Introduction to Database

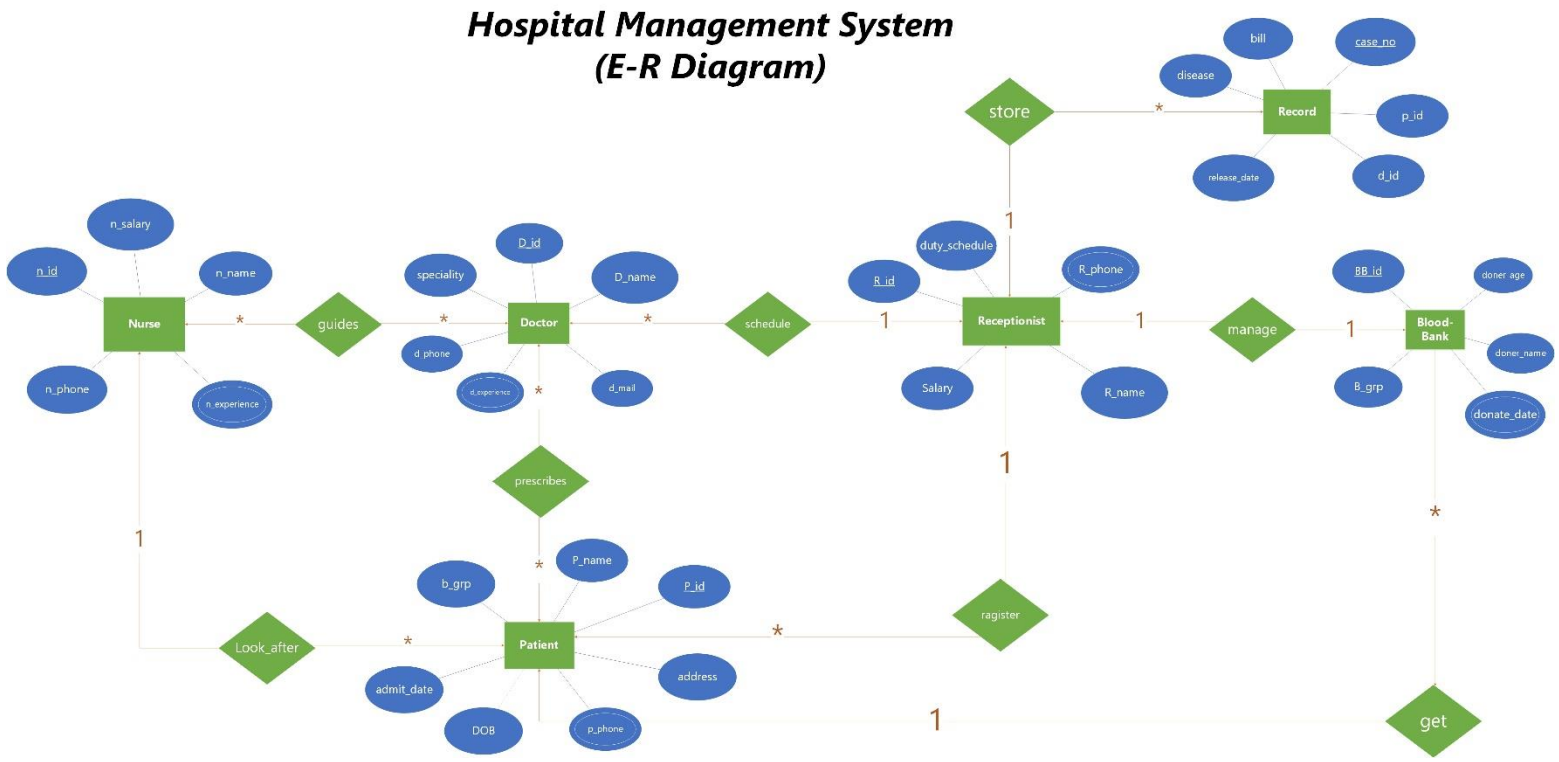
Project: Hospital Management System

section: H

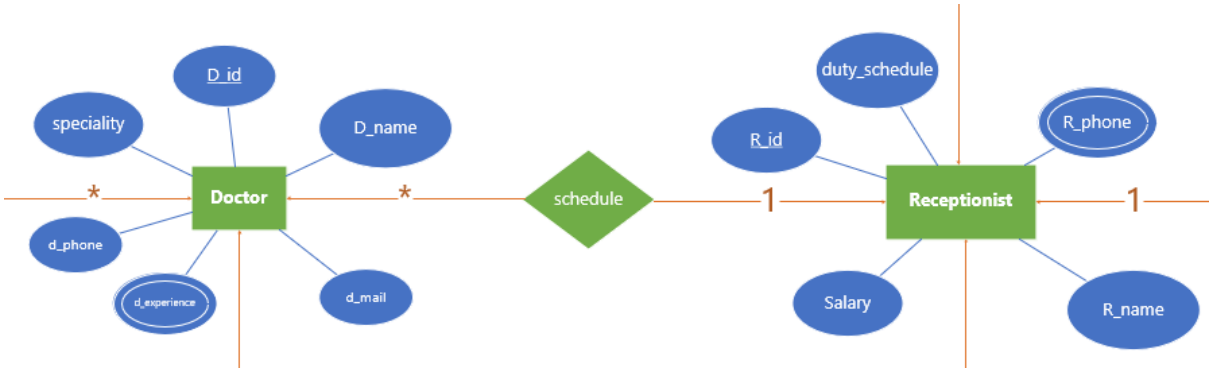
ID	Name
19-41126-2	Rashedul Islam
19-41153-2	Asif Hasan
19-41163-2	Sha Md. Monem Uddin
19-41162-2	Saiful Islam Bhuiyan
18-38782-3	Israk Afjal Noor

Hospital Management System

- Receptionist has details of name, phone no, duty-schedules, salary and can be identified uniquely by id. He/she can schedule with doctors, store records, and manage blood.
- Doctor has unique id, name, phone no, e-mail, specialty, multivalued experience. He may guide multiple nurses and prescribe multiple patients with medicines.
- Nurse has unique id, name, phone no, multivalued experience, salary. A nurse may get instructions from multiple doctors and look after multiple patients.
