Sri Lankan Institute of Information Technology

Information Technology Project (IT2080)

Hospital Management System

Requirements Engineering Document

KDY_2022_WD_1

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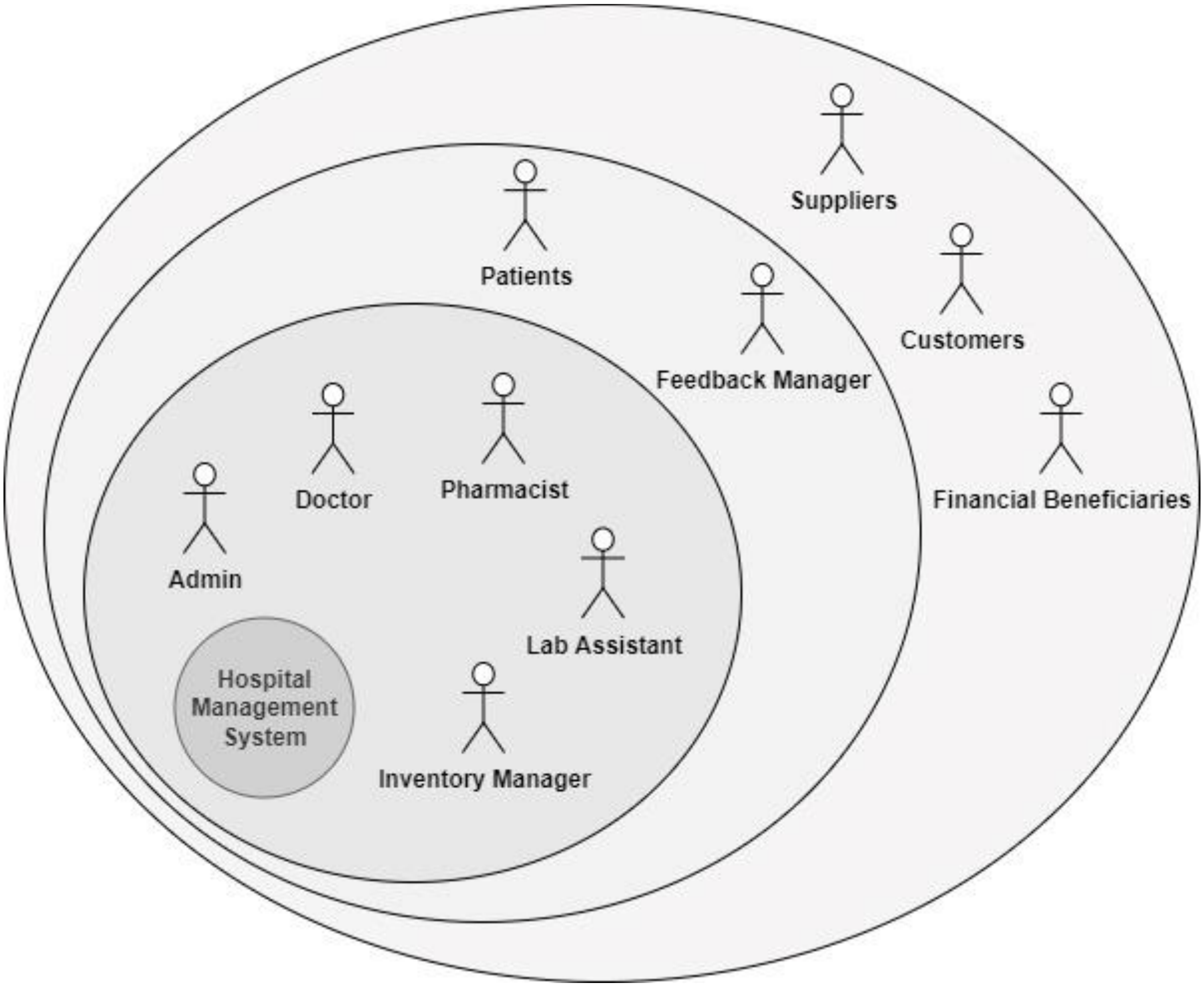
Onion Diagram



User Stories

Admin

As an administrator, I want to give login access to doctors, and all the staff so that they can do their tasks effectively.

As a doctor or a staff member I want to edit, or delete my profile, so that I can make any changes that I want.

Doctor

As a doctor, I want to view the patient’s previous records, so that I can offer the patient the best treatments.

As a doctor, I want to insert the new patient’s condition into the system, so that I can view that record anytime that I want.

As a doctor, I want to view and cancel my appointments, so that I can notify the patients about the cancellation.

Pharmacist

As a Pharmacist I want to insert, update, and delete medicine details So that I can view records of current medicines.

As a Pharmacist I want to receive prescriptions, So that I can arrange prescribed medicines before the patient arrives.

As the Pharmacist I want to issue medicines and check status of the payment So that after I can notify the patient to collect it.

Lab Assistant

As a laboratory assistant, I want to add, update, and delete lab report details which are provided by the laboratory so that I can display the names of the lab reports provided by the laboratory immediate.

As a laboratory assistant, I want to draw blood sample from patient for lab test so that I can request it from laboratory.

As a laboratory assistant, I want to send an email that the lab report has been received after receiving the patient’s report so that I can notify the patient.

Inventory manager

As an Inventory manager, I want to check the current stock and get the report items so, that prevent the item goes out of stock.

As an Inventory manager, I want to add new items so, that I can get the price and the quantity of that item.

As an Inventory manager, I want to add supplier Details so, that I can buy requested items which are not available in the stock.

Functional Requirements

- Doctor management
- Patient management
- Lab management
- Pharmacy management
- Feedback management
- Appointment management
- Inventory management
- Payment management

