SOFTWARE QUALITY ENGINEERING

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Title: Hospital Management System (DIAGRAMS)

HOSPITAL MANAGEMENT SYSTEM:

A project of hospital management system includes patient registration into the hospital, storing their records, assigning doctor, allocating ward and generating computerized bill by receptionist. If we want to see the record of the old patient we will just have to search it by its name and Patient ID. Bills are generated on separate sheet by recording each facility that the customer is provided. All that work is done by the receptionist and other hospital management staff.

CLASS DIAGRAM:
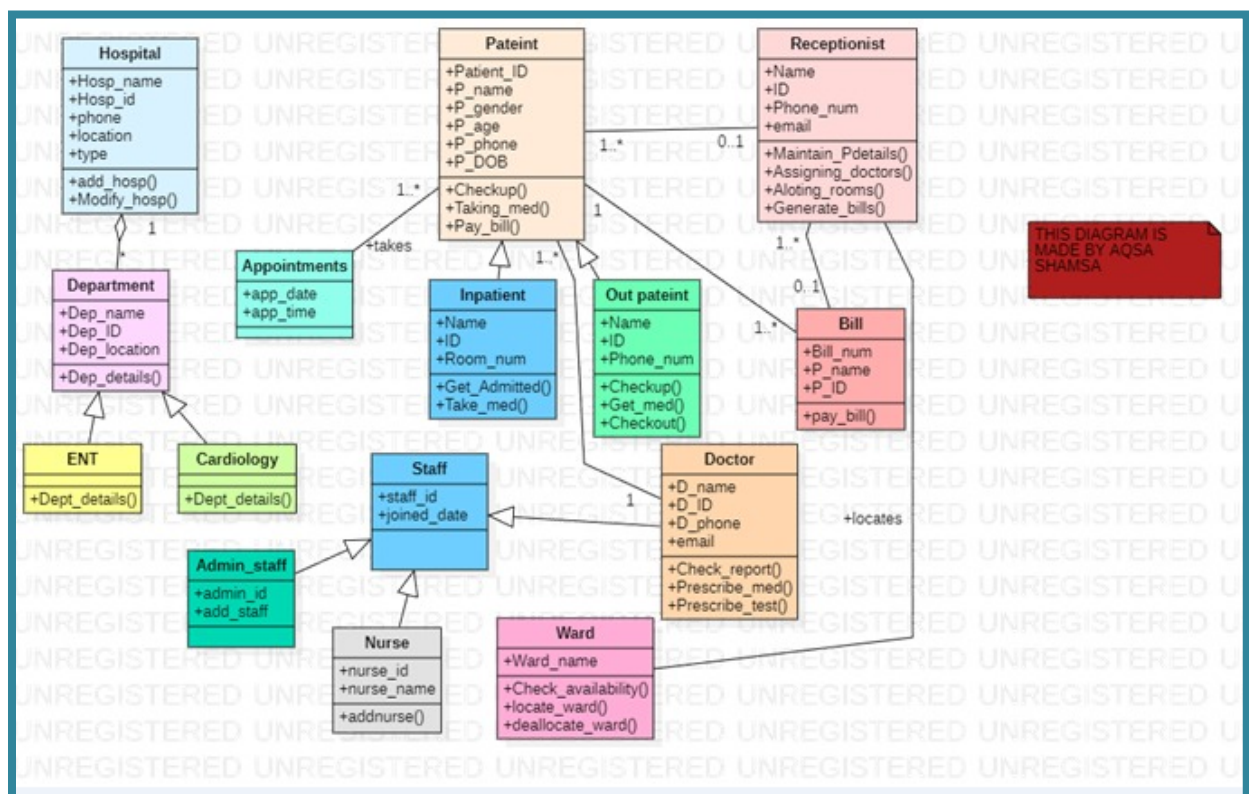
Classes:

- **Hospital:**

  In hospital class we have different attributes such that hospital name, id, phone, location and type. Operations include add_hosp (Adds the hospital name) and modify_hosp(Details about hospital).

- **PATIENT:**

  In patient class we have attributes patient_id, name, gender, age, phone, and date of birth so these all attributes covers the detailed information about the patient which is

required. Operations include checkup (patient checkup details), Taking_med (Medicine that are prescribed to patient), pay_bill (bill payed by patient). Inpatient and outpatient are the generalized forms of the class patient having their own specific attributes and g

- **RECEPTIONIST:**

  In receptionist class we include attributes such that name of the receptionist, its id, phone number and email address. Functions include Maintain_Pdetails (details of the patients are stored in it), Assigning_doctors (specific doctors which are available are assigned), Aloting_rooms (if the patient required to stay in hospital rooms are assigned to them), Generate bills (Bills of all the facilities patient uses).

- **DEPARTMENT:**

  In department class there is a relationship of many to one aggregation between department and hospital class which means that many departments can be associated with one hospital. Attributes of department class include name of department, id, location, details and function include Dep_details (stores detail about department). Department class is further generalized into ENT and Cardiology each having different attributes and functions.

- **APPOINTMENTS:**

  Appointment class includes date of appointment and time. Patient takes appointment for checkup.

