SRM

INSTITUTE OF SCIENCE & TECHNOLOGY

(Deemed to be **University** *u/s 3 of UGC Act, 1956)*

18CSC202J

Object oriented design and programming

HOSPITAL MANAGEMENT SYSTEM

Project presented by -

RA2111026010250 - Shravani P Maskar
RA2111026010256 - Sneha Patnaik

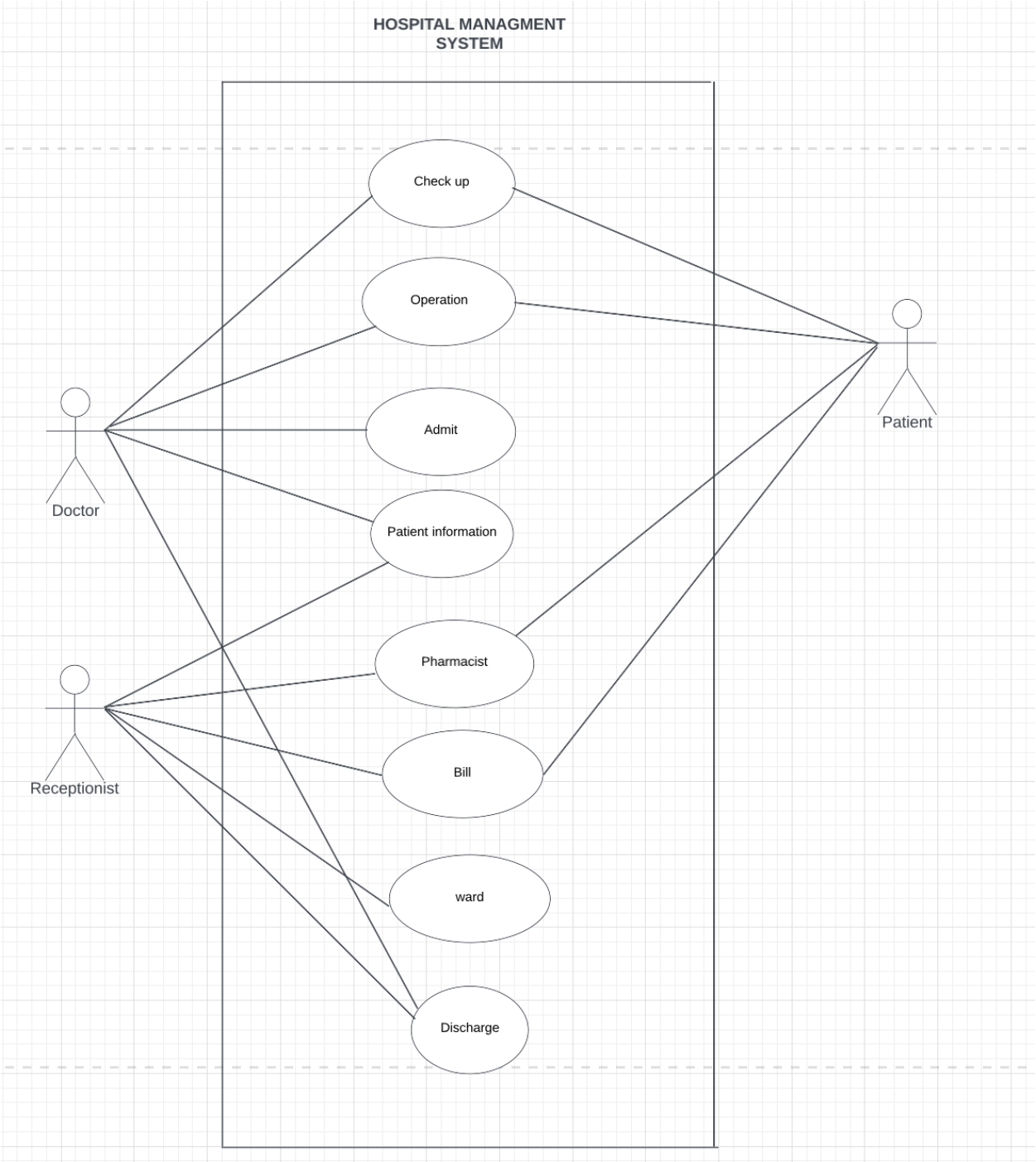
Problem Statement

Analysis and design of the Hospital management system is based on a UML diagram.

A Project of Hospital Management includes registration of patients storing their details into the system and also computerized billing in the pharmacy, and test labs.

