

SOFTWARE DESIGN & ANALYSIS



PROJECT REPORT

Submitted By

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Submitted to

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**FAST NATIONAL UNIVERSITY OF COMPUTER AND
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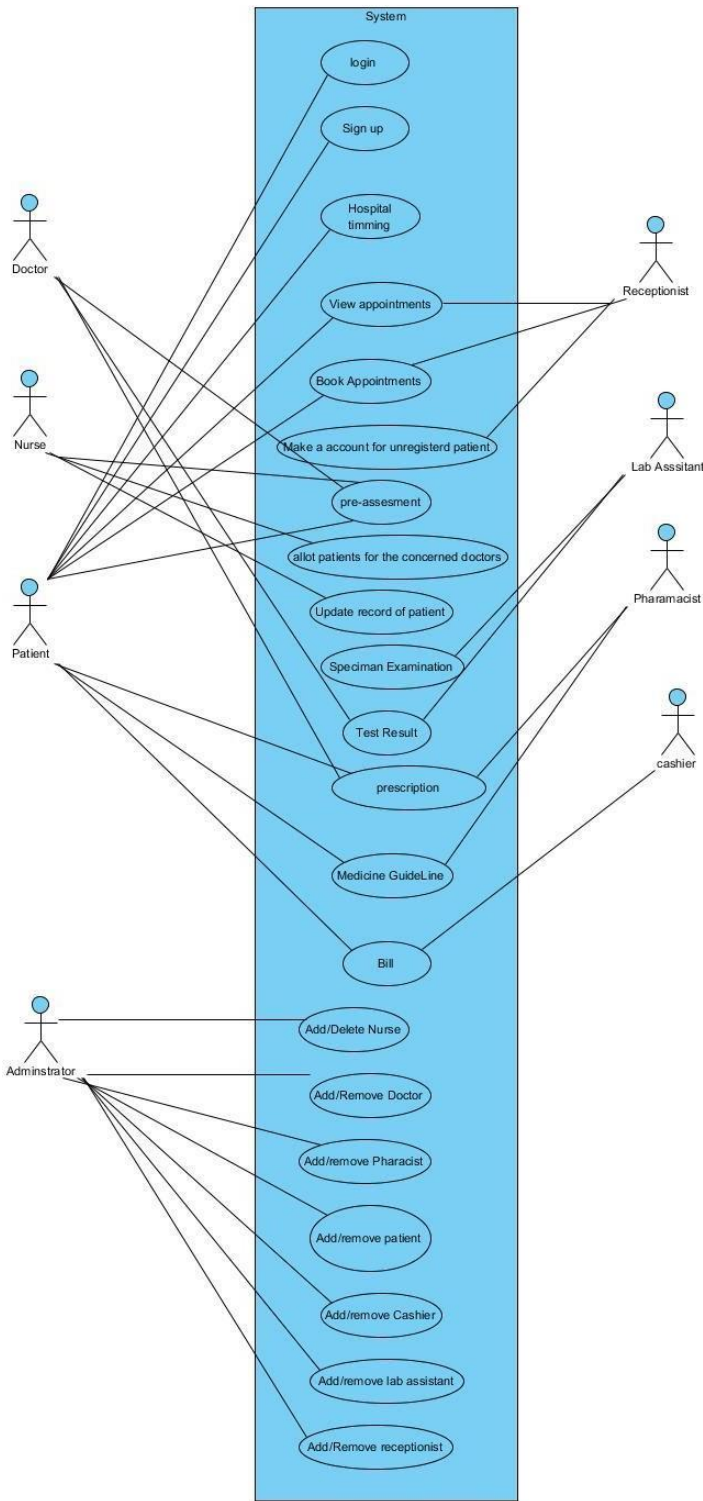
The Hospital Management System (HMS) is a web application, which used for the control of hospital services. The HMS web application can be accessed by either mobile or computer browser. The HMS application combines all details regarding doctors, patients, nurses, hospital

administrative, etc. into one software. HMS System allows the patients to register via a registration module (form), which gathers and stores all required patient's data such as name, e-mail, gender, etc. Registered patients can skip this step and login directly using their username and password through the login module. Nevertheless, unregistered users can only take advantage of major system features such as viewing the hospital timings. After the patient creates an account and register, he can access the allowed system features/functionalities for patients. Patients can view available appointments, book an appointment and manage his/her own profile. After the patient book an appointment, he can visit the hospital according to his appointment. Once the patient reaches the hospital, the receptionist will issue a clinic number for him since the receptionist has access to the system to view the appointments list and status with nurses and doctors. The HMS system also allows the receptionist to create patient accounts and book an appointment, referring to the doctors' schedule, for unregistered patients. Once patient's turn came, the patient can explain his condition to the consulting nurse, so that the nurse performs the pre-assessment examinations to diagnose the problem and then redirect him to the concerned doctor/clinic. The HMS system enables the nurse to allot patients for the concerned doctors, to view doctors' status and to update patients' account. Then, the concerned doctor will diagnose the patient, and then enter the prescription needed for the patient. If the doctor sees that the patient needs any further examinations like collecting and processing specimens, the system allows the doctor to redirect the patient to the Nurse again. After the nurse collects the specimens, the specimens will be sent to the laboratory so that the lab assistant can process, analyze the specimens, and then generate and enter the test results into the system. Furthermore, the doctor can redirect the patient to the lab assistant if there is a need to perform examinations such as X-Ray images, CT scan, MRI. The lab assistant can access the system and generate test reports regarding the examinations or test performed. On the other hand, the doctor keeps track of the examination results entered by the lab assistant and then recommend further actions to be taken if required, as well as enters a new prescription for the patient. The system also allows the patient to access his account to see prescription details and view his reports along with doctor advice. This feature is very useful since test reports usually take a long time to be generated, so that the patient may leave the hospital and view the results along with doctor's advice through his account without the need of going to the hospital again. Once the prescription is ready, the pharmacist will prepare the medicines for the patient and enters the dose and guidelines of each medicine into the system. When the patient goes to the pharmacy of the hospital, he/she will find the medicines ready so

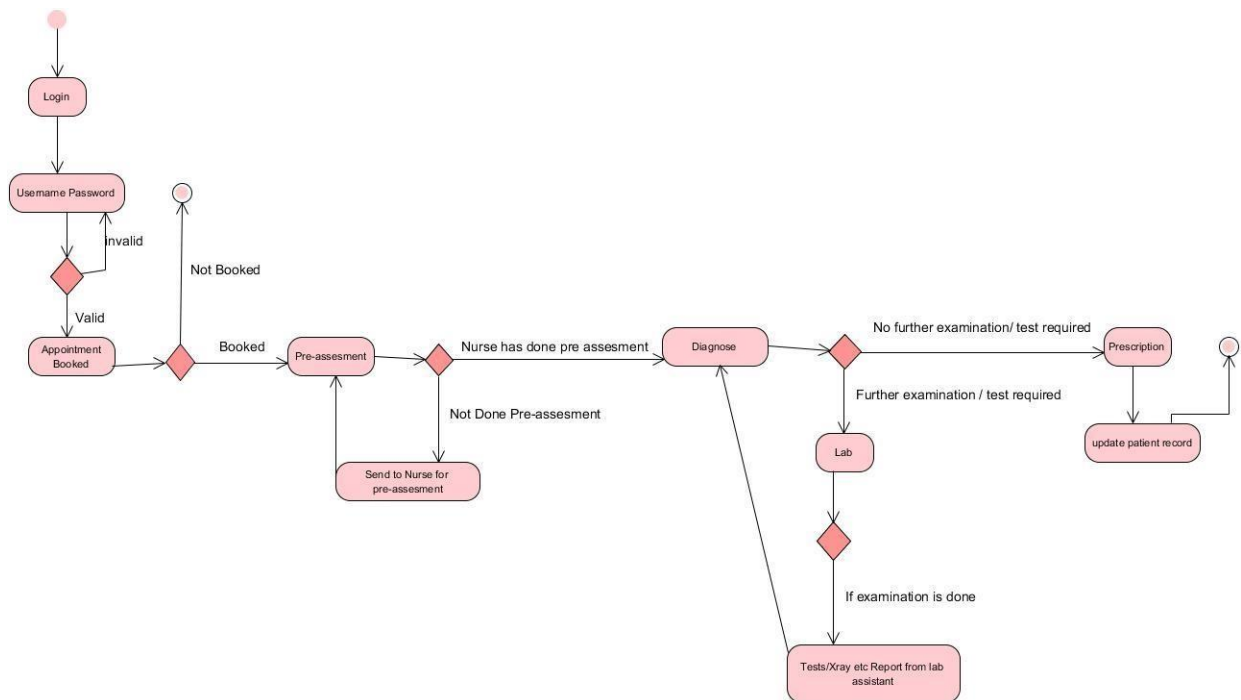
that he/she can pick and go easily. The patient has two options to know the dose and guidelines of each medicine, either by asking the pharmacist directly or by accessing his/her account to see it. This will help the patient be aware of the medicines' dose if he/she forgets it. Finally, the patient will need to go to the cashier to pay for his/her visit. The system allows the cashier to create and order invoice for payment through the billing module. In addition, the cashier can watch the payment history of the patients.