- Patient needs to register himself to a receptionist with information like names, blood group, address, multivalued phone no, date of birth and will be provided with unique id and admit date. Patients may be prescribed by multiple doctors or looked after by multiple nurses during the session.
- Blood-bank will ensure the availability of bloods with unique id, blood group, doner name, multivalued donate date. Blood bank will provide patients blood as much as needed.
- Record will store all the patient history with unique case no, patient id, doctor id by whom treated, disease, bill and release date.



NORMALIZATION



Schedule- (D_id, D_phone, D_name, mail, speciality, D_experience, R_id, R_name, duty_schedule, R_phone, R_salary)

Cardinality: Many to One

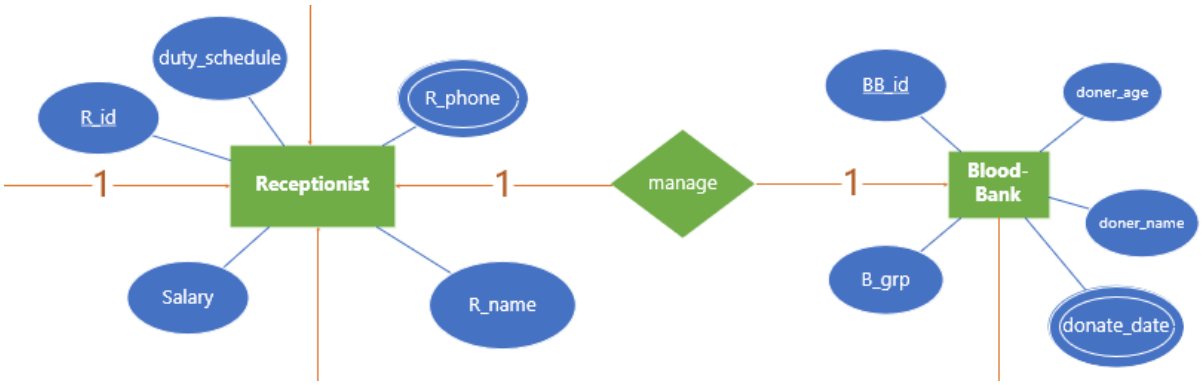
1NF: D_experience, R_phone are multivalued attribute.

