wishes to administer the Vaccination Spots. Having an influx of people registering for vaccination, the Minister of Health (MOH) requested to establish several new

vaccination centers on certain area. Thereby, Kate needs to manually administrate to insert, edit, or delete vaccination spots within the MY_Vaccine admin system's Vaccination Spot Manager.

Kate was first instructed to correct a typo upon a vaccination center's name, in order to do so, she would need to navigate within the "Vaccination Spot Manager" from the admin portal home. Upon entering, she would be presented with a full list of all the established vaccination spots. As the list was crowded and confusing, she makes use of a filter panel on the top left of the list to filter upon the State, District, and the center's name to search upon the desired vaccination center. Once she filtered upon her desired vaccination center, she can click on the "Edit" button to be gain access to an editing form of the particular vaccination center. She can then edit upon the Center's name, the State, the District, and the address of the particular center. She can then submit upon the form, and the particular vaccination center's details will be edited from the system.

Kate was then instructed to remove an existing vaccination center from the system, she would need to search upon the desired vaccination center, and click on the "Delete" button. The vaccination center will then be deleted from the system.

Kate was later then requested to establish a new vaccination spot within the system. She would need to click upon the "Add new vaccination spot" button to be redirected to a "add vaccination spot" form, where she can fill in the details of the new vaccination center upon the Center's name, State, District, and the address. Submitting on the form will add a new vaccination center within the system.

Functional Requirements

Documentation convention

Viewpoint	Colour
Admin	
System	

ID	User Requirements
AR-01	Admins shall be provided with a Web-based UI to perform administration operations upon the MY_Vaccine admin system.
AR-02	Admins shall be required to login to the MY_Vaccine admin portal with a correct credentials in accessing the admin system operations.

AR-03	MY_Vaccine Admin system shall be able to validate the inputted login credentials and provide login session access accordingly.
AR-04	Admins shall be provided with the ability to logout from the MY_Vaccine admin portal.
AR-05	MY_Vaccine Admin system shall be able to clear the login session access upon admin logout.
AR-06	MY_Vaccine Admin system shall be able to authenticate upon the admin's login session access, and prevent any attempts in portal backtracing.

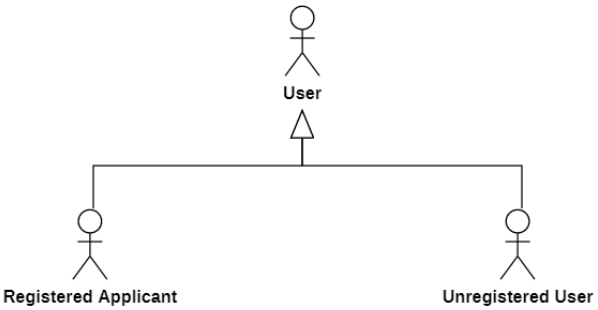
AR-07	Admins shall be provided with different directories upon the admin portal
	• Vaccination Manager
	  ○ Applicant's vaccination manager
	  ○ Applicant's appointment manager
	• Vaccination Spot Manager
	And having the ability to access each of them.

AR-08	Admins shall be provided and presented with the full list of all registered applicant status upon accessing the Applicant's Vaccination Manager.
AR-09	Admins shall be prompted upon a search query for the "Vaccination center", "Vaccine choice", and "Dose number" in accessing the Applicant Appointment Manager. Admins shall be presented with the list of queried applicants appointment data upon establishing the correct queries.
AR-10	Admins shall be provided and presented with the full list of established Vaccination spots upon accessing the Vaccination Spot Manager.
AR-11	Admins shall be provided with a search functionality upon the list in: • Applicant's Vaccination Manager • Vaccination Spot Manager
AR-12	MyVaccine Admin system shall be able to provide the functionality in performing CRUD operations (Create, Read, Update, Delete) upon the managers accordingly: • Applicant's Vaccination Manager (Read, Update)

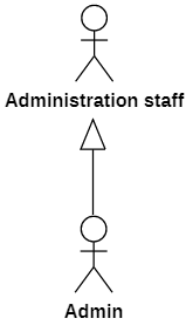
	• Applicant's Appointment Manager (Read, Update) • Vaccination Spot Manager (Create, Read, Update, Delete)

Designs

Actor Survey



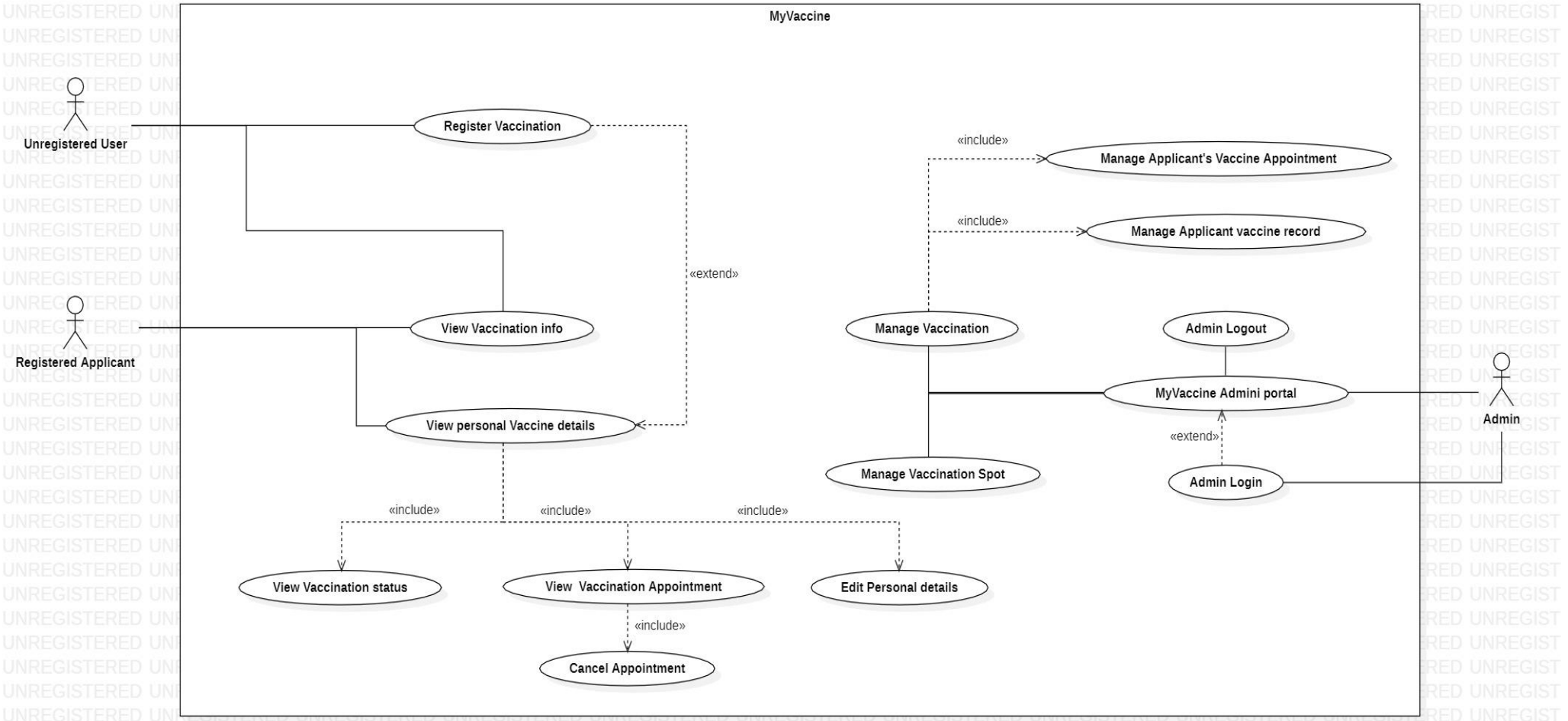
ID	Actor Name	Description
AC1-01	User	The end user for the MY_Vaccine user portal, who utilizes the system's services namely –*View Vaccination info, Vaccination Registration, Check Vaccination status, Check Vaccination Appointment.* Only will have access to the user-level function and data of the system.
AC1-02	Unregistered User	A user that has not been registered for vaccination within the system.
AC1-03	Registered Applicant	A user that has registered as a Vaccination applicant within the system.



