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1. Abstract

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

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

The main objectives of the system is which shows 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.

2. Requirement

1. ADMISSIONS:

This Module helps in registering information about patients and handles patient's query.

2. DOCTOR APPOINTMENTS

This Module deals with, when the ID is generated the Appointment time & number from the Receptionist and accordingly visit the doctor.

3. TESTS APPOINTMENTS

This Module Deals with, when the ID is generated the patient receives the Appointment time & number from the Receptionist and accordingly undergoes the tests.

4. BED ALLOTMENT

This Module handles with allotting the Bed to various patients by checking their ID.

5. UNDERGO OPERATION

This Module handling with undergoes the various operations by diagnosing the patients.

6. DRAW SALARY

This Module checks whether the person is a Doctor/Staff and draws salary based on the information.

7. EDIT DOCTOR/STAFF INFORMATION

This Module handles the activities such as editing (Updating) Doctor/Staff information into the database.

7.1 ADD DOCTOR/STAFF INFORMATION

This Module handles the activities such as adding Doctor/Staff information into the database.

7.2 DELETE DOCTOR/STAFF INFORMATION

This Module handles the activities such as deleting Doctor/Staff information into the database.

8. PRESCRIBE TESTS

This Module handles various activities such as Doctor Diagnoses the patient, gives treatment & gives suggestions to the patients, & prescribes laboratory tests & medicines.

9. WARDWISE BED STATUS

It deals with the maintenance of the wards, inter- and intra-ward transfers.

10. ADMISSION/DISCHARGE REPORTS

This Module helps in generating patient's discharge summary, which includes patient's health at the time of discharge, medical history, various diagnosis and drug prescriptions, history of present illness and course in hospital.

11 . PATIENT INFORMATION

This Module helps in generating the patient information Which is provided by doctor.

3. Introduction to tools

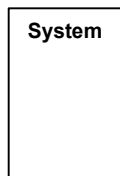
3.1 Use Case Diagram



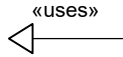
An actor is a direct external user of a system, it is not part of system Actor can be person, device, & other system.
Ex. Patient is an actor of hospital management system.



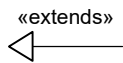
A use case is a coherent piece of functionality that a system can provide by interacting with actors.
Ex. Check up patient by doctor.



System boundary is a rectangle in which use case mentioned in & it have system name also.
Ex. Hospital Management system.



The include relationship incorporate one use case within
The behavior of other use case.

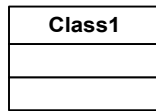


The extend relationship adds increment behavior to a
use case.



An arrow indicates the relationship among actor & use
case.

3.2 Class Diagram



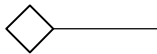
A class describe a group of objects with the same properties (attributes), behavior(operation),kinds of relationship, Semantic.

Ex. Hospital is a class.

End1 End2

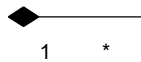
An association is a description of group of links with common Structure & common semantic.

Ex. A person works for a company.



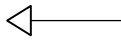
An aggregation is a strong form of association in which an Aggregate Object is made of constituent parts.

Ex. Patient use catering for meals.



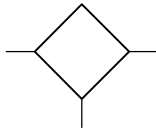
Composition is a form of aggregation with two additional Constrains.

Ex. Hospital has Department.



A generalization is the relationship between a class (super class) & One or more variation of the class (subclass).

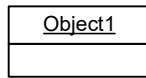
Ex. Patient, Doctor, & Nurse are sub class of a Person class.



An N- array association is relationship among three classes Inter dependent to each other.

Ex. A Patient get prescription from Doctor in Hospital.

3.3 Object Diagram



An object is a instant of a class.

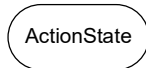
Ex. Joe:Doctor

Note: In Object diagram the relations are as same as in class diagram like as association, aggregation, generalization, Composition, N- array association.

3.4 Activity Diagram



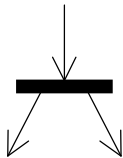
Initial state is a notation of starting of activity.



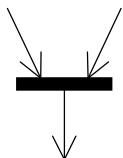
An action state is noted the working flow .
Ex. Get appointment is a active state.



In decision if one condition is satisfied, it's arrow
indicate The next activity to perform.
Ex. Pay fees of doctor is a guard condition.



