Project name:

Hospital

management

system

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Actors	**Primary:**
	1. Doctor
	2. Nurse
	3. Pharmacist
	4. Radiologist
	Second:
	1. Patient
	Supporting:
	1. Administrator

Description	Converting the paper system to electronic

Use Case ID:	1
Use Case Name:	**login**
Actors:	**Primary**: • Doctor • Nurse • Pharmacist • Radiologist **Secondary**: • Patient **Supporting**: • Administrator
Preconditions:	A any user must be registration
Postconditions:	Login successfully
Normal Flow:	1-insert username 2-insert the password 3-the system check if the username and password is correct 4- login successfully
Alternative Flows:	1-Register field if he is a new user 2 -Forget password Field to help user resets his password if he forgets it
Exceptions:	The system detects that the entered username or password is incorrect. The user is prompted to re-enter the correct credentials or recover/reset their password.

Use Case ID:	2
Use Case Name:	**Type of user**
Actors:	Doctor Nurse Pharmacist Radiologist Patient Administrator
Preconditions:	The hospital system must have a way to identify the type of user
Postconditions:	The system give him operation It depends on your choice
Normal Flow:	Select if you: 1-Doctor 2-patient 3-Nurse 4-Admainistrator 5-Pharmscist 6-Hospital Manager 7-Radiologist
Alternative Flows:	1-Based on the selected role, the system provides different options and functionalities tailored to that role. 2- Each role has access to specific features and information relevant to their responsibilities within the hospital.
Exceptions:	No Errors

Use Case ID:	3
Use Case Name:	**Create medical report**
Actors:	Doctor Nurse
Preconditions:	The patient must have a valid medical record
Postconditions:	When generating reports or analytics, the system provides accurate and up-to-date information based on the specified criteria.
Normal Flow:	1-Enter the Patient Name 2-Enter the Patient ID 3-check the patient in the hospital network 4- system will Create the Medical Report
Alternative Flows:	1-If the patient is found in the network, the system retrieves the patient's existing medical records and displays them. 2- the system reviews the patient's existing medical records and decides whether to create a new medical report or update an existing one
Exceptions:	Patient not found in the hospital network. The system fails to find the entered patient name or ID in the hospital's network. The user is prompted to verify the entered information or register the patient if they are not in the system.

Use Case ID:	4
Use Case Name:	**Diagnosis and treatment of patients**
Actors:	Doctor
Preconditions:	The patient must have a valid medical record
Postconditions:	The patient gets the correct diagnosis

Alternative Flows:	1-Based on the analysis, the system provides a list of potential diagnoses that match the entered symptoms. 2-The user reviews the list of potential diagnoses and selects the most likely one. 3-The system presents information about the selected diagnosis, including possible causes, recommended tests, and treatment options. 4-The user reviews the information and decides on the appropriate treatment for the patient. 5-The system provides guidance on the chosen treatment, including dosage, duration, and potential side effects. 6-The user confirms the treatment plan.
Exceptions:	No error.
Normal Flow:	1-Enter the Patient Name 2-Enter the patient ID 3-enter the symptoms of the disease 4- system will determine Diagnosis and treatment of patients

Use Case ID:	5
Use Case Name:	determine the feasibility of creating an operation
Actors:	Doctor Administrator
Preconditions:	It should be in empty rooms
Postconditions:	The completion of the feasibility study results in the generation of a comprehensive feasibility report. This report should outline the key findings, recommendations, and the overall viability of the proposed operation.
Normal Flow:	1-enter the patient's name 2-enter the patient id 3-enter the disease of the patient 4- system will determine the feasibility of creating a operation
Alternative Flows:	1-The system analyzes the entered disease or medical condition and evaluates its suitability for a surgical operation. 2-The system checks various factors such as the severity of the condition, potential risks, available treatment options, and patient-specific considerations. 3-Based on the analysis, the system provides a determination of the feasibility of a surgical operation.
Exceptions:	No error.