ID	Actor Name	Description
AC2-01	Administration staff	The user that operates and maintains the MY_Vaccine system's business operations, who utilizes the admin

		privilege and admin-level services, namely- *Manager Vaccinations, & Manager Vaccination Spots*-.
AC2-02	Admin	A user that has not been registered for vaccination within the system.

System Use Case Diagram



Sequence Diagrams- as per from top to bottom-

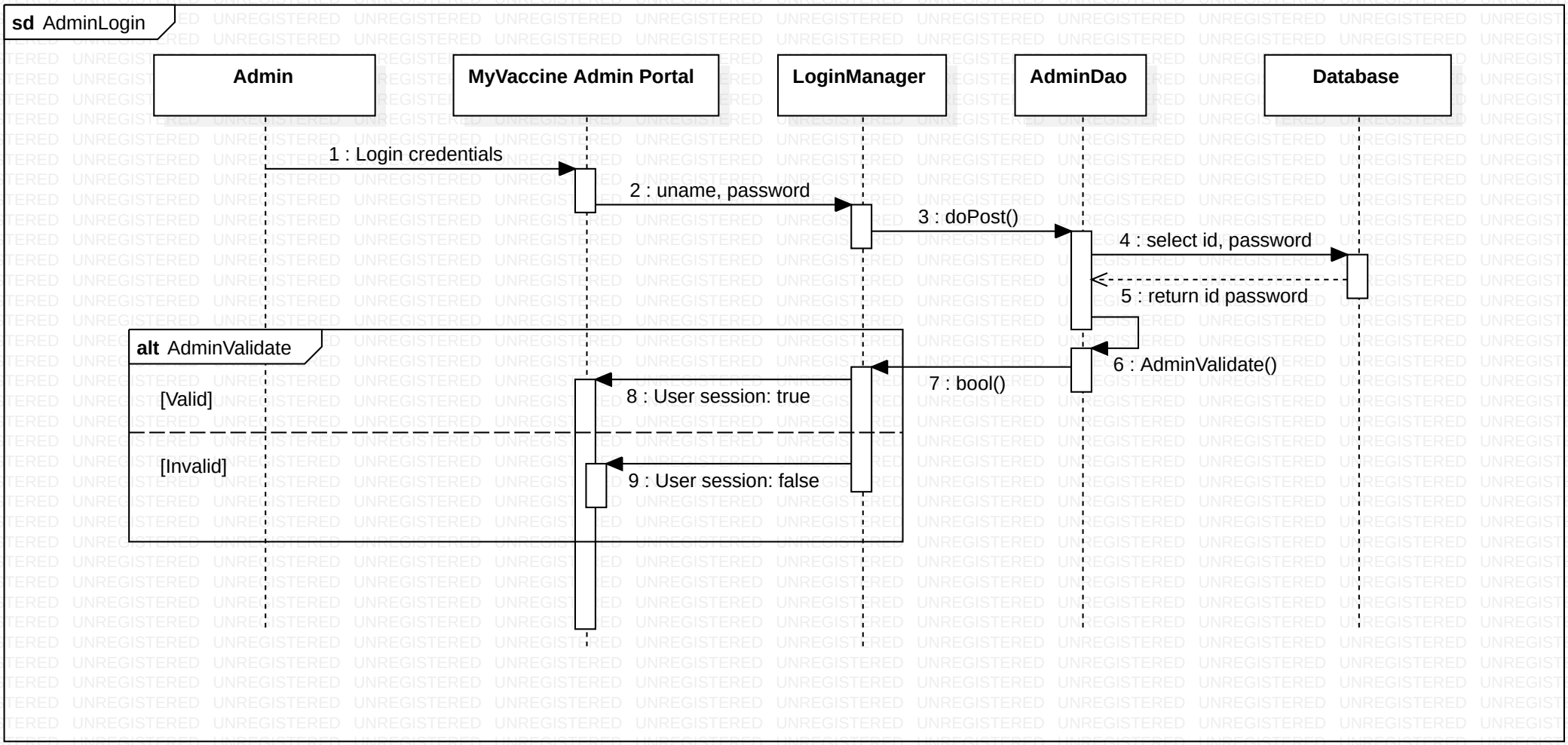
MY_Vaccine Portal package

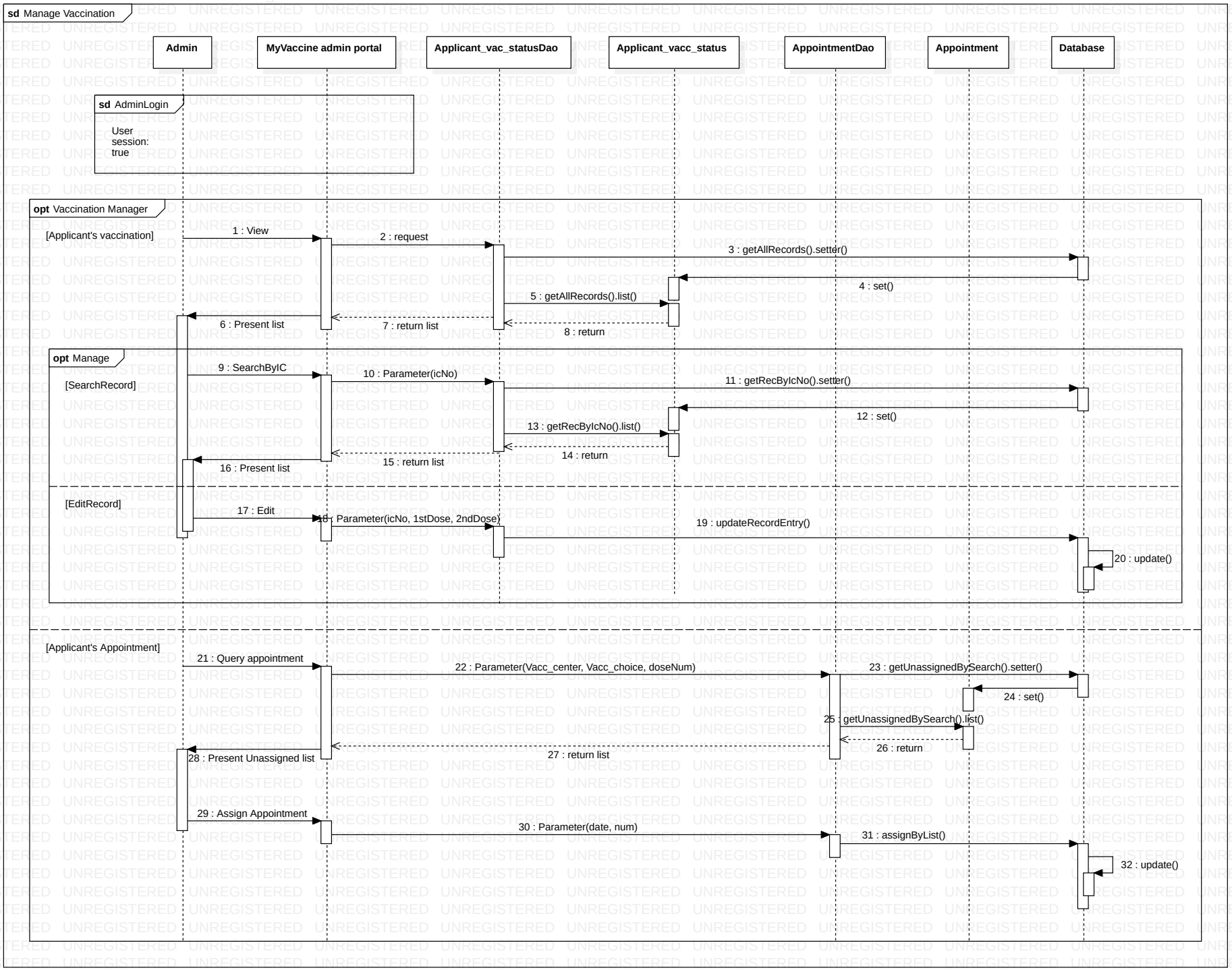
- Admin Login Sequence Diagram
- Manage Vaccination Sequence Diagram
- Manage Vaccination Spot Sequence Diagram

