Cairo University
Faculty of Engineering
Computer Engineering Department
CMP202

SEM - team 13

Introduction to Database Systems
Hospital Database
< ER Diagram Report >
Team Number: 13

Team Members:

Samaa Hazem Mohamed Abdel-latif	1	32
Abdal-hameed Emad Abdal-hameed	1	34
Norhan Reda Abdelwahed Ahmed	2	30
Hoda Gamal Hamouda Ismail	2	32

Contact info:
samaa.abdel-latif03@eng-st.cu.edu.eg
Medo.emadd23@gmail.com
norhan.ahmed01@eng-st.cu.edu.eg
hoda.ismail00@eng-st.cu.edu.eg

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Updated proposal

Project description:

We are implementing a desktop application to represent a database management system for a hospital to store the data related to the hospital so it will be easy for doctors, nurses, pharmacist, accountant, receptionist and administrator to get and update the data related to them so this will help them to keep pace with changes that happen in hospital so they will serve patients well and manage the hospital well and know the situation of the hospital if it wins or loses .

Users:

- Administrator.
- Doctor.
- Nurse.
- Pharmacist.
- Receptionist.
- Accountant.

Entities:

- Employee
- Doctor
- patient
- Medicine
- Lab
- test
- Prescription
- Department
- User
- Account

Functionalities:

- **Doctor**:

- Retrieve his own personal information.

- Get his own schedule of appointments.

- Get patient’s medical information.

- Record patient’s prescriptions and lab tests.

• **Nurse**:

- Retrieve her own personal information.

• **Receptionist**:

- Retrieve his own personal information.

- Be responsible for patient’s registration and discharging.

- Get patient’s personal information and appointments with doctor.

- Check availability of doctors and scheduling appointments for patients with doctors.

• **Accountant**:

- Retrieve his own personal information.

- Get information about patient’s bills.

- Manage salaries of hospital employees.

• **Pharmacist**:

- Retrieve his own personal information.

- Get patient’s prescription.

- Record patient’s medicine bills.

- Get/update medicine information.

• **Administrator**:

- Retrieve his own personal information.

- Get/update departments’ information.

- Manage users, employees and patients' information (He can add or remove any of them).

Problem definition

We create a database system for a hospital. Our application will contain data about hospital's departments and employees who work for. It also will contain data about patients and the treatment they will have.

In our design, the hospital consists of number of departments, each of them has employees work for it and a manager who is also an employee in that department.

It also enables the receptionist to record the patients' personal information and make an appointment for him with a doctor.

The doctor will be responsible for examining the patient and recording for him lab tests and a prescription which contains medicine he should have.

Then the pharmacist will be able to provide the patient with medicine described for him and record his bill, so that the accountant can check the patients' payments.

Also, each employee from employee who have the permission to log in the system application to retrieve or modify will have a username and password.

Entities:

1. Employee

It is an entity type which contains all employees in the hospital and their personal information. It also has a (type) attribute which determines the employee's type which will determines the end view he will get in application program, and database he can retrieve and modify.

2. Doctor

It is an entity type which is a special type of employee with additional functionality and attributes which determines his schedule to examine patients.

3. patient

It is an entity type includes personal information for patients who have an appointment with a doctor.

4. Medicine

It is an entity type includes information about medicines provided in hospital's pharmacy which patient could take and stock of each medicine.

5. Lab test

It is an entity type includes information about lab tests provided in hospital's lab which patient could have.

6. Prescription

It is an entity type includes each prescription that is provided from a doctor to a patient, which contains medicines this patient should take.

7. Department

It is an entity type includes hospital's departments which have employees that work for.

8. User Account

It is an entity type includes username and password for employees who are allowed to use application program and retrieve or modify the database.

Users:

1. Administrators

They are the people that allow others to modify in DB, for example: HR, some managers.

2. Doctor

He can retrieve some information from the data base that belong to him, for ex: his schedule, and modify some information about the patients.

3. Pharmacist

He can retrieve and modify Medicines information.

4. Receptionist

He makes the records between patients and doctors, modify the availability of the doctors, and insert new patients and modify patients' information.