Non-Functional Requirements

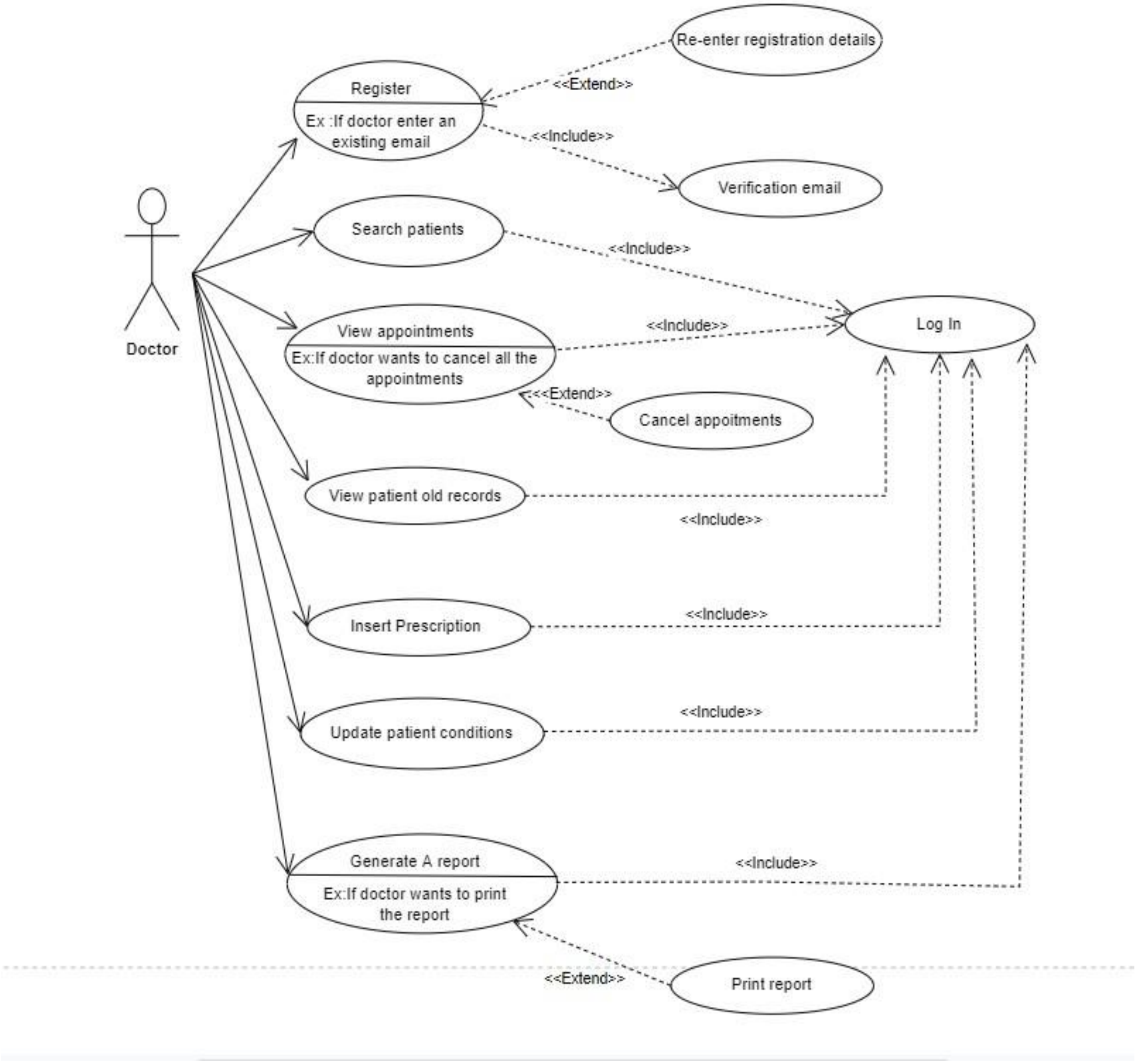
- Performance
- Useability
- Speed
- Reliability
- Compatibility
- Security

Technical Requirements

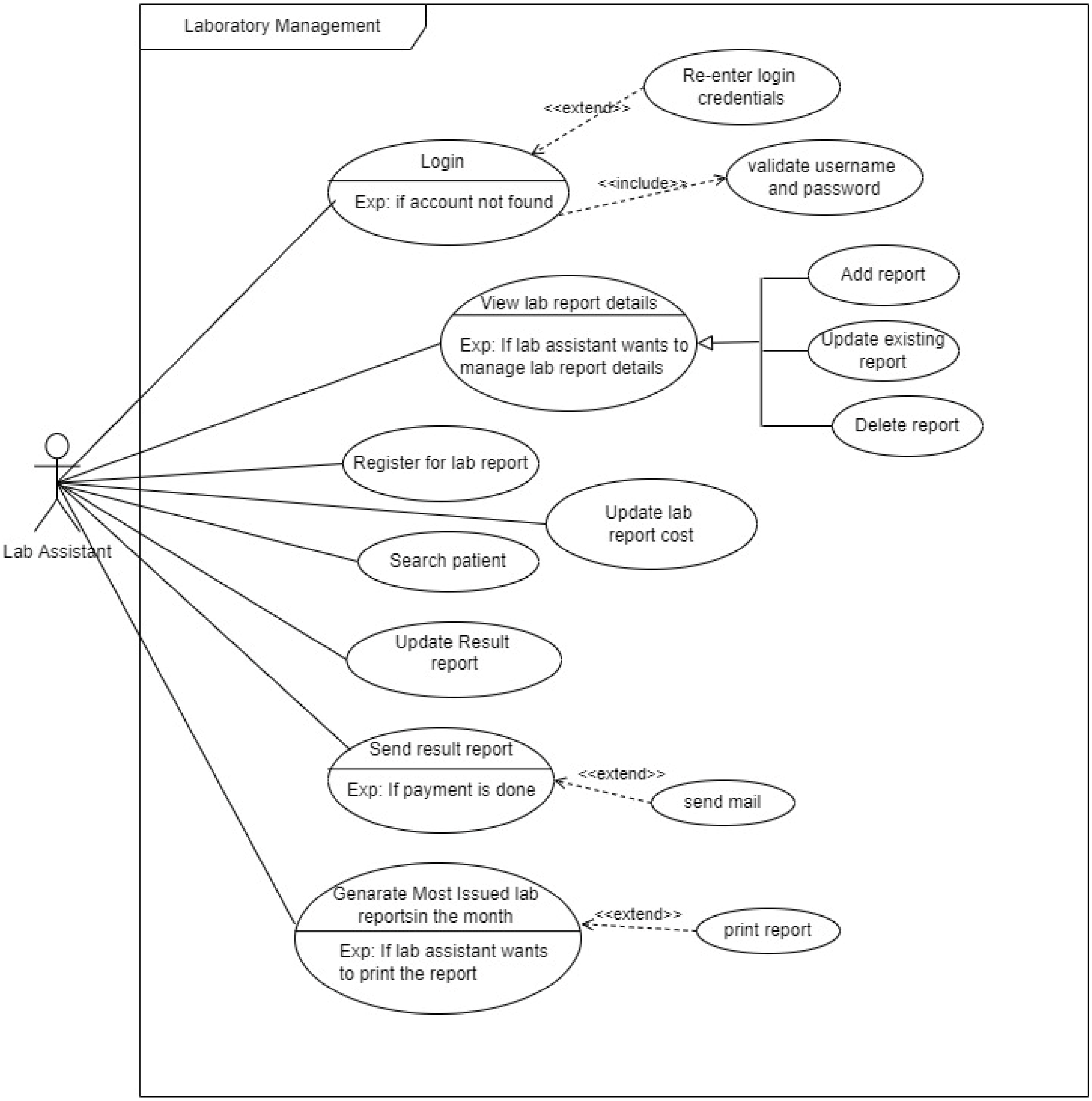
- Web-based system
- Back-end – PHP
- Front-end – HTML, CSS
- Database – MySQL database