Use Case ID:	6
Use Case Name:	Obtaining test result
Actors:	patient
Preconditions:	The hospital system must have a process in place for reviewing and interpreting test results
Postconditions:	1-he testing process produces accurate and reliable results, reflecting the true status of the parameter being tested (e.g., blood glucose level, cholesterol level, presence of a specific biomarker) 2-The test results are made available to the authorized healthcare professionals and, if applicable, the patient in a timely manner.
Normal Flow:	insert Your Name 2-insert Your ID 3- the system if the patient test result in the hospital network or database of the system 4-- System Will Give Obtaining test result
Alternative Flows:	1-The system retrieves the user's associated records and test results from the database. 2-The system presents the available test results to the user. 3-The user selects the specific test result they want to obtain. 4-The system displays the selected test result to the user, including relevant details such as the test type, date conducted, and the actual result.
Exceptions:	Invalid name or ID The system fails to find a match for the entered name or ID. The user is prompted to verify the entered information or contact support for assistance.

Postconditions:	The patient receives accurate health information and the record of patient is updated in him database Health information provided is accurate, evidence-based, and supported by current medical knowledge and research.
Normal Flow:	1-Insert Your Name 2-Insert Your ID 3-Insert Your Disease 4-the system will providing accurate health information
Alternative Flows:	1-The system prompts the user to insert their disease or medical condition of interest. 2-The user enters the disease or medical condition. 3-The system analyzes the entered disease or medical condition and retrieves relevant, accurate health information from trusted sources. 4-The system presents the user with comprehensive information about the disease or medical condition, including causes, symptoms, diagnosis, treatment options, and preventive measures. 5-The user reviews the provided health information. 6-The system offers additional resources such as articles, research papers, or trusted websites for further reading and in-depth understanding. 7-The user has the option to save or bookmark the provided health information for future reference. 8-The system updates the user's record, indicating the accessed health information. 9-The system displays a confirmation message indicating the successful provision of accurate health information
Exceptions:	Invalid name, ID, or disease The system fails to find a match for the entered name, ID, or disease. The user is prompted to verify the entered information or contact support for assistance
Use Case ID:	7
Use Case Name:	providing accurate health information
Actors:	patient
Preconditions:	The hospital system must have a process in place to review and verify the accuracy of health information before it is provided to patients and the public.

Use Case ID:	8
Use Case Name:	following the instructions of caregiver
Actors:	patient
Preconditions:	The caregiver's instructions must be clear
Postconditions:	The patient receives accurate health information and the record of patient is updated in him database Health information provided is accurate, evidence-based, and supported by current medical knowledge and research.
Normal Flow:	1-enter Your Name 2-Enter Your ID 3-system will give following the instructions of caregiver
Alternative Flows:	1-The system verifies the entered ID and proceeds to the next step. 2-The system retrieves the user's caregiver instructions from the database or associated records
Exceptions:	No error

Use Case ID:	9
Use Case Name:	Medication appointments
Actors:	Nurse
Preconditions:	The patient must be scheduled for a medication appointment.
Postconditions:	The scheduled medication is administered to the patient successfully, following the prescribed dosage and administration instructions.

Exceptions:	No error
Normal Flow:	1-Enter the Patient Name 2-Enter the Patient ID 3-Enter the patient disease 4-Enter the patient room number 5-system will give the appointments of medicine
Alternative Flows:	1-The system prompts the user to enter the patient's disease or medical condition. 2-The user enters the patient's disease or medical condition. 3-The system analyzes the entered disease or medical condition and retrieves the relevant medication appointments from the schedule database. 4-The system presents the user with the scheduled medication appointments for the patient.

