



UUM
Universiti Utara Malaysia

**A221 STID3024(F) SYSTEMS ANALYSIS AND
DESIGN**

FINAL REPORT

LAB TEST INFORMATION SYSTEM (LTIS)

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1.0 PROPOSAL

1.1 INTRODUCTION

A software medical company, FSA Medical Health intends to develop a Lab Test Information System (LTIS) that allows visitors to check their lab test result, manage clients, manage lab tests, manage sample, see and set an appointment date that has been chosen and pay their lab test result via cash on the spot or online.

A computer programme called the Lab Test Information System (LTIS) organizes, archives, and maintains client's data, including samples from all phases and varieties of medical procedures and tests. The Lab Test Information System (LTIS) has two types of users including clients and staffs.

The Clients will be given accounts that they can log into using a username and password that they have chosen or entered themselves after they registered an account. Clients also can view the results of the tests they've conducted via online or physical consultation in the nearest branch and find out the appointment that has been made for them. Clients also can cancel their appointment if they have a good reason why they cannot attend the appointment that has been set on a date. Clients can also decide whether to pay in cash on the spot or online and the system will send the receipt confirmation to the clients' email after payment has been made.

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Similarly, staffs can access The Lab Test Information System (LTIS) by registering an account and login into the system after account registration is complete. The staffs can manage client's information such as add, edit, delete and view client's information. The staffs can manage timetables for appointments by sets, check and cancel it if clients are not available by the chosen date to help staffs to manage the appointment timetable more efficiently. The staffs also can manage lab tests by manage, edit and delete sample information by ID code and check or view lab test progress. Results of lab tests also can be viewed by staffs and upload it in system for clients to check their test result.

The system's benefits include increased productivity and efficiency. The Lab Test Information System (LTIS) encourages process automation, decreases manual labor at each stage, and eliminates the possibility of human mistake entering the system. Supporting compliance is the next advantage. The stated policies, medical ethics, and developing rules have all been followed by all labs. Additionally, the Lab Test Information System has the ability to store massive amounts of data entering. The system allows for the safe recording and management of client's data as well as data standardization and centralization.

Upskilling of the workers is a disadvantage of the system. To operate the system and make the workers used to the software system, a more skilled staff and people training are needed. The system must also use a significant amount of money and time. Depending on the size and complexity, developing a system often takes a month or longer. The overall cost of developing a system is high since it includes the work of designers, data analysts, and other individuals in addition to the development team.



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1.2 PROBLEM STATEMENT

Nowadays, a lot of individuals are conscious of the need to look after their personal health when they notice many illnesses that can spread quickly via our surroundings, including covid-19, diabetes, HIV, and many others. When they notice they have sickness symptoms, this leads them to simultaneously visit the hospital, clinic, or health facility to get examined. As a result, they must wait a considerable amount of time to take the lab test, and some even have to leave for home before they can do the test.

So, FSA Medical Health is commanded to create a user-friendly system for lab test information system with relevant and helpful functionalities as well as a high degree of security that can be used to organize, archive, and maintain clients data, including samples from all phases and varieties of medical procedures and tests.

Lab tests are also important because in order to diagnose or screen for a particular disease or condition, lab tests are frequently employed. Diseases are diagnosed through screening before symptoms appear. To track an illness or determine whether a treatment is working, several tests are performed. In order to provide more broad information about your organs and body systems, the lab tests will usually be performed.

1.3 OBJECTIVE

1. To enhance the current Lab Test Information System operations.
2. To develop a user-friendly system with relevant and helpful functionalities as well as a high degree of security.



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1.4 PROPOSED SYSTEM FUNCTIONALITIES AND NON-FUNCTIONALITIES

1.4.1 Functionalities

1. Register/ Login
 - a. Register new client/staff account
 - b. Login
 - c. Forget password
2. Manage client information
 - a. Add new client
 - b. Delete current client
 - c. Edit client information
3. Manage appointments
 - a. Add an appointment
 - b. Edit an appointment
 - c. Delete an appointment
 - d. Cancel an appointment
4. Manage sample information
 - a. Add sample
 - b. Edit sample
 - c. Delete sample.



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1.4.2 Non-Functionalities

1. Operational

- a. Be accessible to online user
- b. Receipt must be display after receive clients' payment

2. Performance

- a. Fast response time
- b. Clean system interface

3. Security

- a. Keep clients' info and data from leaking.
- b. Prevent hacking for stealing data. Prioritize client privacy.
- c. Password changes must be verified by the account owner to ensure account security.

4. Usability

- a. The system should be easy to use and navigate for both technical and non-technical users.

5. Maintainability

- a. The system should be easy to maintain and update over time

6. Data integrity

- a. The system should ensure that data is accurately entered, stored, and retrieved, with no corruption or loss.



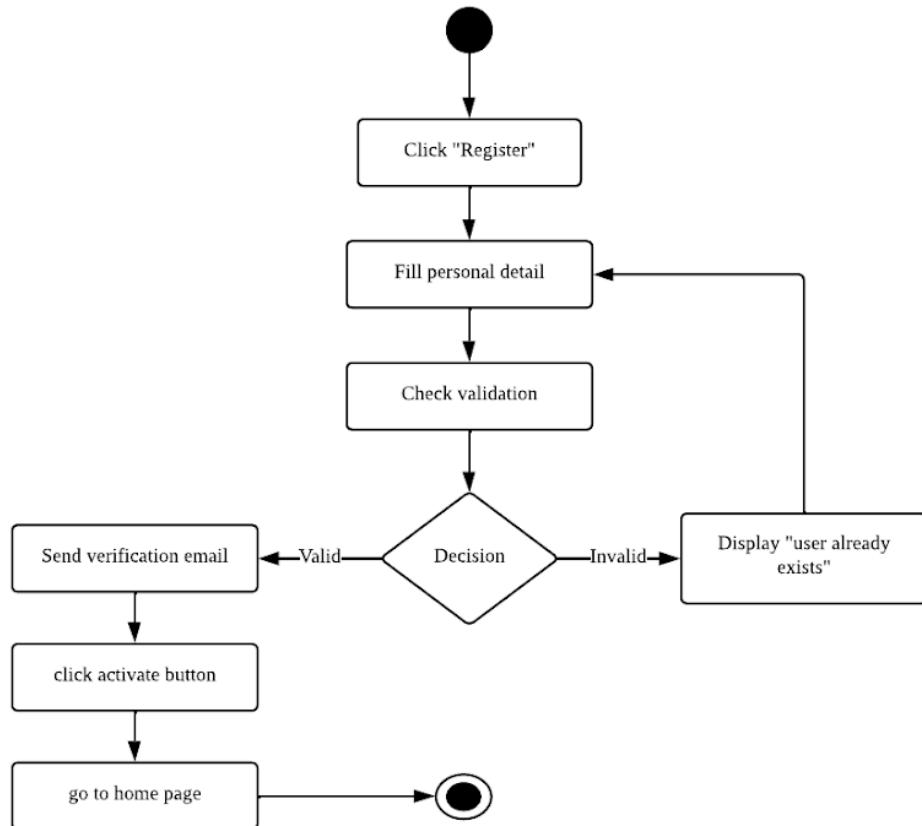
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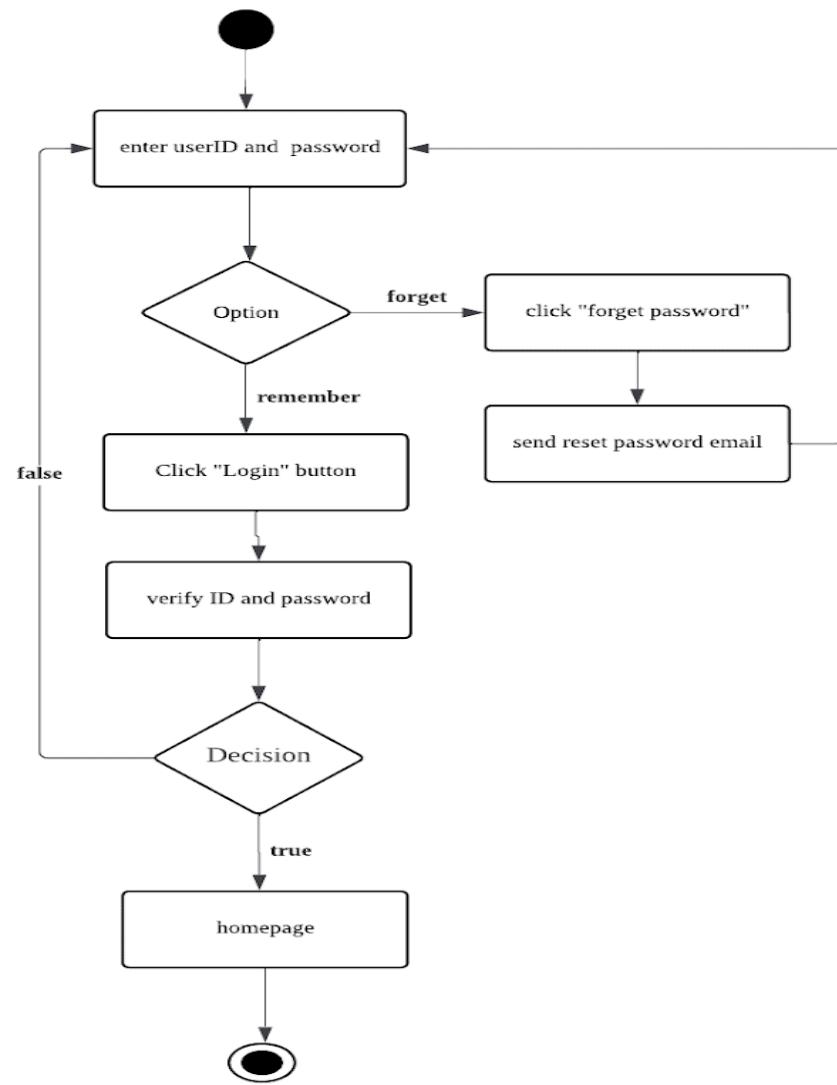
1.5 FLOWCHART

1.5.1 Register



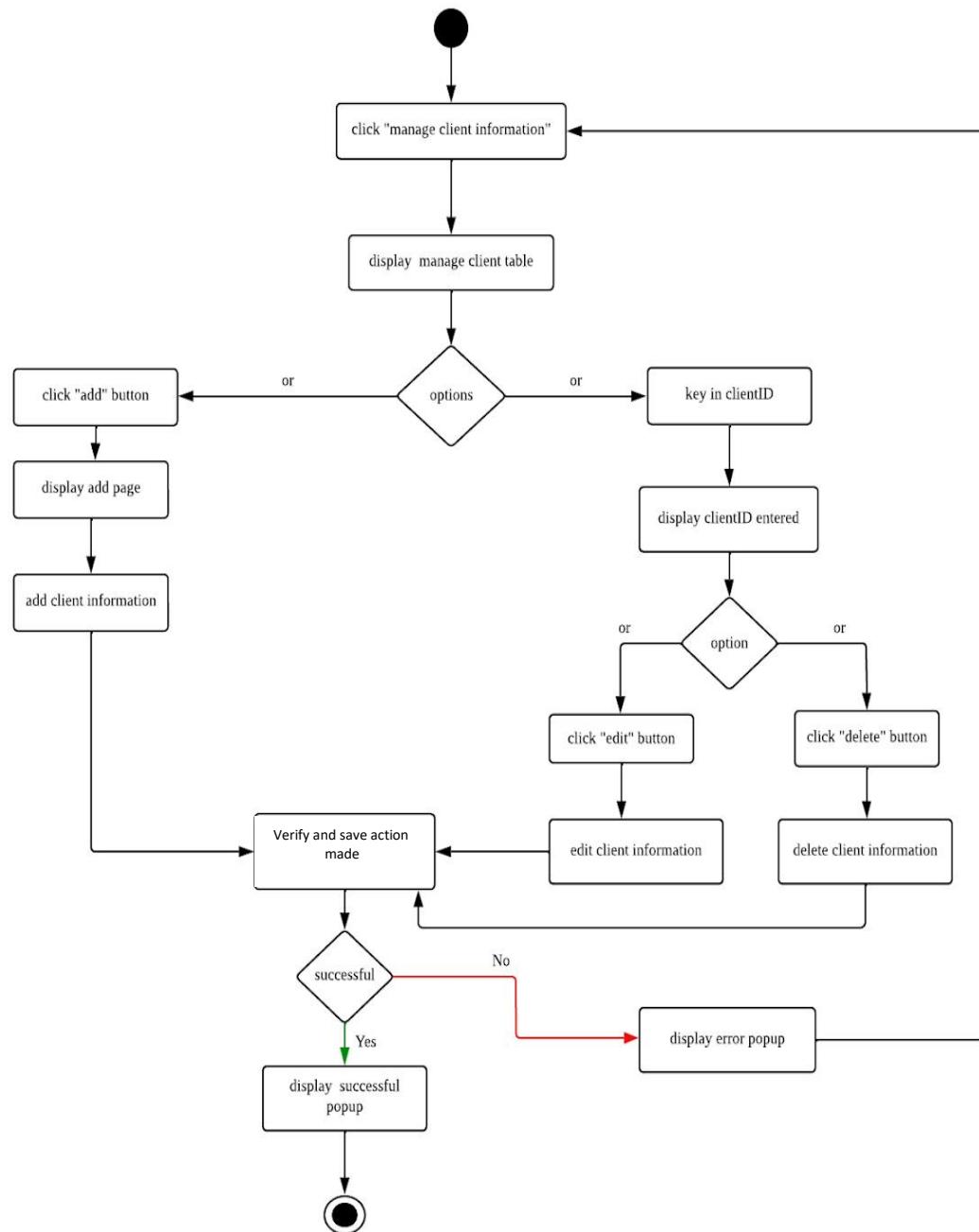
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1.5.2 Login



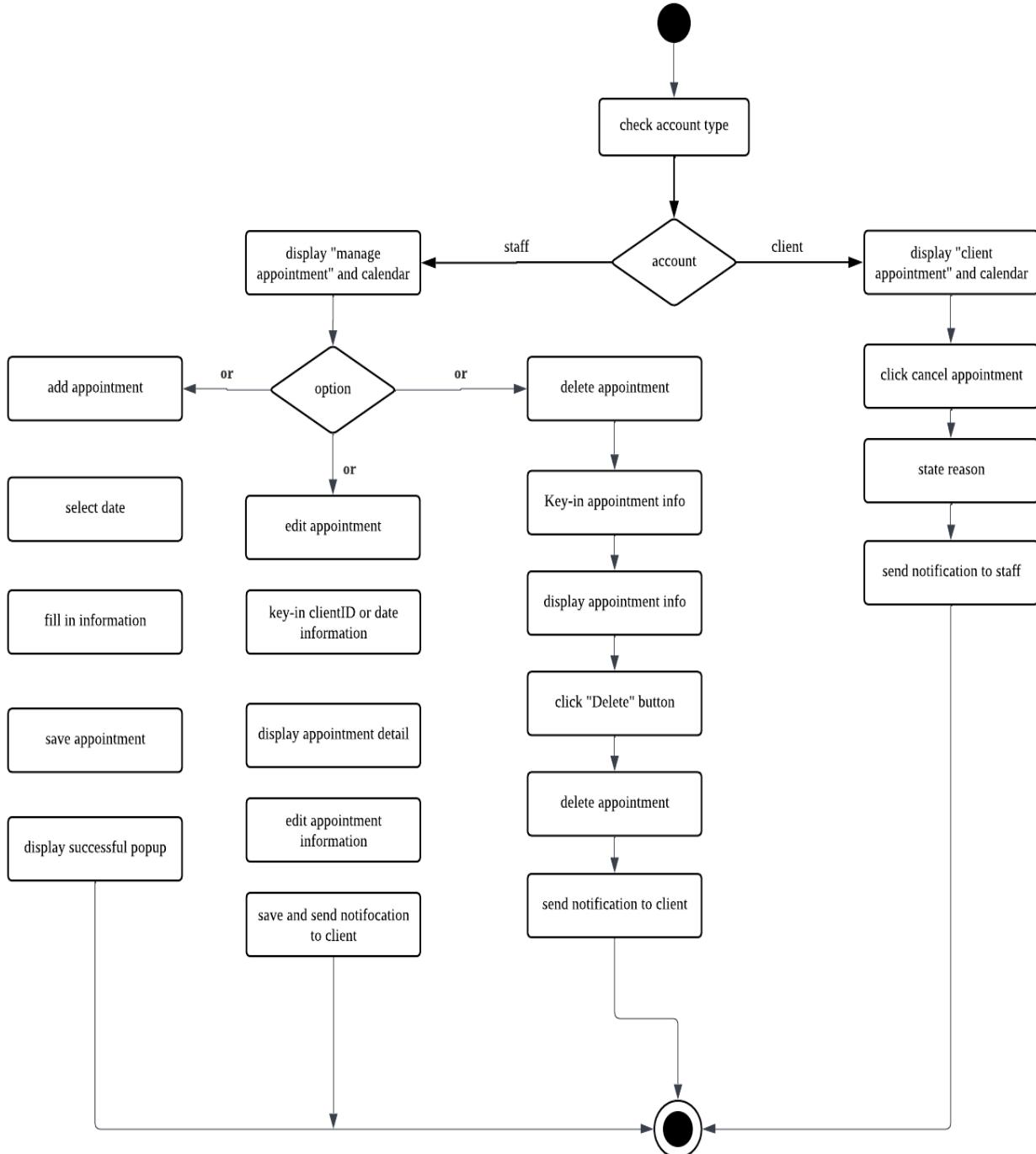
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1.5.3 Manage Client Information



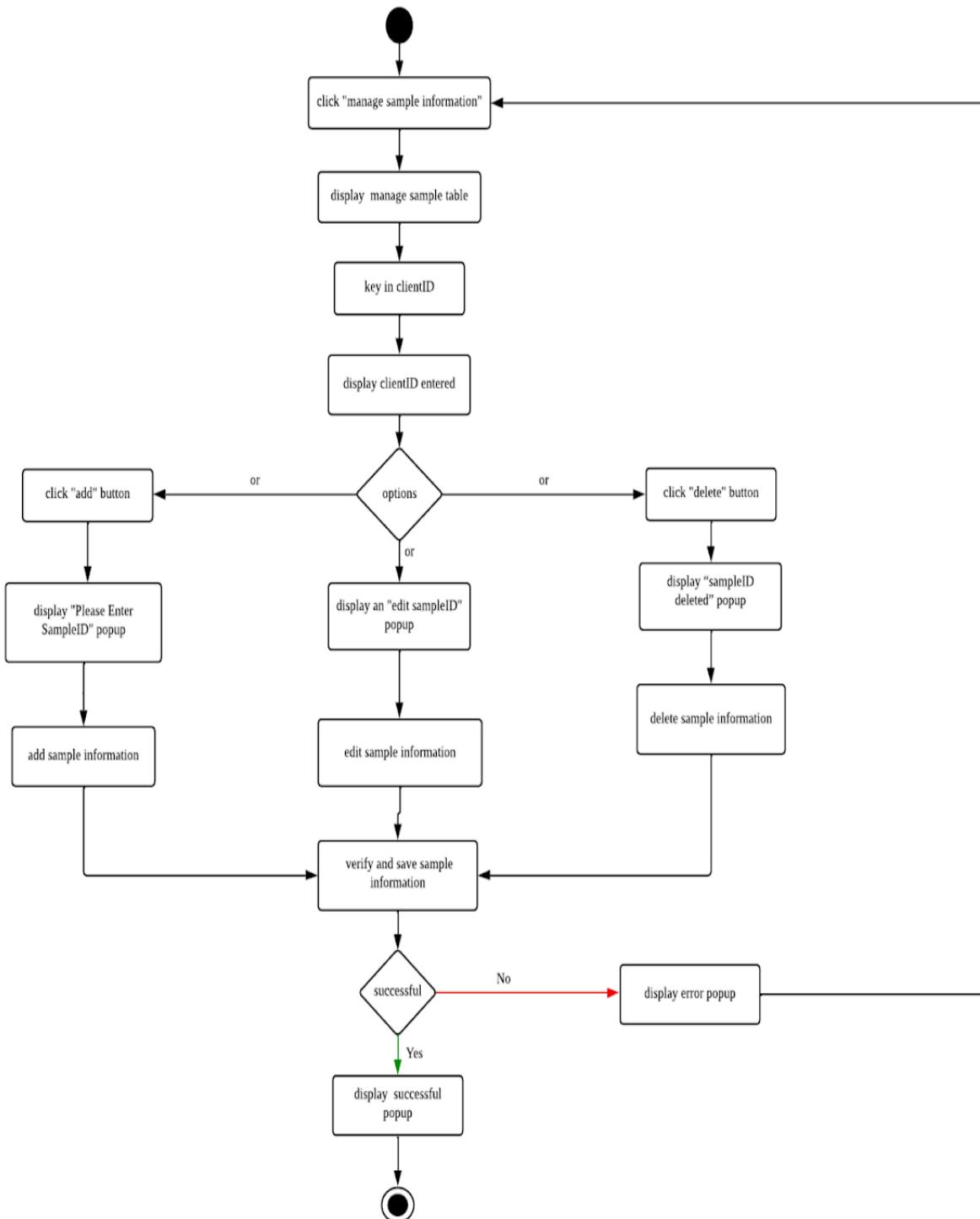
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1.5.4 Manage Appointment



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1.5.5 Manage Sample Information



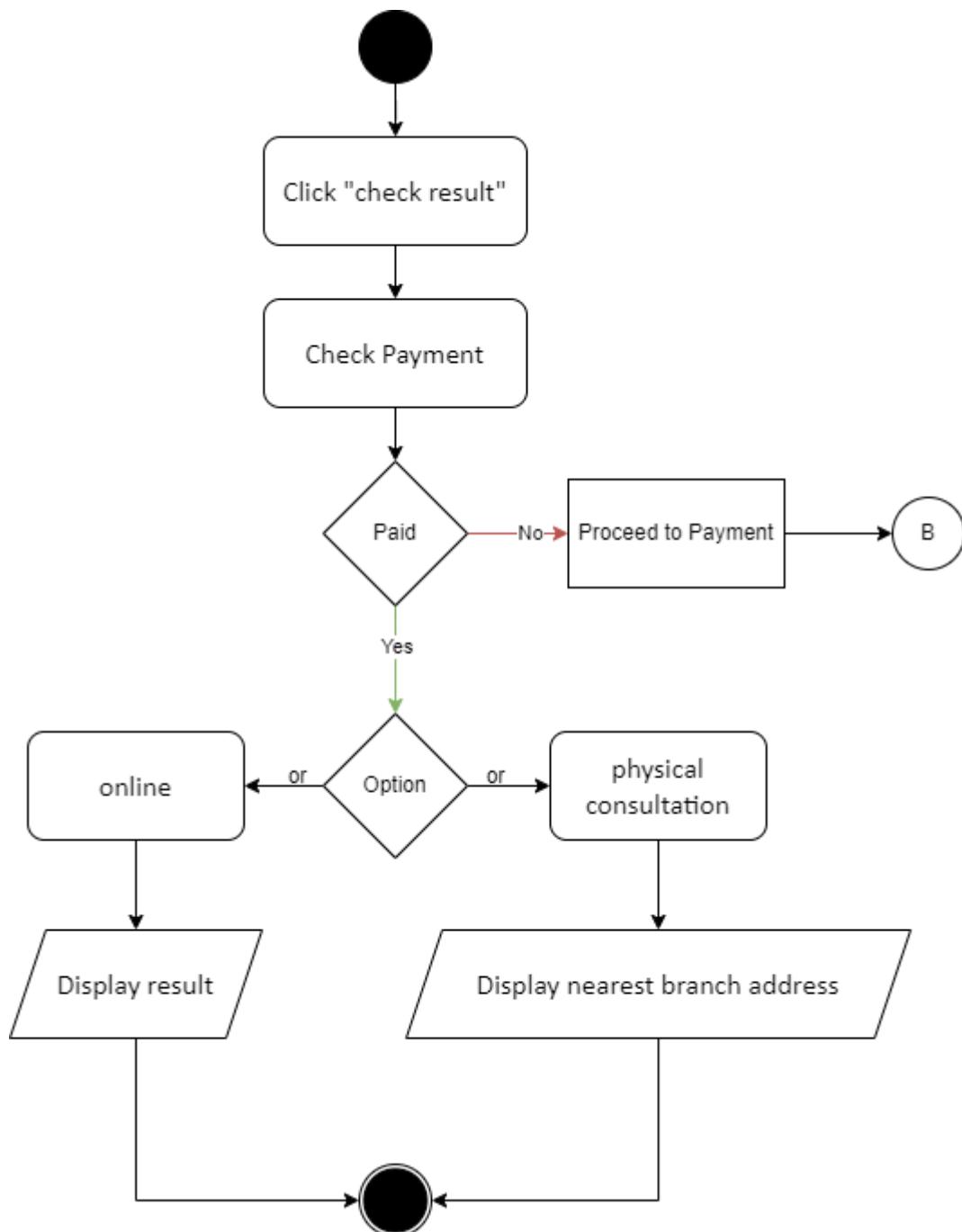
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1.5.6 Manage Lab Test



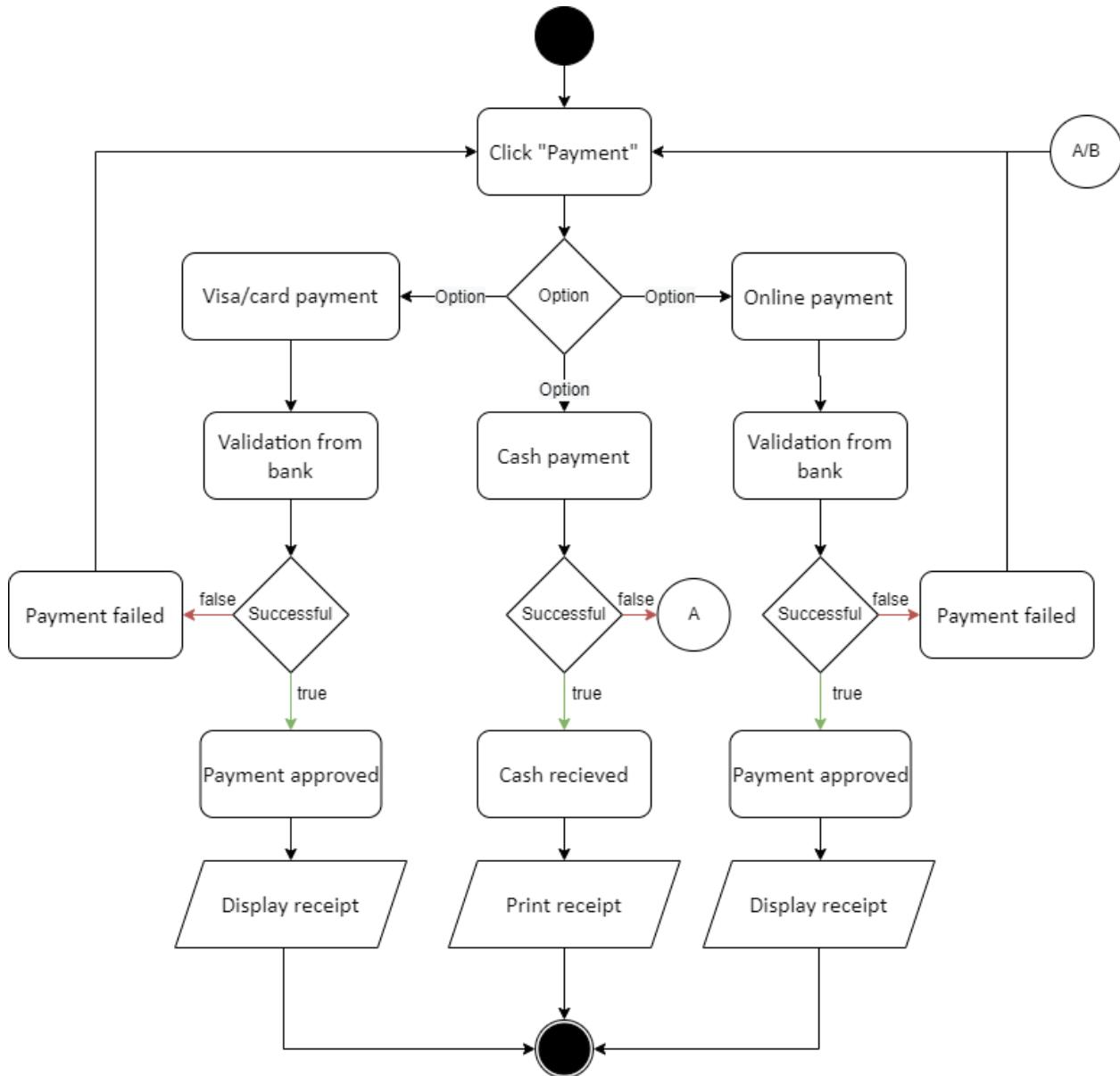
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1.5.7 Check Result (Client)



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1.5.8 Manage Payment



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1.6 USER INTERFACE SKETCH

Lab Test Information

Sign-in or Sign-Up

User ID

Password

[Don't have an account?](#)
[Click here to Register](#)

Login

Lab Test Information

Register

Email
Name
User/Staff ID
Address
Age
Gender
Birth Date
Password
Confirm Password

Register

Lab Test Information

Forget Password

Please enter your email :

Forget Password

Lab Test Information

Main Menu (Staff)

Main Menu

Lab Test Information

Manage Client

Num	Name	ID	Email	Action
1.	Ali	0123		<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Manage Client

Lab Test Information

Add Client

Email
Name
Client ID
Age
Gender
Birth Date
Address

Add Client



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Lab Test Information

Manage Timetable

Num	Name	ID	Appointment
1.	Ali	0123	Add Check Cancel

Manage Appointment

Lab Test Information

Add Appointment

February 2021						
SUN	MON	TUE	WED	THU	FRI	SAT
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	1	2	3	4	5	6

[Confirm](#)

Add Appointment

Lab Test Information

Check Appointment

Name : Ali

Appointment Date : 2/2/2022

Appointment Time : 2:00 PM

Lab Test : Blood Test

Check Appointment

Lab Test Information

Sample

Num	Name	ID	Sample ID	Action
1.	Ali	0123	#B30	Edit Delete

[Add Sample](#)

Manage Sample

Lab Test Information

Lab Test

[Manage Lab Test Information](#)

[Check Lab Test Progress](#)

Menu Lab Test

Lab Test Information

Manage Lab Test Information

Num	Lab Number	Test Type	Action
1.	A2	Urine	Edit Delete
2.	B10	Blood	Edit Delete

[Add Lab Test](#)

Manage Lab Test



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Lab Test Information				
Lab Test Progress				
Num	Name	Sample ID	Status	Result
1.	Ali	#B30	In Progress	Positive

Check Lab Test Progress

Lab Test Information				
Main Menu (Client)				
View Appointment				
Check Result				

Main Menu (Client)

Lab Test Information				
View Appointment				
Num	Date	Time	Appointment	Action
1.	2/2/2022	2:00 PM	Blood Lab Test	Canceled

View Appointment

Lab Test Information				
Appointment Cancellation				
Reason:	<hr/> <hr/> <hr/>			
Submit				

Cancel Appointment

Lab Test Information				
Check Result				
Please complete your payment to view the result				
Proceed to payment				

Check Result

Lab Test Information				
Payment Method				
Cash Payment				
Visa/Card Payment				
Online Payment				

Payment Method

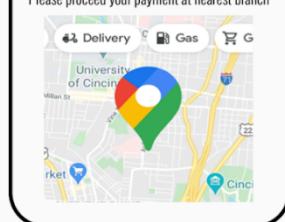


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Lab Test Information

Cash Payment

Client ID:
Please proceed your payment at nearest branch



For further information, please contact:
+60123456789 (Operator)

Cash Appointment

Lab Test Information

Visa/Card Payment

Name on card

Card number

Expiration Date

CW

Region

Card Payment

Lab Test Information

Online Payment

Online Payment

Lab Test Information

PAYMENT SUCCESSFUL!

Result

Name : Ali ID: 0123
Sample ID : #B30

SARS	Negative
MERS	Negative
Covid-19	Negative

Check Result



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1.7 CONCLUSION

The system can manage patient laboratory testing activities on site by registering the patient in the system, compiling laboratory test results, viewing reports, scheduling and canceling appointments. This Laboratory Test Information System is capable of managing the automatic delivery of patient laboratory test reports to patient accounts and e-mail addresses in the laboratory system. Simply accessing the lab reporting system and entering test results into a report form, saving or sending it. This is an automated system for keeping track of patient laboratory reports. By checking their lab test results in this system, patients will always have the most up-to-date information. To keep patients informed and monitored, lab test operators and staff will upload and update patient lab test result information. This will aid in the effective and efficient management of laboratory reporting.



