Team Members: Anish Churi
Aaresh Bachana
Harshil Sheth

Title: MyHealth_Service

Project Summary: A health service standalone application that patients can access to schedule an appointment with an available doctor, track their medical history and access their medical records.

- **Project Requirements:**

Business Requirements				
ID	**Requirement**	**Topic Area**	**User**	**Priority**
BR-001	All login User-Ids must be of format lastName.firstName#, where # is any number (sample: churi.anish123)	Authentication	All	Critical
BR-002	All users must complete basic profile with all mandatory information	Profile	All	Medium
BR-003	User must upload his schedule at least two weeks before hand	Schedule	Doctor	High
BR-004	Send Reminders to Users a day prior to appointment	Schedule	Patient, Doctor	High
BR-005	Users can reschedule/cancel an appointment a day prior to scheduled appointment	Appointment	Patient, Doctor	Critical

User Requirements				
ID	**Requirement**	**Topic Area**	**User**	**Priority**
UR-001	User can sign-up to create a profile	Profile	All	Medium
UR-002	User can log in	Login	All	Critical
UR-003	User view and edit profile	Profile	All	Low
UR-004	User can view his Medical Records	Database	Patient	Medium
UR-005	User can authorize a doctor to view his medical records	Database	Patient	Low
UR-006	User can search for doctor by specialty or name	Database	Patient	Medium
UR-007	User view a doctor's schedule	Schedule	Patient	High
UR-008	User can view and edit his schedule	Schedule	Doctor	Medium
UR-009	User can book an appointment with a doctor	Schedule	Patient	Medium

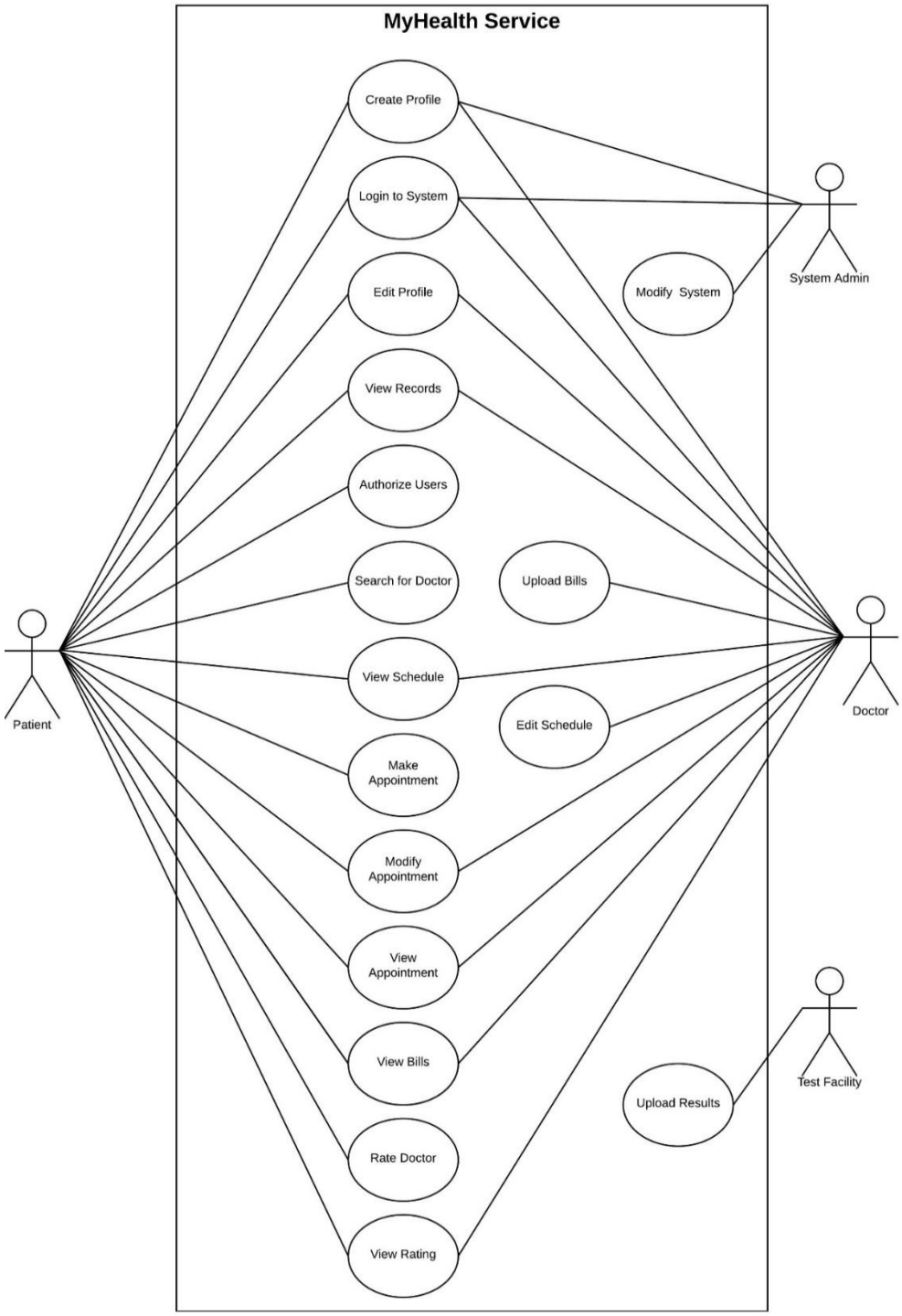
UR-010	User can view his test results	Database	Patient	High
UR-011	Users can reschedule/cancel an appointment	Appointment	Patient, Doctor	High
UR-012	User can view Medical Bills	Bills	Patient	High
UR-013	User can view Patient's medical history if authorized	Database	Doctor	Medium
UR-014	User can request for a test and the results will be uploaded to his profile	Records, Database	Test Facility	Medium
UR-015	User can give additional feedback and rate the doctor	Profile	Patient	Low

Functional Requirements				
ID	**Requirement**	**Topic Area**	**User**	**Priority**
FR-001	System should verify the validity of User-Id and Password	Authentication	System	Critical
FR-002	System should update the doctor's schedule once an appointment is made to avoid appointment clashes	Schedule	System	High
FR-003	System should ask for a security question in case of a user forgets his/her password	Authentication	System	Medium
FR-004	System should pop up a notification message indicating the test results are uploaded	Database	System	High
FR-005	System should update the user medical record with the latest test results	Profile	System	High
FR-006	System should pop up a notification message indicating the medical bills are uploaded	Bill	System	Critical

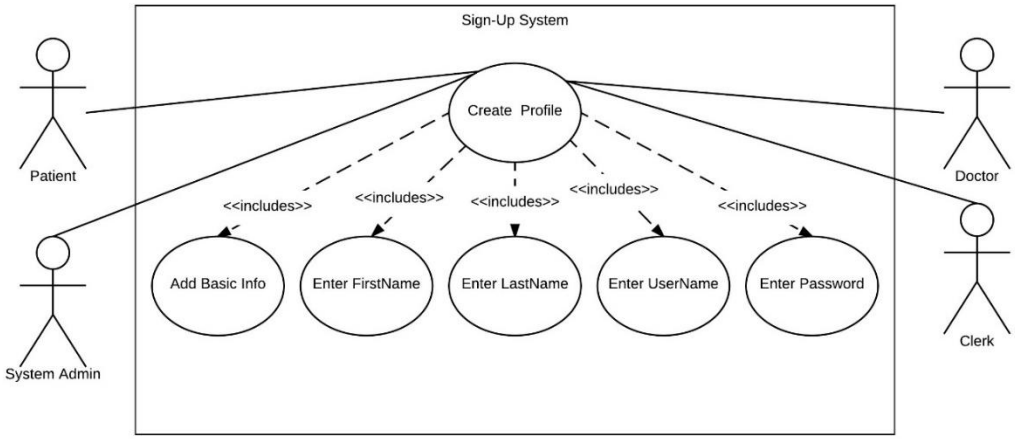
Non-Functional Requirements				
ID	**Requirement**	**Topic Area**	**User**	**Priority**
NR-001	User should be directed to homepage after login within a timeout period	Performance	All	Critical
NR-002	User should restart the system in event of a failure	Reliability	All	Critical
NR-003	User should be notified about the confirmation of his appointment within a minute after scheduling an appointment	Performance	All	High
NR-004	Patients data should be kept private and secure	Security	Patient	High
NR-005	System admin can maintain the system	Supportability	Admin	Critical