My_Vaccine admin portal package

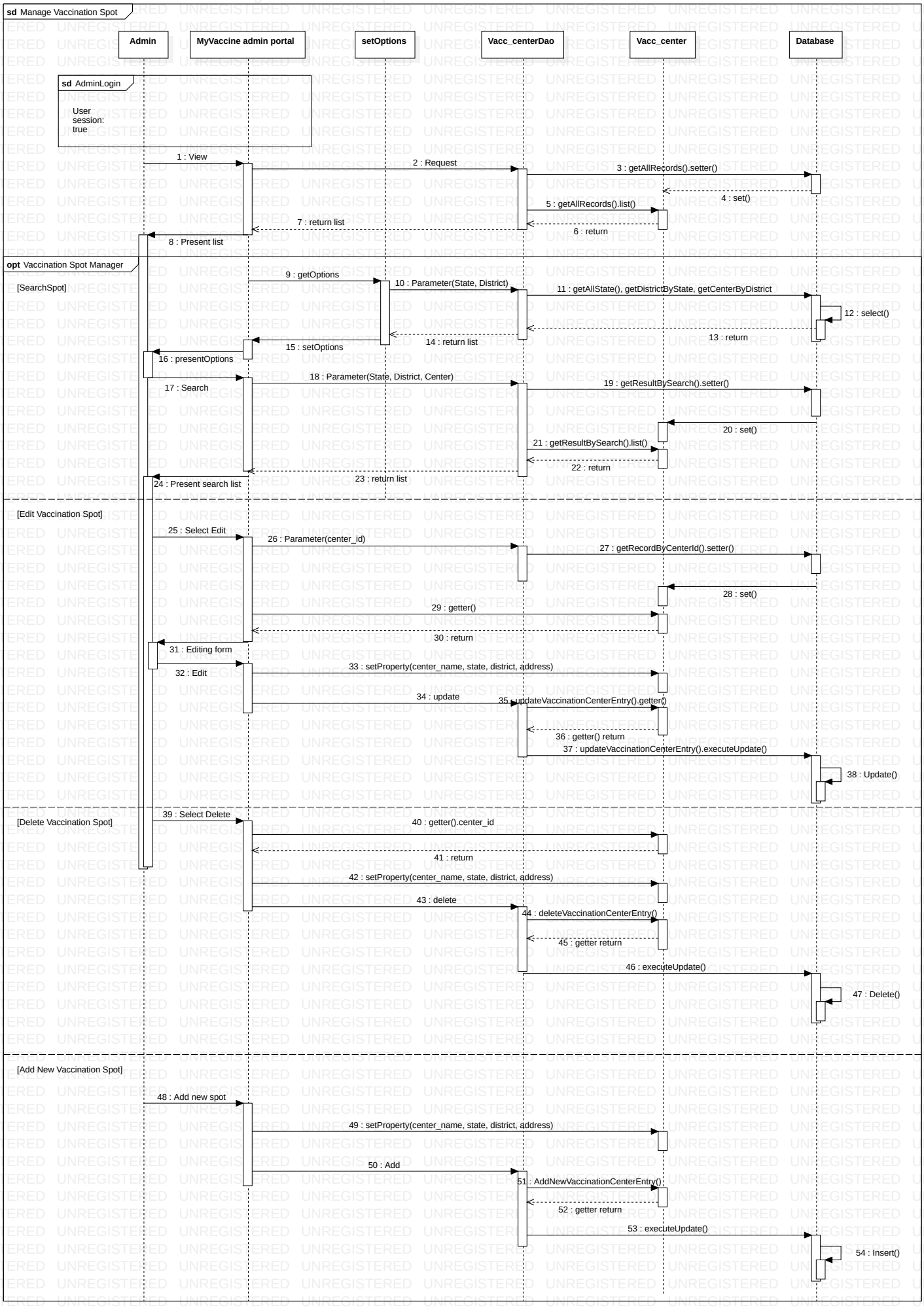
- Apply Vaccination Sequence Diagram
- Check Vaccination Sequence Diagram

Collaboration Interaction1 AdminLogin

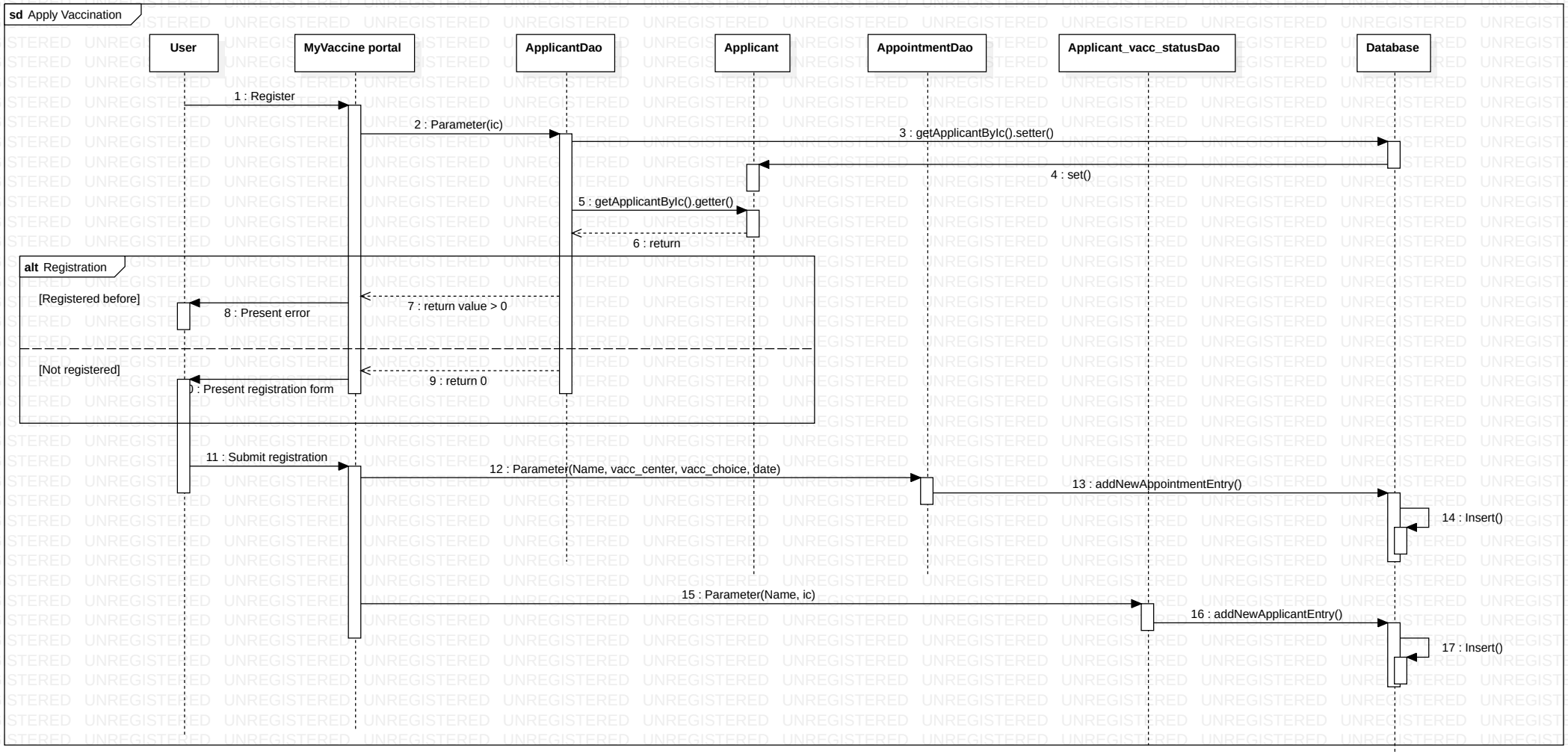



sd Manage Vaccination
Admin
MyVaccine admin portal
Applicant_vac_statusDao
Applicant_vacc_status
AppointmentDao
Appointment
Database
sd AdminLogin
User session: true
opt Vaccination Manager
[Applicant's vaccination]
1 : View
2 : request
3 : getAllRecords().setter()
4 : set()
5 : getAllRecords().list()
6 : Present list
7 : return list
8 : return
opt Manage
9 : SearchByIC
[SearchRecord]
10 : Parameter(icNo)
11 : getRecByIcNo().setter()
12 : set()
13 : getRecByIcNo().list()
14 : return
15 : return list
16 : Present list
[EditRecord]
17 : Edit
18 : Parameter(icNo, 1stDose, 2ndDose)
19 : updateRecordEntry()
20 : update()
[Applicant's Appointment]
21 : Query appointment
22 : Parameter(Vacc_center, Vacc_choice, doseNum)
23 : getUnassignedBySearch().setter()
24 : set()
25 : getUnassignedBySearch().list()
26 : return
27 : return list
28 : Present Unassigned list
29 : Assign Appointment
30 : Parameter(date, num)
31 : assignByList()
32 : update()