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2.0 LIST OF REQUIREMENTS

The table below lists the functional and non-functional requirements of the Lab Test Information System. In the priority column, the following short hands are used:

- M – mandatory requirements (something the system must do)
- D – desirable requirements (something the system preferably should do)
- O – optional requirements (something the system may do)

A. FUNCTIONAL REQUIREMENTS

No.	Requirement ID	Requirement Description	Priority
	LTIS_01	Sign Up	
1.	LTIS_01_01	If Users does not have an account, Users must register one.	M
2.	LTIS_01_02	Users must provide their personal information: <ol style="list-style-type: none">1. Email2. Name3. User or Staff ID4. Address5. Age6. Gender7. Birth Date8. Password9. Confirm Password	M
3.	LTIS_01_03	If Password and Confirm Password are unequal, user needs to re-enter the Password again.	M
4.	LTIS_01_04	Upon registration, user must verify the registration at respective email registered.	M
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	COLLEGE OF Arts and Sciences LTIS_01_03	SYSTEM NAME LAB TEST INFORMATION SYSTEM are staff or client and save it.	DOCUMENT NO. VERSION PAGE
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5.	LTIS_01_05	System must check the registered user account type which are staff or client and save it.	M
	LTIS_02	Login	
6.	LTIS_02_01	Users with existing accounts need to enter their staffID or clientID and password and the system will verify it.	M
7.	LTIS_02_02	If the user's client/Staff ID or password is wrong, the user must re-enter the correct ID and password.	M
8.	LTIS_02_03	If the user forget their password, they may reset their password.	M
9.	LTIS_02_04	System must check the logged in user account type which are staff or client to go to their homepage.	M
	LTIS_03	Manage Appointment	
10.	LTIS_03_01	System will check account type whether it is client account or staff account.	M
11.	LTIS_03_02	System display Manage Appointment Table for staff interface meanwhile display Client's Appointment Table for client interface.	M
12.	LTIS_03_03	Staff can add, edit and delete clients' appointments meanwhile clients can cancel appointments which have been set by staff.	O
13.	LTIS_03_04	Client can cancel appointments.	O
14.	LTIS_03_05	Add Appointment (Staff)	O

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15.	LTIS_03_05_01	System display calendar.	M
16.	LTIS_03_05_02	Staff can create a new appointment for the clients by selecting a date from the calendar.	M
17.	LTIS_03_05_03	System will pop up a page for input appointment data such as: a) Client Name b) Age c) ClientID d) Date e) Time f) Type of lab test	M
18.	LTIS_03_05_04	Staff must key in the appointment details below: System saved the selected date for the appointment in the Manage Appointment Table.	M
19.	LTIS_03_05_05	System saved the appointment in the Manage Appointment Table.	M
20.	LTIS_03_05_06	System must notify client about appointment date by email.	M
21.	LTIS_03_05_07	System must display a successful pop up.	M
22.	LTIS_03_06	Edit Appointment (Staff)	O
23.	LTIS_03_06_01	Staff must key in the ClientID to search for an appointment.	M
24.	LTIS_03_06_02	System will verify the ClientID.	M



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25.	LTIS_03_06_03	System will display appointment details below: a. Client name b. Age c. ClientID d. Date e. Time f. Type of lab test	M
26.	LTIS_03_06_04	Staff can edit those data to update it into the system.	O
27.	LTIS_03_06_05	System will save the update from staff.	M
28.	LTIS_03_06_06	System must notify client by email about edited appointment.	M
29.	LTIS_03_06_07	System must display a successful pop up.	M
30.	LTIS_03_07	Delete Appointment (Staff)	O
31.	LTIS_03_07_01	Staff must key in the ClientID to search for an appointment.	M
32.	LTIS_03_07_02	System will verify the ClientID.	M
33.	LTIS_03_07_03	System will display appointment details below: a. Client name b. Age c. UserID d. Date e. Time f. Type of lab test	M
34.	LTIS_03_07_04	Staff can delete the appointment information.	O



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35.	LTIS_03_07_05	System will delete the appointment from the system.	M
36.	LTIS_03_07_06	System must notify client about deleted appointment by email.	M
37.	LTIS_03_07_07	System must display a successful pop up.	M
38.	LTIS_03_08	Cancel Appointment (Client)	O
39.	LTIS_03_08_01	Client can cancel the appointment at Manage Appointment Table.	M
40.	LTIS_03_08_02	System displays a pop-out column and the client must state the reason for the appointment cancellation.	M
41.	LTIS_03_08_03	System must notify staff about appointment cancellation.	M
42.	LTIA_03_08_04	System must display a successful pop up.	M
	LTIS_04	Manage Client Information	
43.	LTIS_04_01	Staff can add, edit, and delete client information.	O
44.	LTIS_04_02	System display manage client table.	M
45.	LTIS_04_03	Add Client Information	O
46.	LTIS_04_03_01	Staff must key-in required information such as: a) Email b) Name c) ClientID d) Age e) Gender f) Birth Date g) Address	M



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47.	LTIS_04_03_02	System must verify and save clientID and all the client information.	M
48.	LTIS_04_03_03	System displays a successful popup.	M
49.	LTIS_04_04	Edit Client Information	O
50.	LTIS_04_04_1	Staff key-in clientID to search client information	M
51.	LTIS_04_04_2	System must verify and display client information by clientID that had been entered	M
52.	LTIS_04_04_3	Staff can edit client information such as: a) Email b) Name c) ClientID d) Address e) Age System must verify, update and save the client information.	M
53.	LTIS_04_04_4	System displays a successful popup.	M
54.	LTIS_04_05	Delete Client Information	O
55.	LTIS_04_05_01	Staff key-in clientID to search client information	M
56.	LTIS_04_05_02	System must verify and display client information by clientID that had been entered	M
57.	LTIS_04_05_03	Staff can delete client information and the system must verify, delete and save the action made.	M
58.	LTIS_04_05_04	System displays a successful popup.	M



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59.	LTIS_04_05_04	System displays a successful popup.	M
60.	LTIS_05	Manage Sample Information	
61.	LTIS_05_01	Staff can add, edit and delete sample information. (Sample ID)	O
62.	LTIS_05_02	System display sample table.	M
63.	LTIS_05_03	Add Sample Information	O
64.	LTIS_05_03_01	Staff key-in clientID and system will verify and display client information by clientID that had been entered.	M
65.	LTIS_05_03_02	Staff enter sampleID when the system displays a popup.	M
66.	LTIS_05_03_03	System must verify and save sample information.	M
67.	LTIS_05_03_04	System displays a successful popup.	M
68.	LTIS_05_04	Edit Sample Information	O
69.	LTIS_05_04_1	Staff key-in clientID and system will verify and display client information by clientID that had been entered.	M
70.	LTIS_05_04_2	Staff can edit sampleID when the system displays a popup.	
71.	LTIS_05_04_3	System must verify and save the sample information.	M
72.	LTIS_05_04_4	System displays a successful popup.	M
73.	LTIS_05_05	Delete Sample Information	O
74.	LTIS_05_05_01	Staff key-in clientID and system will verify and display client information by clientID that had been entered.	M
75.	LTIS_05_05_02	Staff can delete sampleID when the system displays a popup.	M
76.	LTIS_05_05_03	System must verify and save the sample information.	M
77.	LTIS_05_05_04	System displays a successful popup.	M



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78.	LTIS_05_05_02	Staff can delete sampleID when the system displays a popup.	M
79.	LTIS_05_05_03	System must verify and save the sample information.	M
80.	LTIS_05_05_04	System displays a successful popup.	M
	LTIS_06	Manage Lab Test	
81.	LTIS_06_01	The system will check account type, whether it is staff or client.	M
82.	LTIS_06_02	Staff can add, edit, and delete lab tests.	O
83.	LTIS_06_03	If account type is staff account, system will display the lab test table page.	M
84.	LTIS_06_04	The system must display the status of lab tests currently in progress.	M
85.	LTIS_06_05	Clients can check the results of their lab tests.	O
86.	LTIS_06_06	Add Lab Test	O
87.	LTIS_06_06_01	System must display a page and require staff to key in the information below to create a lab test: a) Laboratory location b) Type of lab test c) Sample ID which involved d) Date & time e) Staff in-charge	M
88.	LTIS_06_06_02	System must create a Lab ID when adding a lab test.	M



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89.	LTIS_06_06_03	System must save the lab test information.	M
90.	LTIS_06_06_04	System must display a successful pop up.	M
91.	LTIS_06_07	Edit Lab Test	O
92.	LTIS_06_07_01	Staff must key in Lab ID or other lab test information to search for a lab test.	M
93.	LTIS_06_07_02	System must verify Lab ID.	M
94.	LTIS_06_07_03	System must display the lab test detail to allow staff to edit the information below: a) Laboratory location b) Type of lab test c) Sample ID which involved d) Date & time e) Staff in-charge	M
95.	LTIS_06_07_04	System must save all edited information.	M
96.	LTIS_06_07_05	System must display a successful pop up.	M
97.	LTIS_06_08	Delete Lab Test	O
98.	LTIS_06_08_01	Staff must key in Lab ID or lab test information to search lab test.	M
99.	LTIS_06_08_02	System must verify Lab ID.	M
100.	LTIS_06_08_03	System must display the lab test detail to allow staff to delete the information below: a) Laboratory location b) Type of lab test c) Sample ID which involved d) Date & time e) Staff in-charge	M



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101.	LTIS_06_08_04	System must ask for confirmation from staff before deletion.	M
102.	LTIS_06_08_05	System must delete the lab test after the confirmation from staff.	M
103.	LTIS_06_08_06	System must display a successful pop up.	M
104.	LTIS_06_09	Check Lab Test Progress	O
105.	LTIS_06_09_01	Staff must key in Lab ID or Sample ID to search and check lab test progress.	M
106.	LTIS_06_09_02	System must display the progress (Preparing/ Processing/ Completed) for the sample or lab test.	M
107.	LTIS_06_10	Check Result (Client)	D
108.	LTIS_06_10_01	System must check whether the client paid for the lab test before displaying their result.	M
109.	LTIS_06_10_02	If the client did not pay the bill yet, the system must display “Please pay your bill to see your result”	M
110.	LTIS_06_10_03	If the client paid the lab test, the system must display their result which contains: a. Name b. IC No. c. Age d. Gender e. Address f. email g. lab test result (positive/negative)	M



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	LTIS_07	Manage Payment	
111	LTIS_07_01	System will auto generate a bill with Bill ID for each sample involved in lab test.	M
112.	LTIS_07_02	Clients must pay his/her lab test bill before viewing their results.	M
113.	LTIS_07_03	System must display 3 options for payment methods. a. Visa/card payment b. Cash payment c. Online payment	M
114.	LTIS_07_04	Visa/card payment	O
115.	LTIS_07_04_01	Client must search Bill ID to choose the bills he wants to pay.	M
116	LTIS_07_04_02	System must display card payment page for client to fill up his card number, CVV, and expire date.	M
117.	LTIS_07_04_03	System must get validation from the bank before approving the payment.	M
118.	LTIS_07_05_04	If a client fails to make payment with Visa/card payment, the client must proceed with their payment with another method.	M
119.	LTIS_07_05_05	If payment is valid, the system must display a successful payment pop up.	M
120.	LTIS_07_05	Cash payment	O
121.	LTIS_07_04_01	System must display the nearest branch address for cash payment.	M
122.	LTIS_07_04_02	Staff at the front desk must check and confirm the amount of cash is valid and accurate for their bill.	M



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123.	LTIS_07_05_03	If the client fails to make payment with Cash payment, the client must proceed with their payment with another method.	M
124.	LTIS_07_05_04	If clients payment is valid, a receipt will be print and give to clients.	M
125.	LTIS_07_06	Online payment	O
126.	LTIS_07_06_01	Client must search Bill ID to choose the bills he wants to pay.	M
127.	LTIS_07_06_02	System will display several third-party online payment method.	M
128.	LTIS_07_06_03	System must get validation from third-party organizations (such as TNG e-wallet) before approving the payment.	M
129.	LTIS_07_06_04	If the client fails to make payment with Online payment, the client must proceed with their payment with another method.	M
130.	LTIS_07_06_05	If the client paid their bill, the system must display a successful payment pop up.	M

B. NON-FUNCTIONAL REQUIREMENTS

No.	Requirement ID	Requirement Description	Priority
	LTIS_08	Operational	
131.	LTIS_08_01	Be accessible to online user	M



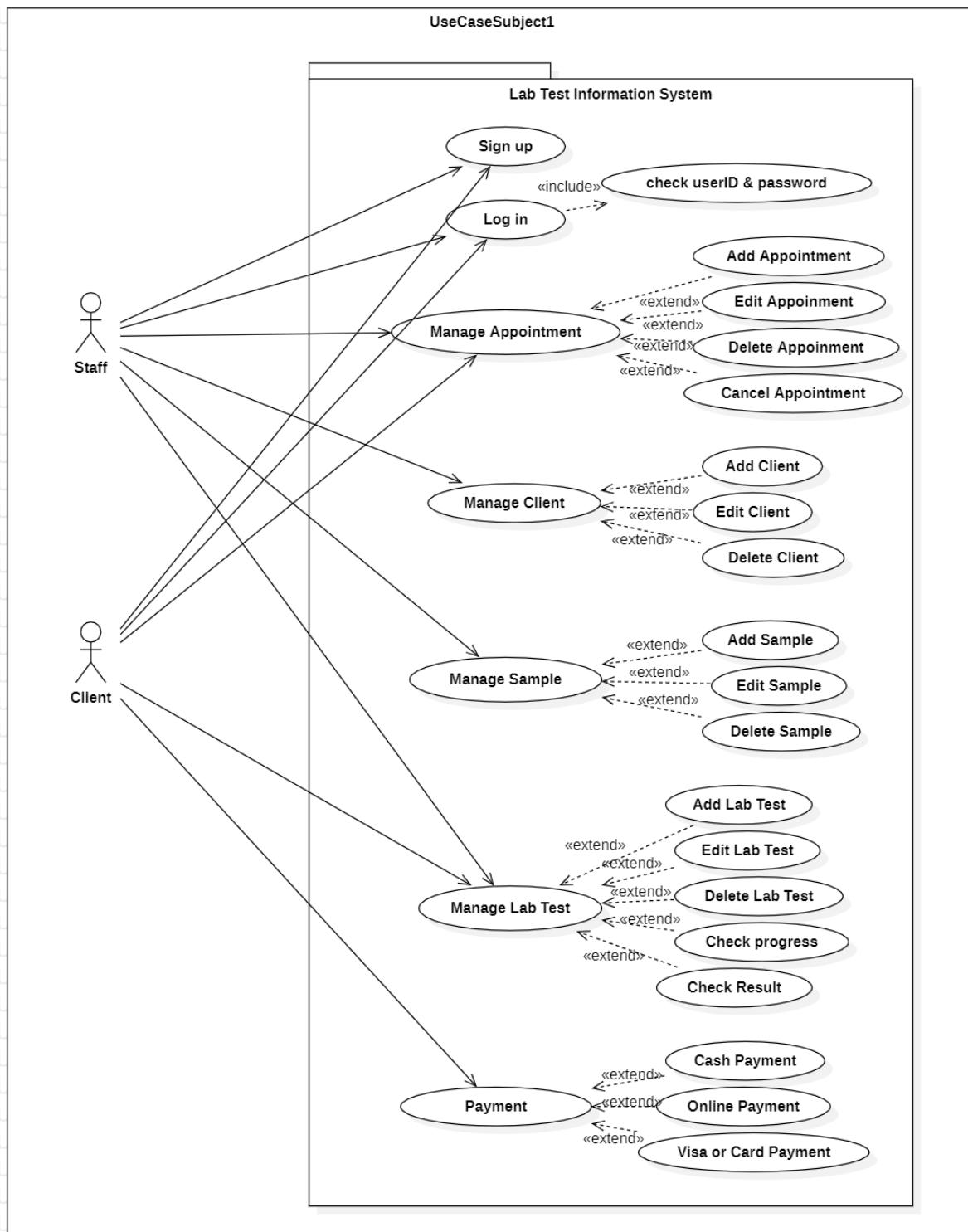
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132.	LTIS_08_02	Receipt must be display after receive clients' payment	M
	LTIS_09	Performance	
133.	LTIS_09_01	Fast response time system	M
134.	LTIS_09_02	Friendly and smooth user interface	M
	LTIS_010	Security	
135.	LTIS_010_01	Keep clients' info and data from leaking.	M
136.	LTIS_010_02	Prevent hacking for stealing data. Prioritize client privacy.	M
137.	LTIS_010_03	Password changes must be verified by the account owner to ensure account security.	M
	LTIS_011	Usability	
138.	LTIS_011_01	The system should be easy to use and navigate for both technical and non-technical users.	M
	LTIS_012	Maintainability	
139.	LTIS_012_01	The system should be easy to maintain and update over time.	M
	LTIS_013	Data integrity	
140.	LTIS_013_01	The system should ensure that data is accurately entered, stored, and retrieved, with no corruption or loss.	M



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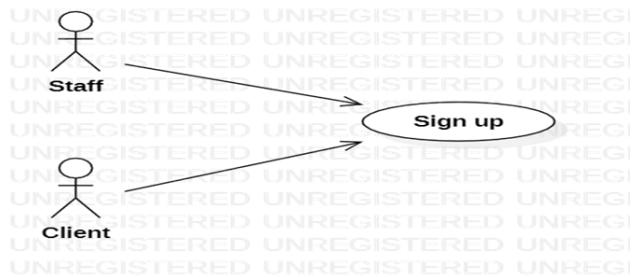
3.0 USECASE DIAGRAM



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4.0 USECASE SPECIFICATION

4.1 USECASE: Sign Up (LTIS_01)



4.1.1 BRIEF DESCRIPTION

This use case is initiated by users either staff or clients by registering a new account by registering staff or Client ID and password.

4.1.2 PRE-CONDITIONS

The users must provide their personal information during new account registration.

4.1.3 CHARACTERISTIC OF ACTIVATION

Event Driven (on staff and client's demand)

4.1.4 FLOW OF EVENTS

4.1.4.1 Basic Flow (LTIS_01_01, LTIS_01_02, LTIS_01_03, LTIS_01_04 & LTIS_01_05)

- This use case begins when a new user accesses the system.
- The system will display the main page.
- The users (staff/client) select the "Click here to Register" button.
- The system will display registration column. (LTIS_01_02)
- The user has to provide their valid personal information's which are email, name, clientID or staffID, address, age, gender, password and confirm password and submit the personal information filled by clicking the "Submit" button.



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- The system will verify staff and client personal information. (**E1: The personal information entered is invalid, ID already register or the Password and Confirm Password are unequal**).
- The system will send a verification email to the newly registered user.
- The user must verify the registration by clicking the “Active” button at the respective email registered. (**LTIS_01_04**)
- The system will check the registered user account type which are staff or client and save it.

4.1.4.2 Alternative Flow

Not applicable

4.1.4.3 Exceptional Flow

E1: The personal information entered is invalid, ID already register or the Password and Confirm Password are unequal

- The users need to recheck their personal information, ID, Password and Confirm Password whether it is correct or not.

4.1.5 POST-CONDITIONS

The system will display the main page and details page to the users.

4.1.6 RULE(S)

- The user must enter the valid personal information in the registration column.
- The account needs to be registered using an email and a user/staff ID that has not been registered yet.

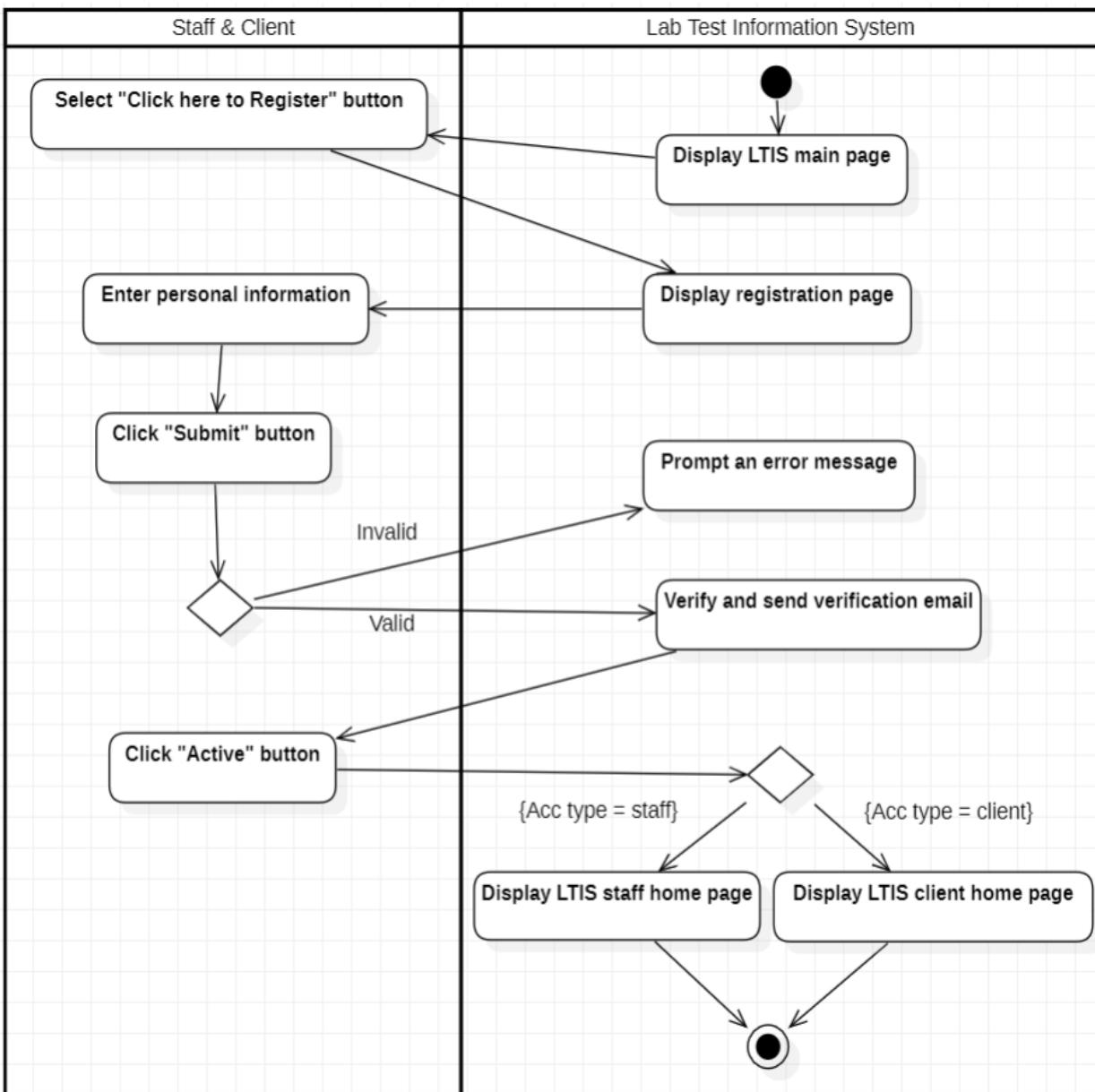
4.1.7 CONSTRAINT(S)

Not applicable



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4.1.8 ACTIVITY DIAGRAM



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4.1.9 SKETCH

LAB TEST INFORMATION SYSTEM



USERID/STAFFID:

PASSWORD:

[Forget Password](#)

Don't have an account? [Click here to Register](#)

LTIS Main Page

LAB TEST INFORMATION SYSTEM

REGISTER 

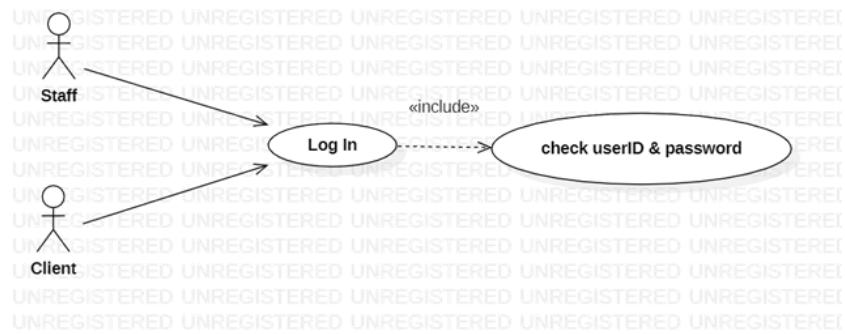
Email	<input type="text"/>
Name	<input type="text"/>
Staff/ClientID	<input type="text"/>
Address	<input type="text"/>
Age	<input type="text"/>
Gender	<input type="text"/>
Password	<input type="text"/>
Confirm Password	<input type="text"/>

Register Page



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4.2 USECASE: Log In (LTIS_02)



4.2.1 BRIEF DESCRIPTION

This use case is by staff or clients. Users can log in by entering the staff or client ID and password that has been registered correctly.

4.2.2 PRE-CONDITIONS

User ID and password of the staff or clients entered must be registered.

4.2.3 CHARACTERISTIC OF ACTIVATION

Event Driven (on staff and client's demand)

4.2.4 FLOW OF EVENTS

4.2.4.1 Basic Flow (LTIS_02_01, LTIS_02_02 & LTIS_02_04)

- This use case begins by the user enters the correct userID and password and click the “Login” button.
- User can press Forget Password (**A1: Forget Password**) button when they forget their password and system will send
- The system will verify the userID and password.
- If the userID and password is valid, system must check the logged in user account type which are staff or client to go to their homepage.
- If the userID or password is invalid, an error (**E1: ID or Password is wrong**) will occur.



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4.2.4.2 Alternative Flow

Forgot Password [A1] (LTIS_02_03)

- If users have forgotten their password, they should click the "Forgot Password" link located under the "Login" button in LTIS main page.
- The system will show the email column and the user needs to enter the email that has been used to register the account and click "Reset Password" button.
- A new temporary password will be sent via email.
- Users must use the temporary password to log in to their accounts.

4.2.4.3 Exceptional Flow

E1: ID or Password is wrong

- The system will issue an error message which is "ID or Password Invalid". Users will go back to LTIS main page to try again to fill in the correct user ID and password.

4.2.5 POST-CONDITIONS

- The system will display the user's home page. Staff and clients have different homepage.

4.2.6 RULE(S)

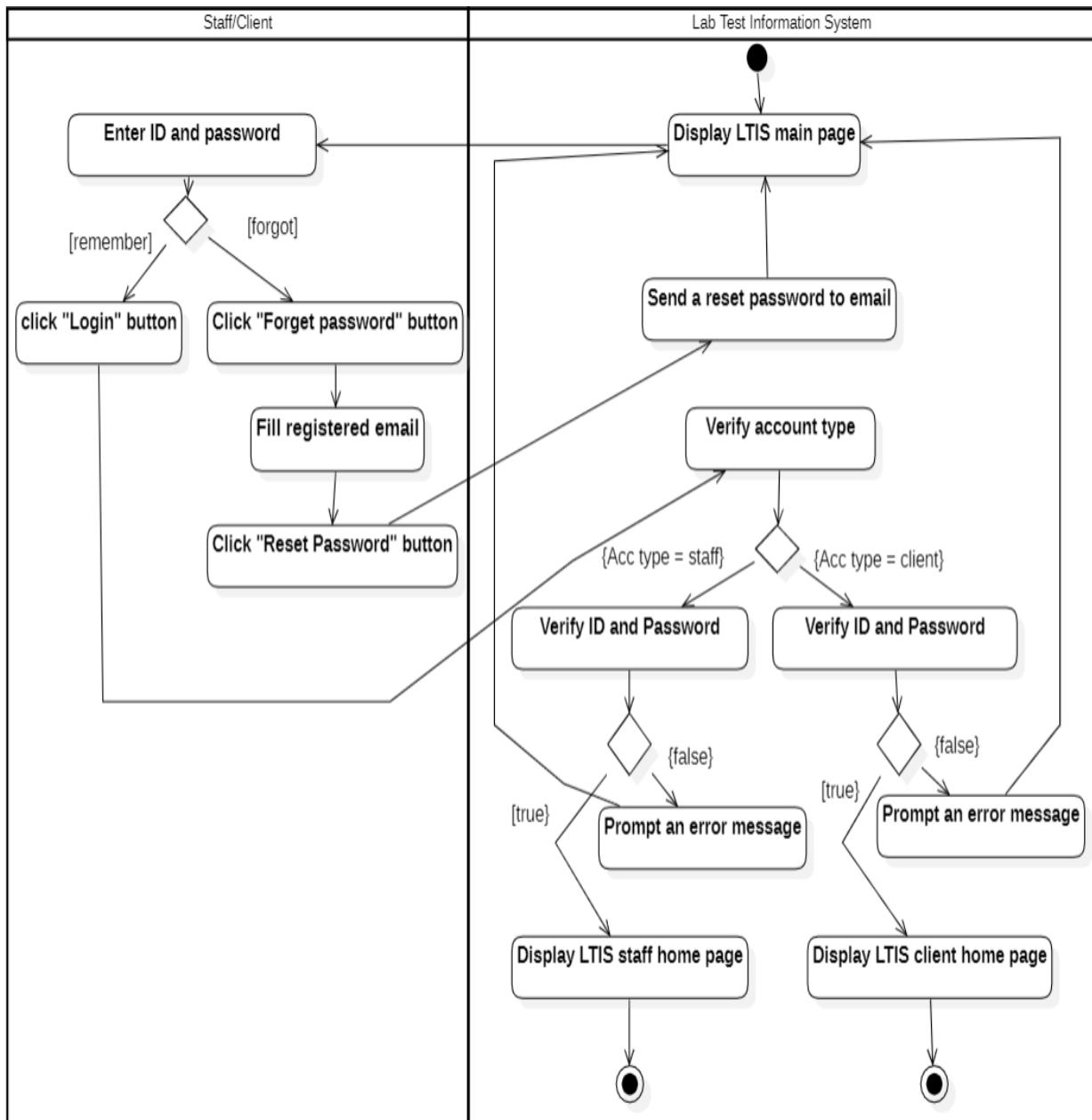
- The user ID and password entered must be correct.
- The email entered to reset the password must be the same as the email used to register the user's new account.

4.2.7 CONSTRAINT(S)

Not applicable

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4.2.8 ACTIVITY DIAGRAM



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4.2.9 SKETCH

LAB TEST INFORMATION SYSTEM



USERID/STAFFID:

PASSWORD:

[Forget Password](#)

Don't have an account? [Click here to Register](#)

LTIS Main Page

LAB TEST INFORMATION SYSTEM



FORGET PASSWORD

Please Enter Your Email:

Forget Password Page



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LAB TEST INFORMATION SYSTEM



STAFF

Manage Client Information

Manage Appointment

Manage Sample Information

Manage Lab Test

Staff Home Page

LAB TEST INFORMATION SYSTEM



CLIENT

Check Appointment

Lab Test Result

Payment

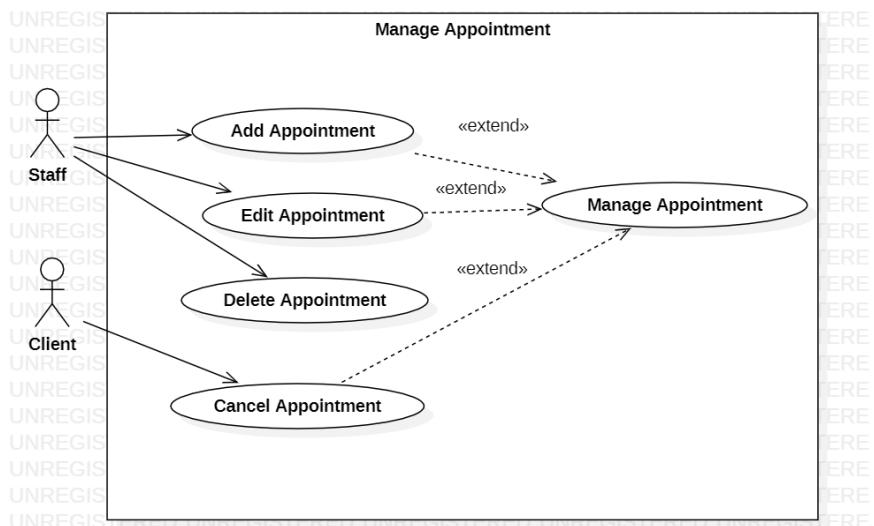
Client Home Page



DOCUMENT IDENTIFICATION

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4.3 USECASE: Manage Appointment (LTIS_03)



4.3.1 BRIEF DESCRIPTION

This use case is initiated by staff and clients to manage appointments. This use case will enable staff to add, edit and delete client appointments. The use case also will enable clients to check and cancel their appointment.

4.3.2 PRE-CONDITIONS

The staff and client must be logged into this Lab Test Management System.

4.3.3 CHARACTERISTIC OF ACTIVATION

Event Driven (on staff and client's demand)

4.3.4 FLOW OF EVENTS

4.3.4.1 Basic Flow (LTIS_03_01, LTIS_03_02, LTIS_03_03 & LTIS_03_04)

- The system will check account type, whether it is staff or client.
- If it is a staff account type, the system will display the "Manage Appointment" table.
- If it is a client account type, the system will display the "Client's Appointment" table.



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- Staff can add (**A1: Add Client Appointment**), edit (**A2: Edit Client Appointment**), and delete (**A3: delete Client Appointment**) client's appointments.
- Clients can cancel (**A4: Cancel Appointment**) their appointment.
- Staff can search for Client data by key-in Client ID in the search column on top of the Manage Appointment Table.

4.3.4.2 Alternative Flow

Add Appointment (Staff) [A1] (LTIS_03_05)

- The system will display the calendar on the "Add Appointment" menu
- Staff can create a new appointment for the clients by clicking a date from the calendar.
- The system will display a page for staff to key in appointment information.
- Staff will key in the appointment information below:
 - a. Client name
 - b. Age
 - c. ClientID
 - d. Date
 - e. Time
 - f. Type of lab test
- After filling in all the information, staff can click the save button to save it into the system.
- The system will save the appointment information in the Manage Appointment Table.
- The system will pop up a message showing "Addition of Appointment Successful" and will notify client about appointment date by email.



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Edit Appointment (Staff) [A2] (LTIS_03_06)

- Staff can edit appointment information by pressing the Edit Appointment icon.
- Staff will need to key in the ClientID to search an appointment.
- System will verify the ClientID.
- The system will display a page for staff to key in appointment information.
- The system will display the details of the appointment information below:
 - a. Client name
 - b. Age
 - c. ClientID
 - d. Date
 - e. Time
 - f. Type of lab test
- Staff may edit the appointment information.
- The system will save the appointment information in the Manage Appointment Table.
- System must notify client by email about edited appointment.
- The system will pop up a message showing "Edit of Appointment Successful"

Delete Appointment (Staff) [A3] (LTIS_03_07)

- Staff will need to key in the ClientID to search an appointment.
- System will verify the ClientID.
- The system will display the details of the appointment information below:
 - a. Client name
 - b. Age
 - c. ClientID
 - d. Date
 - e. Time
 - f. Type of lab test
- Staff may delete the appointment information by clicking the delete button.



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- The system will delete the appointment information in the Manage Appointment Table.
- System must notify client about deleted appointment by email.
- The system will pop up a message showing "Delegation of Appointment Successful"

Cancel Appointment (Client) [A4] (LTIS_03_08)

- The client can cancel their appointments by pressing the "cancel" button on the "View Appointment" menu.
- System will pop up a page to ask the reason of cancelation.
- The client needs to fill in the reason for cancellation.
- System must display a successful pop up.
- System must notify staff about appointment cancellation.

4.3.4.3 Exceptional Flow

E1: Invalid ID

- The system will display the message "Invalid ID" because the clientID does not exist or the current clientID already exists.

E2: Process Invalid

- The system will display the message "Process Invalid" if the page failed to do the process because appointment information already exists or invalid.

4.3.5 POST-CONDITIONS

- The system will update the latest date availability when there is addition or deletion of appointment dates from staff and clients.

4.3.6 RULE(S)

- Staff cannot add any appointment to a date that has already been booked, unless there is an appointment that is canceled on that date.

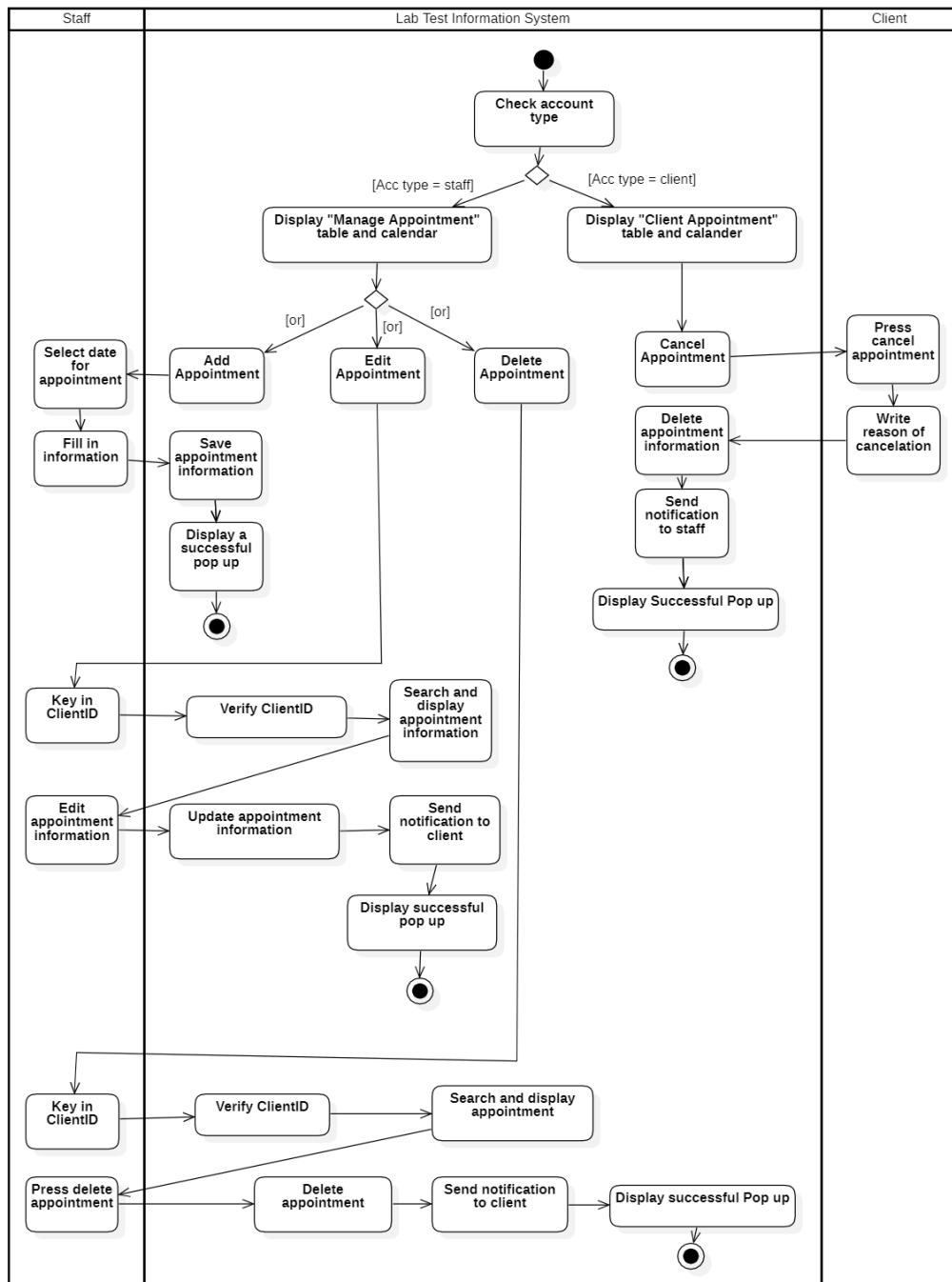


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4.3.7 CONSTRAINT(S)

- The staff can only add, view and delete one client appointment at one time.

4.3.8 ACTIVITY DIAGRAM



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4.3.9 SKETCH

Lab Test Information System					
Appointment Timetable			Search <input type="text"/>		
No	Name	ID	Date	Time	Action
1	TEH JIE FENG	*****	1/1	09:00	
2	ASFA	*****	2/1	20:00	
3	SYAMIL	*****	3/1	00:00	

Back

Manage Appointment

Lab Test Information System						
Calendar						Search <input type="text"/>
JANUARY					2023	
Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Back

Add Appointment Calendar

Lab Test Information System					
Client Appointment Table			Search <input type="text"/>		
No	Name	ID	Date	Time	Action
1	TEH JIE FENG	*****	1/1	09:00	
2	TEH JIE FENG	*****	10/1	04:00	

Back

Client Appointment Table

Lab Test Information System			
Appointment Cancellation			Search <input type="text"/>
Reason <hr/> <hr/> <hr/> <hr/>			
<input type="button" value="Confirm"/>			Back

Cancel Appointment



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4.4 USE CASE: Manage Client Information (LTIS_04)



4.4.1 BRIEF DESCRIPTION

This use case is initiated by staff to manage client information. This use case will enable staff to view, add, edit and delete client information.

4.4.2 PRE-CONDITIONS

The staff must be logged into this Lab Test Management System.

4.4.3 CHARACTERISTIC OF ACTIVATION

Event Driven (on staff's demand)

4.4.4 FLOW OF EVENTS

4.4.4.1 Basic Flow (LTIS_04_01 & LTIS_04_02)

- This use case begins when staff click the “Manage Client Information” icon in the staff interface.
- The system will display manage client table page that contains client’s information which are email, name, clientID, age, gender, address on the screen.
- The staff will choose either they want to add[A1], edit[A2] or delete[A3] client information.
- The staff can click the “Add Client” icon to add the information or details about the new client. (**LTIS_04_03**)
- The staff can click the “Edit” icon to update or change the new information or details about the current client. (**LTIS_04_04**)



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- The staff also can click the “Delete” icon to remove the current client information that is not needed anymore. (**LTIS_04_05**)
- The system shall verify and check the clientID of the client.
(E1: Invalid ID)
- The system must verify and check client personal information.
(E2: Process Invalid)

4.4.4.2 Alternative Flow

Add Client Information[A1] (LTIS_04_03)

- The staff must click the “Add Client” icon and the system will display the add client page.
- Staff must add client information or personal details that are displayed by the system which are email, name, clientID, age, gender, address and password. The system will display a page for staff to key in appointment information.
- Staff must click the “verify and save” button and the system must verify and save the updated information, then the system will display a successful popup.