2NF: D_id, D_phone, D_name, D_mail, D_speciality, D_experience
R_id, R_name, duty_schedule, R_phone, R_salary

3NF: D_id, D_phone, D_name, D_mail, D_speciality, D_experience
R_id, R_name, duty_schedule, R_phone, R_salary

Table for Schedule:

1. D_id, D_name,d_phone D_speciality, D_mail, R_id
2. R_id, R_name, duty_schedule, R_salary
3. D_id, D_experience - Composit PK
4. R_id, R_phone- Composit PK



Manage- (R_id, R_name, duty_schedule, R_phone, R_salary, BB_id, doner_name,doner_age, B_grp, donate_date)

Cardinality: One to One

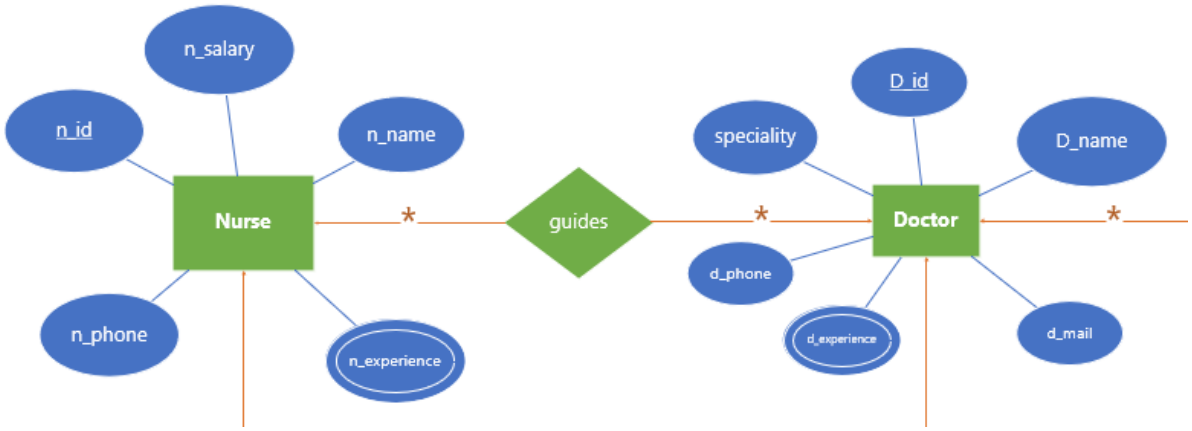
1NF: R_phone, donate_date are multivalued attribute

2NF: R_id, R_name, duty_schedule, R_phone, R_salary
BB_id, doner_name,doner_age, B_grp, donate_date

3NF: R_id, R_name, duty_schedule, R_phone, R_salary
BB_id, B_grp,
Doner_id, doner_name, doner_age,donate_date

Table for Manage:

1. R_id, R_name, duty_schedule, R_salary, BB_id
2. BB_id, B_grp, Doner_id
3. Doner_id, doner_name,doner_age
4. R_id, R_phone- Composit PK
5. Doner_id , donate_date- Composit PK



Guides- (N_id, N_name, salary, N_phone, N_experience, D_id, D_name, D_phone, mail, speciality, D_experience)

Cardinality: Many to Many

1NF: N_experience and D_experience are multivalued attribute

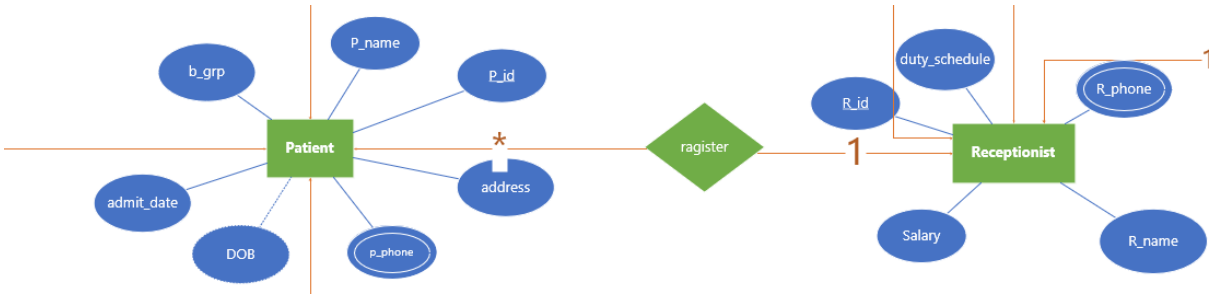
2NF: N_id , N_name, N_salary, N_phone, N_experience
D_id, D_phone, D_name, mail, speciality, D_experience

