HOSPITAL MANAGEMENT

DATABASE

Tanta University
Faculty of Engineering
Computer Engineering and Automatic Control Department

A DATABASE FOR A HOSPITAL

COURSE TITLE : DATABASES SYSTEMS

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DESCRIPTION OF THIS DATABASE

The database represents an up running hospital and stores information about it's operation like the following :

- Stores information about the patient like his first name , last name , sex, diagnosis , email , phone number , age and his Social Security number.
- For each employee it has his first name, last name, Social Security number, age, phone number, email, and sex.**es slide**.
- For each Department there are it's name, number, capacity and the quantity of employees working in it.
- Each medical specialization has its name, id And for how many years this is specialization exists in the hospital.
- We also have three particular employees have their own info and demonstrated like the following :
    - Doctors, having their last names, Social Security numbers, scientific degrees, field, years of experience.
    - Nurses, having their last names, Social Security numbers, shift, and marital status.
    - Housekeepers, having their last names, Social Security numbers and working shifts.
- For each intensive care unit, there are it's number, floor and the landline phone number. Rooms as well have these info in addition to the room capacity.
- Each operation can be performed has it's name, unique id, ETA. The operation theater has it's number and floor.
- Clinics have their names, unique ids, landline phone number and the floor.
- Finally, the database stores for each client his name, age, Email, phone number, social security number and whether he is visiting a patient or want to reserve a clinic appointment for an examination.

Relationships and Business Rules

All of these objects are connected to each other according to the following rules :

- A doctor can manage only one specialization and each specialization is managed by only one doctor.
- Each doctor can supervise as many as possible from nurses but each nurse is supervised by only one doctor.
- one doctor can examine multiple patients but any patient can only be examined by one doctor. Each examination has a specific date, time and period.
- Doctor can perform only one operation for a specific period, but the same operation can be performed by multiple doctors.
- Doctor can run only one clinic for a specific shift and the clinic can be run by only one doctor.
- A nurse can treat multiple patients but the patient is treated by only one nurse.
- A nurse can participate in only one operation but the operation can have multiple nurses participating in it.
- A nurse can take care of multiple rooms and intensive care units but each intensive care unit and each room is taken care of by only one nurse.
- A patient stay in only one room or an icu with an entry date and expected leaving date, but multiple patients can stay in the same room.
- A patient can have only one operation on a specific date and time and an operation can be performed on only one patient.
- An operation can take place in only one operation theater for a specific period.

Relationships and Business Rules

All of these objects are connected to each other according to the following rules :

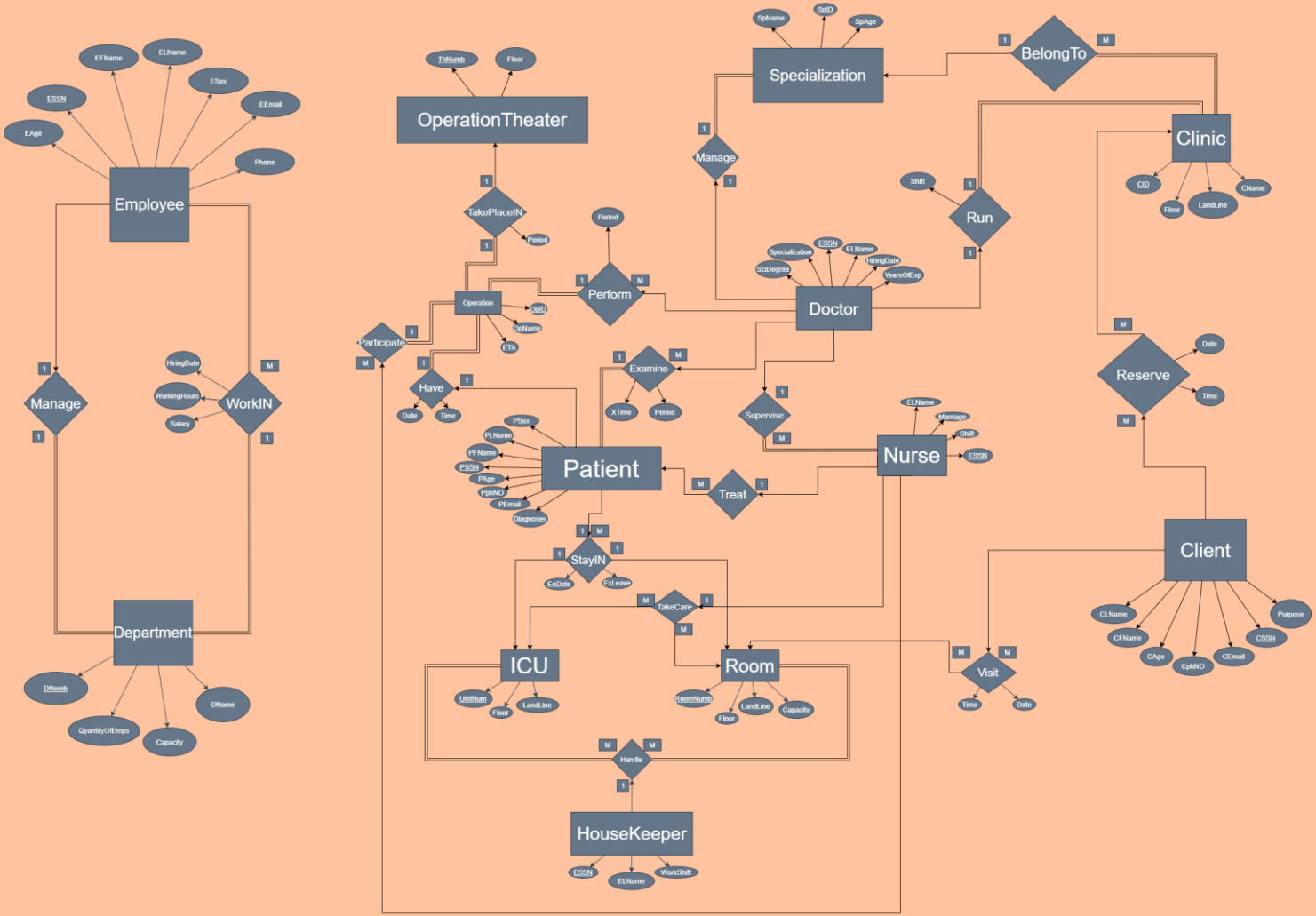
- A housekeeper handle many rooms, intensive care units but each room and each intensive care unit can be handled by only one housekeeper.
- Each clinic belong to only one specialization but the same specialization can have multiple clinics belong to it.
- A client can visit multiple rooms and the same room can be visited by multiple clients. Each visit has a specific date and time.
- Also a client can make appointments on certain dates and times to different clinics, multiple clients can make different appointment to same clinic.
- Each Employee works in only one department with a certain salary, hiring date and working hours. Same department has many employees.
- Each employee can manage only one department and the department has only one manager.