Edit Client Information [A2] (LTIS_04_04)

- The staff must key-in clientID to search client information that wants to be edited.
- The system must verify and display client information by clientID that has been entered on the client table page.
- The staff must click the “Edit” icon to allow them to update the information about the client which are email, name, clientID, age and address when the system displays the client information page.
- Staff must click the “verify and save” button and the system must verify and save the updated information, then the system will display a successful popup.



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Delete Client Information [A3] (LTIS_04_05)

- The staff must key-in clientID to search client information that wants to be deleted.
- The system must verify and displays client information by clientID that has been entered on the client table page.
- The staff must click the “Delete” icon to allow them to remove the current client information that is not needed anymore.
- Staff must click the “verify and save” button and the system must verify and save the updated information, then the system will display a successful popup.

4.4.4.3 Exceptional Flow

E1: Invalid ID

- The system will display the message “Invalid ID” because the clientID does not exist or the current clientID already exists.

E2: Process Invalid

- The system will display the message “Process Invalid” if the page failed to do the process because client personal information already exists or invalid.

4.4.5 POST-CONDITIONS

- The client information managed by the staff.
- The staff can add new client information to the system.
- The information about the client information can be updated or edited by staff.
- The staff can delete the client information in the system.

4.4.6 RULE(S)

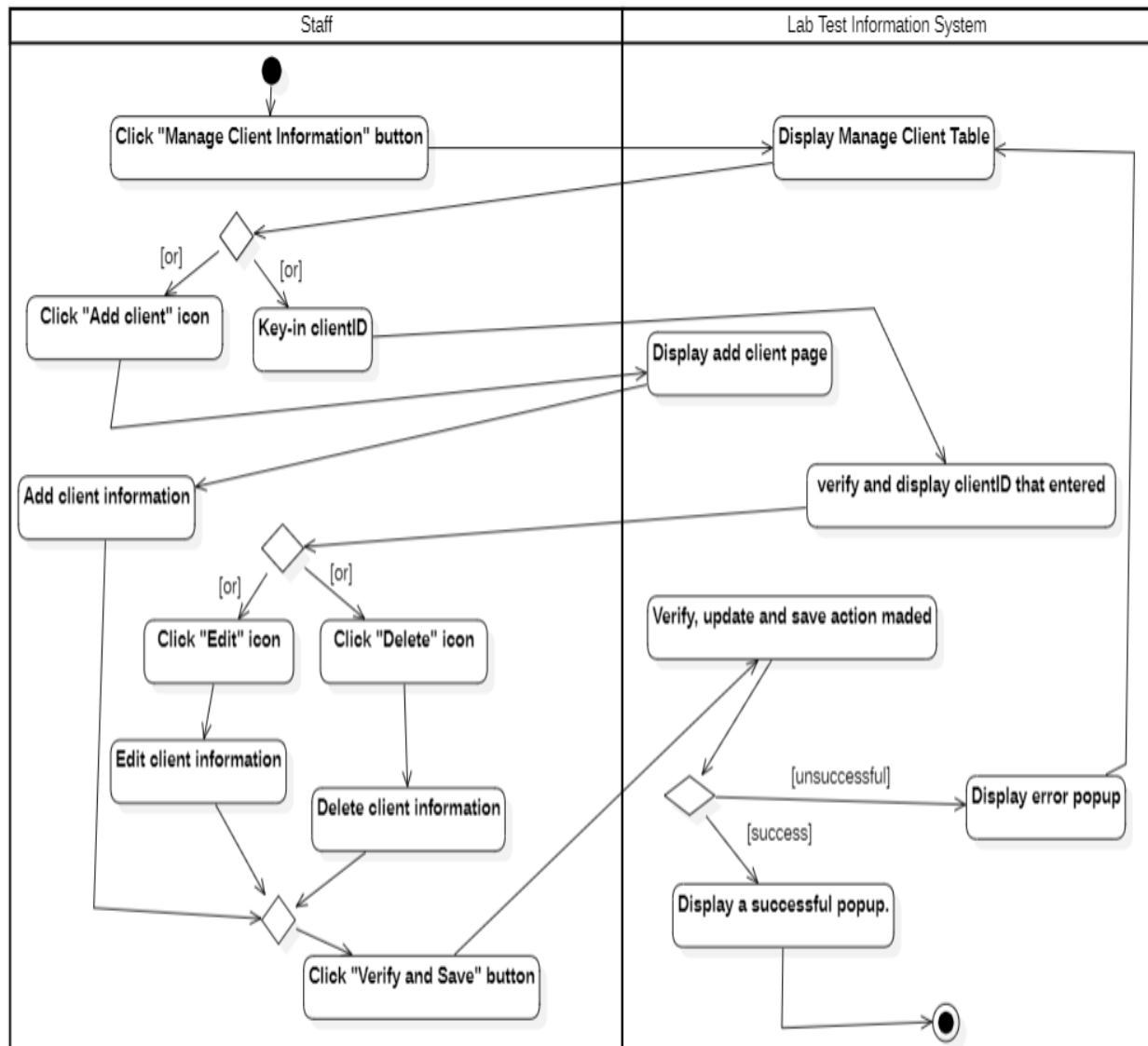
- Each email address and clientID only can be registered once.
- All client information must be correct.
- The staff must key-in their staffID and password to login the system.

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4.4.7 CONSTRAINT(S)

- The staff can only add, view and delete one client information at one time.

4.4.8 ACTIVITY DIAGRAM



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4.4.9 SKETCH

Lab Test Information System						
MANAGE CLIENT				Search ID <input type="text"/> <input type="button" value="Q"/>		
CLIENT ID	NAME	EMAIL	AGE	GENDER	ADDRESS	ACTION
*****	THE JIE FENG	*****@gmail.com	20	Male	-----	<input type="button" value="Edit"/> <input type="button" value="DELETE"/>
*****	ASFA	*****@gmail.com	22	Male	-----	<input type="button" value="Edit"/> <input type="button" value="DELETE"/>
*****	SYAMIL	*****@gmail.com	22	Male	-----	<input type="button" value="Edit"/> <input type="button" value="DELETE"/>

Manage Client Table

Lab Test Information System						
MANAGE CLIENT - ADD CLIENT						
Email	<input type="text"/>					
Name	<input type="text"/>					
ClientID	<input type="text"/>					
Address	<input type="text"/>					
Age	<input type="text"/>					
Gender	<input type="text"/>					
Password	<input type="text"/>					
Confirm Password	<input type="text"/>					
<input type="button" value="Verify and Save"/>						

Add Client Information

Lab Test Information System						
MANAGE CLIENT - EDIT CLIENT						
Email	<input type="text"/>					
Name	<input type="text"/>					
ClientID	<input type="text"/>					
Address	<input type="text"/>					
Age	<input type="text"/>					
<input type="button" value="Verify and Save"/>						

Edit Client Information



SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
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4.5 USE CASE: Manage Sample Information (LTIS_05)



4.5.1 BRIEF DESCRIPTION

This use case is initiated by staff to manage sample information. This use case will enable staff to view, add, edit and delete sample information.

4.5.2 PRE-CONDITIONS

The staff must be logged into this Lab Test Management System.

4.5.3 CHARACTERISTIC OF ACTIVATION

Event Driven (on staff's demand)

4.5.4 FLOW OF EVENTS

4.5.4.1 Basic Flow (LTIS_05_01 & LTIS_05_02)

- This use case begins when staff click the “Manage Sample Information” icon in the staff interface.
- The system will display manage sample table page on the screen.
- The staff will choose either they want to add[A1], edit[A2] or delete[A3] sample information.
- The staff can click the “Add Client” icon to add the sample information. **(LTIS_05_03)**
- The staff can click the “Edit” icon to update or change the sample information **(LTIS_05_04)**
- The staff also can click the “Delete” icon to remove the current sample information that is not needed anymore. **(LTIS_05_05)**



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- The system shall verify and check the ClientID. (**E1: Invalid ID**)
- The system must verify and check sample information (sampleID).
(E2: Process Invalid)

4.5.4.2 Alternative Flow

Add Sample Information[A1] (LTIS_05_03)

- The staff must key-in clientID to add sample information to clientID that they want to find.
- The system must verify and displays client information by clientID that has been entered on the sample table page.
- The staff must click the “Add” icon and the system will display a "Please Enter SampleID" popup to instruct the staff to enter a sampleID.
- Staff must fill in a sampleID and click the “verify and save” button. Staff are not allowed to alter any personal details.
- The system must verify and save the sample information added and the system will display a successful popup.

Edit Sample Information [A2] (LTIS_05_04)

- The staff must key-in clientID to edit sample information to clientID that they want to find.
- The system must verify and displays client information by clientID that has been entered on the sample table page.
- The staff must click the “Edit” icon to allow them to update the sample information which is sampleID and the system will display an "Edit SampleID" popup to instruct the staff to edit a sample ID.
- Staff must click the “verify and save” button and the system must verify and save the updated information, then the system will display a successful popup.



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Delete Sample Information [A3] (LTIS_05_05)

- The staff must key-in clientID to delete sample information to clientID that they want to find.
- The system must verify and displays client information by clientID that has been entered on the sample table page.
- The staff must click the “Delete” icon to allow them to remove the current sample information that is not needed anymore and the system will display a “sampleID deleted” popup.
- Staff must click the “verify and save” button and the system must verify and save the action made, then the system will display a successful popup.

4.5.4.3 Exceptional Flow

E1: Invalid ID

- The system will display the message “Invalid ID” because the clientID does not exist or the current clientID already exists.

E2: Process Invalid

- The system will display the message “Process Invalid” if the page failed to do the process because sampleID does not exist or already exists or invalid.

4.5.5 POST-CONDITIONS

- The sample information managed by the staff.
- The staff can add new sample information to the system.
- The information about the current sample information can be updated or edited by staff.
- The staff can delete the sample information in the system.

4.5.6 RULE(S)

- Each sampleID and only can be registered once.
- The staff must key-in their staffID and password to login the system.

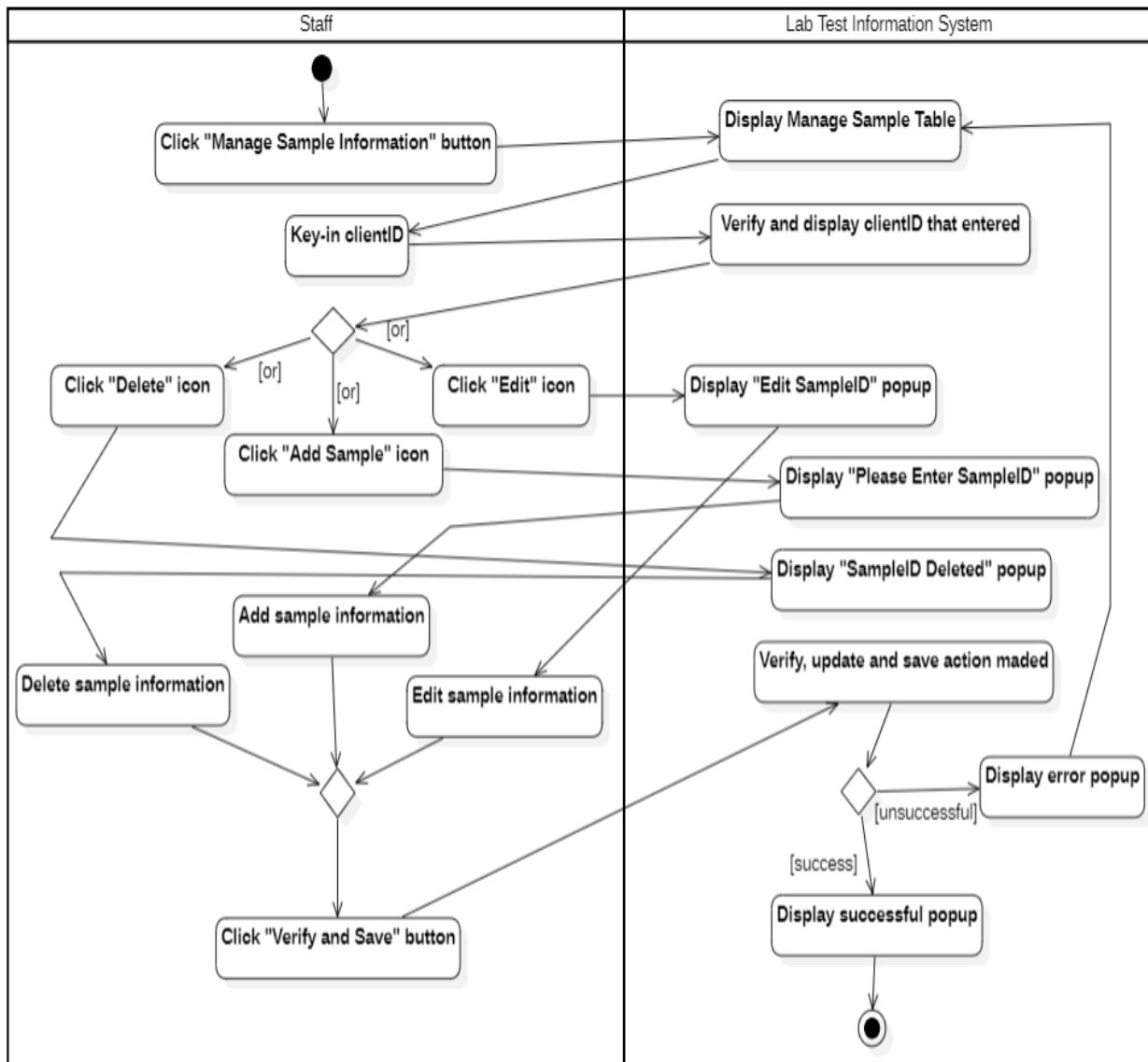


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4.5.7 CONSTRAINT(S)

- The staff can only add, view and delete one sample information at one time.

4.5.8 ACTIVITY DIAGRAM



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4.5.9 SKETCH

Lab Test Information System								
MANAGE SAMPLE					Search ID <input type="text"/>			
CLIENT ID	SAMPLE ID			NAME	EMAIL	AGE	GENDER	ADDRESS
*****	****	<input type="button" value="Add"/>	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	THE JIE FENG	*****@gmail.com	20	Male
*****	****	<input type="button" value="Add"/>	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	ASFA	*****@gmail.com	22	Male
*****	-	<input type="button" value="Add"/>	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	SYAMIL	*****@gmail.com	22	Male

Manage Sample Table

Please Enter SampleID
<input type="text"/>
<input type="button" value="Verify and Save"/>

Add Sample Popup

Edit SampleID
<input type="text"/>
<input type="button" value="Verify and Save"/>

Edit Sample Popup

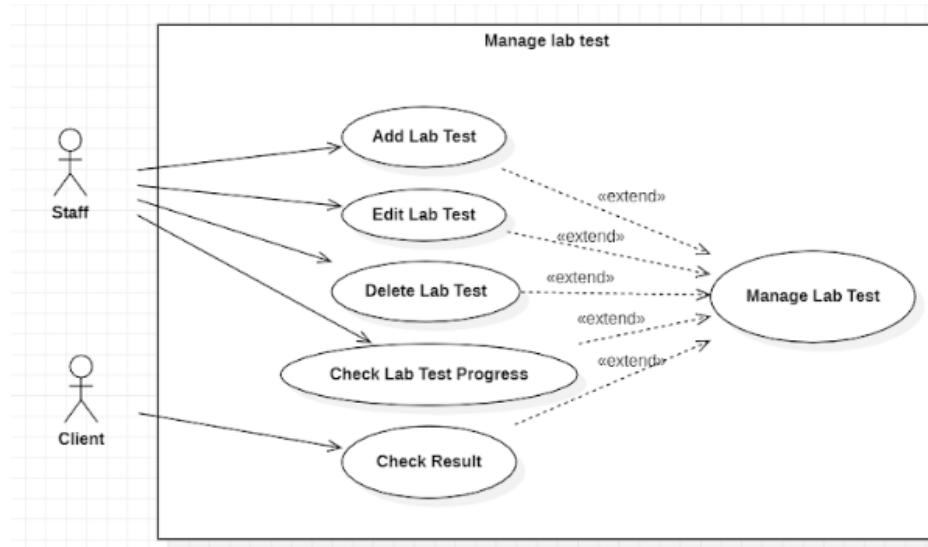
SampleID Deleted
<input type="button" value="Verify and Save"/>

Delete Sample Popup



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4.6 USECASE: Manage Lab Test (LTIS_06)



4.6.1 BRIEF DESCRIPTION

This use case is initiated by staff and clients to manage lab tests and view results (client). This use case will enable staff to add, edit, delete and check lab test progress. while enabling clients to check results.

4.6.2 PRE-CONDITIONS

The staff and client must be logged in to Lab Test Information System to be able to use the manage lab test function.

4.6.3 CHARACTERISTIC OF ACTIVATION

Event Driven (on staff and client's demand)

4.6.4 FLOW OF EVENTS

4.6.4.1 Basic Flow (LTIS_06_01, LTIS_06_02, LTIS_06_03, LTIS_06_04 & LTIS_06_05)

- The system will check account type, whether it is staff or client.
- Staff can add (**A-1: Add lab test**), edit (**A-2: Edit lab test**), delete (**A-3: Delete lab test**) and check lab test progress (**A-4: Check lab test progress**).



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SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
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- If account type is staff account, system will display the lab test table page.
- Lab test table page will show all of the lab tests which are currently in progress.
- Client can check result (**A-5: Check result**).
- The changes made by staff will be saved in the system.

4.6.4.2 Alternative Flow

Add Lab Test [A1] (LTIS_06_06)

- Staff can access to add lab test function by pressing add lab test icon.
- System will show a page where staff needs to fill in the new lab test information.
- Staff required to fill out all the information below to create a new lab test:
 - a. Laboratory location
 - b. Type of lab test
 - c. Sample ID involved
 - d. Date & time
 - e. Staff in-charge
- After filling all the information, staff must press save button in order to save the lab test information.
- System must create and show a Lab ID when adding a new lab test.
- System creates and saves the lab test into the system.
- System will display a successful popup.

Edit Lab Test [A2] (LTIS_06_07)

- Staff can edit lab tests in the system by pressing the edit lab test icon.
- Staff need to search the Lab ID to edit it.
- System will verify the Lab ID.



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- System will show a page with the information of the lab test below:
 - a. Laboratory location
 - b. Type of lab test
 - c. Sample ID involved
 - d. Date & time
 - e. Staff in-charge
- Staff needs to press the edit button to edit the lab test.
- After editing, staff must press the save button to save the update.
- System will update and save the lab test information.
- System will display a successful popup.

Delete Lab Test [A3] (LTIS_06_08)

- Staff can delete lab tests in the system by pressing the delete lab test icon.
- Staff need to search the Lab ID to delete it.
- System will verify the Lab ID.
- System will show the detail of the lab test below:
 - a. Laboratory location
 - b. Type of lab test
 - c. Sample ID involved
 - d. Date & time
 - e. Staff in-charge
- Staff needs to press the delete button to delete the lab test.
- Staff must confirm their deletion before the system deletes the lab test.
- System will delete the lab test after confirmation from the staff.
- System will display a successful popup.

Check Lab Test Progress [A4] (LTIS_06_09)

- Staff can check the progress of lab tests in the system by pressing the check lab test icon.
- Staff need to key-in to search for a lab test to view lab tests progress.
- System will display the progress of lab tests, either preparing, processing or completed.



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Check Result [A5] (LTIS_06_10)

- Client can check their lab test result in the system.
- The system will verify that the customer paid for the lab test (E1: Please pay your bill to check your result).
- If clients paid for their lab test, the system will display lab test results for clients.
- Lab test result page will show the information below:
 - a. Name
 - b. IC No.
 - c. Age
 - d. Gender
 - e. Address
 - f. email
 - g. lab test result (positive/negative)

4.6.4.3 Exceptional Flow

E1: Invalid ID

- The system will display the message “Invalid ID” because the Lab Test ID does not exist or the current Lab Test ID already exist

E2: Process Invalid

- The system will display the message “Process Invalid” if the page failed to do the process because Lab Test already exists or invalid.

E3: Please pay your bill to check your result

- Pop up “Please pay your bill to check your result” to tell client to pay their bill.

4.6.5 POST-CONDITIONS

Not applicable

4.6.6 RULE(S)

Not applicable



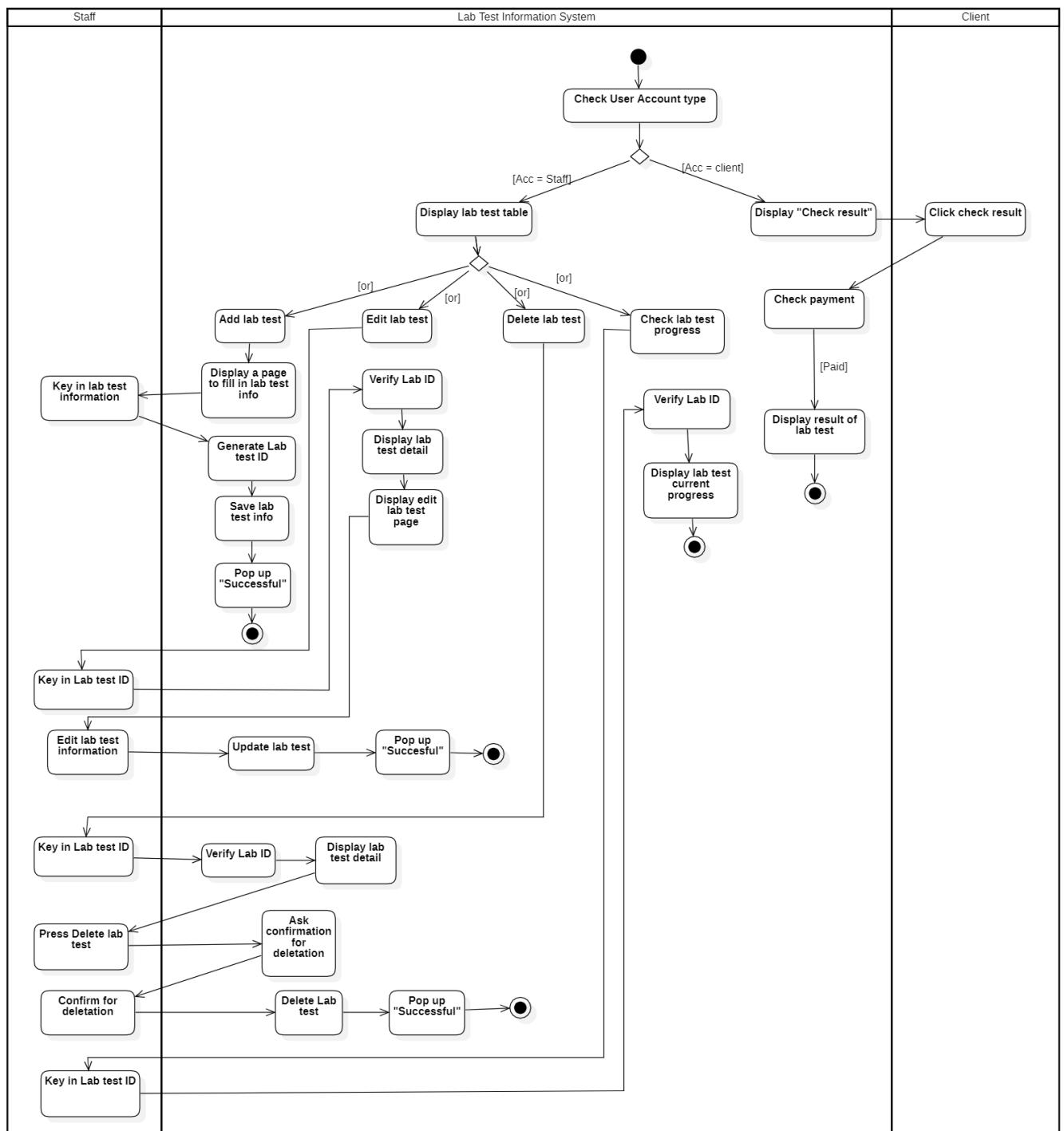
College of Arts and Sciences

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4.6.7 CONSTRAINT(S)

Not applicable

4.6.8 ACTIVITY DIAGRAM



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4.6.9 SKETCH

Lab Test Information System					
Manage Lab Test			Search		
No	Lab	Lab ID	Test	Progress	Action
1	Lab 1	*****	Blood	Check	
2	Lab 2	*****	Covid	Check	
3	Lab 3	*****	Urine	Check	

[Back](#)

Manage Lab Test Table

Lab Test Information System					
Lab Test Result			Search		
No	Name	Sample ID	Test	Date	Result
1	Tan Ah Kao	*****	Blood	1/1/2023	Check
2	Tan Ah Kao	*****	Covid	1/1/2023	Check
3	Tan Ah Kao	*****	Urine	1/1/2023	Check

[Back](#)

Client Lab Test Result

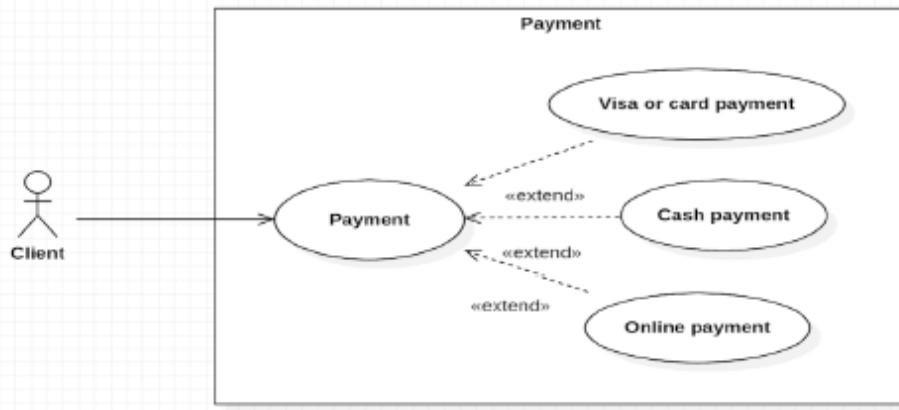
Lab Test Information System																									
Check Result			Search																						
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Information</th> </tr> </thead> <tbody> <tr> <td>Name:</td> <td>TAN AH KAO</td> </tr> <tr> <td>IC NO:</td> <td>*****-**-***</td> </tr> <tr> <td>Age:</td> <td>25</td> </tr> <tr> <td>Gender:</td> <td>M</td> </tr> <tr> <td>Address:</td> <td>1234 Jalan Ah Kau 12010 KL</td> </tr> <tr> <td>Email:</td> <td>ahkaotan11@gmail.com</td> </tr> <tr> <td colspan="2">Result</td> </tr> <tr> <td>HIV:</td> <td>Positive</td> </tr> <tr> <td>COVID:</td> <td>Positive</td> </tr> </tbody> </table>						Information		Name:	TAN AH KAO	IC NO:	*****-**-***	Age:	25	Gender:	M	Address:	1234 Jalan Ah Kau 12010 KL	Email:	ahkaotan11@gmail.com	Result		HIV:	Positive	COVID:	Positive
Information																									
Name:	TAN AH KAO																								
IC NO:	*****-**-***																								
Age:	25																								
Gender:	M																								
Address:	1234 Jalan Ah Kau 12010 KL																								
Email:	ahkaotan11@gmail.com																								
Result																									
HIV:	Positive																								
COVID:	Positive																								
Print Back																									

Check Result Table



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4.7 USE CASE: Payment (LTIS_07)



4.7.1 BRIEF DESCRIPTION

This use case is initiated by clients. Clients use this use case to pay off their bills on lab tests service.

4.7.2 PRE-CONDITIONS

- The client must be logged in to Lab Test Information System to be able to use the manage lab test function.
- Client must at least consume one of the lab test services.

4.7.3 CHARACTERISTIC OF ACTIVATION

Event Driven (on client's demand)

4.7.4 FLOW OF EVENTS

4.7.4.1 Basic Flow (LTIS_07_01 - LTIS_07_02)

- System will auto generate a bill with Bill ID for each sample involved in lab test.
- Client can pay for their lab test by pressing the payment icon in the menu.
- The system will display the Payment page with 3 options below:
 - Visa/card payment
 - Cash payment
 - Online payment



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- The customer needs to choose their payment method, either Visa/card payment (**A-1: Visa/card payment**), cash payment (**A-2: cash payment**) or online payment (**A-3: online payment**).
- The system will verify the payment (**E1- payment failed**) and will display the message that the payment was successfully.
- After payment is complete, customers can check their lab test results.

4.7.4.2 Alternative Flow

Visa/Card Payment [A1] (LTIS_07_03)

- Client can make Visa/card payment by pressing Visa/card payment button.
- System must popup a page for client to fill in their card detail below:
 - a. Card number
 - b. CVV
 - c. Expiration date
- System must get validation from the bank before approving the payment.
- If a client fails to make payment with Visa/card payment (**E1- payment failed**).
- If payment validated, pop up successful message.

Cash Payment [A2] (LTIS_07_04)

- System will popup an address of the nearest branch for cash payment.
- Client must attend the branch to cash payment.
- Front desk staff must check and confirm the amount of cash is valid and accurate for the client bills.
- If the client fails to make payment with a Cash payment (**E1- payment failed**).
- If payment validated, print receipt.



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Online Payment [A3] (LTIS_07_05)

- Client can make online payment by pressing the online payment button.
- System will show some options for online payment such as TNG e-wallet, Kipple pay, and Boost
- System will give access to third-party payment applications to proceed with payment.
- System must get validation from third-party organizations (such as TNG e-wallet) before approving the payment.
- If the client fails to make payment with Online payment (**E1- payment failed**).
- If payment validated, pop up successful message.

4.5.4.3 Exceptional Flow

E1: Payment Failed

- Client must proceed with their payment with another method or wait a moment if wanted used same method.

4.7.5 POST-CONDITIONS

Not applicable

4.7.6 RULE(S)

Not applicable

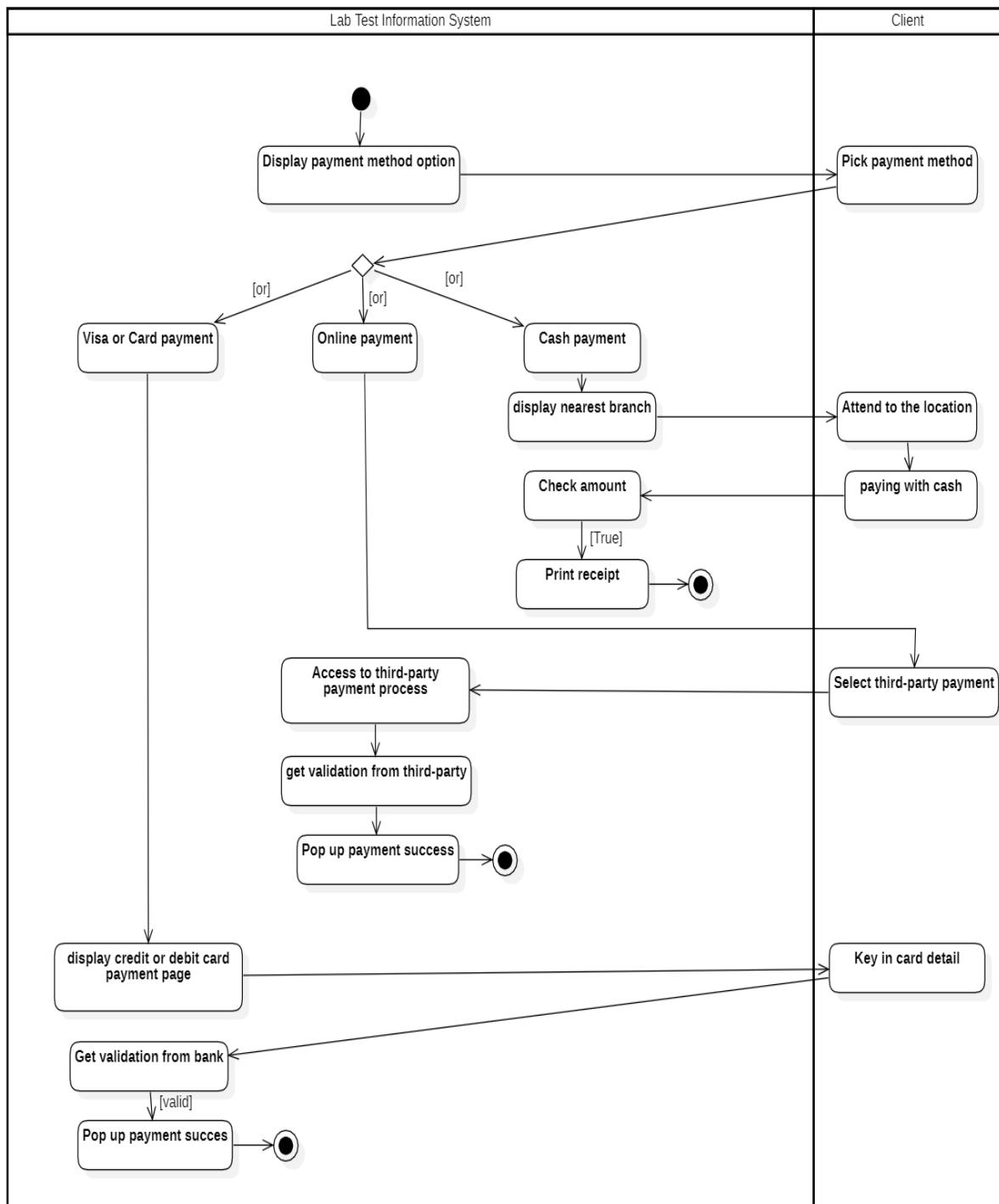
4.7.7 CONSTRAINT(S)

Not applicable



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4.7.8 ACTIVITY DIAGRAM



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4.7.9 SKETCH

Lab Test Information System															
Payment		Search													
<table border="1"><thead><tr><th>Payment Method</th><th colspan="2">Option</th></tr></thead><tbody><tr><td>Visa/Card payment:</td><td>Visa Credit Card </td><td>Select</td></tr><tr><td>Cash payment:</td><td>Cash</td><td>Select</td></tr><tr><td>Online payment:</td><td>TNG E-Wallet </td><td>Select</td></tr></tbody></table>				Payment Method	Option		Visa/Card payment:	Visa Credit Card	Select	Cash payment:	Cash	Select	Online payment:	TNG E-Wallet	Select
Payment Method	Option														
Visa/Card payment:	Visa Credit Card	Select													
Cash payment:	Cash	Select													
Online payment:	TNG E-Wallet	Select													

Payment Page



DOCUMENT IDENTIFICATION

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PBL 2:

5.0 SEQUENCE DIAGRAM & COLLABORATION DIAGRAM

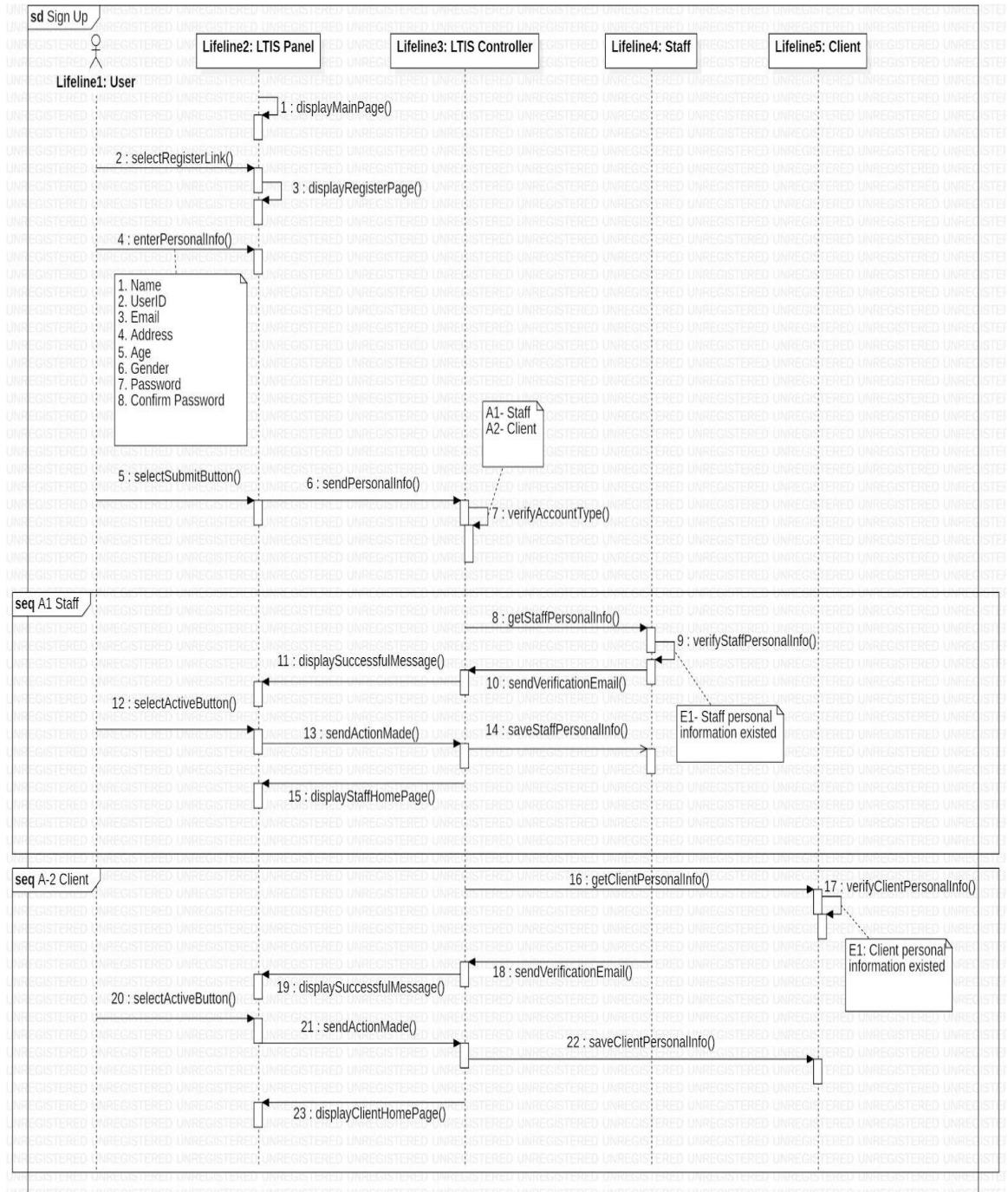


Figure 5.0: Sequence Diagram for Sign Up Usecase



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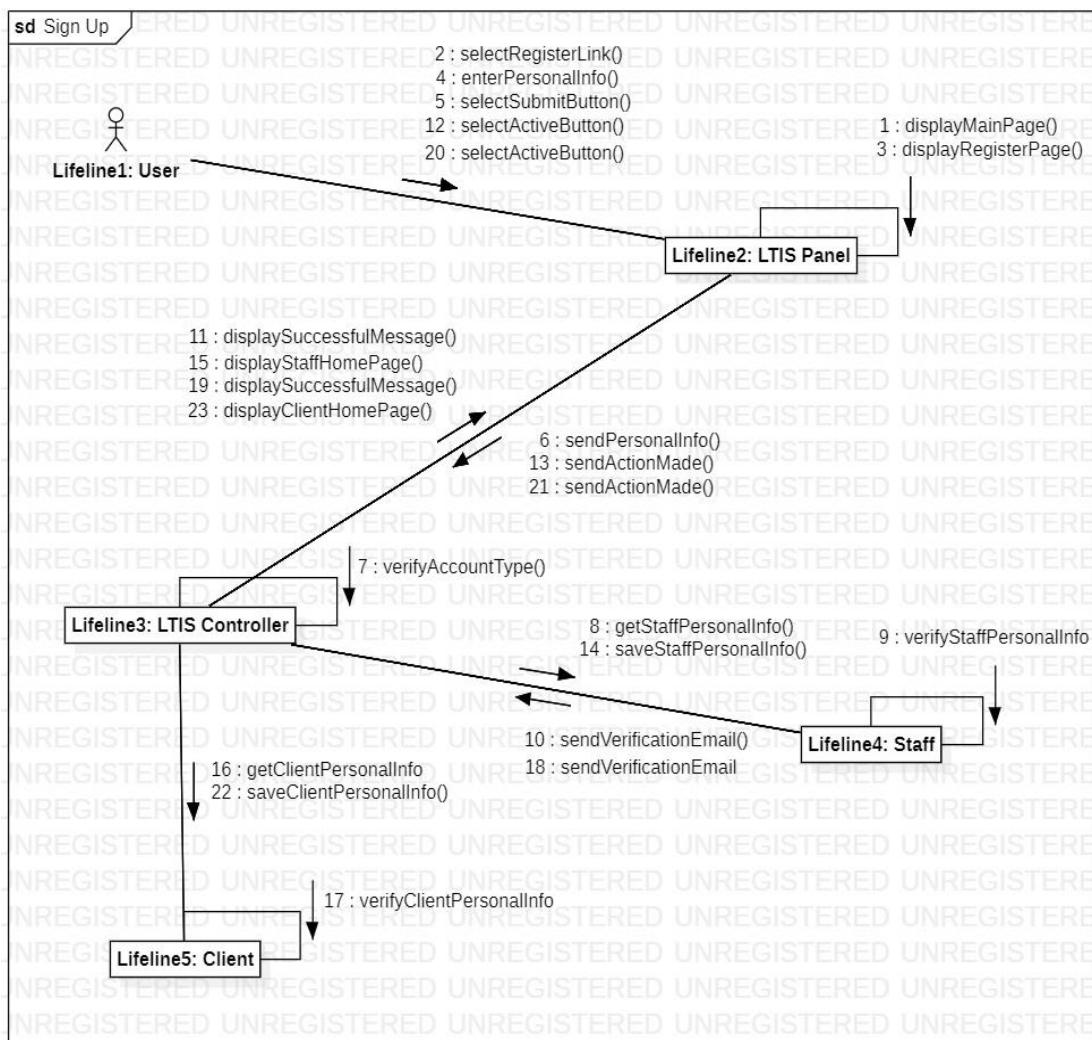


Figure 5.1: Collaboration Diagram for Sign Up Usecase



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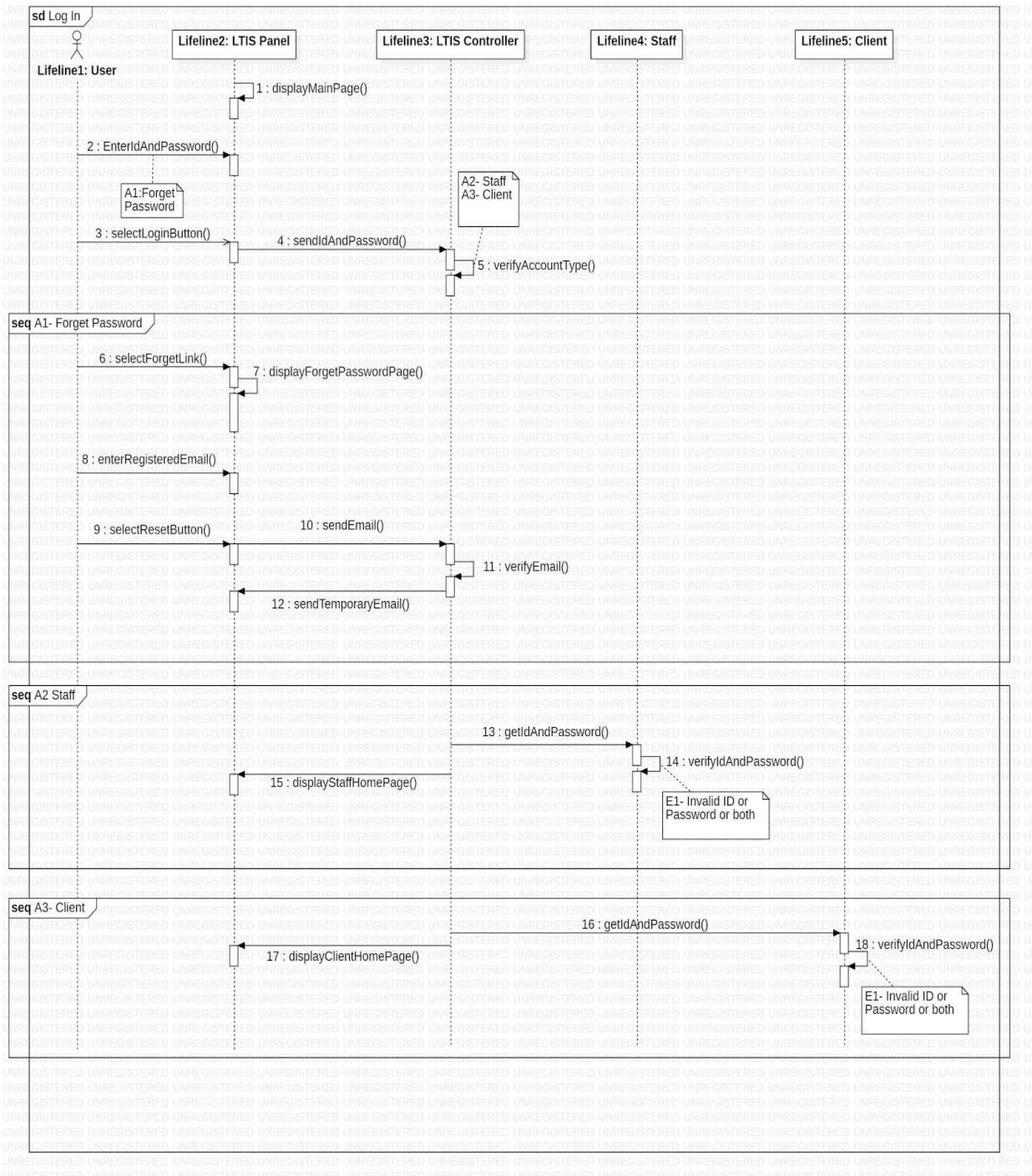


Figure 5.2: Sequence Diagram for Log In Usecase



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SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	75 / 151

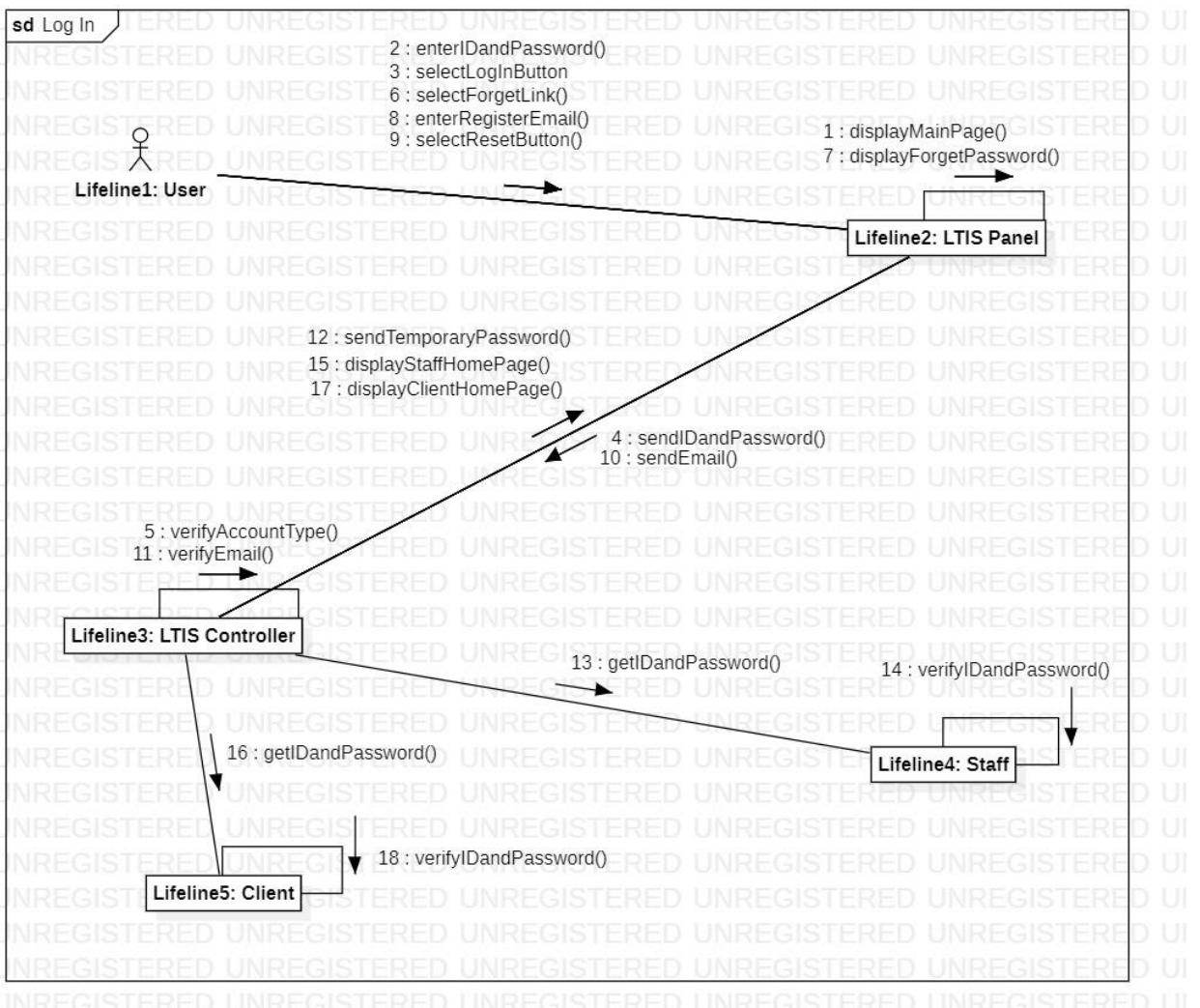
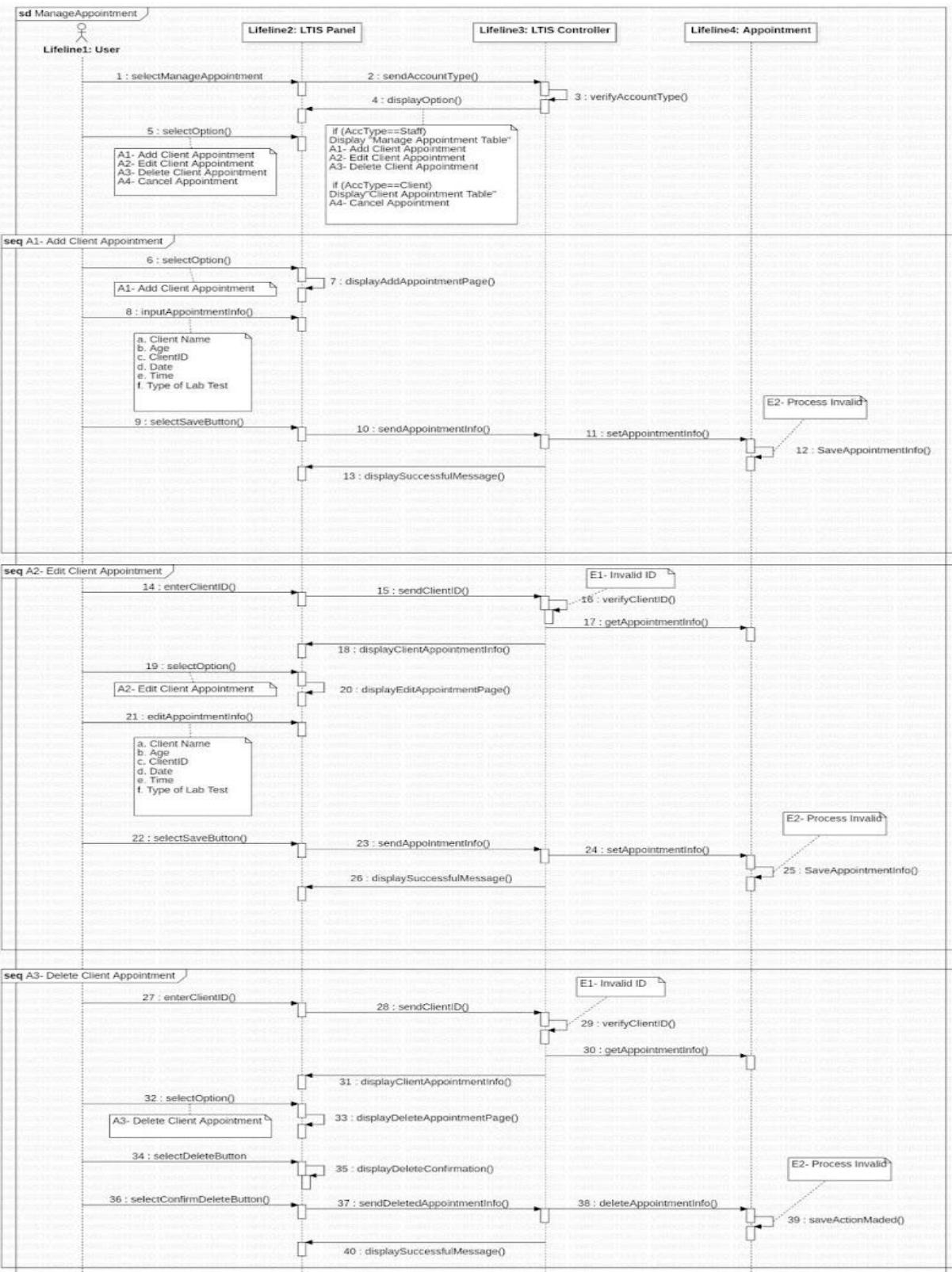


Figure 5.3: Collaboration Diagram for Log In Usecase



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SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
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SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
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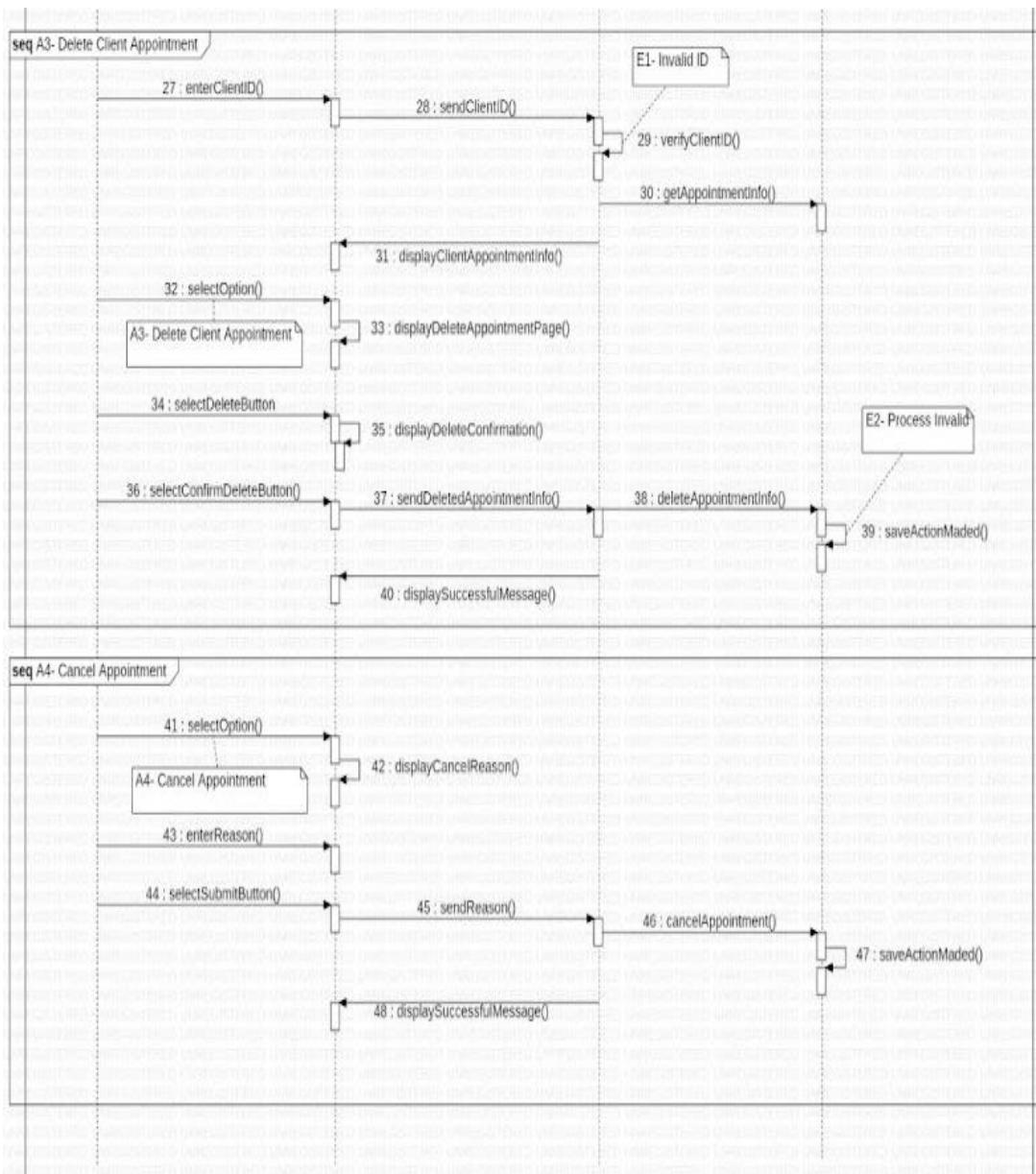


Figure 5.4: Sequence Diagram for Manage Appointment Usecase



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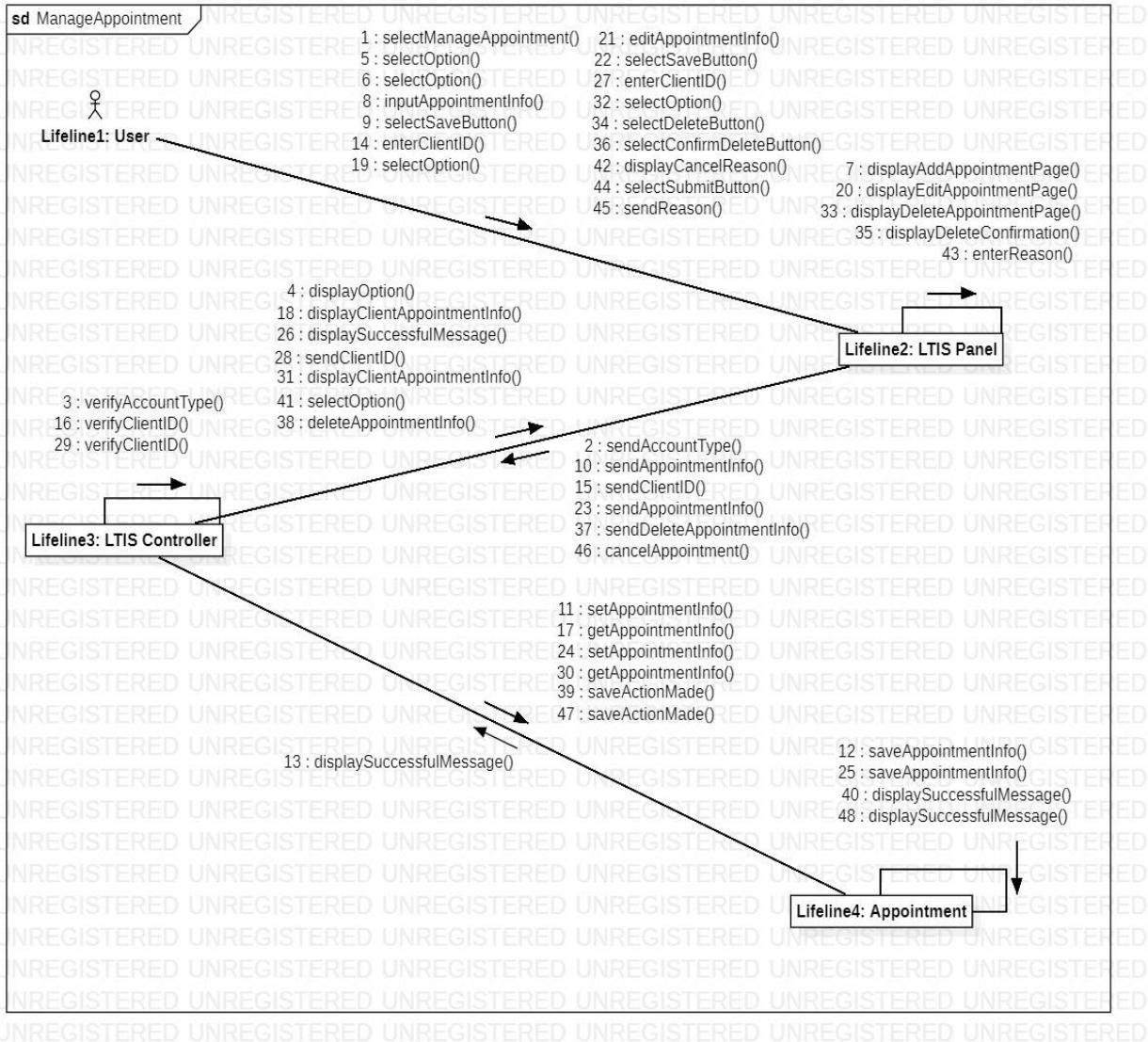


Figure 5.5: Collaboration Diagram for Manage Appointment Usecase



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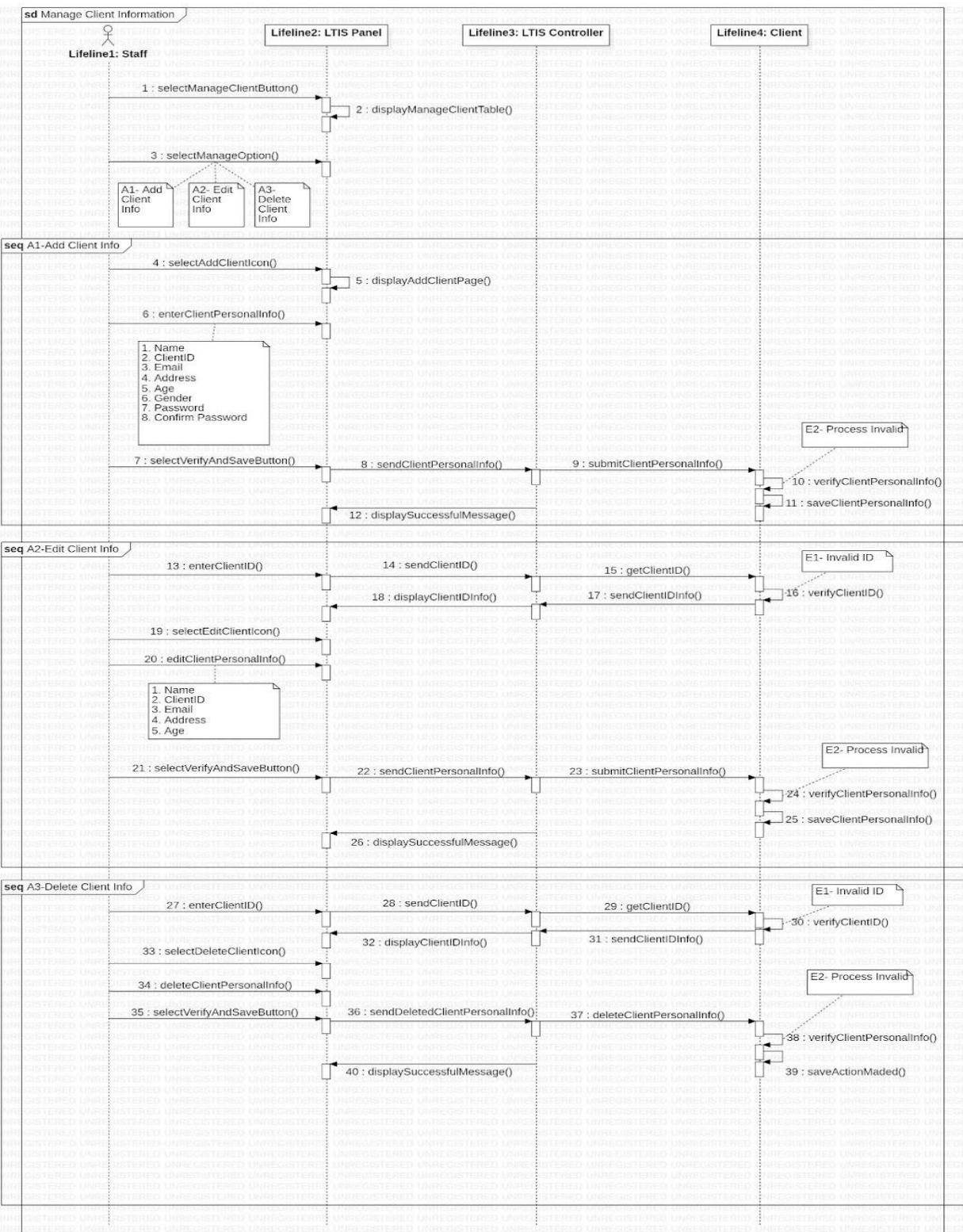


Figure 5.6: Sequence Diagram for Manage Client Information Usecase



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SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE	
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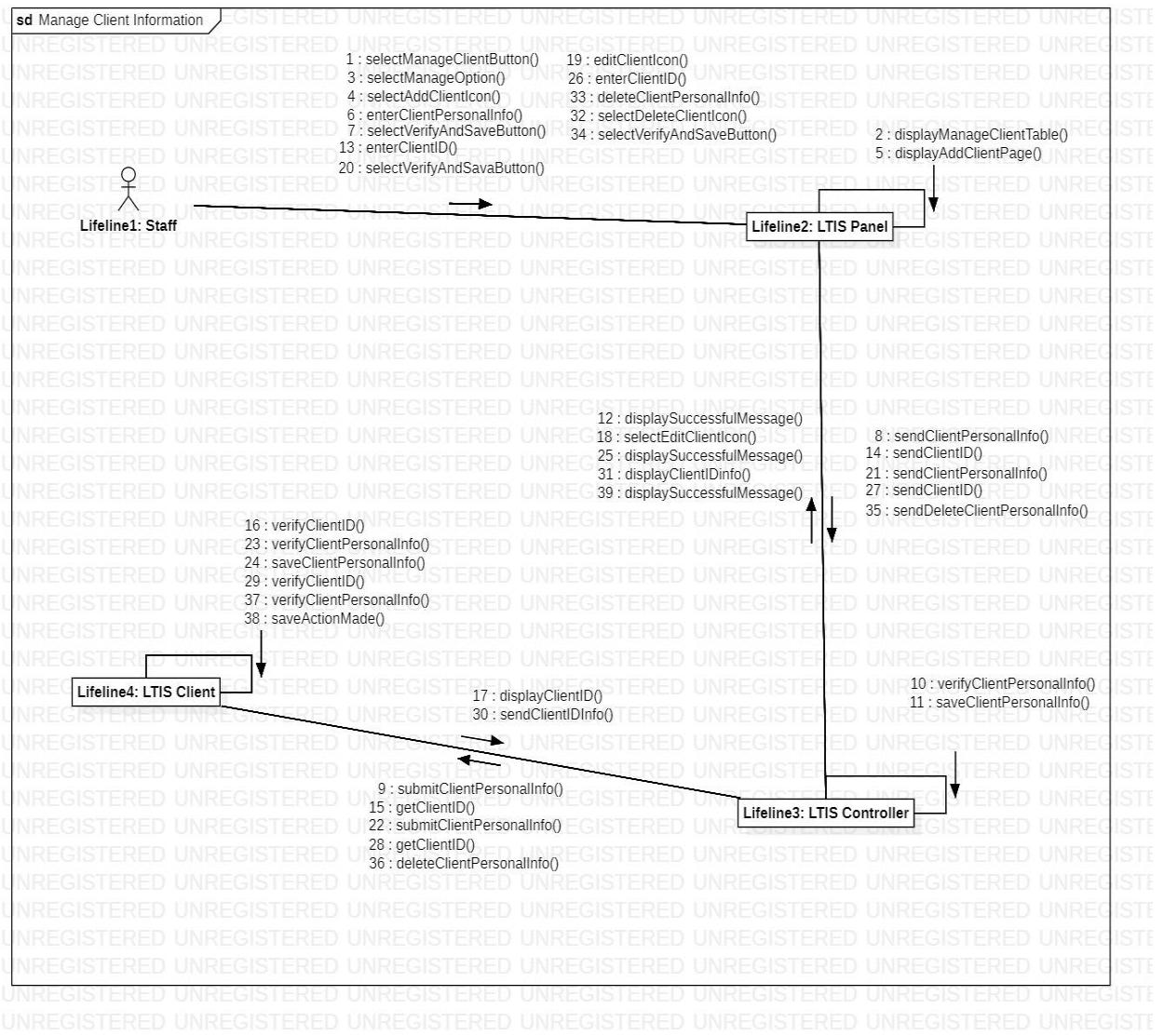


Figure 5.7: Collaboration Diagram for Manage Client Information Usecase



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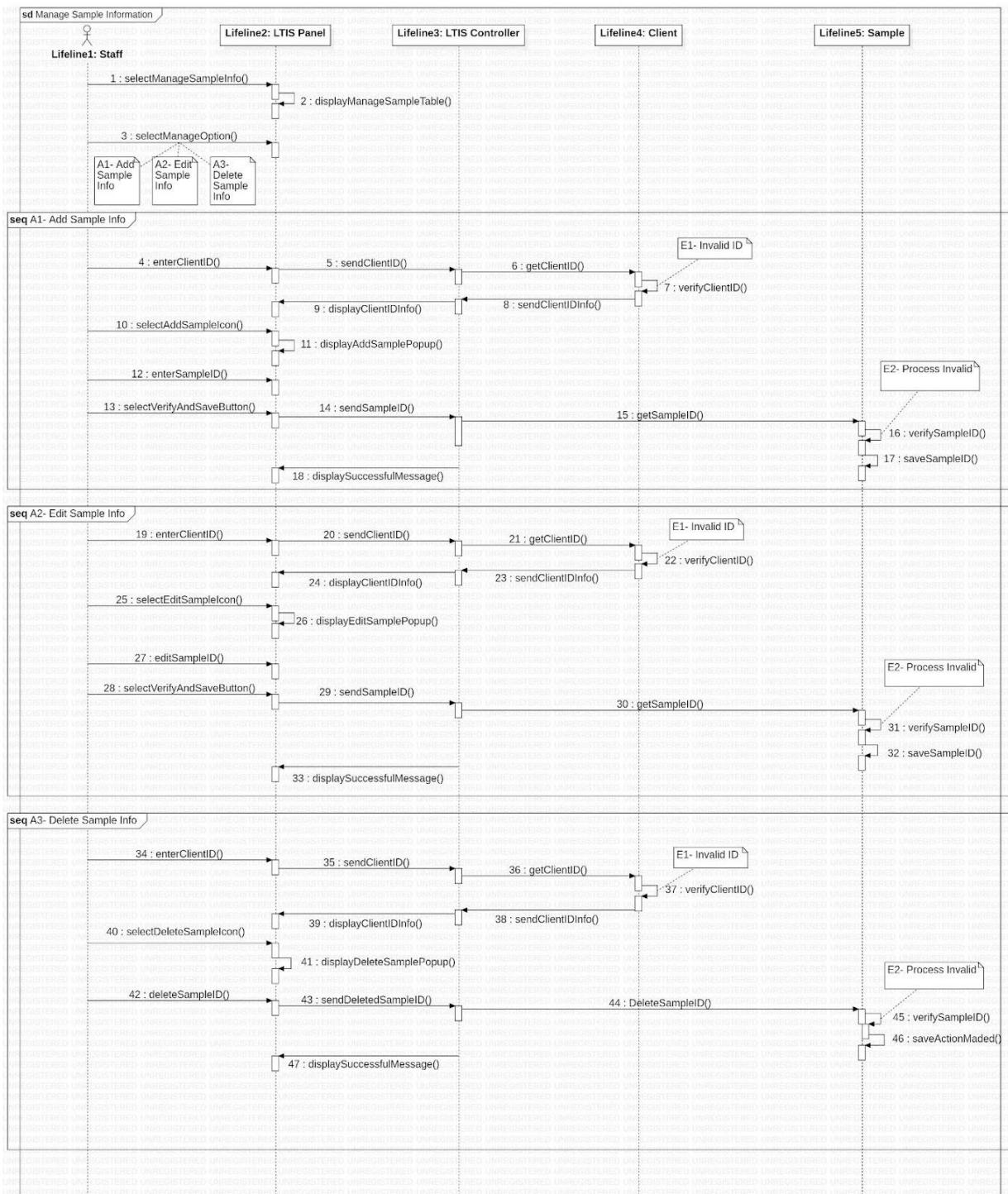