Use Case ID:	**10**
Use Case Name:	**Direct patient care**
Actors:	Nurse
Preconditions:	The patient must have a valid medical record
Postconditions:	The healthcare professional completes a thorough assessment of the patient, including vital signs, medical history, and any relevant clinical information.
Normal Flow:	1-Enter patient Name 2-Enter patient ID 3-room number of patient 4-Direct patient care
Alternative Flows:	1-the system verifies the patient's ID and proceeds to the next step. 2-The system prompts the user to enter the room number of the patient. 3-The user enters the room number of the patient. 4-The system verifies the room number and proceeds to the next step. 5-The system provides the user with information regarding the patient's direct care needs, based on the entered patient information and relevant medical records.
Exceptions:	No error

Use Case ID:	11
Use Case Name:	**Resource Management**
Actors:	Administrator
Preconditions:	Have a system in place for allocating resources
Postconditions:	Resources, including staff, equipment, and facilities, are allocated optimally to meet the current demand and priorities of the healthcare facility.. Staff members are assigned tasks and responsibilities in an efficient manner, ensuring that their skills and expertise match the needs of the healthcare facility.
Normal Flow:	1-enter the resource 2-the system will manage resource
Alternative Flows:	1-The user enters the name or type of the resource they want to manage (e.g., equipment, supplies, personnel). 2-The system validates the entered resource and proceeds to the next step. 3-The system retrieves information about the available resources of the specified type from the resource management database. 4-The system presents the user with a list of available resources, including details such as quantity, location, and availability status.
Exceptions:	No error

Use Case ID:	12

	2-The system retrieves the medical report(s) related to the patient from the database. 3-The system presents the user with the medical report(s) in a readable format..
Exceptions:	Report not found. The system fails to find a medical report for the entered patient's name or ID in the system database. The user is prompted to verify the entered information or contact support for assistance.
Use Case Name:	**Receiving reports**
Actors:	Administrator
Preconditions:	All reports must be complete and accurate
Postconditions:	Received reports are accurate, complete, and free from significant errors or omissions that could compromise the reliability of the information.
Normal Flow:	1-enter the patient's name 2-enter patient id 3-check the report of the patient in the system database 4-the system will give the medical report
Alternative Flows:	1-The system checks the database for available medical reports associated with the entered patient's information.

Use Case ID:	13
Use Case Name:	**managing pharmaceutical inventory**
Actors:	Pharmacist
Preconditions:	Qualified staff Accurate inventory records Secure storage
Postconditions:	The pharmaceutical inventory system should maintain accurate and up-to-date records of all medications in stock.
Normal Flow:	1-the system calculate the number of all medicine in the storehouse 2-the system calculate the number of consumption specific medicine 3-the system give notification if the medicine it's quantity is less than 5
Alternative Flows:	1-The system retrieves the current inventory data for all medicines in the storehouse. 2-The system calculates the total quantity of each medicine available in the storehouse. 3-The system stores the calculated quantity for each medicine in the inventory database. 4-The system prompts the user to specify a specific medicine for consumption calculation. 5-The user enters the name or code of the specific medicine. 6-The system retrieves the consumption data for the specified medicine from the database. 7-The system calculates the total consumption of the specified medicine based on records and usage patterns. 8-The system stores the calculated consumption data for the specified medicine in the inventory database. 9-The system continuously monitors the inventory levels for each medicine. 10-If the quantity of any medicine in the storehouse is less than 5, the system generates a notification. 11-The notification alerts the user about the low quantity of the specific medicine. 12-The user can view the notification and access detailed information about the medicine, including its current quantity, consumption rate, and any associated criticality or urgency. 13-The system provides recommendations for action, such as reordering the medicine, adjusting the inventory levels, or substituting with an alternative medicine if available. 14-The user can acknowledge the notification and mark it as attended or resolved after taking appropriate action. 15-The system updates the inventory database to reflect any changes made based on the user's actions. 16-The system continues to monitor the inventory levels in real-time and generates notifications for any medicine with a quantity less than 5
Exceptions:	No Errors

Normal Flow:	1-enter the patient's name 2-enter the patient Id 3-enter patient disease in medical report 4-the system check if the patient in hospital network 5-the system will give Dispensing medications of patients
Alternative Flows:	1-The system prompts the user to enter the patient's disease or medical condition as mentioned in the medical report. 2-The system checks if the patient is part of the hospital network or has an existing medical record within the system. 3-If the patient is in the hospital network and has a medical record, the system proceeds to the next step. 4-If the patient is not in the hospital network or does not have a medical record, the system displays a message indicating that the patient is not found and advises the user to contact the appropriate healthcare provider for further assistance. 5-The system retrieves the medication information associated with the patient's disease or medical condition from the database. 6-The system generates a prescription or medication order based on the retrieved information. 7-The prescription includes details such as the medication name, dosage instructions, frequency, and duration of the treatment. 8-The system presents the user with the prescription or medication order for review and verification
Exceptions:	Patient not in hospital network The system fails to find the entered patient name or ID in the hospital's network.