5. Accountant

He can retrieve employees' financial information and modify them, for example: employee's salary.

Relationships

WORK_FOR

A relationship between Department and Employee describe that each employee should work, in one department at most, and each department must have an employee works for, it can have many of them in each department.

[One employee works only in one department].

(assumption)

MANAGE

A relationship between Department and Employee describes that one employee can be a manager or not but every department should have a manager, and one manager for every department.

EXAMINE

A relationship between doctor and patient that describe that one examines (in a specific date determined by doctor entity type) should be for one patient towards one doctor, no examine without a patient or without a doctor, this relationship has an attribute describe the fee for each record.

HAVE

A relationship between patient and lab test that describe that this patient can have a one lab test or more, and each lab test can be done by many patients, a patient does not necessarily have a lab test, but no lab test exists if no patient will do it.

[as there is no lab test be done without a patient require and need it].

(assumption)

TAKE

A relationship between patient and medicine that describe that the patient can take one medicine or more, and each medicine type can be taken by many patients (a specific medicine

box belongs to one patient, but entity type Medicine here represent type of the medicine and its name and do on), Every medicine should be taken by a patient or more

[as there is no medicine existed in hospital without at least one patient take it].

(assumption)

PRE_MED

A relationship that describes that every prescription must have at least one type of medicine or more, but not every medicine should be came from a prescription, one medicine can be described by many prescriptions.

WRITE_PRC

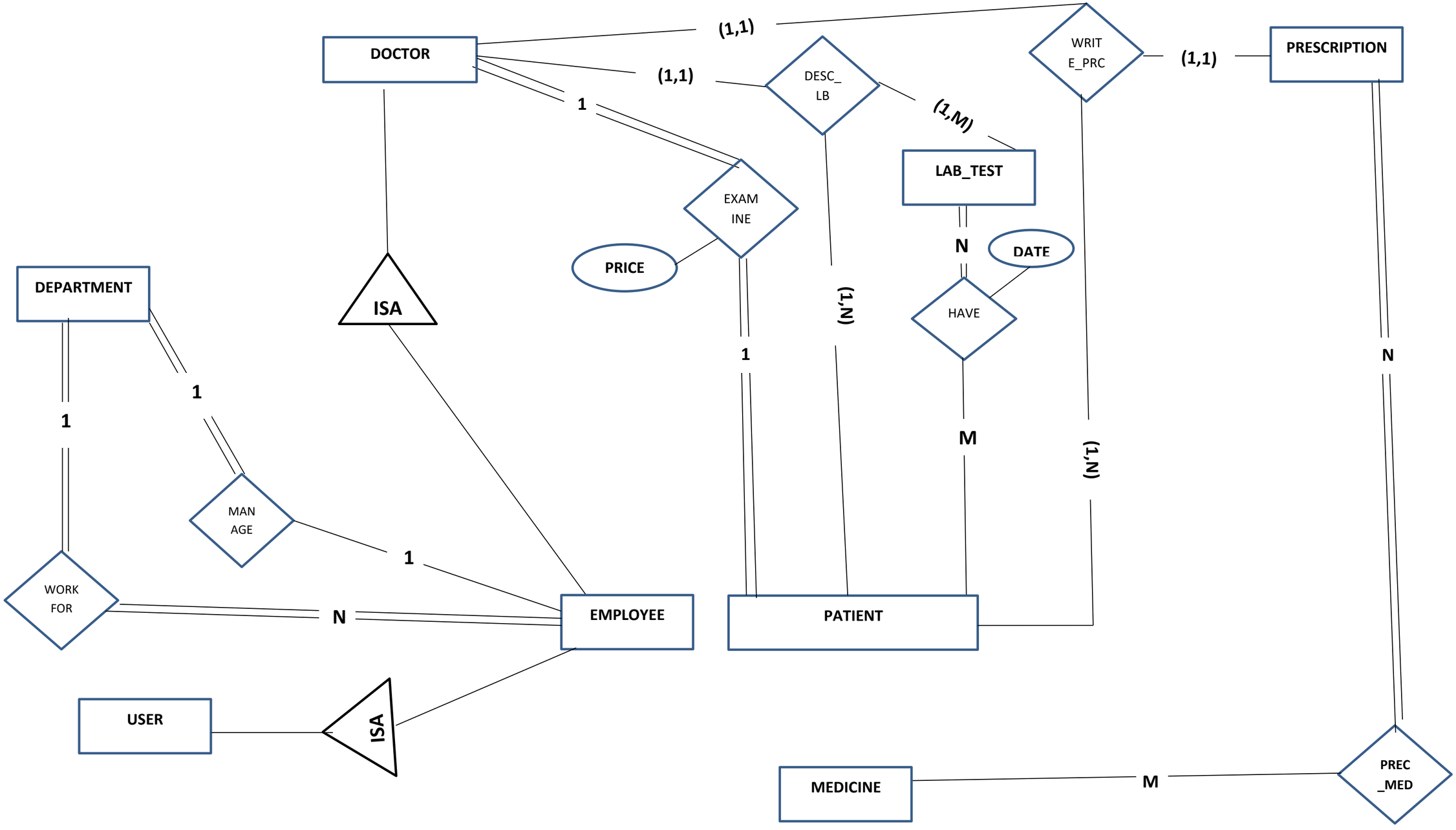
A relationship that describes that there is no prescription can be written without a doctor write it and without being forward to a patient, one doctor writes no more than one prescription to exactly one patient in specific appointment.

