

LH Medical Company

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Component diagram:

Component diagram is used to model physical aspects of a system. Physical aspects are the elements like files, libraries, other files, documents etc. which resides in a node. These diagrams are also used to make executable systems. It does not describe the functionality of the system but the components that make it functional.

- Component Diagram is used to represent physical implementation of a software design.
- Components can be grouped as Deployment Component, Work Product Component and Execution Component.
- Component states provide visual cue to the function of the component.

LH Medical Company is web enabled and multi-platform for connectivity via web service. It manages private LHM Hospital which provides healthcare to its patients.

LH medical System Components:

- ✓ LHM System
- ✓ Instruments
- ✓ Doctors
- ✓ Patients
- ✓ Registration
- ✓ Appointment
- ✓ Treatment
- ✓ Prescriptions

- ✓ Medical Records
- ✓ Database

As above, there are several components that show the LHM medical system. The component diagram in the LH medical system shows the basic components such as LHM system, patients, doctors, treatments, and databases.

All the components are related to each other with the help of database. In other words, all the component data are stored in a database such as patient profile details and his medical records, doctor profile and his treatment for patients. On the other hand LHM system manages the equipments which are used by the hospitals and doctors. LHM also offers this equipment for sale and rental to other hospitals. All these processes and components are interconnected by databases.

In this system patients have to register before taking appointment, after confirmation LHM system assigns a doctor for treatment and doctor make a prescription according to patient and LHM system stores all data in database for best results.