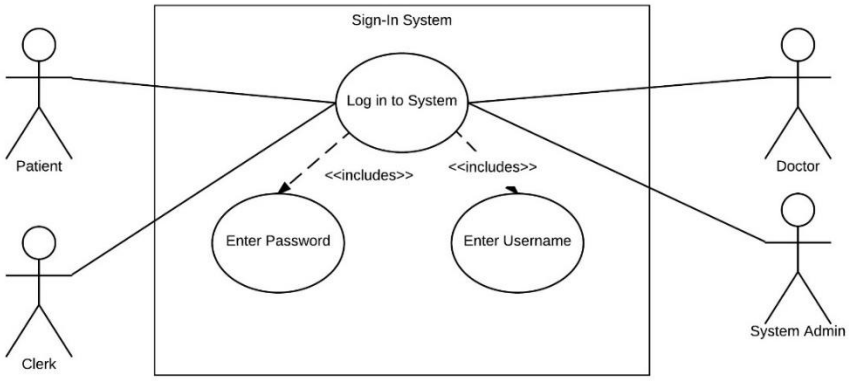
- **Use Cases:**
    - **Actors:** Patient, Doctor, Clerk, System Admin

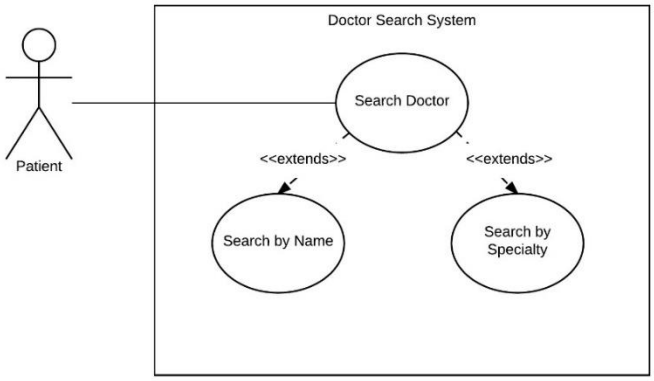
Use Case Overview:

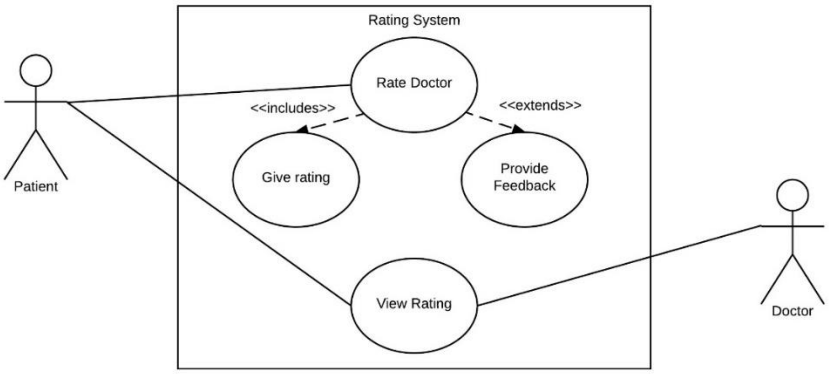


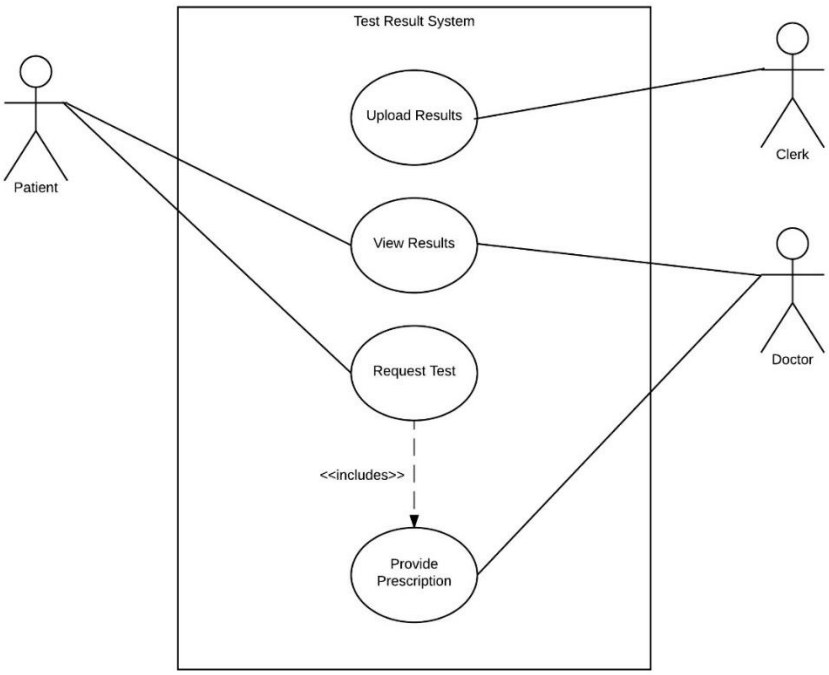
a) **Sub-diagrams:**

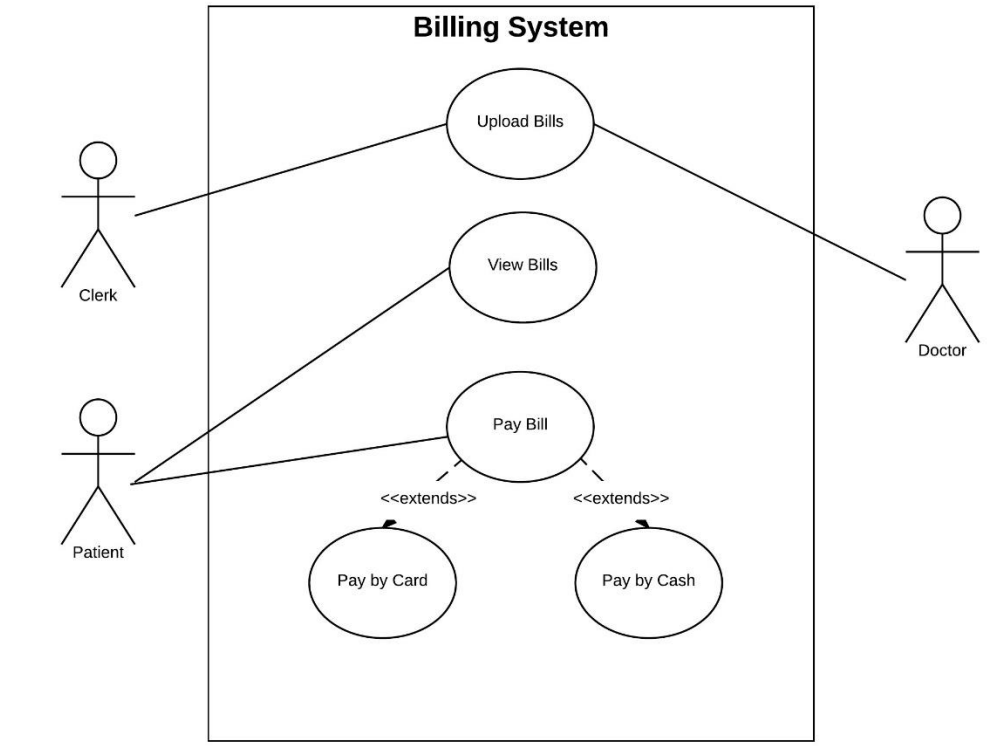


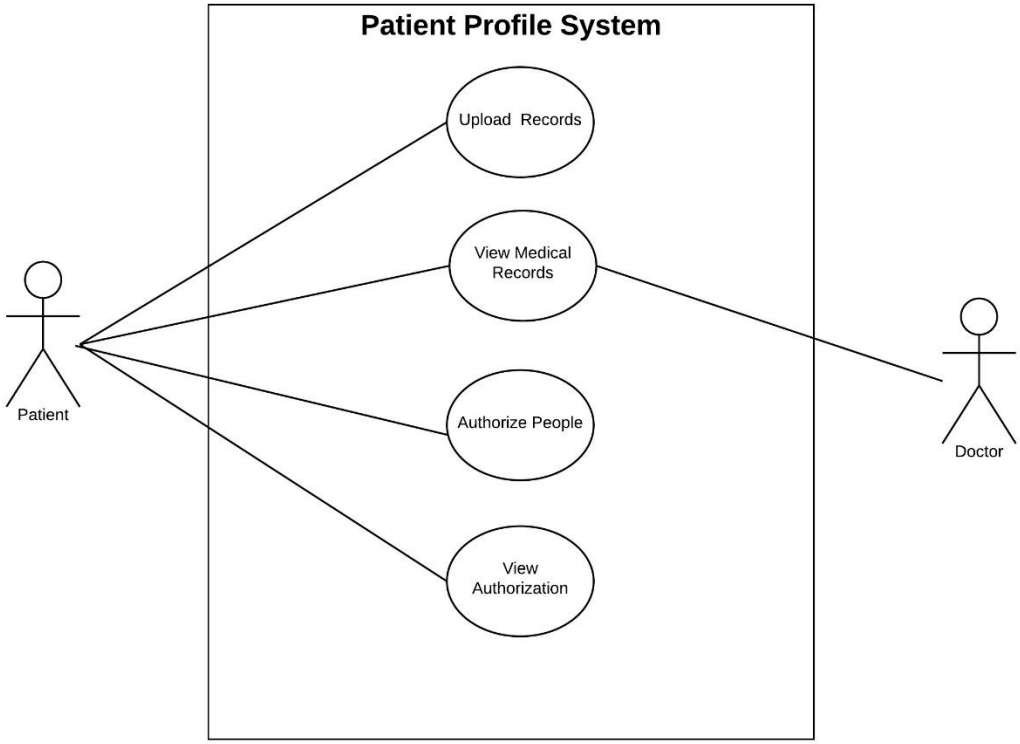


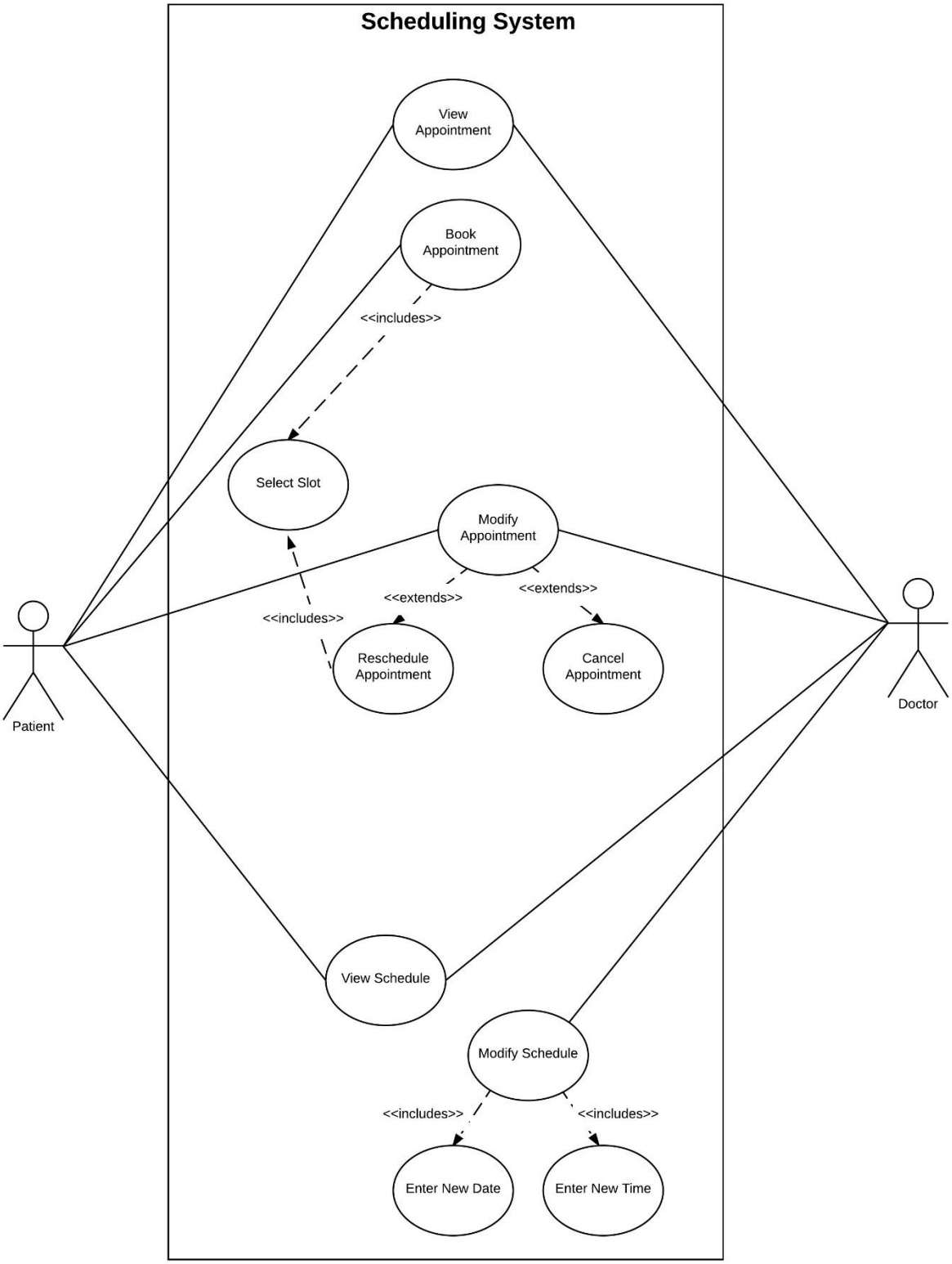



Rating System
Rate Doctor
<<includes>>
<<extends>>
Give rating
Provide Feedback
View Rating
Patient
Doctor


Test Result System
Upload Results
View Results
Request Test
<<includes>>
Provide Prescription
Patient
Clerk
Doctor


Billing System
Upload Bills
View Bills
Pay Bill
<<extends>>
<<extends>>
Pay by Card
Pay by Cash
Clerk
Patient
Doctor


