

Automated CQI

Software Design and Requirement Specification



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Declaration

I declare that the work contained in this thesis is my own, except where explicitly stated otherwise. In addition, this work has not been submitted to obtain another degree or professional qualification.

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Chapter 1

Software Requirement Specification

In the domain of quality enhancement and progress, the creation of a Continuous Quality Improvement (CQI)[2] [3] system signifies a pivotal stride towards augmenting organizational processes and service delivery. This multifaceted system seeks to streamline the evaluation process through efficient survey management, empowering administrators with a robust toolkit for data manipulation and analysis. As we delve into the functional and non-functional prerequisites of this cutting-edge CQI system, meticulous consideration of its capabilities and attributes is imperative to ensure seamless functionality, reliability, security, and user contentment.

1.1 Functional Requirement

Functional requirements of the CQI system should align to the model that provides a usable feedback. The model should follow a proven structure that seems to work adequately and improve over it, Like Google Forms[4], Anthology[1], Survey Monkey[9], Qualrics[7], Metrics for Learning[6]

- The system shall support a secure login and signup system.
- The system shall display surveys in a user-friendly manner to encourage user participation and engagement.
- The system shall allow the user to take surveys
- The system shall allow the user to check which surveys they have submitted.
- The system shall allow the user allow the user to update their profile picture

- The system shall allow the user to update username
- The system shall allow the user to update their password
- The system shall provide administrator, privileges that enable form creation.
- The system shall allow the administrator to delete a form
- The system shall allow the administrator to edit a form
- The system shall facilitate access for administrators to visual representations of statistical data
- The system shall allow administrators to download survey results in a readily usable format.

1.2 Non-functional Requirement

- **Performance:**
 - The system must exhibit prompt responsiveness, delivering meaningful interactions within a five-second timeframe.
- **Scalability:**
 - The system must accommodate up to 10,000 users on a proficiently configured server to safeguard operational efficiency during expansion.
- **Capacity:**
 - The system must manage 1,000 simultaneous users and store data for the same user count.
- **Availability:**
 - The system must maintain uninterrupted 24/7 operation, facilitating surveys at any time interval.
- **Reliability:**
 - The system must deliver precise outcomes consistently, granting administrators the capacity to manage data. - The system must possess resilience to mitigate critical errors and ensure uninterrupted functionality.
- **Maintainability:**
 - The system must provide proactive oversight by programmers to swiftly resolve issues.

- **Serviceability:**
 - The system must address component-level concerns with agility and rapid responsiveness to user requests.
- **Security:**
 - The system must ensure safeguards against unauthorized access and data breaches.
- **Regulatory:**
 - The system must observe compliance with local and international laws.
- **Manageability:**
 - The system must pivot on user-friendly nature, catering to diverse user profiles.
 - The system must protect the environment through conscious design choices.
- **Data Integrity:**
 - The system must ensure user information remains confidential and untampered.
- **Usability:**
 - The system must grant an interactive user experience.
- **Interoperability:**
 - The system must facilitate seamless data exchange with other systems.

1.3 Use case

1.3.1 User Login

Name	User Login
Participating Actors	User
Goal	Display a login form
Trigger	When the website is visited
Pre-Condition	<ul style="list-style-type: none">• Stable internet connection. .
Post-Condition	Redirect to user home page
Basic Flow	<ul style="list-style-type: none">• User shall open the website. .
Alternate Flow	N/A.
Exceptions	<ul style="list-style-type: none">• Server Error• Connection Error
Qualities	<ul style="list-style-type: none">• Must be available 24/7• Must be responsive and quick .

TABLE 1.1: User Login

1.3.2 Sign Up

Name	SignUp
Participating Actors	User
Goal	Display a signup page
Trigger	When create account button is pressed
Pre-Condition	<ul style="list-style-type: none">• Stable internet connection.• Create account button pressed .
Post-Condition	Redirect to sign up
Basic Flow	<ul style="list-style-type: none">• User shall open the website.• User shall click Create account button .
Alternate Flow	N/A
Exceptions	<ul style="list-style-type: none">• Server Error• Connection Error
Qualities	<ul style="list-style-type: none">• Must be available 24/7• Must be responsive and quick .

TABLE 1.2: Sign Up

1.3.3 Select Form

Name	Select Form
Participating Actors	User
Goal	Display a surveys relevant to the user
Trigger	When logged in
Pre-Condition	<ul style="list-style-type: none">• Stable internet connection.• Successful login .
Post-Condition	Redirect to user home page
Basic Flow	<ul style="list-style-type: none">• User shall open the website.• User shall enter correct credentials .
Alternate Flow	Successful Signup
Exceptions	<ul style="list-style-type: none">• Server Error• Connection Error• Wrong Login credentials
Qualities	<ul style="list-style-type: none">• Must be available 24/7• Must be responsive and quick .

TABLE 1.3: Select Form

1.3.4 Fill Form

Name	Fill Form
Participating Actors	User
Goal	Display selected survey form
Trigger	When Form is selected
Pre-Condition	<ul style="list-style-type: none"> • Stable internet connection. • Successful login • Form Selected
Post-Condition	Redirect to form page
Basic Flow	<ul style="list-style-type: none"> • User shall open the website. • User shall enter correct credentials • User shall press login button • User shall select the form from the home page
Alternate Flow	N/A
Exceptions	<ul style="list-style-type: none"> • Server Error • Connection Error
Qualities	<ul style="list-style-type: none"> • Must be available 24/7 • Must be responsive and quick

TABLE 1.4: Fill Form

1.3.5 Take Survey

Name	Take Survey
Participating Actors	User
Goal	Submit survey response
Trigger	When Form is completely filled and the submit button is clicked
Pre-Condition	<ul style="list-style-type: none"> • Stable internet connection. • Successful login • Form Selected • Form Filled and Submit Button Clicked
Post-Condition	Redirect to home page after showing a success message
Basic Flow	<ul style="list-style-type: none"> • User shall open the website. • User shall enter correct credentials • User shall press login button • User shall select the form from the home page • User shall take the survey and click the submit button
Alternate Flow	N/A
Exceptions	<ul style="list-style-type: none"> • Server Error • Connection Error
Qualities	<ul style="list-style-type: none"> • Must be available 24/7 • Must be responsive and quick

TABLE 1.5: Take Survey

1.3.6 Admin Login

Name	Admin Login
Participating Actors	Admin
Goal	Display a login form
Trigger	When the website is visited
Pre-Condition	<ul style="list-style-type: none">• Stable internet connection. .
Post-Condition	Redirect to Admin dashboard page
Basic Flow	<ul style="list-style-type: none">• User shall open the website. .
Alternate Flow	N/A.
Exceptions	<ul style="list-style-type: none">• Server Error• Connection Error
Qualities	<ul style="list-style-type: none">• Must be available 24/7• Must be responsive and quick .

TABLE 1.6: Admin Login

1.3.7 Add New Form

Name	Add New Form
Participating Actors	Admin
Goal	Display a dynamic form that take inputs for form data
Trigger	When the create form button is pressed from admin dashboard
Pre-Condition	<ul style="list-style-type: none"> • Stable internet connection. • Admin logged in successfully
Post-Condition	Redirect to Create Form page
Basic Flow	<ul style="list-style-type: none"> • User shall open the website. • User Shall login with correct admin credentials • User shall click on the create form button
Alternate Flow	N/A.
Exceptions	<ul style="list-style-type: none"> • Server Error • Connection Error
Qualities	<ul style="list-style-type: none"> • Must be available 24/7 • Must be responsive and quick

TABLE 1.7: Create Form

1.3.8 Delete Form

Name	Delete Form
Participating Actors	Admin
Goal	Delete any form according to the will of admin
Trigger	When the delete form button is pressed from desired form selection
Pre-Condition	<ul style="list-style-type: none"> • Stable internet connection. • Admin logged in successfully
Post-Condition	Form successfully deleted
Basic Flow	<ul style="list-style-type: none"> • User shall open the website. • User Shall login with correct admin credentials • User shall click on the delete form button
Alternate Flow	N/A.
Exceptions	<ul style="list-style-type: none"> • Server Error • Connection Error
Qualities	<ul style="list-style-type: none"> • Must be available 24/7 • Must be responsive and quick

TABLE 1.8: Delete Form

1.3.9 Edit Form

Name	Edit Form
Participating Actors	Admin
Goal	Display a dynamic form that take lets admin edit form data
Trigger	When the edit form button is pressed from de-sired form
Pre-Condition	<ul style="list-style-type: none"> • Stable internet connection. • Admin logged in successfully
Post-Condition	Redirect to Edit Form page
Basic Flow	<ul style="list-style-type: none"> • User shall open the website. • User Shall login with correct admin creden-tials • User shall click on the edit form button
Alternate Flow	N/A.
Exceptions	<ul style="list-style-type: none"> • Server Error • Connection Error
Qualities	<ul style="list-style-type: none"> • Must be available 24/7 • Must be responsive and quick

TABLE 1.9: Edit Form

1.3.10 Manage Profile

Name	Manage Profile
Participating Actors	User/Admin
Goal	To edit profile information
Trigger	When the edit profile button is pressed from Navigation
Pre-Condition	<ul style="list-style-type: none"> • Stable internet connection. • logged in successfully
Post-Condition	Redirect to Edit Profile page
Basic Flow	<ul style="list-style-type: none"> • User shall open the website. • User Shall login with correct credentials • User shall click on the edit profile button
Alternate Flow	N/A.
Exceptions	<ul style="list-style-type: none"> • Server Error • Connection Error
Qualities	<ul style="list-style-type: none"> • Must be available 24/7 • Must be responsive and quick

TABLE 1.10: Manage Profile

1.3.11 Edit Profile Picture

Name	Edit Profile Picture
Participating Actors	User/Admin
Goal	To Edit profile picture
Trigger	When the edit profile picture button is pressed from Edit profile tab
Pre-Condition	<ul style="list-style-type: none"> • Stable internet connection. • logged in successfully • manage profile section opened
Post-Condition	Profile picture updated
Basic Flow	<ul style="list-style-type: none"> • User shall open the website. • User Shall login with correct credentials • User shall click on the edit profile button
Alternate Flow	N/A.
Exceptions	<ul style="list-style-type: none"> • Server Error • Connection Error
Qualities	<ul style="list-style-type: none"> • Must be available 24/7 • Must be responsive and quick