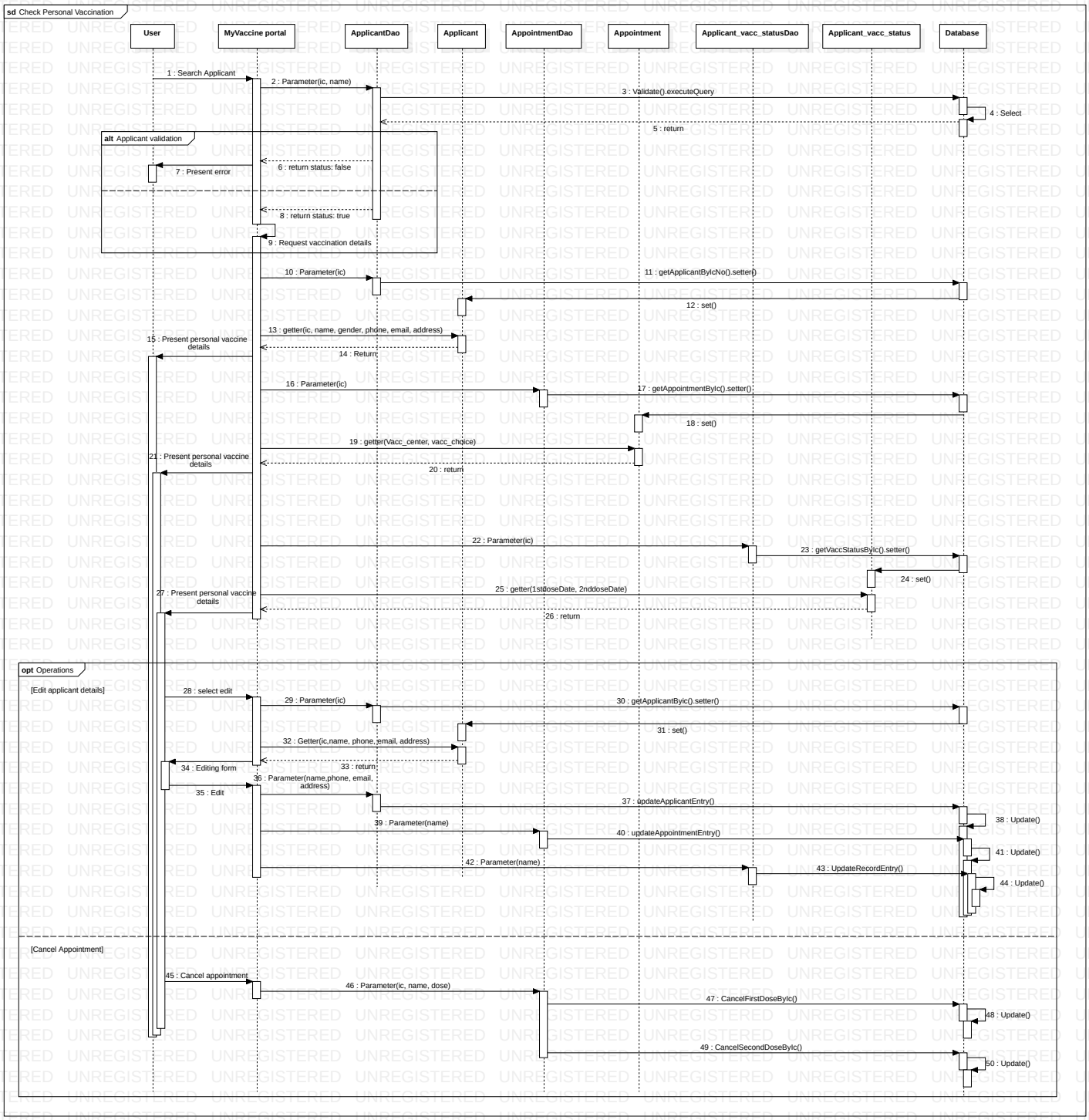
Collaboration Interaction1 Manage Vaccination Spot



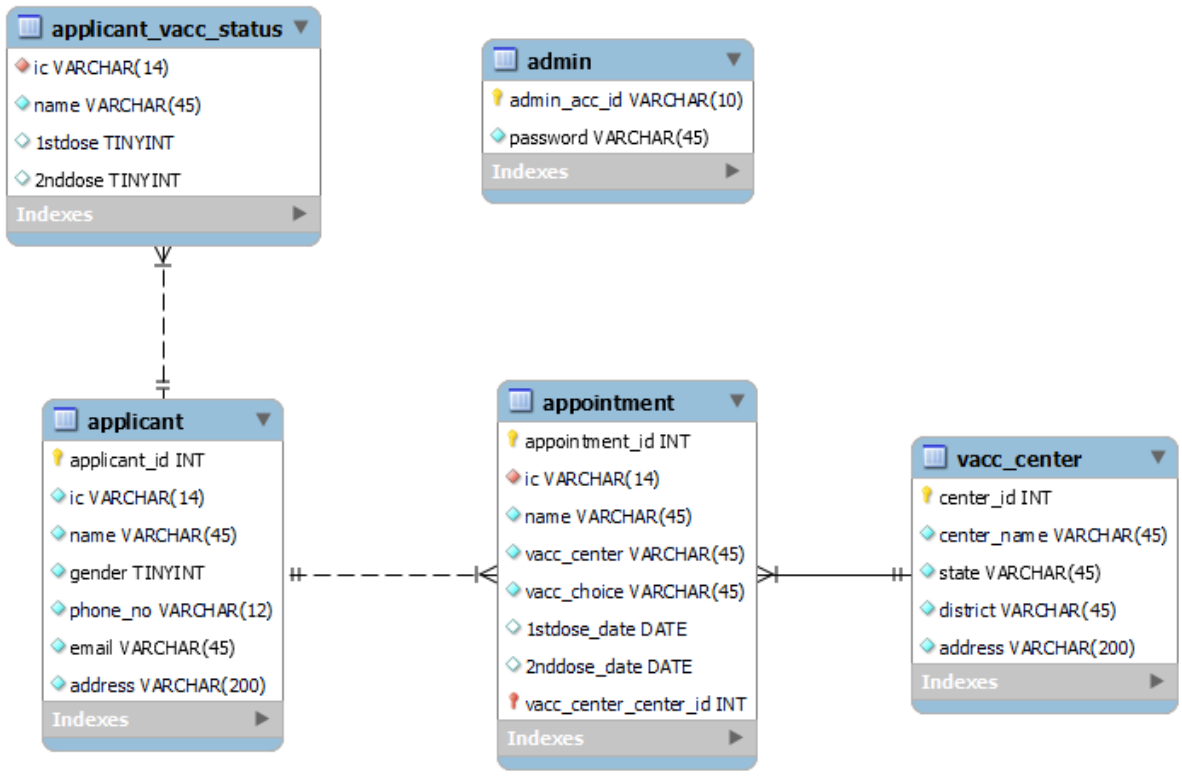
Collaboration1: Interaction1 Apply Vaccination