Patient Profile System
Upload Records
View Medical Records
Authorize People
View Authorization
Patient
Doctor


Scheduling System
View Appointment
Book Appointment
<<includes>>
Select Slot
Modify Appointment
<<extends>>
<<extends>>
<<includes>>
Reschedule Appointment
Cancel Appointment
Patient
Doctor
View Schedule
Modify Schedule
<<includes>>
<<includes>>
Enter New Date
Enter New Time

b) Use Case Documents:

ID:	UR-001
Title:	Sign-Up to create a profile
Description:	User creates a profile by entering his First Name, Last Name, User-ID and Password. User also enters his basic profile information age, blood group, gender, security question and his identity (patient/ doctor/ admin/ clerk)
Primary Actor:	All
Preconditions:	None
Post conditions:	User successfully creates a profile and is directed to his profile page
Main Success Scenario:	1. System displays all entries. 2. User enters correct User Name in required format and username available. 3. User checks exactly one field for his identity (patient/doctor/clerk). 4. User enters all the required information 5. System verifies all the entered information and if correct creates a profile for the user and directs the user to his profile page.
Extensions:	2a. User Name requested doesn't meet requirements. --- 2a1. System displays error message saying that User name requested should be of format lastName.firstName#, where # is any random number --- 2a2. User either enters a username which exits, the system displays an error message that username exits and to choose a new username 4a. User does not enter all the required information --- 4a1. System displays message showing that the profile information is still incomplete.
Frequency of Use:	Moderate
Priority:	P3 – Medium

ID:	UR-002
Title:	Login to the System
Description:	User logs into the system by entering his User-ID and Password. If user forgets his password, he can login by answering a security question
Primary Actor:	Patient, Doctor, Clerk
Preconditions:	The User has signed-up successfully
Post conditions:	User successfully logs in and is directed to his profile page
Main Success Scenario:	1. System displays User ID and Password entries. 2. User enters correct User ID and Password. 3. System shows correct security question when user forgets password. 4. User answers the security question correctly 5. System successfully directs user to his profile page
Extensions:	2a. User enters incorrect User Id and Password. --- 2a1. System displays error message saying that there is a mismatch in the User Id and Password. --- 2a2. User either enters a new password for this use case, or clicks on forgot password button. 4a. User doesn't answer the security question correctly.. --- 4a1. System displays message showing that the entered details were incorrect and displays the number of remaining attempts to answer the question. ---4a2. If User exceeds the max attempts, system redirects the user to contact us page.
Frequency of Use:	High
Priority:	P1 - Critical

ID:	UR-003
Title:	View and Edit Profile
Description:	User can view and edit his profile. User views his basic profile information age, blood group, sex. User can also edit this basic information.
Primary Actor:	All
Preconditions:	Successful Login
Post conditions:	User successfully views and edits profile and the system updates the new information in users profile
Main Success Scenario:	1. System displays basic User profile page with options to view or edit profile 2. User selects view/edit option. 3. System checks the entered option and directs the User to appropriate page. 4. User edits profile with valid information 5. System verifies all the entered information and if correct update the profile for the user and directs the user back to his profile page.
Extensions:	4a. User does not enter correct information when editing. --- 4a1. System displays message showing that the profile information is not valid by highlighting the incorrect field.
Frequency of Use:	Low
Priority:	P4 - Low

ID:	UR-004
Title:	View Medical Records
Description:	User can view his medical records
Primary Actor:	Patient
Preconditions:	Successful Login
Post conditions:	User successfully views his medical records page
Main Success Scenario:	1. System displays all the current medical records from patient's profile 2. If no records exist, system will display a message stating that there no records linked to the profile.
Extensions:	None
Frequency of Use:	Low
Priority:	P3 - Medium

ID:	UR-005
Title:	User authorizes a person to view his medical records
Description:	User enters the ID of the person and adds him to the list of authorized person
Primary Actor:	Patient
Preconditions:	User should login, the authorized person should have a profile created in the system
Post conditions:	System successfully adds a person to the list of authorized persons and the user should see the name in list of authorized person's list. If an invalid ID is entered the system responds with appropriate message.
Main Success Scenario:	1. System displays all required entries. 2. User enters a valid ID of the person to authorize. 3. System verifies all the entered information and if correct adds the person to authorized list.
Extensions:	2a. ID requested doesn't exist in the system --- 2a1. System displays error message saying that ID requested is not available in the system 3a. User does not enter all the required information --- 3a1. System displays message showing that the required fields are empty
Frequency of Use:	Low
Priority:	P4 - Low

ID:	UR-006
Title:	Search for doctor by specialty
Description:	The patient can search for a doctor by doctor specialty
Primary Actor:	Patient
Preconditions:	The patient has successfully logged into his/her account
Post conditions:	Patient can view the number of doctors available for a particular specialty
Main Success Scenario:	1. Patient logs into his/her account using valid credentials 2. System checks for validity of username and password 3. Patient clicks on book appointment 4. System provides booking option by doctor specialty 5. Patient enters the type of doctor he/she requires 6. Patient clicks on Search 7. Patient selects doctor from one of the available options
Extensions:	As another feature, the patient can also search doctor by name
Frequency of Use:	High

ID:	UR-007
Title:	View Doctor's Schedule
Description:	The patient can view a doctor's bi – weekly schedule to book an appointment
Primary Actor:	Patient
Preconditions:	Patient has selected the doctor to view his/her schedule
Post conditions:	Patient can view the doctor's schedule to book an appointment
Main Success Scenario:	tient logs into his/her account using valid credentials tient searches for a doctor by name or by specialty stem gives list of doctors tient selects one of the doctor from the available options tient clicks on 'View Schedule' to view the schedule of the doctor
Extensions:	None
Frequency of Use:	High

ID:	UR-008
Title:	Doctor can view and edit his schedule
Description:	The doctor can enter his bi – weekly availability, view his schedule and make changes to his schedule if necessary
Primary Actor:	Doctor
Preconditions:	Doctor has to successfully log into his account
Post conditions:	Doctor can view his updated schedule and make changes again anytime
Main Success Scenario:	1. Doctor logs into his/her account using valid login credentials 2. System checks for validity of username and password 3. Doctor selects to view/edit schedule 4. Doctor enters the date and time of availability for two weeks 5. Doctor saves the schedule 6. System saves the schedule in the database 7. Doctor views and also edits the schedule by modifying an appointment slot 8. System updates the schedule in the database
Extensions:	The doctor can also delete an appointment slot altogether
Frequency of Use:	Moderate

ID:	UR-009
Title:	Book an appointment
Description:	The patient can book an appointment slot for a particular doctor
Primary Actor:	Patient
Preconditions:	The patient checks the doctor's availability to book an appointment
Post conditions:	Patient gets a notification after successfully booking an appointment
Main Success Scenario:	1. Patient clicks on book appointment 2. System provides search option by name and by specialty 3. Patient searches for doctor by specialty 4. System displays list of doctors 5. Patient selects doctor 6. System displays available slots for the selected doctor 7. Patient selects preferred slot from the list of available slots 8. System checks if slot is available 9. Patient successfully books slot if slot available 10. System updates the slots in the database 11. System notifies the patient after booking
Extensions:	7.a If preferred slot is unavailable the patient can cancel current search and start a new search. 8.a If a slot is unavailable when the system tries to book the slot, the patient is directed again to available slots
Frequency of Use:	High