The main objective of the system is to show and help us to collect most of the information about Hospitality and Medical services. The system is very simple in design and to implement it.
At the same time, the correct use of it will reduce system complexity and improve software development efficiency and portability.

USE CASE


HOSPITAL MANAGMENT SYSTEM
Check up
Operation
Admit
Patient information
Pharmacist
Bill
ward
Discharge
Doctor
Receptionist
Patient

Actors:

Doctor
Patient
Receptionist

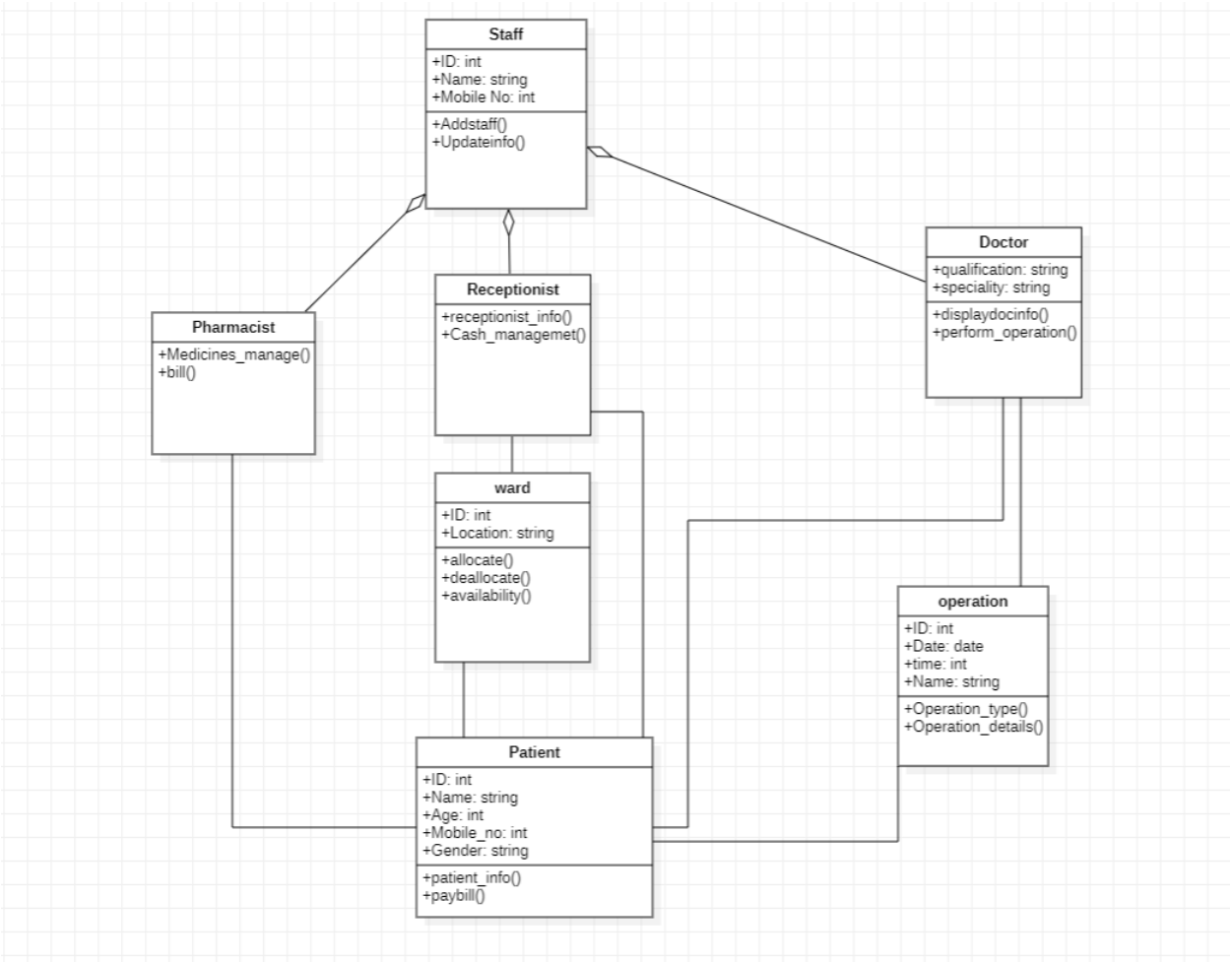
UseCase:

checkup:all the records of patient check ups present and past are stored
Operation:ongoing operation or past operation are maintained in this
Admit: admitting a patient and its details are depended on doctor
Discharge: discharging details
Pharmacy: It keeps the details of medicines required and bills associated with the treatments
Bill: All the bills from operation, ward prices and medicines details
Ward: ward availability, room no and floor situated and assigned to which patient, these details can be found in ward section
patient info: It keeps the patient name, age, gender, medical history and current records.