Use case diagrams

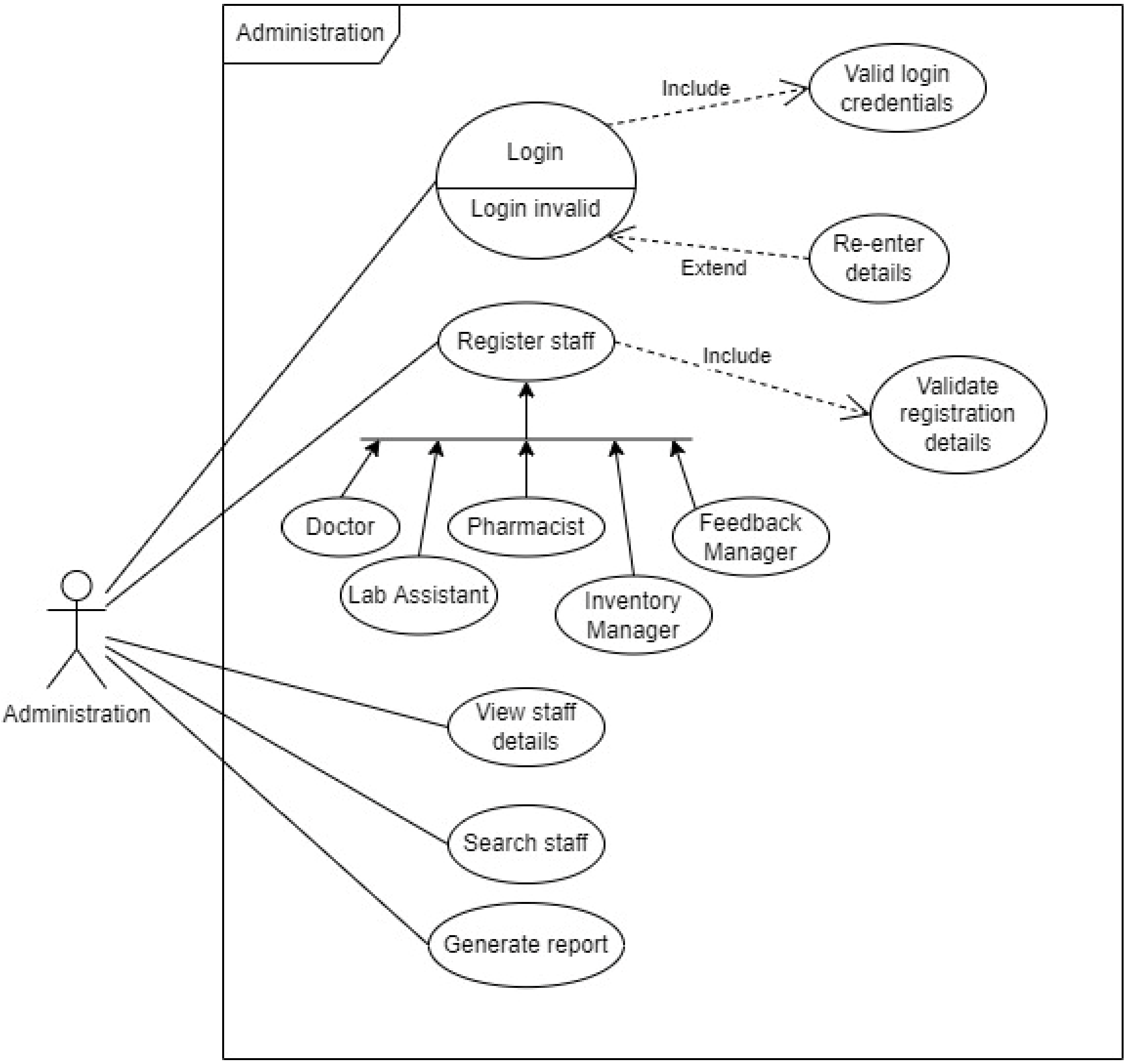
Doctor Management



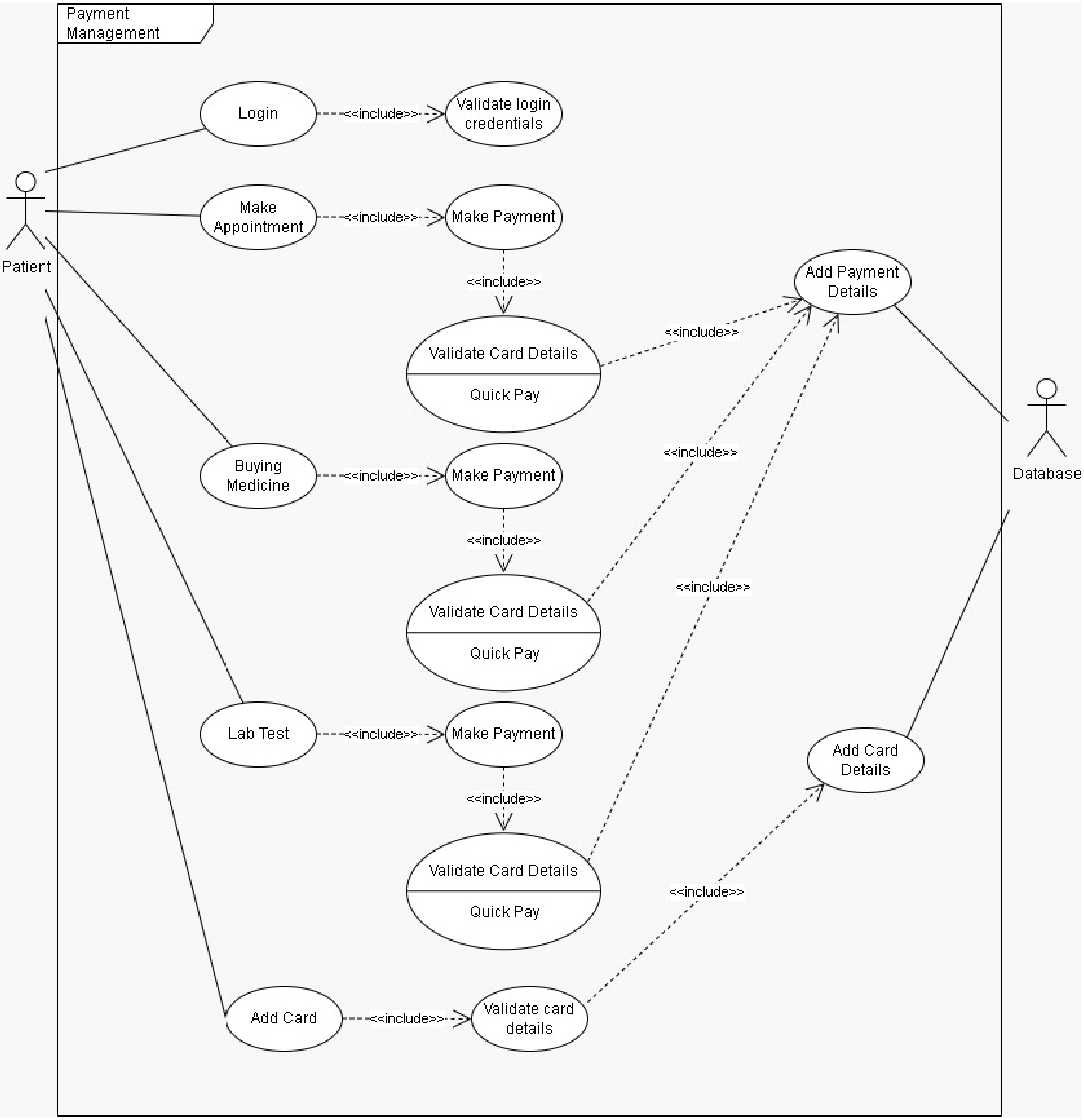
Laboratory Management



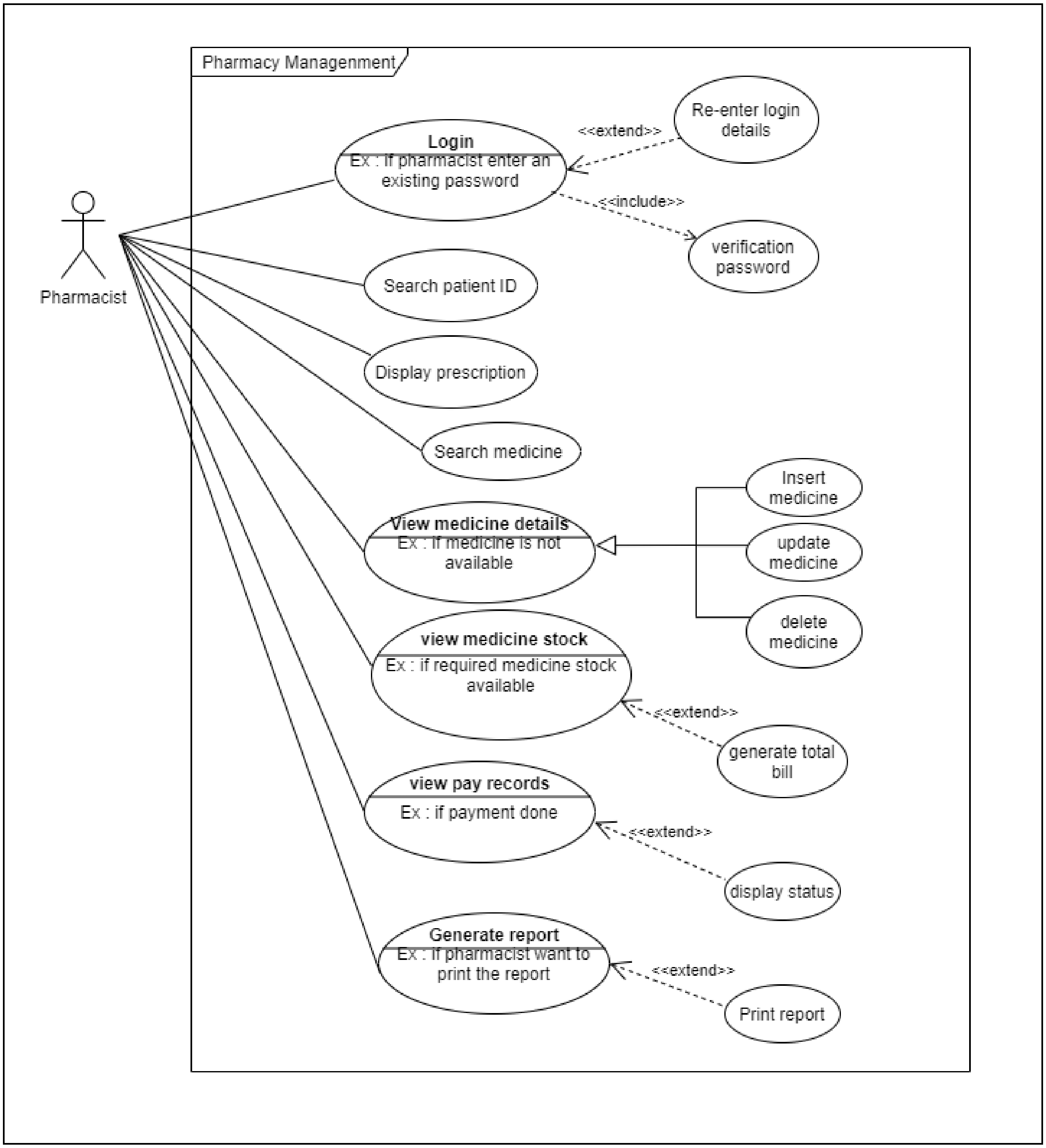
Administration



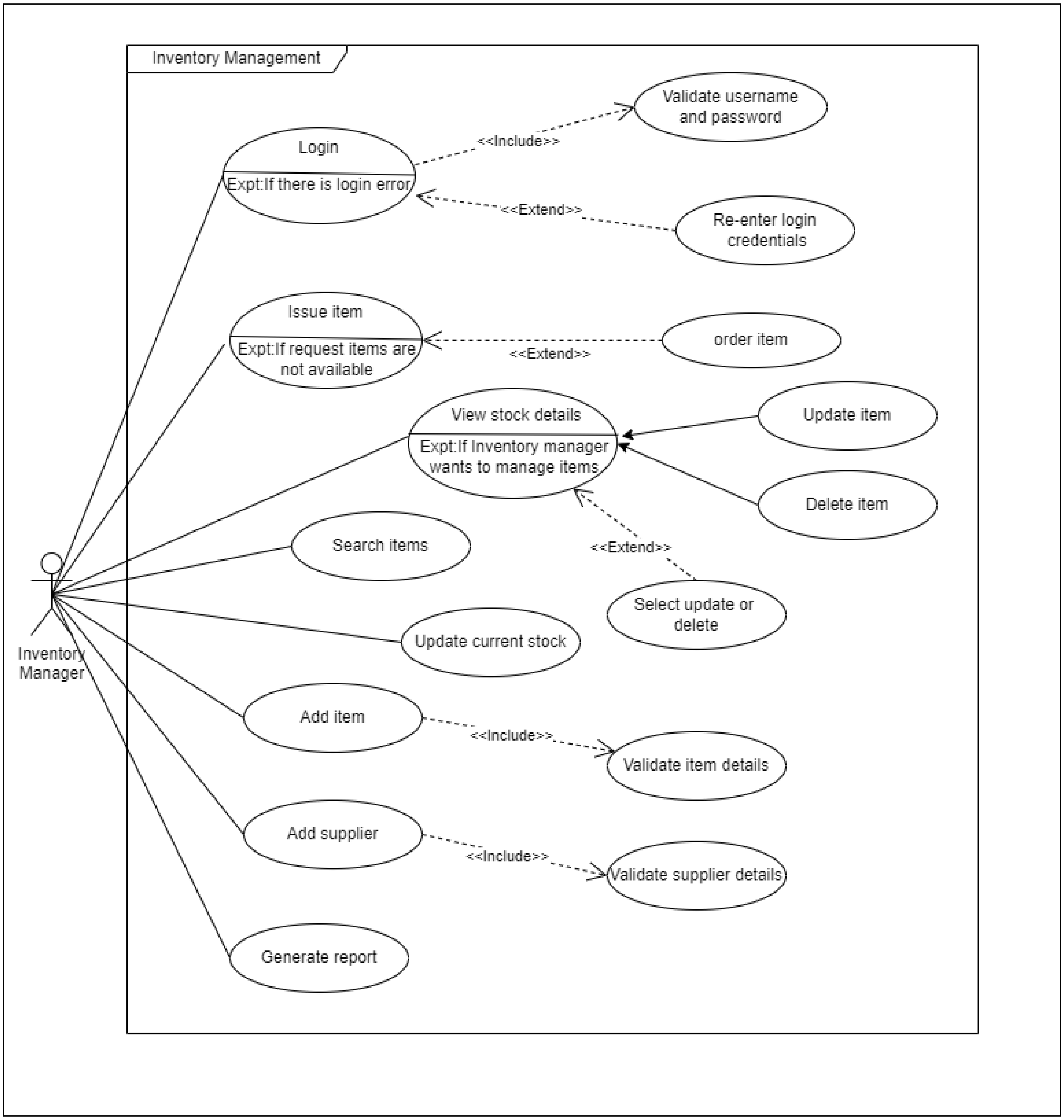
Payment management



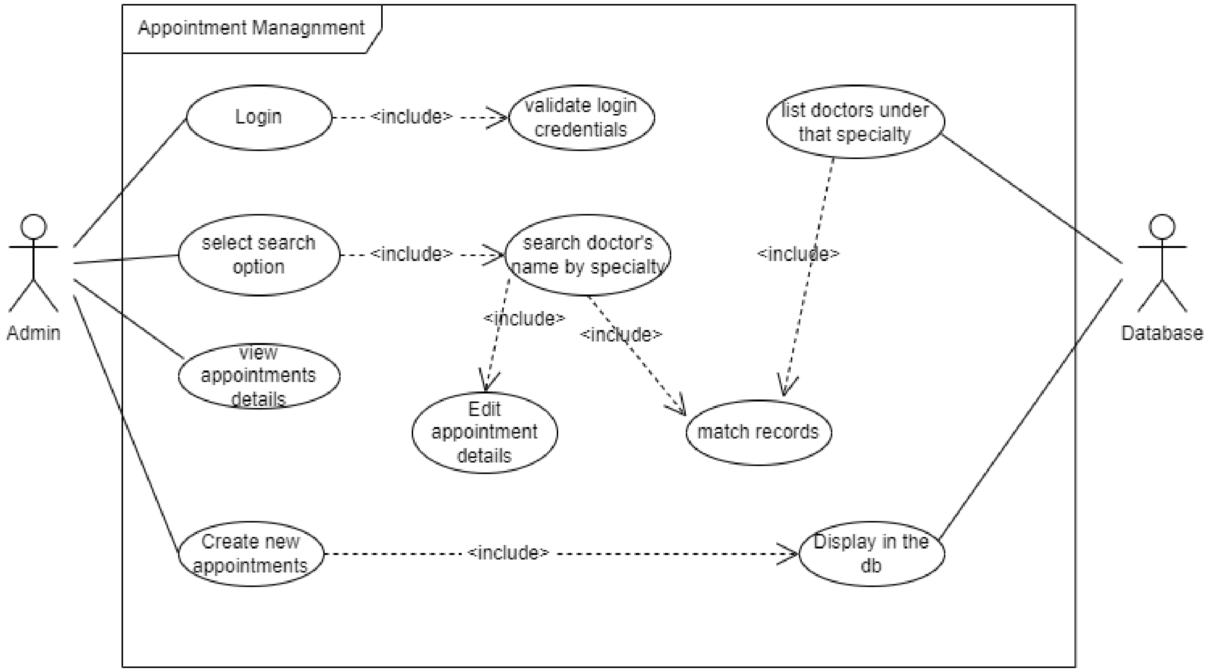
Pharmacy management



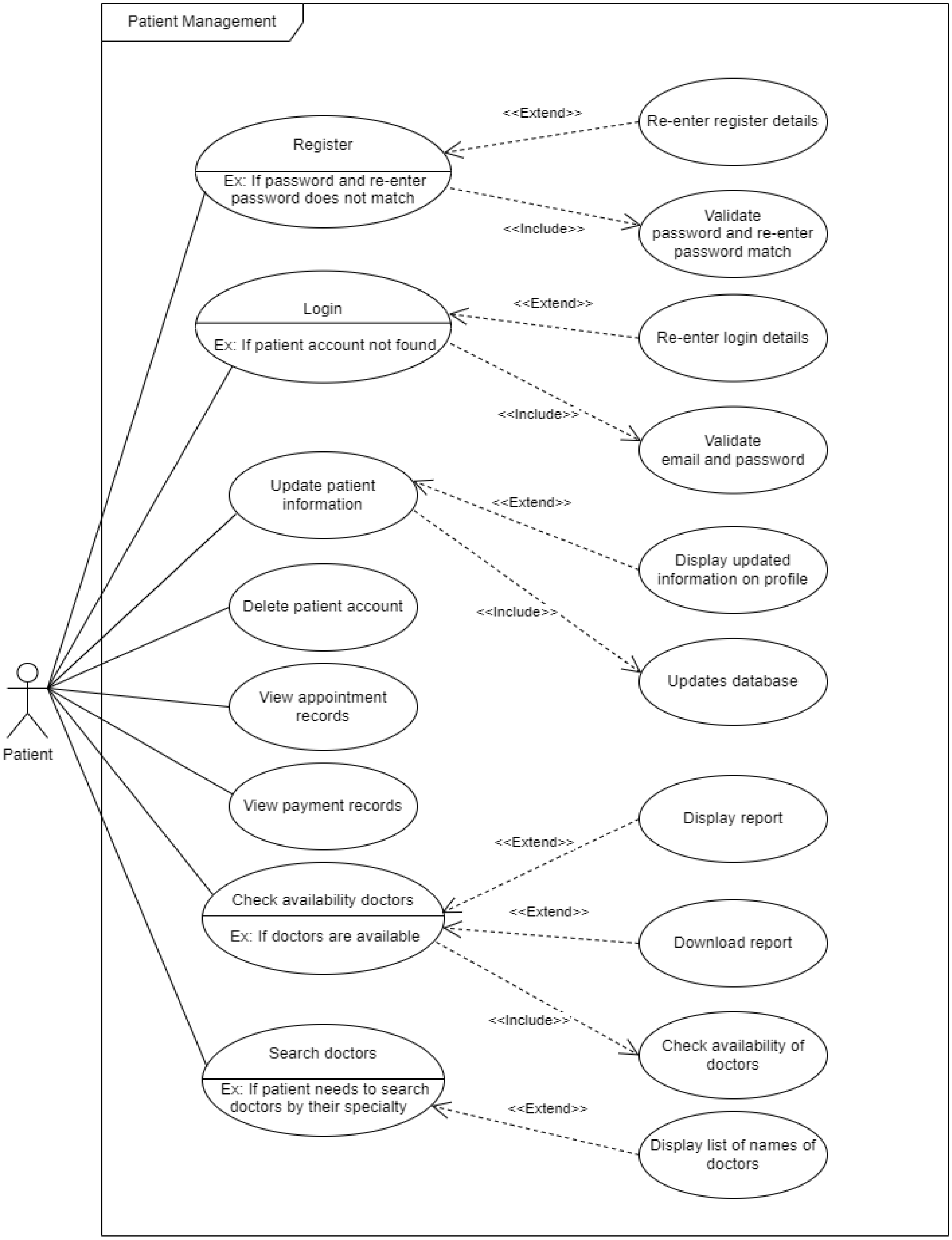
Inventory management



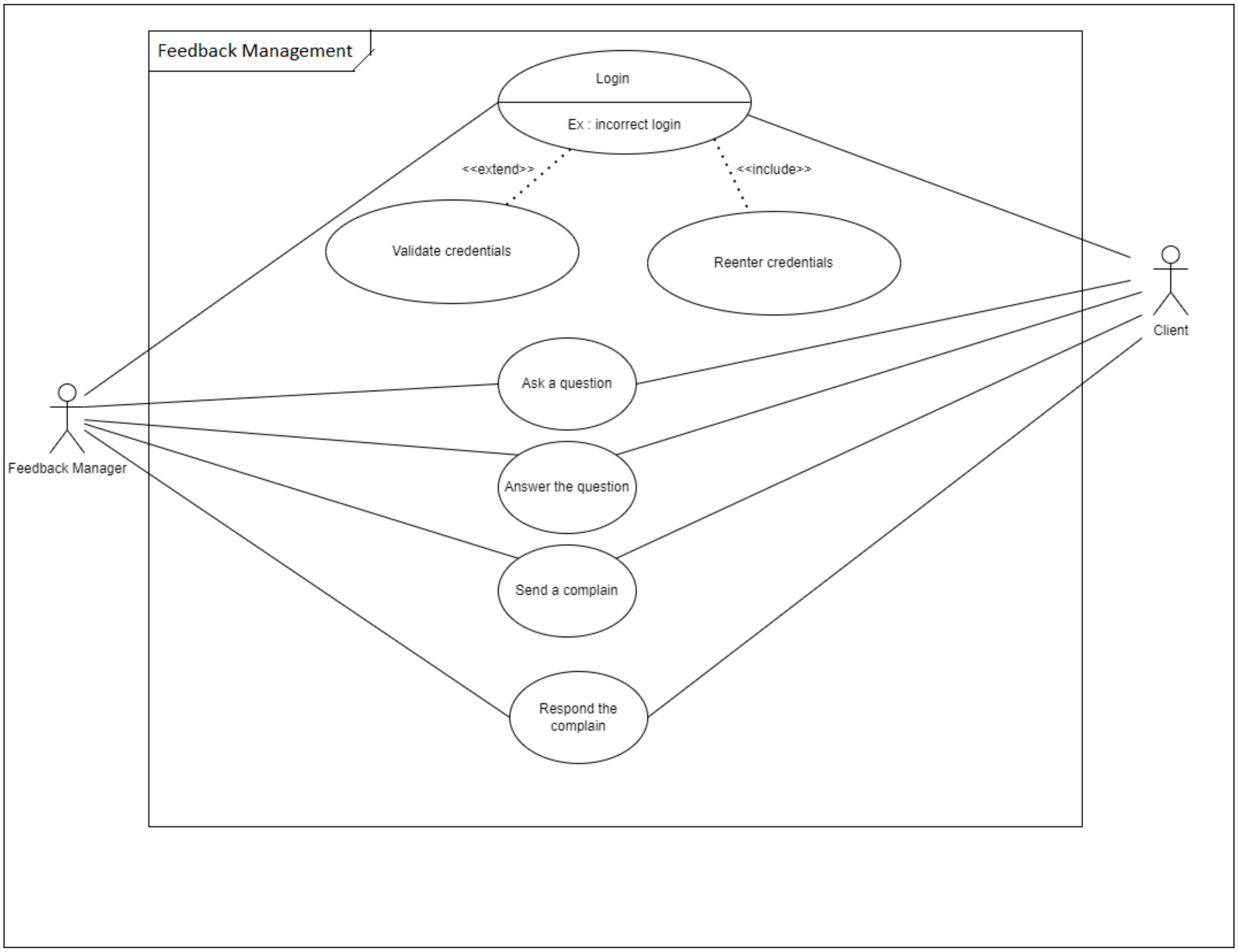
Appointment management



Patient management


Patient Management
Patient
Register
Ex: If password and re-enter password does not match
<<Extend>>
Re-enter register details
<<Include>>
Validate password and re-enter password match
Login
Ex: If patient account not found
<<Extend>>
Re-enter login details
<<Include>>
Validate email and password
Update patient information
<<Extend>>