3NF: N_id , N_name, N_salary, N_phone, N_experience
D_id, D_phone, D_name, mail, speciality, D_experience

Table for guides:

1. N_id , N_name, N_salary, N_phone

2. D_id, D_phone, D_name, mail, speciality
3. Unit_id, N_id, D_id
4. N_id, N_experience- Composit PK
5. D_id, D_experience- Composit PK



Register- (P_id, P_name, b_grp, admit_date, DOB, P_phone, address,R_id, duty_schedule, R_phone, R_name, R_salary)

Cardinality: Many to One

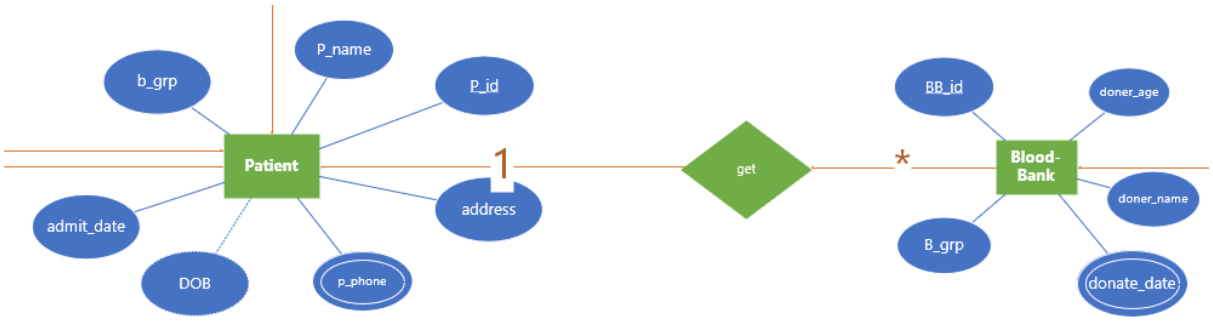
1NF: P_phone, R_phone are multivalued attribute

2NF: P_id, P_name, b_grp, admit_date, DOB, P_phone, address
R_id, R_name, duty_schedule, R_phone, R_salary

3NF: P_id, P_name, b_grp, admit_date, DOB, P_phone, address
R_id, R_name, duty_schedule, R_phone, R_salary

Table for Register:

1. P_id, P_name, b_grp, admit_date, DOB, address, R_id
2. R_id, R_name, duty_schedule, R_phone, R_salary
3. P_id, P_phone- Composit PK
4. R_id, R_phone- Composit PK



Get- (P_id, P_name, b_grp, admit_date, DOB, P_phone, address, BB_id, doner_name,doner_age, B_grp, donate_date)

Cardinality: One to Many

1NF: P_phone and donate_date are multivalued attribute

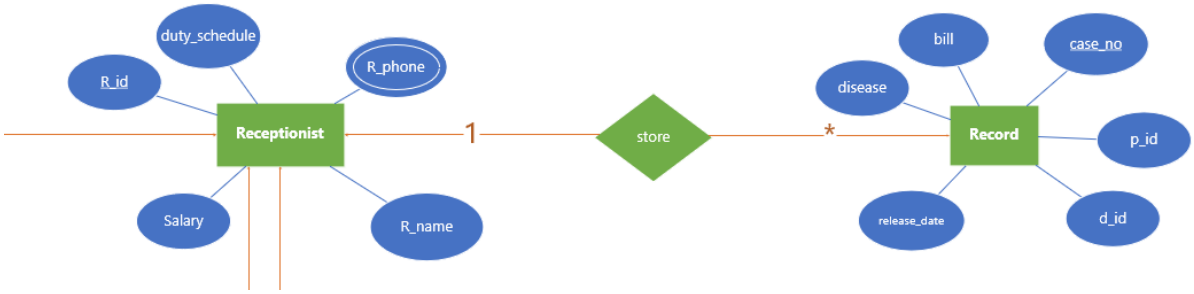
2NF: P_id, P_name, b_grp, admit_date, DOB, P_phone, address
BB_id, doner_name,doner_age, B_grp, donate_date