Use case Diagram is a visual representation of an actor and use case together with any additional definition and specification.
It has use cases(requirement) & Actor(person or system)
There may be some use cases that do not directly interact with actors.
In many instances, a function requirement maps directly to a use case.

In the Use case diagram of the hospital management system there are actors: patient, doctor, receptionist.
The doctor interacts with check up, operation admission of the patient, patient's information and discharge
The receptionist can access patient information, the pharmacy details and bill details.
The patient can access check up routines operation details and pharmacy and bills

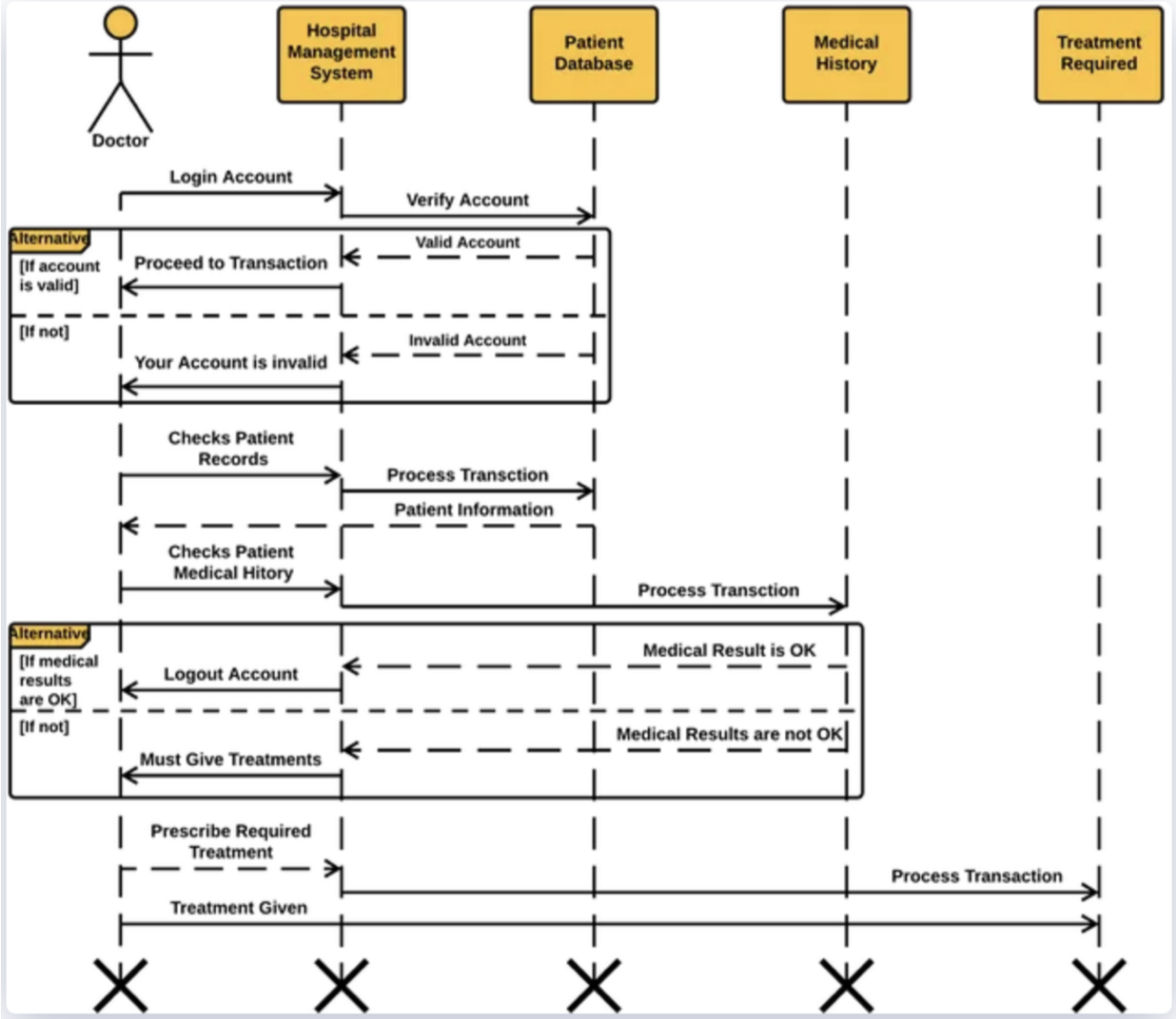
CLASS DIAGRAM



Classes:

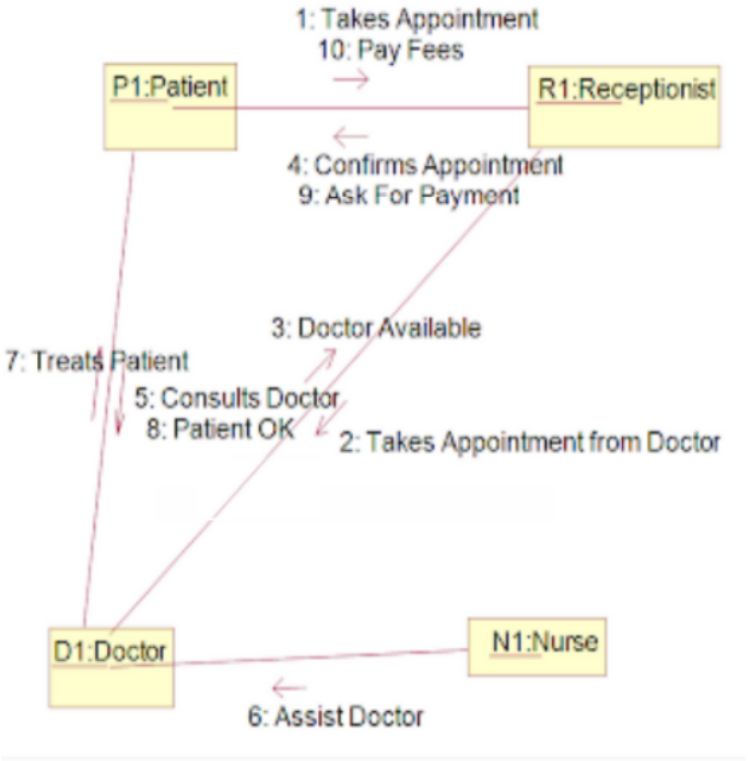
- **Staff class**:to supervise all the operation of staff members
  Consist of ID, name, mobile no as data member and it add and updates the detail of staff members
- **Patient Class**: To supervise the operations of Patient
  Keeps the record of ID, name,age,mobile no and gender and keeps the information and bill details
- **Doctors Class:** To supervise all the operations of Doctors
  Details of doctor qualification and speciality. It also displays the all the operation done by that doctor so far
- **Operation class**: to keep track of all operations happening in the hospital
  It shows when the operation was performed on whom and by whom
- **Receptionist class**: to keep details of receptionist
  This class handles all the cash management and access to pharmacy bills paid or not
- **Pharmacist class:** to manage pharmacist
  Checks all the medicines required as prescribed by doctor and thus generates bills accordingly