Requirement Analysis

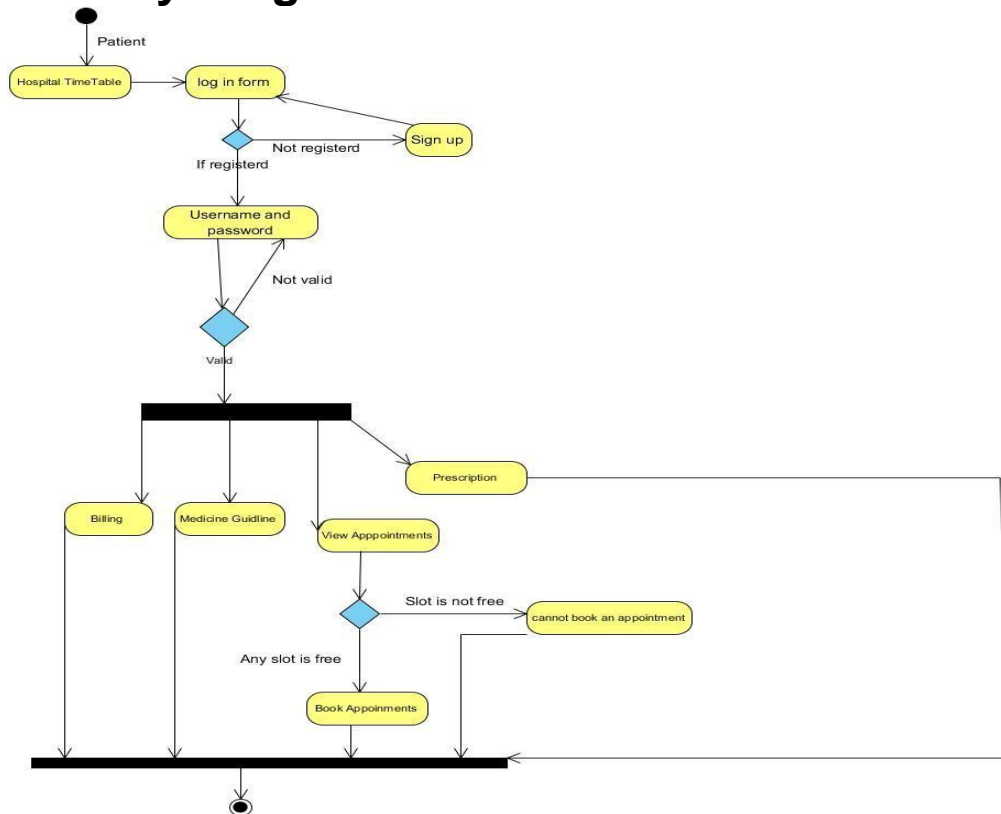
USE CASE DIAGRAM



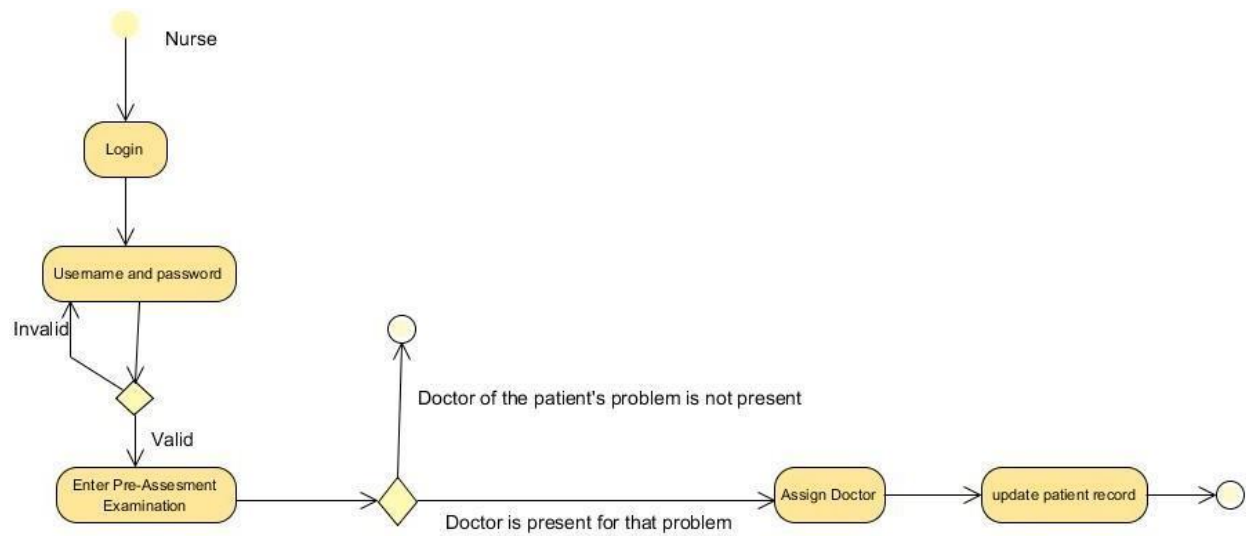
Activity Diagram of Doctor



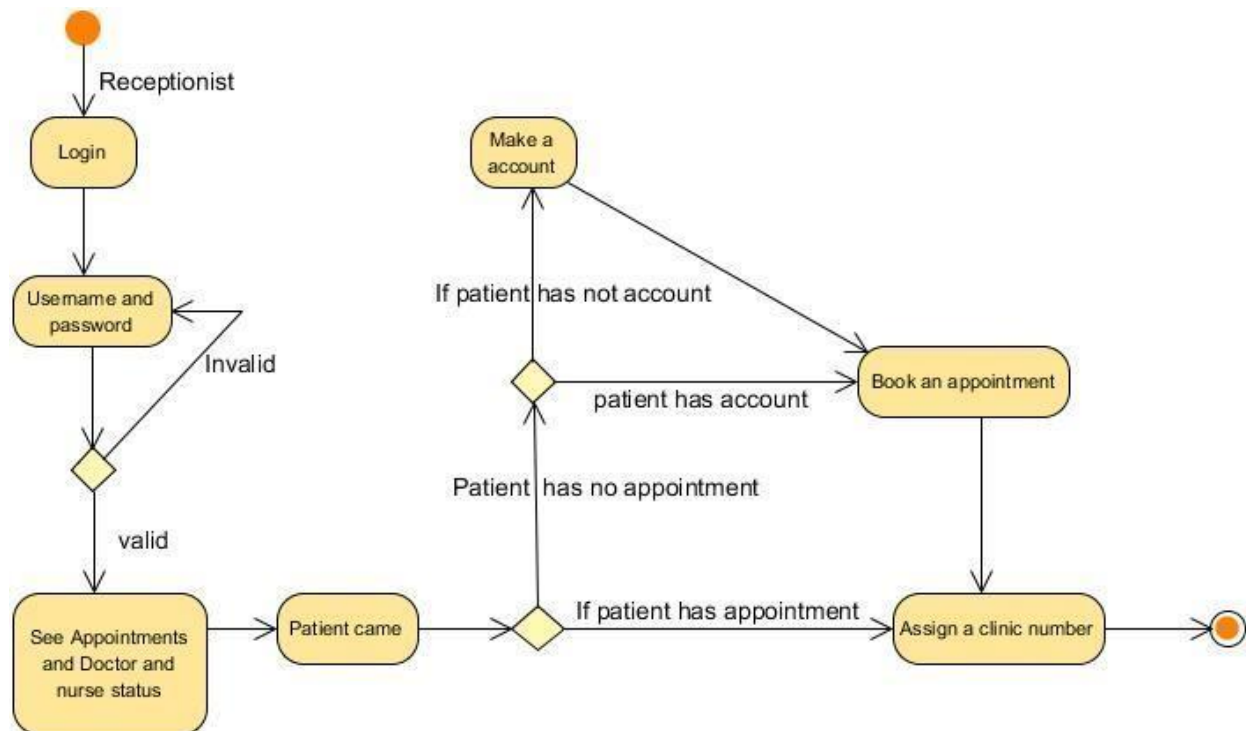
Activity Diagram of Patient:



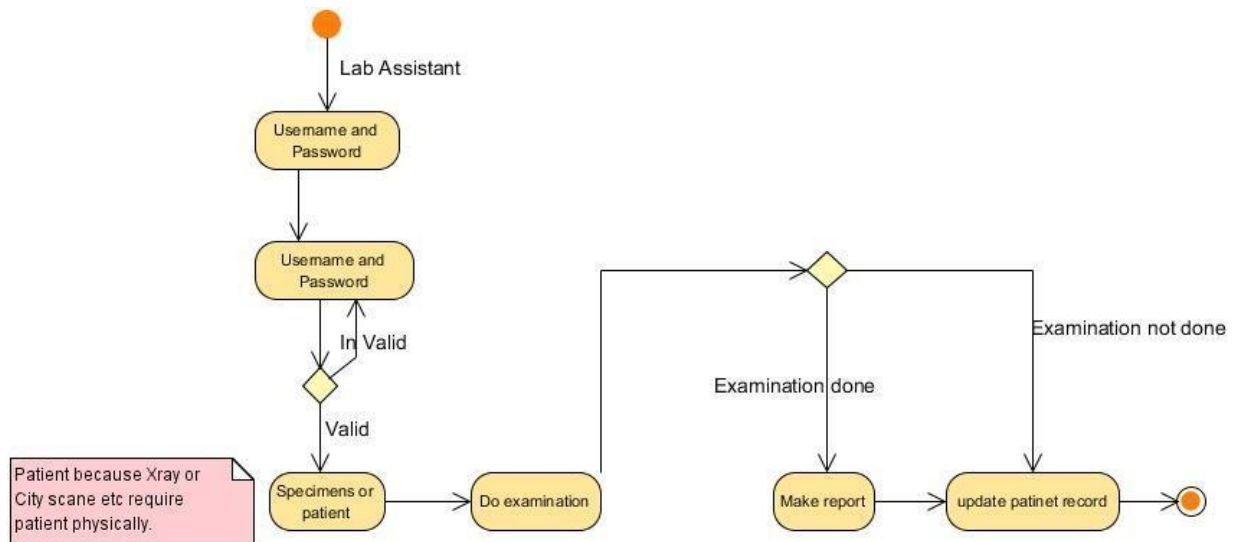
Activity Diagram of Nurse



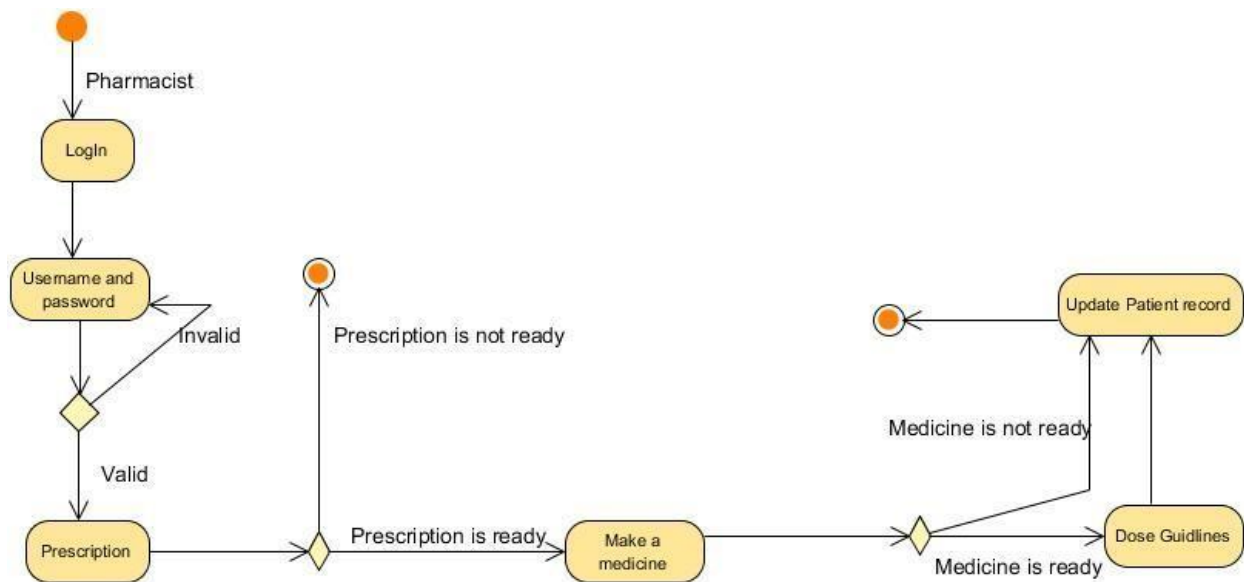
Activity Diagram of Reception



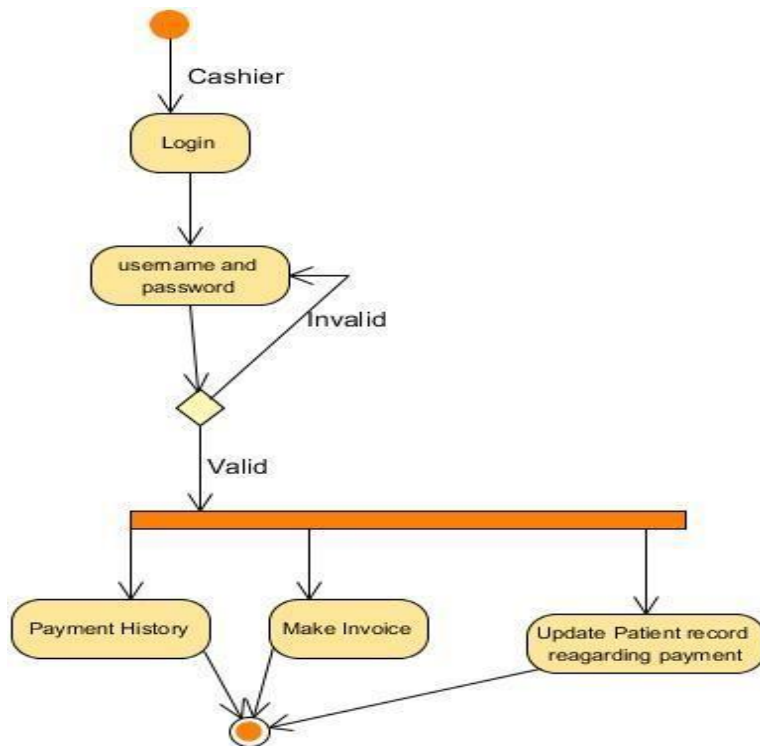
Activity Diagram of Lab Assistant



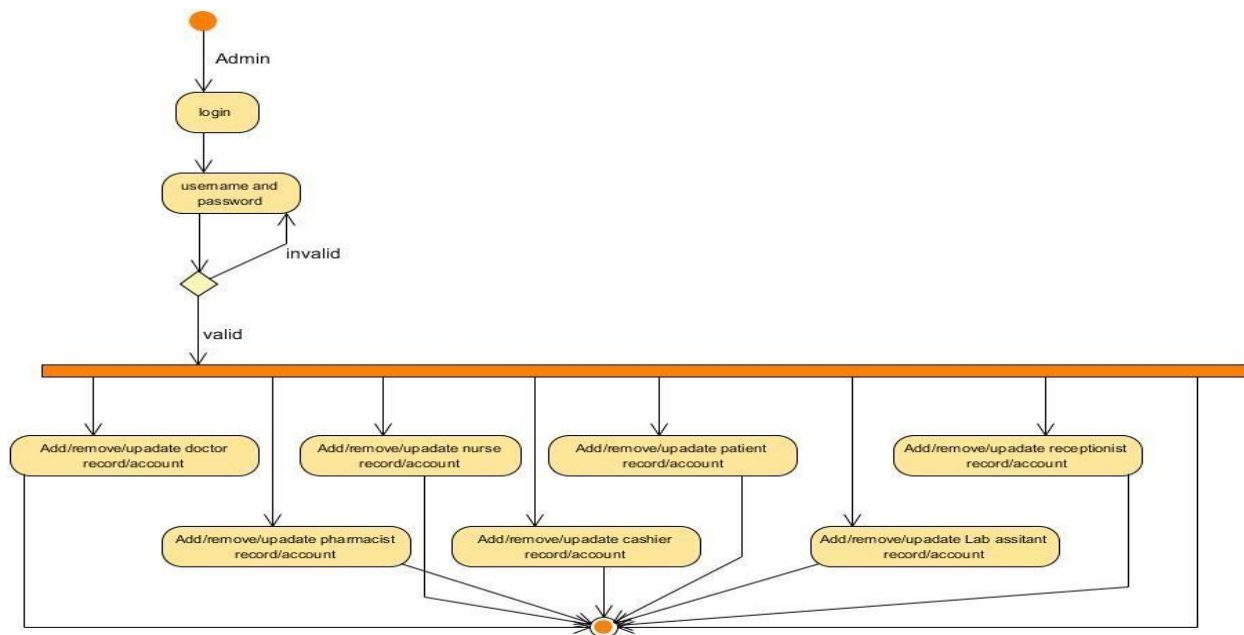
Activity Diagram of Pharmacist



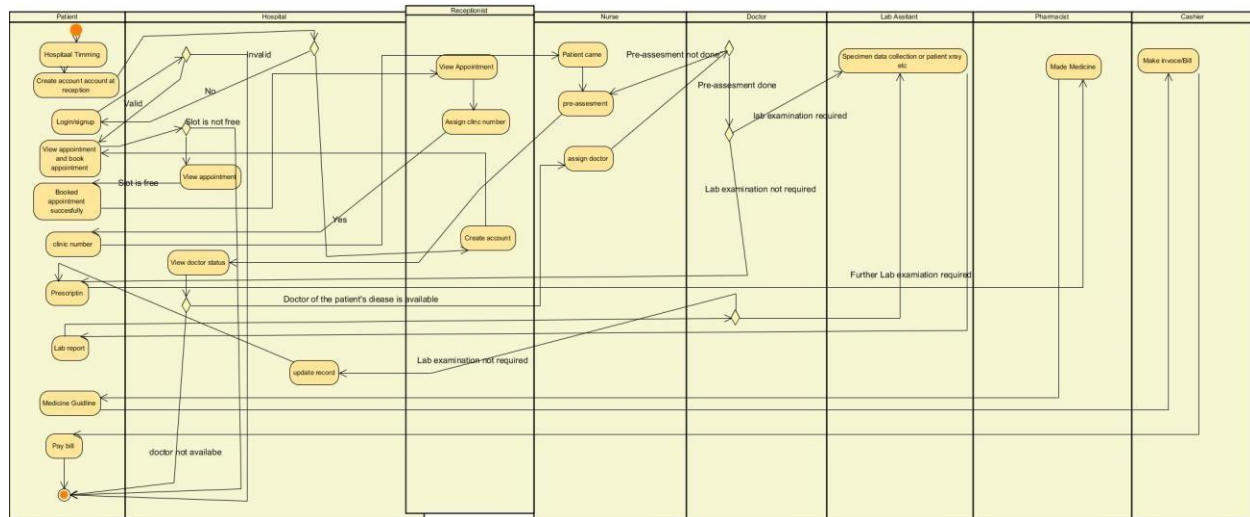
Activity Diagram of Cashier



Activity Diagram of Adminstrator:



Swim lane diagram