Fork pseudo state enable to take a single event
transmission & split it into several control parts.

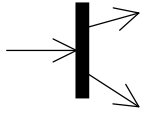


Join pseudo manages multiple transmission part into one
Transmission.

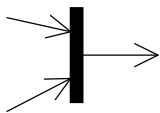


Final state is a notation of ending of activity.

3.5 State Diagram



Fork pseudo state enable to take a single event transmission & split it into several control parts.



Join pseudo manages multiple transmission part into one Transmission.



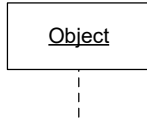
A state is an abstraction of the values and links of an Objects, sets of values and links are grouped to gather Into a state according to the group behavior of object.
Ex. Prescribing is a state.



Drawn as a line from the origin state to the target state.
An arrowhead points to the target state.

Note: Final & Initial state are as same as in Activity diagram.

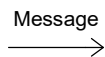
3.6 Sequence Diagram



In Sequence diagram each actor, object or system is represent by vertical line called object life line.



An Activation describe that the system is in process by means system in use.



Messages extend from the lifeline of one object to the lifeline of another except in the case of a message from an object to itself, in which case the message begins and ends on the same lifeline.

4. List of diagram

4.1.1. Use Case Diagram(user's view diagram)

Use case Diagram is a visual representation of actor and use case together with any additional definition and specification.

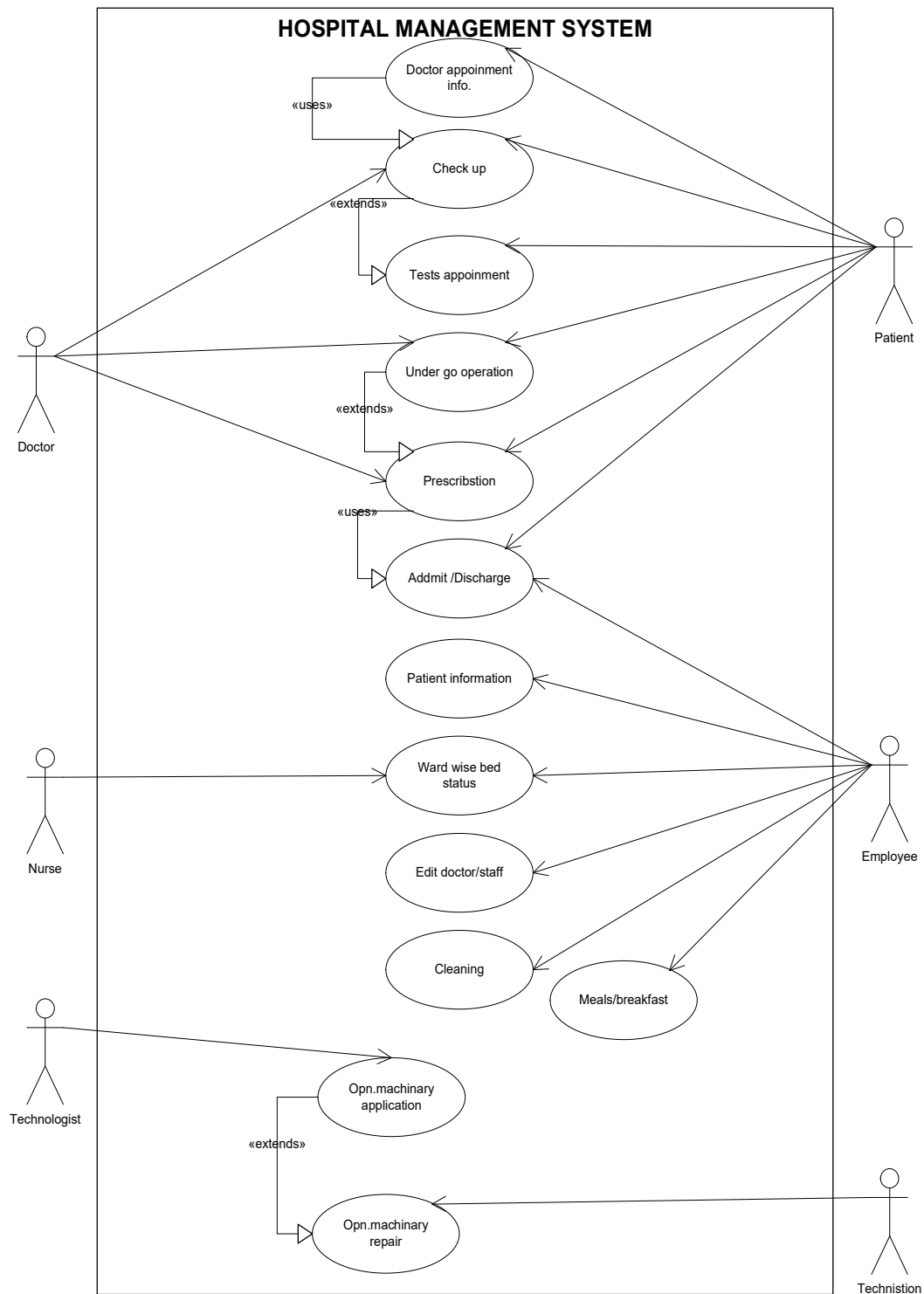
It has use cases(requirement) & Actor(person or system)
There may be some use cases that do not directly interact with actors.