- **STAFF:**

  Staff class includes attributes such that staff id and the joined date of staff. Class Doctor, Admin_Staff and Nurse are generalization of the class Staff with different attributes and operations.
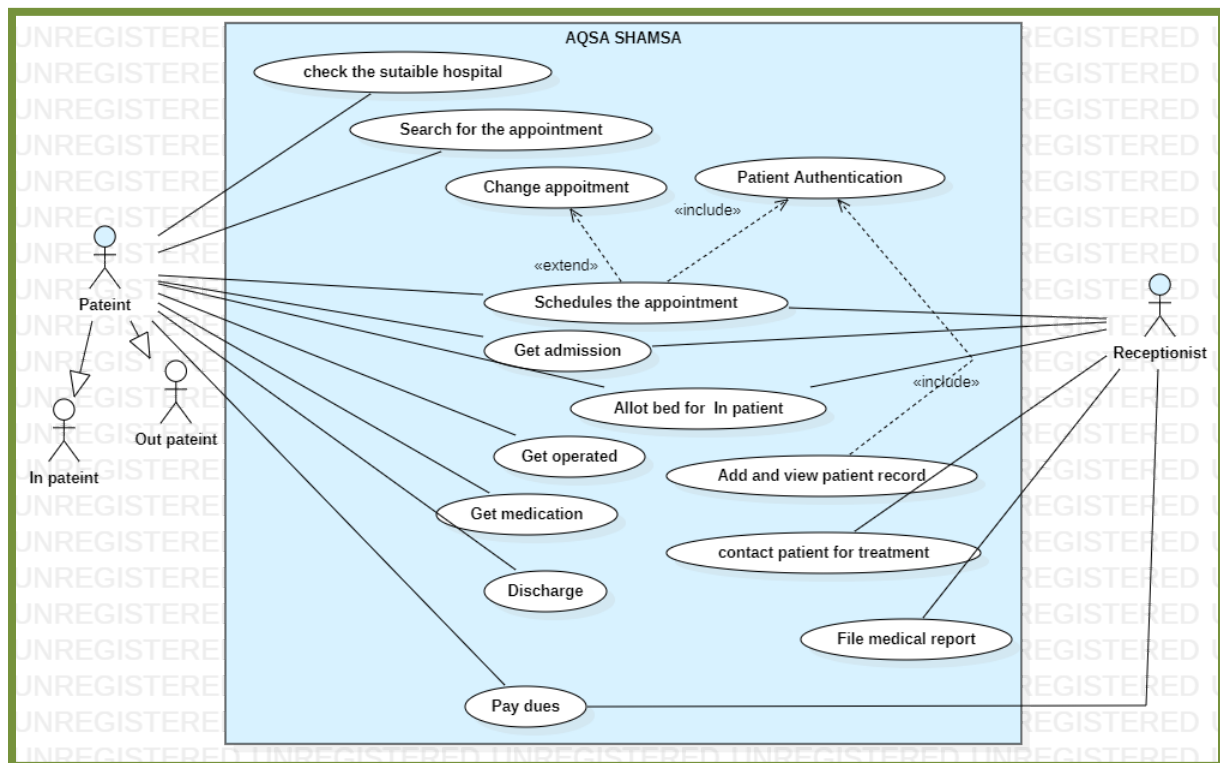
- **Ward:**

  In hospital there are number of wards filled with people of some are empty. Ward attribute is ward name. Operations include check_availability (this function checks that the empty wards are available in hospital or not), locate_ward (this function assign the ward to the patient and record is store) deallocate_ward (this function deallocate the ward which means that when patient left the ward that record is stored in this function).