DESIGNING THE DATABASE

First phase of designing the database. :

— Entity Relationship Diagram

- The following ERD was designed using draw.io design tool.
- You can access a more clear version using this URL : http://bit.ly/3b83tZn


Employee
EFName
ELName
ESex
ESSN
EEmail
EAge
Phone
Manage
WorkIN
HiringDate
WorkingHours
Salary
Department
DNumb
DName
QyantityOfEmps
Capacity
OperationTheater
ThNumb
Floor
TakePlaceIN
Period
Operation
OpID
OpName
ETA
Participate
Have
Date
Time
Perform
Specialization
SpName
SpID
SpAge
Manage
BelongTo
Clinic
CID
CName
Floor
LandLine
Shift
Run
Doctor
Specialization
ESSN
ELName
HiringDate
SclDegree
YearsOfExp
Examine
XTime
Period
Supervise
Patient
PSex
PLName
PFName
PSSN
PAge
PphNO
PEmail
Diagnoses
Treat
Nurse
ELName
Marriage
Shift
ESSN
Reserve
Date
Time
Client
CLName
CFName
CAge
CphNO
CEmail
CSSN
Purpose
StayIN
EnDate
ExLeave
TakeCare
ICU
UnitNum
Floor
LandLine
Room
RoomNumb
Floor
LandLine
Capacity
Visit
Time
Date
Handle
HouseKeeper
ESSN
ELName
WorkShift

HANDS ON THE ER DIAGRAM

NOTES

TOTAL VS PARTIAL PARTICIPATION

We have 13 total participations against 21 partial participations.

RELATIONSHIPS ORDER

We have 3 ternary relationships against 14 binary relationships.

RELATIONSHIPS CARDINALITY

We have 6 one to one relationships, 12 one to many relationships, 2 many to many relationships.

Second phase of designing the database. :

— DETERMINING THE DATABASE TABLES

- # THE DATABASE CONTAIN THE FOLLOWING TABLES

Employee
ESSN (PK)
EFName
ELName
EAge
ESex
EEmail
Phone

Doctor
ESSN (PK)
ELName
HireDate
YearsOfExp
Field
SciDegree

Patient
PSSN (PK)
PFName
PLName
PAge
PSex
PEmail
PPhone
Diagnoses

Client
CSSN (PK)
CFName
CLName
CAge
CPhone
CEmail
Purpose

Housekeeper
ESSN (PK)
ELName
WorkShift

Nurse
ESSN (PK)
ELName
Marriage
Shift

- THE DATABASE CONTAIN THE FOLLOWING TABLES

Department
Dnum (PK)
DName
Capacity
QuOfEmps

Operation
OpID (PK)
OpName
ETA

Room
RoomNo (PK)
Capacity
RFloor
LandLine

Clinic
CID (PK)
CName
CLandLine
CFloor

Specialization
SpID (PK)
SpName
SpAge

ICU
UnitNum (PK)
ICUFloor
LandLine

OpTheater
THNum (PK)
Floor

third phase of designing the database. :

— DEFINING TABLES ATTRIBUTES & RELATIONAL SCHEMA

RELATIONAL SCHEMA

Employee

ESSN	integer	not NULL	Primary key
EFName	character	not NULL	
ELName	character	not NULL	
EAge	Integer	not NULL	
ESex	character	not NULL	
EEmail	character(30)	not NULL	pattern match:email
Phone	character(13)	not NULL	

Patient

PSSN	integer	not NULL	Primary key
PFName	character	not NULL	
PLName	character	not NULL	
PAge	integer	not NULL	
PSex	character	not NULL	
PEmail	character(30)	not NULL	pattern match:email
PPhone	character(13)	not NULL	

Doctor

ESSN	integer	not NULL	Primary key
ELName	character	not NULL	
HireDate	Date	not NULL	default: today
YearsOfExp	Integer	not NULL	
Field	character	not NULL	
SciDegree	character	not NULL	