Display updated information on profile
<<Include>>
Updates database
Delete patient account
View appointment records
View payment records
Check availability doctors
Ex: If doctors are available
<<Extend>>
Display report
<<Extend>>
Download report
<<Include>>
Check availability of doctors
Search doctors
Ex: If patient needs to search doctors by their specialty
<<Extend>>
Display list of names of doctors

Feedback management



Use cases

Administration

Use Case Name	Administration registering doctor	
Goal	Admin should be able to successfully register a doctor to the system	
Overview	Only the admin can register doctors, to do this he/she must login using admin email and password and on the doctor register page the admin must enter various fields and register doctor	
Pre-conditions	Admin must have the doctors' details	
Post-conditions	Register success	
Primary Actors	Admin	
Basic path	**Step**	**Action**
	1	Admin logs in to the system
	2	Redirects to the admin home page
	3	Doctor registration option is clicked and is redirected to a form
	4	Admin enters details relating to the doctor including full name, specialization, email, password, and date of birth, also a ID for the doctor is auto generated by the system.
	5	System validates these details by checking, password and email.
Alternative path	Step	Action
	1a	If the login details are incorrect, he/she will be asked to re-login

	1b	Incase the admin forgets password there will be a separate button which the admin can use to change it.
	5a	If form details are incorrect, system askes admin to re-enter.
NFRs, and TRs	NFRs 24/7 Availability Pages must load within 2 seconds TRs Web-based system Back-end – PHP Front-end – HTML, CSS Database - MySQL	

Doctor Management

Use Case Name	Manage doctor appointments and consultations.	
Actor	Doctor.	
Goal	Doctor need to view appointments and manage the consultations.	
Overview	Doctors view the appointments that he has for the date that he has chosen. After that, he can view the patient records and add prescriptions. After that he/she can update the patient’s conditions and store them.	
Pre-conditions	The doctor should log in to the system.	
Post Conditions	The Doctor should store the details and prescriptions of the patient in the database.	
Basic Path:	1	The doctor log in to the system.
	2	The doctor click the Doctor Management button in his profile.
	3	The doctor views the appointments.
	4	The doctor enters the date.
	5	The doctor selects the appointments from the table.