- **BILL:**

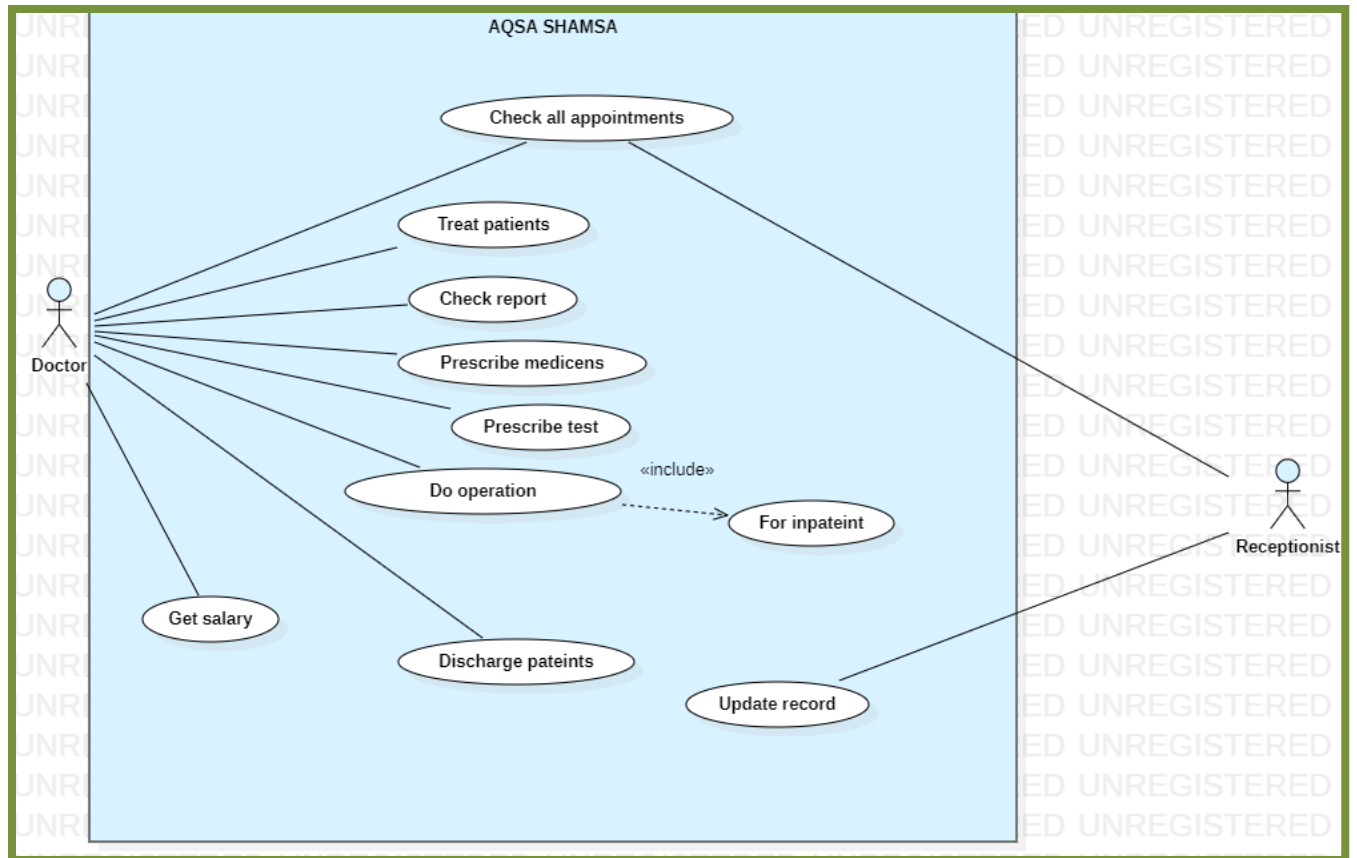 Class bill have attributes like bill number, patient name, and id of the patient whose bill have to be paid. Operation include pay_bill (payment paid by the patient is recorded into it).
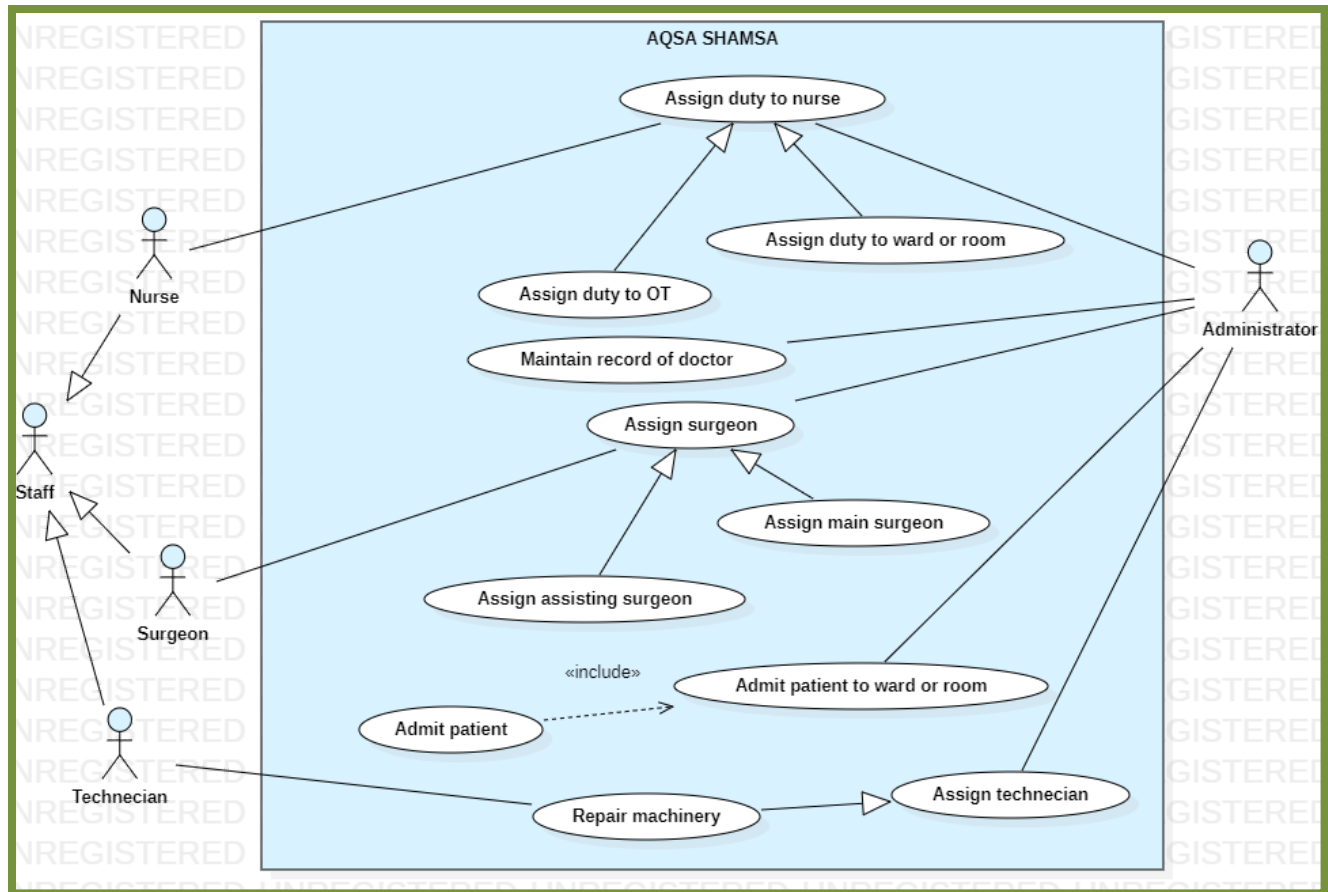
USE CASE DIAGRAMS:

PATIENT AND RECEPTIONIST:

AQSA SHAMSA

- check the sutaible hospital
- Search for the appointment
- Change appoitment
- Patient Authentication
- Schedules the appointment
- Get admission
- Allot bed for In patient
- Get operated
- Add and view patient record
- Get medication
- contact patient for treatment
- Discharge
- File medical report
- Pay dues

«include»
«extend»
«include»

Pateint
Out pateint
In pateint
Receptionist

DOCTOR:

STAFF AND ADMINISTRATOR:

1. **Author: Patient:**

Use case name: Treatment

Primary actor: Patient

Secondary actor: Nurse, doctor, receptionist

Description: Patient will come to the receptionist and the receptionist will generate a registration id and allocate the room (if needed).Patient comes to doctor and prescribed their needs. Nurse will take care of patient.