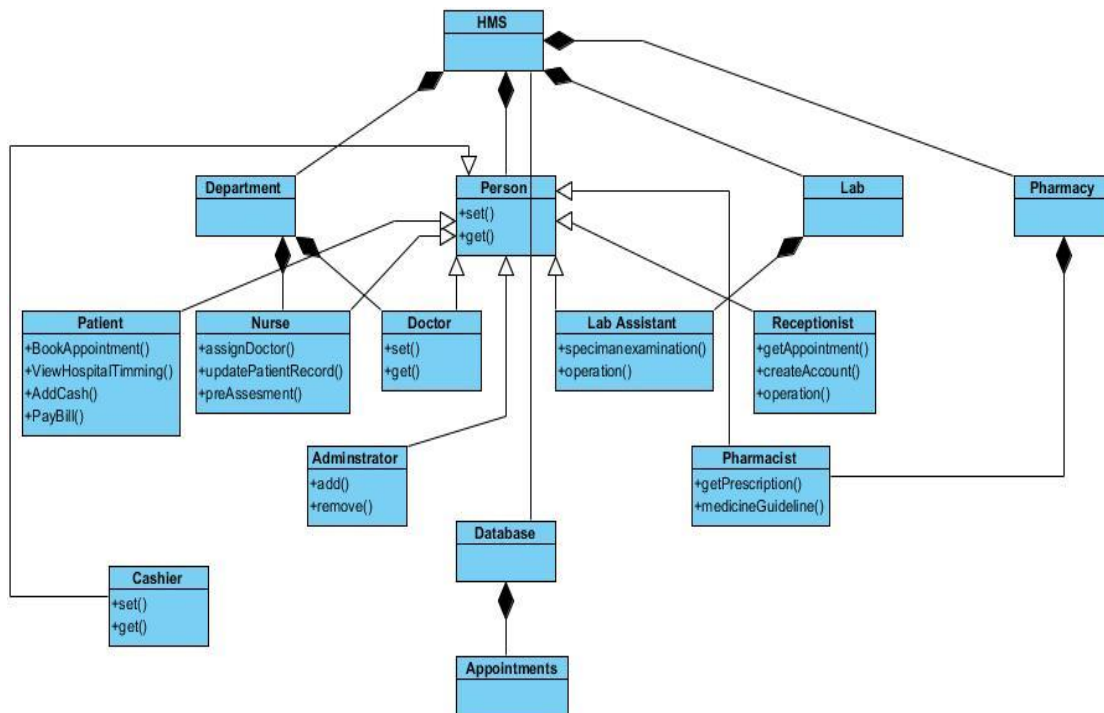
Design Model

Identify a possible set of classes/objects in the HMS case study.

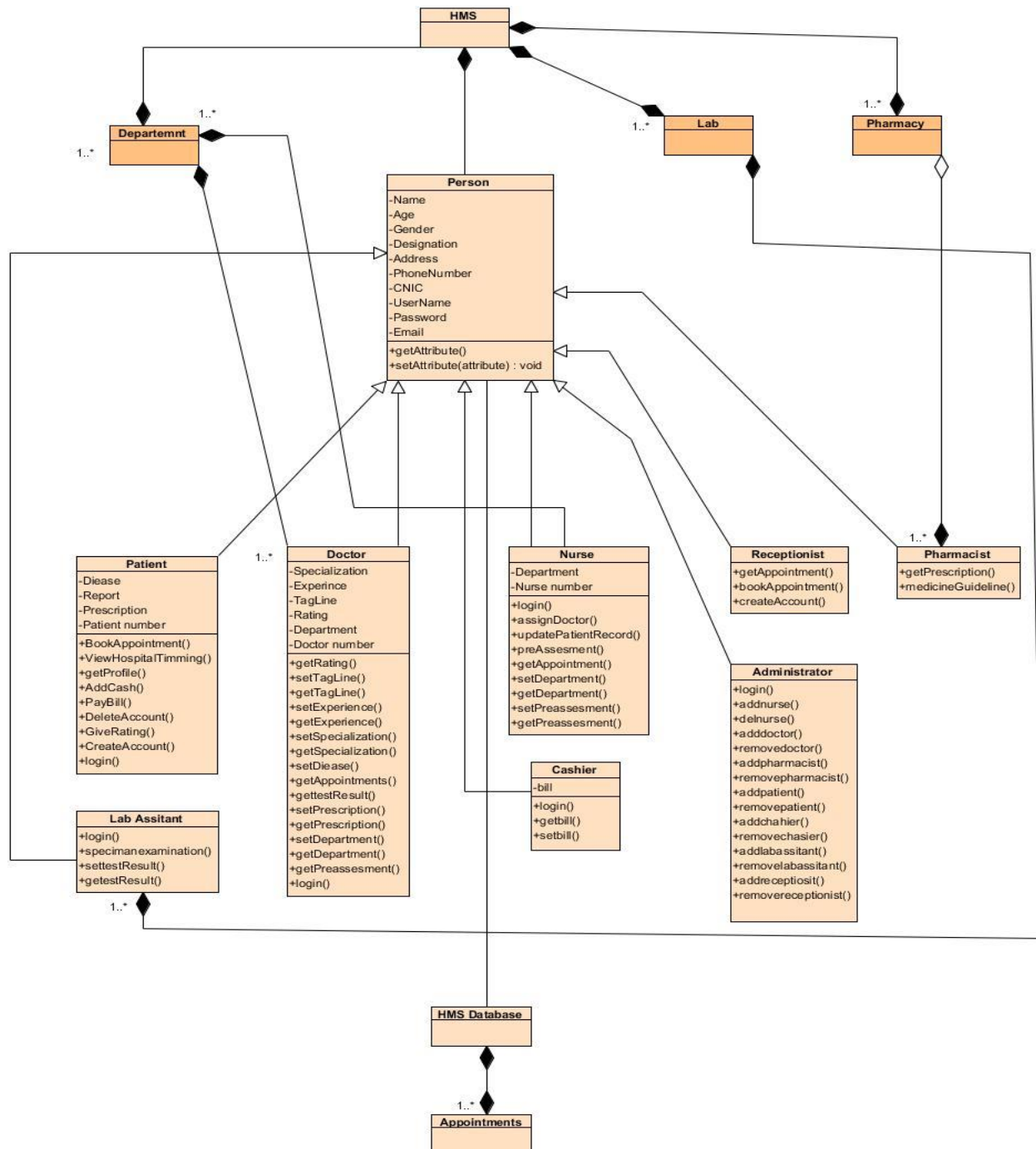
Name of classes and attribute are:

- * Doctor, patient
- * Nurse, pharmacists,
- * lab_assitant,
- * Cashier, reception,
- * administrator, person
- * pharmacy, lab,
- * department,

ASSOCIATION



Class diagram:



AFTER ANALYSIS AND USING SOLID principles and design patterns.