Collaboration1: Interaction1: Check Personal Vaccination



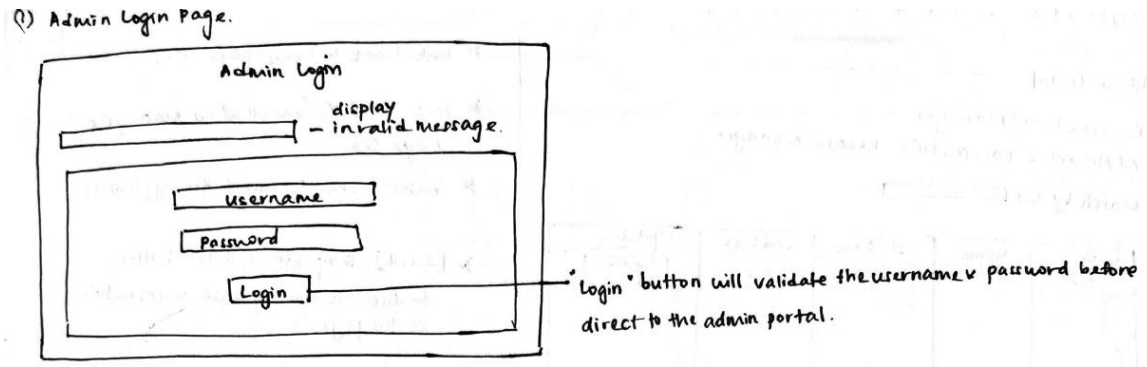
Database Design



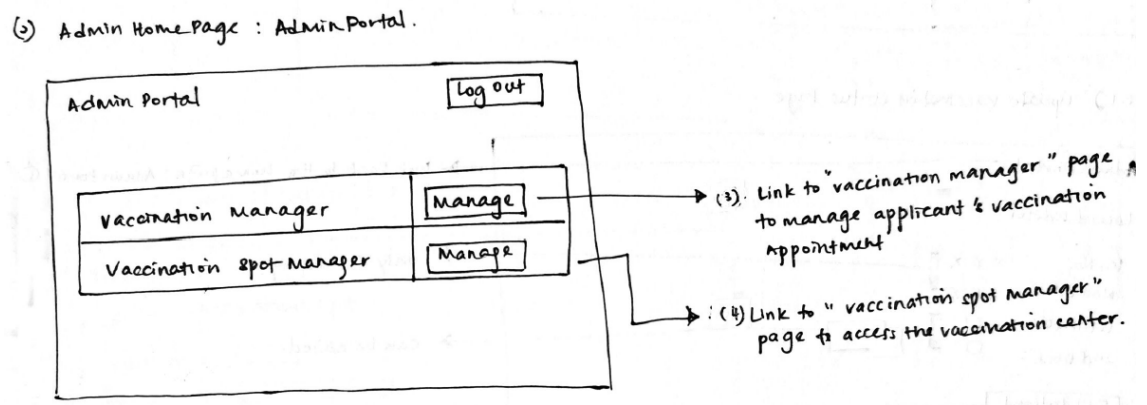
Graphical User Interface (GUI)

MY_Vaccine Admin Portal Prototype

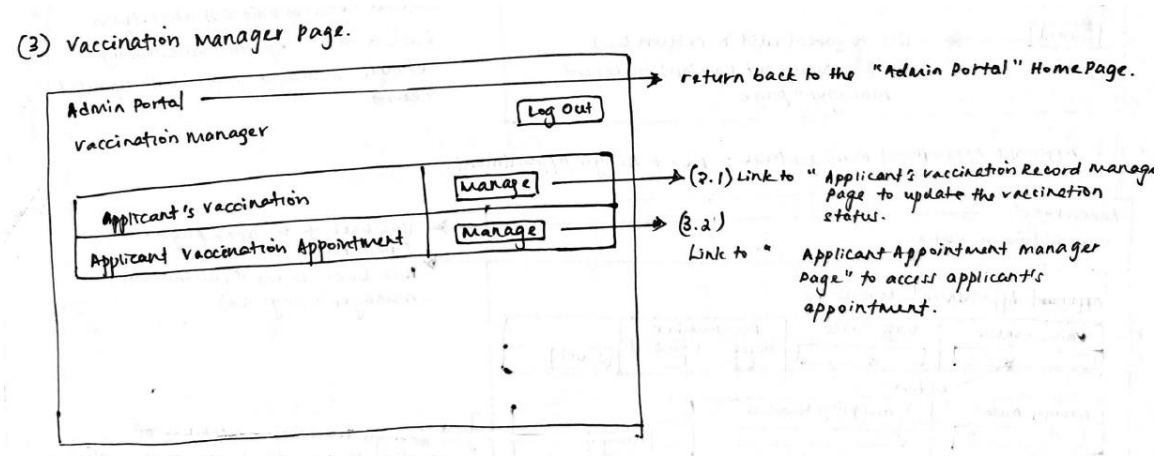
1. Admin Login Page



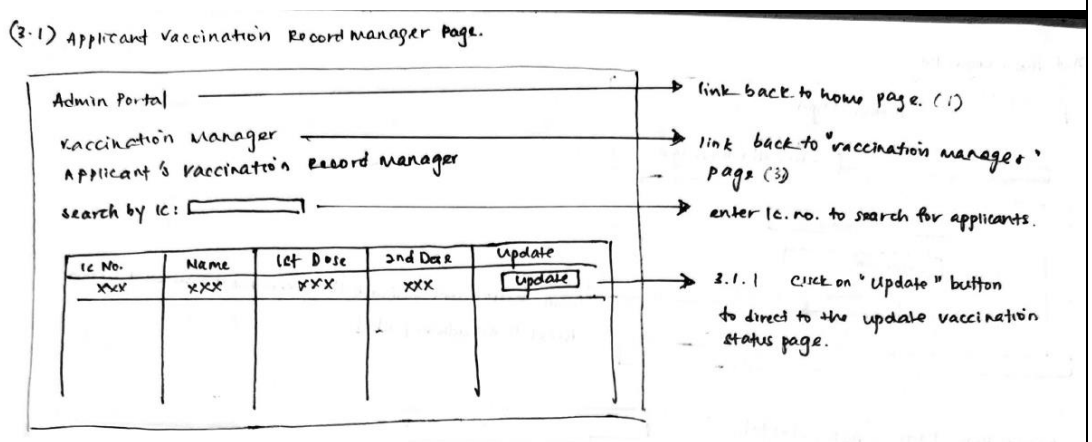
2. Admin Home



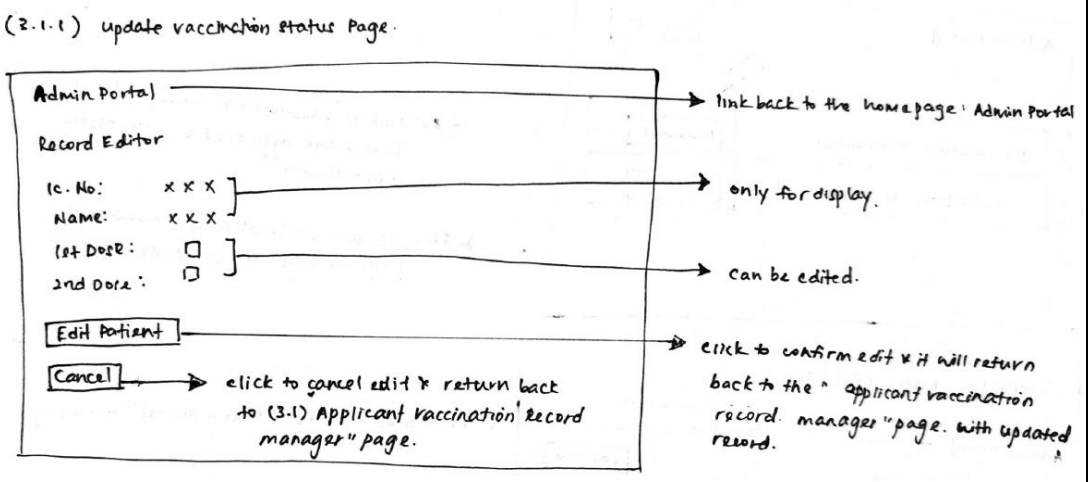
3. Vaccination Manager Page – Menu Page



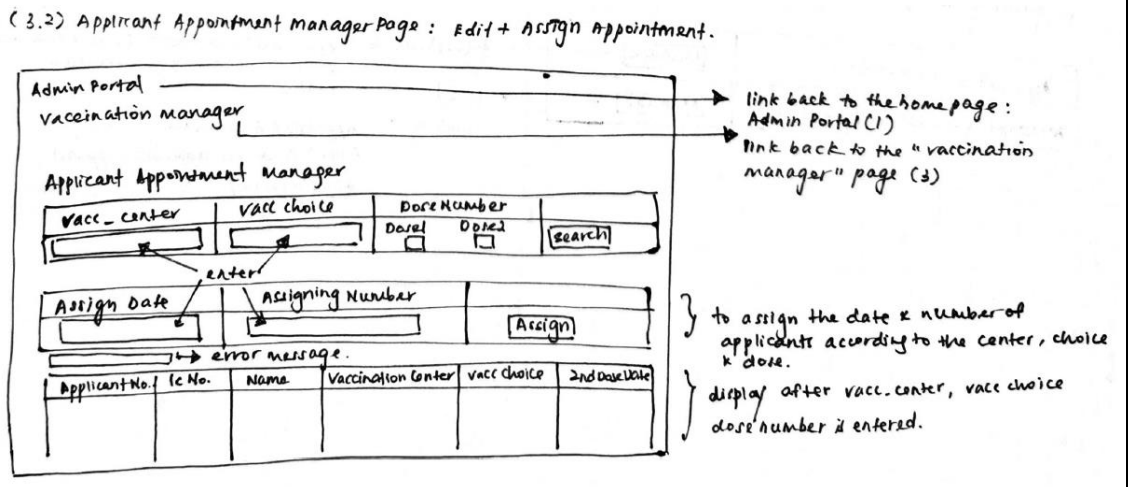
3.1. Applicant Vaccination Record Manager Page