Precondition: Need appointment

Success scenario: Treated successfully

2. **Author: Receptionist:**

Use case name: Appointment

Primary actor: patient

Secondary actor: doctor

Description: patients are referred to the available doctors and are allocated rooms.

Precondition: Need an appointment

Success scenario: checkup successfully

3. **Author: Staff:**

Use case name: Assign duties

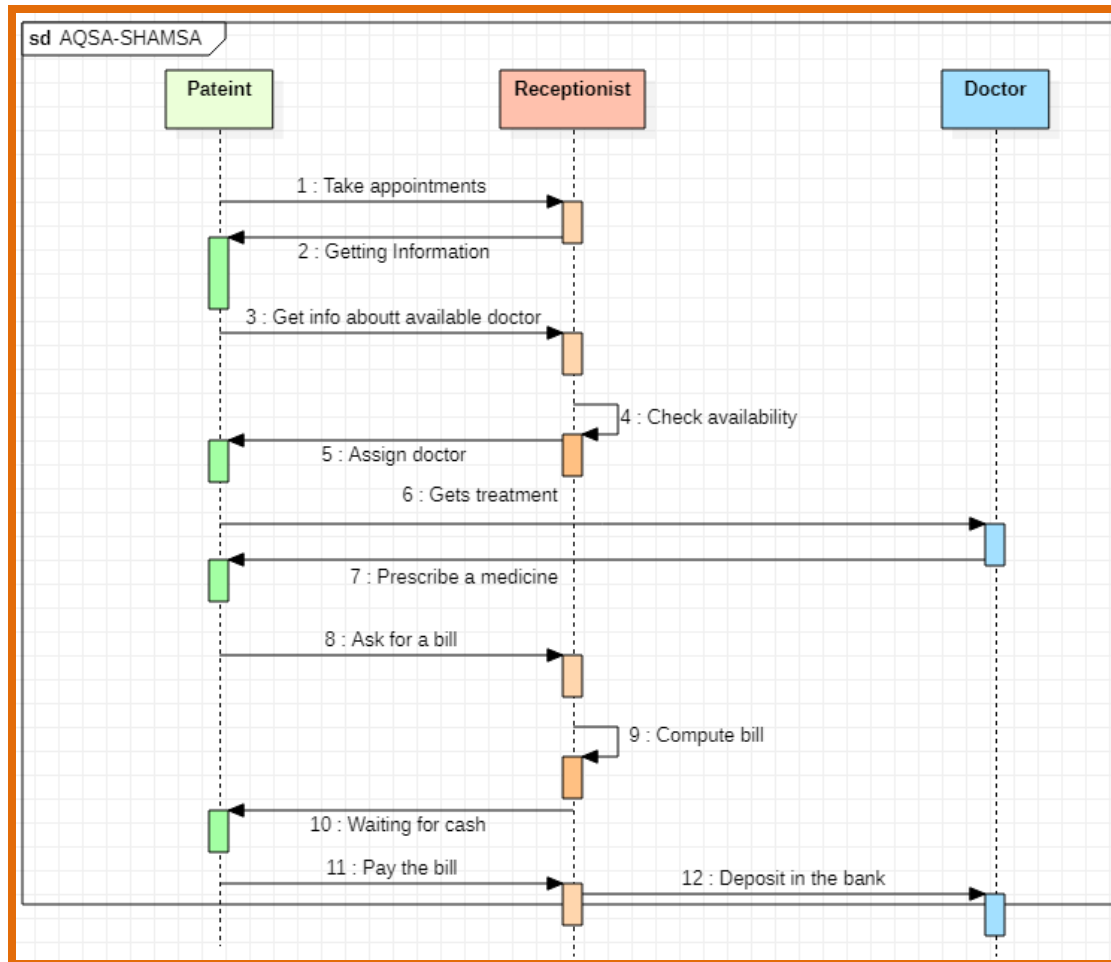**Primary actor:** patient, doctor

Secondary actor: staff and employees

Description: Different staff members perform their jobs so that the whole hospital runs in the best possible way.

Precondition: Need an appointment

## SEQUENCE DIAGRAM:

FOR PATIENT CHECKUP:

This diagram shows the patient checkup information that includes three lifelines Patient, Receptionist and Doctor. First of all patient take appointment from the receptionist, receptionist check details of the appointments of specific doctor if there is the availability then information is provided to the patient and doctor is assign to them. Patient comes to hospital and gets treatment from doctor. Doctor prescribed specific medicines to the patient. From receptionist patient take over their bill and paid it. That bill is transferred to the bank account of the doctor.