	6	If doctor wants to delete the appointments for the selected date he can delete them.
	7	The system checks whether the patient is a new patient or an old patient.
	8	The doctor click the prescription button.
	9	System displays an empty prescription form.
	10	Doctor filled the inputs fields and click the save button to save the details.
	11	The doctor click the condition button.
	12	System displays the empty condition form to insert the present condition.
	13	Doctor click the save button to save the details.
	14	If doctor need to view the report he can view it by clicking the view report button.
	15	If doctor needs to get the print he can get a print as well.
Alternative Paths	Step	Action
	6a	The system will send the notification to the patients who are in the cancel appointments list.
	7a	If the patient is a new patient it will display a separate interface without the previous condition button.
		If the patient is an old patient it will display a separate interface with the previous condition button.
NFRs, and TRs	NFR'S Time to complete scheduling time. Security. Accuracy. Availability. TR'S Web-based system Back-end – PHP Front-end – HTML, CSS Database - MySQL	

Laboratory Management

Use case Name	Register a patient for the laboratory test and Issued result report.	
Overview	Lab assistance supposed to view and manage all the test report details conducted in the laboratory. And Lab assistants register a patient for the laboratory test. After receiving result report upload it to the patient record and notify the patient. Generating a report to get the highest count of issued lab reports in a month	
Pre-condition	Lab assistant should be logged into the system	
Post-condition	The patient's lab report details should be stored in the database.	
Primary Actor	Lab assistant	
Trigger	Registering a patient for the laboratory test	
Basic Path	**Step**	**Action**
	1	Lab Assistant login to the system entering username and password.
	2	System display a login successful message.
	3	Lab Assistant click on the Register for report button
	4	System displays the form to register a patient for the laboratory test.
	5	Ask patientID from the patient and gets his corresponding information through the system.
	6	Drown a blood from the patient and submit the from.
	7	After receiving the lab result from the chemist Lab assistant click manage patient report button
	8	Search for particular patientID and get corresponding information through the system
	9	Click Update report button.

	10	System display interface to update result report
	11	If payment status is “Done”, update report Status to the “Issued”
	12	Upload result report an submit
	13	Click send report button and send result report to the patient via email
Alternative Path	**Step**	**Branching Action**
	1a	System display that the entered username or password invalid.
	1b	Lab Assistant goes back to step 1 and re-enter login details.
	11a	If payment status is “Pending”, update report status to the “Available”
	11b	Upload result report an submit
NFRs, and TRs	NFRs Time to complete the search Availability Manageability Security Usability TRs Web – based system Back end - PHP Front end – HTML, CSS Database - MySQL	

Patient management

Use Case Name	New patient register for an account, log in, edit their profile, generate a report on the availability of doctors and search for details of doctors.	
Summary	Register as a new patient, login to the system, edit their profile, generate a report on the availability of doctors, and search details of doctors.	
Pre-conditions	Patient should enter all the relevant details and get registered.	
Post-conditions	All the relevant details of the relevant patient are displayed on the patient profile	
Primary Actor	Patient	
Trigger	Patient login to the system.	
Basic paths	**Step**	**Action**
	1	Patient enter relevant details and register to the system.
	2	System validates the patient’s entered details and checks whether the password and re-entry password match or not
	3	Login to the system by entering user details and Clicking “Login” button.
	4	System validates the login details.
	5	Click on the “edit profile” button.
	6	Patient updates their relevant details and click the “edit “button.
	7	Click the “Check availability of doctors” Button.
	8	Select a date.

	9	System generates a summarized report on the availability of doctors.
	10	Report can be downloaded by clicking the “Download report” button.
	11	Search details of doctors by their name or specialty.
	12	Select a doctor.
	13	System displays selected doctor details.
Alternative paths	**Step**	**Action**
	1a	If the password and re-enter password does not match. Display “password did not match” Asks patient to enter the password again
	4a	If the validation is unsuccessful, the login un success message will be displayed. System Asks to fill login form again.
	6a	System displays updated information on patient profile.
	6b	System updates edited information to the database
	9a	If there are no doctors available. System displays “No doctors available”
	9b	If there are doctors available. System displays report.
	11a	If the entered keyword matches the doctor’s specialty or name. Display names of relevant doctors
	11b	System shows “Result not found for given search.” Asks patient to search again.

NFRs:	• Time to complete. • Availability. • Manageability. • Security. • Usability.
TRs:	• Web-based system. • Back end – PHP • Front end – Html, CSS. • Database – MySQL.

Payment management

Use Case Name	Payment management	
Goal	Patient paying a bill	
Summary	A patient can pay a bill also can add, update or remove a added card You can choose card when you pay if you wish for. And can check payment history.	
Pre-conditions	Patients must have a necessary bill.	
Post-conditions	Payment Successful.	
Primary Actors	Patient	
Trigger	Patient making an appointment, take a lab test or buy medicine from pharmacy	
Basic path	**Step**	**Action**
	1	Patient has a necessary bill redirects to payment section
	2	Redirects to payment section
	3	Make a payment through a card. With the necessary Information.

	4	Validate payment information
	5	Validate card information
	6	If you have cards saved, you can quick pay.
	7	Check Payment History
Alternative path	**Step**	**Action**
	4a	If the payment information incorrect redirect to payment page
	5a	If the card information incorrect display the information is wrong and to re-enter
	5b	Patient needs to enter the card information again
	5c	If the validation is unsuccessful, prompt to re-enter information
NFRs, and TRs	NFRs Security Availability Manageability Read/View payment history Useability TRs Web-based system. Back end – PHP Front end – Html, CSS. Database – MySQL.	