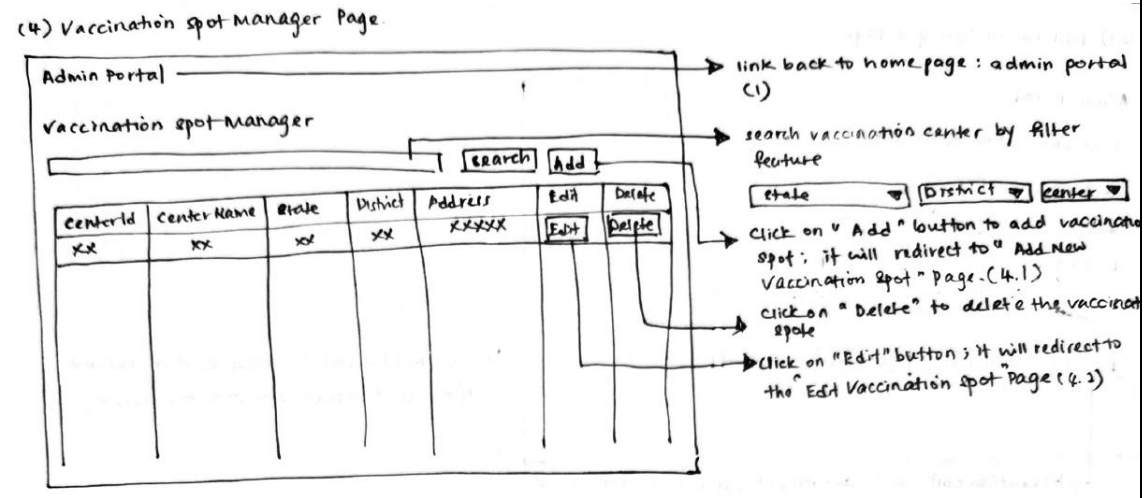
3.1.1. Update Vaccination Status Page



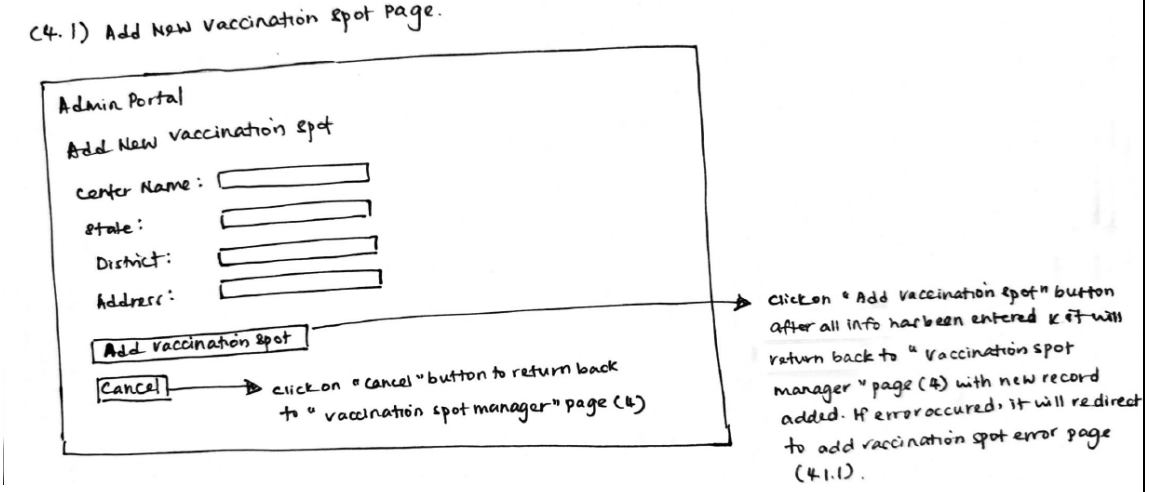
3.2. Applicant Appointment Manager Page



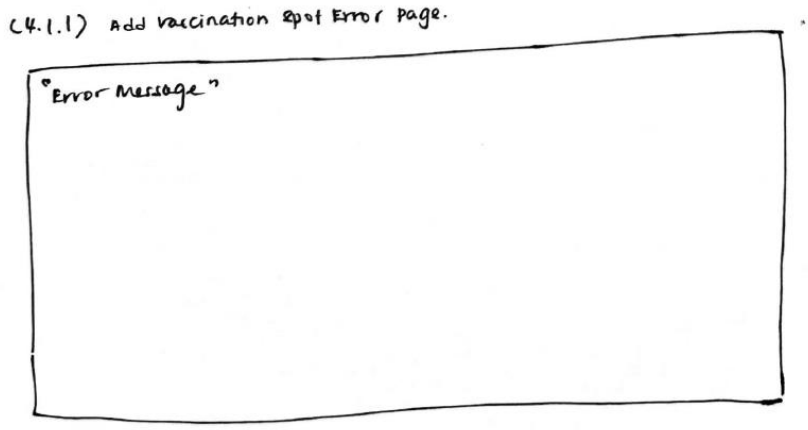
4. Vaccination Spot Manager Page



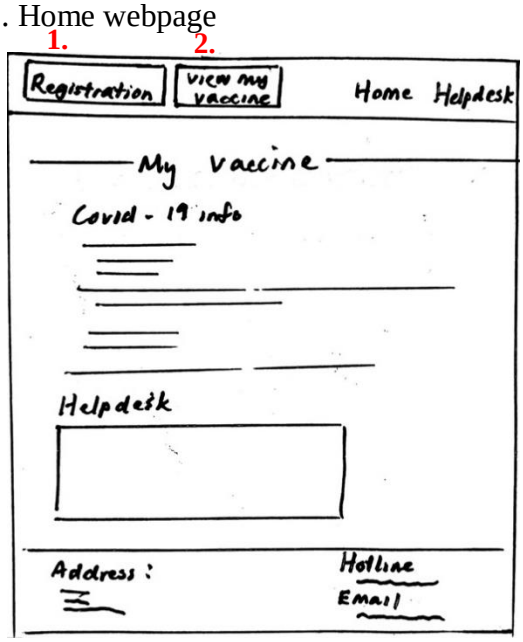
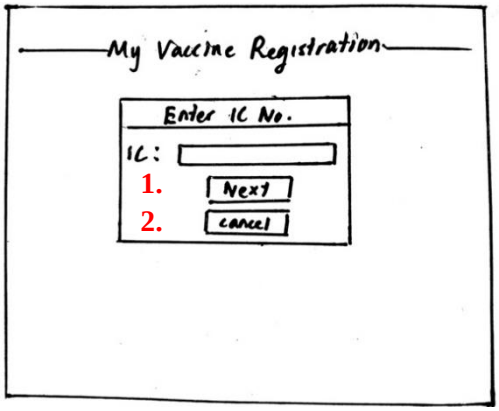
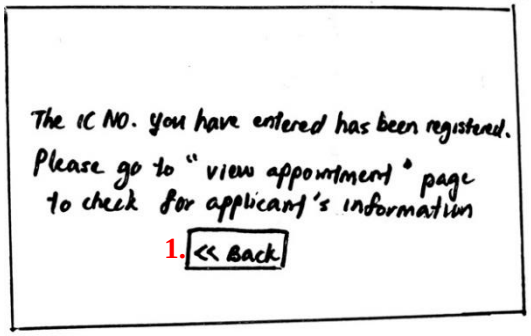
4.1. Edit Vaccination Spot Page