TABLE 1.11: Edit Profile Picture

1.3.12 Edit Username

Name	Edit Username
Participating Actors	User/Admin
Goal	To Edit Username
Trigger	When the edit username button is pressed from edit profile tab
Pre-Condition	<ul style="list-style-type: none"> • Stable internet connection. • logged in successfully • manage profile section opened
Post-Condition	username updated
Basic Flow	<ul style="list-style-type: none"> • User shall open the website. • User Shall login with correct credentials • User shall click on the edit username
Alternate Flow	N/A.
Exceptions	<ul style="list-style-type: none"> • Server Error • Connection Error
Qualities	<ul style="list-style-type: none"> • Must be available 24/7 • Must be responsive and quick

TABLE 1.12: Edit Username

1.3.13 Edit Password

Name	Edit Password
Participating Actors	User/Admin
Goal	To Edit Password
Trigger	When the edit password button is pressed from edit profile tab
Pre-Condition	<ul style="list-style-type: none"> • Stable internet connection. • logged in successfully • manage profile section opened
Post-Condition	password updated
Basic Flow	<ul style="list-style-type: none"> • User shall open the website. • User Shall login with correct credentials • User shall click on the edit password
Alternate Flow	N/A.
Exceptions	<ul style="list-style-type: none"> • Server Error • Connection Error
Qualities	<ul style="list-style-type: none"> • Must be available 24/7 • Must be responsive and quick

TABLE 1.13: Edit Password

1.3.14 View Stats

Name	View Stats
Participating Actors	Admin
Goal	Watch graphical representation of stats
Trigger	When the view stats button is pressed from Navigation bar
Pre-Condition	<ul style="list-style-type: none"> • Stable internet connection. • Admin logged in successfully
Post-Condition	Redirect to View Stats page
Basic Flow	<ul style="list-style-type: none"> • User shall open the website. • User Shall login with correct admin credentials • User shall click on the View Stats button
Alternate Flow	N/A.
Exceptions	<ul style="list-style-type: none"> • Server Error • Connection Error
Qualities	<ul style="list-style-type: none"> • Must be available 24/7 • Must be responsive and quick

TABLE 1.14: View Stats

1.3.15 Download Results

Name	Download Results
Participating Actors	Admin
Goal	Download results of a survey
Trigger	When the download results button is pressed from Navigation bar
Pre-Condition	<ul style="list-style-type: none"> • Stable internet connection. • Admin logged in successfully
Post-Condition	download results successfully in a usable format[5]
Basic Flow	<ul style="list-style-type: none"> • User shall open the website. • User Shall login with correct admin credentials • User shall click on the download results button of a specific survey
Alternate Flow	N/A.
Exceptions	<ul style="list-style-type: none"> • Server Error • Connection Error
Qualities	<ul style="list-style-type: none"> • Must be available 24/7 • Must be responsive and quick