ID:	UR-010
Title:	View Test Results
Description:	The patient can view his/her test results
Primary Actor:	Patient
Preconditions:	The patient has finished his/her test with the test facility and has received a notification stating that the clerk has successfully uploaded the results of the test to the database.
Post conditions:	The patient has finished viewing his test results.
Main Success Scenario:	1. The patient logs in to the system and clicks on the “view results” tab 2. The system asks for the record id associated with the patient 3. The patient puts in the record id. 4. The system retrieves the records from the database and stores it to the patient’s profile. 5. The patient can view the test results.
Extensions:	None
Frequency of Use:	Moderate

ID:	UR-011
Title:	Reschedule/Cancel an appointment
Description:	The patient can reschedule or cancel a previously booked appointment.
Primary Actor:	Patient
Preconditions:	Patient has booked an appointment with a doctor but has not finished his/her appointment yet.
Post conditions:	The schedule of the doctor gets freed up and the slot is visible to all future visitors to the system.
Main Success Scenario:	1. Patient logs in to the system and clicks on the “Edit Appointment” tab 2. Patient searches for the doctor by specialty 3. The system will display the list of all doctors 4. Patient selects the doctor and sees the appointments 5. Patient can then select “edit” or “cancel” button 6. If “edit” is selected, the patient puts in the new empty appointment slot and confirms the appointment. 7. The system will update the slots. The previous slot is opened so that it can be accessed by other patients. 8. If “cancel” is selected, the previous slot is opened and can be accessed by other patients and a notification is sent to the doctor.
Extensions:	--The patient rather than writing the rating out of five can also select the amount of stars he/she wants to give the doctor as a user interface enhancement. --The patient can also search for the list of doctors by name.
Frequency of Use:	Moderate

ID:	UR-012
Title:	View and Pay bills
Description:	The patient can view all the bills that he owes to the system
Primary Actor:	Patient
Preconditions:	The patient has taken up the service
Post conditions:	Patient completes the payment process
Main Success Scenario:	1. The clerk uploads the bills and waits for doctor's approval 2. The system sends a notification to the doctor to seek approval 3. The doctor approves the bills 4. System sends a notification to the patient 5. The patient views pending bills 6. The patient completes the payment process 7. The system processes payment 8. The billing information is then stored in the database 9. The patient is notified of the successful payment
Extensions:	1. Payment via the application itself. This is currently not supported and the patient has to go to a counter and pay by cash or card. 2. Patient gets notified to repay if the payment fails 3. The doctor can not approve the bills and in that case the clerk gets a notification to re-upload the bills
Frequency of Use:	High

ID:	UR-013
Title:	Authorize Doctor
Description:	The patient can give permission to the doctor to view his or her medical records which are present on the patient profile
Primary Actor:	Patient
Preconditions:	Patient has uploaded her past test results as well as medical records on the system
Post conditions:	Doctor can view the respective patient's past medical records and test results
Main Success Scenario:	1. Patient logs into the system and clicks on "Authorize Doctor" tab 2. Patient searches for doctor by name 3. Patient selects the doctor 4. Patient clicks on "Authorize Doctor" button 5. The system sends a notification to the doctor telling him/her that he has been authorized by the patient to view his/her past medical records and test results.
Extensions:	--The patient can select multiple doctors at once. --The patient can search for doctor by specialty also
Frequency of Use:	Moderate

ID:	UR-014
Title:	Test System
Description:	The patient can request a test which will be conducted and the clerk will then upload the test results to his profile
Primary Actor:	Patient
Preconditions:	Patient has been assigned a test by his/her doctor
Post conditions:	Patient can view the test results and if permission granted, the doctor can also view the test results.
Main Success Scenario:	1. Patient searches for the respective test which he/she has to undergo 2. System displays the different list of tests 3. The patient selects the respective test from the list 4. The system sends an approval message 5. After the test has been approved, the patient gets a notification message. 6. The doctor conducts the test on the patient and passes the results to the clerk. 7. The clerk clicks on the “Upload Records” tab 8. Clerk writes the record ID number associated with the patient 9. Clerk uploads the result for the respective patient 10. The files get uploaded on the database and the records will be saved there. 11. The system sends a notification to the patient who can later view the test results.
Extensions:	After the results have been uploaded, the system can also notify the doctor so that he can view the test results.
Frequency of Use:	Moderate

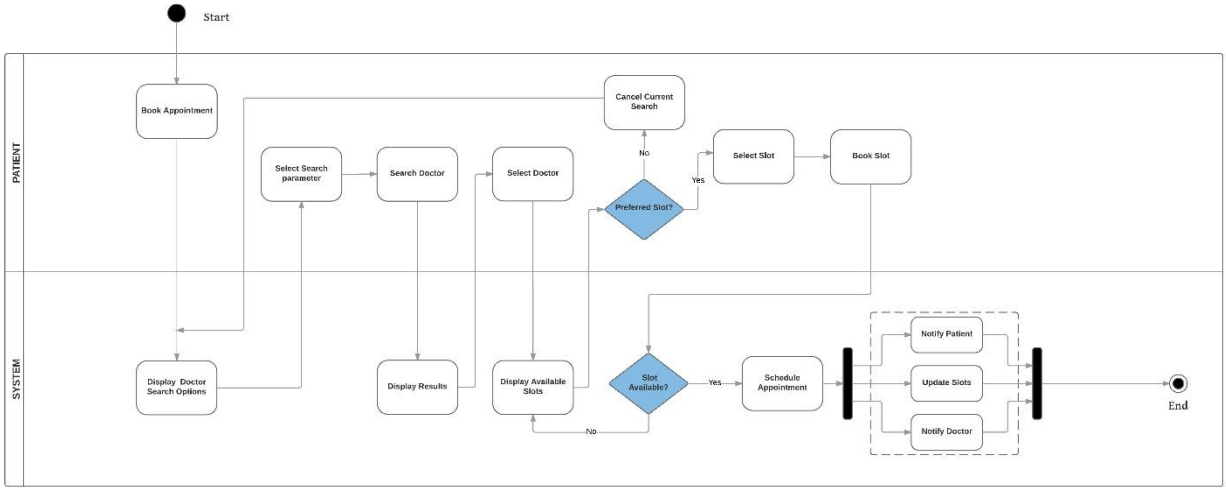
ID:	UR-015
Title:	Rate and Provide Feedback
Description:	The patient can provide a rating as well as provide feedback about the doctor after the completion of here appointment
Primary Actor:	Patient
Preconditions:	Patient has finished his/her appointment with the doctor
Post conditions:	Patient can view the feedback provided by him/her for the doctor
Main Success Scenario:	1. Patient selects the tab “Feedback”. 2. Patient searches for the doctor whose appointment has been completed. 3. Patient selects the doctor. 4. Patient gives a rating out of five. 5. Patient can also provide additional feedback in words for the selected doctor. 6. Patient clicks on “Submit Feedback”. 7. The system can update the database with the feedback associated with the respective doctor. 8. Patient exits the “Feedback” tab and returns home.
Extensions:	The patient rather than writing the rating out of five can also select the amount of stars he/she wants to give the doctor as a user interface enhancement.
Frequency of Use:	Low

Activity Diagrams:

GitHub Link :
https://github.com/aarbac/MyHealth_Services/tree/Master/UML%20Diagrams/Activity%20diagram