Client

CSSN	integer	not NULL	Primary key
CFName	character	not NULL	
CLName	character	not NULL	
CAge	integer	NULL	
CPhone	character(13	not NULL	
CEmail	character(30)	not NULL	pattern match:email
Purpose	character	not NULL	

RELATIONAL SCHEMA

Nurse

ESSN	integer	not NULL	Primary key
ELName	character	not NULL	
Marriage	Boolean	NULL	
shift	character	not NULL	

Housekeeper

ESSN	integer	not NULL	Primary key
ELName	cahracter	not NULL	
WorkShift	cahracter	not NULL	

Department

Dnum	integer	not NULL	Primary key
DName	character	not NULL	
Capacity	integer	not NULL	
QuOfEmps	integer	not NULL	

Operation

OpID	integer	not NULL	Primary key
OpName	cahracter	not NULL	
ETA	integer	not NULL	

Room

RoomNo	integer	not NULL	Primary key
Capacity	integer	not NULL	
RFloor	integer	not NULL	
LandLine	integer	not NULL	

OperationTheater

THNum	integer	not NULL	Primary key
Floor	integer	not NULL	

RELATIONAL SCHEMA

Clinic

CID	integer	not NULL	Primary key
CName	character	not NULL	
CFloor	integer	NULL	
CLandLine	integer	not NULL	

Specialization

SpID	integer	not NULL	Primary key
SpName	cahracter	not NULL	
SpAge	integer	NULL	

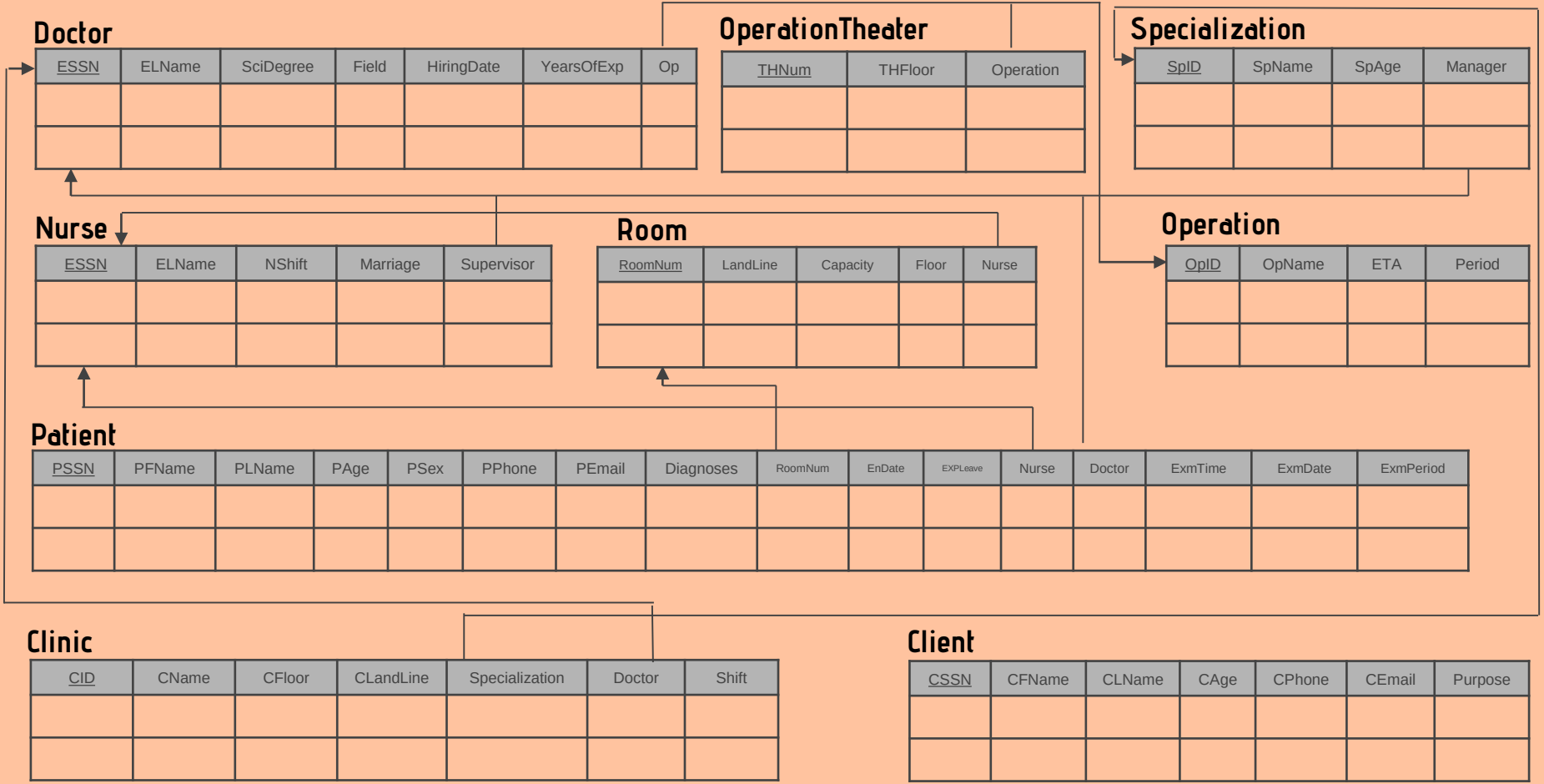
ICU

UnitNum	integer	not NULL	Primary key
ICUFloor	integer	not NULL	
LandLine	integer	not NULL	