3NF: doner_name ,doner_age, donate_date have transitive dependency

P_id, P_name, b_grp, admit_date, DOB, P_phone, address
BB_id, B_grp
Doner_id, doner_name,doner_age, donate_date

Table for Get-

1. P_id, P_name, b_grp, admit_date, DOB, address, bb_id
2. BB_id, B_grp, Doner_id,
3. Doner_id, doner_name,doner_age
4. Doner_id , donate_date- Composit PK
5. P_id, P_phone- Composit PK



Store- (R_id, R_name, duty_schedule, R_phone, R_salary, case_no, bill, P_id, disease, release_date)

Cardinality: One to many

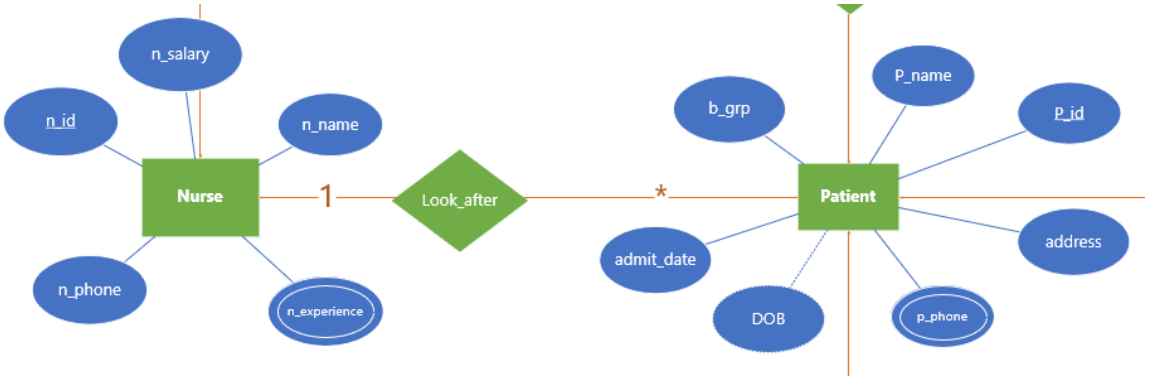
1NF: R_phone is a multivalued attribute.

2NF: R_id, R_name, duty_schedule, R_phone, R_salary
Case_no, disease, bill, P_id, P_name, release_date

3NF: R_id, R_name, duty_schedule, R_phone, R_salary
Case_no, disease, bill, release_date
Unit_id, P_id, P_name
R_id, R_phone- Composit PK

Table for Store-

1. R_id, R_name, duty_schedule, R_salary
2. Case_no, disease, bill, release_date, R_id
3. R_id, R_phone- Composit PK
4. s_id, p_id,d_id



look_after–(n_id, n_name, n_salary, n_phone, n_experience, p_id, p_name, p_phone, b_grp, address, admit_date, DOB **)**
Cardinality: one to many

1NF – n_experience, p_phone are multivalued attribute

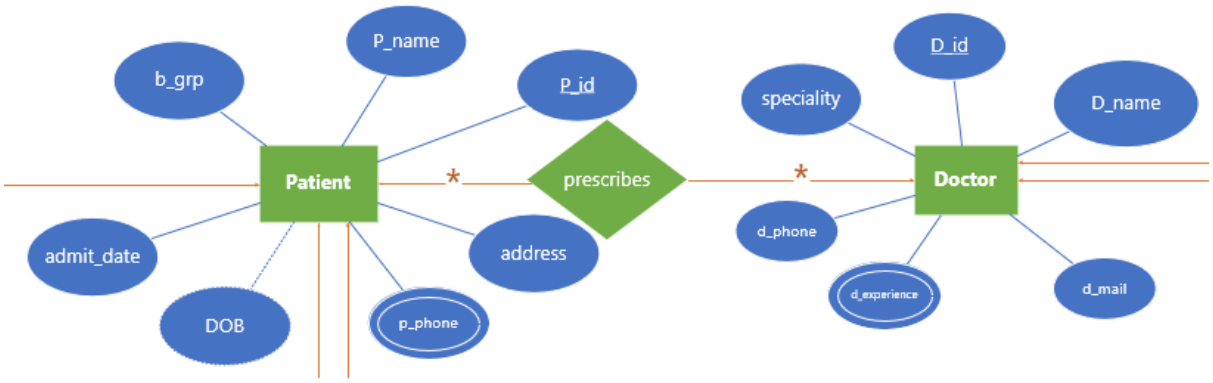
2NF – n_id,n_name,n_salary,n_phone,n_experience
p_id,p_name, p_phone,b_grp,address,admit date,DOB