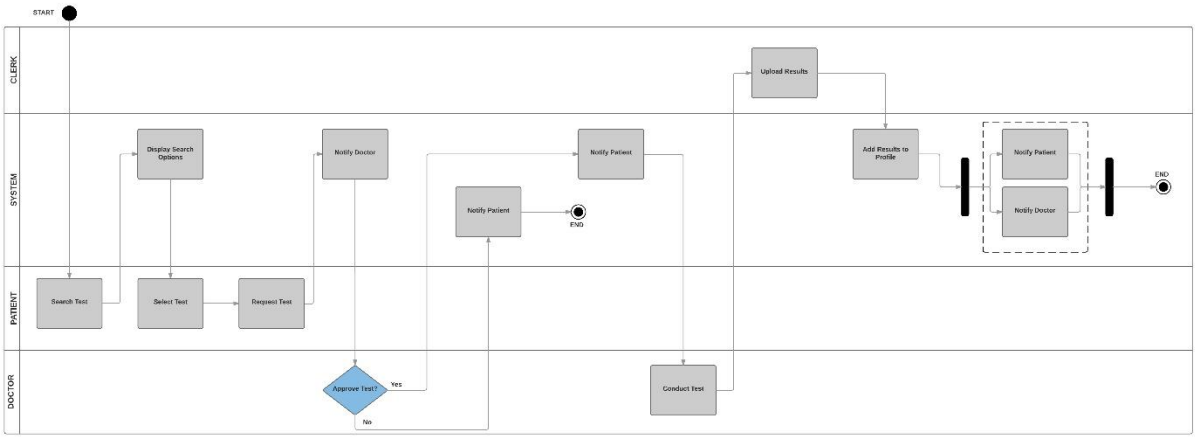
APPOINTMENT BOOKING SYSTEM — Anish Churi | October 12, 2016

ACTIVITY DIAGRAM FOR UR-009



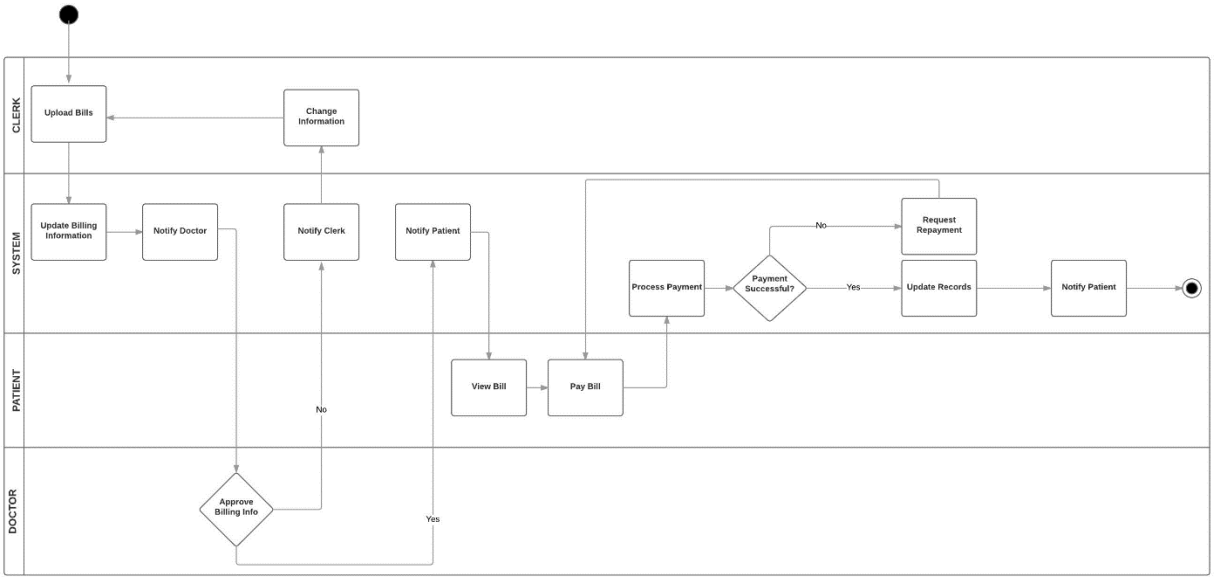
TEST SYSTEM — Aaresh | October 12, 2016

ACTIVITY DIAGRAM FOR UR-014



BILLING SYSTEM
ACTIVITY DIAGRAM FOR UR-012

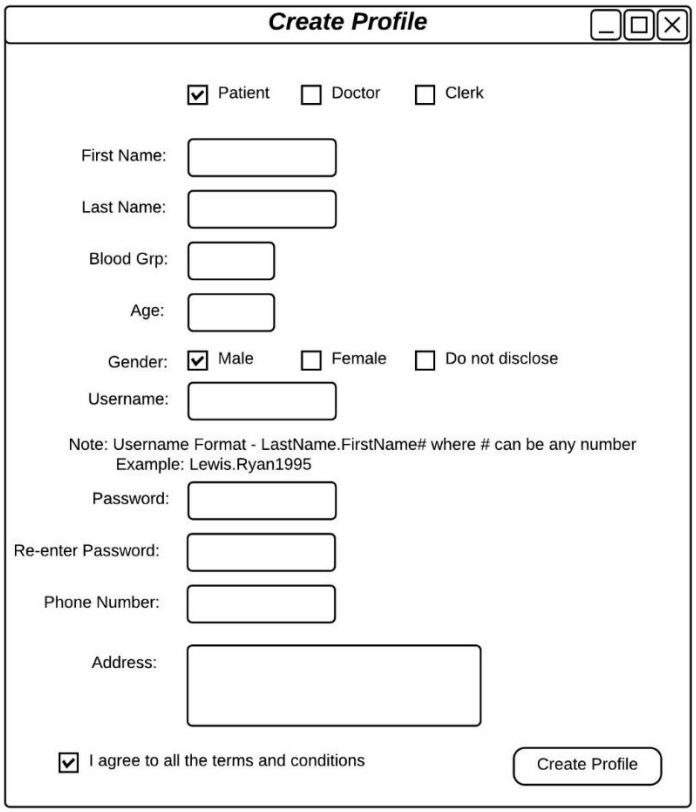
Harshil Sheth | October 12, 2016

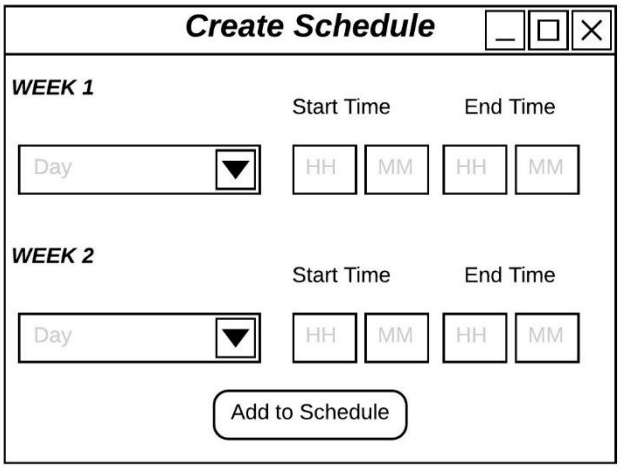


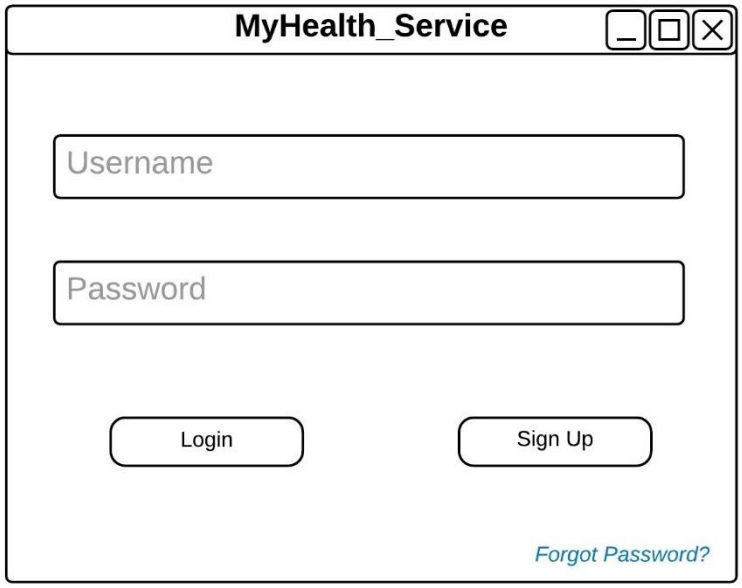
Data Storage:

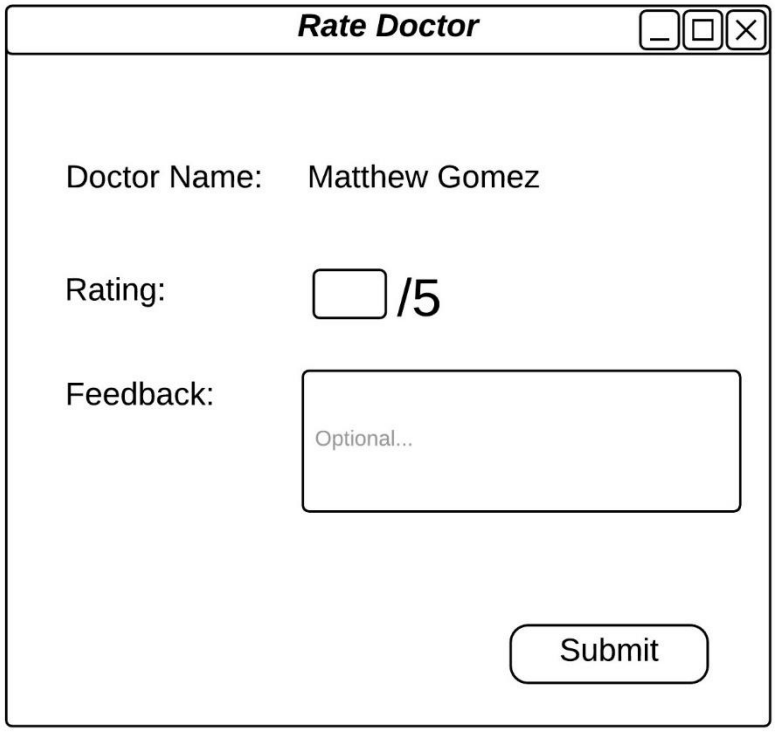
The DatabaseCtrl will interact with a MYSQL database which will store all the relevant information for the system like the user profiles, patient records, doctor's schedule and appointment slots. There will be various methods which can be used to save information to the database as well as retrieve data from the database. Methods like getDoctorListByName(), getAppointment(), getRecords(), getFeedback(), saveFeedback(), saveRecords(), etc will be used frequently.

UI Mockups:


Create Profile
Patient
Doctor
Clerk
First Name:
Last Name:
Blood Grp:
Age:
Gender:
Male
Female
Do not disclose
Username:
Note: Username Format - LastName.FirstName# where # can be any number
Example: Lewis.Ryan1995
Password:
Re-enter Password:
Phone Number:
Address:
I agree to all the terms and conditions
Create Profile


Create Schedule
WEEK 1
Start Time
End Time
Day
HH
MM
HH
MM
WEEK 2
Start Time
End Time
Day
HH
MM
HH
MM
Add to Schedule


MyHealth_Service
Username
Password
Login
Sign Up
Forgot Password?


Rate Doctor
Doctor Name:
Matthew Gomez
Rating:
/5
Feedback:
Optional...
Submit

User Interactions:

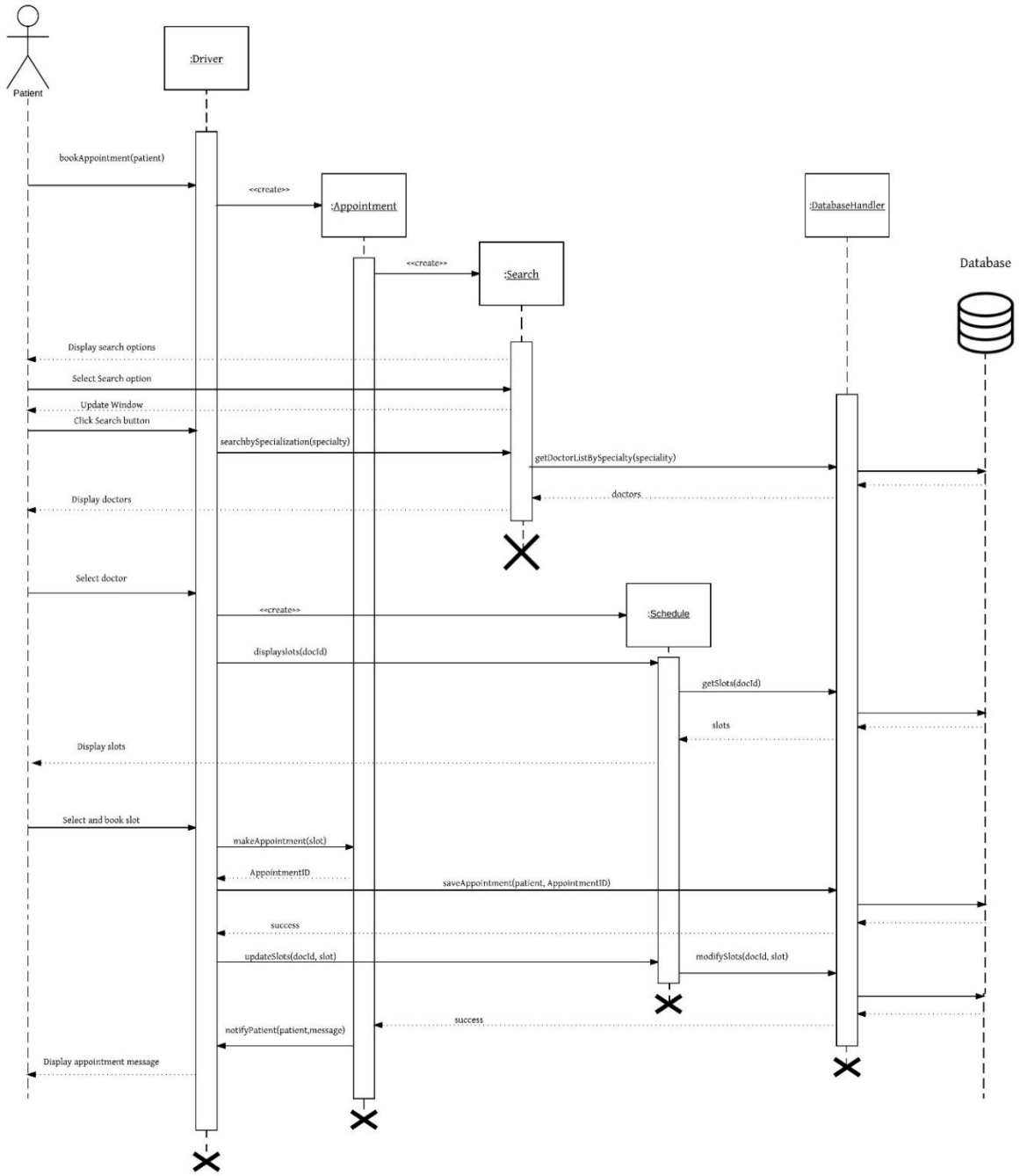
GitHub Link:

https://github.com/aarbac/MyHealth_Services/tree/Master/UML%20Diagrams/Sequence%20diagram