A) SOLID Principles

1) Open Close Principle:

In our class diagram we apply Open Close Principle in our class diagram we can add new classes without changing data in other class. You can simply see this Principle in our diagram. For example you add new class inherit with person class without changing into any other class.

2) LISKOV SUBSTITUTION PRINCIPLE:

In our class diagram we apply LISKOV SUBSTITUTION PRINCIPLE by adding this we inherit that class together which have same function under same class and other in different class and at the end we combine these classes with super class. In our case we have function `getAttribute()` and `setAttribute()` which are use with their base class

B) Design pattern

1) Builder Design Pattern

In our class diagram we use Builder Design Pattern. Like for HMS we have different classes and combine them in that way at the end it make for us complete HMS.

2) Bridge Design Pattern

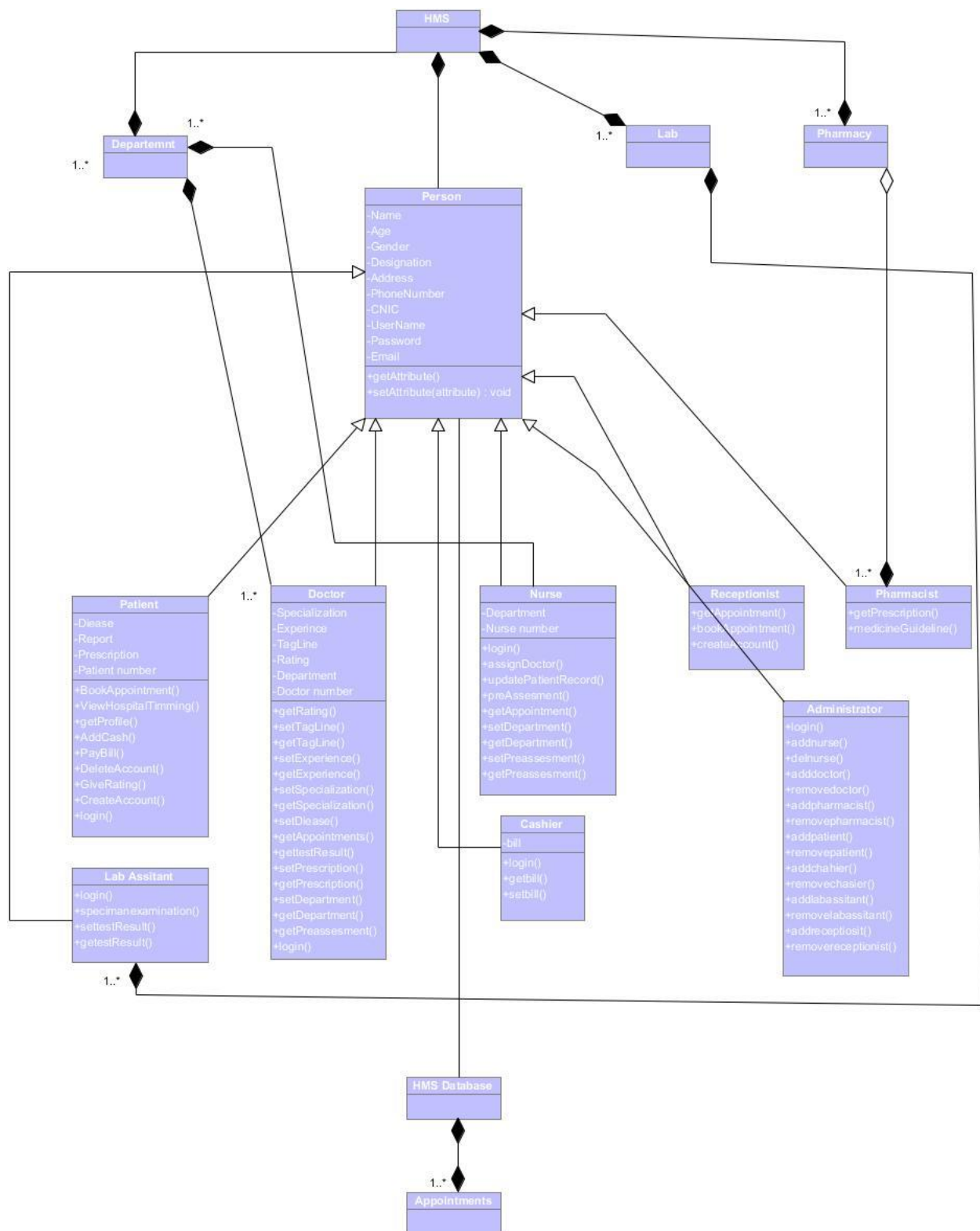
In our class diagram we use Bridge Design Pattern for everything we use sperate class like lab class and pharmacy class we divide every class in that way and connect it with super class that at the time we call and do things.

3) Decorator Design Pattern

We also use Decorator Design Pattern in our class

4) Chain of Responsibility

In our class diagram we also have Chain of Responsibility in that after main class we have different classes after some choice we move to next class and after using different class we move to next class .



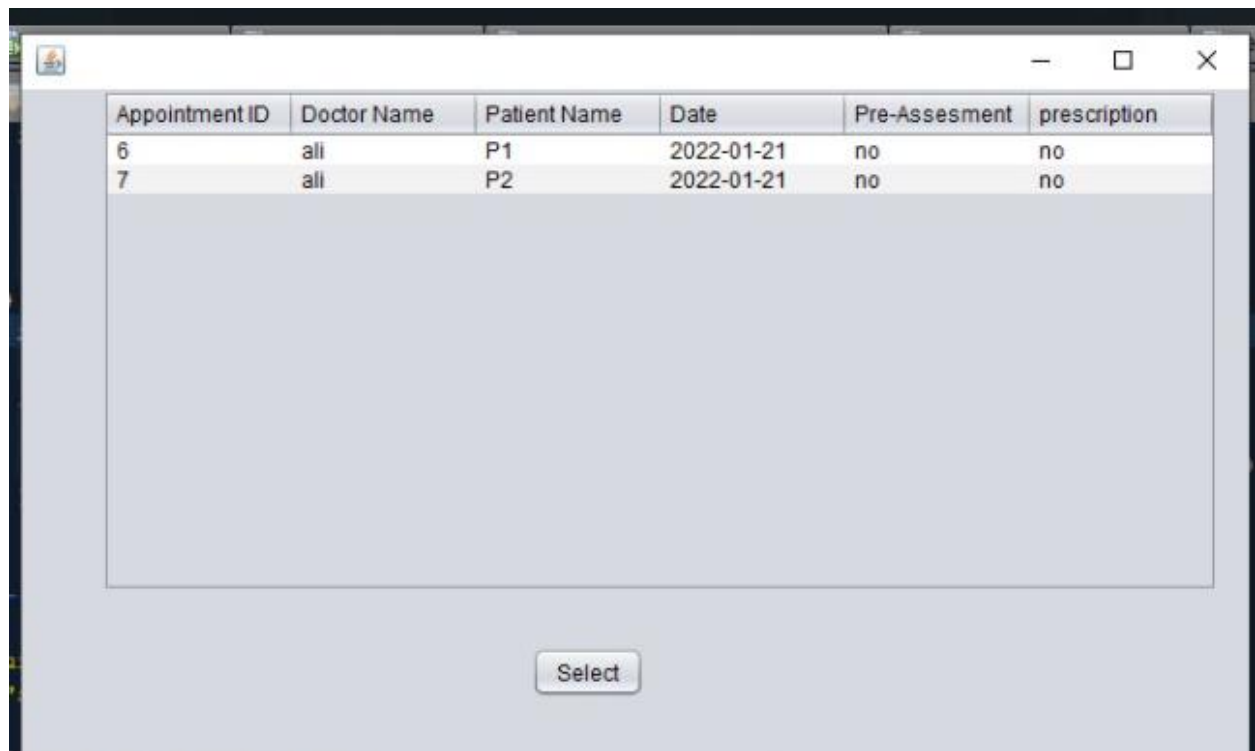
Screenshot of working project



The screenshot shows a Java Swing window titled "Staff Login Form". The window has a light gray background and a standard title bar with minimize, maximize, and close buttons. The form contains the following elements:

- A label "Enter User name :" followed by a text input field containing the text "ali".
- A label "Enter Password:" followed by a password input field containing three asterisks "***".
- A dropdown menu currently showing "Doctor".
- A "Signin" button.