SEQUENCE DIAGRAM:

FOR WARD ALLOCATION FOR PATIENT:
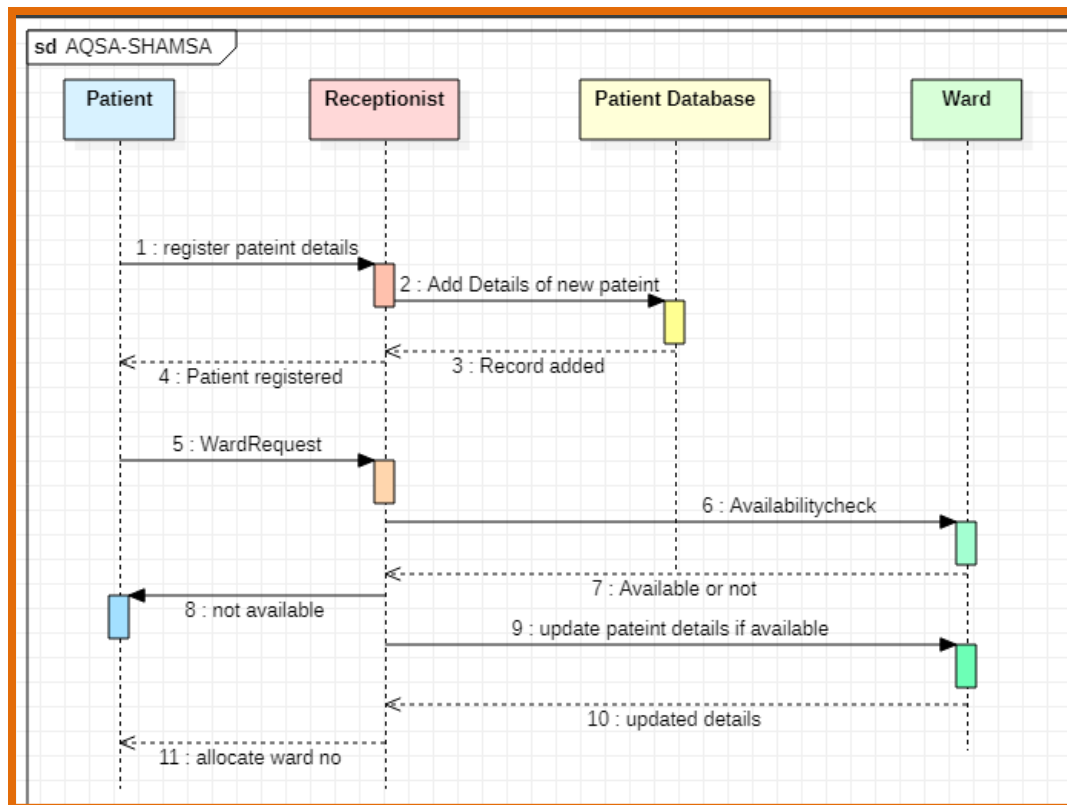
This diagram shows the ward allocation for the patient that means that if the condition of the patient is swear so they have to stay in the hospital so there are different wards in the hospital for such patients. We have for lifelines for this scenario such that Patient, Receptionist, Patient Database and ward. Patient details are registered by the receptionist and if the patient is new so its details are added into the database record of the patient. When the record is stored in the database patient got registered into the hospital and request for the ward. Receptionist checks either there is the availability of ward or not if available then the patient is allocated the ward number and its details are updated.

ACTIVITY DIAGRAMS:

FOR REGISTRATION IN HOSPITAL:
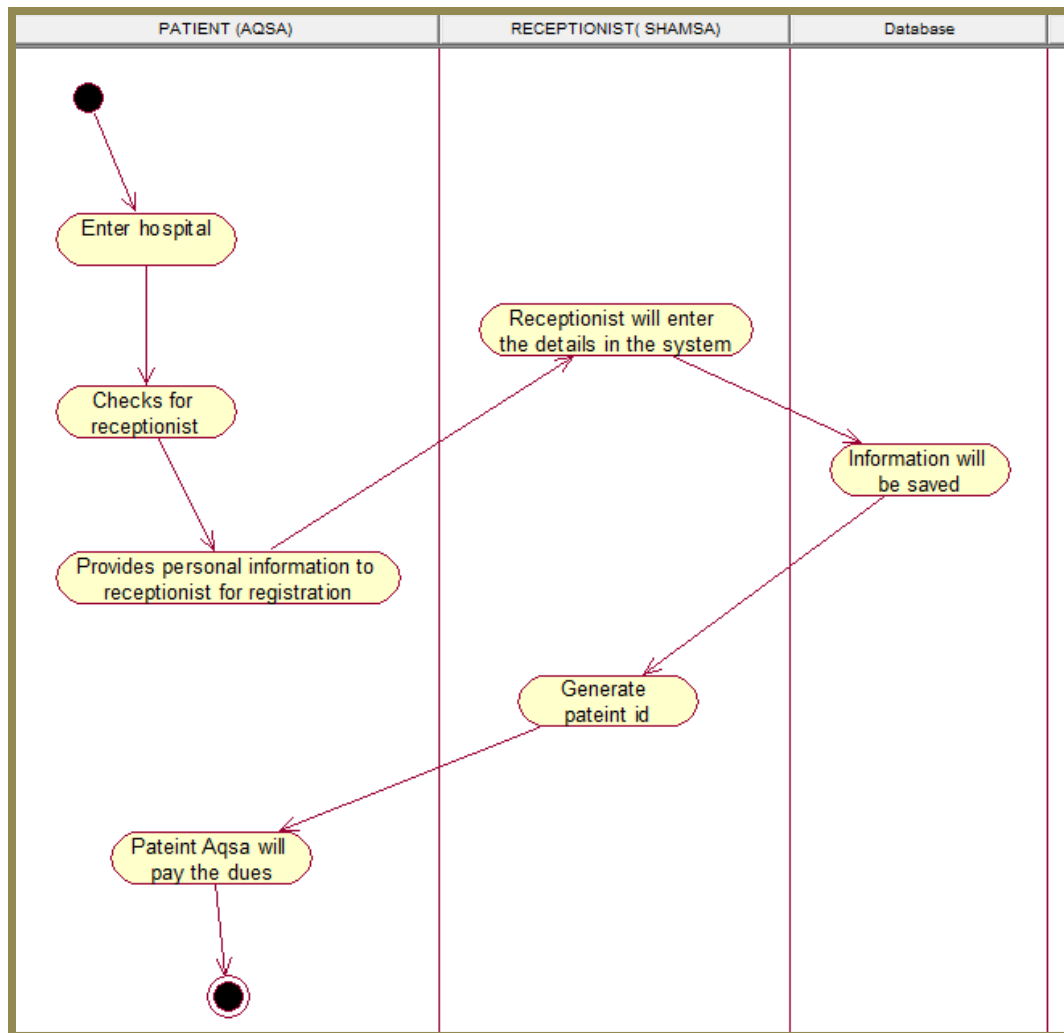
In this activity diagram we have three swim lanes