SEQUENCE DIAGRAM



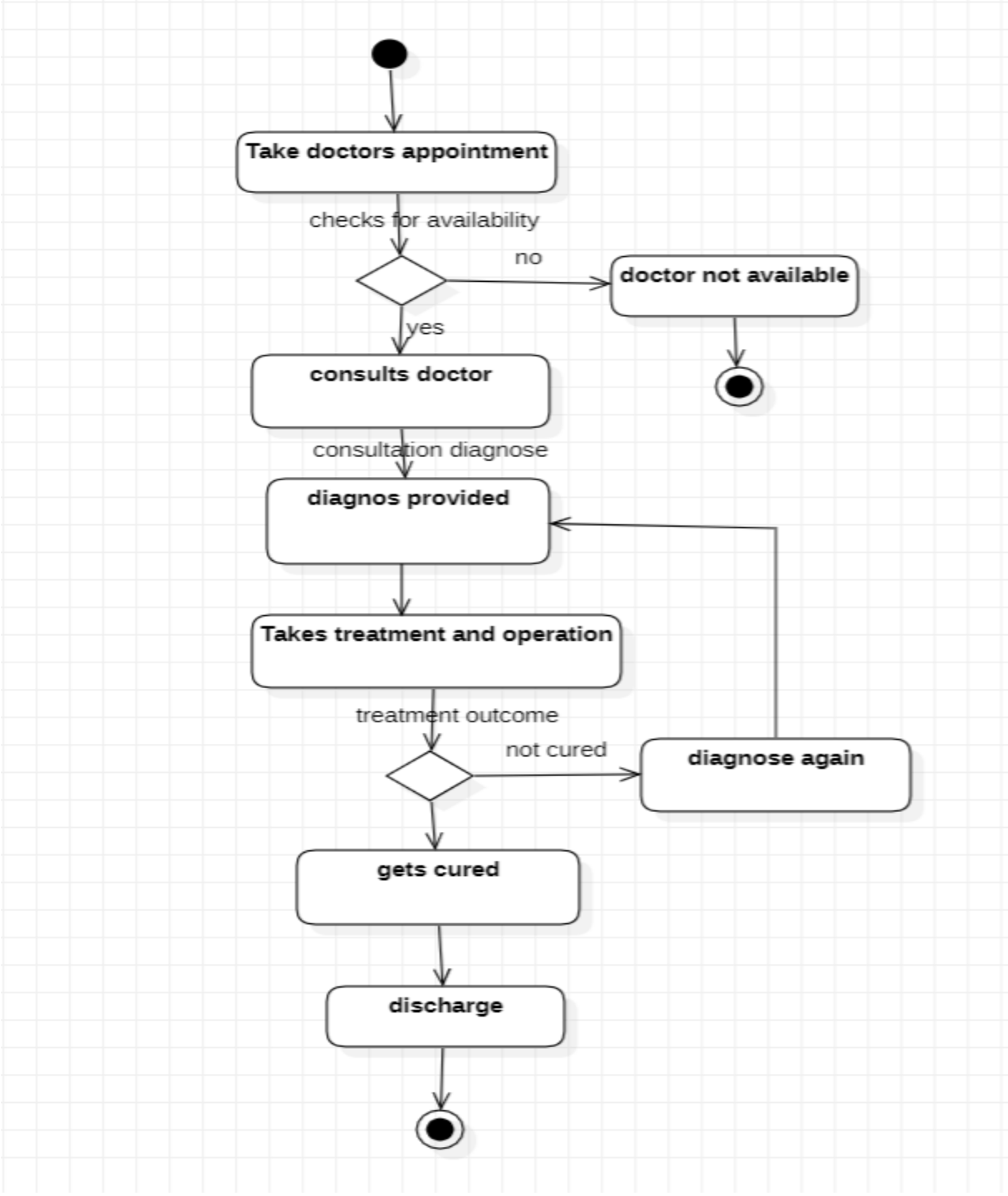
This is the **Hospital Management System's Login Sequence Diagram**, which shows how administrators can access their accounts using their credentials.
After logging in, the doctor can access the patient database after verifying the credentials.
Then it checks for patient records and payment records in the patient database and hospital database . Process the transaction.
Doctor also checks the previous medical history to see to provide the best advice
If the medical records are good then successfully logs out
If not then prescribes the required treatment and thereafter processes the transaction.

COLLABORATION DIAGRAM



The collaboration diagram is used to show the relationship between the objects in a system. Both the sequence and the collaboration diagrams represent the same information but differently. Instead of showing the flow of messages,
Patient request the receptionist for an appointment with a doctor
Receptionist then takes appointment from doctor after checking their availability and confirms the appointment
Patient then consults doctor and along with nurse the doctors treats the patient, check if they are ok
After that patient proceeds to pay the bill