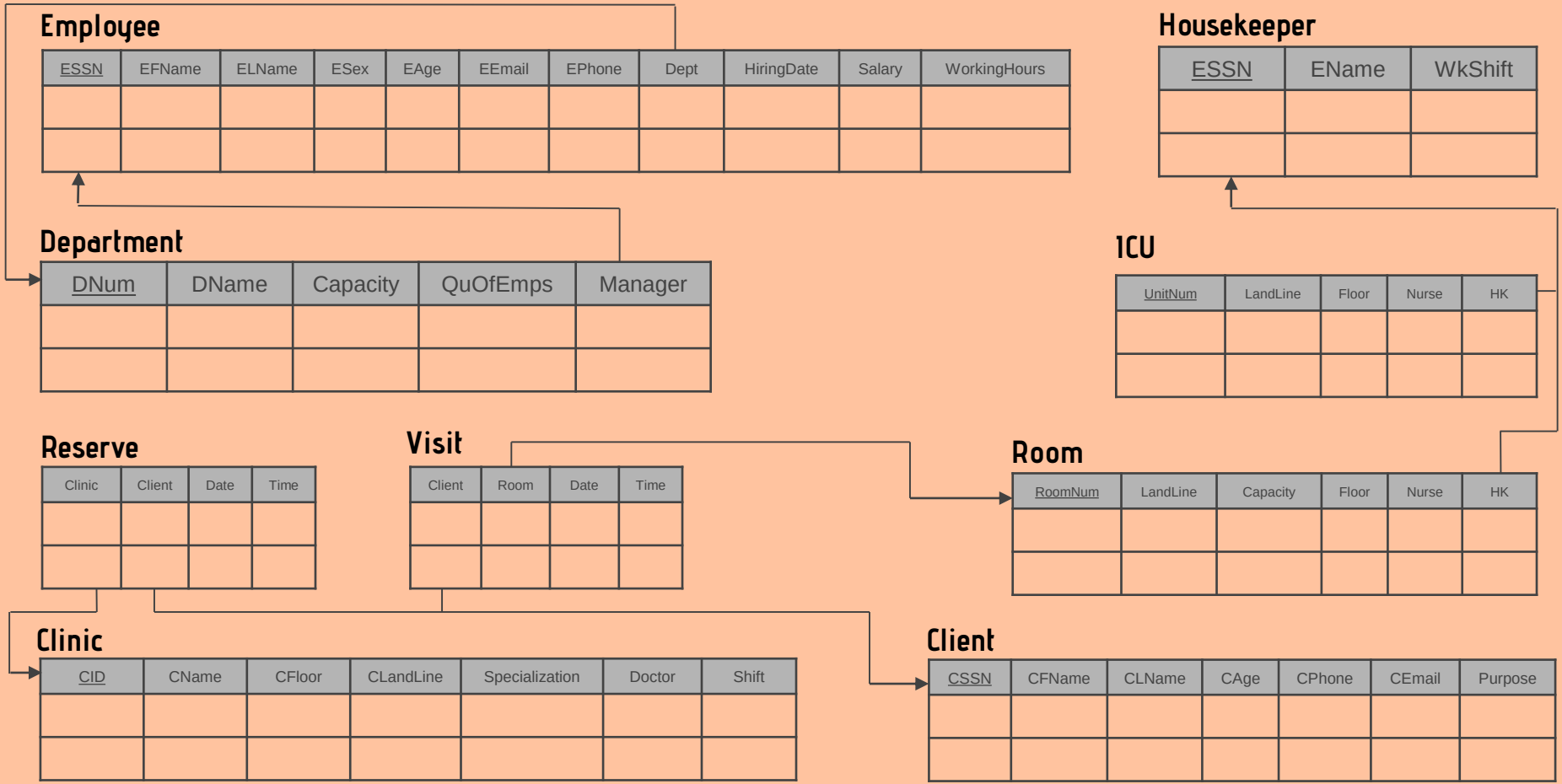
Fourth phase of designing the database. :

— MAPPING INTO RELATIONAL MODEL

HERE WE CREATE THE RELATIONS DEPENDING ON ENTITIES AND RELATIONSHIPS CARDINALITIES



HERE WE CREATE THE RELATIONS DEPENDING ON ENTITIES AND RELATIONSHIPS CARDINALITIES



— Database Coding & Implementation

- The following database code was implemented by Microsoft SQL Server Using T-SQL .
- A file contains the database code is attatched.