TABLE 1.15: Download Results

Chapter 2

Design specification

2.1 Wireframes

2.1.1 Log in

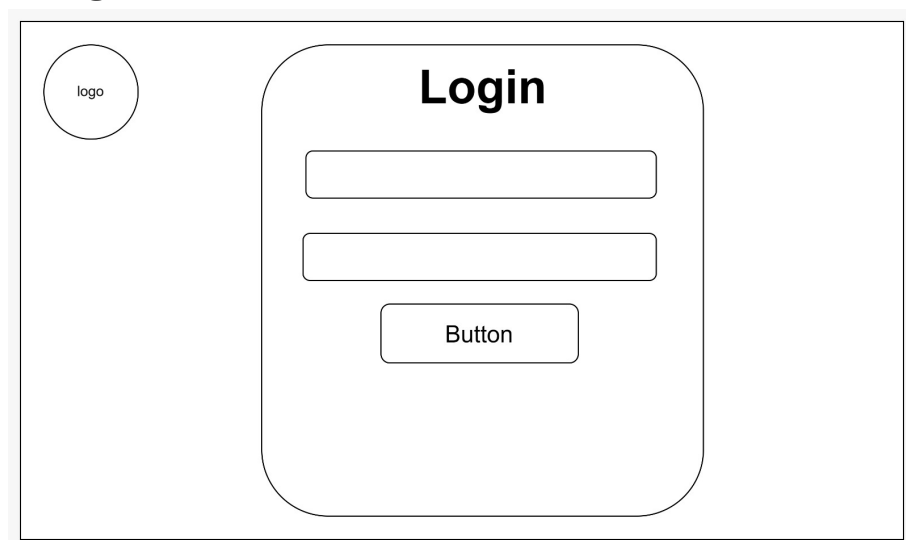


FIGURE 2.1: Login Wireframe

2.1.2 Sign up

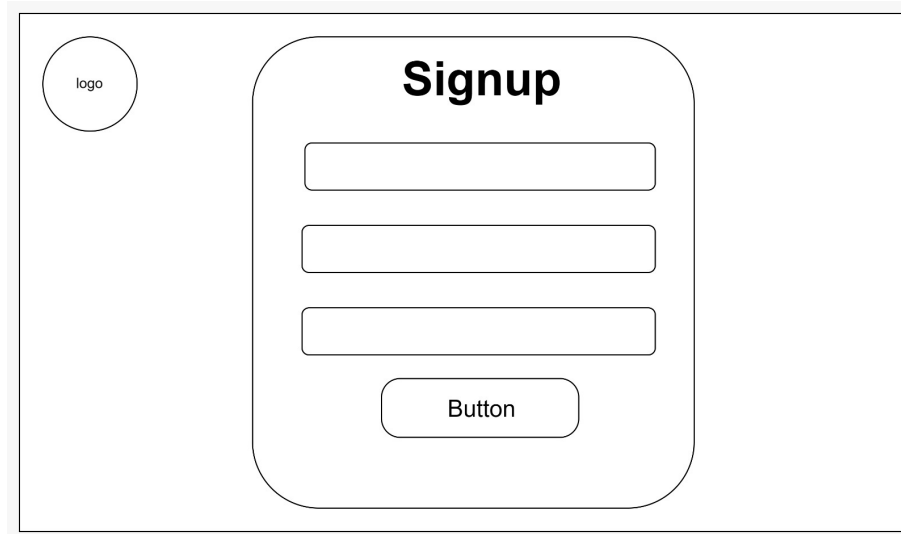


FIGURE 2.2: Signup Wireframe

2.1.3 Profile

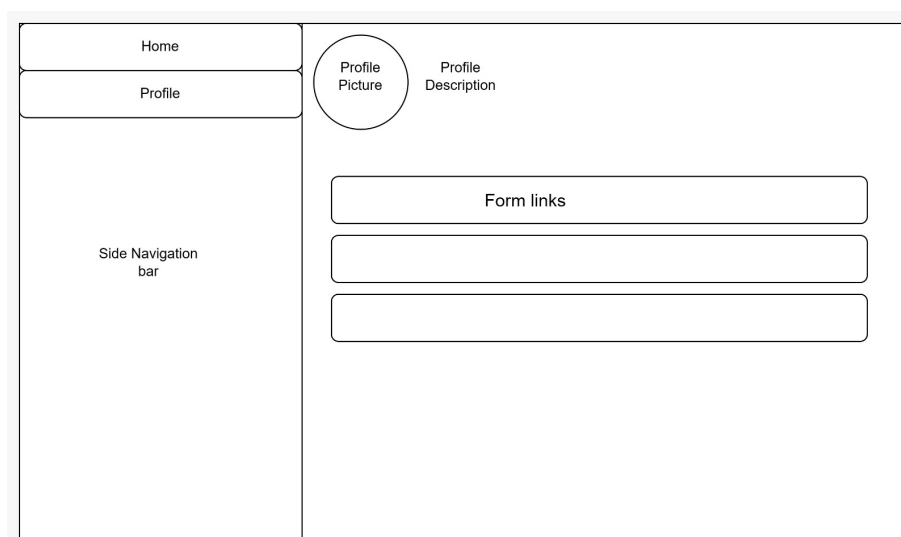


FIGURE 2.3: Profile Wireframe

2.1.4 Fill Form

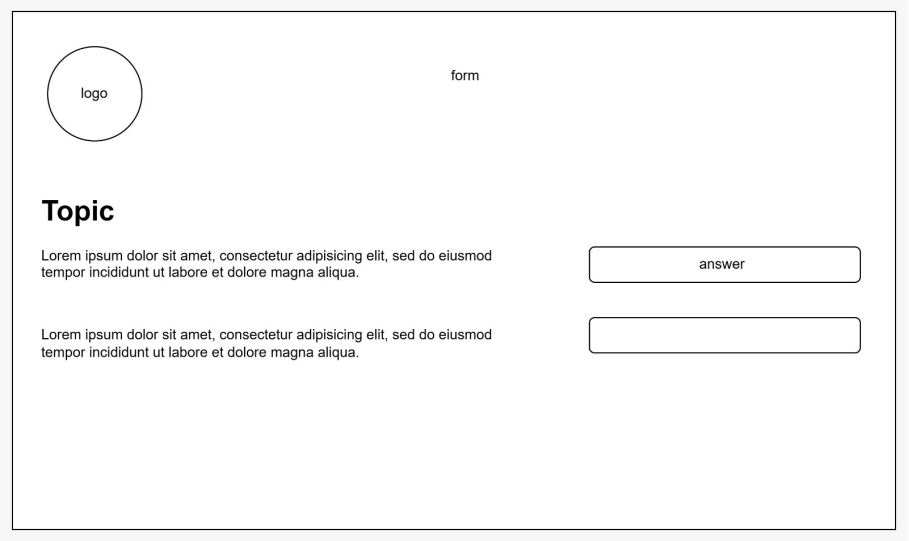


FIGURE 2.4: Fill Form Wireframe

2.1.5 Manage Profile

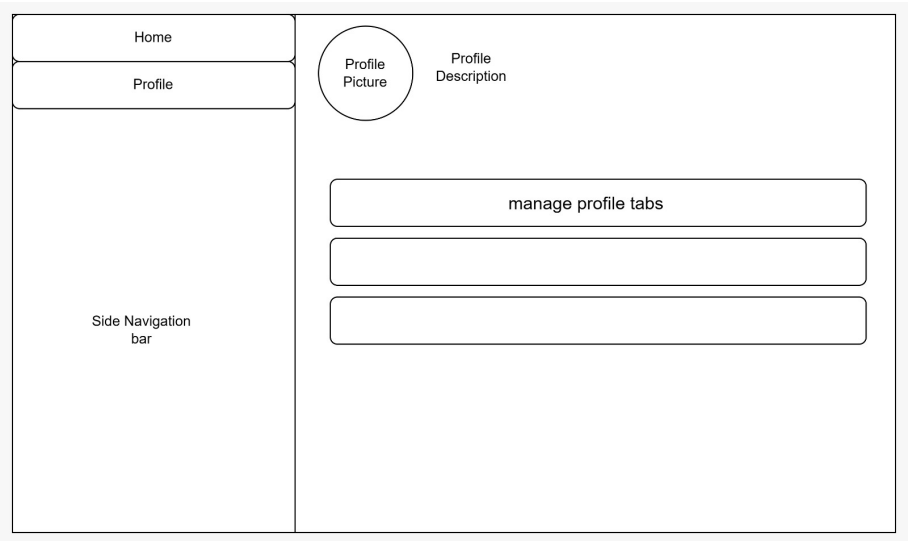


FIGURE 2.5: Manage Profile Wireframe

2.1.6 Manage Form

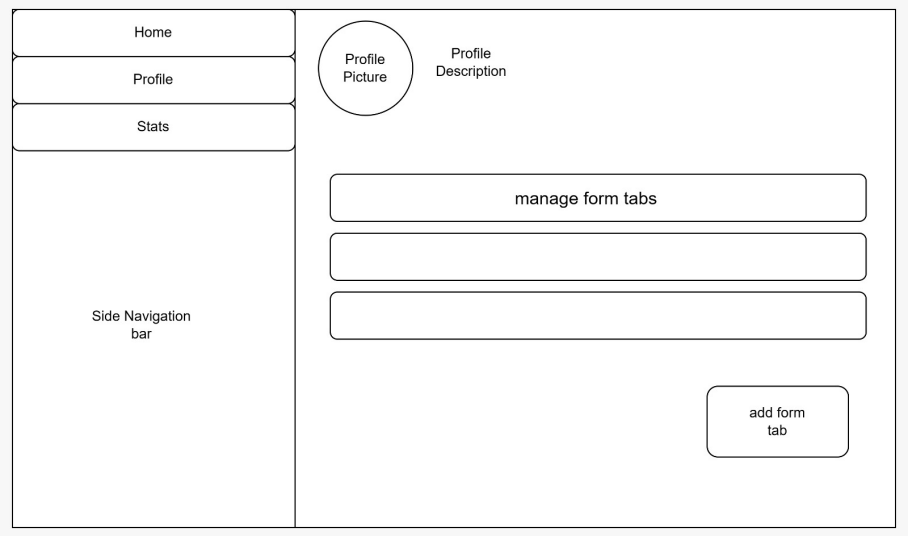