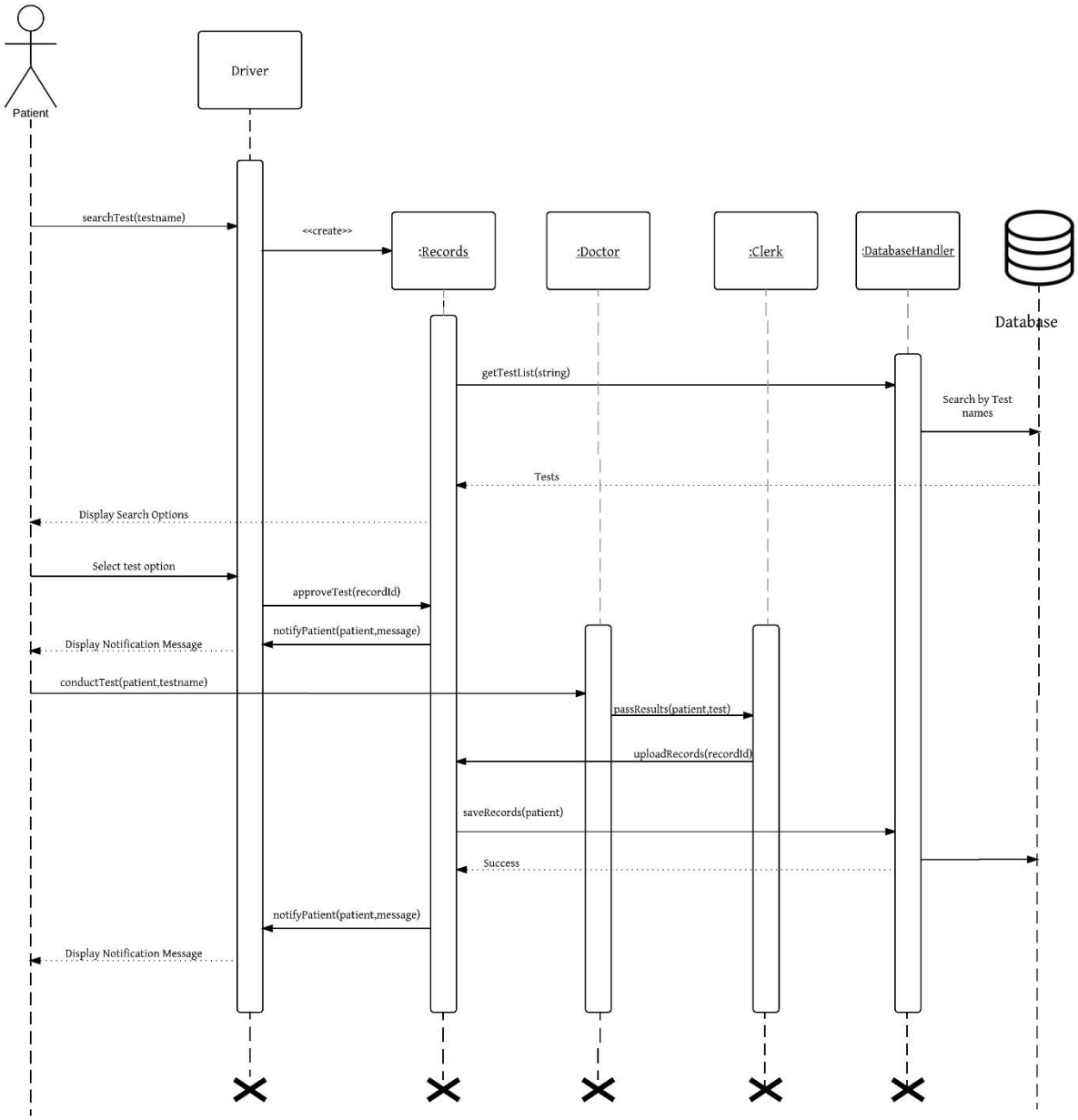
APPOINTMENT BOOKING SYSTEM

Anish Churi | October 12, 2016

SEQUENCE DIAGRAM FOR UR-009

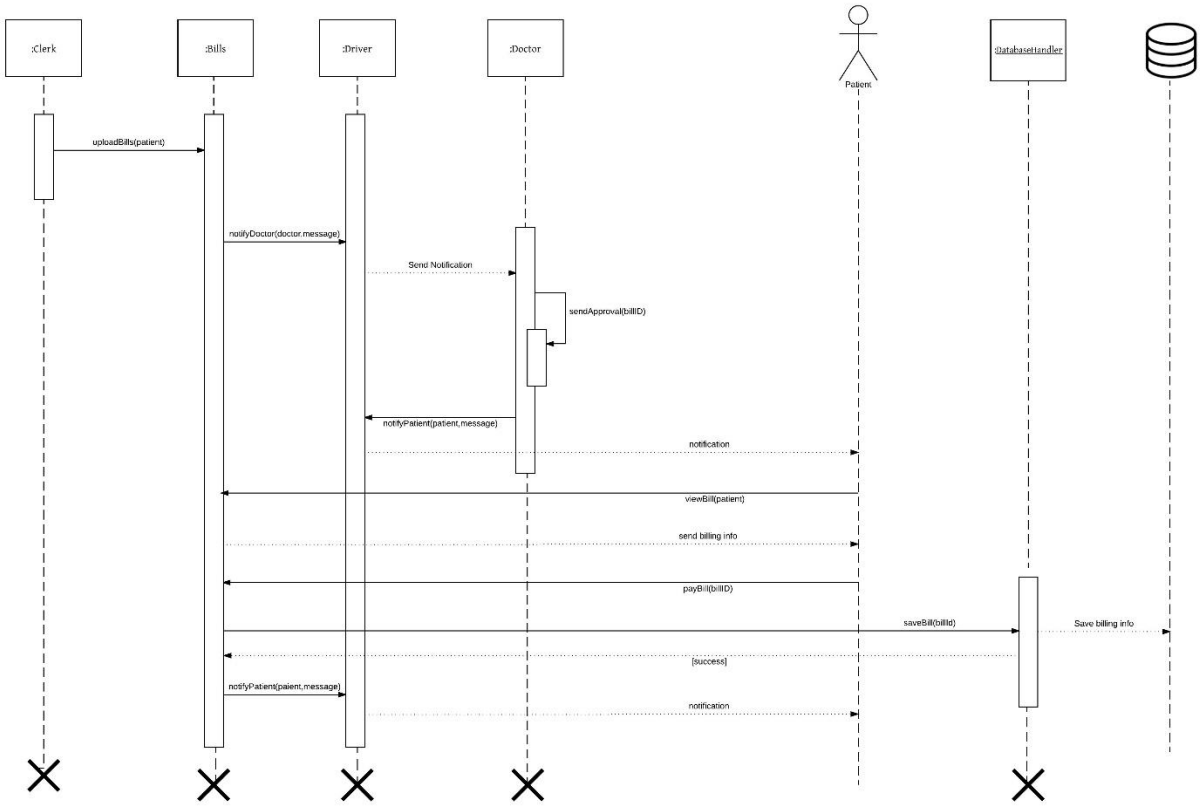


SEQUENCE DIAGRAM FOR UR-014



SEQUENCE DIAGRAM - BILLING SYSTEM
SEQUENCE DIAGRAM FOR UR-012

Harshil Sheth | October 12, 2016



Class Diagram:

GitHub Link:

https://github.com/aarbac/MyHealth_Services/tree/Master/UML%20Diagrams/Class%20diagram