3NF – no transitive dependency

n_id,n_name,n_salary,n_phone,n_experience
p_id,p_name, p_phone,b_grp,address,admit date,DOB

Table for treats –

1. n_id,n_name,n_salary,n_phone
2. p_id,p_name, b_grp,address,admit date,DOB, n_id
3. P_id, P_phone- Composit PK
4. n_id,n_experience- Composit PK



prescribe- (d_id, d_name ,d_phone ,d_mail ,d_experience ,d_speciality, p_id, p_name, p_phone, b_grp, address, admit_date, DOB **)**

Cardinality: Many to many

1NF – d_experience and p_phone are multivalued

2NF – d_id, d_name,d_phone,d_mail,d_experience,d_speciality
p_id,p_name, p_phone,b_grp,address,admit date,DOB

3NF – no transitive dependency

d_id, d_name,d_phone,d_mail,d_experience,d_speciality
p_id,p_name, p_phone,b_grp,address,admit date,DOB

Table for prescribe –

1. d_id, d_name,d_phone,d_mail, d_speciality
2. p_id,p_name, b_grp,address,admit date,DOB
3. s__id,d_id,p_id
4. D_id, D_experience - Composit PK
5. P_id, P_phone- Composit PK

Final tables for Hospital:

1. D_id, D_name,d_phone D_speciality, D_mail, R_id ---doctors
2. D_id, D_experience - Composit PK --dr_exp
3. R_id, R_phone- Composit PK --rec_phn
4. R_id, R_name, duty_schedule, R_salary, BB_id ---receptionists
5. BB_id, B_grp, Doner_id,p_id --blood_bank
6. Doner_id, doner_name,doner_age --doner
7. Doner_id , donate_date- Composit PK --dnr_rec
8. N_id , N_name, N_salary, N_phone --nurses
9. Unit_id, N_id, D_id --unit
10. N_id, N_experience- Composit PK --n_exp
11. P_id, P_name, b_grp, admit_date, DOB, address, R_id, n_id --patients
12. P_id, P_phone - Composit PK --p_phn
13. Case_no, disease, bill, release_date, R_id,s_id --records
14. s_id,d_id,p_id --treatment

DESC Table

1.Doctor

Object Type TABLE Object DOCTORS

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
DOCTORS	D_ID	Number	-	10	0	1	-	-	-
	D_NAME	Varchar2	30	-	-	-	✓	-	-
	D_PHONE	Number	-	30	0	-	✓	-	-
	D_SPECIALITY	Varchar2	30	-	-	-	✓	-	-
	D_MAIL	Varchar2	30	-	-	-	✓	-	-
	R_ID	Number	-	10	0	-	✓	-	-
									1 - 6

FK -> *alter table doctors add constraint cons1_2 foreign key(r_id) references receptionists(r_id) on delete set null*

2.Dr_exp

Object Type **TABLE** Object **DR_EXP**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
DR_EXP	D_ID	Number	-	10	0	1	-	-	-
	D_EXPERIENCE	Varchar2	30	-	-	2	-	-	-
									1 - 2

3.Rec_phn

Object Type **TABLE** Object **REC_PHN**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
REC_PHN	R_ID	Number	-	10	0	1	-	-	-
	R_PHONE	Number	-	15	0	2	-	-	-
									1 - 2