Use Case ID:	**14**
Use Case Name:	**Dispensing medications of patients**
Actors:	Pharmacist
Preconditions:	Check production and expiration date
Postconditions:	Medications are dispensed accurately according to the prescription provided by the healthcare provider. Minimize the risk of medication errors, ensuring that patients receive the right medication in the correct dosage.

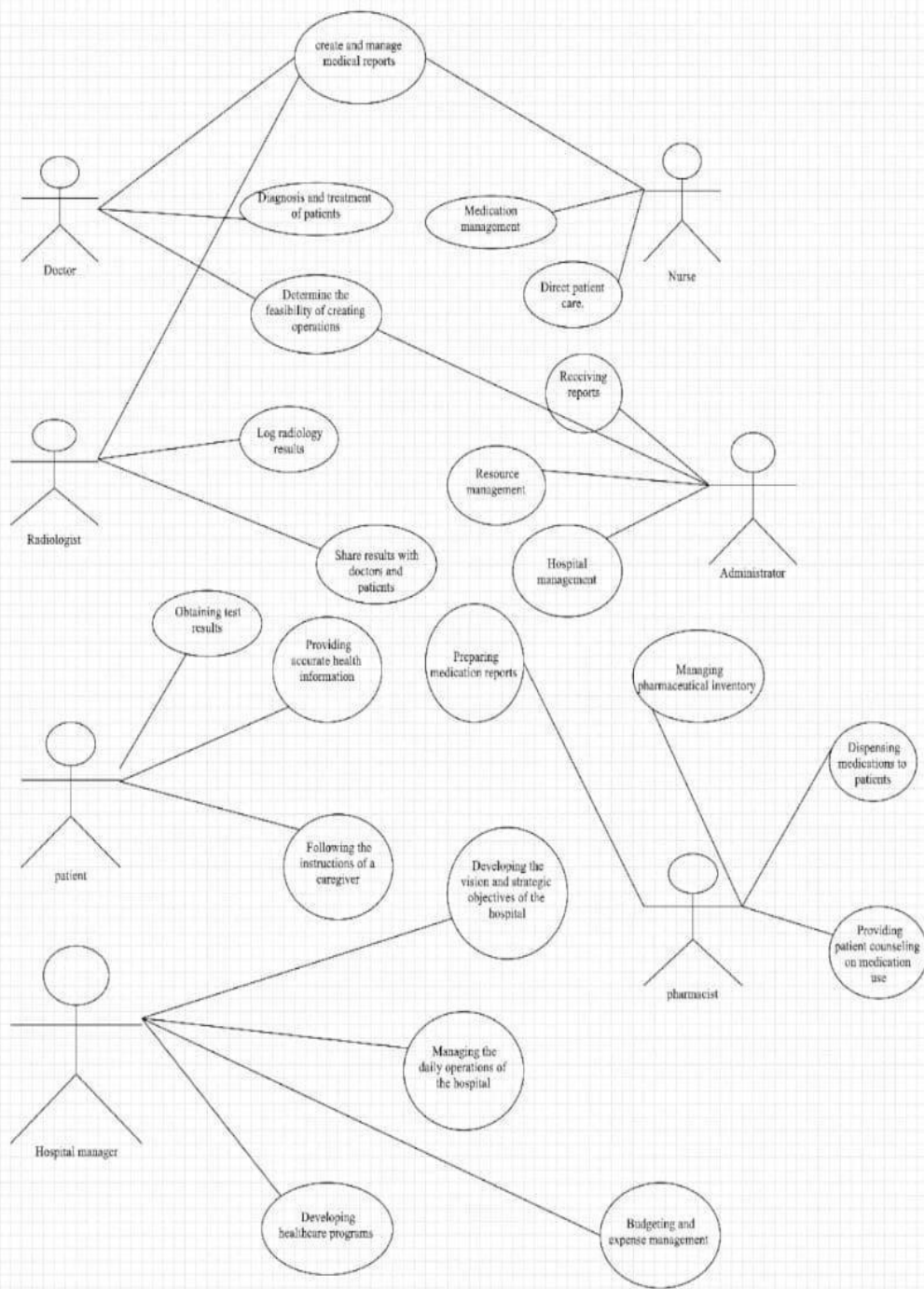|	
Use Case ID:	15
Use Case Name:	**providing patient counseling on medication use**
Actors:	Pharmacist
Preconditions:	--
Postconditions:	Patients demonstrate an understanding of their prescribed medications, including the purpose, dosage, frequency, and administration instructions.
Normal Flow:	1-enter the symptoms of the disease 2-enter the name of medicine 3-the system will give provide patient counseling on medication use