The window is open over a background of a code editor with several Java files open, including "addTimeFee.java", "doctorPrescriptionLabExam.java", and "DoctorUs".



The screenshot shows a Java Swing window displaying a table of appointment data. The table has six columns: Appointment ID, Doctor Name, Patient Name, Date, Pre-Assesment, and prescription. The table contains two rows of data. Below the table is a "Select" button.

Appointment ID	Doctor Name	Patient Name	Date	Pre-Assesment	prescription
6	ali	P1	2022-01-21	no	no
7	ali	P2	2022-01-21	no	no

phpMyAdmin

Server: 127.0.0.1 Database: myhmsdb Table: appointment

Showing rows 0 - 1 (2 total. Query took 0.0017 seconds)

SELECT * FROM `appointment`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

	appointmentID	doctorclinicID	patientID	preassessment	appointmentDate	prescription	labresult	medicineGuideline
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	6	1	1	no	2022-01-21	no	no	NULL
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	7	1	2	no	2022-01-21	no	no	NULL

Check all | With selected: Edit Copy Delete Export

Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None


Query results operations

Print Copy to clipboard Export Display chart Create view

Bookmark this SQL query

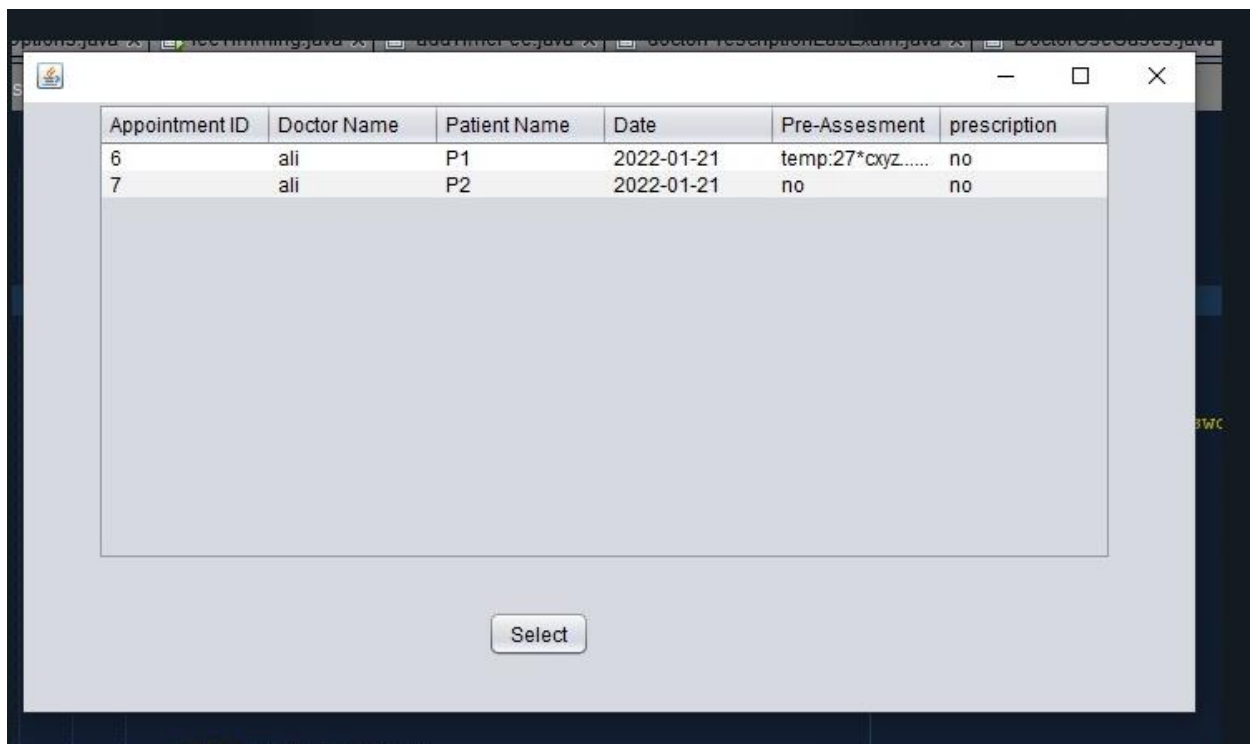
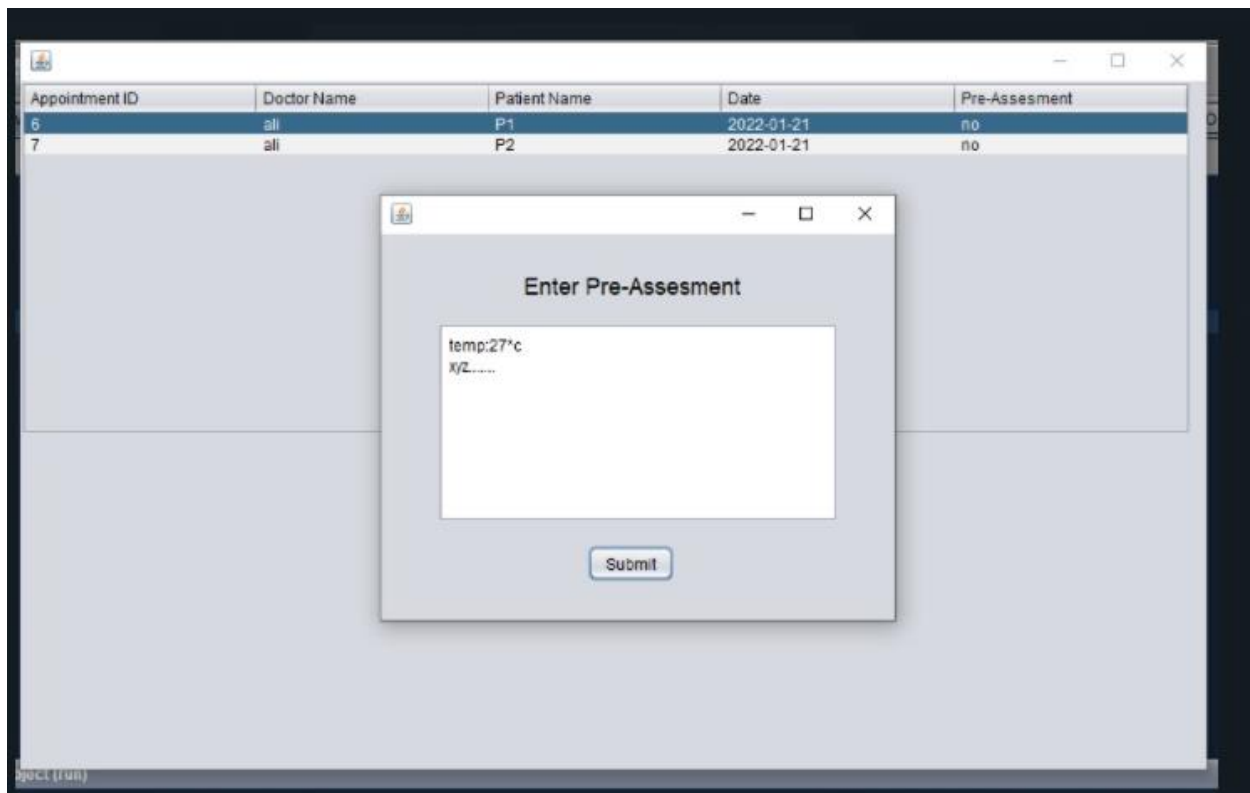
Appointment ID	Doctor Name	Patient Name	Date	Pre-Assesment	prescription
6	ali	P1	2022-01-21	no	no
7	ali	P2	2022-01-21	no	no

