Hospital Management System

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Introduction:

Hospital are the essential part of our lives, providing best medical facilities to people suffering from various ailments, which may be due to change in climatic conditions, increased work-load, emotional trauma stress etc. It is necessary for the hospitals to keep track of its day-to-day activities & records of its patients, doctors, nurses, ward boys and other staff personals that keep the hospital running smoothly & successfully.

But keeping track of all the activities and their records on paper is very cumbersome and error prone. It also is very inefficient and a time-consuming process Observing the continuous increase in population and number of people visiting the hospital. Recording and maintaining all these records is highly unreliable, inefficient and error-prone. It is also not economically & technically feasible to maintain these records on paper.

Thus keeping the working of the manual system as the basis of our project. We have developed an automated version of the manual system, named as “Hospital Management System”.

The main aim of our project is to provide a paper-less hospital up to 90%. It also aims at providing low-cost reliable automation of the existing systems. The system also provides excellent security of data at every level of user-system interaction and also provides robust & reliable storage and backup facilities.

Objectives of the system:

The project “Hospital management system” is aimed to develop to maintain the day –to-day state of admission/discharge of patients, list of doctors, reports generation etc. It is designed to achieve the following objectives:

1. To computerize all details regarding patient details & hospital details.
2. Scheduling the services of specialized doctors and emergency properly so that facilities provided by hospital are fully utilized in effective and efficient manner.
3. The information of the patients should be kept up to date and there record should be kept in the system for historical purposes.

4. To keep track of the facilities provided by nurses such as medical facilities to patients at their door step, participation in social service, tutoring the students and serving the patients in the hospital.
5. To keep track of various drugs present in the pharmacy.
6. To analyze the data about various medicines given to patients or to the nurses who are assisting the elderly patients based on prescriptions.

Problem Statement:

In this project, we have implemented the three entities of Hospital Management System i.e. Doctors, Nurses and Pharmacy initially as separate databases in order to get a deeper understanding of how each entity works as an independent organization. Later we need to merge these three databases of different entities into one using MYSQL, so that any higher level management of the hospital organization can retrieve the information they need in order to make the business decisions.

Scope:

The proposed software product is the Hospital Management System (HMS). The system will be used in any Hospital, Clinic to get the information from the patients and then storing that data for future usage

Modules:

We have three different modules in our project.

1.Doctor’s module

2.Nurses module

3.Pharmacy module

Doctors Module:

This module consists of patients who are treated by doctors based on the type of disease they are affected and specialization of the doctor

Nurse Module:

This module consists of various functionalities or services being offered by the nurses:

1. They provide assistance to patients in the hospital.
2. They provide tutoring to the students.
3. They participate in the social activities.

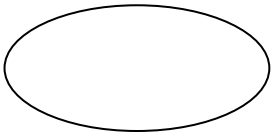
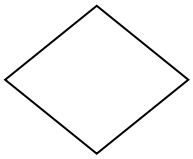
They provide medical facilities to the patients at their doorstep

Pharmacy Module:

This module provides the medicine to the patients treated by the doctor based on the prescription provided to them. They can give the medicines to the patients or they can give medicines to the nurses on behalf of the elderly patients who are being treated at their houses.