Use Case ID:	**16**
Use Case Name:	**preparing medication reports**
Actors:	Pharmacist
Preconditions:	Accurate patient records
Postconditions:	Medication reports contain accurate and up-to-date information, including details on drug names, dosages, frequencies, and patient-specific data.
Normal Flow:	1-Enter the name of medicine 2-Enter the id of medicine 3-the system will check if the medicine in the pharmacy network 4-the system give the report in the medicine
Alternative Flows:	1-The system checks if the medicine is part of the pharmacy network or available in the database. 2-If the medicine is part of the pharmacy network or available in the database, the system proceeds to the next step. 3-If the medicine is not part of the pharmacy network or unavailable in the database, the system displays a message indicating that the medicine is not found and advises the user to contact the appropriate supplier or update the database with the medicine information. 4-The system retrieves the relevant information and data associated with the medicine from the database. 5-The information may include the medicine's generic and brand names, indications, dosage forms, active ingredients, strength, dosage instructions, and any special considerations or warnings. Exception 6-The system generates a medication report based on the retrieved information. 7-The medication report provides a comprehensive summary of the medicine, including its properties, therapeutic uses, contraindications, side effects, drug interactions, storage requirements, and any recent updates or recalls. 8-The system presents the user with the medication report for review and verification.
Exceptions:	Medicine not found in the pharmacy network The system fails to find the entered medicine name or ID in the pharmacy network. The user is prompted to verify the entered information or contact support for assistance.
Alternative Flows:	1-The system analyzes the entered symptoms and compares them with known patterns or medical guidelines. 2-The system retrieves the relevant medication information based on the symptoms and disease. 3-The system prompts the user to enter the name of the medication. 4-The user enters the name of the medication. 5-The system retrieves the medication details, including dosage instructions, usage guidelines, possible side effects, and any special considerations. 6-The system generates a patient counseling guide or summary based on the medication details and the entered symptoms. 7-The patient counseling guide includes information on how to take the medication properly, potential interactions with other medications or food, possible side effects to watch out for, and any specific precautions or warnings. 8-The system presents the patient counseling guide to the user for review. 9-The user can review the patient counseling guide and make any necessary adjustments or additions. 10-The system may provide additional information or resources, such as educational materials, videos, or links to reputable sources, to enhance patient understanding and compliance. 11-The user confirms the patient counseling guide and proceeds to the next step. 12-The system provides the user with the patient counseling guide to share with the patient.
Exceptions:	No error

Use Case ID:	**17**
Use Case Name:	**Managing the daily operation hospital**

Actors:	Hospital Manager
Preconditions:	Accurate and up-to-date patient records Adequate nurse and resources
Postconditions:	Patients experience a high level of safety and satisfaction during their stay at the hospital.
	Enhance the overall patient experience, promote positive feedback, and improve the reputation of the hospital.
Normal Flow:	1-Enter the name of patient 2-Enter the ID patient 3-Enter the disease of the patient 4-the system will give the plan to manage the hospital
Alternative Flows:	Foster increased collaboration among different healthcare disciplines, promoting a holistic approach to patient care and management.
	Enhance communication, reduce silos, and provide more comprehensive and integrated healthcare services.
Exceptions:	No error