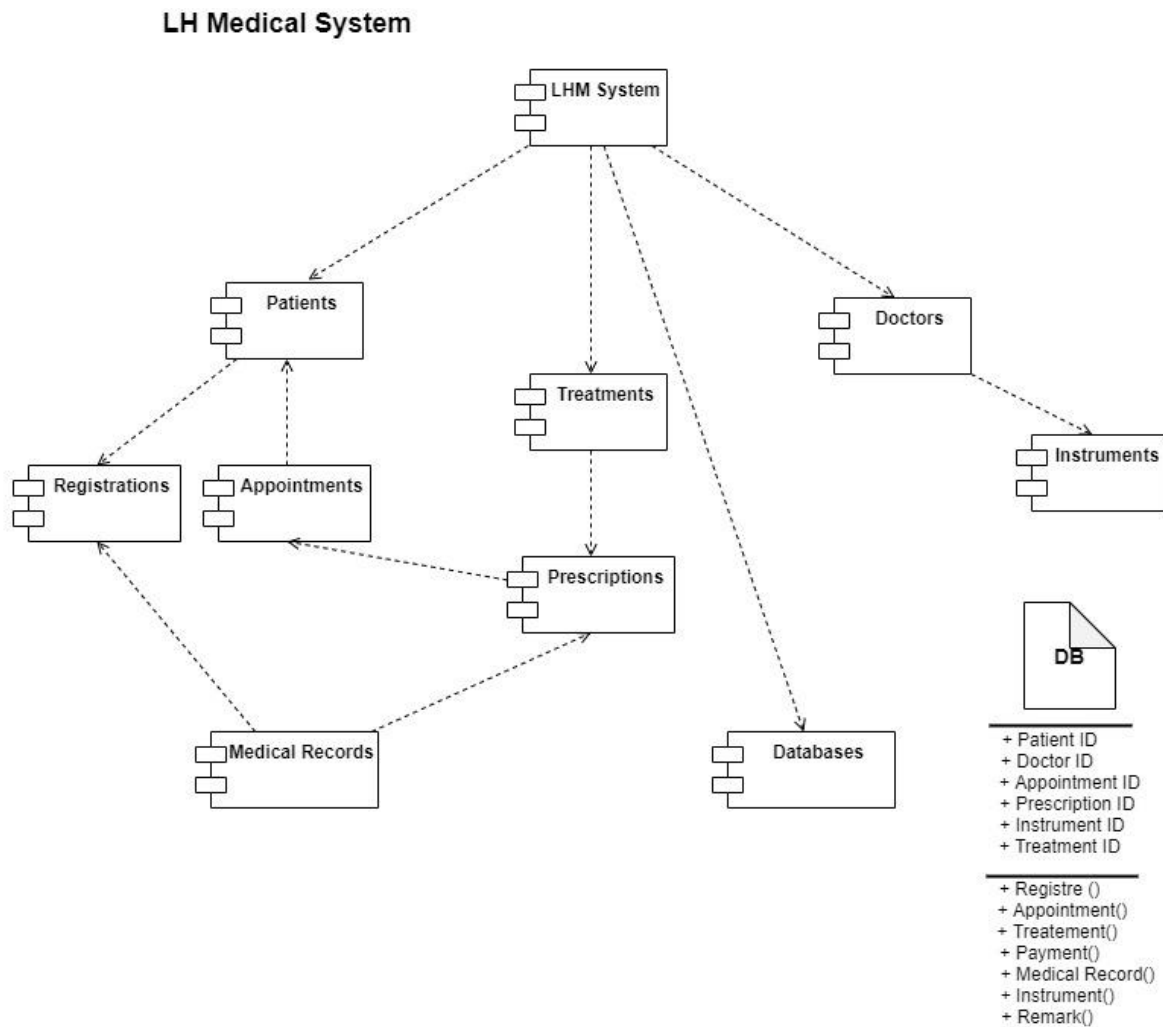


Figure 1: ER Diagram

Sequence Diagram

A sequence diagram is a (UML) diagram that shows the sequence between tasks in an interaction. A sequence diagram consists of a set of tasks that are represented by lines, and messages that move over time.

A sequence diagram is a model in which we use “Use case diagram” such as kernel, optional, variant.

The functions of Sequence diagram are –

- To capture the dynamic behavior of a system.
- To describe the message flow in the system.
- To describe the structural organization of the objects.
- To describe the interaction among objects.

LH Medical Company is web enabled and multi-platform for connectivity via web service. It manages private LHM Hospital which provides healthcare to its patients.

In another word LHM is a London-based company that manages hospital systems and equipment and provides better treatment to the patients.

The LHM system provides an interface for the customer to register with the hospital and thereafter the patient can receive treatment from the doctor. On the other hand, LHM doctors to make prescriptions for the patients. Here the HLM records the patient's disease and past medical records.

LHM manages medical equipment for hospitals and doctors, and LHM also sells or rents them.