In many instance, a function requirement maps directly to a use case.

In Use case diagram of hospital management system there are an actors patient, doctor, nurse, technologist, technician& employee.

An employee are generalized as receptionist, administration, Cleaner & cooker.

A use case diagram of hospital management system



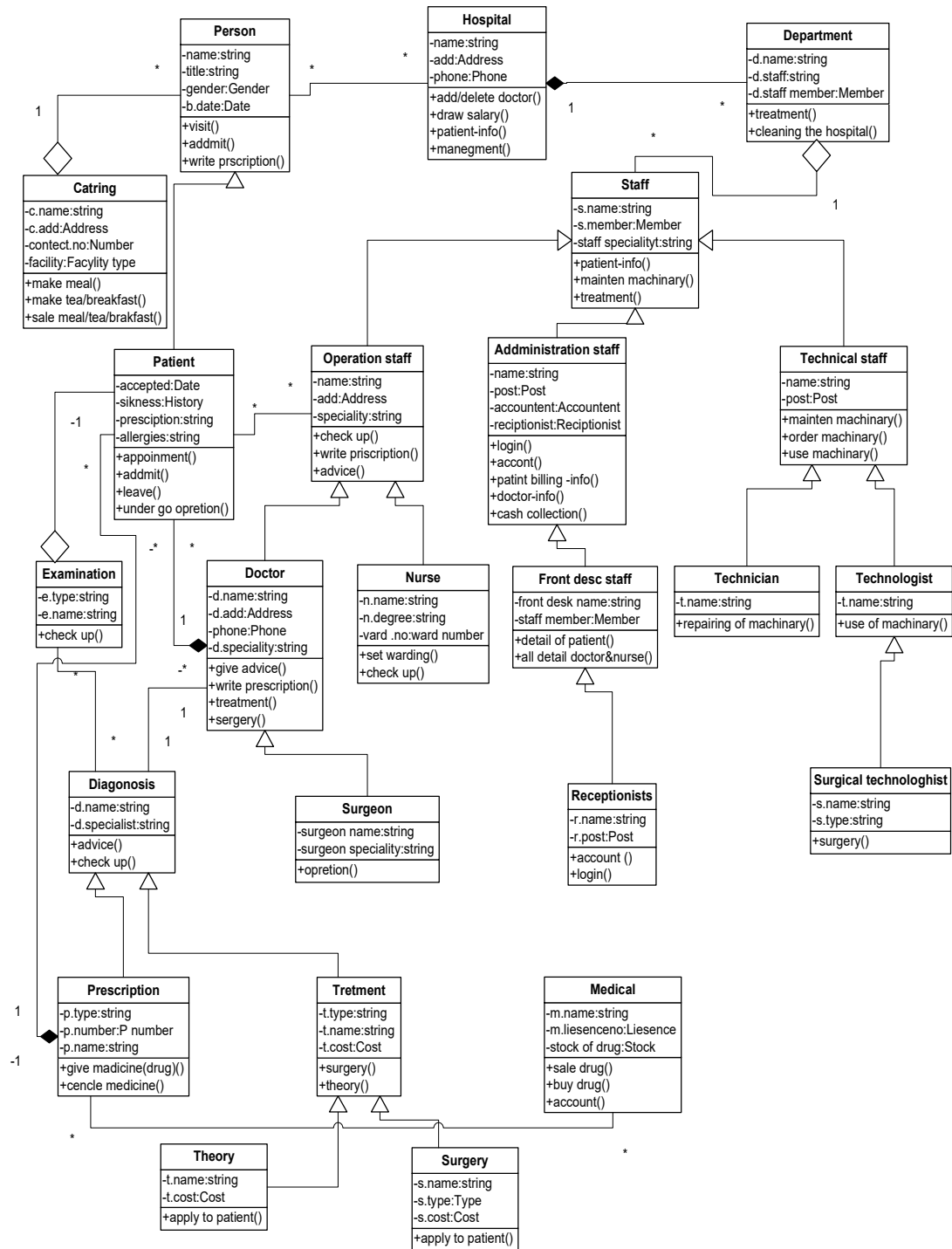
4.2 Structural View

4.2.1. Class Diagram