Figure 5.8: Sequence Diagram for Manage Sample Information Usecase



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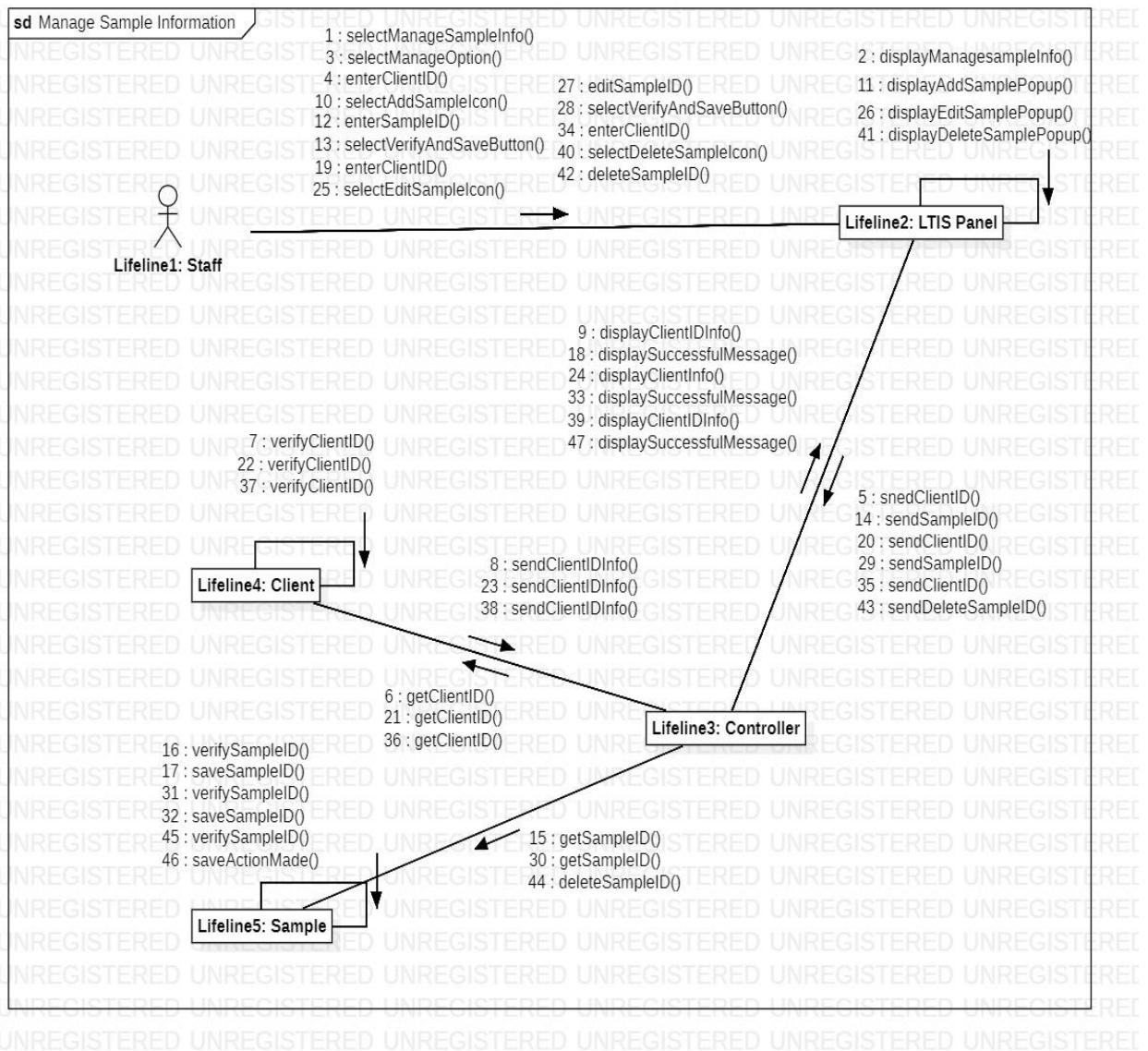
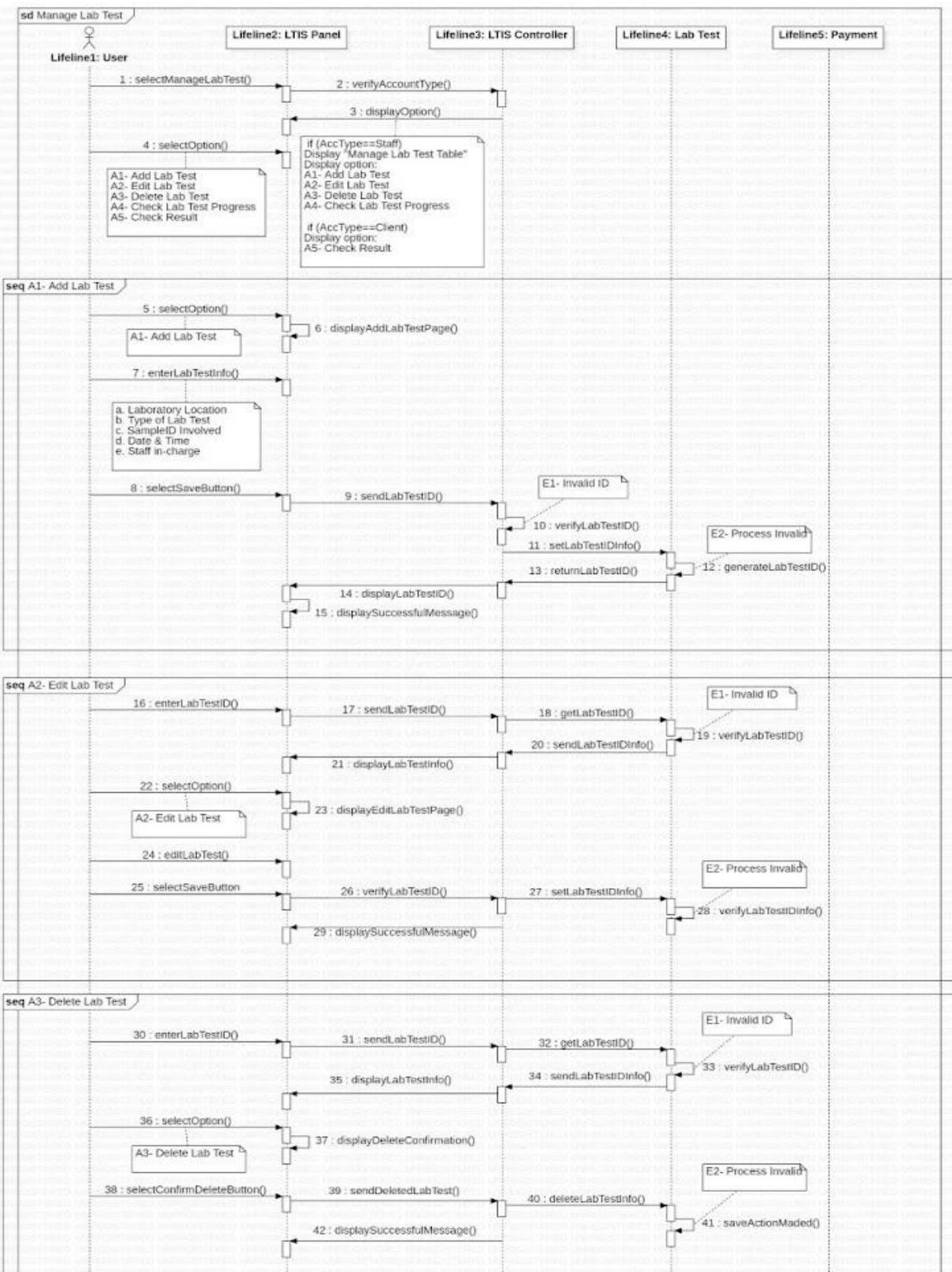


Figure 5.9: Collaboration Diagram for Manage Client Information Usecase



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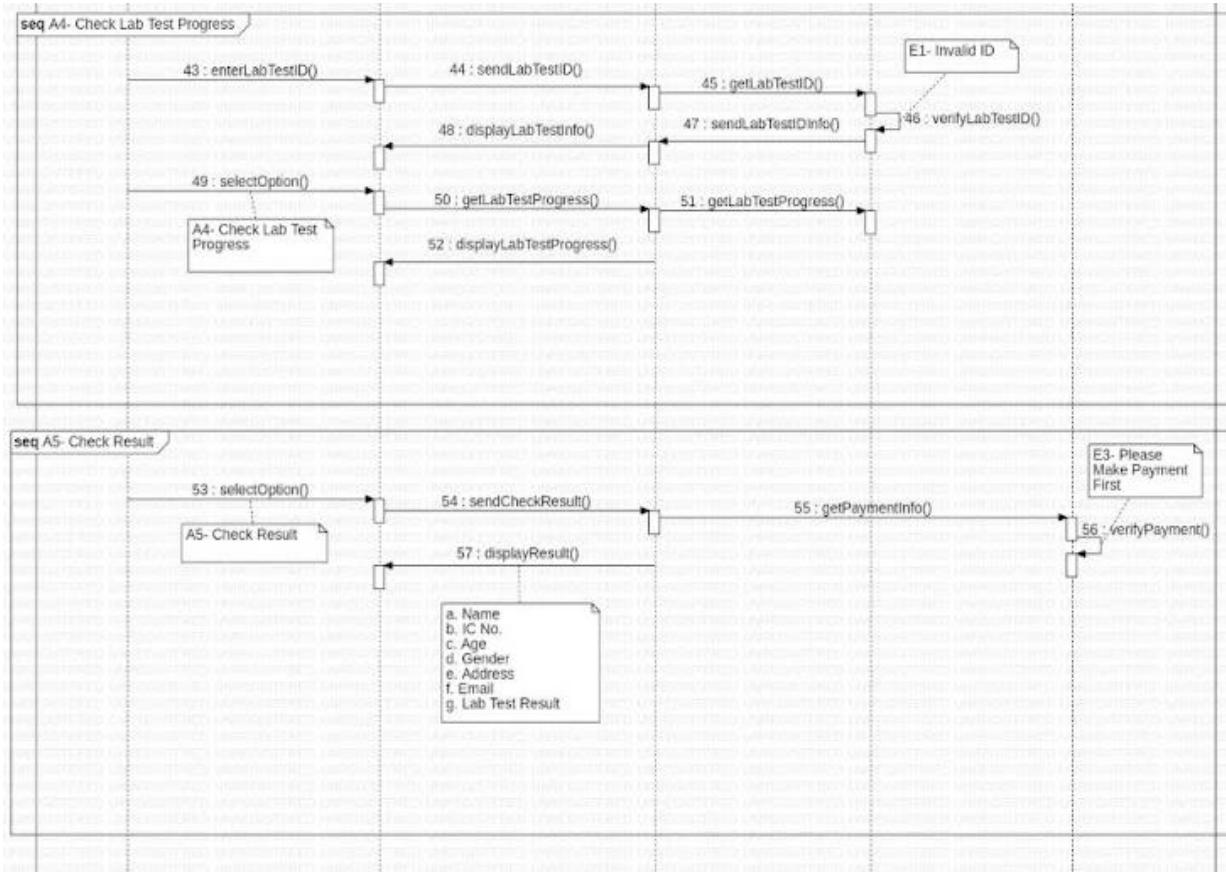


Figure 5.10: Sequence Diagram for Manage Lab Test Usecase



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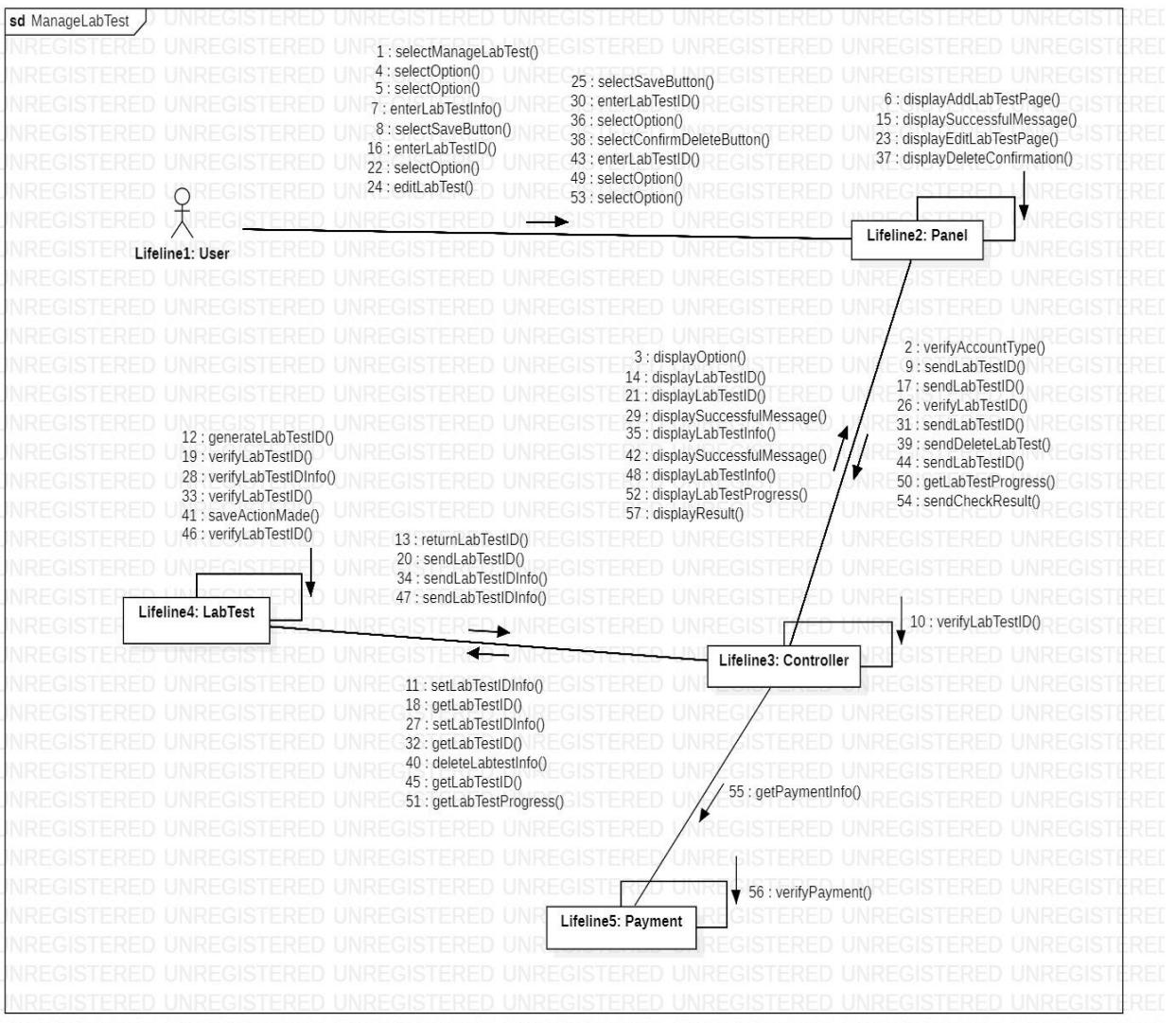


Figure 5.11: Collaboration Diagram for Manage Lab Test Usecase



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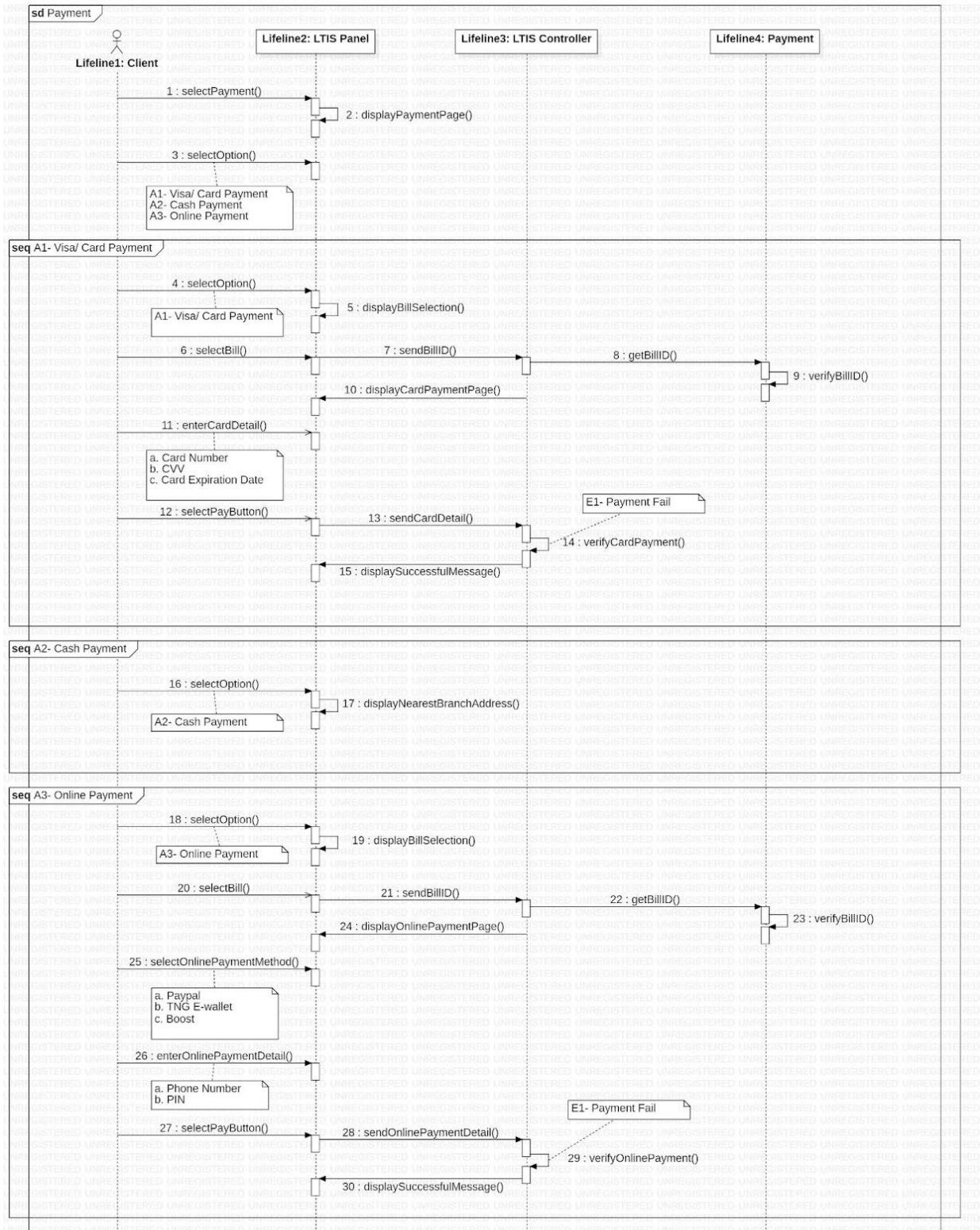


Figure 5.12: Sequence Diagram for Payment Usecase

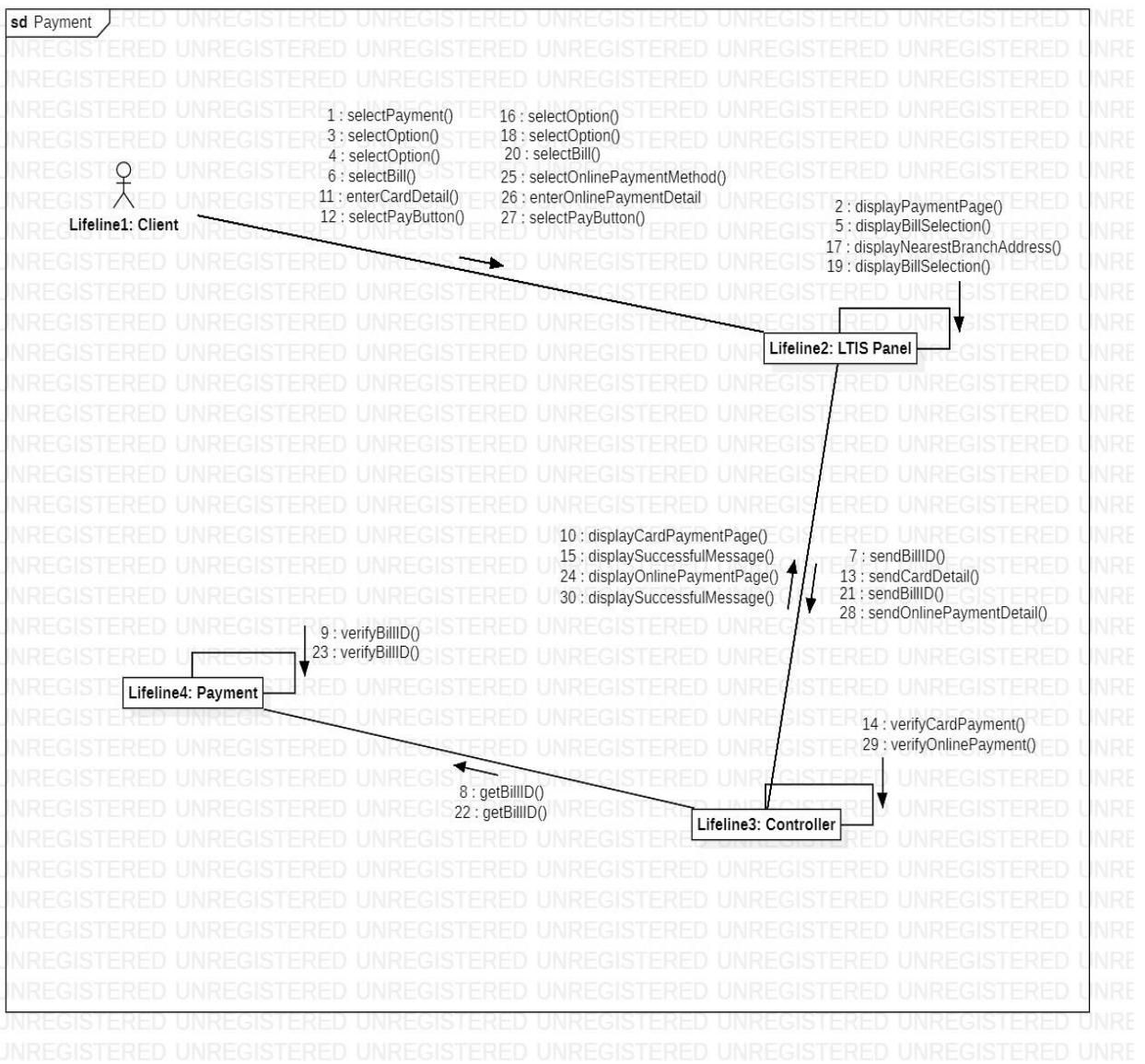


Figure 5.13: Collaboration Diagram for Payment Usecase

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6.0 CLASS DIAGRAM

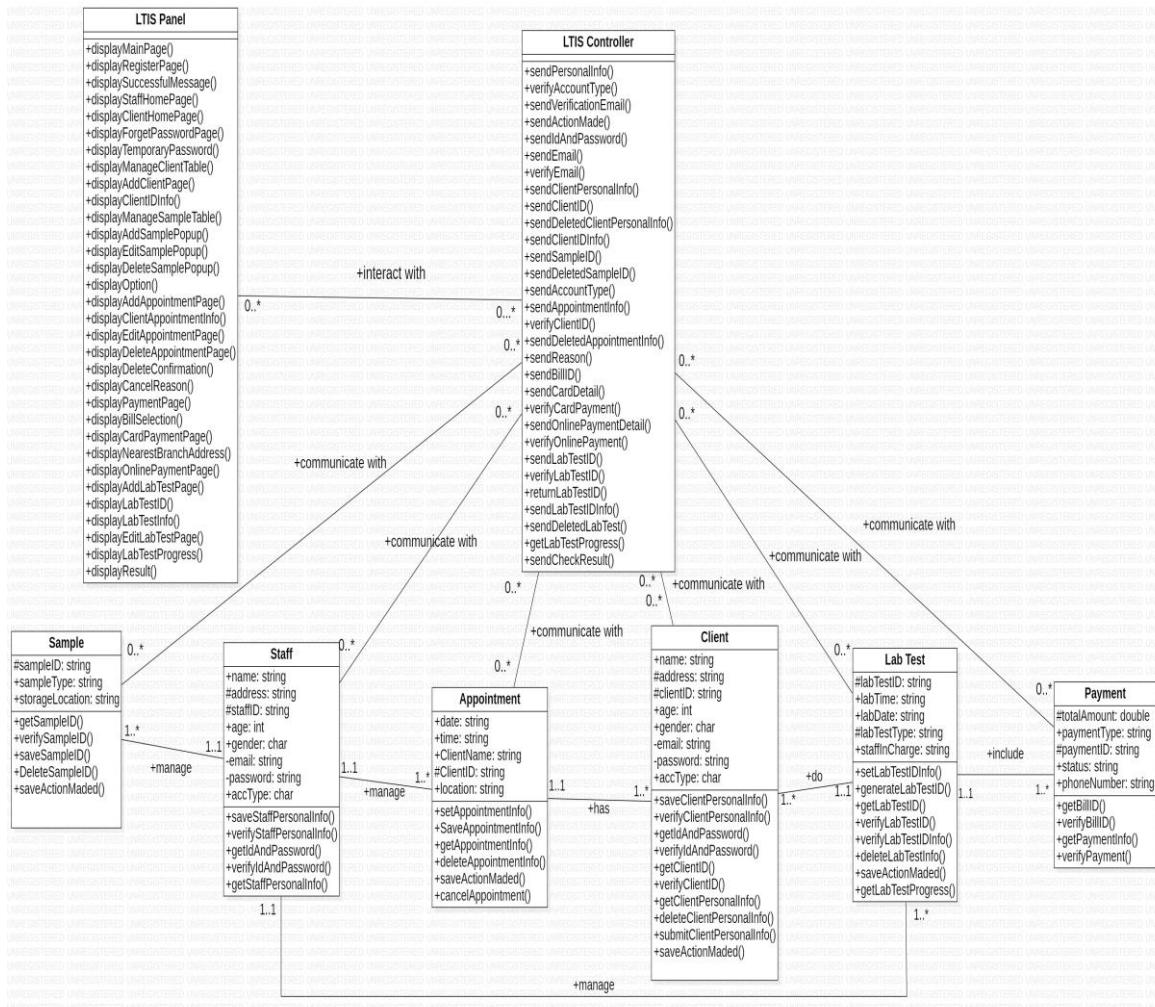


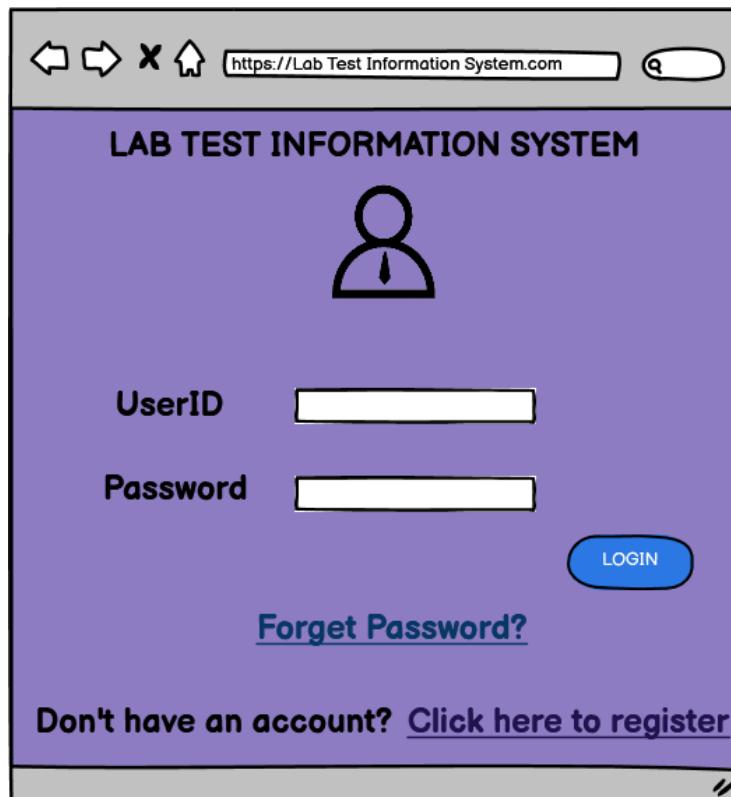
Figure 6.0: Class Diagram for Lab Test Information System (LTIS)



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PBL3:

7.0 User Manual for Sign Up Use Case



Purpose: The purpose of this Sign-up functionality is register new user account either staff or client to use Lab Test Information System (LTIS).

Guidelines: To create a new account, the user either staff or client must click “Click here to register” word.



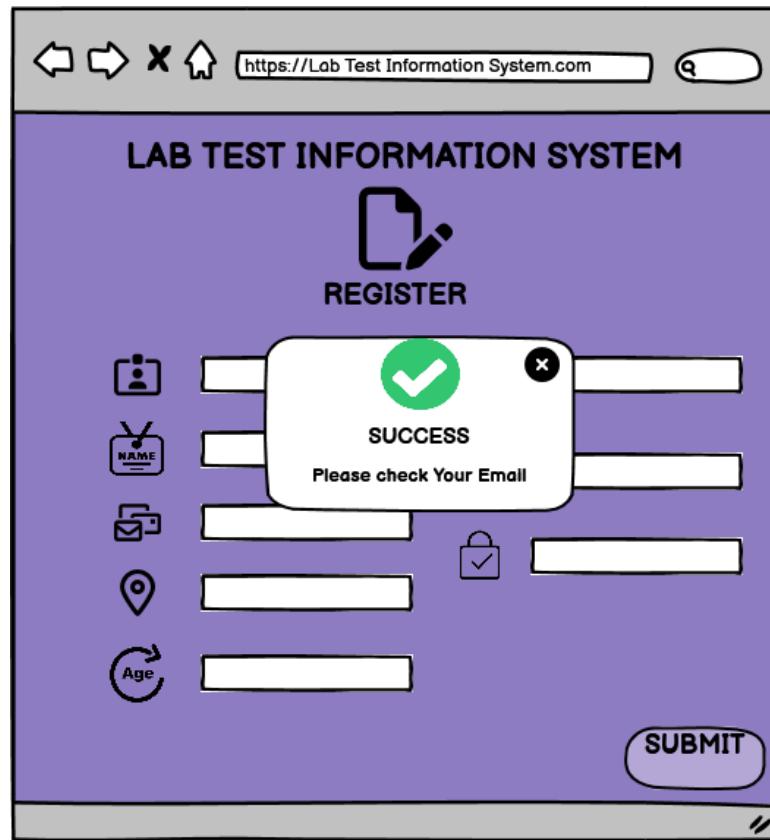
DOCUMENT IDENTIFICATION			
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Purpose: The purpose of register functionality is to fill in the account user information that wants to be registered.

Guidelines:

- The user must key-in information which are staffID (for staff) or clientID (for client), name, email, address, age, gender, password and confirm password.
- To create a new account, the user either staff or client must click "submit" button.

College of Arts and Sciences	DOCUMENT IDENTIFICATION			
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	LAB TEST INFORMATION SYSTEM		1.0	91 / 151



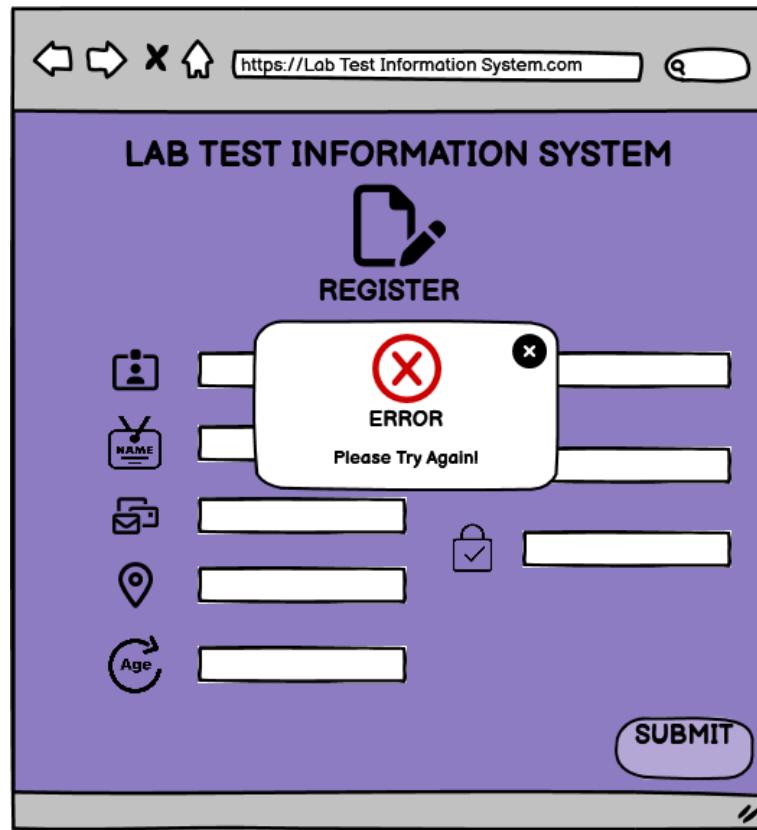
Purpose: The purpose of this message functionality is to let the user (staff/client) know that the user account is successfully created.

Guidelines:

- The system will popup a “SUCCESS” message to the user if user successfully fill in information.
- The user must check verification email that send by the system and click “Active” button as the final step.
- System will check user account type and display homepage for each user either staff homepage or client homepage.



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SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
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Purpose: The purpose of this message functionality is to let the user (staff/client) know that the user account is failed to create.

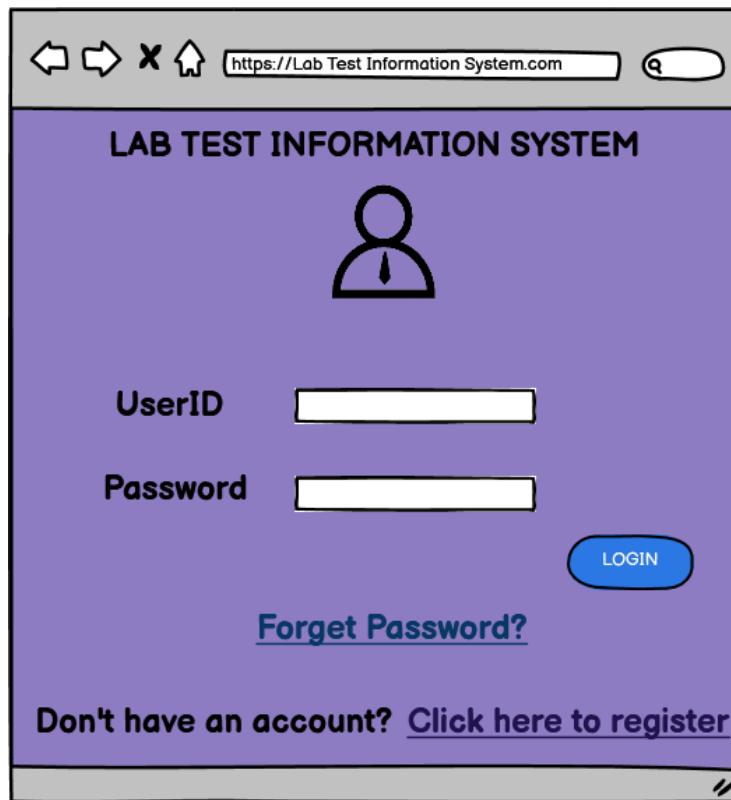
Guidelines:

- The system will popup a “ERROR” message to the user if user fail to create account.
- The user will click “x” button, then the page will be refreshed and user must fill in again correct information.



DOCUMENT IDENTIFICATION			
SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	93 / 151

7.1 User Manual for Log In Use Case

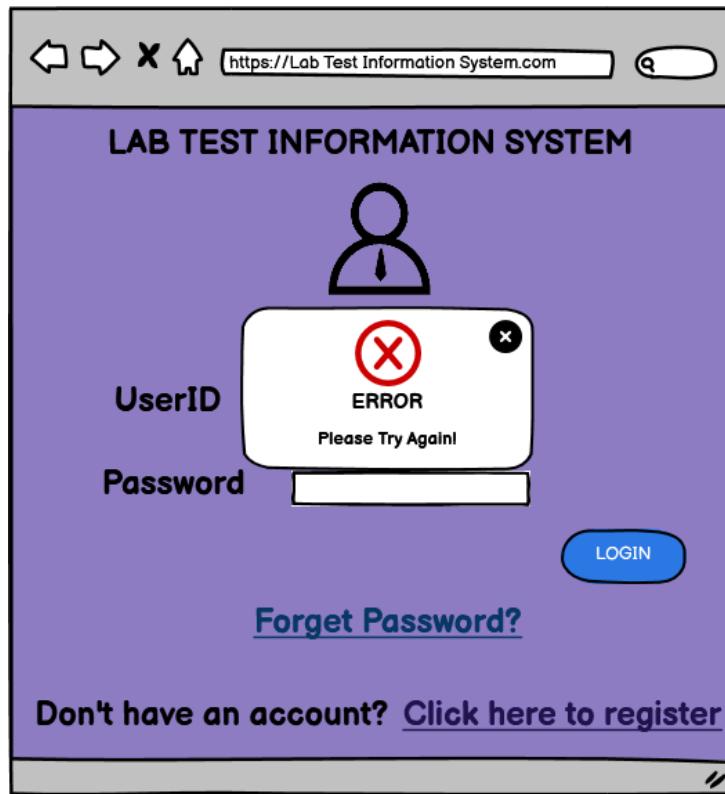


Purpose: The purpose of this Log in functionality is for user account either staff or client to use Lab Test Information System (LTIS).

Guidelines: To login an account, the user either staff or client must fill in userID and password and click “LOGIN” button to enter the system.



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SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
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Purpose: The purpose of this message functionality is to let the user (staff/client) know that the user account is failed to login the system.

Guidelines:

- The system will popup a “ERROR” message to the user if user fail to login to the system.
- The user will click “x” button, then the page will be refreshed and user must fill in again correct userID and password.
- The user can click “Forget Password?” link if they forget their password.



DOCUMENT IDENTIFICATION			
SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	95 / 151

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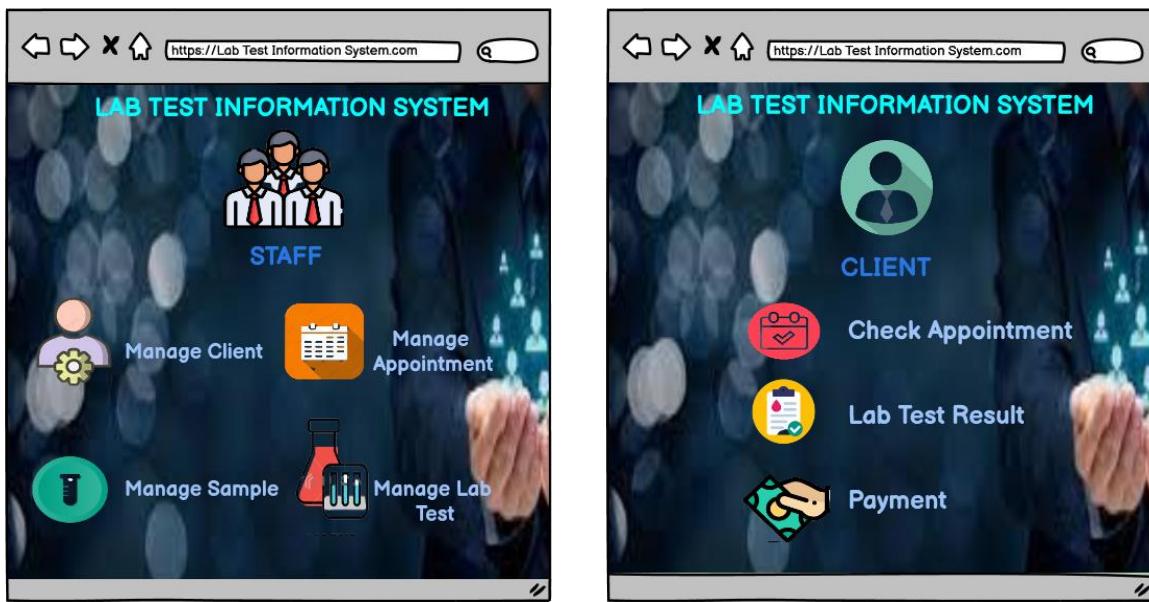
Purpose: The purpose of this forget password functionality is for user account that don't remember their password for login to the system.