LH Medical System

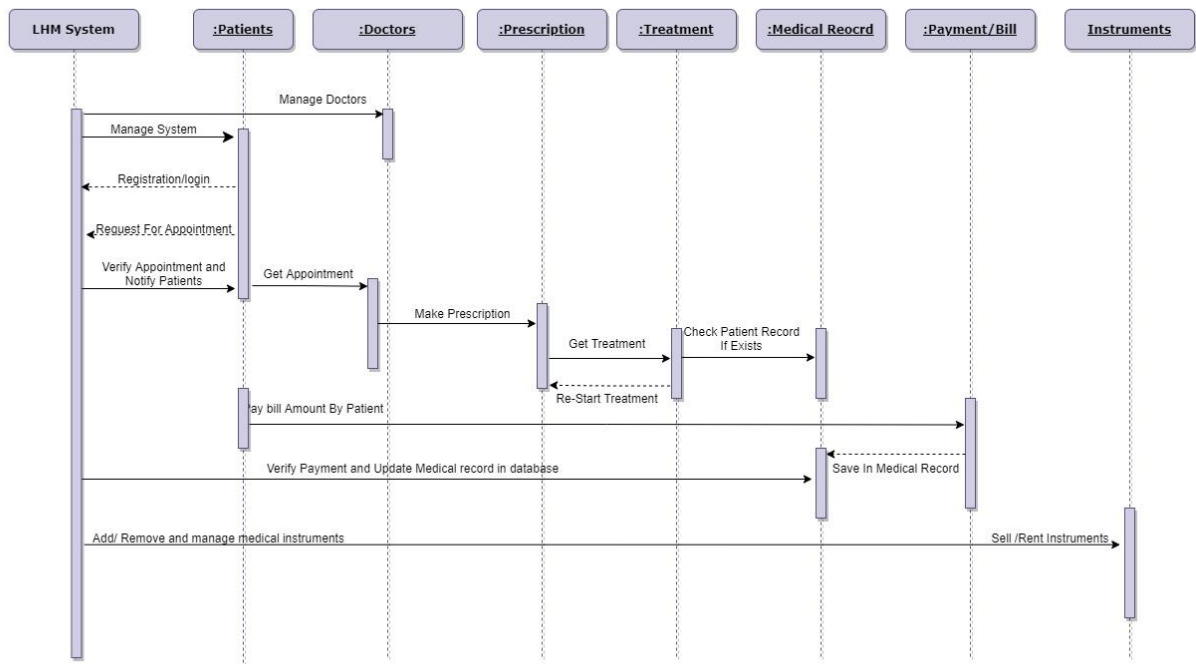


Figure 2: Sequence diagram

UML Class Diagram

A Class Diagram is a diagram describing the structure of a system. It consists the:

- Classes
- Attributes
- Operations (or methods)
- Relationships among the classes

LH medical system is a web based application which is providing medical services.

LHM system manages multiple classes which are:

- LHM
- Doctors
- Patients
- appointment
- Prescriptions
- Instruments
- Medical records
- Disease
- Treatment

With help of this class LHM system manage all Patients, Doctor, appointment, Treatment, Patient's Disease and instruments.

Here LHM is a main class which is manage hospital and provide medical services through application and provide medical treatment, Operations and vaccinations, Consultations and check-ups through doctor.

Patient is a second main class who have to register and successful login to enter the system after that patients can request for a treatment to system. On another hand LHM system provide a best doctor to patients.

LHM system has another class medical Disease in this class system store patient's medical history and records. LHM provide facility in which patients can pay treatment bill by cash or insurance policy.

LHM system has instruments class in which it store instrument details and keep records of instrument rent and sell

LH Medical Company class those perform operations as below-

LHM – LH Medical Company is a System where LHM is a main class which is manage entire system. It Perform many function such as Provide_Health_care(), Manage_services(), Provide_Treatment_Course(), Sent_Notifications(), Estimate_cost_treatment, Cancel_treatment(), Generate_Treatment_Bill(), Refer_Client_other_medical_Center(), Offer_Medical_instruments().

Patients – In this system patients is class which store patient's basic details. It Perform many function such as register(), Login(), Request_For_Appointment(), Get_prescription(), Get_treatment_course(), Get_notification(), Get_Treatment(), cancel_prescription(), Pay_bill(), Medical_records() and Logout(). Patients class manage attribute: Patient_ID, Name, Age, Insurance_number, Email, Phone, Address, Registered_Patient, Login_ID and Password. It has connectivity 1:M from Appointment, Prescription and Medical_record .

Appointment – In this system appointment is class which store patient's appointment Details. It Perform many function such as Make_appointment(), Update_Appointment(), Cancel_Appointment() and New_Appointment(). Appointment class manage attribute: Appointment_ID, Patient_ID, Doctor_ID, Date, Time, Name, Duration, Estimacost. It has connectivity M:1 from patients and Doctor.

Doctor – In this system doctor is class which store doctor's appointment Details. It Perform many function such as Login(), Consultation(), Prescriptions(), Cancel_Treatment(), Restart_Existing_Treatment(), Logout (). Doctor class manage attribute: Doctor_ID, Name, Role, Specialization, Email, Phone, Login_ID, Password. It has connectivity 1:M from appointment and instruments.

Instruments – In this system instrument is class which store instruments details. It Perform many function such as Manage_instruments(), Add_new(), Delete_instruments(). Instruments class manage attribute: Instrument_ID, Doctor_ID, Name, Type, Description. It has connectivity M:1 from Doctors.