FIGURE 2.6: Manage Form Wireframe

2.1.7 Download Results

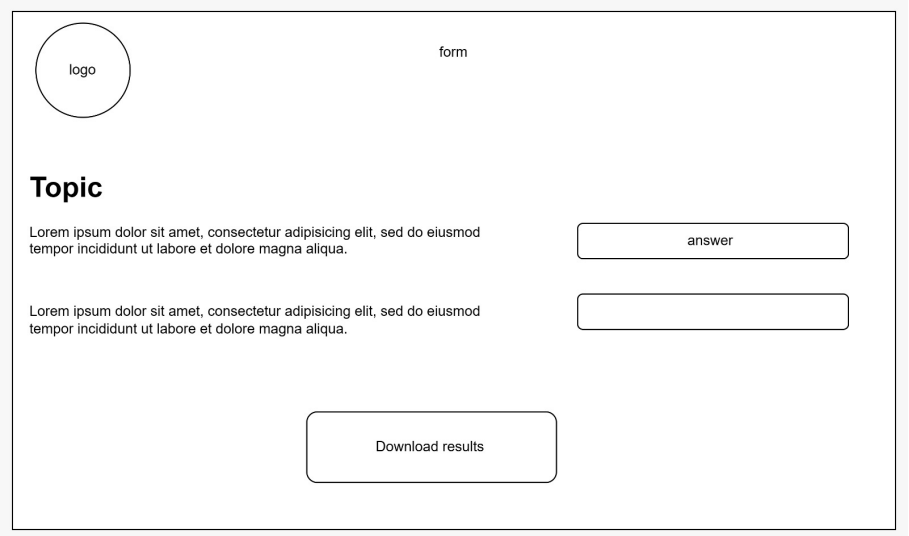


FIGURE 2.7: Download Results Wireframe

2.1.8 Create new Form

New Form

Add topic

Add questions

Create Form

FIGURE 2.8: Create new Form Wireframe

2.1.9 View Stats

Home

Profile

Stats

Side Navigation bar

Graphs

FIGURE 2.9: View Stats Wireframe

2.2 Activity Diagram

2.2.1 Admin-side Diagram

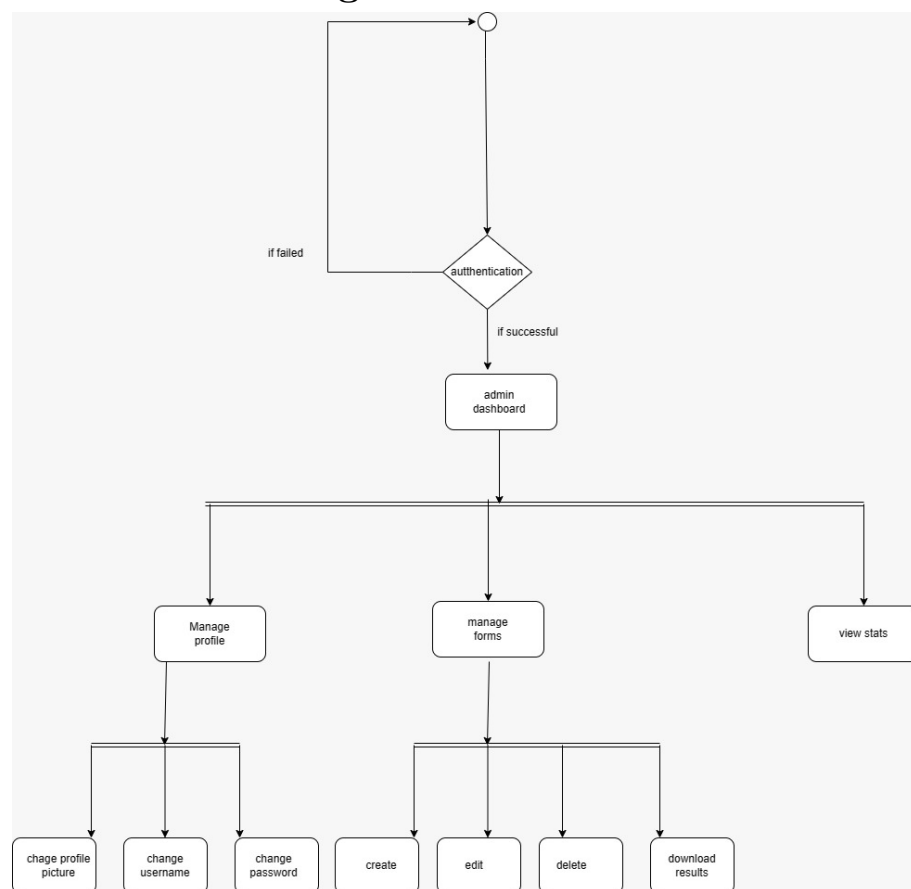


FIGURE 2.10: Admin-side Diagram

2.2.2 User-side Diagram

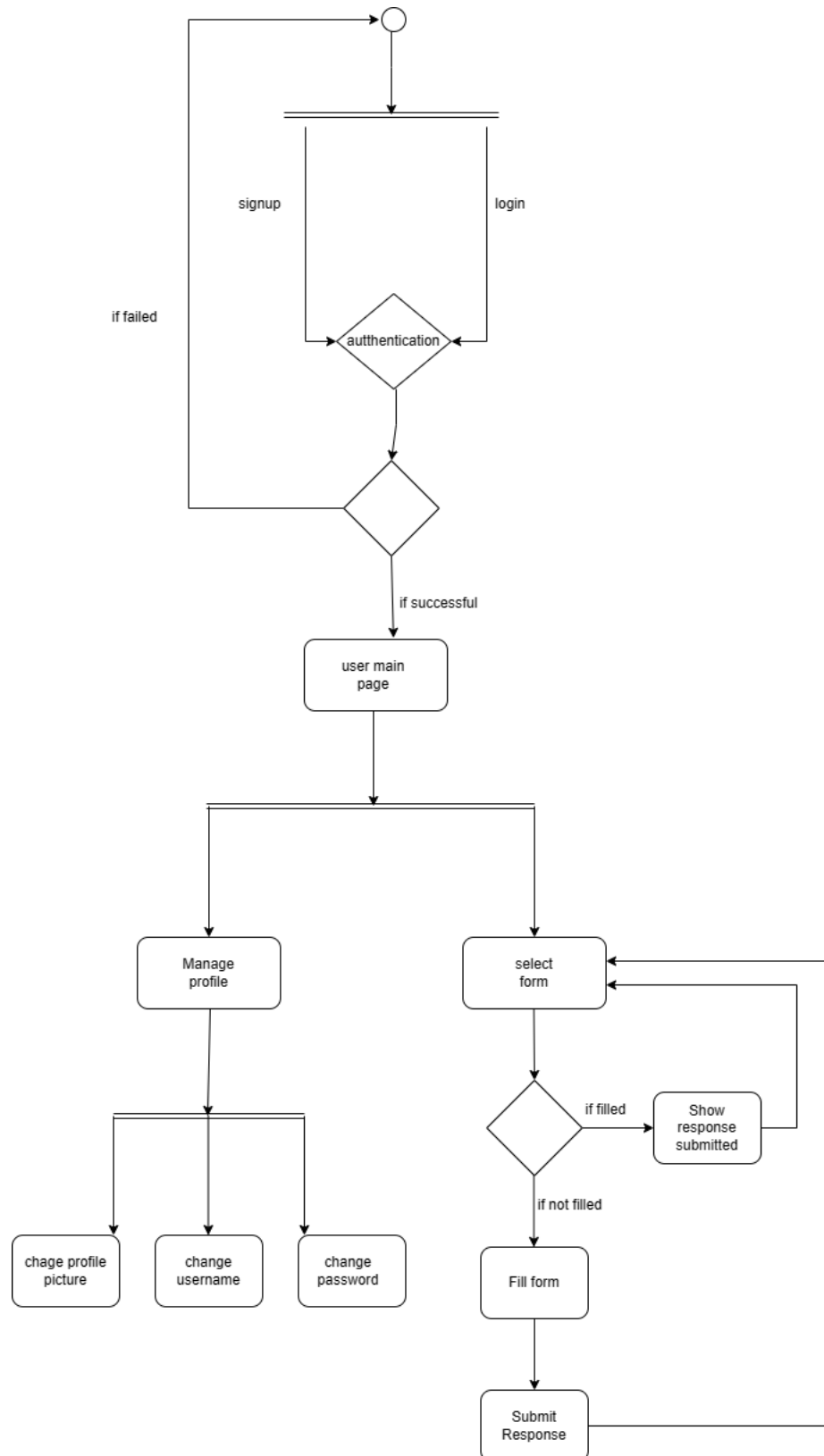


FIGURE 2.11: User-side Diagram

2.3 State Diagram

2.3.1 Admin-side Diagram