Use Case ID:	18
Use Case Name:	**preparing medication reports**
Actors:	Pharmacist

Preconditions:	------------------------------------
Postconditions:	Medication reports contain accurate and up-to-date information, including details on drug names, dosages, frequencies, and patient-specific data.
Normal Flow:	1-Enter the name of medicine 2-Enter the id of medicine 3-the system will check if the medicine in the pharmacy network 4-the system give the report in the medicine
Alternative Flows:	1-The system checks if the medicine is part of the pharmacy network or available in the database. 2-If the medicine is part of the pharmacy network or available in the database, the system proceeds to the next step. 3-If the medicine is not part of the pharmacy network or unavailable in the database, the system displays a message indicating that the medicine is not found and advises the user to contact the appropriate supplier or update the database with the medicine information. 4-The system retrieves the relevant information and data associated with the medicine from the database. 5-The information may include the medicine's generic and brand names, indications, dosage forms, active ingredients, strength, dosage instructions, and any special considerations or warnings. Exception 6-The system generates a medication report based on the retrieved information. 7-The medication report provides a comprehensive summary of the medicine, including its properties, therapeutic uses, contraindications, side effects, drug interactions, storage requirements, and any recent updates or recalls. 8-The system presents the user with the medication report for review and verification.
Exceptions:	Medicine not found in the pharmacy network The system fails to find the entered medicine name or ID in the pharmacy network. The user is prompted to verify the entered information or contact support for assistance.

Use case diagram

- create and manage medical reports
- Diagnosis and treatment of patients
- Medication management
- Determine the feasibility of creating operations
- Direct patient care.
- Receiving reports
- Log radiology results
- Resource management
- Share results with doctors and patients
- Hospital management
- Obtaining test results
- Providing accurate health information
- Preparing medication reports
- Managing pharmaceutical inventory
- Dispensing medications to patients
- Following the instructions of a caregiver
- Developing the vision and strategic objectives of the hospital
- Providing patient counseling on medication use
- Managing the daily operations of the hospital
- Developing healthcare programs
- Budgeting and expense management

Actors:
- Doctor
- Nurse
- Radiologist
- Administrator
- patient
- pharmacist
- Hospital manager

Activity diagram

Shows activities performed by a system step-by-step.