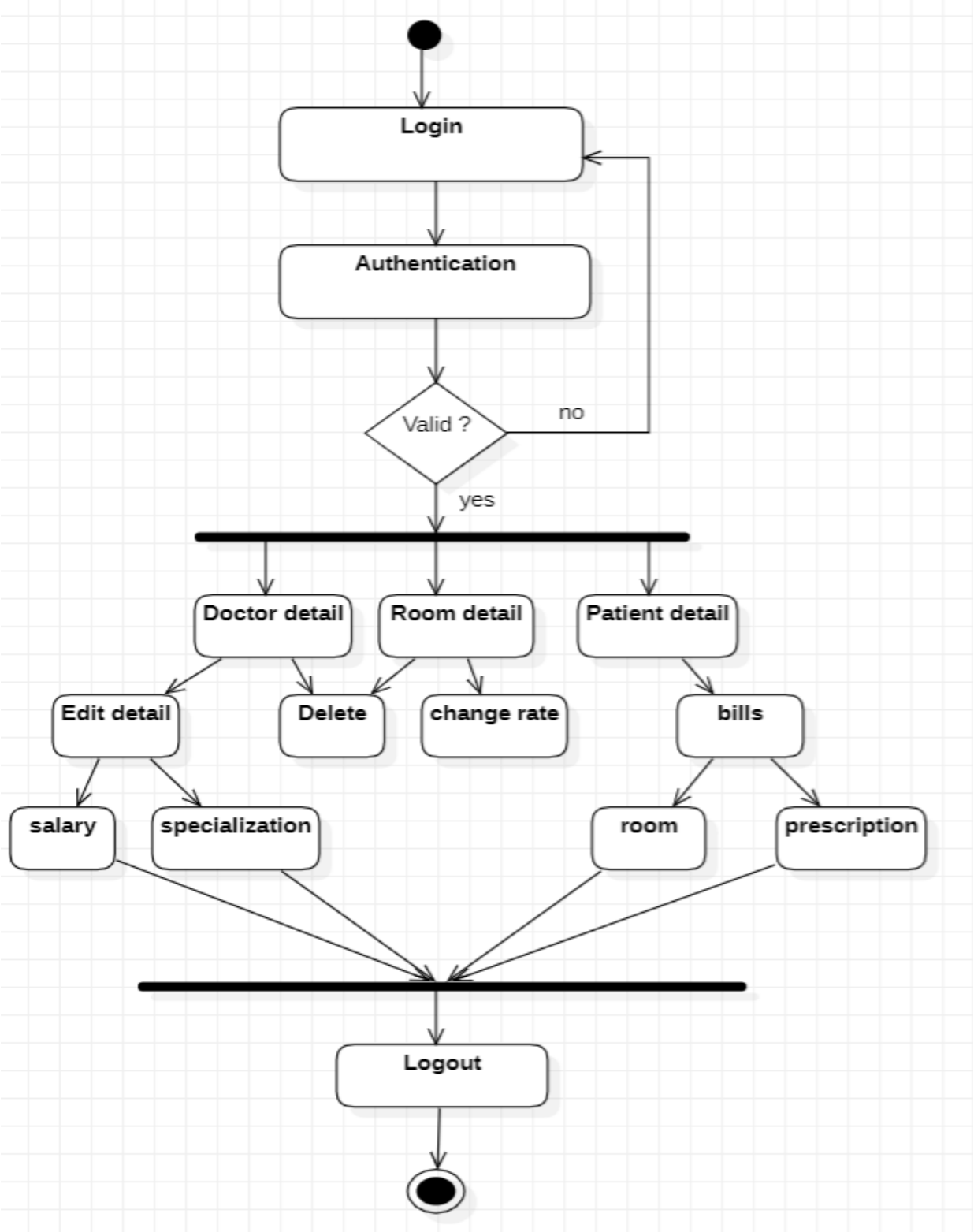
STATE CHART DIAGRAM



Any real time system is expected to be reacted by some kind of internal/external events. These events are responsible for state change of the system.Statechart diagram is used to represent the event driven state change of a system. It basically describes the state change of a class, interface etc.State chart diagram is used to visualize the reaction of a system by internal/external factors.

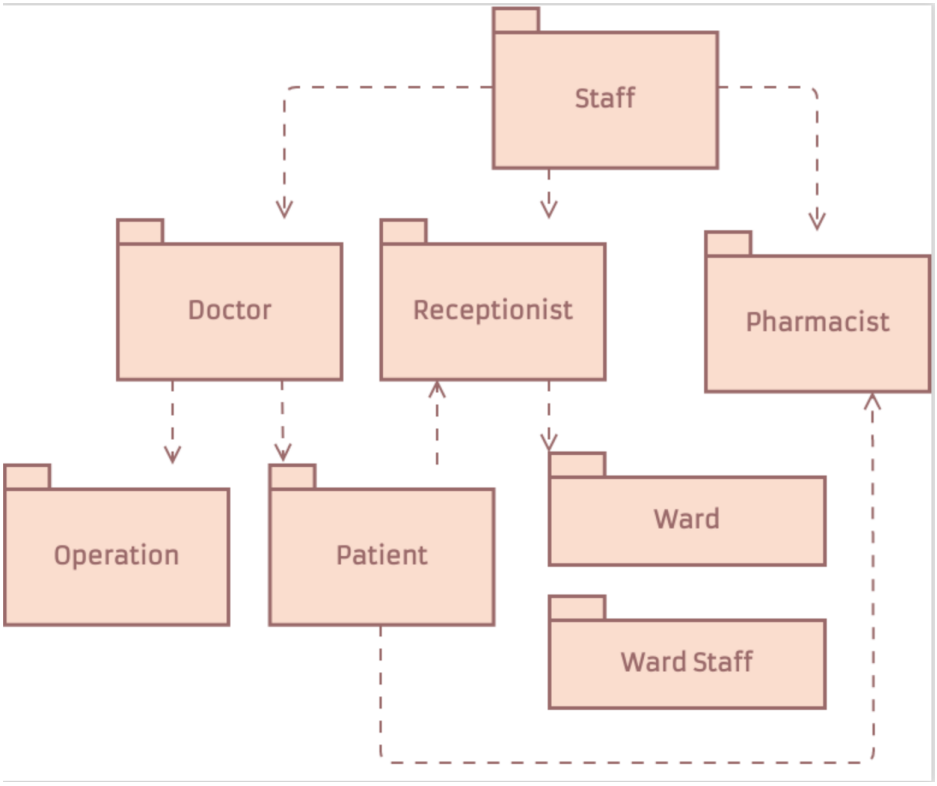
Here a user books an appointment with doctor.checks the availability of doctor if not available then tries again. If available it consults doctor, the doctor provides a consultation and checks if the patient would require any treatment hence performs diagnosis tests the patient does the required medication and treatment and goes to doctor again if patient get cured then doctor discharges the patient, otherwise performs the diagnosing again.