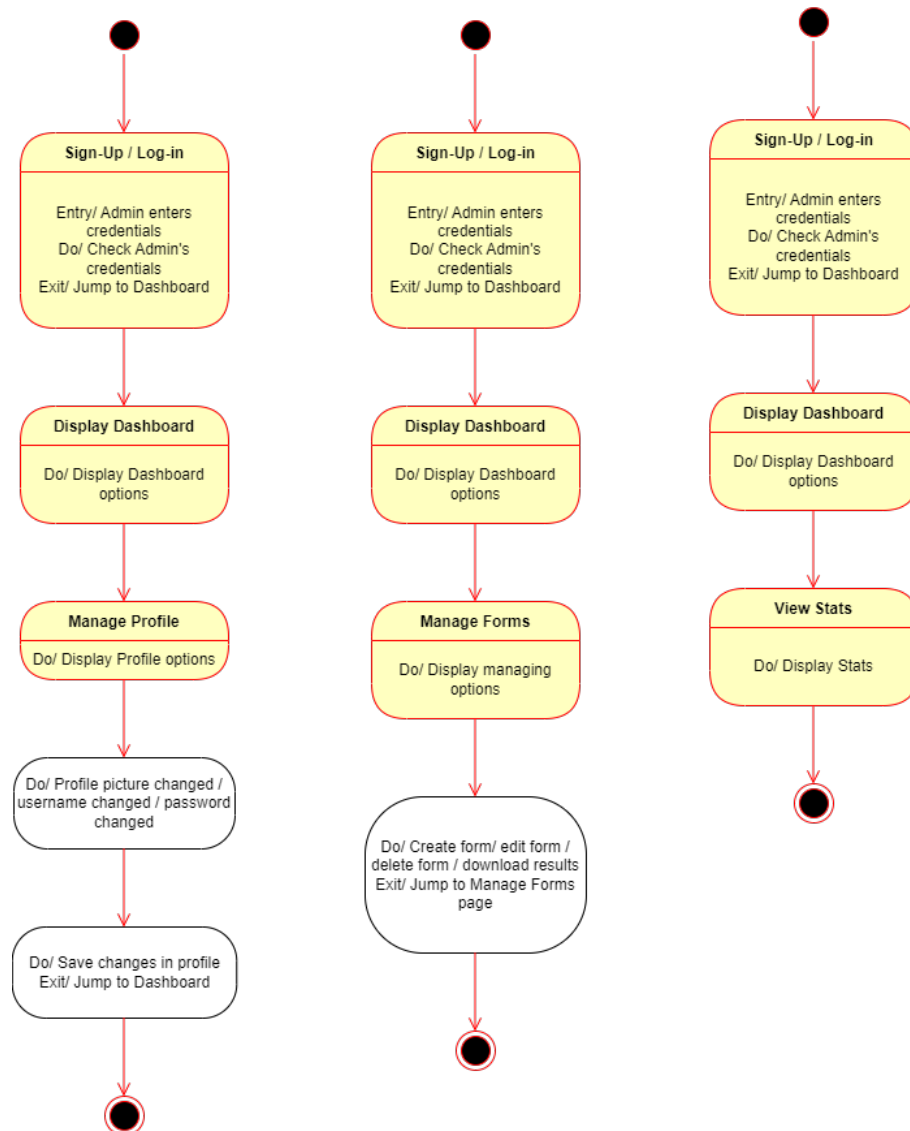


FIGURE 2.12: Admin-side State Diagram

2.3.2 User-side Diagram

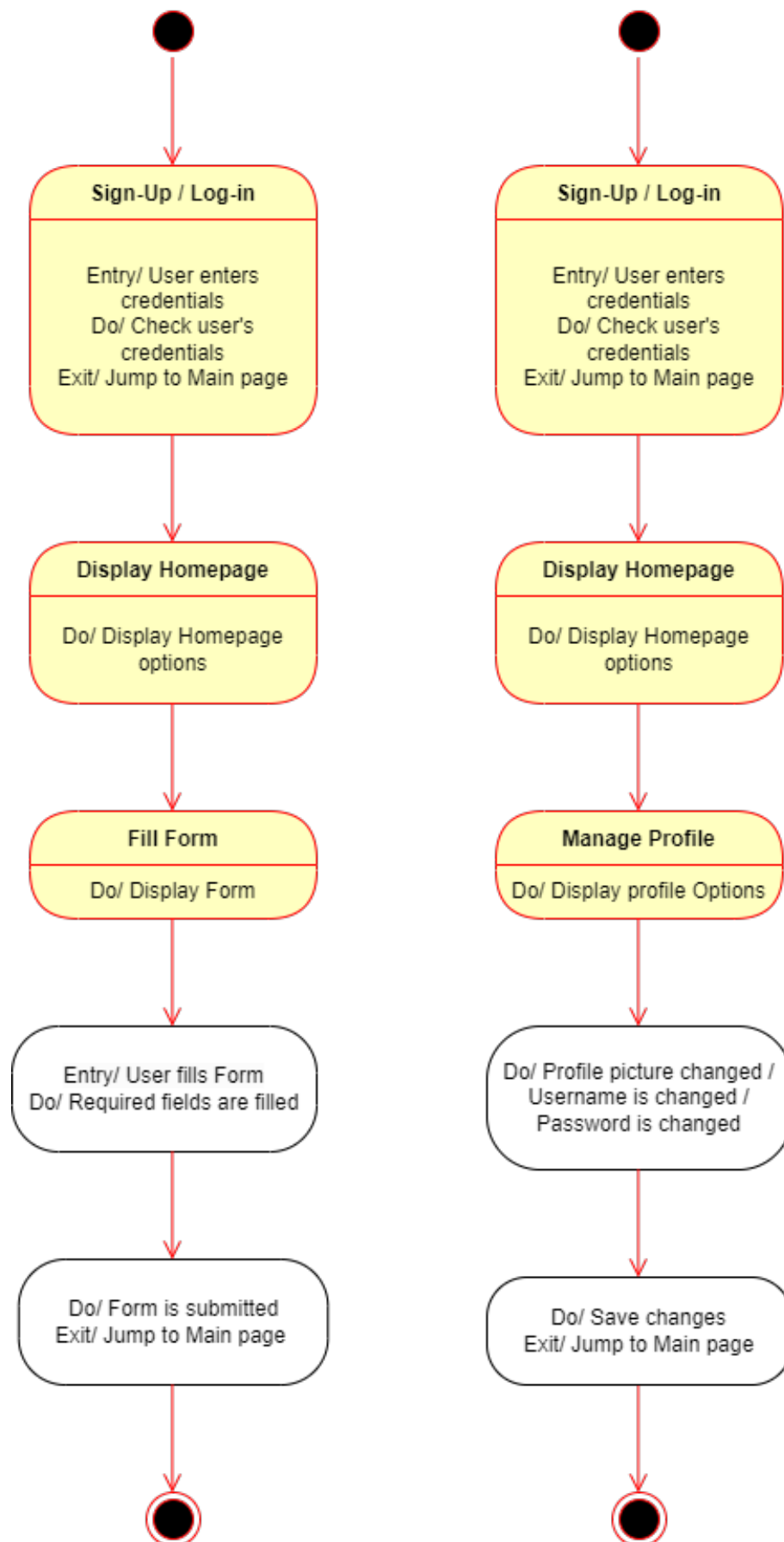


FIGURE 2.13: User-side State Diagram

2.4 Sequence Diagram

2.4.1 User Login

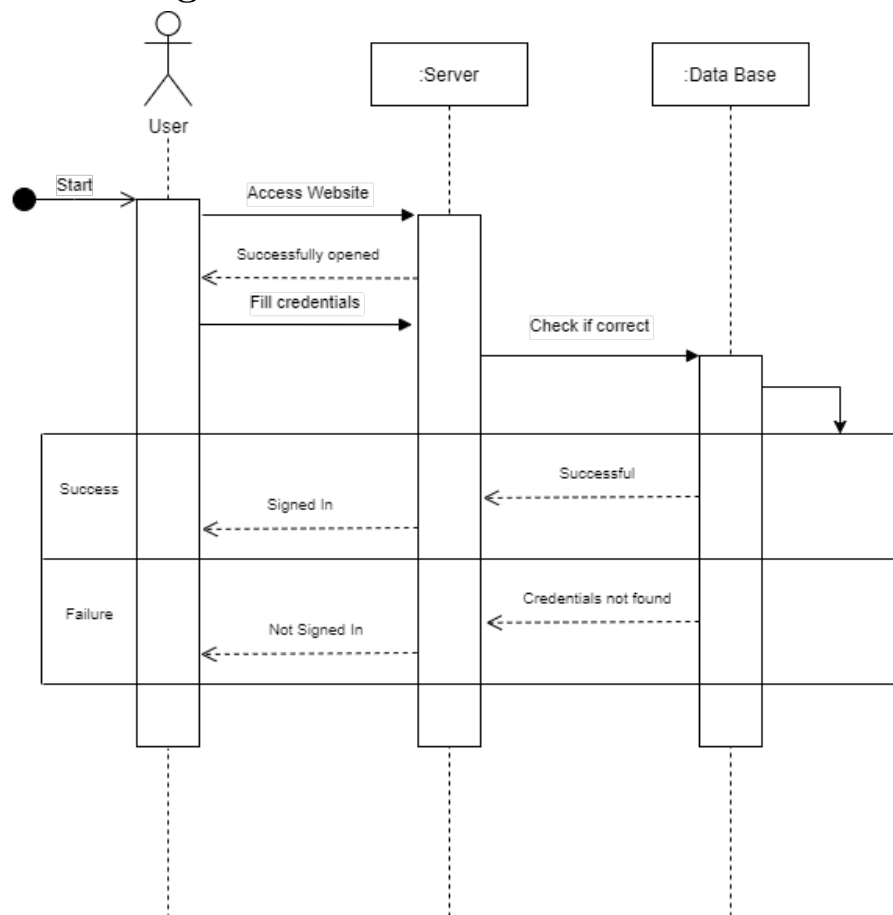


FIGURE 2.14: User Login Sequence Diagram

2.4.2 Sign up

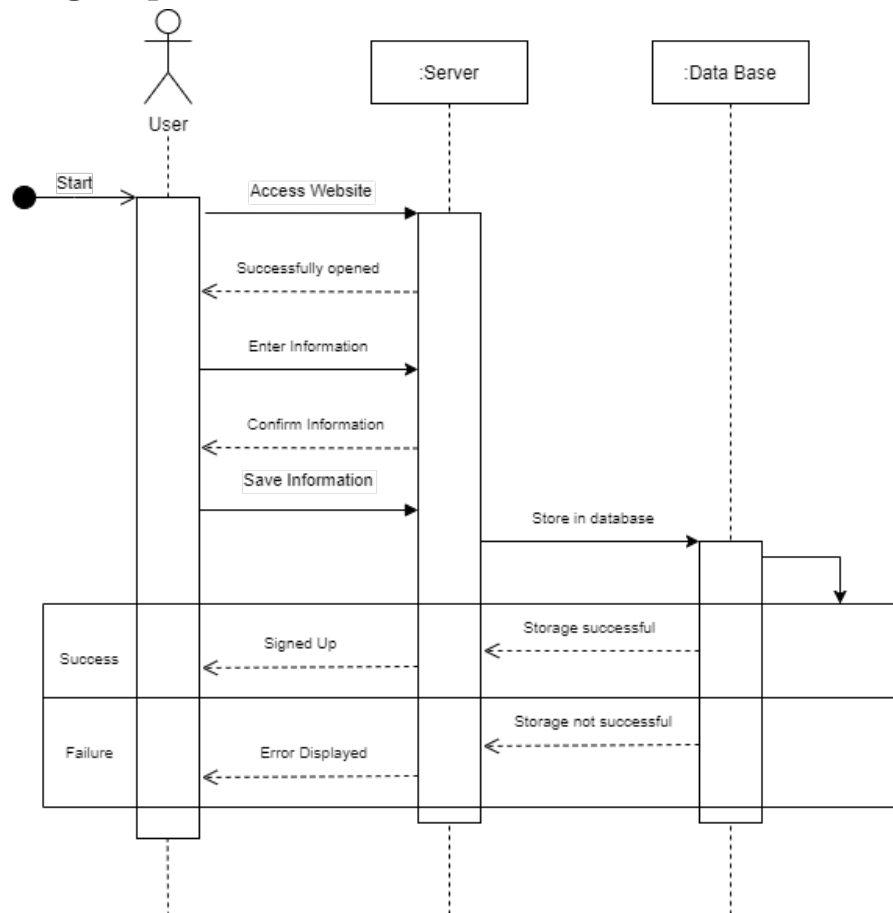


FIGURE 2.15: Sign up Sequence Diagram

2.4.3 Select Form

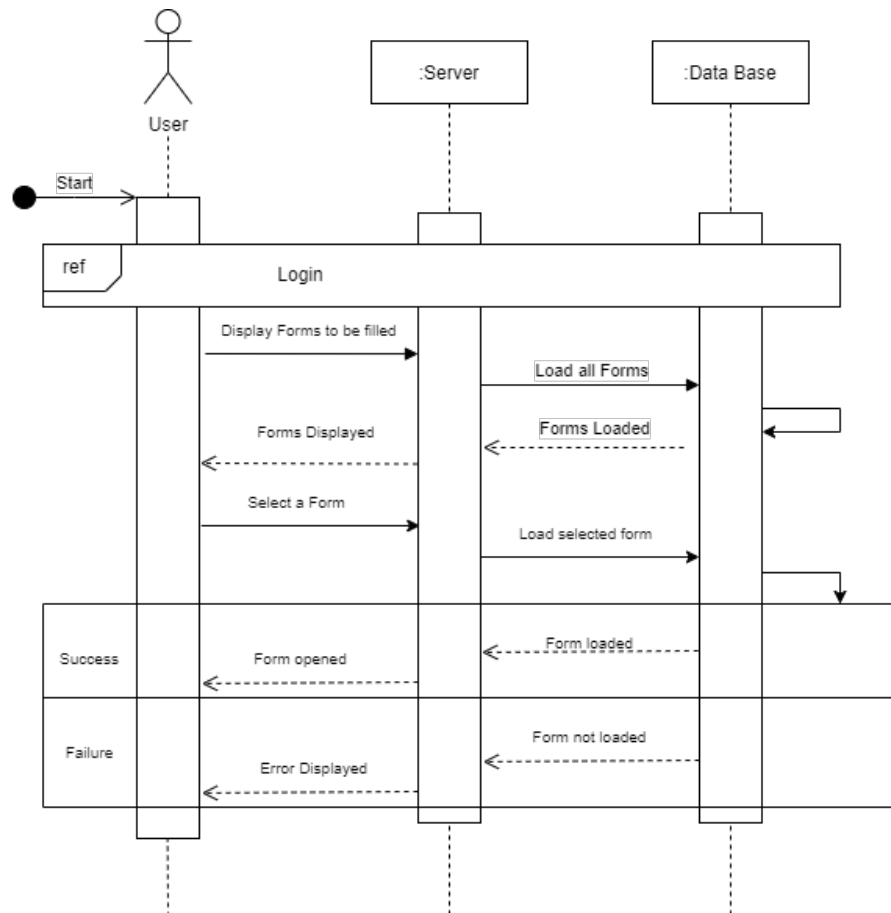


FIGURE 2.16: Select Form Sequence Diagram

2.4.4 Fill Form

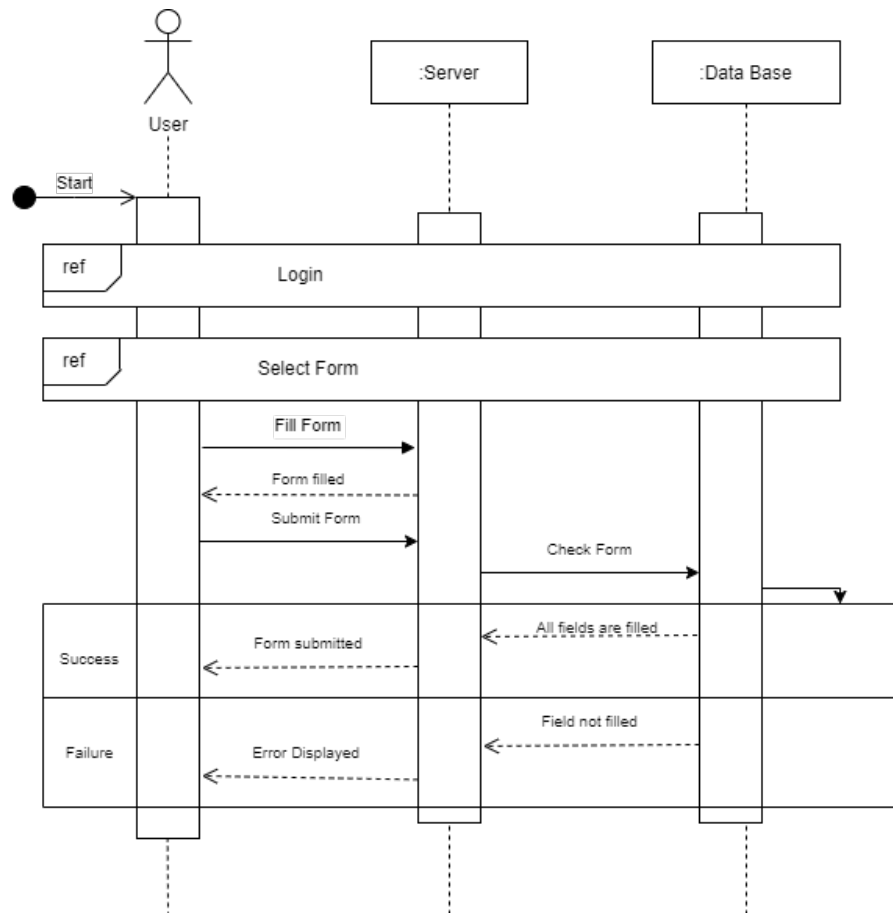


FIGURE 2.17: Fill Form Sequence Diagram