Inventory management

Use Case Name	Maintains the stock and supply required items	
Summary	Inventory Manager view requested items from the inventory and issue them. Add new items to the stock.	
Preconditions	The user must be logged into the system	
Postconditions	Issue Items and add new items to the system	
Primary Actor	Inventory Manager	
Trigger	The inventory manager issue items and has chosen to add a new item	
Basic path	**Step**	**Action**
	1	User logs into the system using inventory manager credentials
	2	The system redirects to the inventory manager portal
	3	The user chooses the “Pending Request Item” section
	4	The user presses the “Check button”
	5	The user presses the “Issue item button”
	6	The user chooses the “Add a new Item” section
	7	The system displays the form related to the item registration
	8	The user enters the relevant details in the text fields
	9	The user presses the “Add button”
	10	The system clears the entered details of the form.
	11	The system sends the filled data to the database and update stock table
Alternative path	**Step**	**Action**
	1.a	The system displays an error message and ask to log again
	5.a	If items are available
	5.b	Update the current stock

	5.c	If the items are not available, it redirects to order item portal
	9.a	The system displays alert messages
	9.b	The user presses the ok button
	9.c	The user enters correct data to the fields
NFRs, and TRs	NFRs Reliability Usability Security Maintainability TRs Web-based system. Back end – PHP Front end – Html, CSS. Database – MySQL.	

Pharmacy management

Use case Name	Maintain the medicines and issue the required medicines	
Summary	Pharmacist supposed to view and manage all the medicines conducted in the pharmacy. And pharmacist can add new medicines to the system. After receiving the payment status is done, issue the medicines for the particular patient. Generating a report to get the maximum sold out pharmacy products.	
Pre-condition	Pharmacist should be logged into the system	
Post-condition	Issue medicines for the patient and add new medicines to the system	
Primary Actor	Pharmacist	
Trigger	Pharmacist add new medicines and issue medicines	
Basic paths	**Step**	**Action**

	1	Pharmacist login to the system entering username and password
	2	The system re-direct to the pharmacy home page
	3	Search patient ID
	4	Display prescription with the patient details
	5	Pharmacist press the medicine catalog button
	6	Search the required medicines
	7	View the medicine details
	8	Click add medicine and add the medicine details
	9	Click delete button and delete expired medicines
	10	Generate total amount and Send relevant bill
	11	View medicine stock and insert,update,delete stock out medicine quantities
	12	Click pay record button
	13	Issue medicines and send notification to the patient
	14	View records and insert,update,delete amount
	15	Click request pharmacy product button
	16	Click generate report button and get report details
	17	Click printout button
Alternative Paths	**Step**	**Branching Action**
	1a	If the invalid login re-enter login details
	10a	If required medicine stock is available
	10b	If required medicine stock is unavailable

	12a	If payment is successful
	12b	If payment is not success
	15a	If want to requests pharmacy products
	16a	If want to get printout
NFRs and TRs:	**NFRs:** • Time to complete managing pharmacy products • Maintainability • Availability • Accuracy • Security **TRs:** • Web-based system • Back end- PHP • Front end- HTML, CSS • Database – MySQL	

Appointment management

Use Case Name	Manage appointments	
Summary	The administrator manages and updates the details of the appointments. Admin creates new appointments and adds them to the database. Admin can views appointments made by the patients.	
Pre-conditions	Admin should login to the system	
Post Conditions	The admin should store the details of the appointments in the database.	
Primary Actor	Admin	
Trigger	Admin insert details.	
Basic path	1	The admin logs in to the system.
	2	The admin clicks the Appointment Management button.
	3	The admin views the appointments.

	4	The admin clicks the search button to search the doctor and specialty.
	5	The admin can insert the specific name of the doctor and the specialty.
	6	The system displays appointment details of the specific doctor.
	7	The admin can update or delete details.
	8	The admin clicks the new button.
	9	The system displays an empty appointment details form.
	10	Admin fills the input fields and clicks the add button to save the details of the new appointment and displays them in the system.
	11	When the admin clicks the view button, he can view the details he inserted.
Alternative path	3a	The admin can check the payment status and details of the appointments made by the patients.
	7a	The system will display the name and the specialty of the doctor and the appointment date and the time can be changed by the admin.
	7b	The patient will be notified about changes and cancellations of the appointments.
	10a	Admin can input doctor's name, specialty, time slots and the date he is available.
NRFs and TRs	**NRF**	Availability Security Recoverability Maintainability
	TR	Web – based system Back end – PHP Front end – HTML, CSS Database - MySQL

Feedback management

Use case – 1

Use Case Name	Ask a question	
Summary	Client asks a question	
Priority	Medium	
Pre-conditions	Patient supposed to be a logged user	
Primary Actor	Client	
Trigger	When client submits the question	
Basic path	**Step**	**Action**
	1	Patient getting logged in
	2	Visits the FAQ page
	3	Type a question
	4	Submit the question
Alternative path	**Step**	**Action**
	4a	System notifies when the submission is successful
	4b	System notifies when the submission is failed
NFRs	• Timeliness • Availability. • Manageability. • Security.	
TRs	• Web-based system. • Back end – PHP • Front end – Html, CSS. • Database – MySQL.	

Use case – 2

Use Case Name	Send a complain	
Summary	Client complains	
Priority	Medium	
Pre-conditions	Patient supposed to be a logged user	
Primary Actor	Client	
Trigger	When client submits the complain	
Basic path	**Step**	**Action**
	1	Patient getting logged in
	2	Visits the complaint page
	3	Type a complain
	4	Submit the complain
Alternative path	**Step**	**Action**
	4a	System notifies when the submission is successful
	4b	System notifies when the submission is failed
NFRs	• Timeliness • Availability. • Manageability. • Security.	
TRs	• Web-based system. • Back end – PHP • Front end – Html, CSS. • Database – MySQL.	

Use case – 3

Use Case Name	Feedback manager replies complain	
Summary	Questions asked will be answered	
Pre-conditions	Feedback manager supposed to be logged in	
Post-conditions	Questions need to be available to answer	
Primary Actor	Feedback Manager	
Trigger	When manager submits answer	
Basic path	**Step**	**Action**
	1	Manager logs in
	2	Manager checks for latest available questions
	3	Manager answers questions accordingly
	4	Managers submits answers for client
Alternative path	**Step**	**Action**
	3a	Manager can delete a question if needed
	3b	Manager can edit a question and paraphrase.
NFRs	• Timeliness • Availability. • Manageability. • Security.	
TRs	• Web-based system. • Back end – PHP • Front end – Html, CSS. • Database – MySQL.	

Use case – 4

Use Case Name	Feedback manager respond a complain	
Summary	Answers will be provided for complains	
Pre-conditions	Feedback manager supposed to be logged in	
Post-conditions	Complains need to be available	
Primary Actor	Feedback Manager	
Trigger	When manager submits answer	
Basic path	**Step**	**Action**
	1	Manager logs in
	2	Manager checks for latest available complains
	3	Manager answers complains accordingly
	4	Managers submits answers for client
Alternative path	**Step**	**Action**
	2a	Manager can search for complains as well
	2b	Manager can edit a complains.
NFRs	• Timeliness • Availability. • Manageability. • Security.	
TRs	• Web-based system. • Back end – PHP • Front end – Html, CSS. • Database – MySQL.	