CREATING THE DATABASE USING DDL

```
CREATE DATABASE Hospital
```

CREATING TABLES

```
CREATE TABLE Doctor
(
ESSN int not Null PRIMARY KEY,
ELName nvarchar(30) not Null ,
HireDate date not NULL ,
YearsOfExp int not null ,
Field nvarchar(30) not null ,
SciDegree nvarchar(30) not null ,
Op int null
)
```

```
CREATE TABLE Client
(
CSSN int not null PRIMARY KEY ,
CFName nvarchar(30) not null ,
CLName nvarchar(30) not null ,
CAge int not null ,
Purpose nvarchar(30) not null ,
CEmail nvarchar(30) not null ,
CPhone nvarchar(13) not null
)
```

```
CREATE TABLE Employee
(
ESSN int not null PRIMARY KEY
EFName nvarchar(30) not null ,
ELName nvarchar(30) not null ,
EAge int not null ,
ESex nvarchar(10) not null ,
EEmail nvarchar(30) not null ,
Phone nvarchar(13) not null ,
Dept int not null ,
Hired date not null ,
Salary int not null ,
WorkHours int not null
)
```

```
CREATE TABLE HouseKeeper
(
ESSN int not null PRIMARY KEY ,
ELName nvarchar(30) not null ,
WkShift nvarchar(30) not null ,
)
```

```
CREATE TABLE Patient
(
PSSN int not null PRIMARY KEY ,
PFName nvarchar(30) not null ,
PLName nvarchar(30) not null ,
PPAge int not null ,
PSex nvarchar(10) not null ,
PEmail nvarchar(30) not null ,
PPhone nvarchar(13) not null ,
Dignoses nvarchar(100) not null ,
RoomNum int not null ,
EnDate date not null ,
ExpLeave date not null ,
Doctor int not null ,
ExmTime time not null ,
ExmDate date not null ,
ExmPeriod int not null ,
Nurse int not null
)
```

FOLLOW CREATING TABLES

```
CREATE TABLE Nurse
(
ESSN int not null PRIMARY KEY ,
ELName nvarchar(30) not null ,
NShift nvarchar(30) not null ,
Marriage BIT null ,
Supervisor int not null
)
```

```
CREATE TABLE Department
(
Dnum int not null PRIMARY KEY ,
DName nvarchar(30) not null ,
Capacity int not null ,
QuOfEmps int null ,
Manager int not null
)
```

```
CREATE TABLE Specialization
(
SpId int not Null PRIMARY KEY,
SpName nvarchar(30) not Null ,
SpAge int NULL ,
SpMAnager int not null
)
```

```
CREATE TABLE Room
(
RoomNo int not null PRIMARY KEY ,
RFloor int not null ,
Capacity int not null ,
RLandLine int null ,
RNurse int not null ,
RHK int not null
)
```

```
CREATE TABLE Opration
(
OpID int not Null PRIMARY KEY,
OpName nvarchar(15) not Null ,
ETA int not NULL ,
OpPeriod int not null
)
```

```
CREATE TABLE OperationTheater
(
THNum int not Null PRIMARY KEY,
THFloor int not Null ,
Operation int not null
)
```

```
CREATE TABLE Clinic
(
CID int not Null PRIMARY KEY,
CName nvarchar(30) not Null ,
CFloor int NULL,
CLandLine int not Null ,
CShift nvarchar(10) not null ,
Specialization int not null ,
Doct int not null
)
```

```
CREATE TABLE ICU
(
UnitNum int not Null PRIMARY KEY,
ICUFloor int not Null ,
IcuLandLine int not NULL ,
INurse int not null ,
IHK int not null
)
```

ADDING KEY CONSTRAINTS

```
Alter table Doctor
add foreign key (Op)
references Opration(OpID)
```

```
Alter table Nurse
add foreign key (Supervisor)
references Doctor(ESSN)
```

```
Alter table OperationTheater
add foreign key (Operation )
references Opration(OpID)
```

```
Alter table Specialization
add foreign key (SpMAnager )
references Doctor(ESSN)
```

```
Alter table Room
add foreign key (RNurse)
references Nurse(ESSN)
Alter table Room
add foreign key (RHK )
references HouseKeeper (ESSN)
```

```
Alter table Clinic
add foreign key (Doct)
references Doctor(ESSN)
Alter table Clinic
add foreign key (Specialization)
references Specialization(SpID)
```

```
Alter table ICU
add foreign key (INurse)
references Nurse(ESSN)
Alter table ICU
add foreign key (IHK )
references HouseKeeper (ESSN)
```

```
Alter table Patient
add foreign key (RoomNum)
references Room(RoomNo)
Alter table Patient
add foreign key (Nurse)
references Nurse(ESSN)
Alter table Patient
add foreign key (Doctor )
references Doctor(ESSN)
```

```
Alter table Employee
add foreign key (Dept)
references Department(Dnum)
```

```
Alter table Department
add foreign key (MAnager )
references Employee(ESSN)
```

MAPPING MANY TO MANY RELATIONS

```
CREATE TABLE Reserve
(
Clinic int not null,
Client int not NULL ,
RsvDate Date not null,
RsvTime Time not null
)
```

```
CREATE TABLE Visit
(
Room int not null,
Client int not NULL ,
VstDate Date not null,
VstTime Time not null
)
```

```
Alter table Reserve
add foreign key (Clinic)
references Clinic(CID)
Alter table Reserve
add foreign key (Client )
references Client (CSSN)
```

```
Alter table Visit
add foreign key (Room)
references Room(RoomNo)
Alter table Visit
add foreign key (Client )
references Client (CSSN)
```

IMPLEMENTING SOME QUERIES

Q-1. SQL query fetches “EFName” from Employee table using the alias name as <EMPLOYEE_NAME>.

```
Select EFName AS EMPLOYEE _NAME from Employee;
```

Query

	EMPLOYEE_NAME
1	Saaed
2	Salah
3	Mohsen
4	Mostafa
5	Abdo
6	Youssef
7	Ali
8	Muhammed
9	Islam

Output

Q-2. SQL query fetches “ELName” from Employee table in upper case.

```
Select upper (ELName) from Employee;
```