2.4.5 Create Form

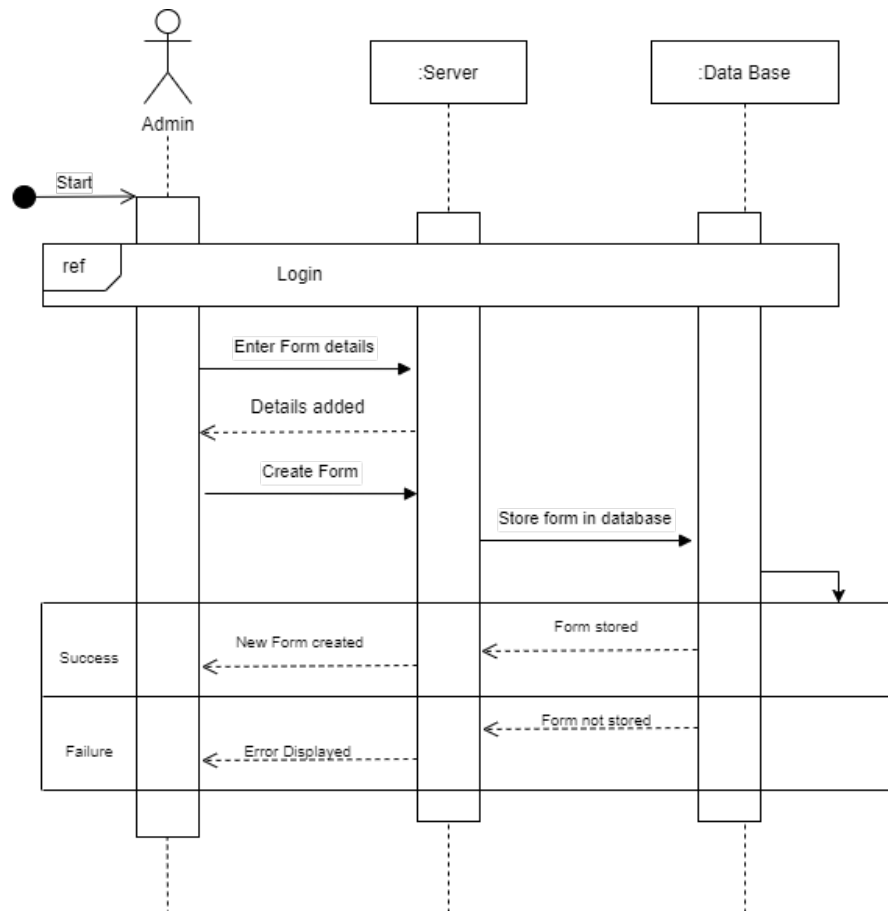


FIGURE 2.18: Create Form Sequence Diagram

2.4.6 Delete Form

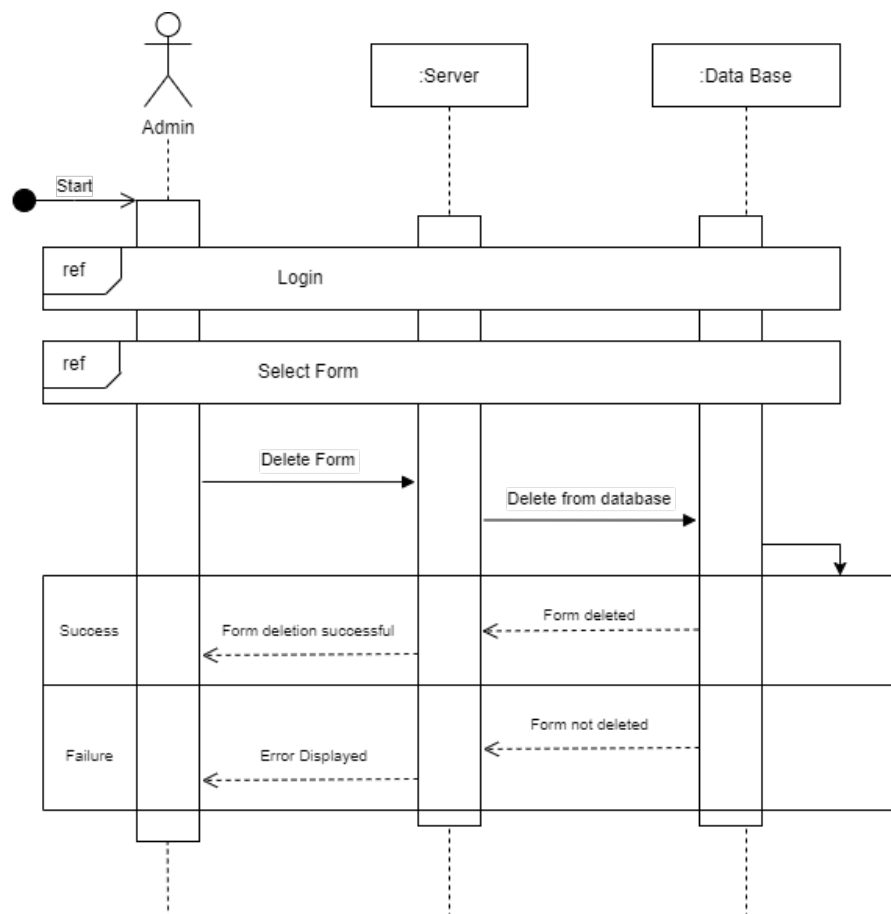


FIGURE 2.19: Delete Form Sequence Diagram

2.4.7 Edit Form

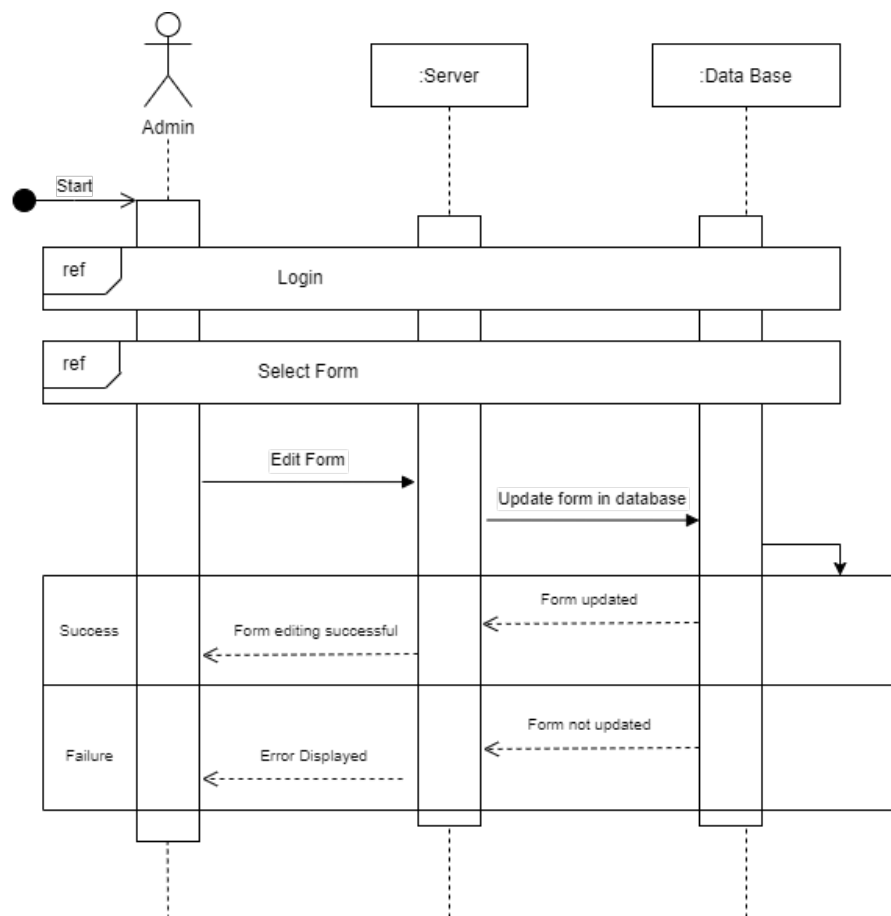


FIGURE 2.20: Edit Form Sequence Diagram

2.4.8 Manage Profile

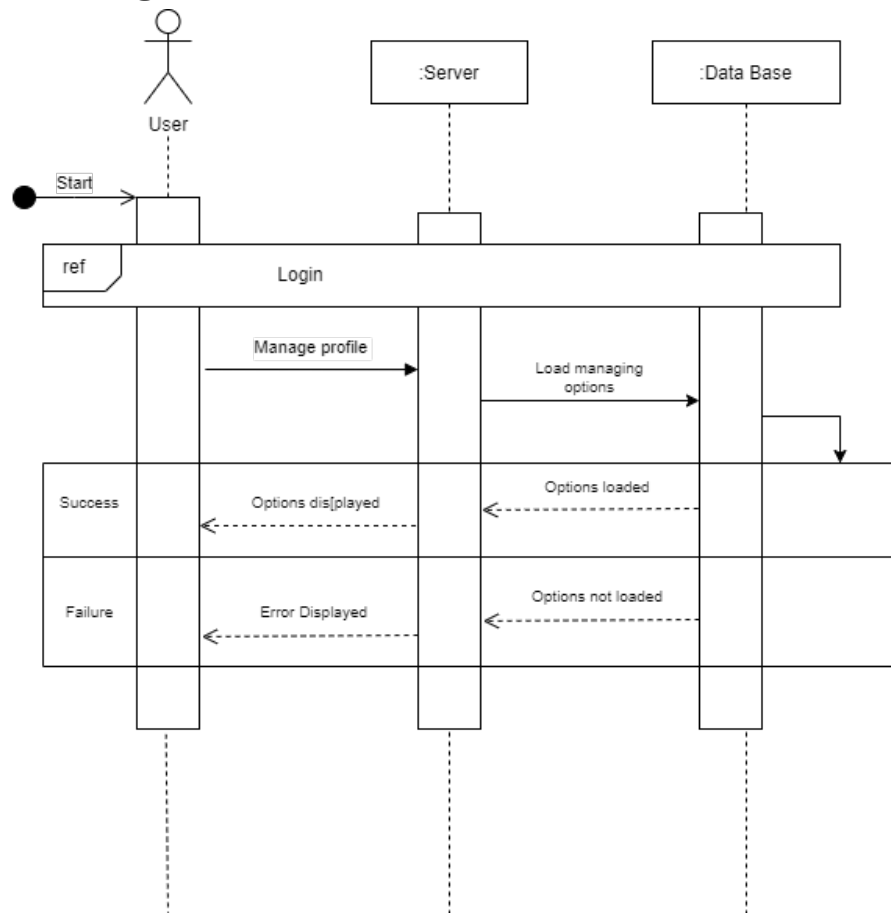


FIGURE 2.21: Manage Profile Sequence Diagram

2.4.9 Edit Profile Picture

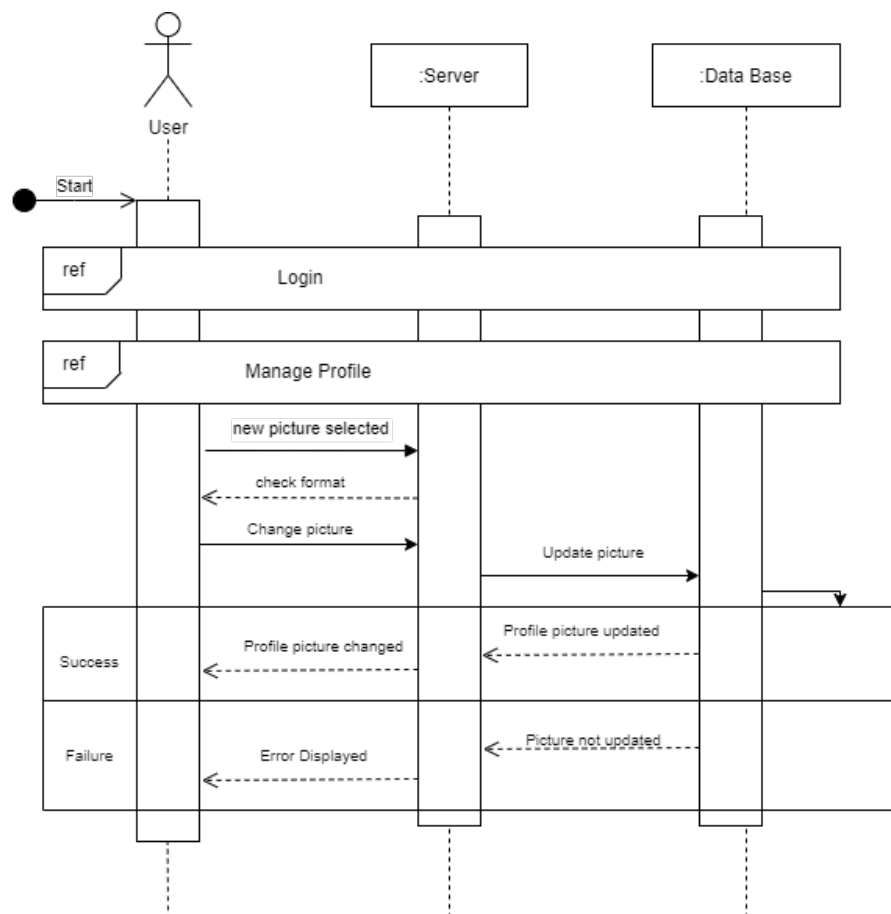


FIGURE 2.22: Edit Profile Picture Sequence Diagram

2.4.10 Edit Username

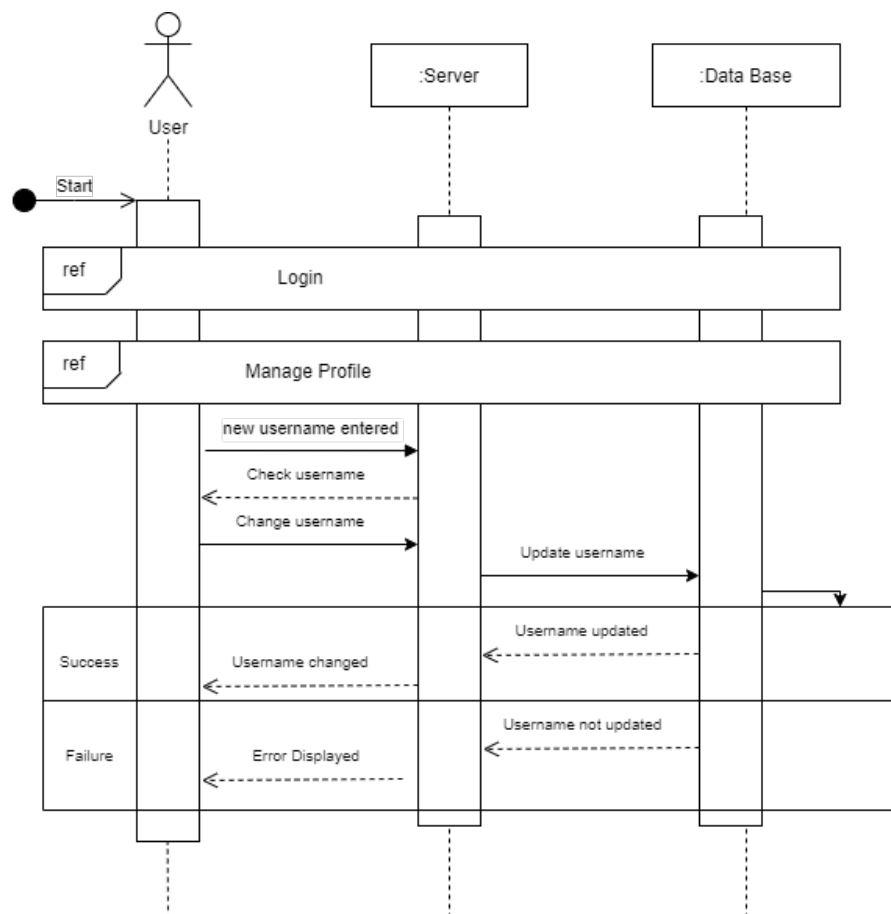