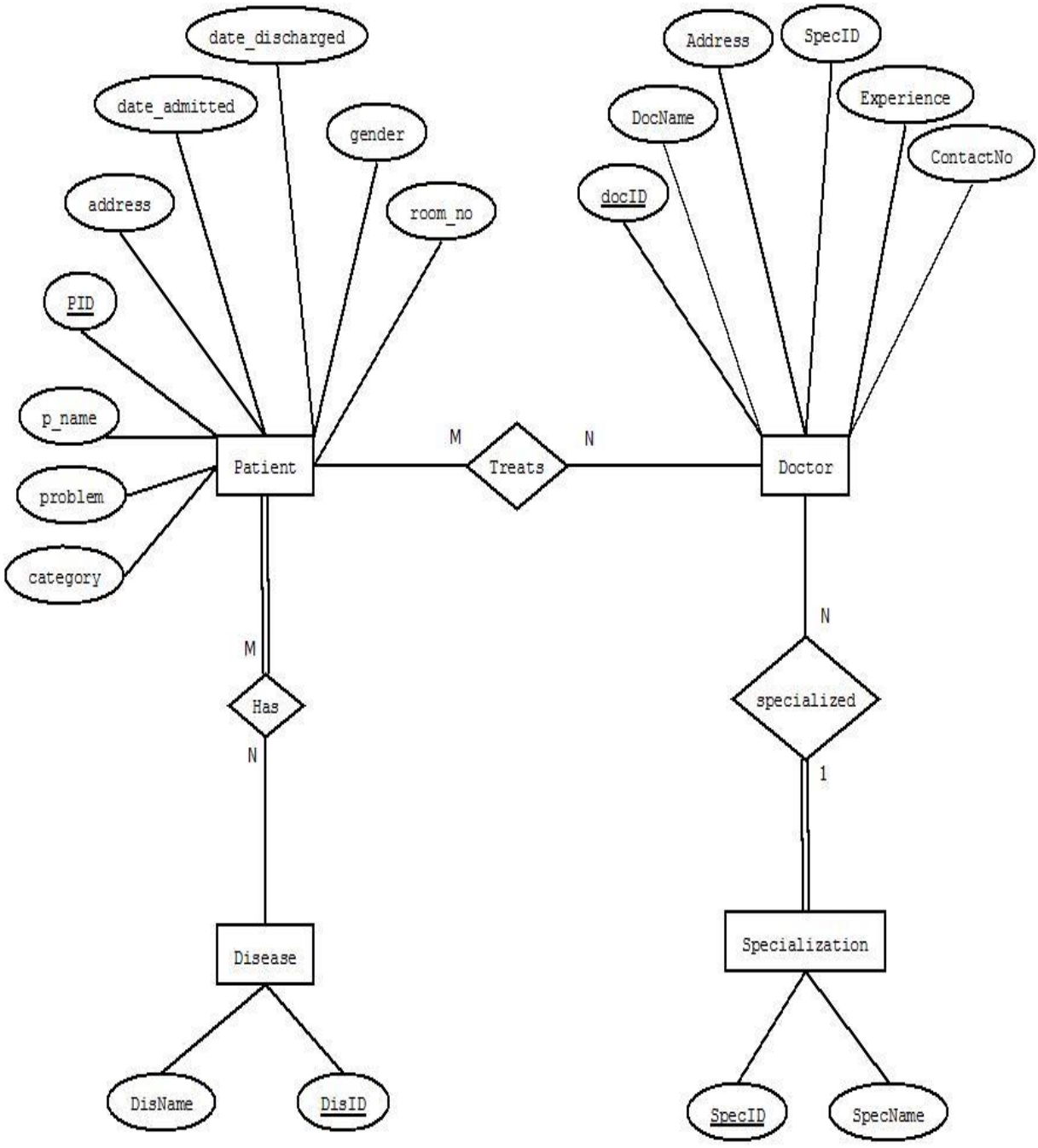
ER Diagram:

Entity-Relationship Diagram is a graphical representation of entities and their relationship to each others. It describes how data is related to each other. An entity is a piece of data- an object or a concept about which data is stored. A relationship is how the data is shared between entities. In E-R Diagram, there are 3 main Components:

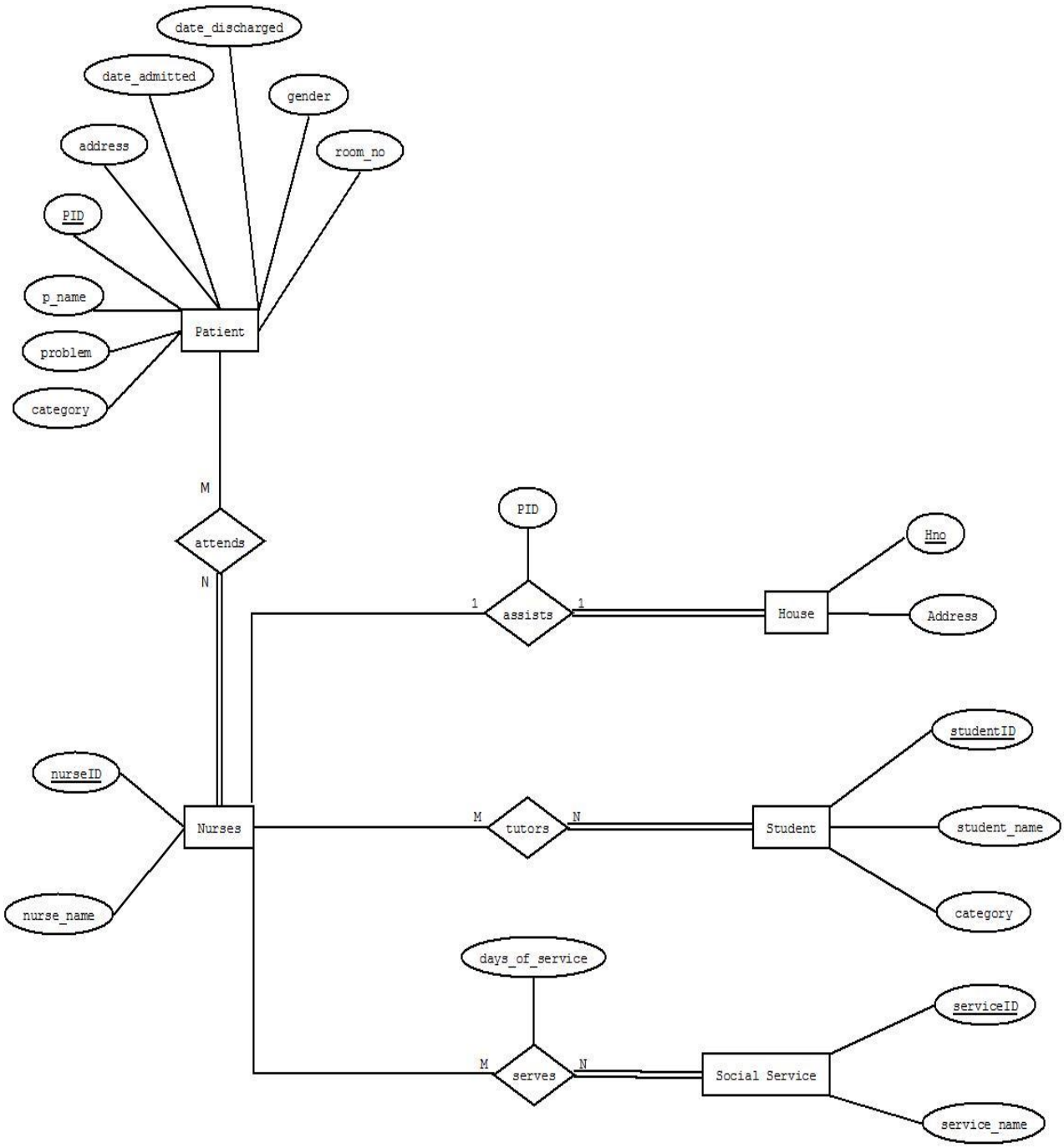
Symbol	Name	Description
	Entity	An entity can be any object, place, person or anything.
	Attribute	An Attribute Describes a property or characteristics of an entity.
	Relationship	A Relationship Describes relation between entities.

List of ER diagrams for each module:

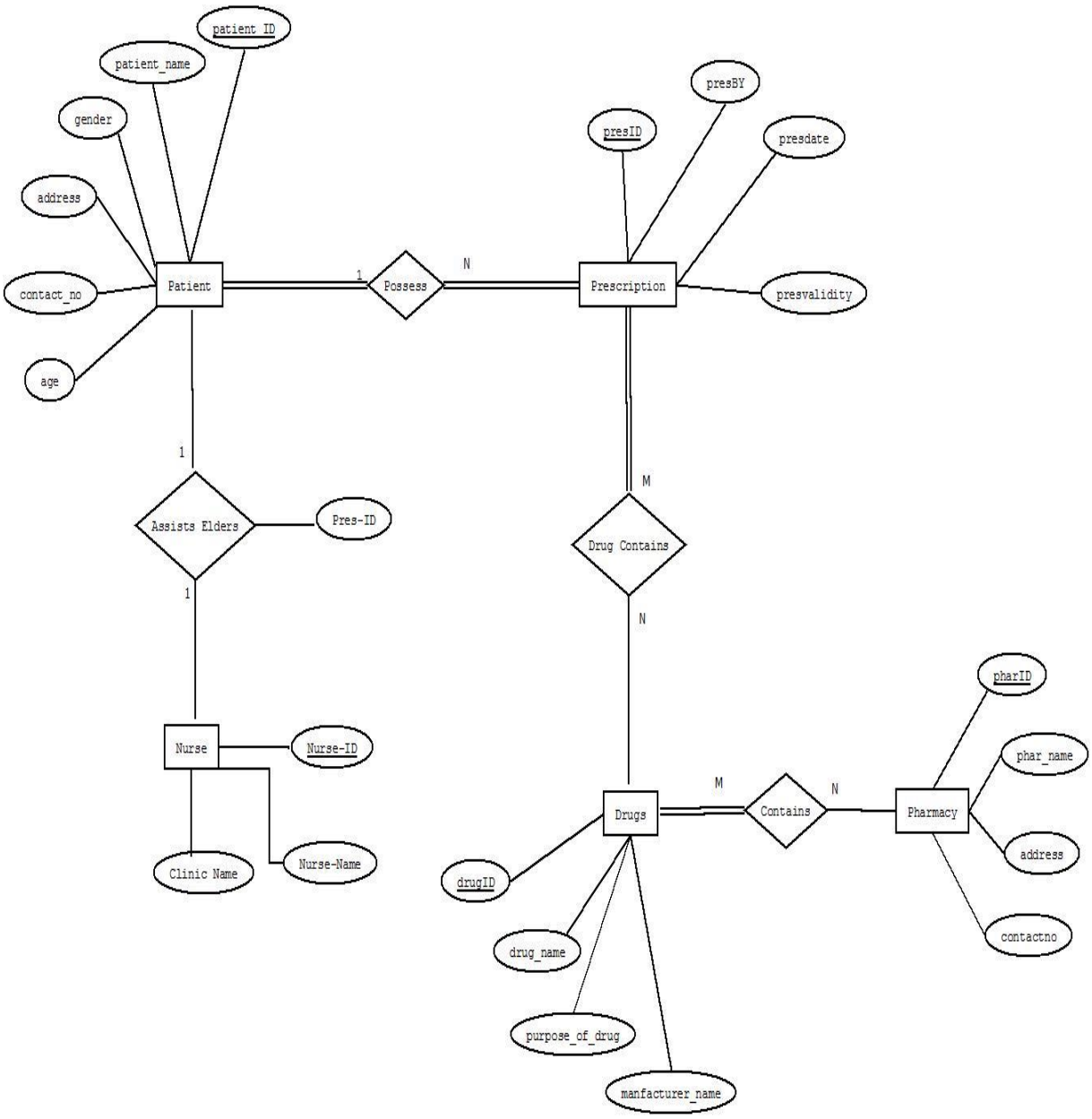
1.Doctors module:



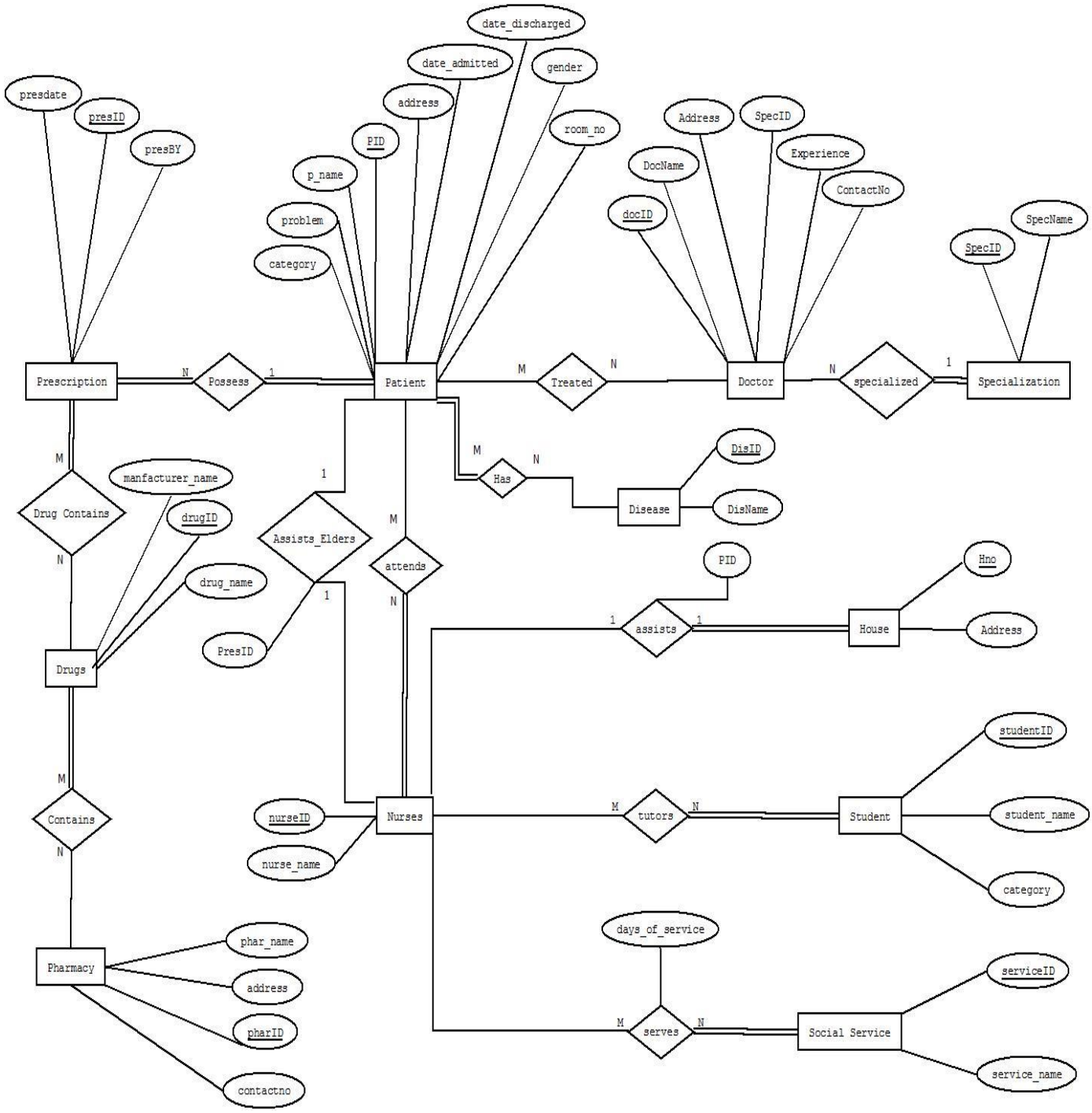
2.Nurses Module



3.Pharmacy Module



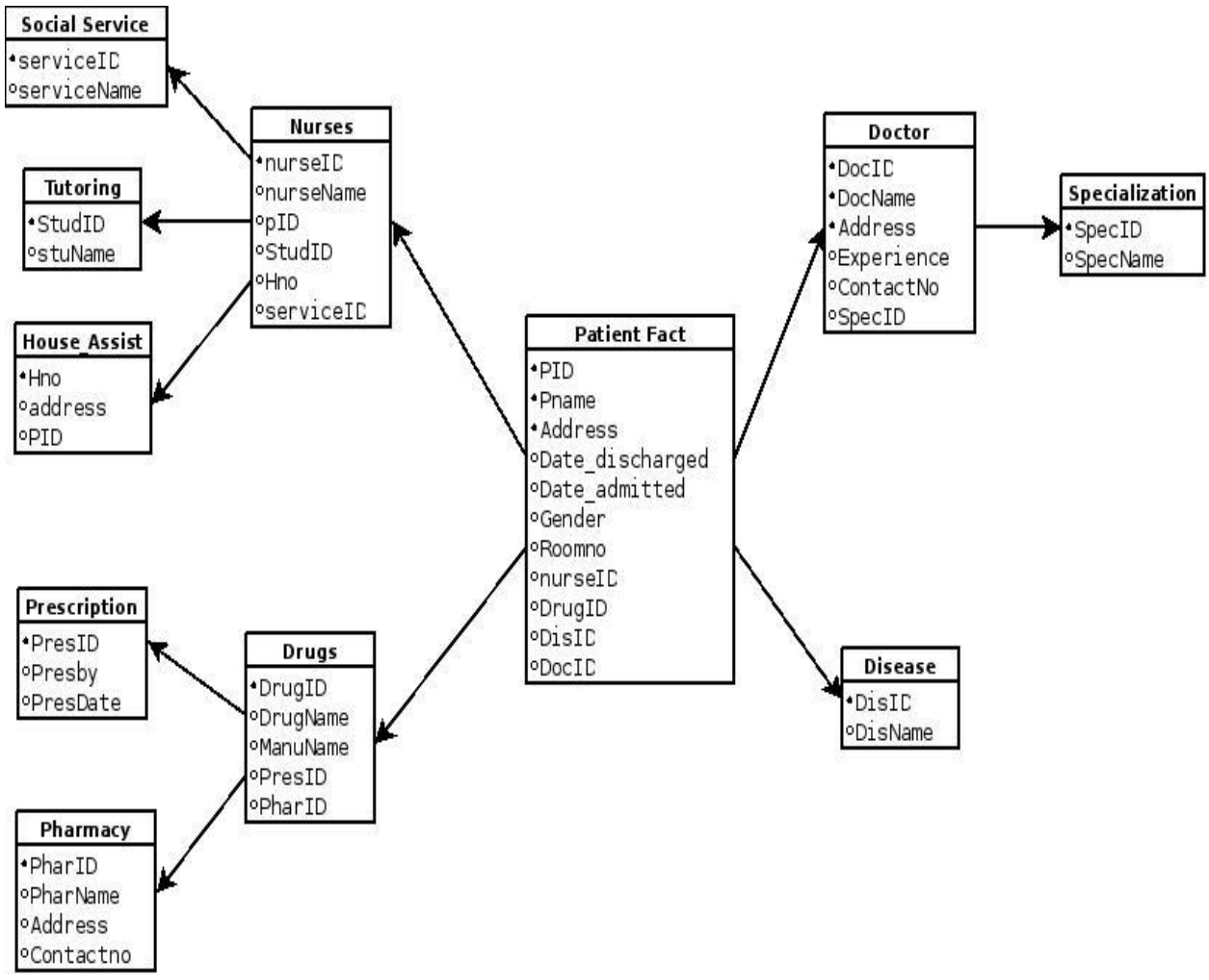
Data Warehouse:



Snow Flake Schema:

A snowflake schema is a logical arrangement of tables in a multidimensional database such that the entity relationship diagram resembles a snowflake shape. The snowflake schema is represented by centralized fact tables which are connected to multiple dimensions. "Snowflaking" is a method of normalising the dimension tables in a star schema. When it is completely normalised along all the dimension tables, the resultant structure resembles a snowflake with the fact table in the middle. The principle behind snowflaking is normalisation of the dimension tables by removing low cardinality attributes and forming separate tables.

The snowflake schema is similar to the star schema. However, in the snowflake schema, dimensions are normalized into multiple related tables, whereas the star schema's dimensions are denormalized with each dimension represented by a single table. A complex snowflake shape emerges when the dimensions of a snowflake schema are elaborate, having multiple levels of relationships, and the child tables have multiple parent tables.



Analysis of use cases:

- **Details of the patient:**

  Select * from Patients;