Medical_Record – In this system Medical record is class which store patient's medical history details. It Perform many function such as Manage_patient_medical_records(), Add_new_record(), Update_record(), Operation1(). Medical Records class manage attribute: M_Record_ID, Prescription_ID, Patient_ID, Treatment_ID and Other_Details. It has connectivity M:1 from Prescriptions and Patients.

Prescriptions – In this system Prescriptions is a class which store patient's Prescriptions details which is made by doctor. It Perform many function such as Get_patient_details(), Get_patient_medical_record(), Get_patient_medical_status(), Medical_treatment(), Update_treatment(). Prescriptions class manage attribute: Prescription_ID, Patient_ID, Doctor_ID, Disease_ID, Treatment_ID, Name, Duration and Description. It has connectivity 1:M from Medical_records, Disease and treatment.

Disease – In this system disease is a class which store patient's disease details. It Perform many function such as Disease_details(), Add_disease_record() and Manage_Disease_records(). Disease class manage attribute Disease_ID, Disease, Type and Disease_Details. It has connectivity M:1 from Prescription.

Treatment – In this system treatment is a class which store patient's treatment details which is given by doctor. It Perform many function such as Update_treatment(), Add_treatment(), Remove_treatment(). Treatment class manage attribute Treatment_ID, Categories, Treatment_Name, Start_Date, Completion_Date, Treatment_Durat, Amount and Desc. It has connectivity M:1 from Prescription.