4.Receptionists

Object Type **TABLE** Object **RECEPTIONISTS**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
RECEPTIONISTS	R_ID	Number	-	10	0	1	-	-	-
	R_NAME	Varchar2	30	-	-	-	✓	-	-
	DUTY_SCHEDULE	Varchar2	30	-	-	-	✓	-	-
	R_SALARY	Number	-	30	0	-	✓	-	-
	BB_ID	Number	-	10	0	-	✓	-	-
									1 - 5

FK -> alter table receptionists add constraint cons4_2 foreign key(bb_id) references blood_bank(bb_id) on delete set null

5.Blood_bank

Object Type **TABLE** Object **BLOOD_BANK**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
BLOOD_BANK	BB_ID	Number	-	10	0	1	-	-	-
	B_GRP	Varchar2	30	-	-	-	✓	-	-
	DONER_ID	Number	-	10	0	-	✓	-	-
	P_ID	Number	-	10	0	-	✓	-	-
									1 - 4

FK -> alter table blood_bank add constraint cons5_2 foreign key(doner_id) references doner(doner_id) on delete set null
FK -> alter table blood_bank add constraint cons5_3 foreign key(p_id) references patients(p_id) on delete set null

6.Doner

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
DONER	DONER_ID	Number	-	10	0	1	-	-	-
	DONER_NAME	Varchar2	30	-	-	-	✓	-	-
	DONER_AGE	Number	-	-	0	-	-	-	-
									1 - 3

7.Dnr_rec

Object Type **TABLE** Object **DNR_REC**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
DNR_REC	DONER_ID	Number	-	10	0	1	-	-	-
	DONATE_DATE	Date	7	-	-	2	-	-	-
									1 - 2

8.Nurses

Object Type **TABLE** Object **NURSES**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
NURSES	N_ID	Number	-	10	0	1	-	-	-
	N_NAME	Varchar2	30	-	-	-	✓	-	-
	N_SALARY	Number	-	10	0	-	✓	-	-
	N_PHONE	Number	-	30	0	-	✓	-	-
									1 - 4

9.Unit

Object Type **TABLE** Object **UNIT**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
UNIT	UNIT_ID	Number	-	10	0	1	-	-	-
	D_ID	Number	-	10	0	-	✓	-	-
	N_ID	Number	-	10	0	-	✓	-	-
									1 - 3

FK -> *alter table unit add constraint cons9_2 foreign key(d_id) references doctors(d_id) on delete set null*
FK -> *alter table unit add constraint cons9_3 foreign key(n_id) references nurses(n_id) on delete set null*

10.n_exp

Object Type **TABLE** Object **N_EXP**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
N_EXP	N_ID	Number	-	10	0	1	-	-	-
	N_EXPERIENCE	Varchar2	30	-	-	2	-	-	-
									1 - 2

11.Patients

Object Type **TABLE** Object **PATIENTS**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
PATIENTS	P_ID	Number	-	10	0	1	-	-	-
	P_NAME	Varchar2	30	-	-	-	✓	-	-
	ADMIT_DATE	Date	7	-	-	-	✓	-	-
	B_GRP	Varchar2	30	-	-	-	-	-	-
	DOB	Date	7	-	-	-	✓	-	-
	ADDRESS	Varchar2	30	-	-	-	✓	'Bangladesh'	-
	R_ID	Number	-	10	0	-	✓	-	-
	N_ID	Number	-	10	0	-	✓	-	-
									1 - 8

FK -> *alter table patients add constraint cons11_2 foreign key(r_id) references receptionists(r_id) on delete set null*
FK -> *alter table patients add constraint cons11_3 foreign key(n_id) references nurses(n_id) on delete set null*

12.P_phn

Object Type **TABLE** Object **P_PHN**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
P_PHN	P_ID	Number	-	10	0	1	-	-	-
	P_PHONE	Number	-	15	0	2	-	-	-
									1 - 2

13.Records

Object Type **TABLE** Object **RECORDS**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
RECORDS	CASE_NO	Number	-	10	0	1	-	-	-
	DISEASE	Varchar2	30	-	-	-	✓	-	-
	BILL	Number	-	30	0	-	✓	-	-
	RELEASE_DATE	Date	7	-	-	-	-	-	-
	R_ID	Number	-	10	0	-	✓	-	-
	S_ID	Number	-	10	0	-	✓	-	-