FIGURE 2.23: Edit Username Sequence Diagram

2.4.11 Edit Password

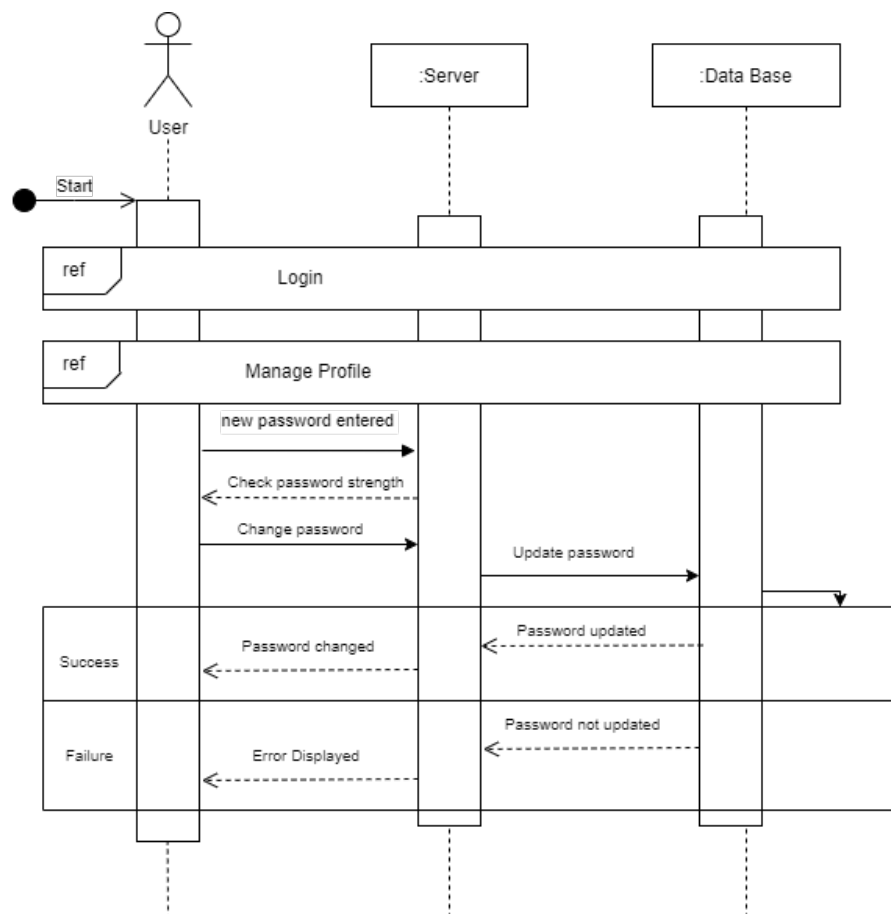


FIGURE 2.24: Edit Password Sequence Diagram

2.4.12 View Stats

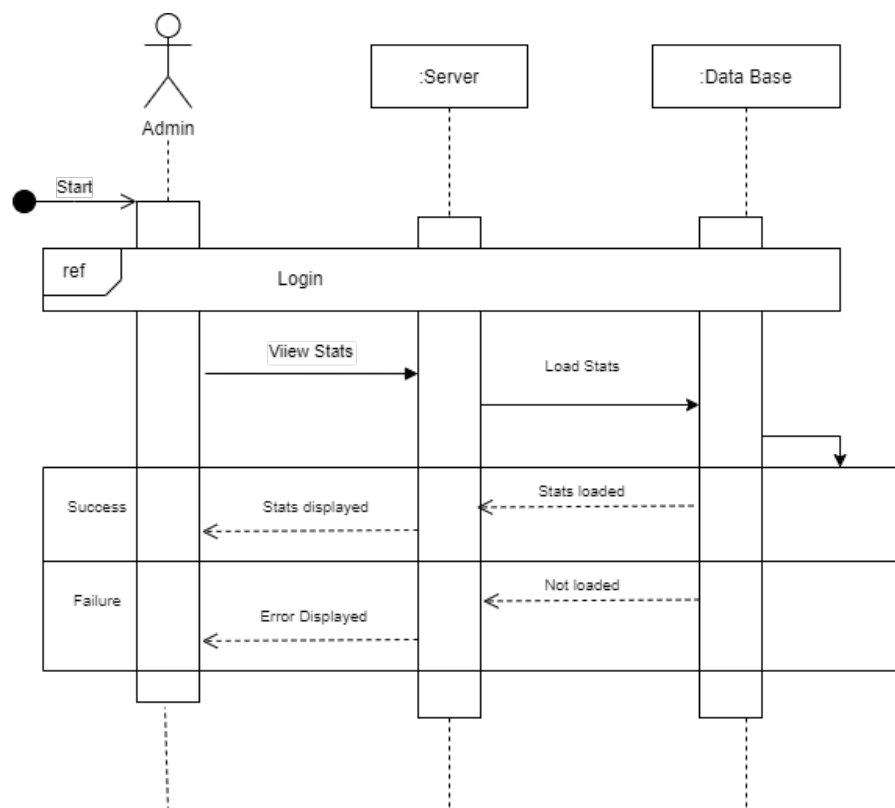


FIGURE 2.25: View Stats Sequence Diagram

2.4.13 Download result

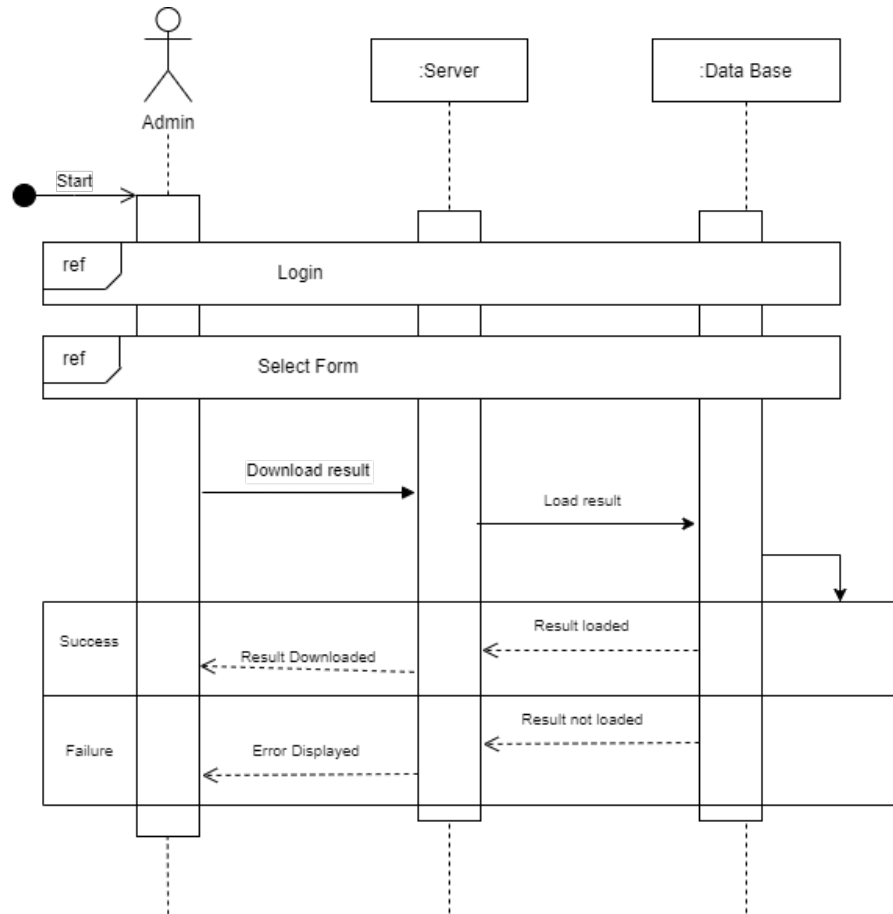


FIGURE 2.26: Download result Sequence Diagram

2.5 Collaboration Diagram

2.5.1 Admin-side Diagram

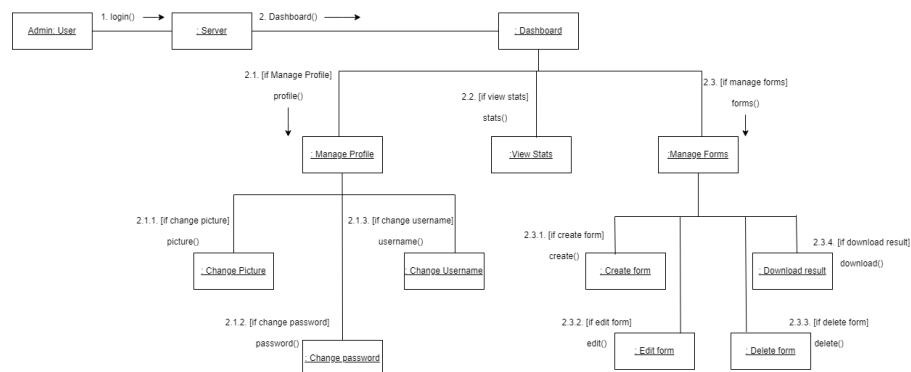


FIGURE 2.27: Admin-side Collaboration Diagram

2.5.2 User-side Diagram

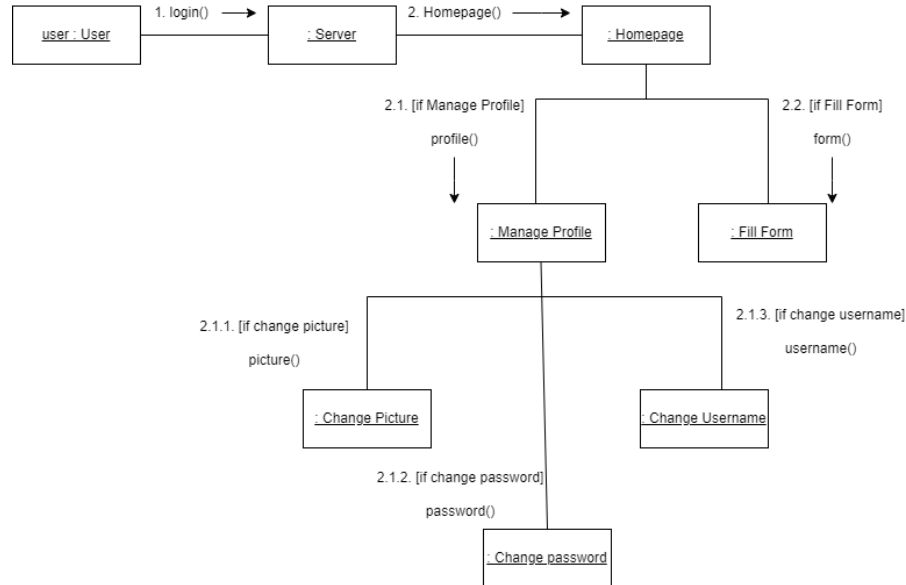


FIGURE 2.28: User-side Collaboration Diagram