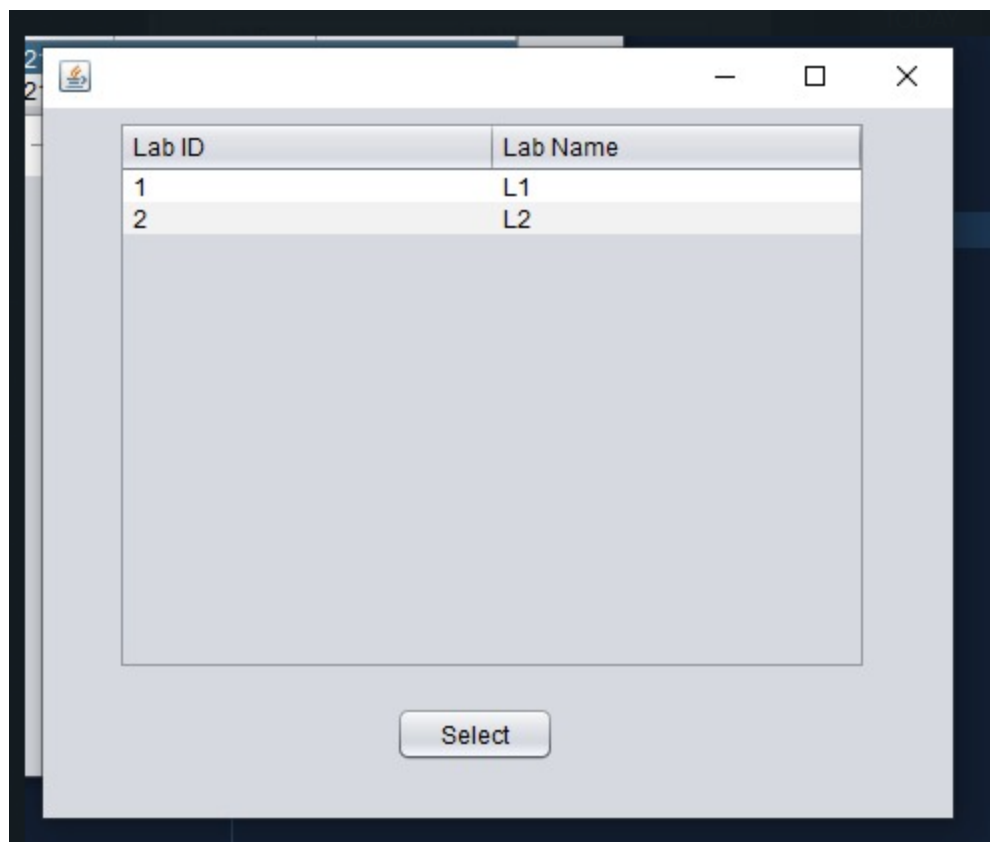
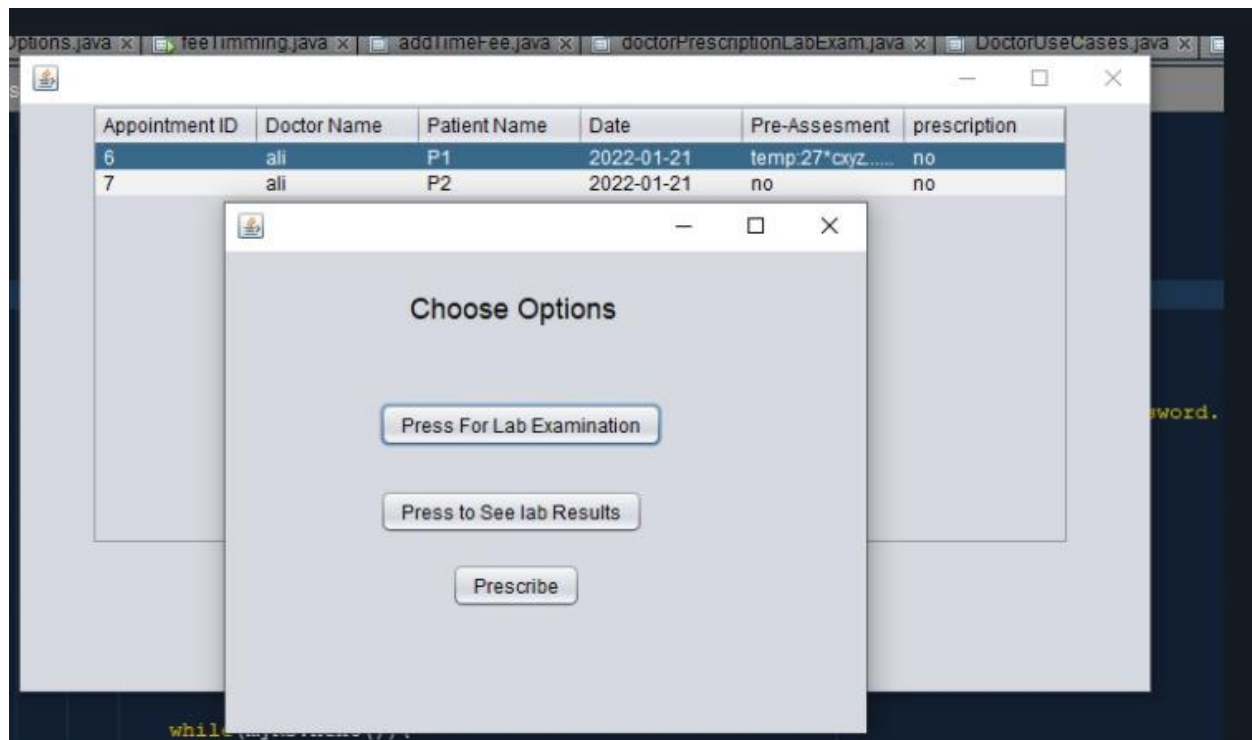
Message

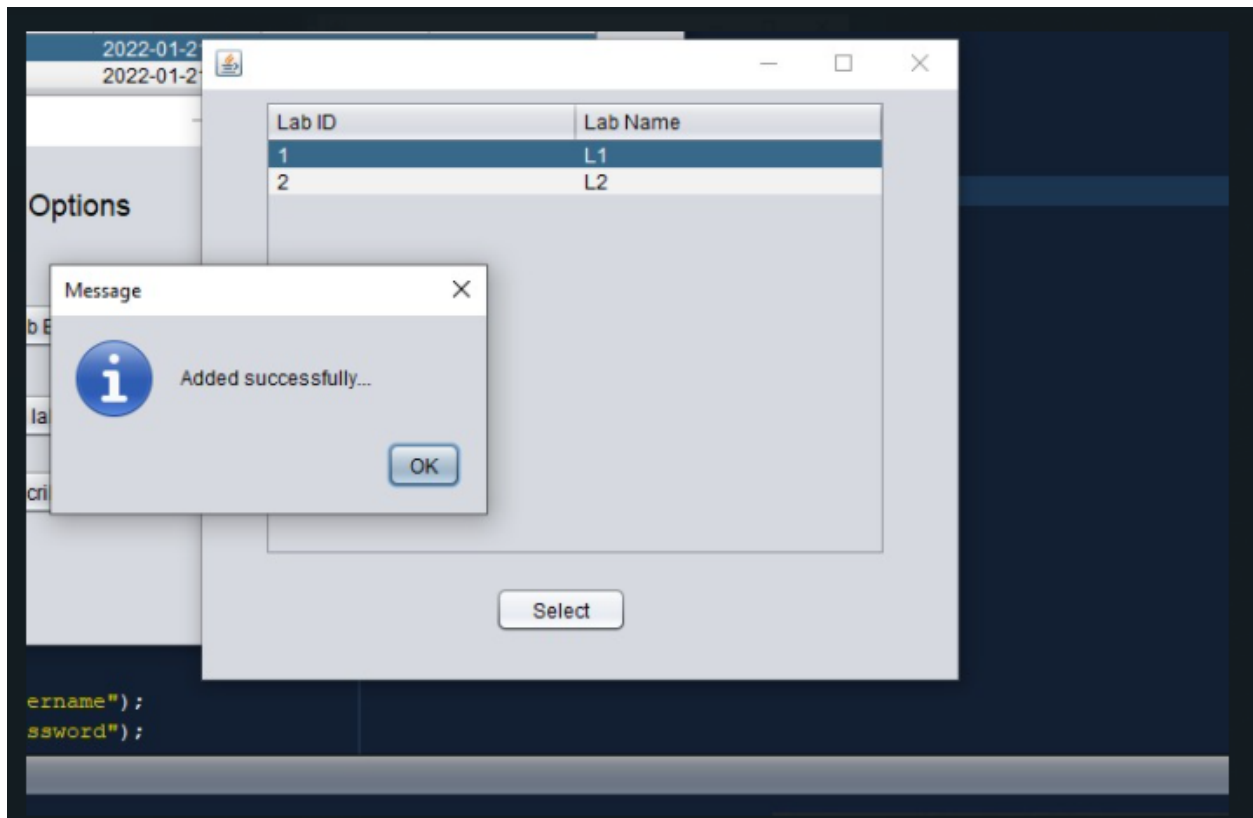
 Pre-assesment Is Required....