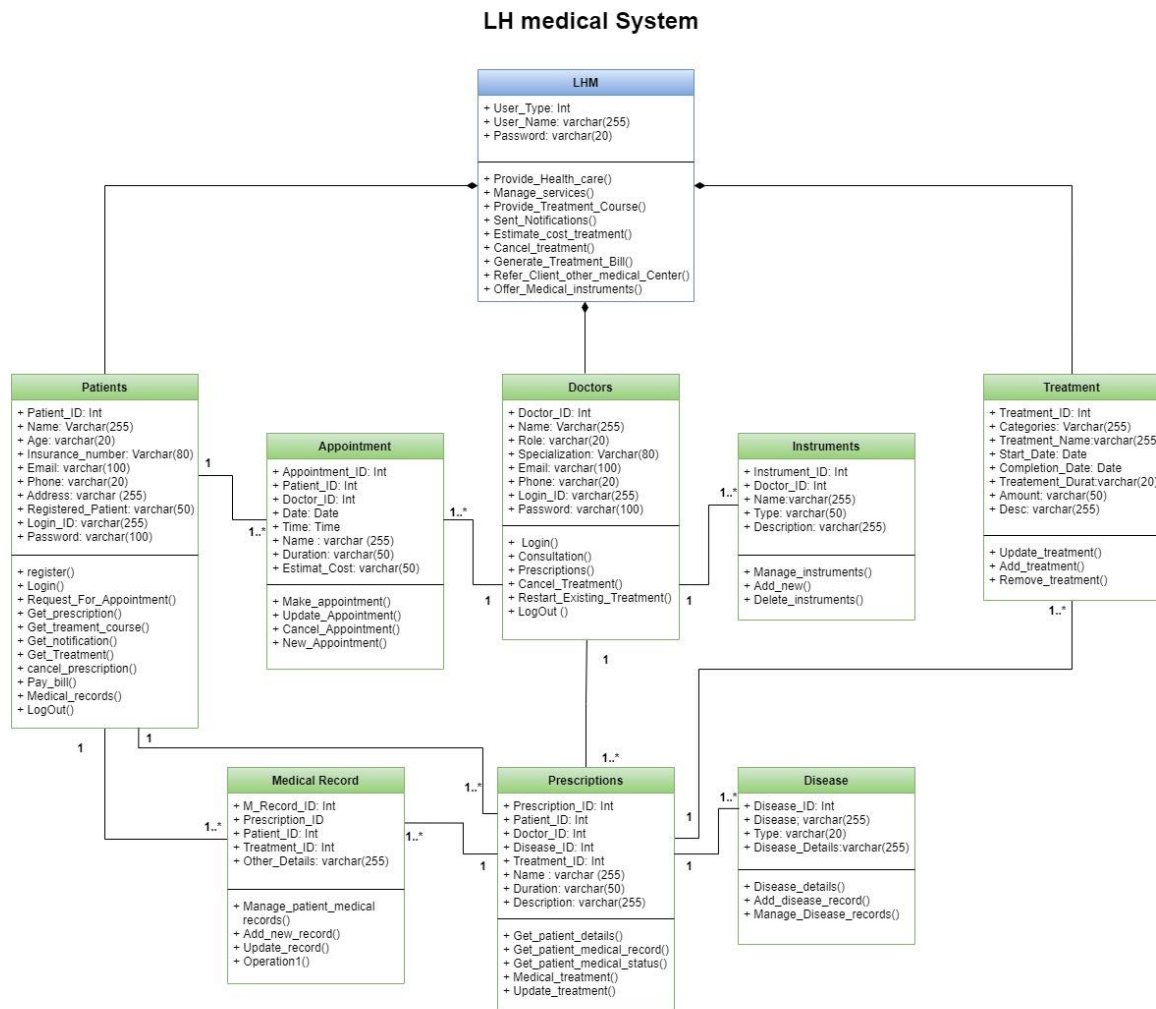


Figure 3: UML Class diagram

Use case Diagram

Use case diagram is a graphic depiction of the interactions among the elements of a system. Use case is a methodology used in system analysis to identify, clarify, and organize system requirements. It specific roles played by the actors within and around the system.

Use case diagrams are used to specify:

- Required usages of a system under design or analysis (subject) - to capture what the system is supposed to do.
- The functionality offered by a subject – what the system can do.
- Requirements the specified subject poses on its environment - by defining how environment should interact with the subject so that it will be able to perform its services.

In this **LH medical System** Use case there are main 3 actors which is perform all functions these actors are:

1. LHM System(Admin and Staff)
2. Doctor
3. Patient

Here **LHM System** performs many functions:

- Provide_Health_care
- Manage_services
- Provide_Treatment_Course
- Sent_Notifications
- Estimate_cost_treatment
- Cancel_treatment
- Generate_Treatment_Bill
- Refer_Client_other_medical_Center
- Offer_Medical_instruments

LHM system manages hospitals services and doctor. It Provide medical health care to patients as patents need. LHM provide multiple treatment courses for every kind of patients.

Once the patient registers in the system, the system can send notification to the patient through mail as per the requirement of the patient. on behalf patient request, LHM system provide best doctor to Patient and provide treatment after doctor prescription.

On another hand LHM system provides medical instruments for hospital and also provide sell or rent to another hospital.

Doctor performs many functions:

- Login System
- Consultation
- Prescriptions
- Cancel_Treatment
- Restart_Existing_Treatment
- Logout

In LHM system use case **doctor** is second main actor who is create prescription according to patient disease. Doctor can restart and change the treatment as customer medical records

Here Patients perform many functions:

- Register
- Login
- Request_an_Appointment
- Get_Treatment_Course
- Medical_Records
- Consultation
- Prescriptions
- Cancel_Treatment
- Get_Treatment
- Vaccination
- Pay_Bill
- Restart_Existing_Treatment
- Logout

In this system **customer** have to register and after successfully login he can request for an appointment to a doctor. After confirmation, patients have to tell to doctor his medical records and his disease and after that doctor will make prescription and Patients can pay bill of all these treatment by cash or insurance.

Patients are to be treated as per the prescription which may include

- Operations and vaccinations
- Consultations and check-ups
- Medicine and different types of tablets
- Clinical reports and attached documents and history
- Prescriptions and repeat prescriptions

Use Case Name	Login
Use case Description	Patients and Doctor login to system to access the functionality of the system.
Actors	LHM System, Doctor and patients.
Pre-Condition	System Must be Connected to the Network.
Post- Condition	After a successful Login Employer can manage the System.