Guidelines:

- The user must fill in email they used when sign up an account before.
- The user clicks "RESET PASSWORD" button when done fill in email and the system will give temporary password to their email for login to the LTIS.

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Purpose: The purpose of homepage functionality is to divide respective functionality that can be used by staff and client after successfully login.

Guidelines:

- System will check user account type and display homepage for each user either staff homepage or client homepage.
- For Client homepage, client have check appointment, lab test result and payment functionality.
- For staff homepage, staff have manage client, manage appointment, manage sample and manage lab test functionality.



DOCUMENT IDENTIFICATION

SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	97 / 151

7.2 User Manual for Manage Appointment Use Case

no	Name	ID	Date	Time	Action
1	Feng	3456	1/1/2023	09:00	
2	Mil	2323	2/1/2023	10:00	
3	Feng	3456	3/1/2023	12:00	

Purpose: The purpose of this Manage Appointment functionality is for staff to view, add, edit, and delete appointment information.

Guidelines:

- To add a new appointment information, staff clicks on the add appointment symbol which located under the last name.
- To edit an appointment information, staff will search client ID wanted in search box and clicks on the edit symbol in “Action” column, system will display “Edit Appointment” page.
- To delete an appointment information, staff will search client ID wanted in search box and clicks on the dustbin symbol in “Action” column, system will display “Delete Appointment” page.
- Staff can view appointment information on the Manage Appointment table.



DOCUMENT IDENTIFICATION				
SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE	
LAB TEST INFORMATION SYSTEM		1.0	98 / 151	

Purpose: The purpose of “Add Appointment” functionality is to fill in appointment information and save it in the system.

Guidelines:

- The staff must key-in appointment information which are clientID, name, age, type of lab test, date, and time.
- After key-in all appointment information, the staff must click “Save” button to save it in the system.



DOCUMENT IDENTIFICATION			
SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
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The screenshot shows a web-based application titled "LAB TEST INFORMATION SYSTEM" with a sub-section "ADD APPOINTMENT". At the top, there are navigation icons (back, forward, search, etc.) and a URL bar containing "https://LTIS.com/Staff/ManageAppointment". Below the title, the text "JANUARY 2023" is centered above a 7x7 grid representing the days of the month. The grid columns are labeled S, M, T, W, T, F, S. The days are numbered sequentially from 1 to 31. Some days contain a small circle with a minus sign (-), indicating they are unavailable for appointment. The 5th of January is highlighted with a blue circle.

S	M	T	W	T	F	S				
1	2	3	4	5	(-)	6	7			
8	(-)	9	(-)	10	11	(-)	12	(-)	13	14
15	16	17	18	19	20	21				
22	(-)	23	(-)	24	25	26	27	28		
29	30	31	1	2	3	4				
5	6	7	8	9	10	11				

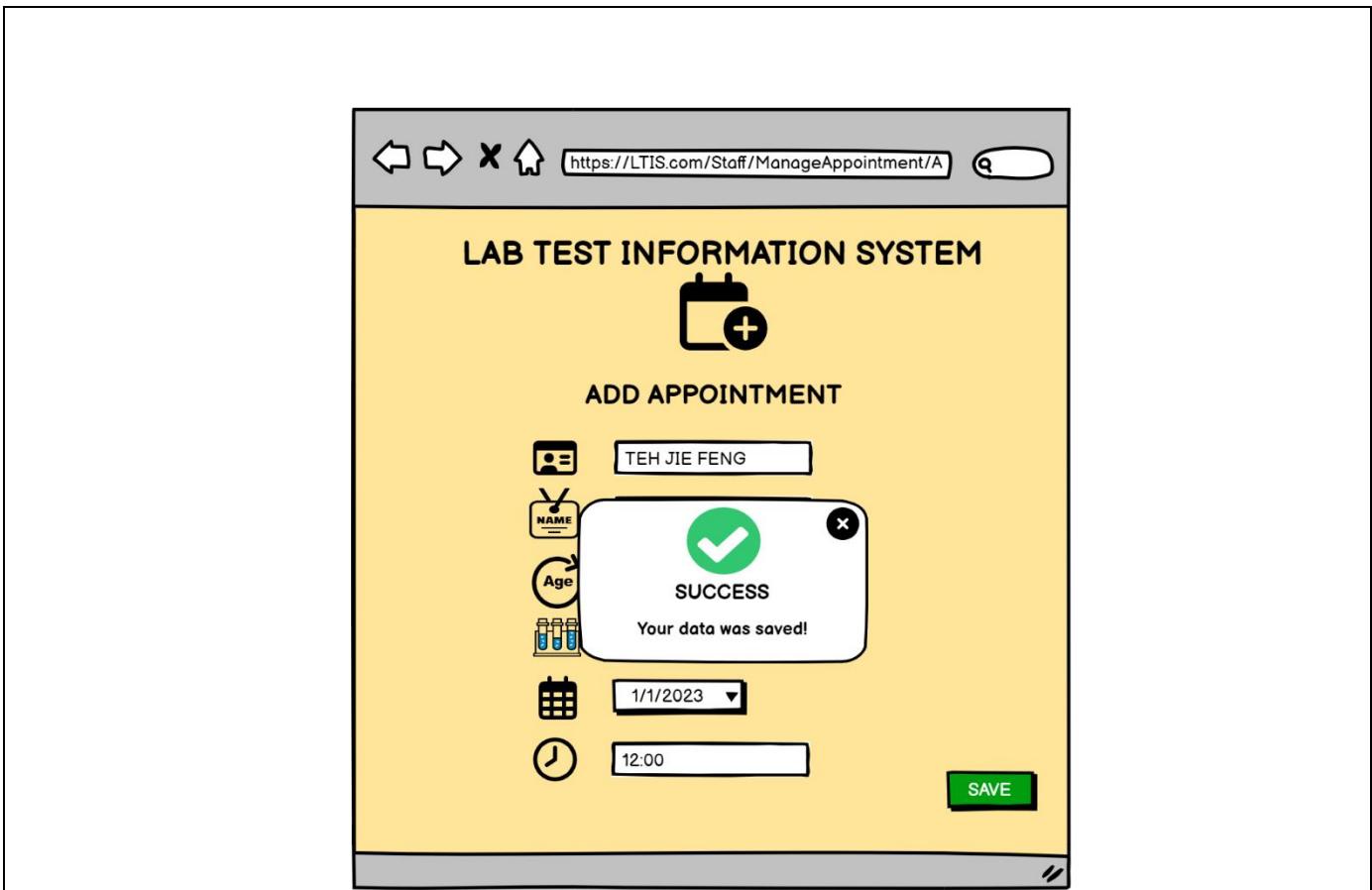
Purpose: The purpose of this calendar page is to add appointment date into appointment information and save it in the system. Besides, the calendar also will show the available dates for appointment.

Guidelines:

- Staff can add appointments on available dates, which are blanks in the date column.
- The date box with the "prohibited" icon is unavailable date.



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SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	100 / 151



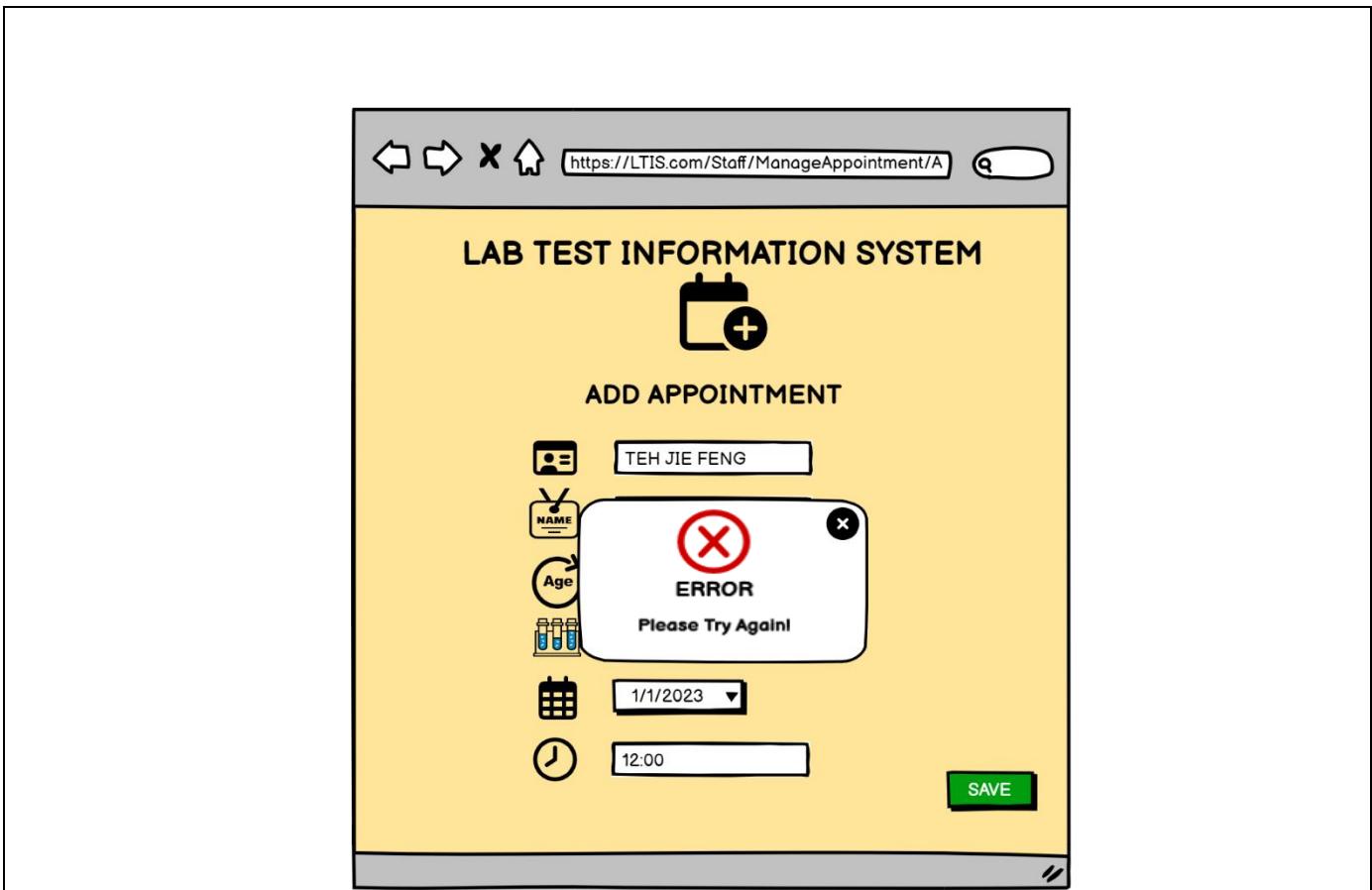
Purpose: The purpose of this pop up is to let staff know that the appointment information is saved in the system.

Guidelines:

- The system will popup a “SUCCESS” message to the staff.
- The staff can click on the “X” button on the top right to back to the manage appointment page.



DOCUMENT IDENTIFICATION			
SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	101 / 151



Purpose: The purpose of this pop up is to let staff know that the appointment information is failed to save in the system.

Guidelines:

- The system will popup a “ERROR” message to the staff.
- The staff will click “x” button, then the page will be refreshed and staff must fill in again valid appointment information.



DOCUMENT IDENTIFICATION			
SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	102 / 151

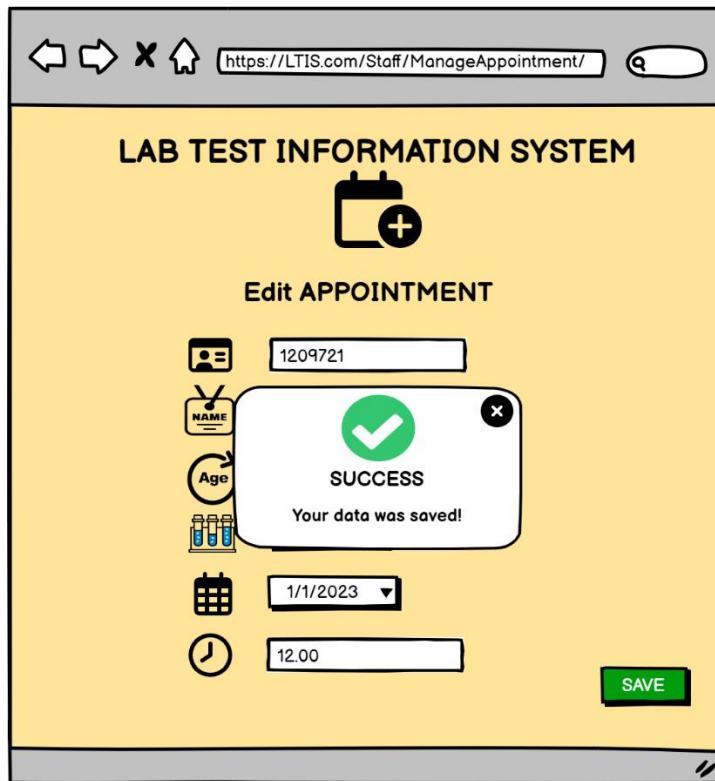
Purpose: The purpose of “Edit Appointment” functionality is to edit appointment information and save it in the system.

Guidelines:

- The staff can edit the appointment information which are clientID, name, age, type of lab test, date, and time.
- After edit appointment information wanted, the staff must click “Save” button to save it in the system.



DOCUMENT IDENTIFICATION			
SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	103 / 151



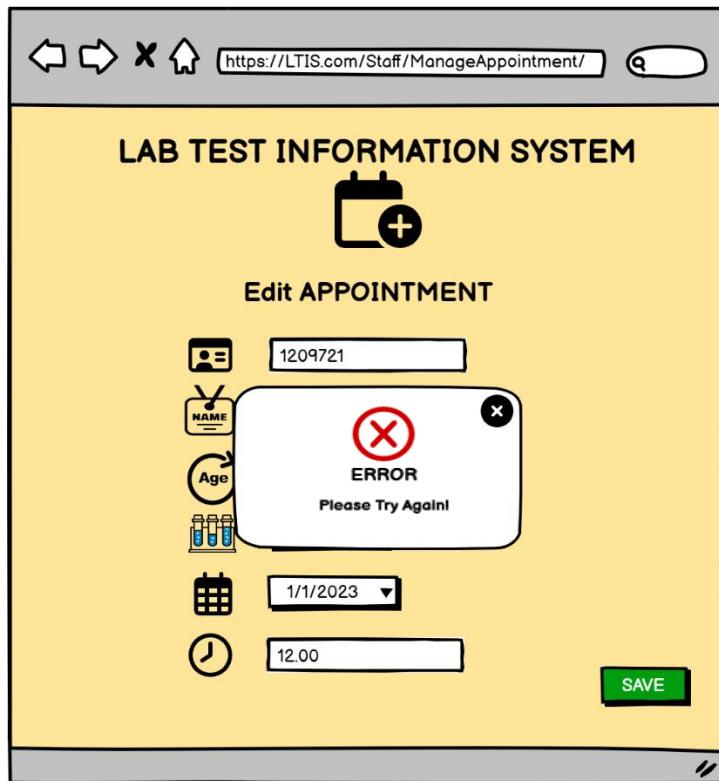
Purpose: The purpose of this pop up is to let staff know that the edited appointment information is saved in the system.

Guidelines:

- The system will popup a “SUCCESS” message to the staff.
- The staff can click on the “X” button on the top right to back to the manage appointment page.



DOCUMENT IDENTIFICATION			
SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	104 / 151



Purpose: The purpose of this pop up is to let staff know that the appointment information edited is failed to save in the system.

Guidelines:

- The system will popup a “ERROR” message to the staff.
- The staff will click “x” button, then the page will be refreshed and staff must edit again valid appointment information.



DOCUMENT IDENTIFICATION			
SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	105 / 151

Purpose: The purpose of “Delete Appointment” functionality is to delete appointment information and save it in the system.

Guidelines:

- The staff can delete the appointment information which are clientID, name, age, type of lab test, date, and time.
- After the staff click the delete button, system will pop up a column and ask the staff to confirm the delete.



DOCUMENT IDENTIFICATION			
SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	106 / 151

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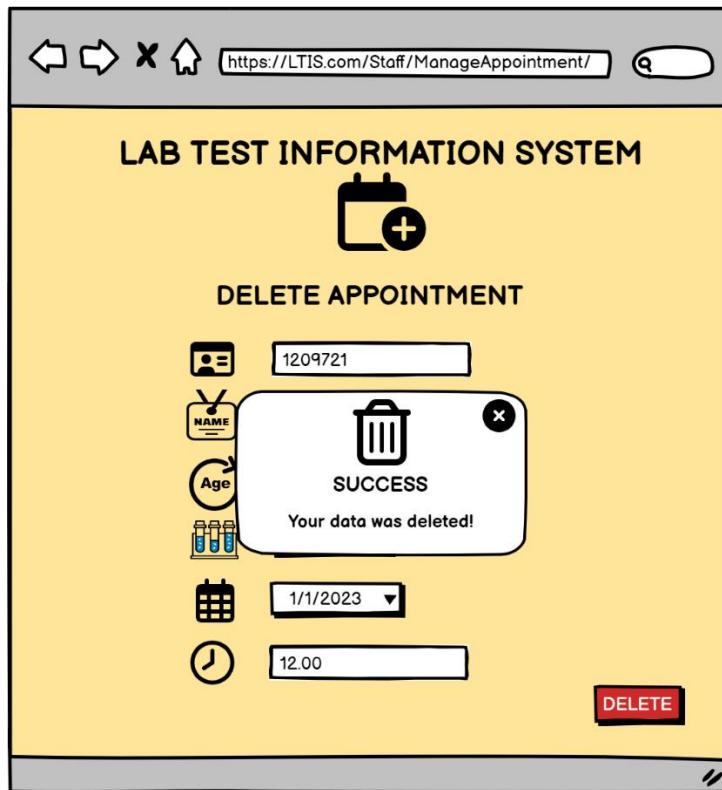
Purpose: The purpose of this pop up is to ask the confirmation from staff whether he want to delete the appointment or not.

Guidelines:

- Staff can click on the red “DELETE” button to delete the appointment.
- If staff don’t want to delete the appointment, staff can click on the green “NO” button to back to the manage appointment page.
- The staff also can click on the “X” button on the top right to back to the manage appointment page.

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DOCUMENT IDENTIFICATION			
SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	107 / 151



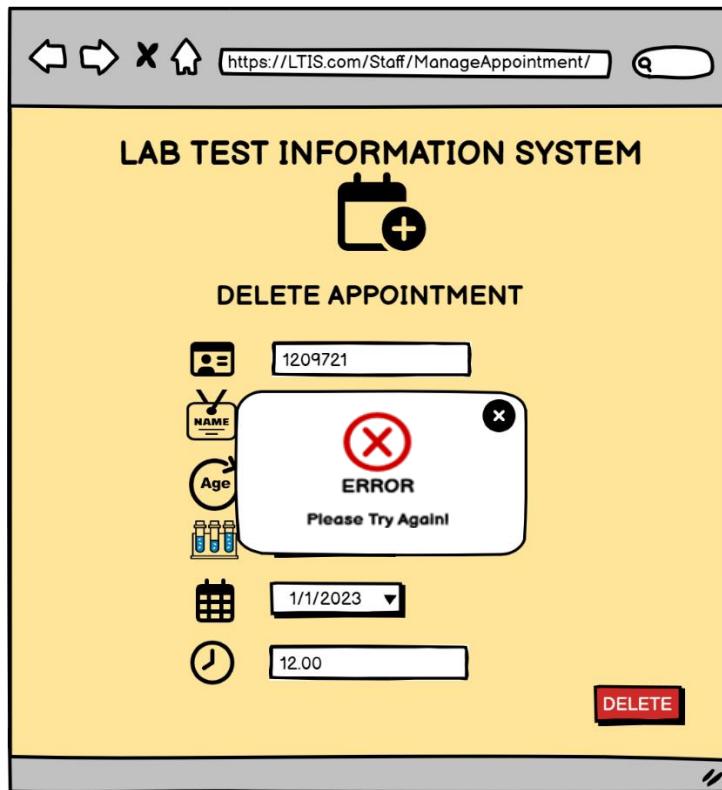
Purpose: The purpose of this pop up is to tell the staff about the deletion of the appointment is success.

Guidelines:

- The system will popup a “SUCCESS” message to the staff.
- The staff also can click on the “X” button on the top right to back to the manage appointment page.



DOCUMENT IDENTIFICATION			
SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	108 / 151



Purpose: The purpose of this message functionality is to let the staff know that the appointment information is failed to delete.

Guidelines:

- The system will popup a “ERROR” message to the.
- The staff will click “x” button, then the page will be refreshed and staff must check what the possible problem and solved it to trying again delete appointment information selected.



DOCUMENT IDENTIFICATION			
SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	109 / 151

no	Name	ID	Date	Time	Action
1	Feng	3456	1/1/2023	09:00	<input type="button" value="Cancel"/>
2	Feng	3456	2/1/2023	10:00	<input type="button" value="Cancel"/>
3	Feng	3456	3/1/2023	12:00	<input type="button" value="Cancel"/>

Purpose: The purpose of this appointment table is to let client to view and cancel their appointment if they want to.

Guidelines:

- Client can view the date and time of appointment they need to attend.
- Client can cancel the appointment if they want to, they can click on the cancel icon to proceed with appointment cancelation.



DOCUMENT IDENTIFICATION

SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	110 / 151

The screenshot shows a web page titled "LAB TEST INFORMATION SYSTEM". At the top, there are standard browser navigation icons (back, forward, search, etc.) and a URL bar containing "https://LTIS.com/Client/ManageAppointment/Cancel". Below the title is a large, stylized sad face icon. The main content area is titled "TELL US WHY" and contains a large, empty text input field with a decorative wavy border. In the bottom right corner of the main content area, there is a red "Submit" button.

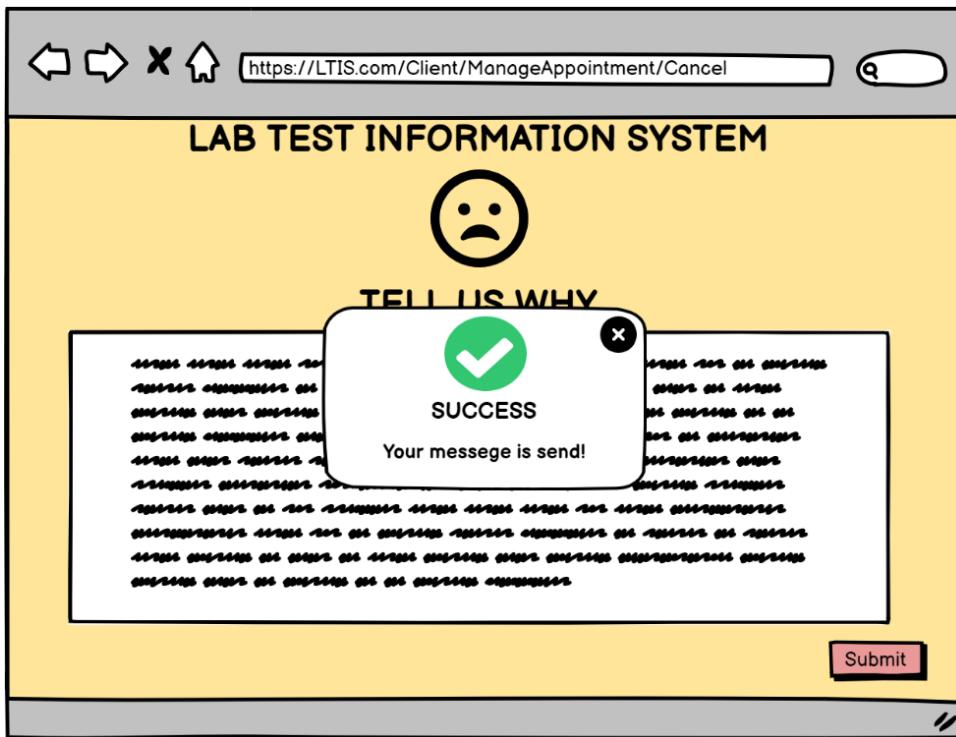
Purpose: The purpose of this page is to let client to write about their reason for cancelation.

Guidelines:

- Client can write their reason of cancelation appointment in the text box given, such as sick, date or time given are not available, and so on.
- Client can click the "Submit" button to submit their reason.



DOCUMENT IDENTIFICATION			
SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	111 / 151



Purpose: The purpose of this pop up is to let the client know his cancelation reason is sent.

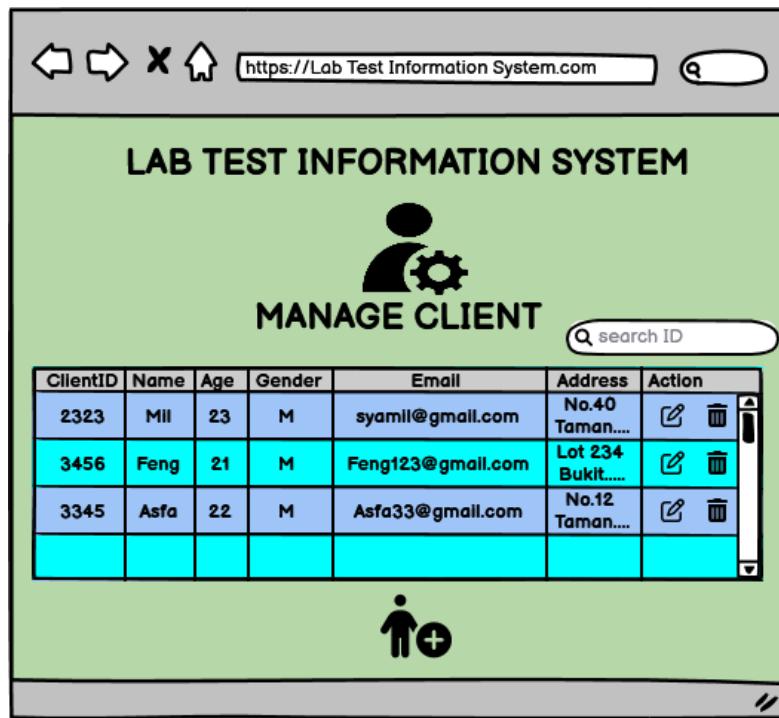
Guidelines:

- The system will popup a “SUCCESS” message to the client.
- The client can click on the “X” button on the top right to back to the client appointment table page.



DOCUMENT IDENTIFICATION			
SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	112 / 151

7.3 User Manual for Manage Client Information Use Case



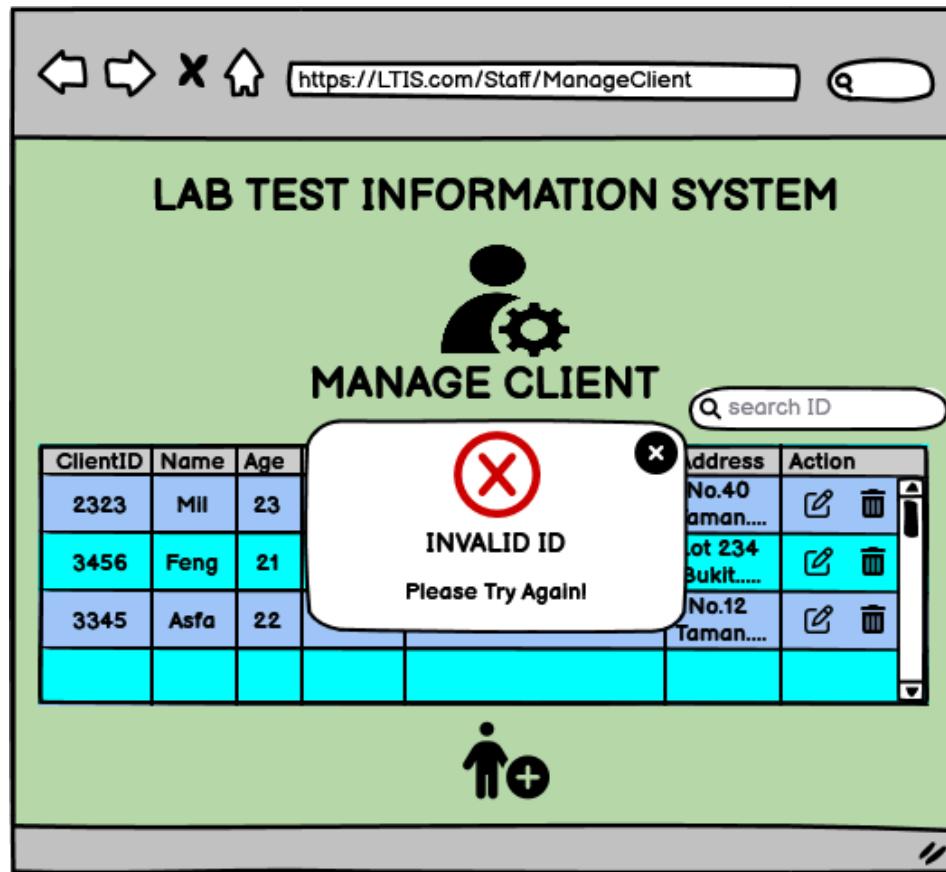
Purpose: The purpose of this Manage Client functionality is for staff to view, add, edit and delete client information.

Guidelines:

- To add a new client information, staff clicks on the add client symbol.
- To edit a client information, staff must search client ID wanted in search box and clicks on the edit symbol in “Action” column on client information wanted when system display client information by ID entered.
- To delete a client information, staff must search client ID wanted in search box and clicks on the delete symbol in “Action” column on client wanted when system display client information by ID entered.
- Staff can view client information on the Manage Client table.



SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	113 / 151



Purpose: The purpose of this message functionality is to let the staff know that the clientID entered in the “search ID” box is invalid.

Guidelines:

- The system will popup a “INVALID ID” message to the staff if clientID entered in the “search ID” box by staff is invalid or not found.
- The staff will click “x” button, then the page will be refreshed and staff must check again that clientID entered is correct before try to search clientID again.



SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	114 / 151

The screenshot shows a web-based application titled 'LAB TEST INFORMATION SYSTEM'. The main heading is 'ADD CLIENT'. Below the heading is a logo consisting of a stylized human figure with a plus sign inside a circle. The form contains five input fields: 'clientID' (with a person icon), 'gender' (with male and female icons), 'NAME' (with a name tag icon), 'password' (with a lock icon), and 'Age' (with a circular arrow icon). To the right of each input field is a corresponding empty rectangular box for data entry. At the bottom right of the form is a teal-colored button labeled 'Verify and Save'.

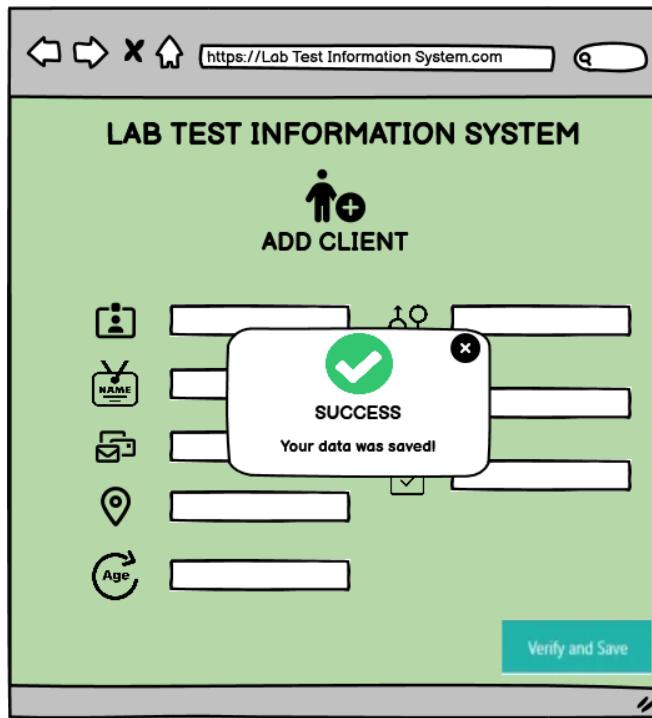
Purpose: The purpose of Add Client functionality is to fill in client information and save it in the system.

Guidelines:

- The staff must key-in client information which are clientID, name, email, address, age, gender, password and confirm password.
- After key-in all client information, the staff must click “Verify and Save” button to save it in the system.



DOCUMENT IDENTIFICATION			
SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	115 / 151



Purpose: The purpose of this message functionality is to let the staff know that the client information is added successfully.

Guidelines:

- The system will popup a “SUCCESS” message to the staff if staff successfully fill in client information.
- Client information will be saved in the system.
- Staff will click on the “x” button, then the staff will be taken to the Manage Client page.



DOCUMENT IDENTIFICATION

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Purpose: The purpose of this message functionality is to let the staff know that the client information is failed to add.

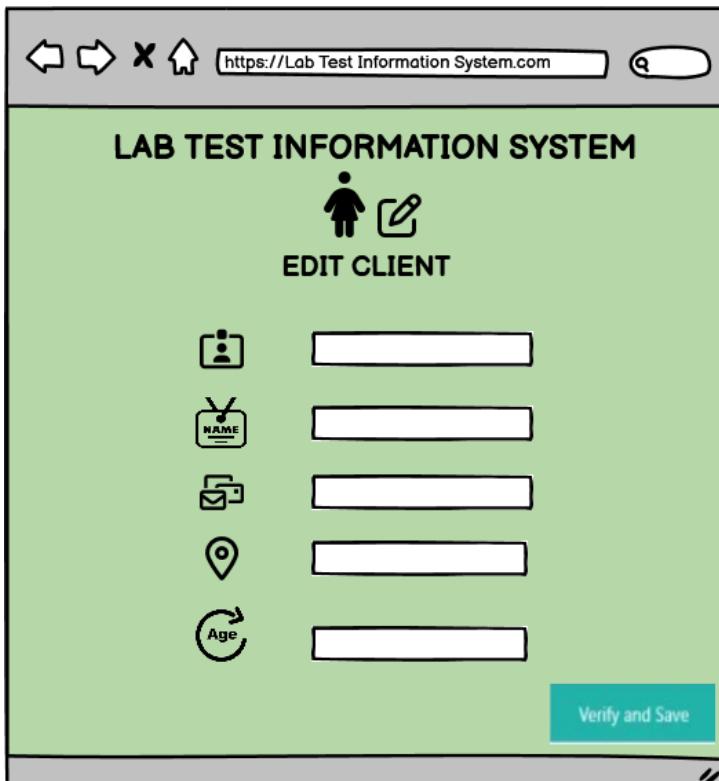
Guidelines:

- The system will popup a “ERROR” message to the staff if staff fail to add client information.
- The staff will click “x” button, then the page will be refreshed and staff must fill in again valid client information.

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LAB TEST INFORMATION SYSTEM

EDIT CLIENT

Verify and Save

Purpose: The purpose of Edit Client functionality is to edit client information and save action made in the system.

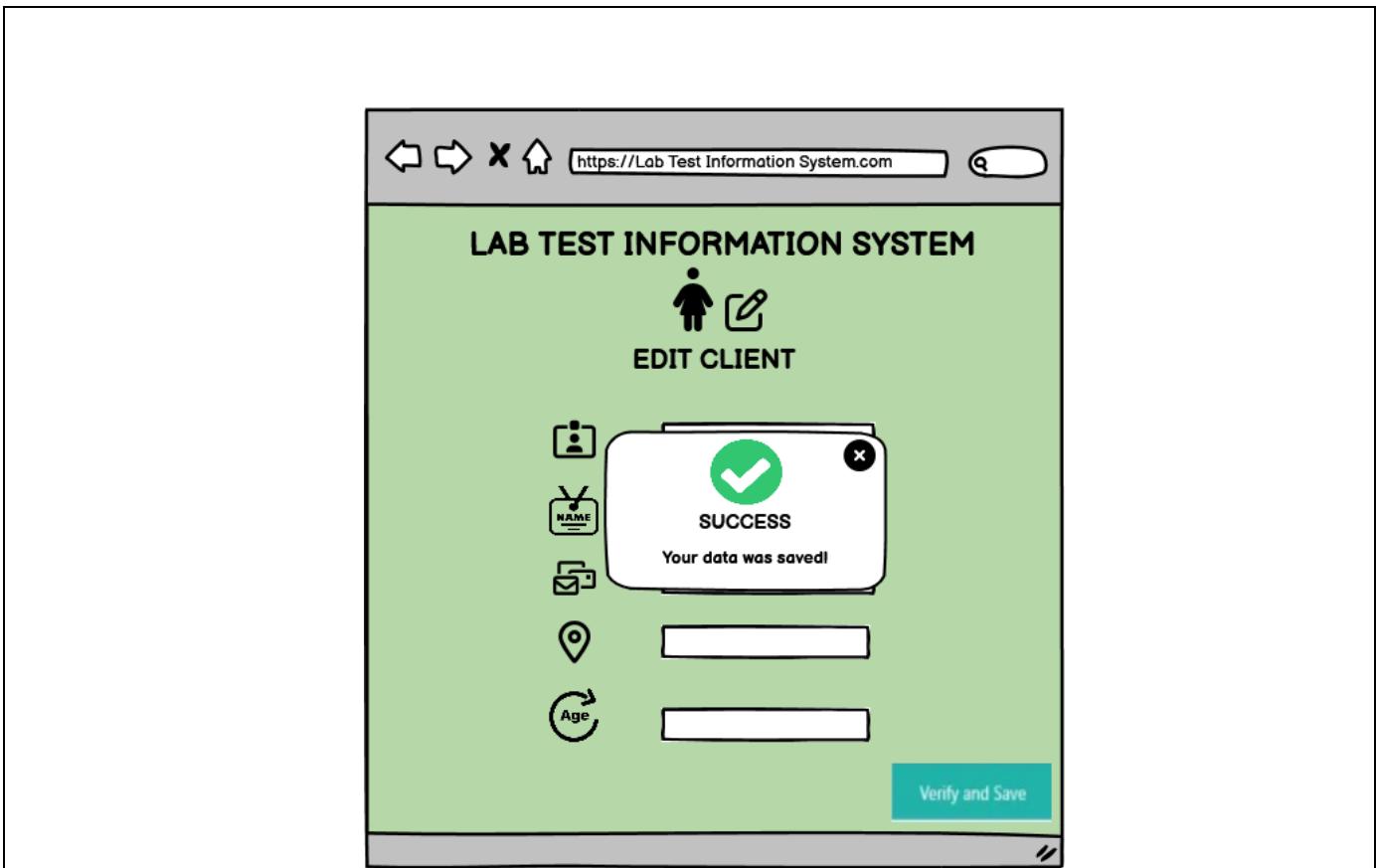
Guidelines:

- The staff must edit client information which are clientID, name, email, address, and age.
- After edit client information, the staff must click “Verify and Save” button to save it in the system.