ACTIVITY DIAGRAM



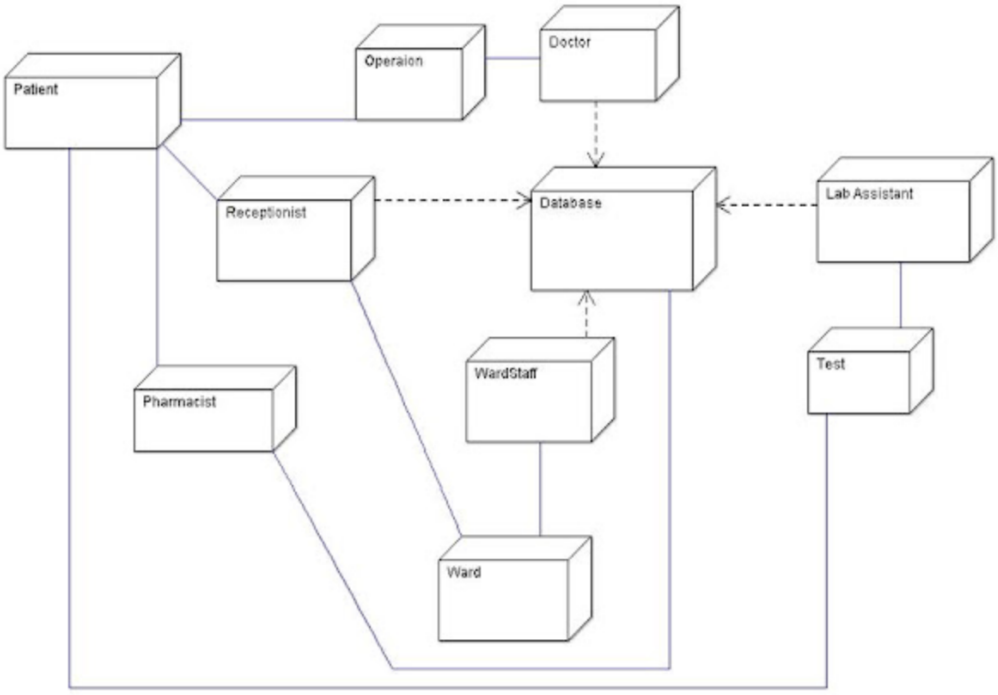
This is the Login Activity Diagram of Hospital Management System, which shows the flows of Login Activity, where admin will be able to login using their username and password. After login, users can manage all the operations on Nurse, Medicines, Patient, Doctor, Hospital. All the pages such as Pa-tient, Doctor, Hospital are secure and users can access these pages after login. T The various objects in the Doctor, Nurse, Medicines, Patient, and Hospital page- interact over the course of the Activity, and users will not be able to access this page without verifying their identity. After the authentication we can change access the doctor, patient and ward details accordingly change the details and then logout of the system