Query

	(No column name)
1	MUHAMMED
2	EZZ
3	AHMED
4	MAHMOUD
5	HAMZA
6	HAFEZ
7	SHABAAN
8	ALAA
9	SAMY

Output

Q-3. SQL query fetches unique values of Dignoses from Patient table.

```
Select distinct Dignoses from Patient;
```

Query

	Dignoses
1	patient

Output

Q-4. SQL query finds the first three characters of PEmail from Patient table.

```
Select substring(PEmail,1,3) from Patient;
```

Query

	(No column name)
1	ali
2	mos
3	ala
4	she
5	ezz
6	kha
7	muh
8	ism
9	ibr

Output

Q-5. SQL query prints the Field and SciDegree from Doctor table into a single column CAREER_INFO. A space char should separate them.

```
Select CONCAT(Field, ' ', SciDegree) AS ' CAREER_INFO ' from Doctor;
```

Query

	CAREER_INFO
1	Heart BSC
2	Eyes BSC
3	Bones BSC
4	Leather BSC
5	Belly BSC
6	Children BSC
7	Surgery BSC
8	Dentist BSC
9	Neurologists BSC

Output

Q-6. SQL query finds all Patient details from the Patient table order by PFName Ascending and PPAge Descending.

```
Select * from Patient order by PFName asc, PPAge desc;
```

Query

	PFName	PPAge
1	Alaa	32
2	Ali	42
3	Ezzat	54
4	Ibrahim	30
5	Ismail	29
6	Khaled	62
7	Mostafa	23
8	Muhammed	21
9	Shebl	71

Output

Q-7. SQL query finds details for Patients with the first name as “Ahmed” or “Mona” from Patient table.

```
Select * from Patient where PFName in (' Ibrahim ','Shebl');
```

Query

	PSSN	PFName	PLName	PPAge	PSex	PEmail	PPhone	Dignoses	RoomNum	EnDate	ExpLeave	Doctor	ExmTime	ExmDate	ExmPeriod	Nurse
1	500503	Shebl	Tarek	71	Male	shebl@info.com	141516	patient	3	2020-05-10	2020-11-11	200203	08:00:00.0000000	2020-10-10	2	300103
2	500508	Ibrahim	Sobhy	30	Male	ibrahim@info.com	192021	patient	8	2020-05-10	2020-11-11	200208	08:00:00.0000000	2020-10-10	2	300108

Output

Q-8. SQL query finds details of Employess excluding first names, “Ali” and “Sara” from Worker table.

```
Select * from Employee where EFName not in ('Ali','Salah');
```

Query

	ESSN	EFName	ELName	EAge	ESex	EEmail	Phone	Dept	Hired	Salary	WorkHours
1	600600	Saaed	Muhammed	23	Male	saaed@info.com	777333	700100	2019-02-02	4000	8
2	600602	Mohsen	Ahmed	20	Male	mohsen@info.com	444999	700102	2019-02-02	3500	8
3	600603	Mostafa	Mahmoud	26	Male	mostafa@info.com	111222	700103	2019-02-02	4200	8
4	600604	Abdo	Hamza	28	Male	abdo@info.com	444888	700104	2019-02-02	4500	8
5	600605	Youssef	Hafez	27	Male	youssef@info.com	777555	700105	2019-02-02	6000	8
6	600607	Muhammed	Alaa	26	Male	Muhammed@info.com	111888	700107	2019-02-02	4800	8
7	600608	Islam	Samy	24	Male	islam@info.com	777555	700108	2019-02-02	4700	8

Output

Q-9. SQL query finds details of Department with DName as “Admin”.

```
Select * from Department where DName like 'Admin%';
```

Query

	Dnum	DName	Capacity	QuOfEmps	Manager
1	700100	Mange	100	20	600600

Output

Q-10. SQL query finds details of the Patients whose PFName contains ‘a’.

```
Select * from Patient where PFName like '%a%';
```

Query

	PSSN	PFName	PLName	PPAge	PSex	PEmail	PPhone	Dignoses	RoomNum	EnDate	ExpLeave	Doctor	ExmTime	ExmDate	ExmPeriod	Nurse
1	500500	Ali	Ahmed	42	Male	ali@info.com	111213	patient	0	2020-05-10	2020-11-11	200200	08:00:00.0000000	2020-10-10	2	300100
2	500501	Mostafa	Mahmoud	23	Male	mostafa@info.com	121314	patient	1	2020-05-10	2020-11-11	200201	08:00:00.0000000	2020-10-10	2	300101
3	500502	Alaa	Muhammed	32	Male	alaa@info.com	131415	patient	2	2020-05-10	2020-11-11	200202	08:00:00.0000000	2020-10-10	2	300102
4	500504	Ezzat	Samy	54	Male	ezzat@info.com	151617	patient	4	2020-05-10	2020-11-11	200204	08:00:00.0000000	2020-10-10	2	300104
5	500505	Khaled	Abaas	62	Male	khaled@info.com	161718	patient	5	2020-05-10	2020-11-11	200205	08:00:00.0000000	2020-10-10	2	300105
6	500506	Muhammed	Sabry	21	Male	muhammed@info.com	171819	patient	6	2020-05-10	2020-11-11	200206	08:00:00.0000000	2020-10-10	2	300106
7	500507	Ismail	Alaa	29	Male	ismail@info.com	181920	patient	7	2020-05-10	2020-11-11	200207	08:00:00.0000000	2020-10-10	2	300107
8	500508	Ibrahim	Sobhy	30	Male	ibrahim@info.com	192021	patient	8	2020-05-10	2020-11-11	200208	08:00:00.0000000	2020-10-10	2	300108