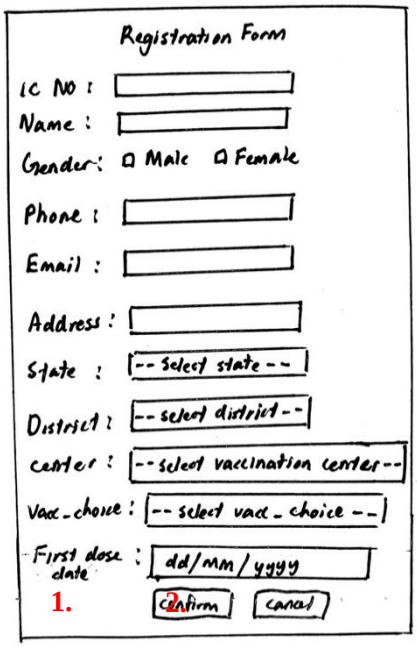
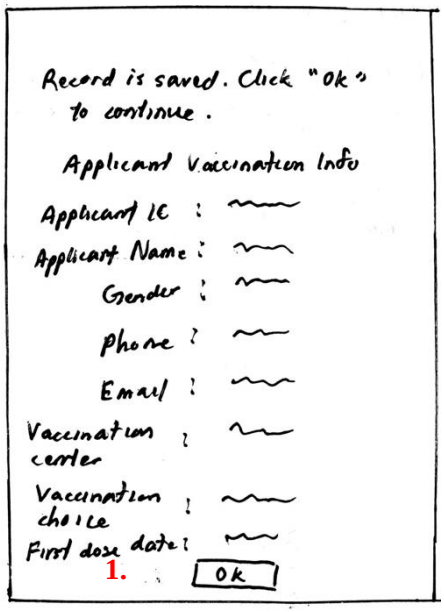
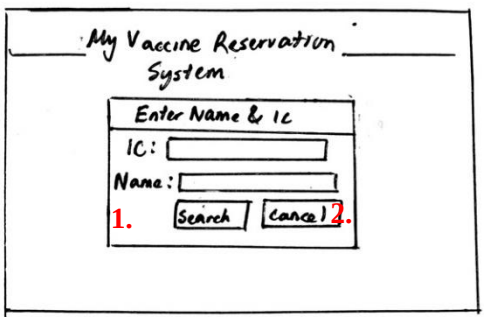


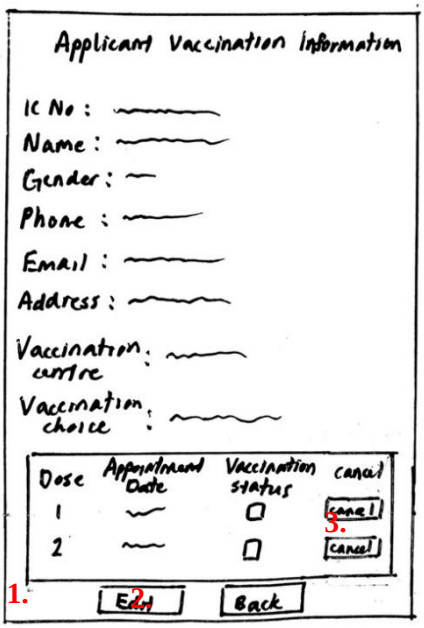
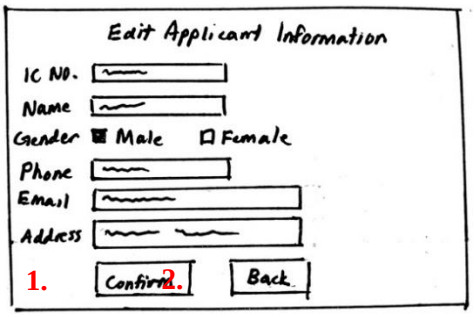
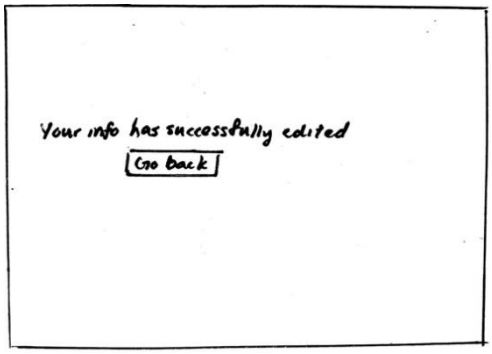
4.1.1 Add Vaccination Spot Error Page



MY Vaccine Portal Prototype

<table>
<tr>
<td>1. Home webpage
 
</td>
<td>1. “Registration” button:
• Redirect unregistered user to “My Vaccine registration webpage” for vaccination registration.
2. “View my vaccine” button:
• Redirect registered user to search for their information such as personal information, appointment schedule and vaccination status.</td>
</tr>
<tr>
<td>Registration validate webpage
 
</td>
<td>1. “Next” button:
• Redirect the user to the registration webpage if the IC entered is yet to register, it will else redirect the user to the webpage signaling that the IC number has been registered.
2. “Cancel” button:
• Redirect user back to home page</td>
</tr>
<tr>
<td>Reistered webpage
 
</td>
<td>1. “Back” button:
• Redirect user back to registration validate webpage.</td>
</tr>
</table>

Registration form webpage  	**1. "Confirm" button:** • Redirect user to Applicant Vaccination Information webpage if all fields required are entered correctly. Else, an error, message will be displayed.
Registration successful webpage  	**1. "OK" button:** • Redirect back to home webpage.
Search Applicant: My vaccine reservation webpage  	**1. "Search" button:** • Redirect user to Applicant vaccination info webpage if both name and IC number are correctly entered, else, it will display an error message. **2. "Cancel" button:** • Redirect user back to home page

Applicant vaccination info webpage 	**1. "Edit" button:** • Redirect to the Edit applicant information webpage. **2. "Back" button:** • Redirect the applicant back to "search applicant" webpage. **3. "Cancel" button:** • Date for that particular appointment will be deleted.
Edit Applicant Information webpage 	**1. "Confirm" button:** • Redirect user to edit success webpage when it is successfully edited. **2. "Back" button:** • Redirect user back to Applicant vaccination webpage.
Edit successful webpage 	**1. "Go back" button:** • Redirect user back to my vaccine reservation webpage.

Recommendation and Conclusion

The main objective/aim of this MY_Vaccine project is through the web application system to enhance the high-level business process manifested in the appointment of COVID-19 vaccination. Which, providing vaccination volunteers with the accessibility to the latest vaccination information and vaccination application. The COVID-19 pandemic is extremely infectious which it can be spread and transmitted rapidly across a wide demographic range, thus there is a potential risk of a new outbreak due the mutation of new variants. Therefore, the ease in accessing the vaccination information and vaccination application by all Malaysian, also a reduced procedure in the vaccination appointment application and appointment approval /acknowledgement is critical. Such that facilitate and accelerate the vaccination progress in Malaysia, which with a higher vaccination rate among the Malaysian's population the lower potential on the mutation of variants. Thereby, able to contain the pandemic and maintaining it at a stable level.

The business/domain solution provided and implemented in the proposed MY_Vaccine system is evaluated to be feasible in being effective and efficient in the realization of the project's goals /objectives. Where the realization of the project's aims is manifested as follows:

Realizing Implementations	Goals
Solution facilitated by the MY_Vaccine Admin Portal package	• Reduced procedure/Enhanced efficiency in processing the vaccination and vaccination appointment
Solution facilitated by the MY_Vaccine Portal package	• Enhanced effectiveness in the dissemination and the access of vaccination information • Enhanced effectiveness in the access of vaccination appointment application • Reduced procedure/Enhanced efficiency in the application of vaccination appointment

Through several walkthroughs and inspections conducted on the proposed MY_Vaccine system with a reference to the vaksincovid portal provided by Jawatankuaasa Khas Jaminan Akses Bekalan Vaksin COVID-19 (JKJAV) where both system shares a similar approach to business solution. It is observed that the business solution provided by the vaksincovid portal is validated and proved to be effective in realizing the anticipated goals which it successfully elevates the vaccination rate among the Malaysian's populations.