Class Diagram shows a set of classes, interfaces, and collaborations and their relationships. They are important for visualizing, specifying, and documenting structural models and also for constructing executable systems through forward and reverse engineering.

In class diagram of hospital management there are many classes like Hospital, Patient, Doctor, Receptionist, Nurse etc. the relationship among classes are association, generalization, composition, aggregation.

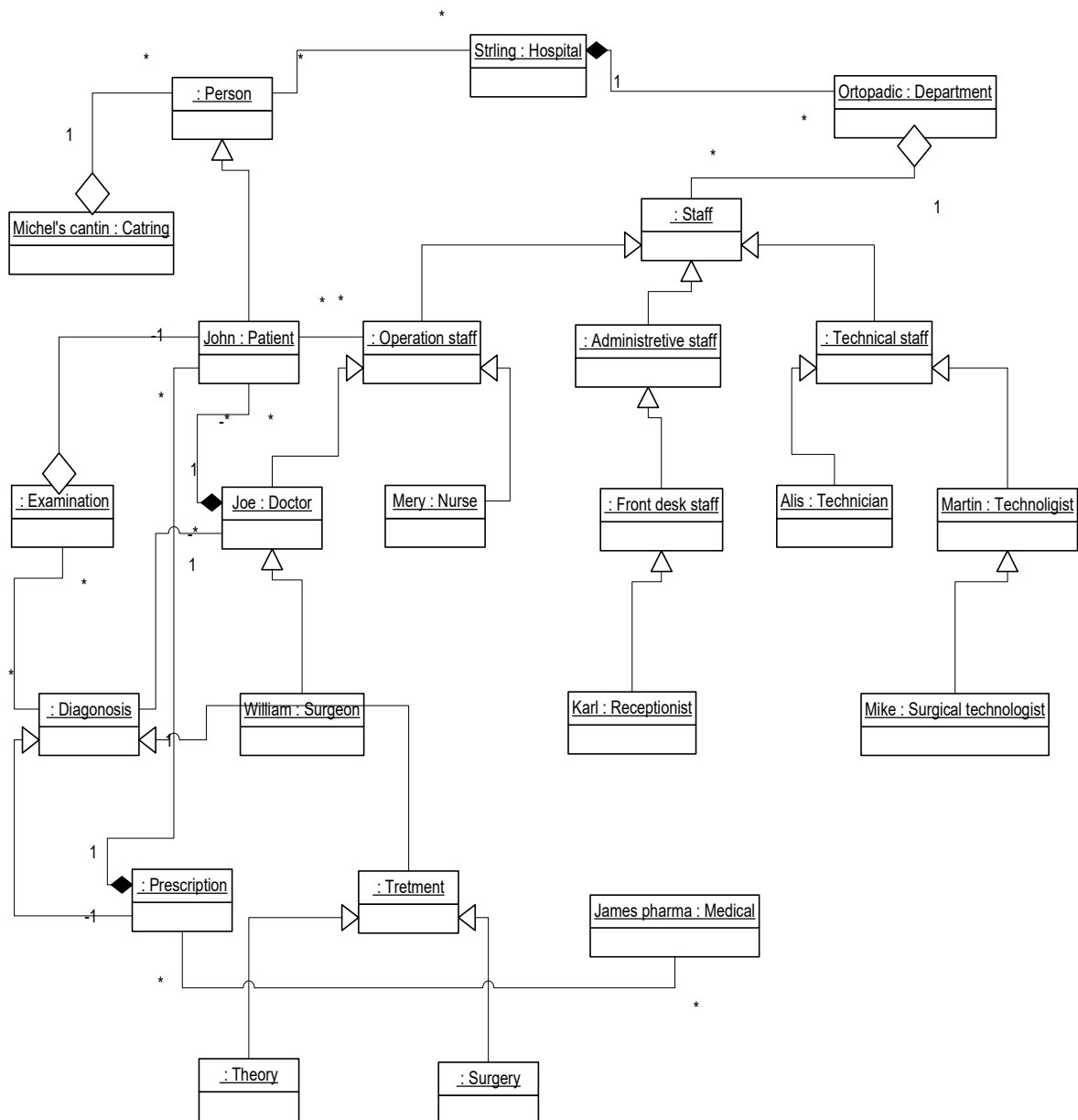
A class diagram of hospital management system