Output

Q-11. SQL query finds details of the Employees whose EFName ends with ‘h’ and contains six alphabets.

```
Select * from Employee where EFName like '____h';
```

Query

	ESSN	EFName	ELName	EAge	ESex	EEmail	Phone	Dept	Hired	Salary	WorkHours
1	600601	Salah	Ezz	21	Male	salah@info.com	888555	700101	2019-02-02	3000	8

Output

Q-12. SQL query finds details of the Employees whose Salary lies between 4000 and 20000.

```
Select * from Employee where Salary between 4000 and 20000;
```

Query

	ESSN	EFName	ELName	EAge	ESex	EEmail	Phone	Dept	Hired	Salary	WorkHours
1	600600	Saaed	Muhammed	23	Male	saaed@info.com	777333	700100	2019-02-02	4000	8
2	600603	Mostafa	Mahmoud	26	Male	mostafa@info.com	111222	700103	2019-02-02	4200	8
3	600604	Abdo	Hamza	28	Male	abdo@info.com	444888	700104	2019-02-02	4500	8
4	600605	Youssef	Hafez	27	Male	youssef@info.com	777555	700105	2019-02-02	6000	8
5	600606	Ali	Shabaan	29	Male	ali@info.com	333222	700106	2019-02-02	5000	8
6	600607	Muhammed	Alaa	26	Male	Muhammed@info.com	111888	700107	2019-02-02	4800	8
7	600608	Islam	Samy	24	Male	islam@info.com	777555	700108	2019-02-02	4700	8

Output

Q-13. SQL query finds details of the Employees who have been hired in Feb'2019.

```
Select * from Employee where year(Hired) = 2019 and month(Hired) = 2;
```

Query

	ESSN	EFName	ELName	EAge	ESex	EEmail	Phone	Dept	Hired	Salary	WorkHours
1	600600	Saaed	Muhammed	23	Male	saaed@info.com	777333	700100	2019-02-02	4000	8
2	600601	Salah	Ezz	21	Male	salah@info.com	888555	700101	2019-02-02	3000	8
3	600602	Mohsen	Ahmed	20	Male	mohsen@info.com	444999	700102	2019-02-02	3500	8
4	600603	Mostafa	Mahmoud	26	Male	mostafa@info.com	111222	700103	2019-02-02	4200	8
5	600604	Abdo	Hamza	28	Male	abdo@info.com	444888	700104	2019-02-02	4500	8
6	600605	Youssef	Hafez	27	Male	youssef@info.com	777555	700105	2019-02-02	6000	8
7	600606	Ali	Shabaan	29	Male	ali@info.com	333222	700106	2019-02-02	5000	8
8	600607	Muhammed	Alaa	26	Male	Muhammed@info.com	111888	700107	2019-02-02	4800	8
9	600608	Islam	Samy	24	Male	islam@info.com	777555	700108	2019-02-02	4700	8

Output

Q-14. SQL query finds the count of Rooms existing in the third floor.

```
SELECT COUNT(RoomNO) FROM Room WHERE RFloor = 6 ;
```

Query

	(No column name)
1	2

Output

Q-15. SQL query to finds the number of Clinics whose LandLine number starts with 2.

```sql
SELECT count(CID) FROM Clinic WHERE CAST( CLandLine as nvarchar(50) ) LIKE '2%';
```

Query

	(No column name)
1	9

Output

Q-16. SQL query finds Last Names and Fields of the Doctors who run specializations and have more than 5 years of experience.

```sql
SELECT ELName, Field
FROM Doctor, Specialization
Where ESSN = SpMAnager AND YearsOfExp > 5 ;
```

Query

	ELName	Field
1	Zezo	Surgery
2	Mada	Dentist
3	Abdo	Neurologists

Output

Q-17. SQL query shows the ELName and salary of the Employees with the second highest salary from a table.

	ELName	Salary
1	Shabaan	5000

Output

```sql
SELECT ELName , Salary FROM Employee
WHERE Salary in (SELECT max(Salary) from Employee
                 where Salary not in (SELECT max(Salary) from Employee) );
```

Query

Q-18. SQL query shows all departments along with the number of people in there in descending order.

```
SELECT DName As 'Name' , QuOfEmps as 'Number of Workers'
FROM Department ORDER BY QuOfEmps desc
```

Query

	Name	Number of Workers
1	Cairo	40
2	Tala	31
3	Tawzef	30
4	Zefta	28
5	Santa	26
6	Nables	25
7	Mange	20
8	Menof	18
9	Tanta	15

Output

Q-19. SQL query finds the departments that have less than ten people in it.

```
SELECT DName As 'Name' , QuOfEmps as 'Number of Workers' FROM Department
WHERE QuOfEmps < 20
ORDER BY QuOfEmps decs;
```

Query

	Name	Number of Workers
1	Tanta	15
2	Menof	18

Output

Q-20. SQL query finds the names of Employees who earn the highest salary.

```
SELECT EFName, ELName, Salary from Employee WHERE Salary =(SELECT max(Salary) from Employee);
```