Main Scenarios	Serial No	Steps
Actors	1	Enter Username Enter Password
	2	Validate Username and Password
	3	Allow access to System
Extensions	1a	Invalid Username System shows an error message
	2b	Invalid Password System shows an error message

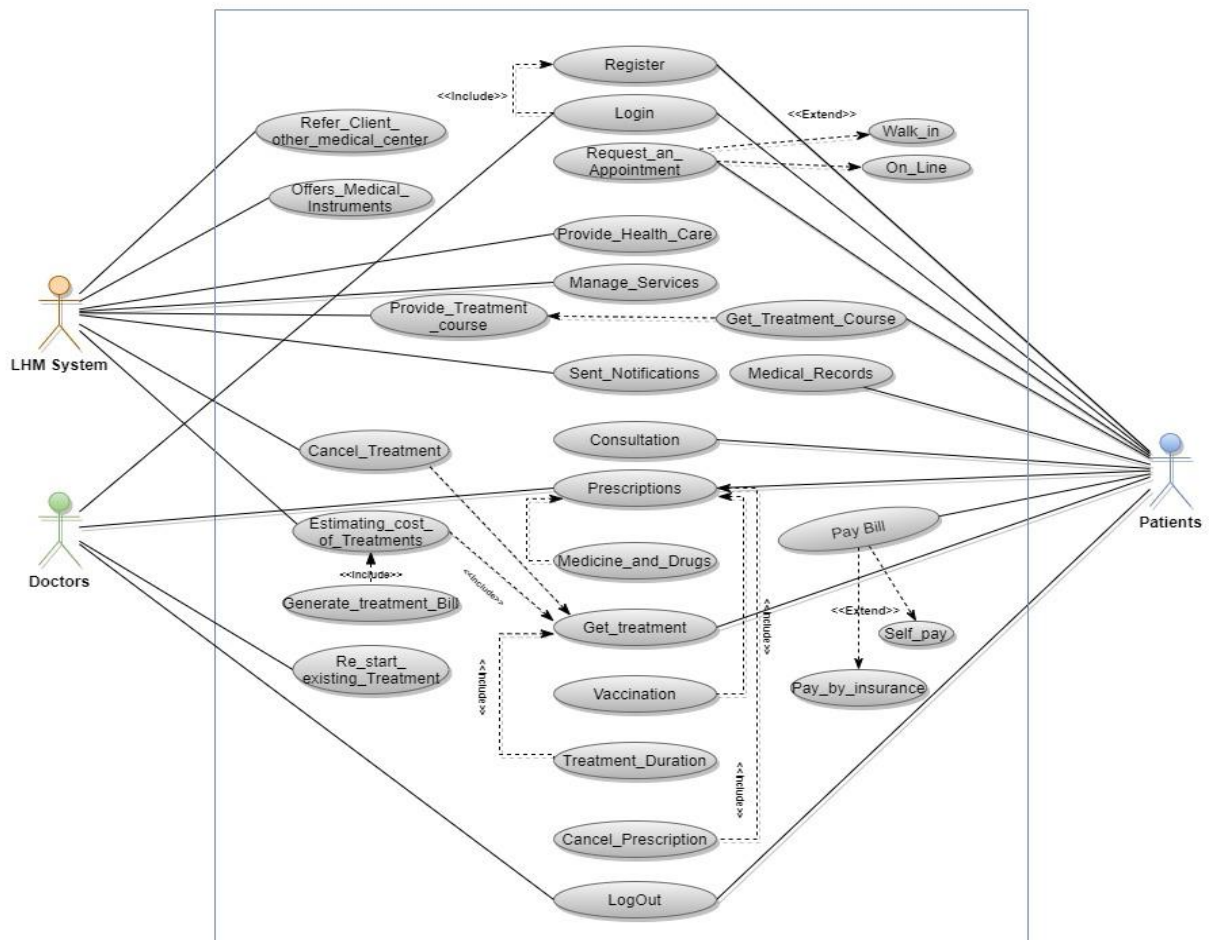


Figure 4: Use Case Diagram