4.2.2. Object Diagram

An object diagram shows individual objects and their relationship .Object diagram are helpful for documenting test cases and discussing example. A class diagram correspond to infinite set of object diagrams. In object diagram there mainly consist name of system.

An object diagram for hospital management system

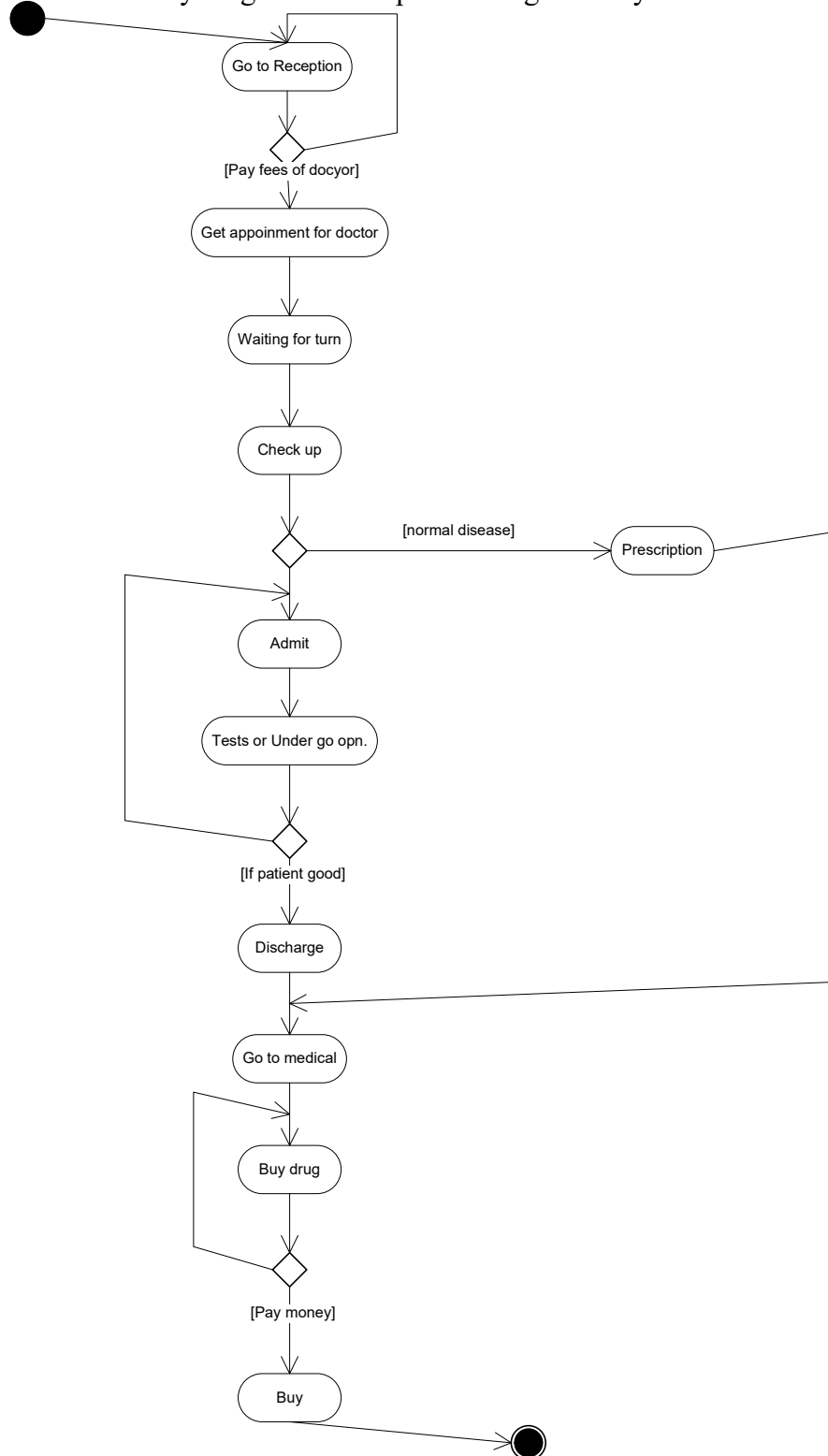


4.3. Behavioral Diagram

4.3.1. Activity Diagram

An activity diagram shows the sequence of steps that make up a complex process, such as an algorithm or work flow. It focus on operation.

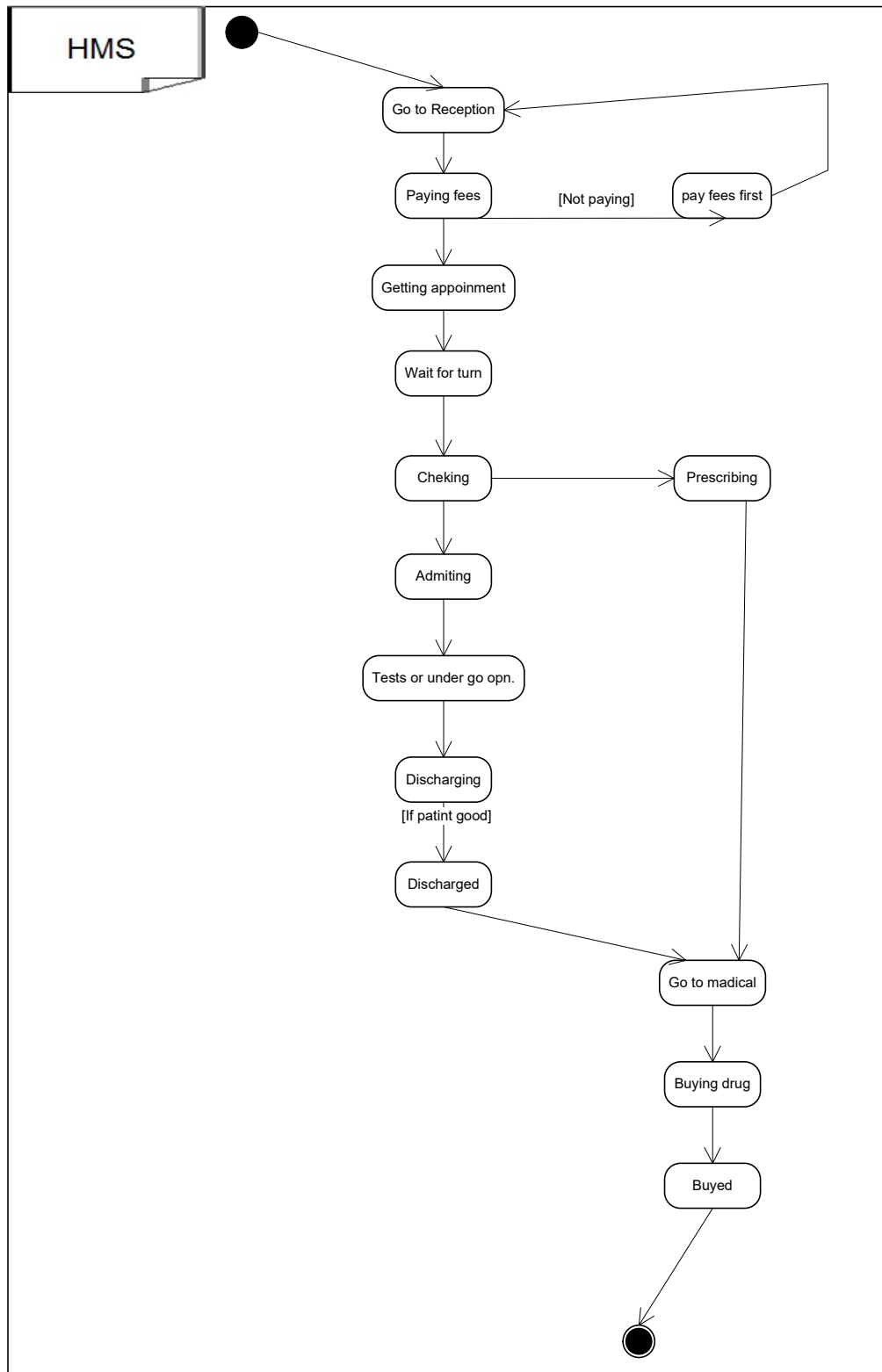
An activity diagram for hospital management system