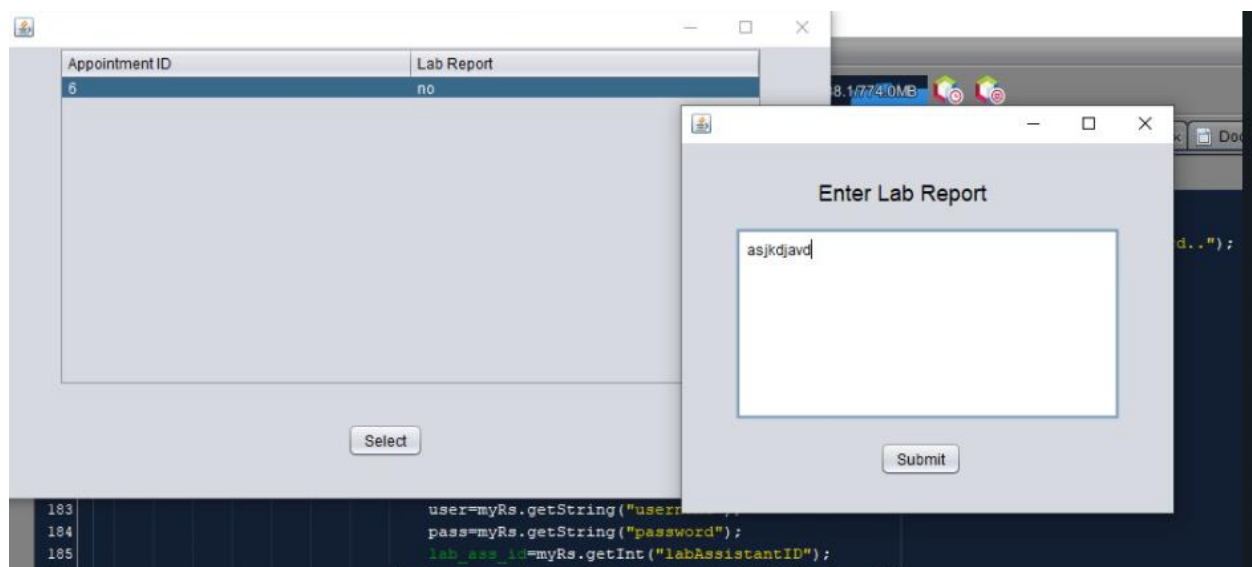
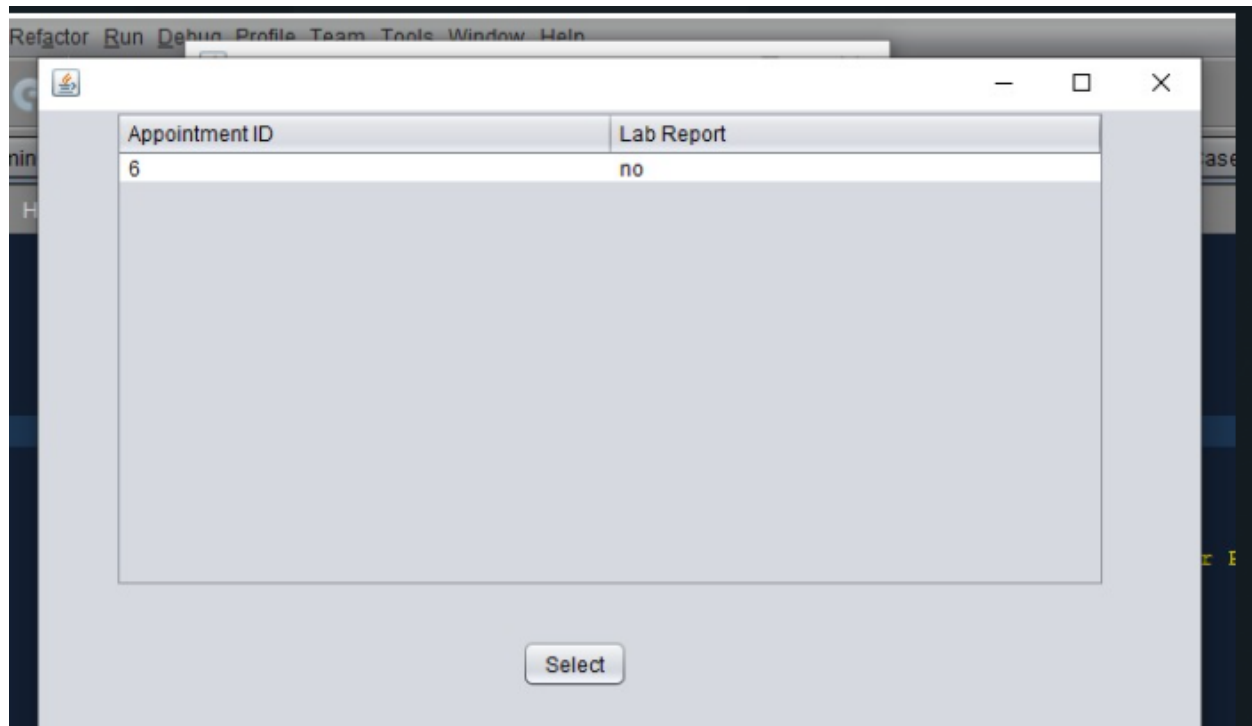
OK

Select









```
183 user=myRs.getString("username");  
184 pass=myRs.getString("password");  
185 lab_ass_id=myRs.getInt("labAssistantID");
```


Staff Login Form

Enter User name :

Enter Password:

Appointment ID	Doctor Name	Patient Name	Date	Prescription	medicineGuideline
6	ali	P1	2022-01-21	no	
7	ali	P2	2022-01-21	no	

Message

 Prescription is Required....

Appointment ID	Doctor Name	Patient Name	Date	Pre-Assessment	prescription
6	ali	P1	2022-01-21	temp:27*cx	no
7	ali	P2	2022-01-21	no	

Choose Options

Enter Prescription

— □ ×

PAKISTAN INTERNATIONAL HOSPITAL

LOGIN

USERNAME

PASSWORD

LOG IN

Create New Account

— □ ×

SIGN UP

NAME*

EMAIL*

USERNAME*

PASSWORD*

AGE*

GENDER*


Male ▾

CNIC

PHONE

ADDRESS

SIGN UP

— □ ×

PAKISTAN INTERNATIONAL HOSPITAL


LOGIN

USERNAME

PASSWORD

LOG IN

Create New Account

— □ ×

Book Appointment

View Appointment

Hospital Timing

Profile


I'M Looking for

Eye


Select Doctor

Mohsin

Done



Plan your Visit



Timing

03:00PM - 05:00PM


Done

Book Appointment

View Appointment

Hospital Timing

Profile



Your Appointment has been booked. Pay Following Amount to Cash counter.


500|

Book Appointment

View Appointment

Hospital Timing

Profile




Book Appointment

View Appointment

Hospital Timing

Profile

Doctor Name	Date	Prescription	Medicine Guideline
Mohsin	Fri Jan 21 00:00:00 PKT 2...		
Ahmad	Sat Jan 22 00:00:00 PKT ...		
Mohsin	Sat Jan 22 00:00:00 PKT ...		
Mohsin	Sun Jan 23 00:00:00 PKT ...		
Mohsin	Mon Jan 24 00:00:00 PKT ...		
Mohsin	Mon Jan 24 00:00:00 PKT ...		
Mohsin	Tue Jan 25 00:00:00 PKT ...		
Mohsin	Sun Jan 30 00:00:00 PKT ...		
Mohsin	Sun Jan 23 00:00:00 PKT ...		
Mohsin	Wed Jan 26 00:00:00 PKT...		



Book Appointment

View Appointment

Hospital Timing

Profile

Welcome, Hope you find best service here

Timings
24/7

Contact Us
0300-7867867

www.pihi.com
info@pihi.com

—

□

×

Book Appointment

View Appointment

Hospital Timing

Profile

Name

tahawar

Age

18

Gender

Male

Username

tahawar123

Email

t@gmail.com

Phone

03101234567

CNIC

322020000001

Address

Narowal