2.6 Class Diagram

Since we are using MERN Stack, which provides a better alternative to conventional classes, in react functional component we use react hooks[8] instead of conventional classes

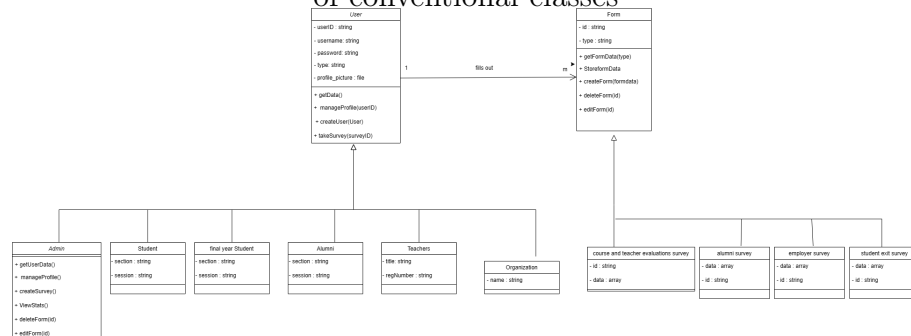


FIGURE 2.29: Class Diagram

2.7 Component Diagram

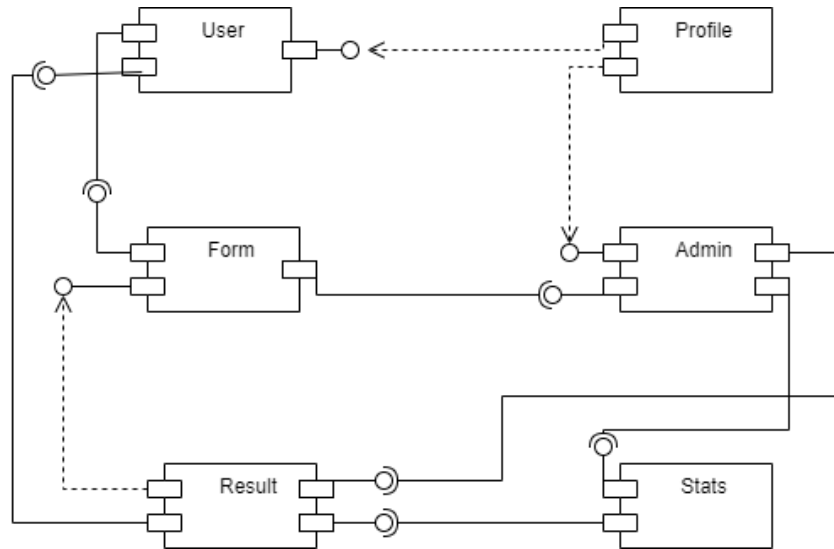


FIGURE 2.30: Component Diagram

2.8 Deployment Diagram

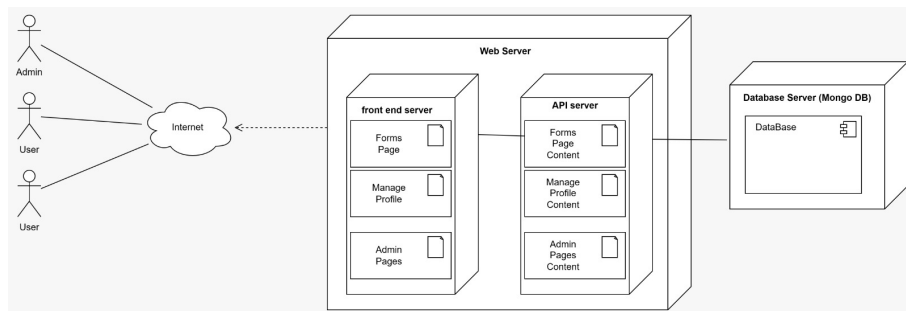


FIGURE 2.31: Deployment Diagram

2.9 ER Diagram

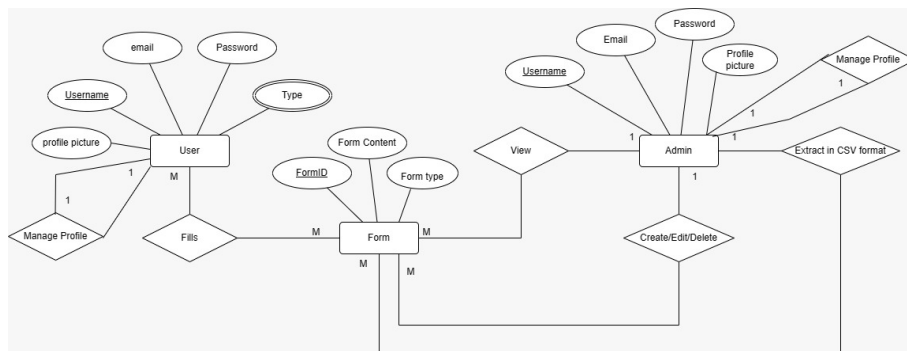


FIGURE 2.32: Entity Relationship Diagram

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