4.3.2. State Diagram

A state diagram is a graph whose nodes are states & whose direct arcs are transition between states. A state diagram specifies the state sequence caused by event sequence.

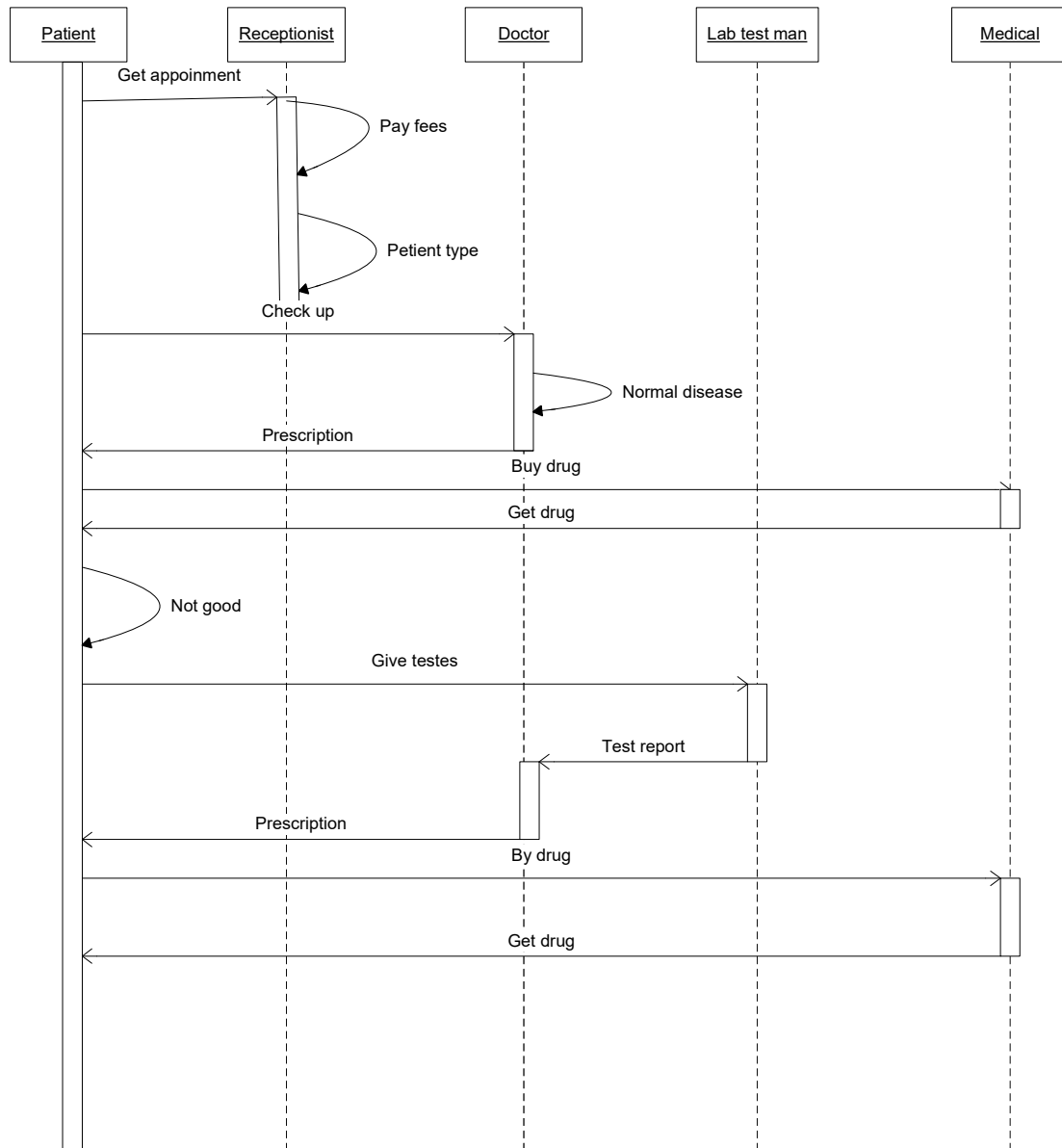
A state diagram for hospital management system