1. Patient (AQSA)

2. Receptionist (SHAMSA)

3. Database

First of all patients enter into the hospital and comes to the receptionist and provides the required information to the receptionist for the registration in the hospital. Receptionist than record that all information about the patient in the system and save it. By saving the patient information specific id of the patient will be generate and the patient that comes for checkup whose name is Aqsa pay the dues which are made and here the process of registration in the hospital ends.

**FOR REGISTRATION IN WARD OR ROOM:**
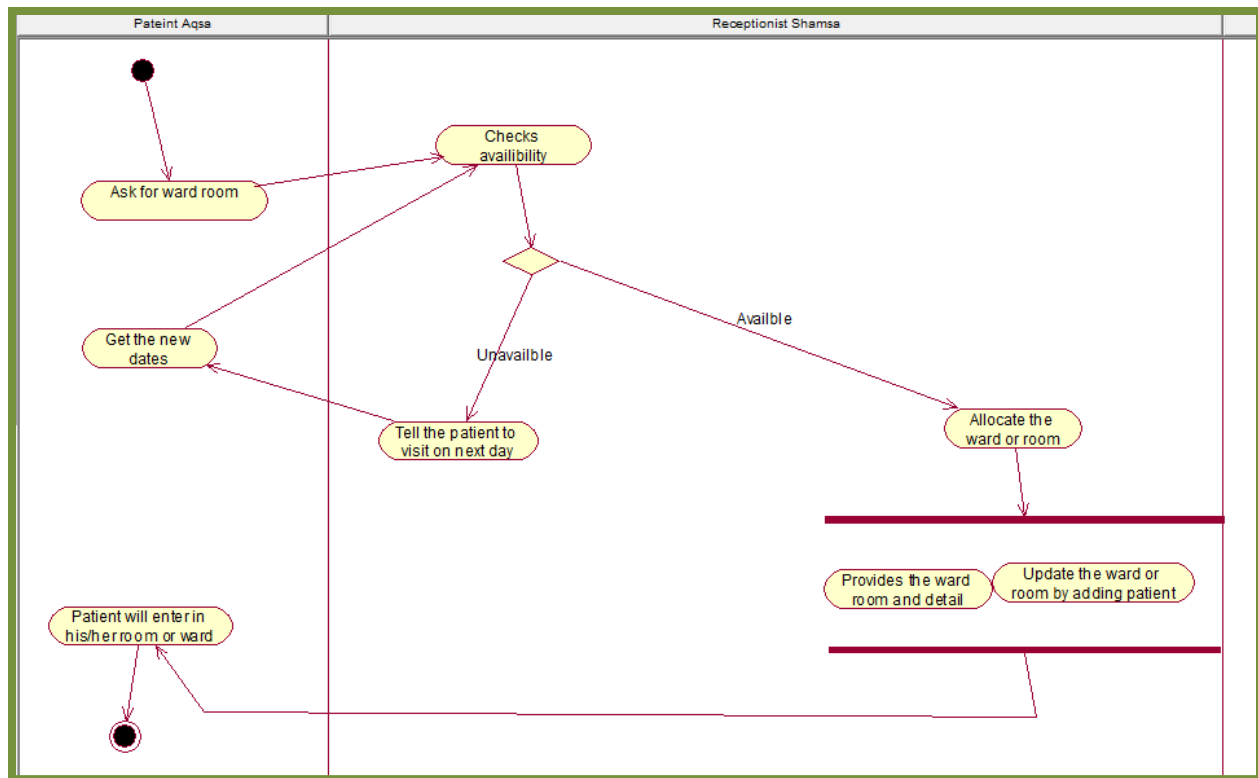
In this activity diagram we have two swim lanes