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DOCUMENT IDENTIFICATION			
SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	118 / 151



Purpose: The purpose of this message functionality is to let the staff know that the client information is edited successfully.

Guidelines:

- The system will popup a “SUCCESS” message to the staff if staff successfully edit client information.
- The action made will be saved in the system.
- Staff will click on the “x” button, then the staff will be taken to the Manage Client page.



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The screenshot shows a web browser window titled "LAB TEST INFORMATION SYSTEM" with a sub-section "ADD CLIENT". On the left, there are five input fields with icons: a person (NAME), a television (NAME), an envelope (EMAIL), a location pin (ADDRESS), and a circular arrow (AGE). In the center, a large red "X" icon inside a rounded rectangle is displayed with the word "ERROR" above it and "Please Try Again!" below it. To the right of the error message is a small checkbox. At the bottom right of the page is a teal button labeled "Verify and Save".

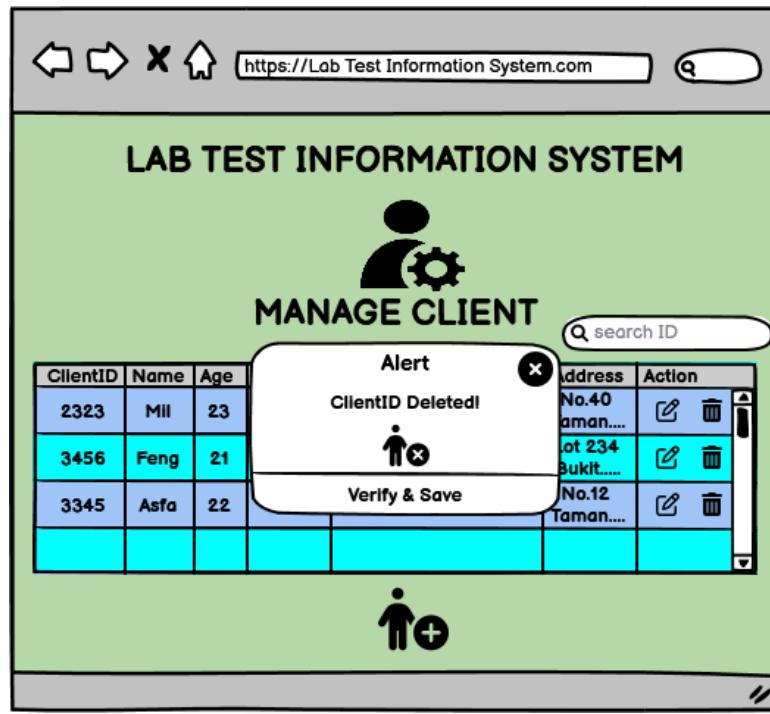
Purpose: The purpose of this message functionality is to let the staff know that the client information is failed to edit.

Guidelines:

- The system will popup a “ERROR” message to the staff if staff fail to edit client information.
- The staff will click “x” button, then the page will be refreshed and staff must edit again valid client information.

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DOCUMENT IDENTIFICATION			
SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
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Purpose: The purpose of Delete Client functionality is to delete client information and save action made in the system.

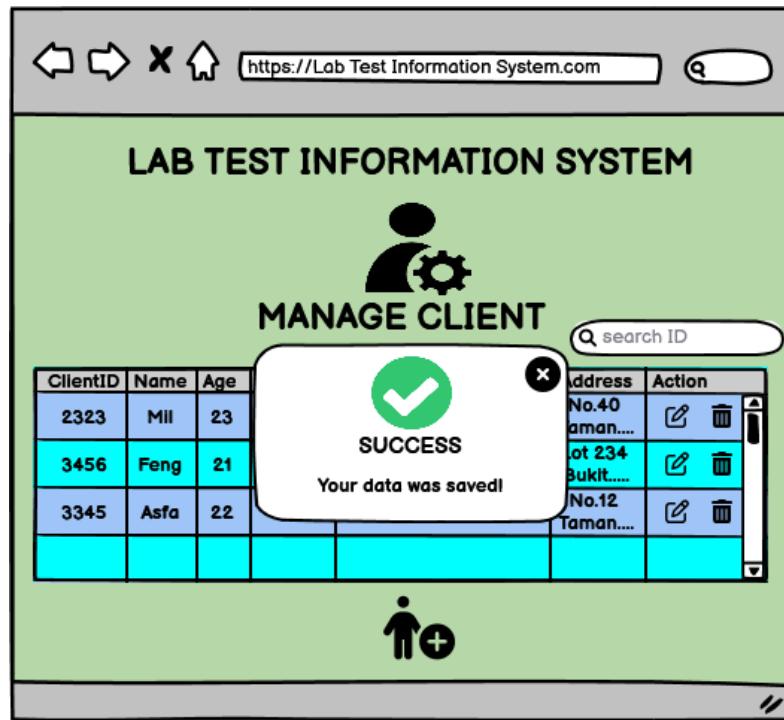
Guidelines:

- The staff can delete client information permanently by click on delete icon in “Action” column.
- After delete client information, the staff must click “Verify and Save” button to save action made in the system.



DOCUMENT IDENTIFICATION

SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	121 / 151

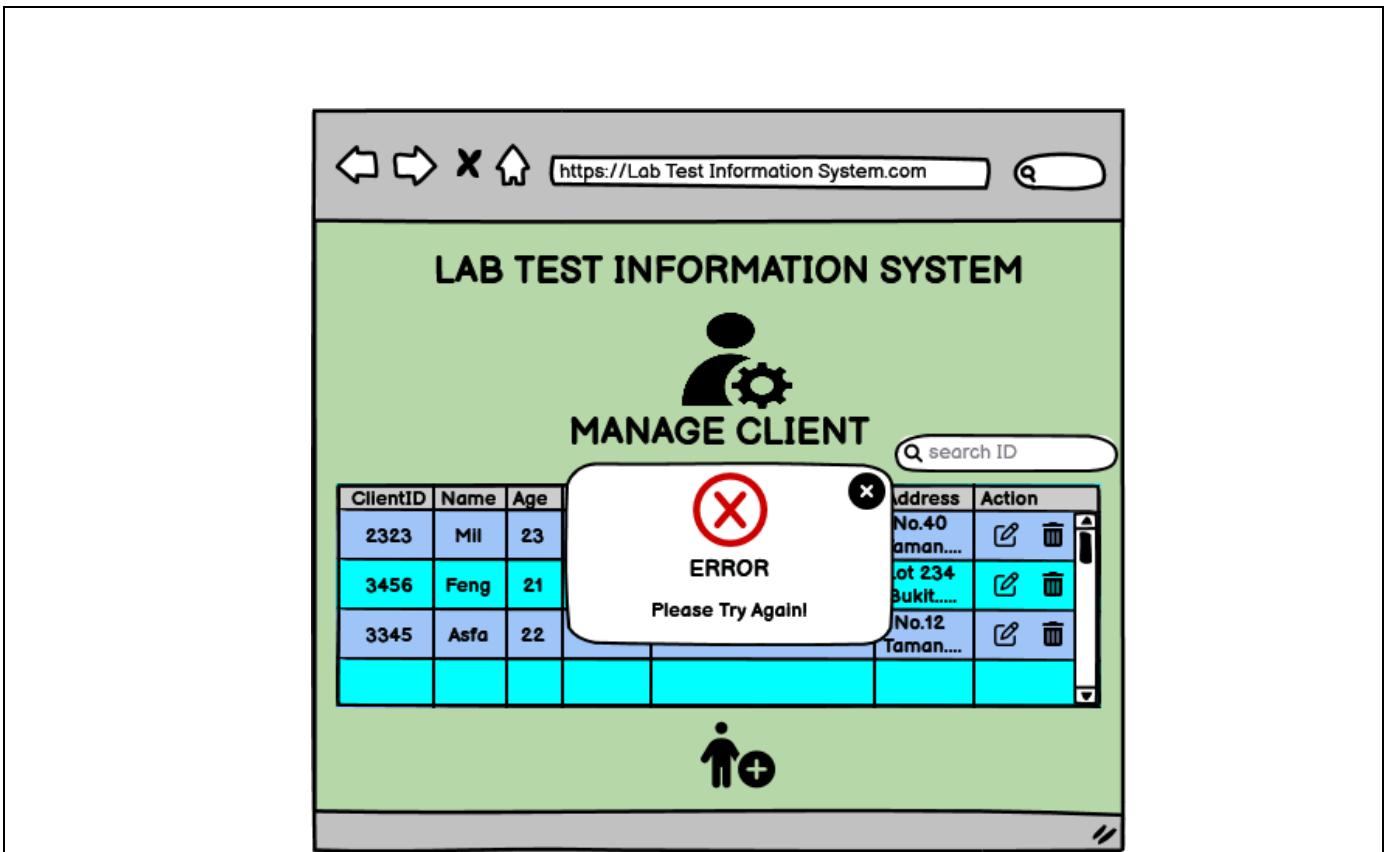


Purpose: The purpose of this message functionality is to let the staff know that the client information is deleted successfully.

Guidelines:

- The system will popup a “SUCCESS” message to the staff if staff successfully delete client information.
- The action made will be saved in the system.
- Staff will click on the “x” button, then the staff will be taken to the Manage Client page.

SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	122 / 151



Purpose: The purpose of this message functionality is to let the staff know that the client information is failed to delete.

Guidelines:

- The system will popup a “ERROR” message to the staff if staff fail to delete client information.
- The staff will click “x” button, then the page will be refreshed and staff must check what the possible problem and solved it to trying again delete client information selected.



DOCUMENT IDENTIFICATION			
SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	123 / 151

7.4 User Manual for Manage Sample Information Use Case

ClientID	Name	Age	Gender	Email	Address	SampleID
2323	Mil	23	M	syamil@gmail.com	No.40 Taman....	
3456	Feng	21	M	Feng123@gmail.com	Lot 234 Bukit....	
3345	Asta	22	M	Asta33@gmail.com	No.12 Taman....	

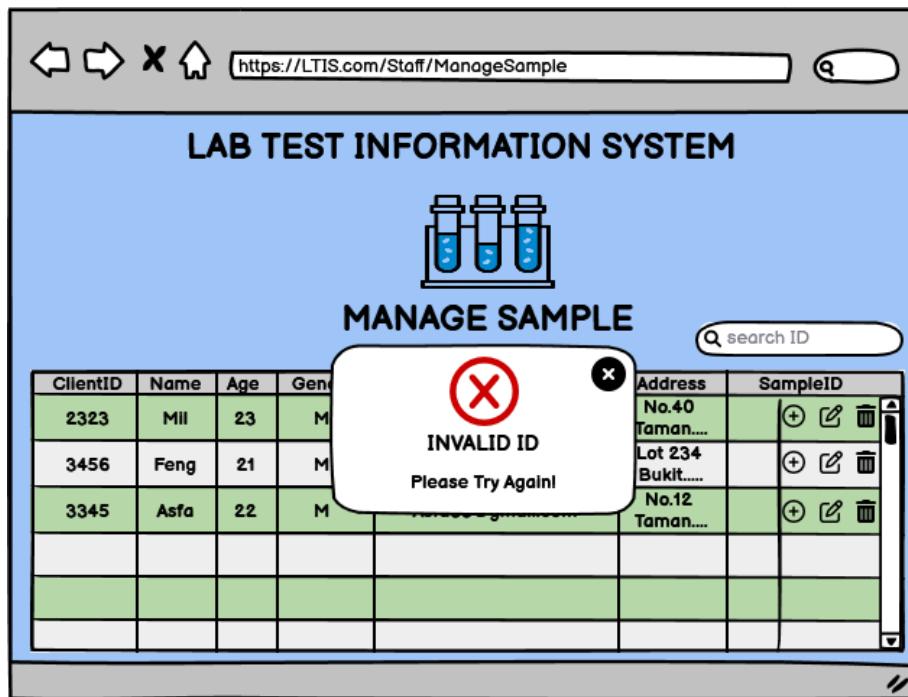
Purpose: The purpose of this Manage Sample functionality is for staff to view, add, edit and delete sample information (SampleID).

Guidelines:

- To add a new sample information, staff must search client ID wanted in search box and clicks on the add symbol in “SampleID” column on client information wanted when system display client information by ID entered.
- To edit a sample information, staff must search client ID wanted in search box and clicks on the edit symbol in “SampleID” column on client information wanted when system display client information by ID entered.
- To delete a client information, staff must search client ID wanted in search box and clicks on the delete symbol in “SampleID” column on client wanted when system display client information by ID entered.
- Staff can view sample information on the Manage Client table.



SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	124 / 151



Purpose: The purpose of this message functionality is to let the staff know that the clientID entered in the “search ID” box is invalid.

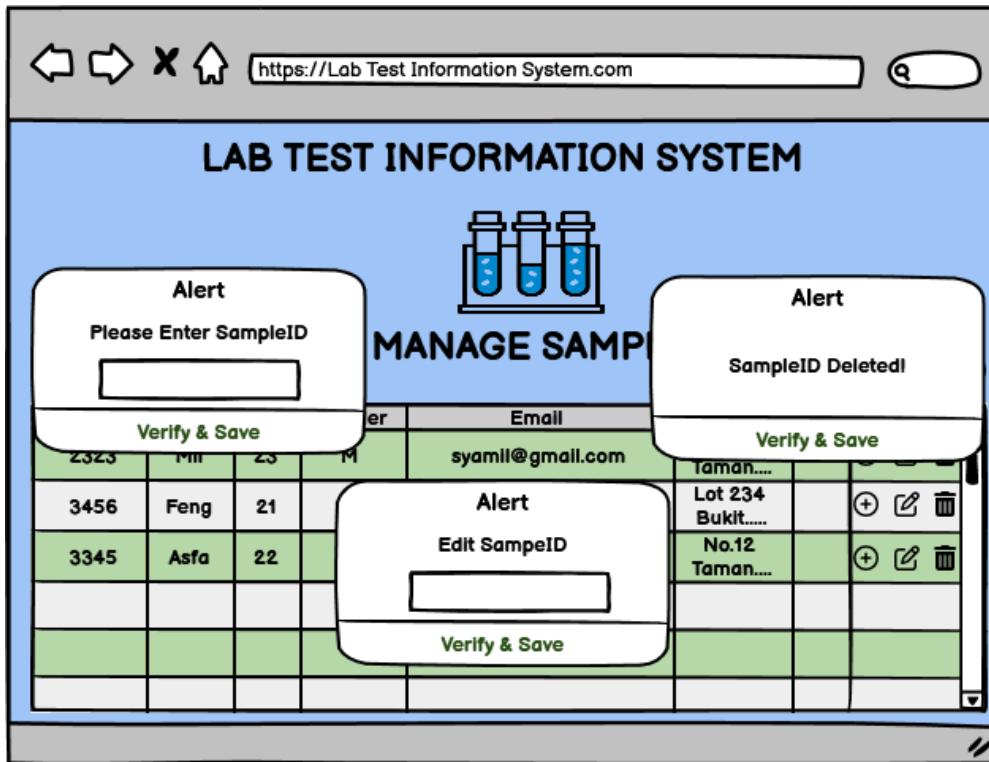
Guidelines:

- The system will popup a “INVALID ID” message to the staff if clientID entered in the “search ID” box by staff is invalid or not found.
- The staff will click “x” button, then the page will be refreshed and staff must check again that clientID entered is correct before try to search clientID again.



DOCUMENT IDENTIFICATION

SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	125 / 151



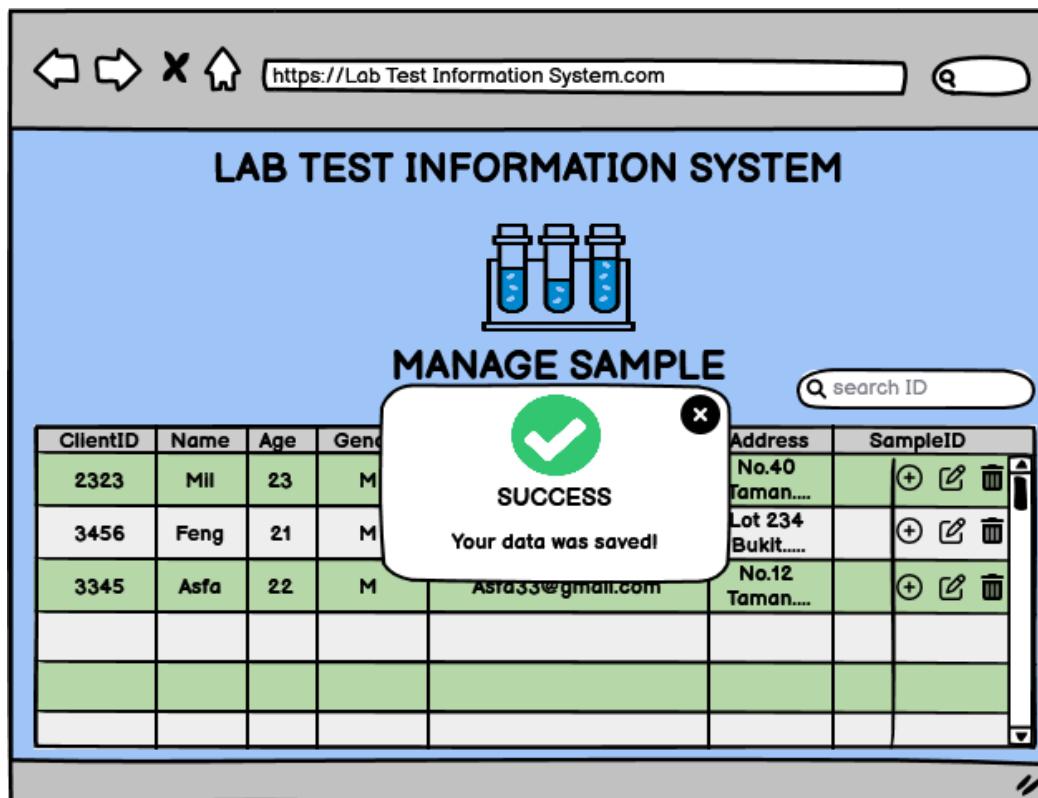
Purpose: The purpose of Add, Edit or Delete Client functionality is to add, edit or deleted sample information and save action made in the system.

Guidelines:

- When staff click add icon to add sample information, the system will display popup alert message “Please Enter SampleID”. The staff must key-in sampleID and click “Verify & Save” button to save action made in the system.
- When staff click edit icon to edit sample information, the system will display popup alert message “Edit SampleID”. The staff must edit sampleID and click “Verify & Save” button to save action made in the system.
- When staff click delete icon to delete sample information, the system will display popup alert message “SampleID Deleted!”. The staff must click “Verify & Save” button to save action made in the system.



SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	126 / 151



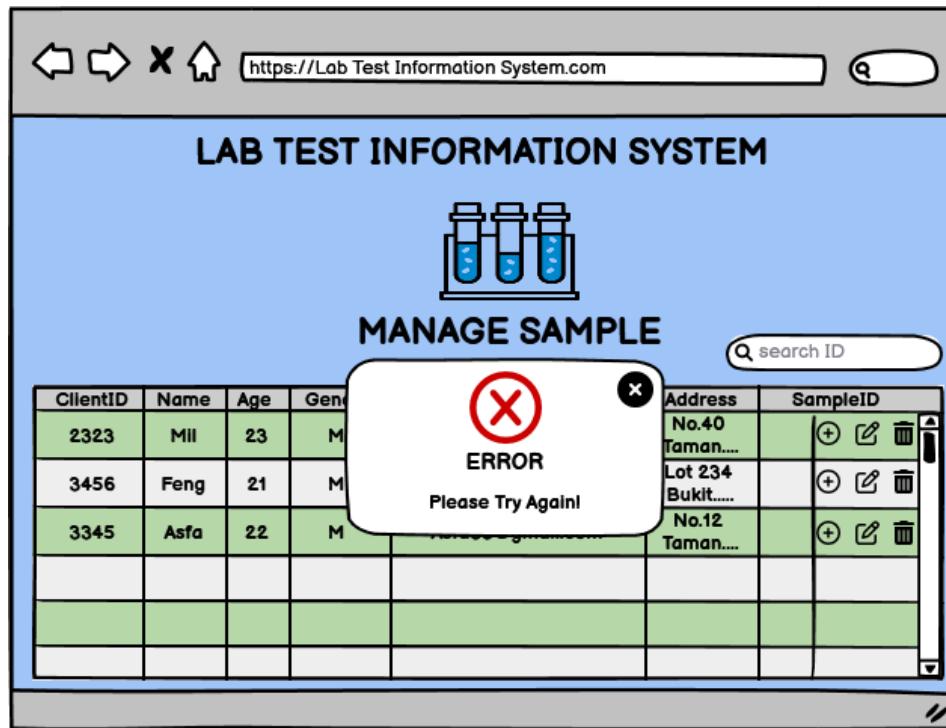
Purpose: The purpose of this message functionality is to let the staff know that the sample information is added, edited or deleted successfully.

Guidelines:

- The system will popup a “SUCCESS” message to the staff if staff successfully add, edit or delete sample information.
- The action made will be saved in the system.
- Staff will click on the “x” button, then the staff will be taken to the Manage Sample page.



SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	127 / 151



Purpose: The purpose of this message functionality is to let the staff know that the sample information is failed to add, edit or delete.

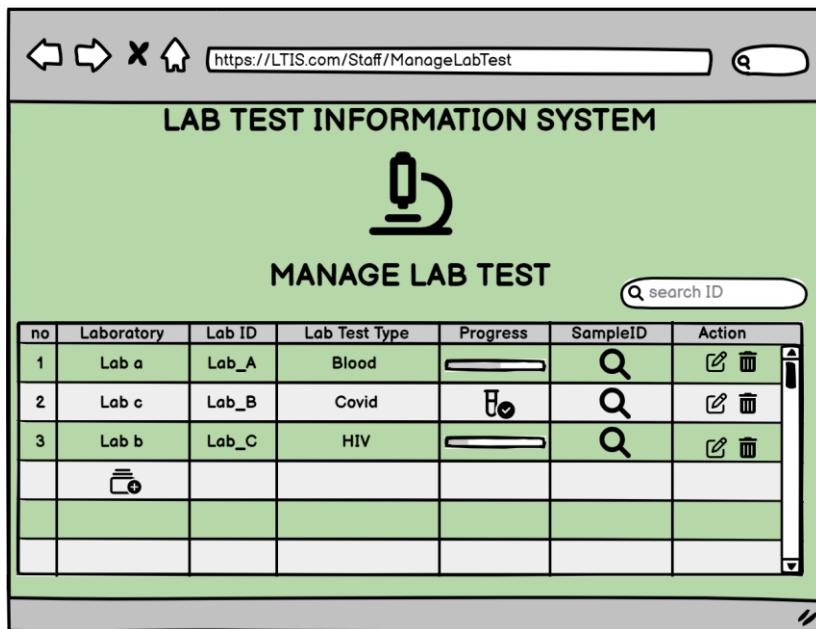
Guidelines:

- The system will popup a “ERROR” message to the staff if staff fail to add, edit or delete sample information.
- The staff will click “x” button, then the page will be refreshed and staff must check what the possible problem and solved it to trying again add, edit or delete sample information selected.



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SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	128 / 151

7.5 User Manual for Manage Lab Test Use Case



Purpose: The purpose of this “Manage Lab Test Table” is to let staff to add, edit, delete, and check progress about the lab test.

Guidelines:

- To add a new lab test information, staff clicks on the add lab test symbol which located under the last laboratory in the “Laboratory” column.
- To edit a lab test information, staff will search lab test ID (Lab ID) in search box and clicks on the edit symbol in “Action” column, system will display “Edit Lab Test” page.
- To delete an lab test information, staff will search lab test ID (Lab ID) in search box and clicks on the dustbin symbol in “Action” column, system will display “Delete Lab Test” page.
- To check the progress of a lab test, staff can search lab test ID (Lab ID) and view the progress of the lab test in the “progress” column.



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LAB TEST INFORMATION SYSTEM		1.0	129 / 151

Purpose: The purpose of “Add Lab Test” functionality is let staff to fill in new lab test information and save it in the system.

Guidelines:

- The staff must key-in lab test information which are laboratory, type of lab test, involved sample, date, time, and in-charge staff.
- After key-in all lab test information, the staff must click “Save” button to save it in the system.



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The screenshot shows a web-based application titled "LAB TEST INFORMATION SYSTEM". At the top, there are navigation icons (back, forward, search, etc.) and a URL bar containing "https://LTIS.com/Staff/ManageSample". Below the title, there is a small icon of three test tubes. The main area is titled "Select Sample" and contains a table with the following data:

ClientID	Name	Age	Gender	Email	Address	SampleID	Action
2323	Mil	23	M	syamil@gmail.com	No.40 Taman....	B123	<input checked="" type="checkbox"/>
3456	Feng	21	M	Feng123@gmail.com	Lot 234 Bukit....	B131	<input checked="" type="checkbox"/>
3345	Asfa	22	M	Asfa33@gmail.com	No.12 Taman....	C133	<input checked="" type="checkbox"/>

Purpose: The purpose of "Select Sample" table is let staff to select the sample which involved in a lab test.

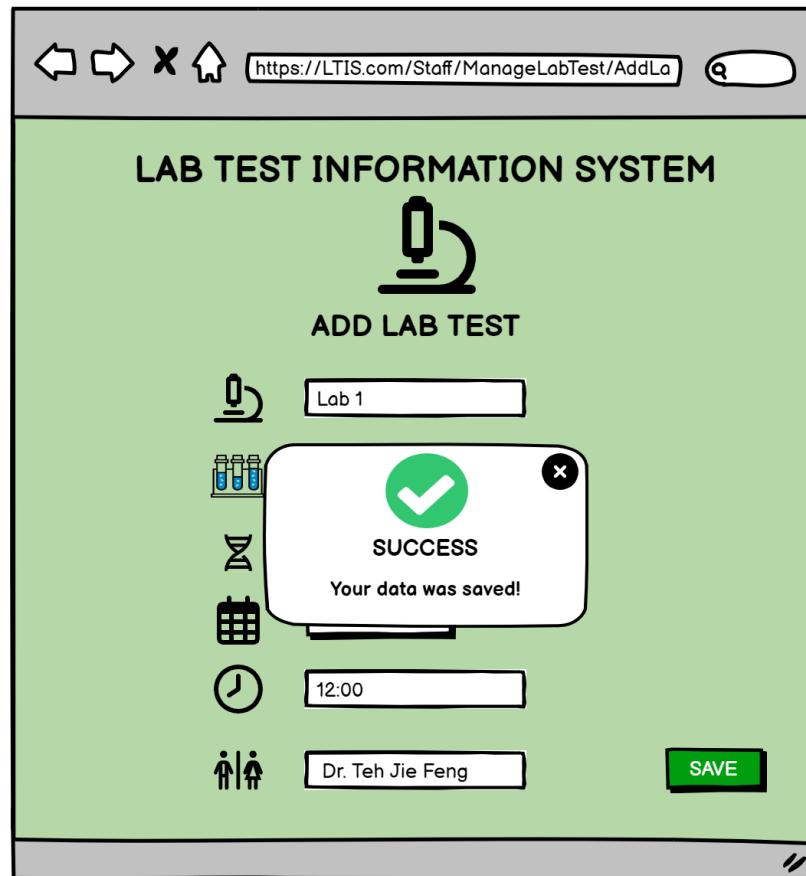
Guidelines:

- The staff must key-in the Sample ID to search a sample to add it in the lab test.
- The right-hand side of the table will show a tick icon. The tick icon shows which samples are selected in the lab test.
 - The dark tick represents selected
 - The light tick represents not selected



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LAB TEST INFORMATION SYSTEM		1.0	131 / 151



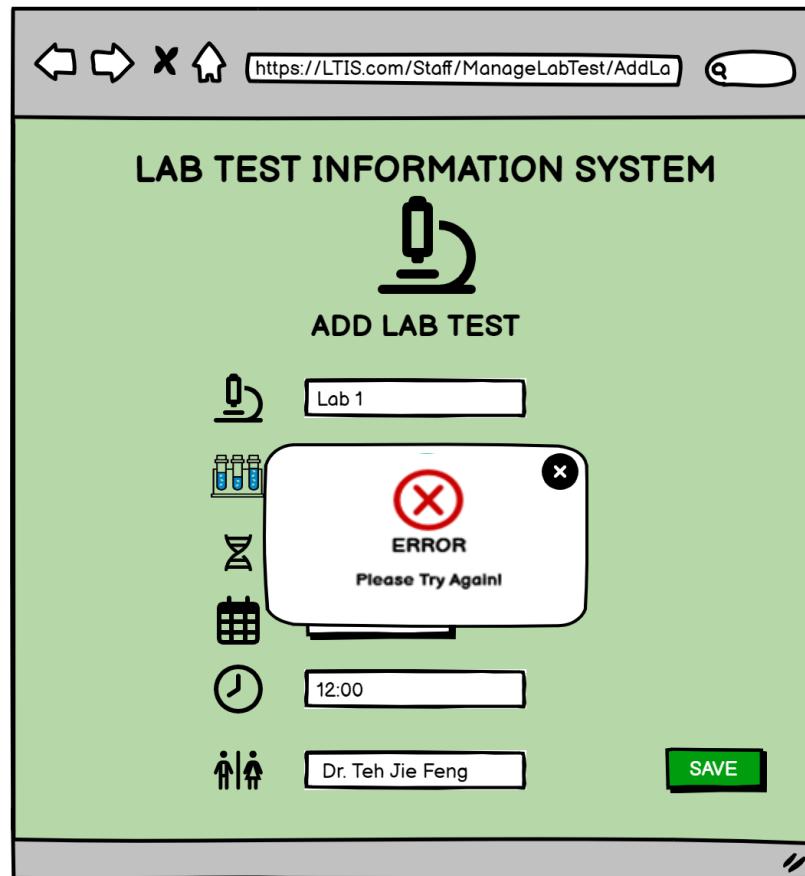
Purpose: The purpose of this pop up is to let staff know that the lab test information is saved in the system.

Guidelines:

- The system will popup a “SUCCESS” message to the staff.
- The staff can click on the “X” button on the top right to back to the manage lab test page.



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Purpose: The purpose of this message functionality is to let the staff know that the lab test information is failed to added.

Guidelines:

- The system will popup a “ERROR” message to the staff.
- The staff will click “x” button, then the page will be refreshed and staff must check what the possible problem and solved it to trying again add lab test information selected.



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LAB TEST INFORMATION SYSTEM		1.0	133 / 151

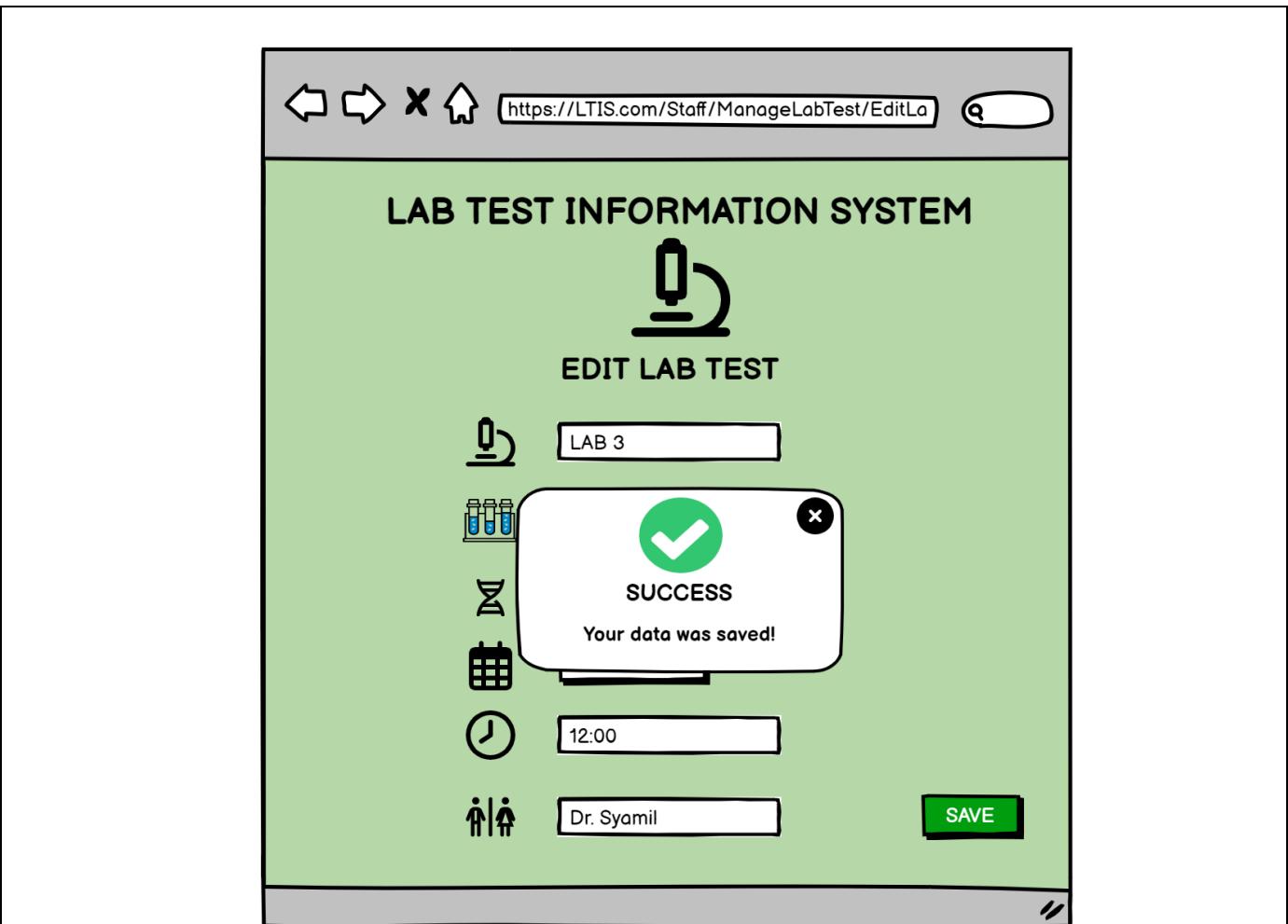
Purpose: The purpose of “Edit Lab Test” functionality is let staff to edit a lab test information and save it in the system.

Guidelines:

- The staff can edit a lab test information which are laboratory, type of lab test, involved sample, date, time, and in-charge staff.
- After edit a lab test information, the staff must click “Save” button to save it in the system.



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SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	134 / 151



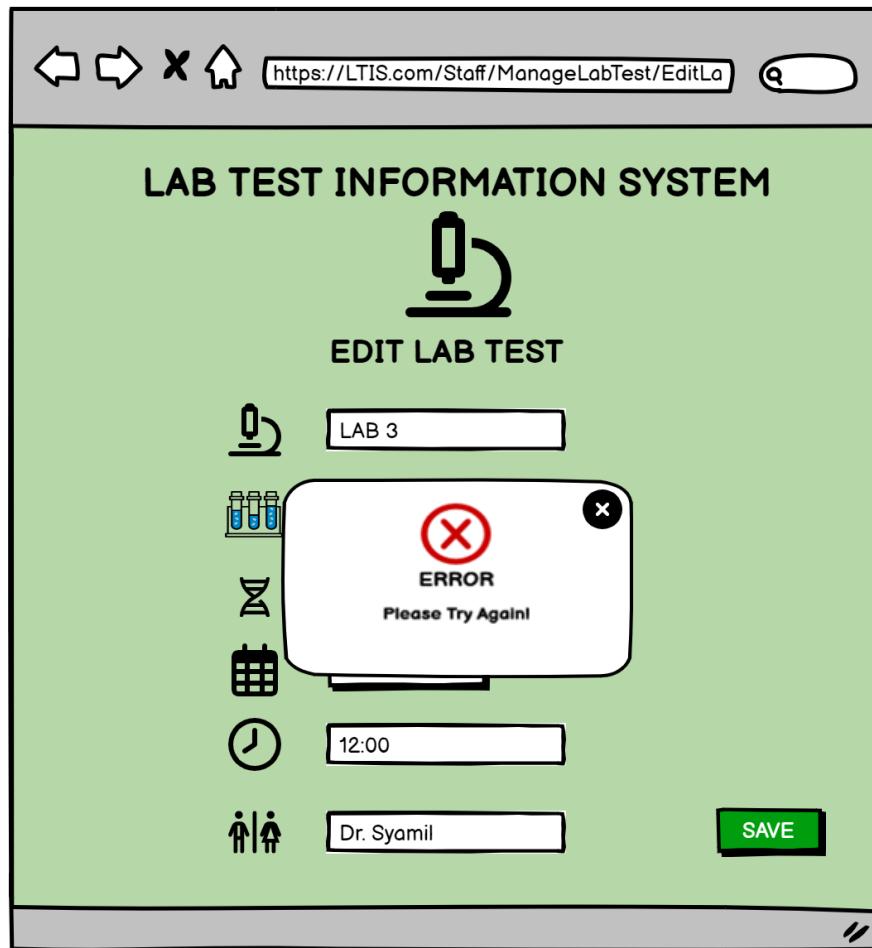
Purpose: The purpose of this pop up is to let staff know that the edited lab test information is saved in the system.