[If a prescription consists of many pages, it is still count as one in it].

(assumption)

DESC_LB

A relationship that describe that there is no lab test can be written without a doctor write it and without being forward to a patient, doctor can write more than one lab test , doctor can write one lab test type for one patient or more , no more than one doctor write a lab test to a patient in a specific appointment(as doctor entity type is specified by an appointment).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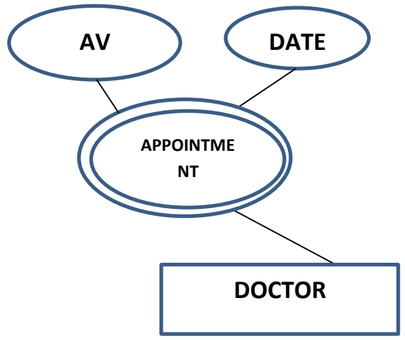
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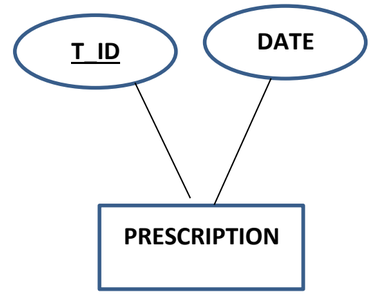
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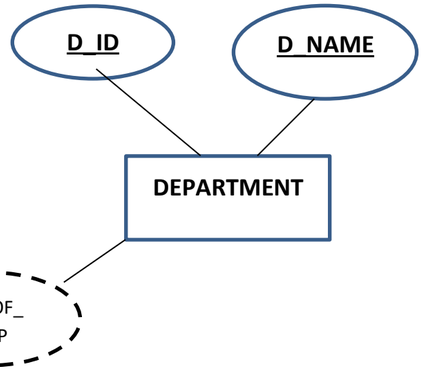
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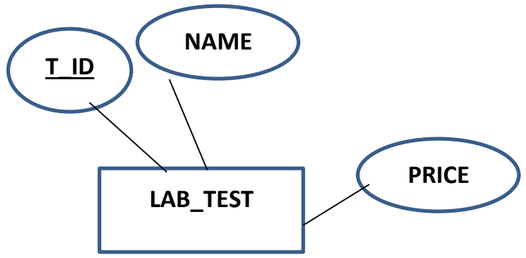
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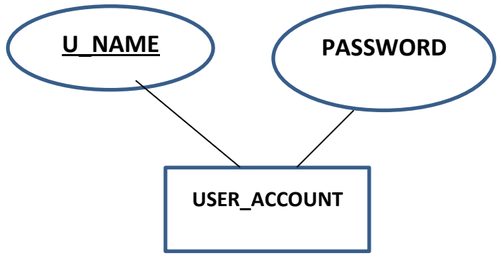
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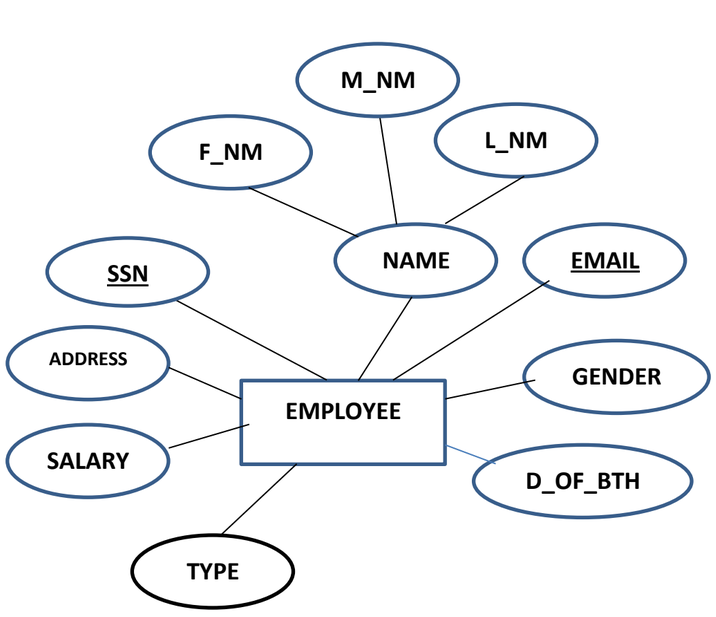
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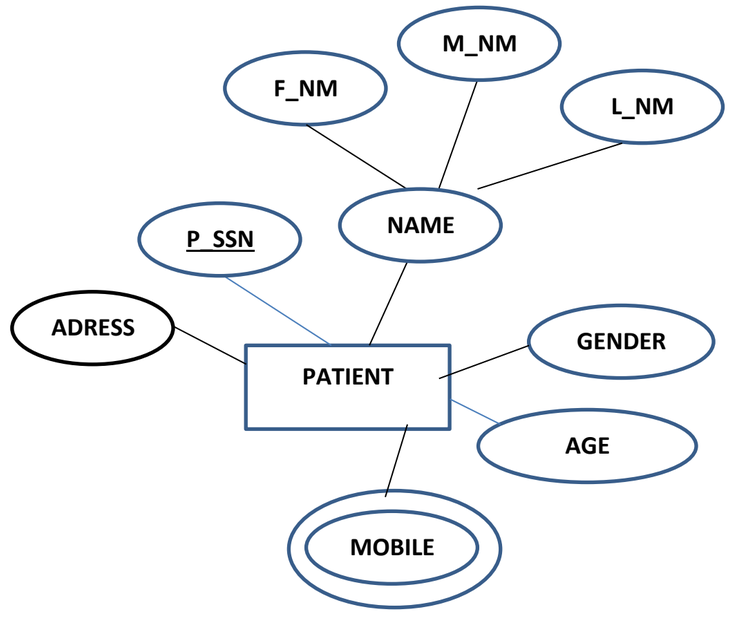
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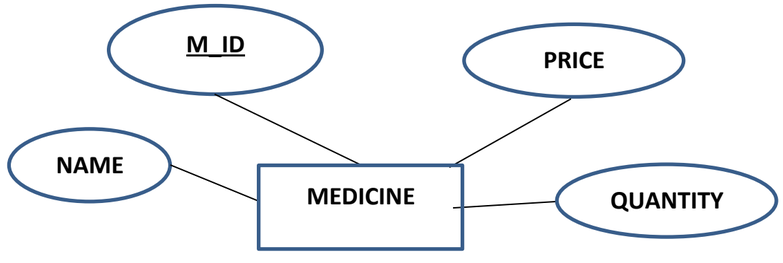
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