Query

Output

	EFName	ELName	Salary
1	Youssef	Hafez	6000

Q-21. SQL query gives a list of rooms, of Intensive Care Units that share the same nurse as the following: Room Number – ICU Number – Nurse Name .

```
SELECT Room.RoomNo AS 'Room Number' ,
ICU.UnitNum AS 'ICU Number' ,
Nurse.ELName AS 'Nurse Name'
FROM ICU , Room , Nurse
WHERE Room.RNurse = ICU.INurse AND Nurse.ESSN = ICU.INurse ;
```

Query

	Room Number	ICU Number	Nurse Name
1	0	700700	Tahani
2	1	700701	Aliaa
3	2	700702	Menna
4	3	700703	Manar
5	4	700704	Aya
6	5	700705	Hader
7	6	700706	Hanan
8	7	700707	Eman
9	8	700708	Amany

Output

Q-22. SQL query shows which patient is examined by which doctor.

```
SELECT Patient.PLName , Doctor.ELName
FROM Patient , Doctor
WHERE Patient.Doctor = Doctor.ESSN ;
```

Query

	PLName	ELName
1	Ahmed	Nabil
2	Mahmoud	Ahmed
3	Muhammed	Fekry
4	Tarek	Omar
5	Samy	Tarek
6	Abaas	Alaa
7	Sabry	Zezo
8	Alaa	Mada
9	Sobhy	Abdo

Output

Q-23. SQL query to finds details of the youngest Patient.

```
Select top 1 * from Patient order by PPAge desc;
```

Query

	PSSN	PFName	PLName	PPAge	PSex	PEmail	PPhone	Dignoses	RoomNum	EnDate	ExpLeave	Doctor	ExmTime	ExmDate	ExmPeriod	Nurse
1	500503	Shebl	Tarek	71	Male	shebl@info.com	141516	patient	3	2020-05-10	2020-11-11	200203	08:00:00.0000000	2020-10-10	2	300103

Output

Q-24. SQL query shows name of which Client is visiting which Patient.

```
SELECT Client.CLName , Patient.PLName , Visit.Room
FROM Client , Patient , Visit
WHERE Visit.Room = Patient.RoomNum AND Visit.Client = Client.CSSN ;
```

Query

	CLName	PLName	Room
1	Ahmed	Ahmed	0
2	Ali	Mahmoud	1
3	Ahmed	Muhammed	2
4	Mostafa	Tarek	3
5	Muhammed	Samy	4
6	Mahmoud	Abaas	5
7	Muhammed	Sabry	6
8	Ibrahim	Alaa	7
9	Nabil	Sobhy	8

Output

Q-25. SQL query shows Name of which Clinic is reserved by which client.

```
SELECT Clinic.CName , Client.CLName
FROM Clinic , Reserve , Client
WHERE Reserve.Client = Client.CSSN AND Reserve.Clinic = Clinic.CID ;
```

Query

	CName	CLName
1	Alamal	Ahmed
2	Alamal	Ali
3	Alhaya	Ahmed
4	Alhaya	Mostafa
5	Teba	Muhammed
6	Teba	Mahmoud
7	Dar-AlShefaa	Muhammed
8	Dar-AlShefaa	Ibrahim
9	Alsalama	Nabil

Output

Q-26. SQL query shows Which nurse is supervised by each doctor.

```
SELECT Nurse.ELName , Doctor.ELName  FROM Nurse , Doctor
WHERE Nurse.Supervisor = Doctor.ESSN ;
```

Query

	ELName	ELName
1	Tahani	Nabil
2	Aliaa	Ahmed
3	Menna	Fekry
4	Manar	Omar
5	Aya	Tarek
6	Hader	Alaa
7	Hanan	Zezo
8	Eman	Mada
9	Amany	Abdo

Output

Q-27. SQL query shows which operation performed Doctor with experience less than 5 years.

```
SELECT Doctor.ELName , Opration.OpName FROM Doctor , Opration
WHERE Doctor.Op = Opration.OpID AND Doctor.YearsOfExp < 5 ;
```

Query

	ELName	OpName
1	Nabil	Heart
2	Ahmed	Eyes
3	Omar	Leather
4	Tarek	Belly
5	Alaa	Tonsil

Output

Q-28. SQL query shows Names of all clinics Belongs to Heart specialization.

```
SELECT CName FROM Clinic
WHERE Clinic.Specialization = ( SELECT SpID FROM Specialization WHERE SpName = 'Heart') ;
```

Query

	CName
1	Alamal

Output

Q-29. SQL query shows details of rooms have capacity more than 1 patient.

```
SELECT * FROM Room WHERE Capacity > 1 ;
```

Query

	RoomNo	RFloor	Capacity	RLandLine	RNurse	RHK
1	0	5	5	4545	300100	400400
2	1	5	5	4545	300101	400401
3	2	6	5	4546	300102	400402
4	3	6	5	4546	300103	400403
5	4	7	4	4547	300104	400404
6	5	7	4	4547	300105	400405
7	6	8	4	4548	300106	400406
8	7	8	4	4548	300107	400407
9	8	9	4	4549	300108	400408

Output

Q-30. SQL query shows Departments Managed by Employees older than 40 years old or have Salary more than 4000.

```
SELECT DName FROM Department
WHERE Manager in ( SELECT ESSN FROM Employee WHERE EAge > 40 OR Salary > 4000 ) ;
```

Query

	DName
1	Cairo
2	Tanta
3	Menof
4	Tala
5	Santa
6	Zefta

Output

THANK YOU