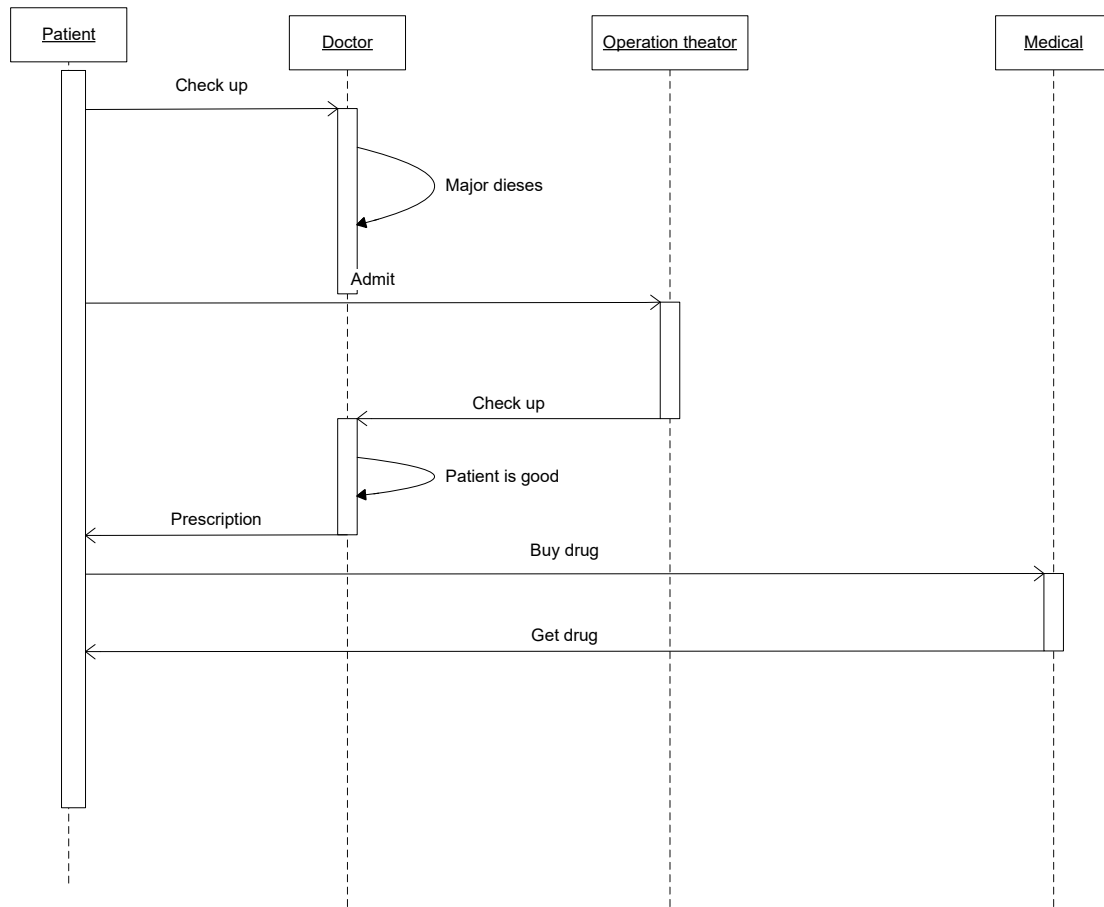
4.3.3. Sequence Diagram

A sequence diagram shows the participants in an interaction and the sequence of messages among them. It is not attempt to be general.

A sequence-1 diagram for hospital management system



A sequence-2 diagram for hospital management system



5. Conclusion

According to Unified Modeling Language, we use UML diagram For represent the complex system in simplest and compact form. In short time we describe the flow of system. It is easily understandable by user.

6. References

Michael R Blaha, James R Rumbaugh. The Object-Oriented Modeling and Design with UML, Second Edition.
Dorling Kindersley, India: Pearson Prentice Hall, 2010.