Guidelines:

- The system will popup a “SUCCESS” message to the staff.
- The staff can click on the “X” button on the top right to back to the manage lab test page.



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LAB TEST INFORMATION SYSTEM		1.0	135 / 151



Purpose: The purpose of this message functionality is to let the staff know that the lab test information is failed to edit.

Guidelines:

- The system will popup a “ERROR” message to the staff.
- The staff will click “x” button, then the page will be refreshed and staff must check what the possible problem and solved it to trying again edit lab test information selected.



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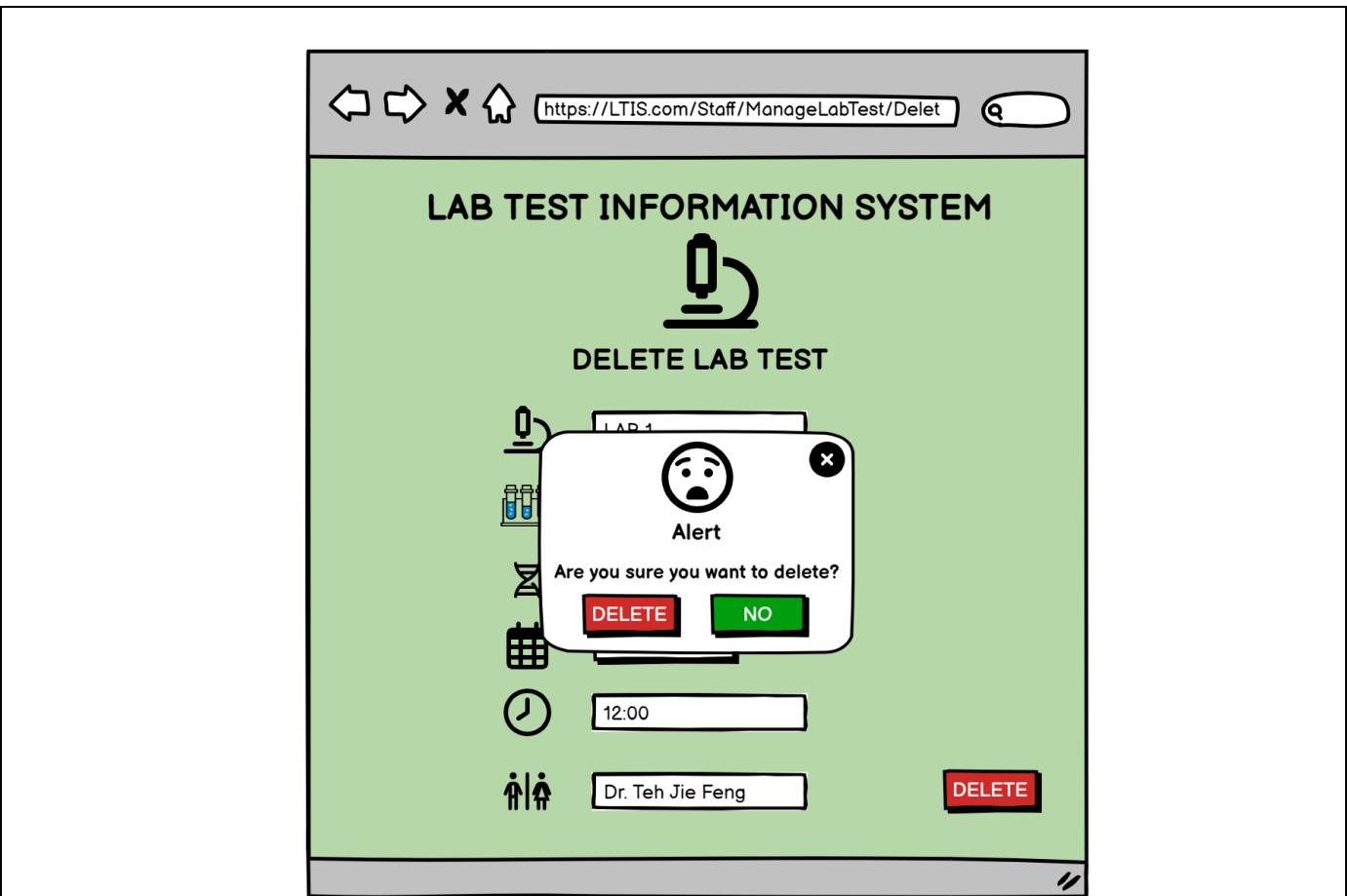
Purpose: The purpose of “Delete Lab Test” functionality is let staff to delete a lab test information from the system.

Guidelines:

- The staff can delete a lab test information by click the red “Delete” Button.
- After click the delete button, system will ask confirmation from staff before delete the lab test information.



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SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
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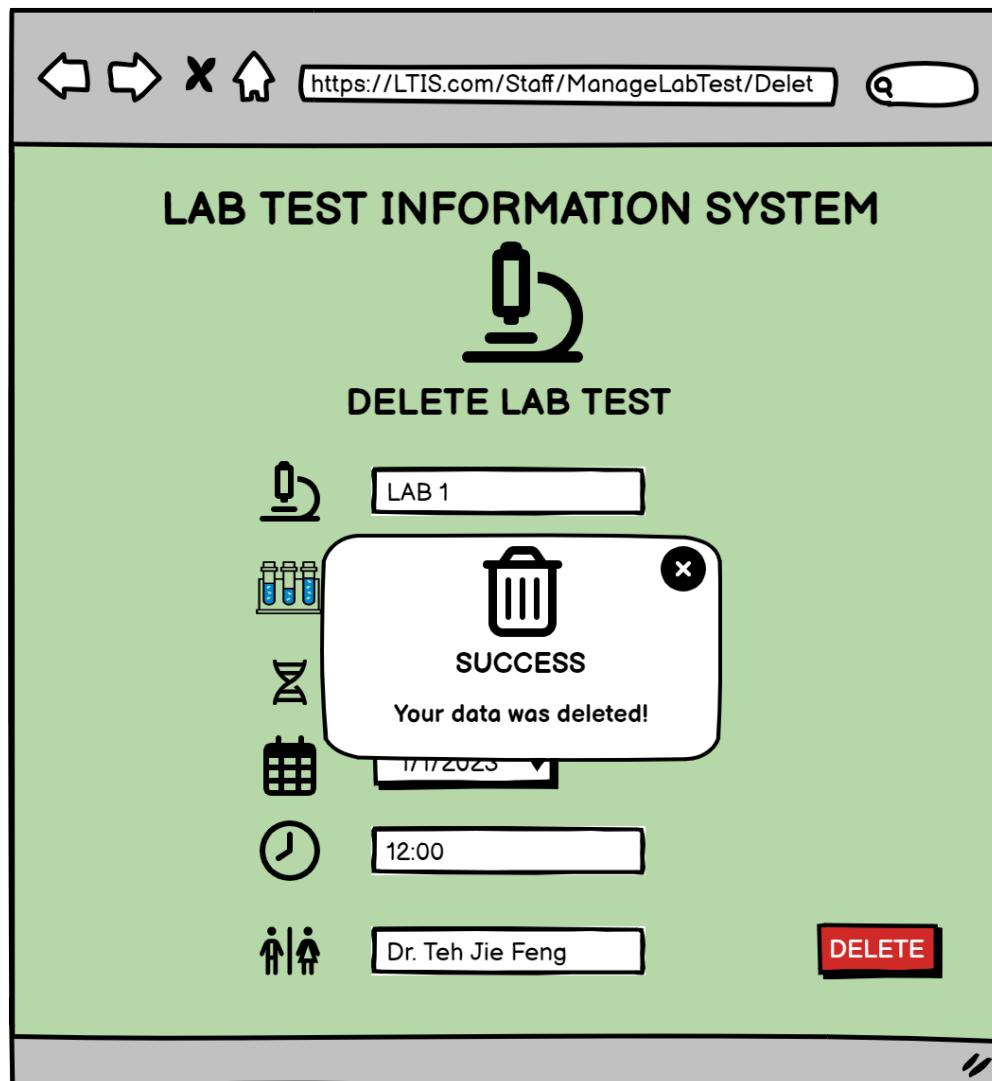
Purpose: The purpose of this pop up is to ask the confirmation from staff whether he want to delete the lab test or not.

Guidelines:

- Staff can click on the red “DELETE” button to delete the lab test.
- If staff don’t want to delete the appointment, staff can click on the green “NO” button to back to the manage lab test page.
- The staff also can click on the “X” button on the top right to back to the manage lab test page.



DOCUMENT IDENTIFICATION			
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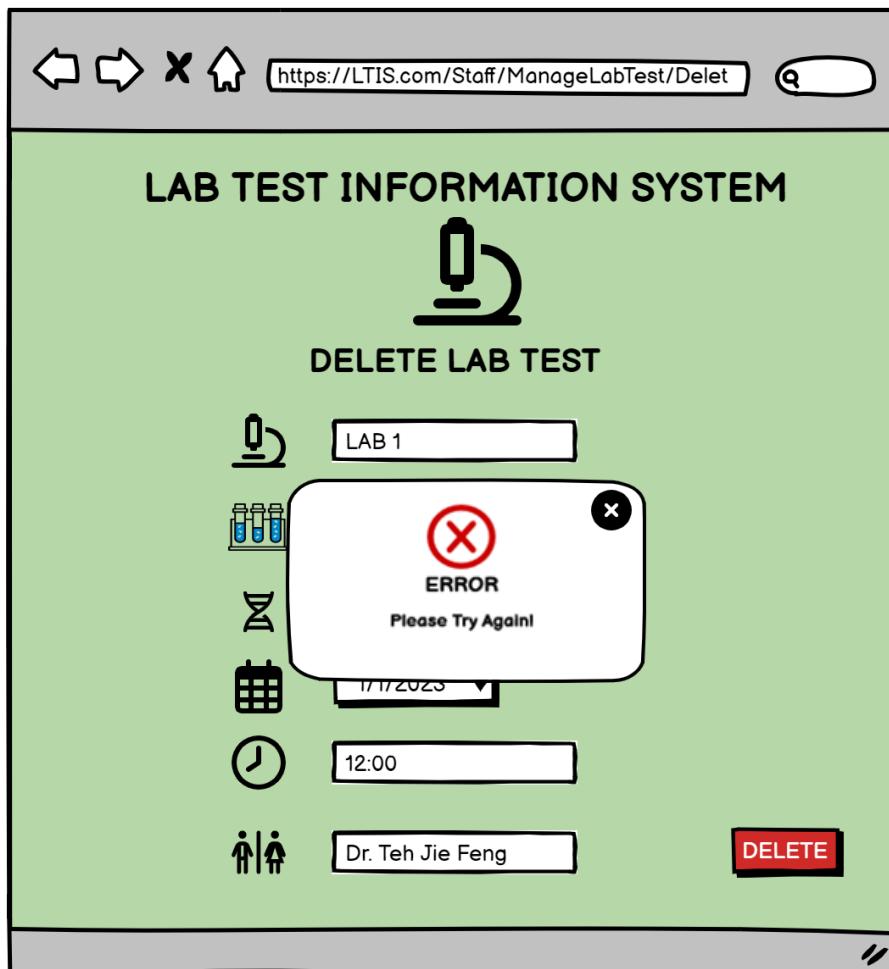
Purpose: The purpose of this pop up is to tell the staff about the deletion of the lab test is success.

Guidelines:

- The system will popup a “SUCCESS” message to the staff.
- The staff can click on the “X” button on the top right to back to the manage lab test page.



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Purpose: The purpose of this message functionality is to let the staff know that the lab test information is failed to delete.

Guidelines:

- The system will popup a “ERROR” message to the staff.
- The staff will click “x” button, then the page will be refreshed and staff must check what the possible problem and solved it to trying again delete lab test information selected.



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The screenshot shows a web browser window with the URL <https://LTIS.com/Client/Result>. The page title is "LAB TEST INFORMATION SYSTEM". Below it is a logo consisting of a square with a stylized human figure inside. The main content area is titled "LAB TEST RESULT". A search bar labeled "search ID" is located at the top right. Below the search bar is a table with the following columns: no, Name, Sample ID, Lab Test Type, Date, and Result. The table contains the following data:

no	Name	Sample ID	Lab Test Type	Date	Result
1	Feng	279073	Blood	1/1/2023	
2	Feng	390841	Covid	2/1/2023	
3	Feng	412445	HIV	3/1/2023	

Purpose: The purpose of “Lab Test Table” functionality is let client to search and check their lab test result.

Guidelines:

- The client can check his lab test result by click the icon with the magnify glass under the “Result” Column.



DOCUMENT IDENTIFICATION

SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	141/ 151

The screenshot shows a web browser window with the URL <https://LTIS.com/Client/ViewResult>. The page title is "LAB TEST INFORMATION SYSTEM". Below the title is a table with the following data:

Information	
Name	TEH JIE FENG
No. IC	*****-***
Age	25
Gender	M
Address	1234 Jalan Ah Kau...
Email	jiefengteh@gmail.com
RESULT:	
HIV	POSITIVE
COVID	POSITIVE
Blood Type	B+

Purpose: The purpose of result table is let client to look their lab test result.

Guidelines:

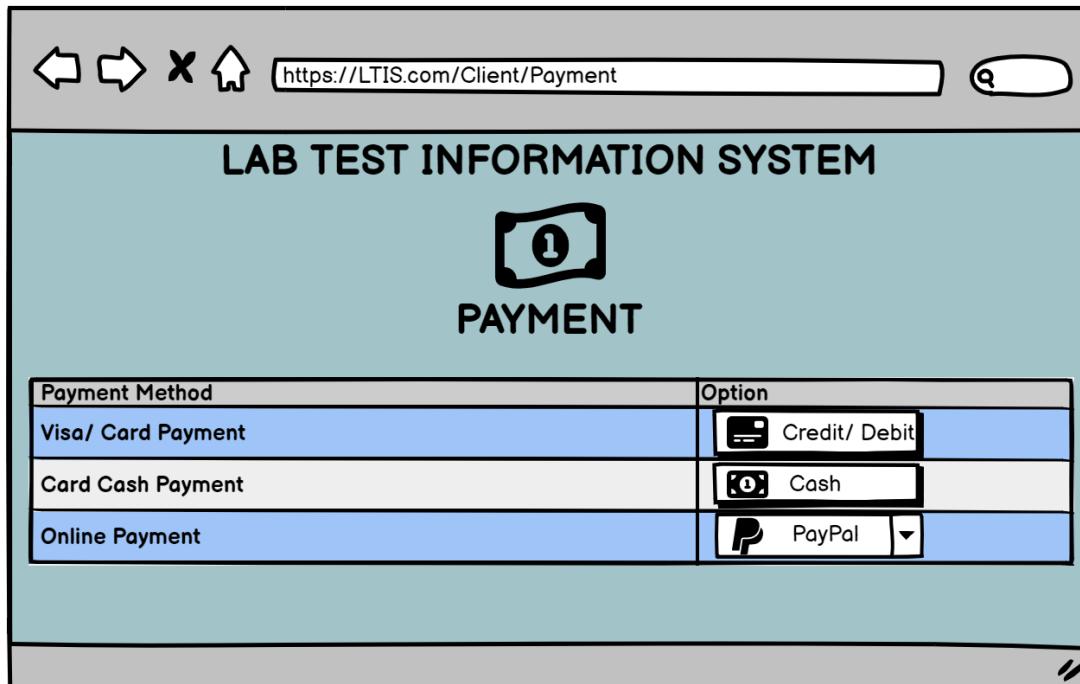
- The system will output a table which print the result of the lab test.
- Client can scroll down to check on the result.



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LAB TEST INFORMATION SYSTEM		1.0	142 / 151

7.6 User Manual for Payment Use Case



Purpose: The purpose of this “Payment” functionality is to let client to make payment online.

Guidelines:

- Client is requested to pick a payment method from Visa/ card payment, Cash payment, and online payment.
- Client can click on the option given in the right-hand side of the table.
- Client are been given several options of E-wallet, client can click on the downward “Arrow” to choose other options of online payment.



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Lab Test Bill	Date	Amount	Select
Blood test	29/11/2022	RM 250.00	<input checked="" type="checkbox"/>
HIV test	30/12/2022	RM 300.00	<input type="checkbox"/>
DNA test	2/1/2023	RM 500.00	<input type="checkbox"/>
TOTAL		RM 300.00	

Pay

Purpose: The purpose of this Payment Cart functionality is to let client to choose which lab test he want make payment.

Symbol:

Tick: paid

Dark colour "cart": add to cart

Light colour "cart": not added to cart

Guidelines:

- Client can add the lab test bill to the cart by click the light colour "cart", which located at the right side of the table. The cart will change to dark colour, means that the bill is selected.
- Client can undo the selection by click on the dark colour "cart", which will change the cart back to light colour.
- Client can click green "pay" button to proceed in payment process on those selected bills.



DOCUMENT IDENTIFICATION			
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The screenshot shows a web-based payment interface for the Lab Test Information System. At the top, there are standard browser navigation icons (back, forward, search, etc.) and a URL bar containing the address <https://LTIS.com/Client/Payment/Card>. The main header is "LAB TEST INFORMATION SYSTEM" with a small credit card icon. Below this, the section title is "VISA/ CARD PAYMENT". The form contains four input fields: "Name of Cardholder" (empty), "Card Number" (empty), "CVV" (empty), and "Exp Date" (MM and YY dropdown menus). A prominent green "Pay" button is located at the bottom right of the form area.

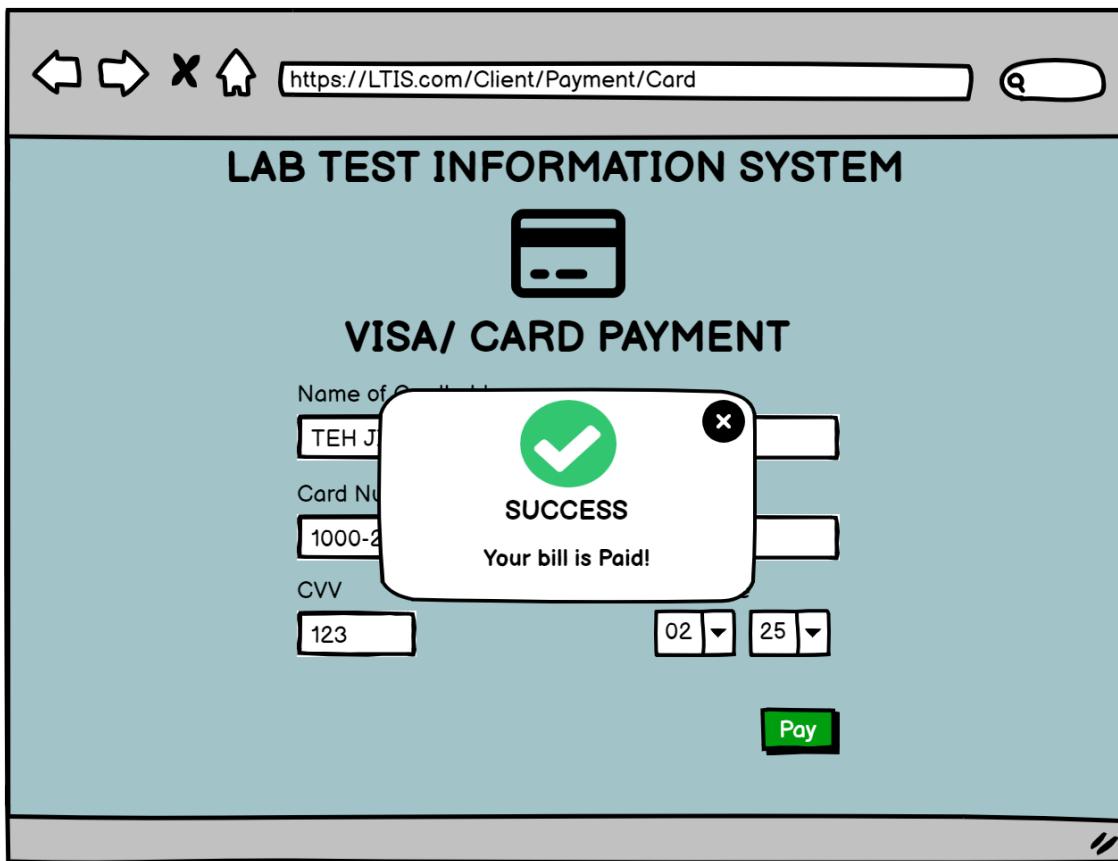
Purpose: The purpose of this “Card Payment” functionality is to let client to make payment through credit card and debit card.

Guidelines:

- Client is requested to key-in the card detail, such as name of cardholder, card number, CVV, Expire date of the card.
- CVV is the 3-digit number which located on the backside of your bank card.
- Client can click on the green “Pay” button to proceed with credit/ debit card payment process.



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SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
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Purpose: The purpose of this “Card Payment Pop up” is to let client know that his payment through credit card or debit card is successful.

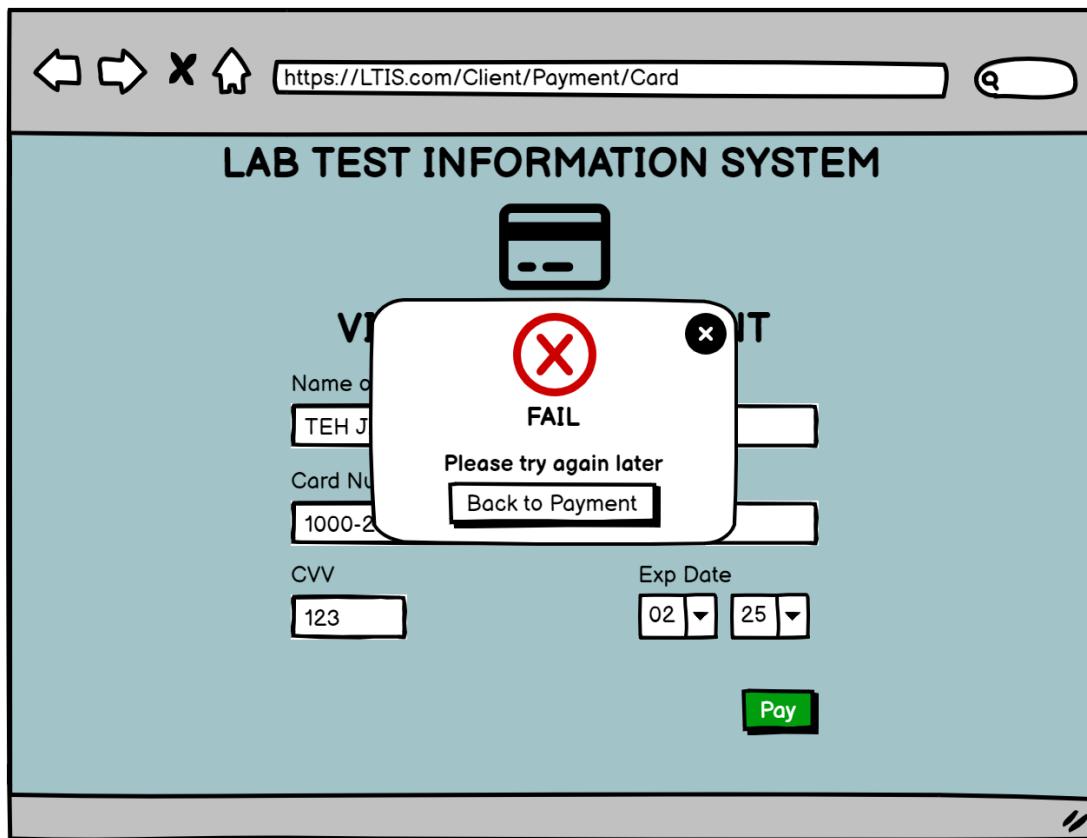
Guidelines:

- The system will popup a “SUCCESS” message to the staff.
- Client can click the “X” button on the top right to close and back to the “Payment” page.



DOCUMENT IDENTIFICATION

SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
LAB TEST INFORMATION SYSTEM		1.0	146 / 151



Purpose: The purpose of this “Card Payment Fail Pop up” is to let client knows that his payment through credit card or debit card is unsuccessful.

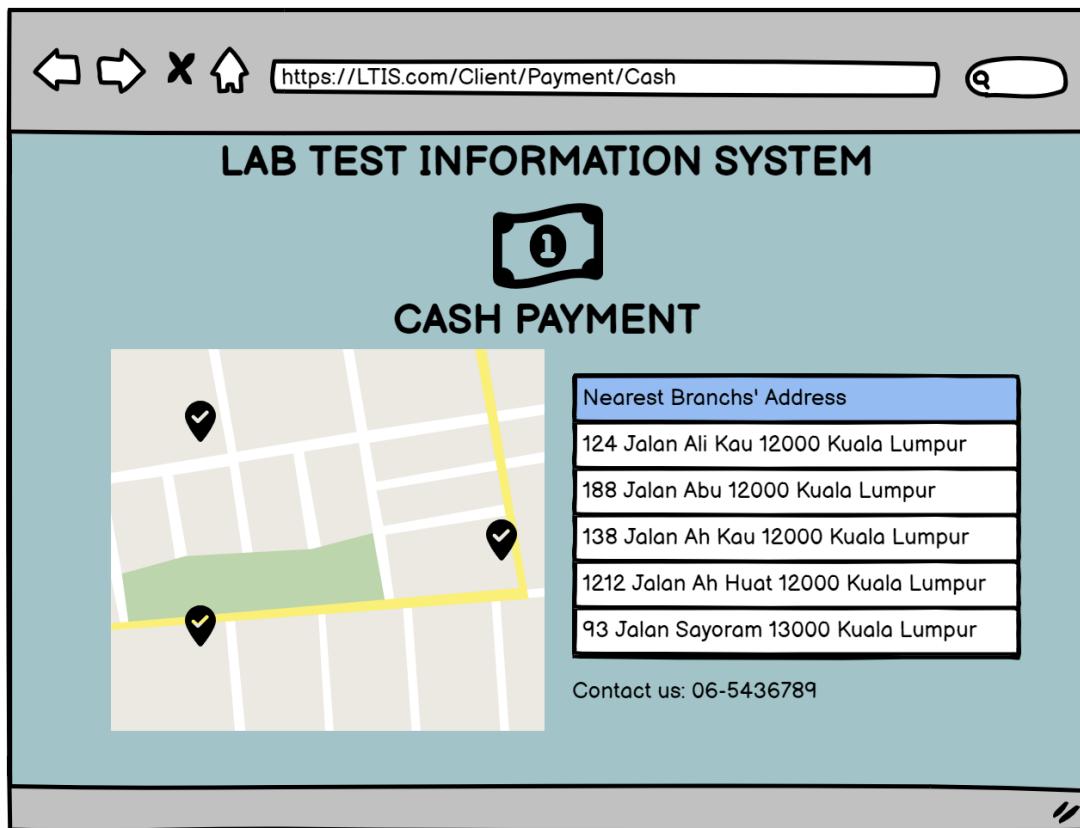
Guidelines:

- Client required to try again later.
- Client can click the “Back to Payment” button to do his payment again with another payment method.



DOCUMENT IDENTIFICATION

SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
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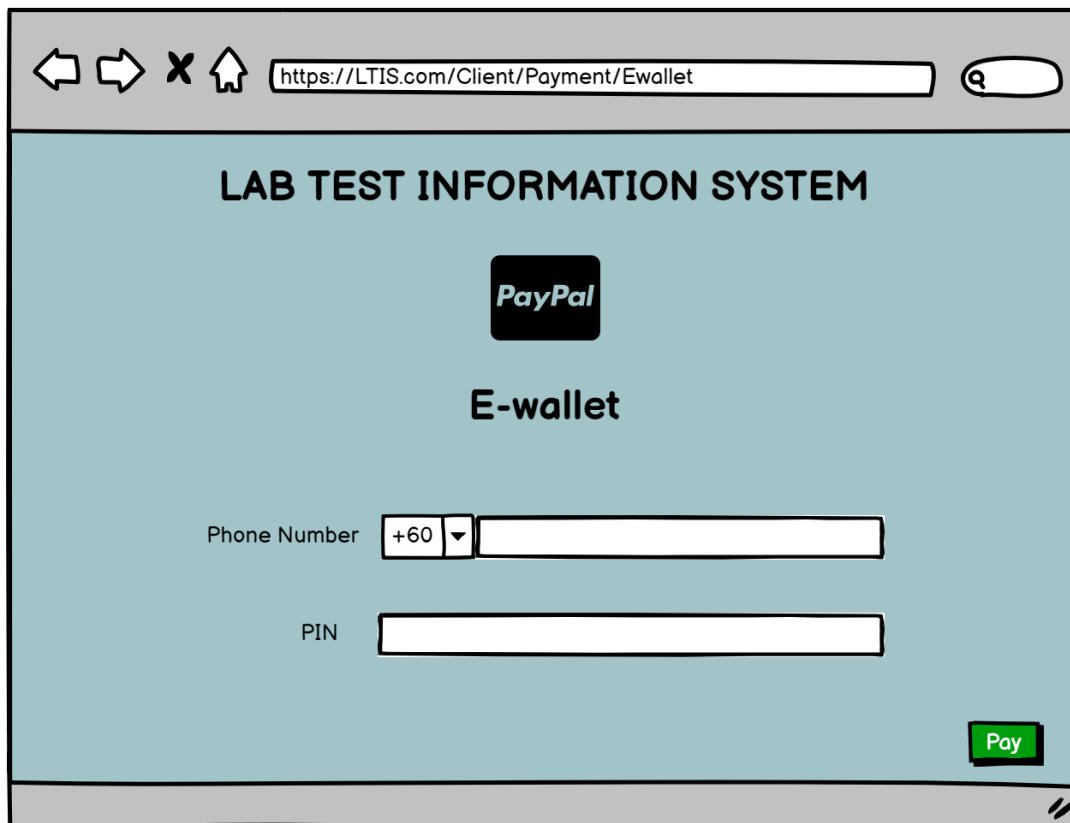
Purpose: The purpose of this “Cash Payment” functionality is to let client to make payment through cash by attending the nearest branch.

Guidelines:

- The left-hand side of the page will show the map and locations of the branches which near the client’s address/ GPS.
- The right-hand side of the page will show a table of several addresses which near to the client’s address.
- Below the table, there will be an office number of our customer services, client may call it if need some helps.



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SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
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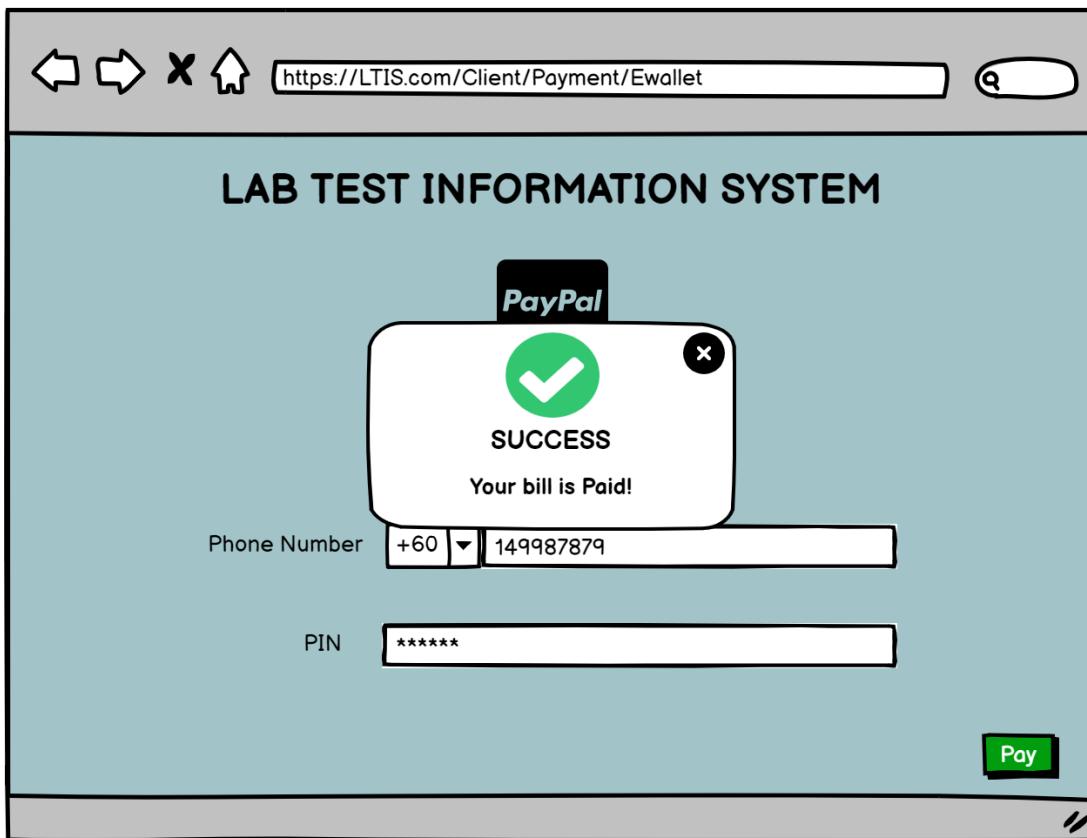
Purpose: The purpose of this “Online Payment” functionality is to let client to make payment through online, such as PayPal, TNG E-wallet, Boost, and so on.

Guidelines:

- Client is requested to key-in the phone number, and the PIN number of the online payment application.
- The phone number must be registered and activated for the selected online payment application.
- Client can click on the green “Pay” button to pay the lab test bill online.



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SYSTEM NAME	DOCUMENT NO.	VERSION	PAGE
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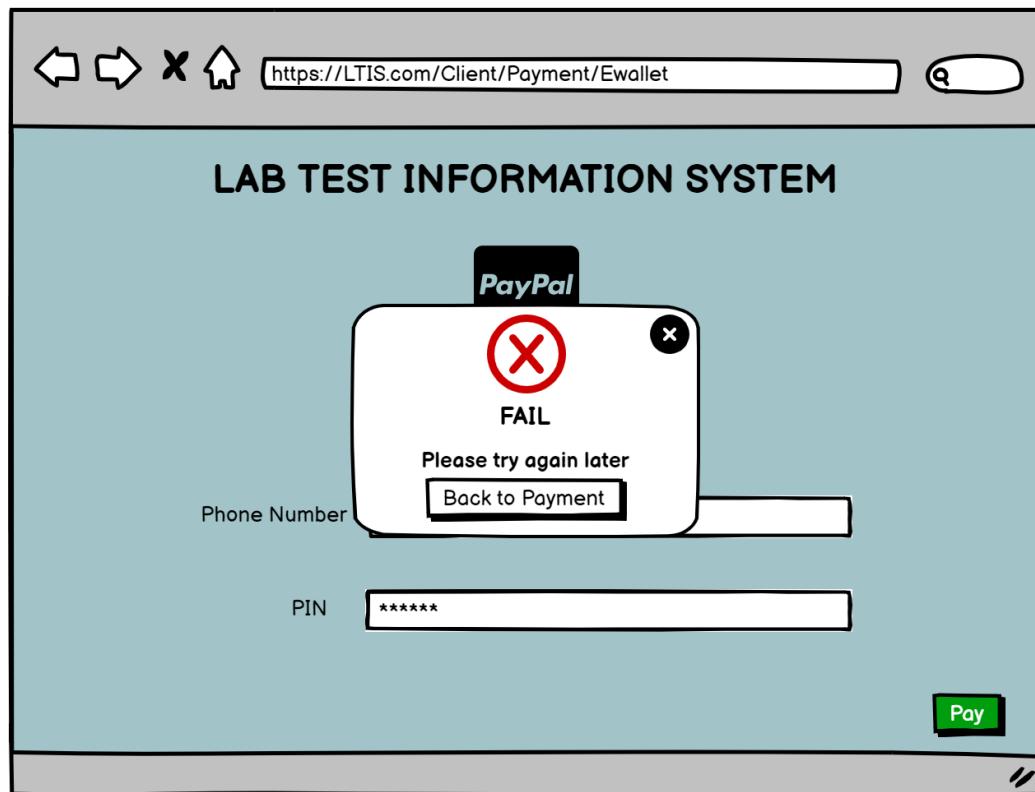
Purpose: The purpose of this “Online Payment Pop up” is to let client know that his payment through online payment is successful.

Guidelines:

- The system will popup a “SUCCESS” message to the staff.
- Client can click the “X” button on the top right to close and back to the “Payment” page.



DOCUMENT IDENTIFICATION			
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Purpose: The purpose of this “Online Payment Fail Pop up” is to let client knows that his payment through online payment is unsuccessful.

Guidelines:

- Client required to try again later.
- Client can click the “Back to Payment” button to do his payment again with another payment method.



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