patientID	patient_name	problem	category	address	date_discharged	date_admitted	Gender	room_no	disID	pharflag	nurflag	docflag
1	Jon Snow	Cough	General Physician	11005 F Ashford Charlotte	NULL	NULL	M	NULL	2	1	0	1
10	Harish varma	Heart attack	Cardiologist	11009 F Ashford Charlotte	2016-11-11	2016-10-10	M	2	4	1	1	1
11	Srikar Medi	Bone Marrow	Orthopeditian	11010 F Ashford Charlotte	2016-08-08	2016-07-07	M	3	13	1	1	1
12	Prem Rai	Bone Marrow	Orthopeditian	11010 G Ashford Charlotte	2016-08-09	2016-07-07	M	4	13	1	1	1
13	Megan Rose	Heart attack	Cardiologist	11009 F Ashford Charlotte	NULL	2016-11-11	F	5	4	1	1	1
14	Snip Cage	Psoriasis	Dermatologist	11005 J Ashford Charlotte	NULL	NULL	M	NULL	2	1	0	1
15	Keerthana Reddy	Gum Disease	Dentist	11008 I Ashford Charlotte	NULL	NULL	F	NULL	7	1	0	1
16	Sravani Reddy	Fever	General Physician	11008 X Ashford Charlotte	NULL	NULL	F	NULL	3	1	0	0
17	Suneetha	Eczema	Dermatologist	11008 O Ashford Charlotte	NULL	NULL	F	NULL	11	0	1	0
18	Swetha	Eczema	Dermatologist	11008 S Ashford Charlotte	NULL	NULL	F	NULL	11	0	1	0
19	Sarada	Cold	General Physician	11008 K Ashford Charlotte	NULL	NULL	F	NULL	11	0	0	1
2	Virinchi Ande	Cold	General Physician	11006 F Ashford Charlotte	NULL	NULL	M	NULL	1	1	0	1
3	Rashmi Ravindra	Fever	General Physician	11007 F Ashford Charlotte	NULL	NULL	F	NULL	3	1	0	1
4	Bhanu Sri	Gum Disease	Dentist	11008 F Ashford Charlotte	NULL	NULL	F	NULL	7	1	0	1
5	Sridhar Reddy	Heart attack	Cardiologist	11009 F Ashford Charlotte	NULL	2016-11-11	M	1	4	1	1	1
6	Sathwick Gopu	Cavity	Dentist	11008 H Ashford Charlotte	NULL	NULL	M	NULL	7	1	0	1
7	Jeevan Ram	leprosy	Dermatologist	11005 H Ashford Charlotte	NULL	NULL	M	NULL	2	1	0	1
8	Vamsy Jasti	Cavity	Dentist	11008 H Ashford Charlotte	NULL	NULL	M	NULL	7	1	0	1
9	Bharaav Gunda	Psoriasis	Dermatologist	11005 H Ashford Charlotte	NULL	NULL	M	NULL	2	1	0	1
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

- **patients who used all three facilities:**

  Select p.patient_name

  from patient p

  where pharflag =1 and nurflag =1 and docflag= 1 ;

patient_name
Harish varma
Srikar Medi
Prem Rai
Megan Rose
Sridhar Reddy

- **Patients being treated by doctor, disease and specialization:**

  Select p.patient_name,d.FirstName, p.problem, s.specName
  from patient p, doctor d , specialization s
  where p.docID=d.docID

and d.specID = s.specID;

patient_name	FirstName	problem	specName
Keerthana Reddy	Tvwin	Gum Disease	Dentist
Suneetha	Tvwin	Eczema	Dentist
Swetha	Tvwin	Eczema	Dentist
Bhanu Sri	Tvwin	Gum Disease	Dentist
Sathwick Gopu	Tvwin	Cavity	Dentist
Vamsy Jasti	Tvwin	Cavity	Dentist
Harish varma	Olivia	Heart attack	Cardiologist
Megan Rose	Olivia	Heart attack	Cardiologist
Sridhar Reddy	Olivia	Heart attack	Cardiologist
Jon Snow	Robert	Cough	General Physician
Srikar Medi	Robert	Bone Marrow	General Physician
Prem Rai	Robert	Bone Marrow	General Physician
Sravani Reddy	Robert	Fever	General Physician
Sarada	Robert	Cold	General Physician
Virinchi Ande	Robert	Cold	General Physician
Rashmi Ravindra	Robert	Fever	General Physician
Snip Cage	Aron	Psoriasis	Dermatologist
Jeevan Ram	Aron	leprosy	Dermatologist
Bharqav Gunda	Aron	Psoriasis	Dermatologist

- **nurses who participate in both tutoring and social service:**

Select n.nurse_name
from nurses n , tutor t, services s
where n.nurseID= t.nurseID and n.nurseID = s.nurseID;

	nurse_name
	Margery

- **Number of drugs in the Pharmacy:**

Select drugID,count(*) from drugcontains group by drugID;

drugID	count(*)
1	2
11	2
12	2
16	3
2	2
3	1
4	2
5	2
7	2
9	1

Conclusion:

We have achieved the objective of transforming the databases of three entities that existed separately in to a data warehouse from which the information can be analyzed at a faster rate. This provides an easier way to understand the data and to take business decisions appropriately.

Future Scope:

In this we have developed the architecture of a data warehouse of a hospital management system for which in future we can develop an application which will be very useful for hospitals and patients to avail the services.