1. Patient (AQSA)

2. Receptionist (SHAMSA)

Patient asks from the receptionist about the availability of the ward, receptionist check the availability. Is the ward is not available then they excuse from the patient and assign new date to patient. If available then by following the specific procedure receptionist allocate the ward to the patient. By providing the ward number to the patient, receptionist update the patient record and provide details to the patient. After the ward number allocation patient moves towards their assigned ward and the process for the registration of ward ends over here.
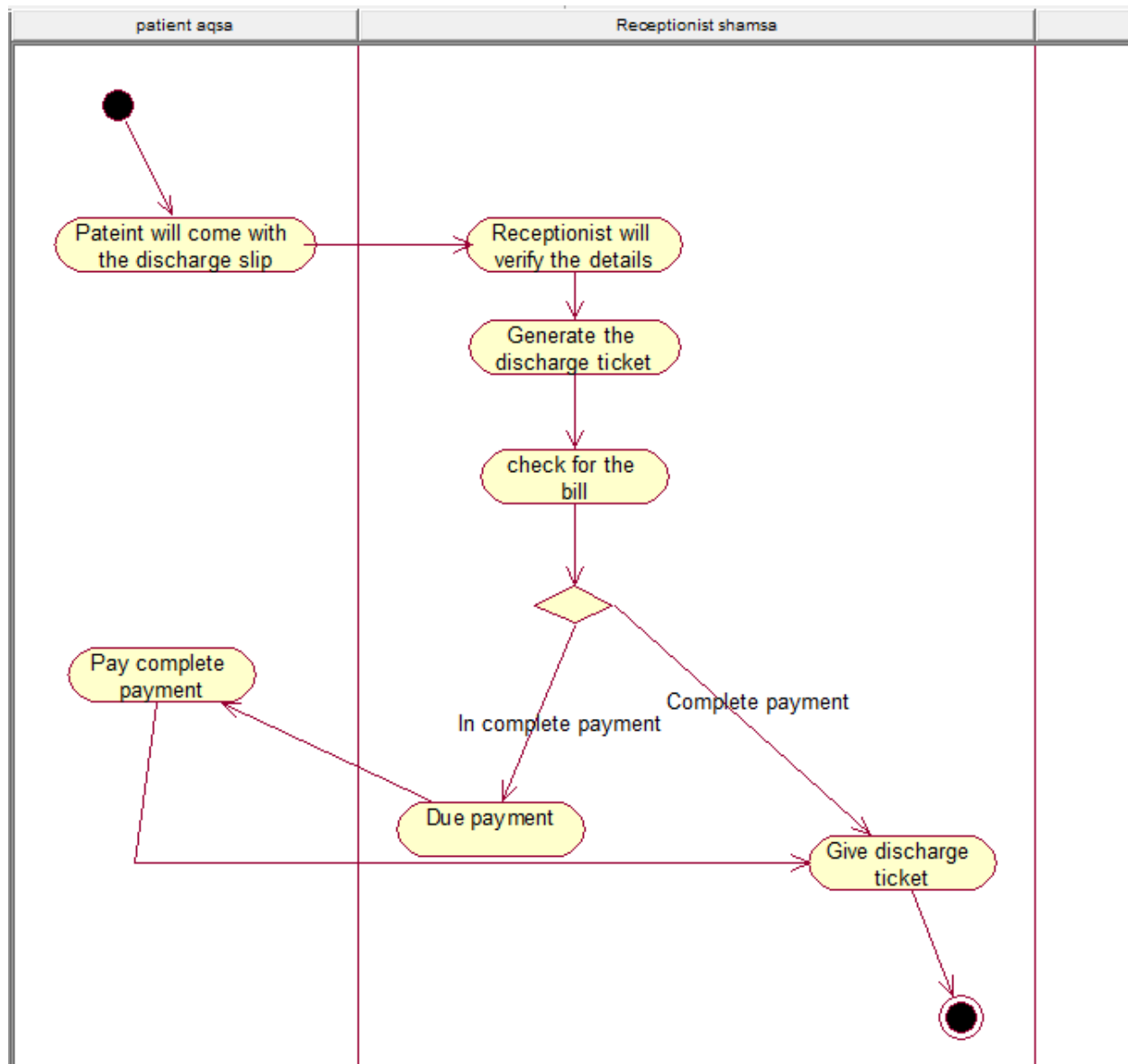
FOR PATIENT AND DOCTOR:
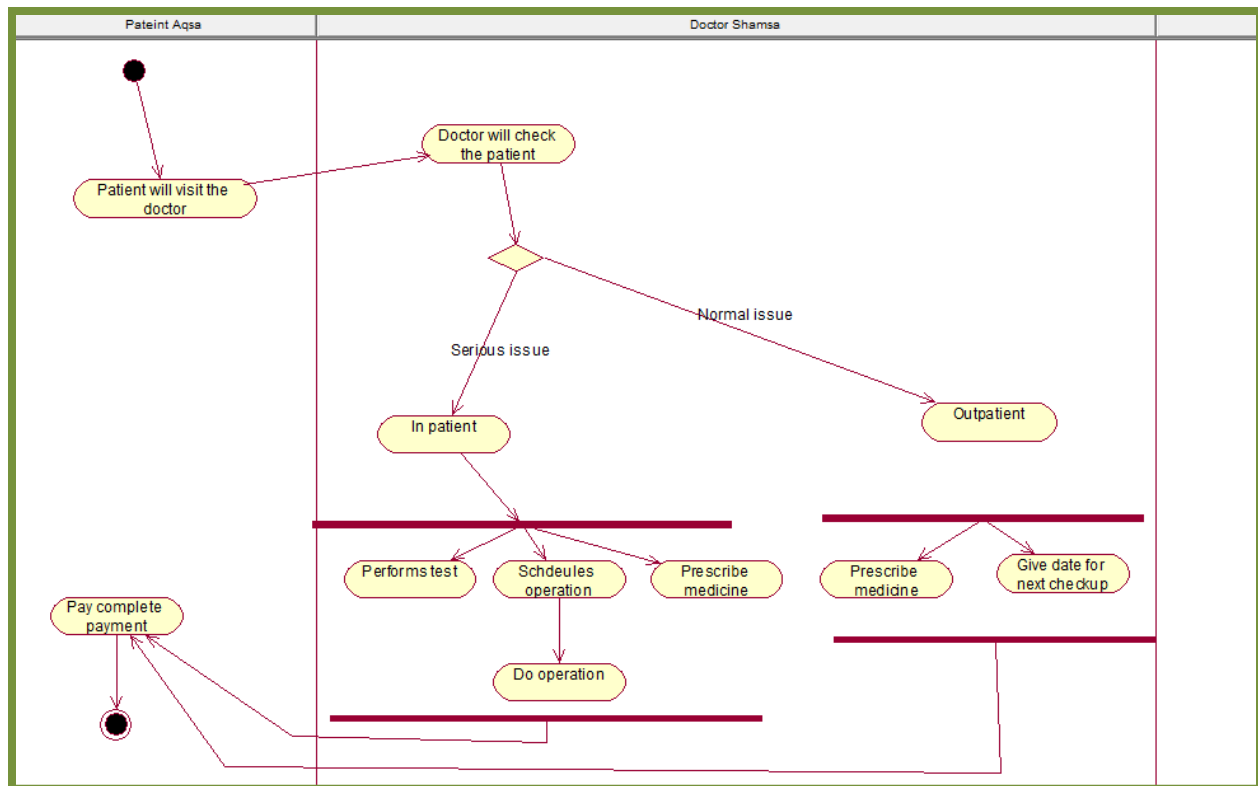
In this activity diagram we have two swim lanes