Package diagram



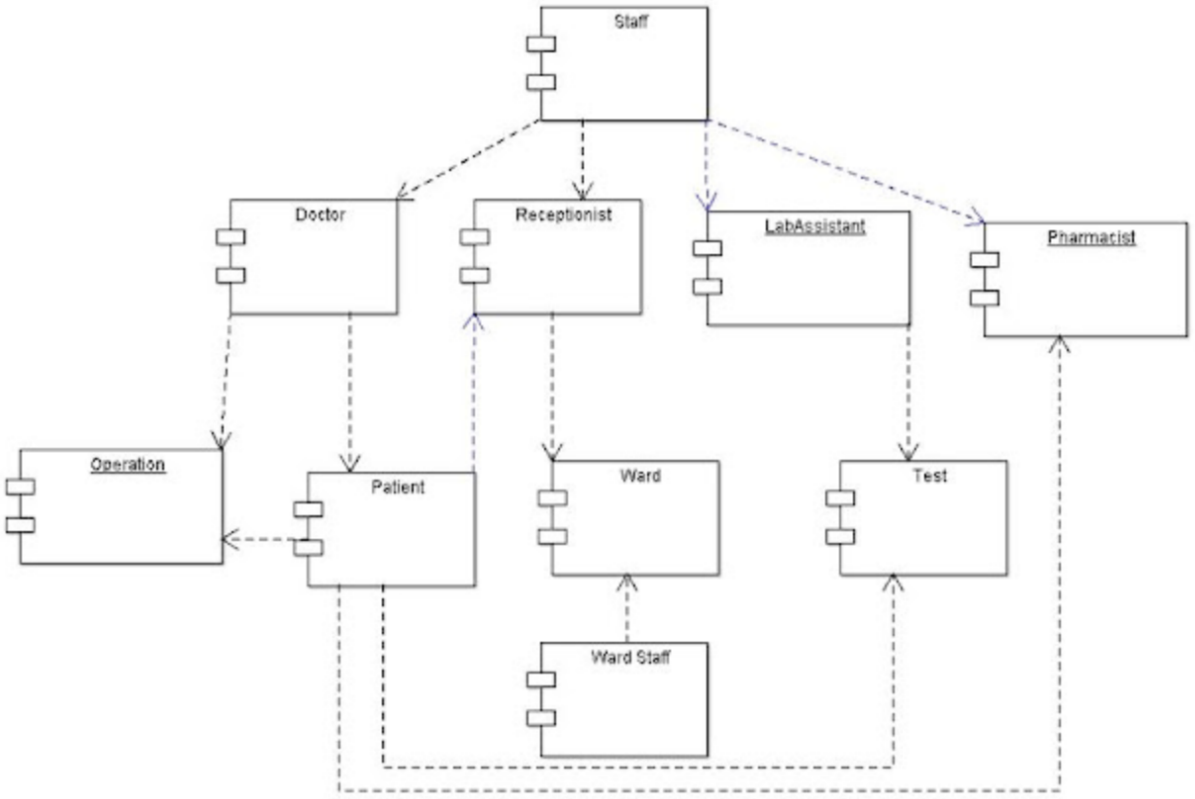
All the interrelated classes and interfaces of the system when grouped together form a package.
To represent all these interrelated classes and interface UML provides a package diagram.
Package diagram helps in representing the various packages of a software system and the dependencies between them.
It also gives a high-level impression of use case and class diagram.
In hospital management, staff, doctor, receptionist, pharmacist, operation, patient, ward, ward staff are the packages. These packages organize elements into groups to provide better structure for the system model.

Component diagram



This is a Component diagram of Hospital Management System which shows components, provided and required interfaces, ports, and relationships between the Patient, Doctor, Appointment, Medicines and Hospital. This type of diagram is used in Component-Based Development (CBD) to describe systems with Service-Oriented Architecture (SOA). Hospital Management System UML component diagram, describes the organization and wiring of the physical components in a system.

Deployment diagram



UML deployment diagram for hospital systems is able to define how the software and hardware work and where the processing takes place. The needed hardware and software specifications of the hospital system are visualized using deployment diagrams. It is one of the structural diagrams which describes the physical aspects of a real-world project.This is a simple diagram with four nodes that shows how a hospital's management is deployed. It starts with the desktop client node, where the client comes with his query. The request is processed to the hospital's local server, either printed to a database server or printed out. The represents the profile class that shows how an existing met class acts as a part of a profile.

Conclusion

Implementation of hospital management system project helps to store all the kinds of records, provide coordination and user communication, implement policies, improve day-to-day operations, arrange the supply chain, manage financial and human resources, and market hospital services.

References

https://www.freeprojectz.com/uml-diagram/hospital-management-system-uml-diagram

https://itsourcecode.com/uml/hospital-management-system-sequence-diagram-uml/