With the emergence of the new COVID-19 variant, namely omicron variant, the demand for vaccination booster doses become more and more prevalent as Malaysia is opening up and people are gradually going back to a normal life. Because of the new omicron variant which is more infectious thereby there are still potential risks of a new wave of outbreak, which this can be costly and severe to the Malaysia economy. According to (*"Interim statement on booster doses for COVID-19 vaccination"*, 2021), suggested with evidences that there is a significant need for booster doses to help the COVID-19 immunity last longer. Thereby there should be a need for a system evolution facilitating new incremental features in promoting booster doses campaign and catering of applicants that are interested in applying for the booster doses.

Appendices

Appendix_01- *Product Backlog*-

Online Vaccination Reservation portal

Admin Portal

1. Log In/Out
2. Vaccination Spot Management
3. Vaccination Management

a. Applicants vaccination status management

b. Applicants appointment management

Vaccination portal (user)

1. Vaccine Registration

a. Name

b. IC

c. Gender

d. Phone number

e. Email

f. Address

g. State

h. City

i. Vaccination spot

j. Vaccine choice

k. Vaccination Date

2. Vaccination info (Display Info - Front End)
3. My Vaccine

a. View Appointment

i. Edit appointment registration

ii. Cancel appointment

b. Vaccination Status

4. Contact me/Helpline

<u>User portal</u>

Vaccine info (home)

Register vaccination

- Registration form

Result page

- Success (view my vaccine)

My vaccine

- IC login
- View my vaccine (appointment + status)
    - Edit personal page

Admin portal

Admin login

- Admin ID
- Password

Admin portal home

Vaccination spot management (State, City, Spot)

- Add vaccination spot
- Edit vaccination page

Vaccination management (menu)

- Applicant vaccination status management (IC)
    - IC
    - Name
    - 1st dose
    - 2nd dose
- Applicant appointment management (VSpot, Choice, Dose1/2)
    - IC
    - Name
    - D1/D2

---

deliverables

VC set

portalHome.html

VC set

vaccManager.html

- Applicant vaccination
  - applicantVaccRecManager.jsp (Applicant_vacc_statusDao.getAllRec)
  - searchApplicantVaccRec.jsp (Applicant_vacc_statusDao.getRecByIc)
  - vaccRecEditor.jsp
  - updateVaccRec.jsp (Applicant_vacc_statusDao.update())
- Applicant appointment
  - applicantAppointmentManager.html
  - searchAppointment.jsp (AppointmentDao.getUnassignedBySearch())
  - assignDate.jsp (AppointmentDao.assignByList())

Got dummy data at the bottom ye. –Ben

VC set

vaccSpotManager.jsp (Vacc_centerDao.getAllRec)

- addVacSpotForm.html
- addVacSpot.jsp (Vacc_centerDao.save())
- editVacSpotForm.jsp
- editVacSpot.jsp (Vacc_centerDao.update())
- deleteVacSpot.jsp (Vacc_centerDao.delete())
- searchVacSpot.jsp (by VSpot, State, City) (Vacc_centerDao.getRecByVspot(), Vacc_centerDao.getRecByState(), Vacc_centerDao.getRecByCity(), getRecBySearch())

User Page (Draft nia)

Home Page

- Home.html

Registration Page (VC set)

- addApplicantsform.html
  - addApplicantsForm.jsp (link to html)
  - addApplicants.jsp (ApplicantDao.insert,Applicant_vacc_statusDao.insertApplicant, AppointmentDao.insertApplicant)
  - addApplicants-success.jsp
  - viewApplicants.jsp (ApplicantDao.getRecbyIc)***

- editApplicants.jsp (ApplicantDao.update)***
- addApplicants-error.jsp

- addAppointmentForm.html
  - addAppointment.jsp(AppointmentDao.insert)
  - addVaccinationSpot.jsp(Vacc_centerDao.getSate, Vacc_centerDao.getAreabyState, AppointmentDao.insertVaccinationSpot)

Vaccination Page (VC set)

- SearchApplicantsForm.html (NAme, IC)
- viewApplicants.jsp (ApplicantDao.getRecbyIc)***
- editApplicants.jsp (ApplicantDao.update) ***
- viewAppointments.jsp (AppointmentDao.getRecbyIc)
- CancelAppointment.jsp (AppointmentDao.deleteappointment)
- cancelappointment-success.jsp

References

1.3 Distributed Multitiered Applications - Java Platform, Enterprise Edition: The Java EE Tutorial (Release 7). oracle.com. Retrieved 25 December 2021, from https://docs.oracle.com/javaee/7/tutorial/overview003.htm#BNAAZ.

Arlow, J., & Neustadt, I. (2013). *UML 2 and the unified process* (2nd ed.). Addison-Wesley.

Interim statement on booster doses for COVID-19 vaccination. who.int. (2021). Retrieved 25 December 2021, from https://www.who.int/news/item/22-12-2021-interim-statement-on-booster-doses-for-covid-19-vaccination---update-22-december-2021.

Java EE application architecture - Programmer Sought. Programmersought.com. Retrieved 25 December 2021, from https://www.programmersought.com/article/92293756792/.

Mihalceanu, A. (2014). *JSF Versus JSP: Which One Fits Your CRUD Application Needs? (Part 1) - DZone Big Data*. dzone.com. Retrieved 25 December 2021, from https://dzone.com/articles/code-less-do-more-jsf-versus.

Sikora, M., Verma, M., Mawata, C., & Bean, L. (2008). *EJB 3 developer guide*. Packt Pub.

Tyson, M. (2019). *What is JPA? Introduction to the Java Persistence API*. infoworld.com. Retrieved 25 December 2021, from https://www.infoworld.com/article/3379043/what-is-jpa-introduction-to-the-java-persistence-api.html.

APPENDIX 1

MARKING RUBRICS

Component Title	Project Report				Weight	30%	
Criteria	Score and Descriptors					Marks	Total Marks
	Excellent 13-15	**Good 10-13**	**Average 5-10**	**Need Improvement 3-5**	**Poor 0-3**		
Abstract	Information is presented in effective order. Excellent structure of paragraphs and transitions enhances readability and comprehension.	Information is logically ordered with paragraphs and transitions.	Include vague informati-on.	Details and examples are not organized, and hard to follow and understand.	Details are not related and badly written and hard to follow.	15	
Criteria	**Score and Descriptors**					**Marks**	**Total Marks**
	Excellent 13-15	**Good 10-13**	**Average 5-10**	**Need Improvement 3-5**	**Poor 0-3**		
Introduction	Information is presented in effective order. Excellent structure of paragraphs and transitions enhances readability and comprehension.	Information is logically ordered with paragraphs and transitions.	Include vague informati-on.	Details and examples are not organized, and hard to follow and understand.	Details are not related and badly written and hard to follow.	15	
Criteria	**Score and Descriptors**					**Marks**	**Total Marks**
	Excellent 25-30	**Good 20-25**	**Average 15-20**	**Need Improvement 10-15**	**Poor 0-10**		
Java EE Concept	Information is presented in effective order. Excellent structure of paragraphs and transitions enhances readability and comprehension.	Information is logically ordered with paragraphs and transitions.	Include vague informati-on.	Details and examples are not organized, and hard to follow and understand.	Details are not related and badly written and hard to follow.	30	

Criteria	Score and Descriptors					Marks	Total Marks
	Excellent 20-25	**Good 15-20**	**Average 10-15**	**Need Improvement 5-10**	**Poor 0-5**		
Requirement Analysis and Design.	Information is presented in effective order. Excellent structure of paragraphs and transitions enhances readability and comprehension.	Information is logically ordered with paragraphs and transitions.	Include vague informati-on.	Details and examples are not organized, and hard to follow and understand.	Details are not related and badly written and hard to follow.	25	
Criteria	**Score and Descriptors**					**Marks**	**Total Marks**
	Excellent 13-15	**Good 10-13**	**Average 5-10**	**Need Improvement 3-5**	**Poor 0-3**		
Recommendation and conclusion	Information is presented in effective order. Excellent structure of paragraphs and transitions enhances readability and comprehension.	Information is logically ordered with paragraphs and transitions.	Include vague informati-on.	Details and examples are not organized, and hard to follow and understand.	Details are not related and badly written and hard to follow.	15	
					TOTAL	**100**	

Note to students: Please attach this appendix together with the submission of coursework