1. Patient (AQSA)

2. Doctor (SHAMSA)

Patient will come to the specific doctor for treatment. Doctor checks the patient and if the patient have some normal disease then is comes in the category of outpatient which means that the doctor prescribed medicines to them and after getting medicines they can go back to their home and their treatment completes. If the patient have some serious disease than doctor refer to them to be admitted in the hospital and different test that are required for their disease are taken, medicines are prescribed and if there is a need of operation that doctors perform operations and patient pay the dues and this process of doctor and patient treatment ends.

FOR DISCHARGE:

patient aqsa	Receptionist shamsa	

Patient will come with the discharge slip

Receptionist will verify the details

Generate the discharge ticket

check for the bill

Pay complete payment

Complete payment

In complete payment

Due payment

Give discharge ticket

In this activity diagram we have two swim lanes

1. Patient (AQSA)

2. Receptionist (SHAMSA)

When the patient becomes easy or its treatment gets over than doctor discharge it. Patient is provided with the discharge slip by doctor. Then the receptionist will verify all the patients' details and generate their discharge ticket and give the patient their bill which they have to be paid before leaving. Patient then pay the complete bill and receptionist verify that and discharge the patient and the process of discharging the patient end.

DEPLOYEMENT DIAGRAM:
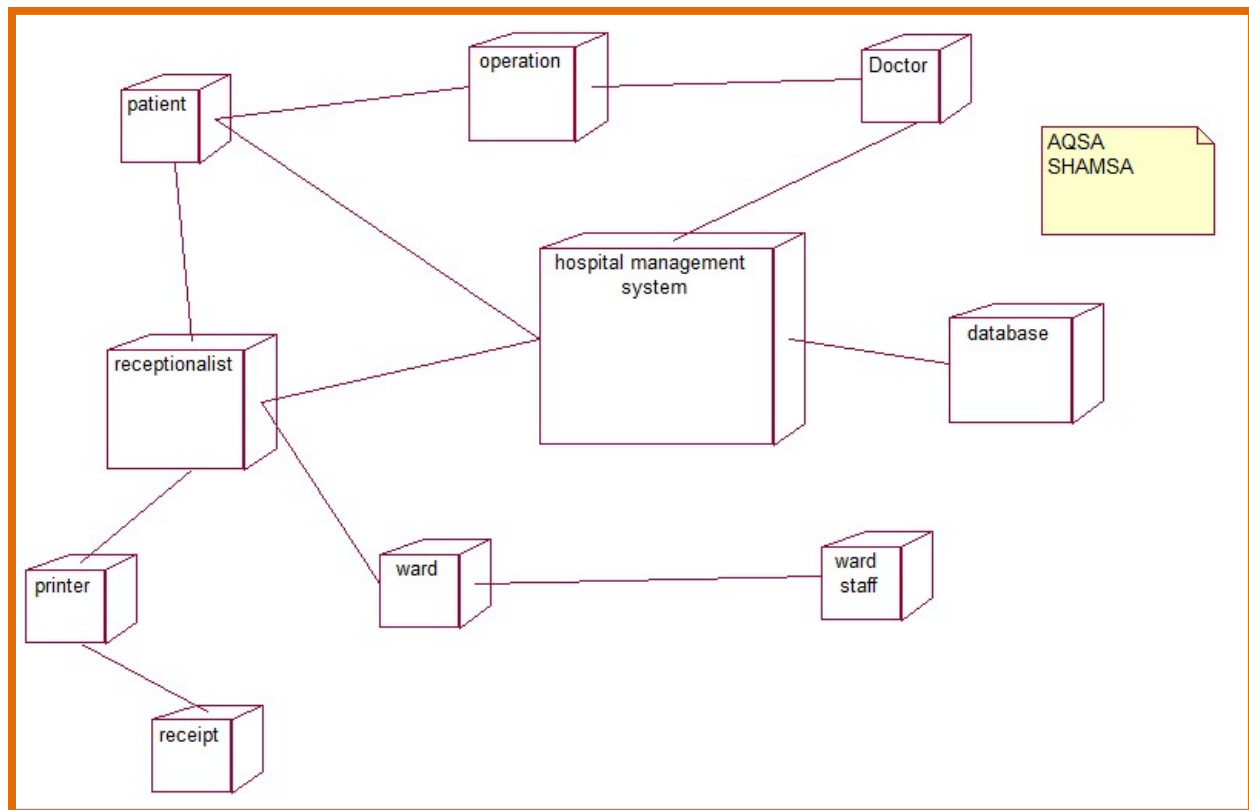
Here we made deployment diagram which model physical hardware elements and the communication paths between them. It overall shows the plan of the architecture of a system.