Activity diagram for hospital management system
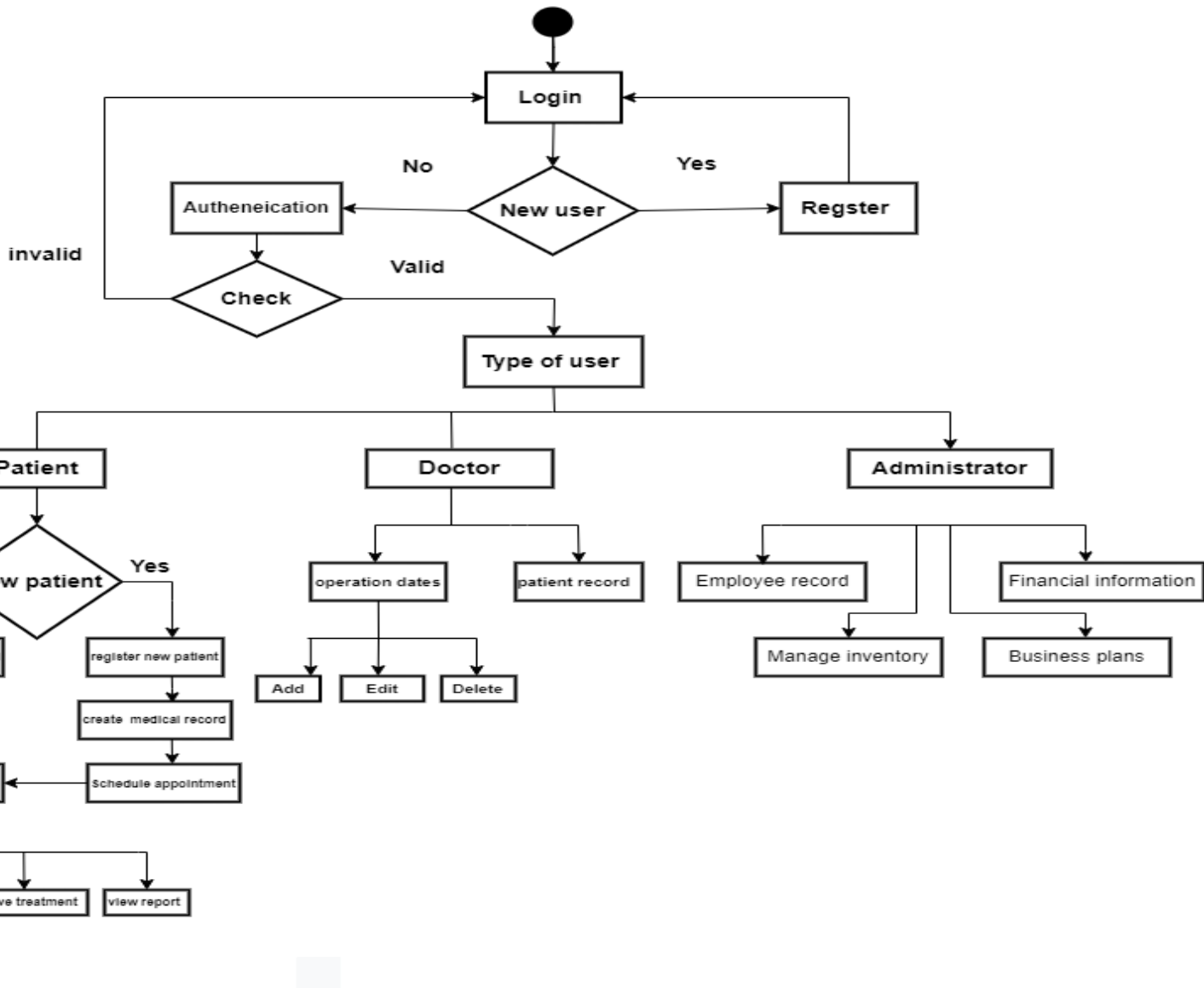
Class

Is the description of a set of objects having,
 similar attributes,
operations, relationships,

Class diagram for hospital management system

Hospital

+ name : String
+ address : String
+ phone : int

view_data()

User_Account

1 ...*   1

1

- user_name : string
- password : string

+ login()

Login

Login   Login

Doctor

+ name : String
- salary : double
- ID : string
+ qualification: string
+ phone : string

check_patient ()
get_salary()
view_report()
+ describe_drugs()
- receive_notices()
-update_database()

Patient

+ name : String
# ID : String
# age : int
# sex : string
+ phone : string

+ Booking_appointments ()
# Account_payment()
+ view_report()
+ receive_drugs()
+ receive_notices()
-update_database()

treats

1   1 ...*

Distract

1 ...*   1

pharmacist

+ name : String
- salary : double
+ ID : string
+ phone : String

+ Dispensing-medications()
+ view_report()
+ cost()
# check_Availability()
# Quantity ()
+ receive_notices()
-update_database()

1 ...*   1 ...*

manage

Administration

+ name : String
- salary : double
+ ID : string
+ qualification: string
+ phone : string

- Edit_doctor()
- provide_report()
- Edit_salary()
- organize()
- provide_drugs()
- receive_notices()
- update_database()

manage

login

login failed

check login

wrong information

correct information

login successful

choose

type of user

administrator

manage

financial information

Inquiring about
something

manage

employee record

manage inventory

business plans

choose

type of user

select

Examines

Doctor

(add-edit-delete)

operation dates

patient record

choose

type of user

Patients

No

Yes

check new patient

view medical record

Register new patient

Deposit

create

check in

create medical record

add room

cost of room

Buy medicines

schedule appointments