1 - 6

FK -> *alter table records add constraint cons13_2 foreign key(r_id) references reciptionists(r_id) on delete set null*
FK -> *alter table records add constraint cons13_3 foreign key(s_id) references treatment(s_id) on delete set null*

14.Treatment

Object Type **TABLE** Object **TREATMENT**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
TREATMENT	S_ID	Number	-	10	0	1	-	-	-
	D_ID	Number	-	10	0	-	✓	-	-
	P_ID	Number	-	10	0	-	✓	-	-

1 - 3

FK -> *alter table treatment add constraint cons14_2 foreign key(d_id) references doctors(d_id) on delete set null*
FK -> *alter table treatment add constraint cons14_3 foreign key(p_id) references patients(p_id) on delete set null*

Sequences

For Doctor and Patient table:

Query -> *create sequence d_seq start with 1001 increment by 1 nomaxvalue nocycle nocache*
Query -> *create sequence p_seq start with 5001 increment by 1 nomaxvalue nocycle nocache*

SEQUENCE_NAME	MIN_VALUE	MAX_VALUE	INCREMENT_BY	CYCLE_FLAG	ORDER_FLAG	CACHE_SIZE	LAST_NUMBER
D_SEQ	1	999999999999999999999999999	1	N	N	0	1006
P_SEQ	1	999999999999999999999999999	1	N	N	0	5005

2 rows returned in 0.02 seconds CSV Export

Values

1.Doctor

D_ID	D_NAME	D_PHONE	D_SPECIALITY	D_MAIL	R_ID
1002	Steve	15552641	Medicine	rogers@gmail.com	3002
1003	Bruce	15635842	Diagnostic	banner@gmail.com	3003
1004	Clint	15653149	Cardiology	barton@gmail.com	3004
1001	Tony	15264210	Surgon	stark@gmail.com	3001
1005	Thor	15486417	Physician	odinson@gmail.com	3004

2.Dr_exp

D_ID	D_EXPERIENCE
1001	Apollo
1001	Square
1002	Popular
1002	Shomorita
1003	Labaid
1004	Greenland
1004	Square
1005	United

3.Rec_phn

R_ID	R_PHONE
3001	55982
3002	55983
3002	55985
3003	55984
3004	55983

4.Receptionists

R_ID	R_NAME	DUTY_SCHEDULE	R_SALARY	BB_ID
3001	Jon	8.00-2.00	15500	501
3002	Arya	8.00-2.00	18000	502
3003	Daenary	2.00-11.00	17000	503
3004	Sensa	2.00-11.00	14500	504

5.Blood_bank

BB_ID	B_GRP	DONER_ID	P_ID
501	A+	9001	5001
502	A-	9002	5001
503	B+	9003	-
504	B-	9004	5004

6.Doner

DONER_ID	DONER_NAME	DONER_AGE
9001	Ragnar	30
9002	Rollo	32
9003	Bjorn	21
9004	Lagartha	27

7.Dnr_rec

DONER_ID	DONATE_DATE
9001	05-MAY-19
9001	05-MAY-20
9002	09-SEP-19
9003	10-OCT-19
9003	10-OCT-20
9004	08-AUG-19

8.Nurses

N_ID	N_NAME	N_SALARY	N_PHONE
2001	Rebeka	10000	48314574
2002	Haylay	8500	48231521
2003	Freya	9200	48514365
2004	Hope	7800	48612667
2005	Davina	9500	48632141
2006	Camille	11000	48426413

9.Unit

UNIT_ID	D_ID	N_ID
1	1001	2004
2	1001	2006
3	1003	2002
4	1004	2005
5	1004	2003
6	1002	2001

10.n_exp

N_ID	N_EXPERIENCE
2001	United
2002	Greenland
2003	Apollo
2004	Popular
2004	Square
2005	Labaid

11.Patients

P_ID	P_NAME	ADMIT_DATE	B_GRP	DOB	ADDRESS	R_ID	N_ID
5001	Stefan	07-MAY-20	A+	05-JUL-80	Virginia	3001	2002
5002	Damon	08-SEP-20	A+	09-AUG-87	Mystic Fall	3003	2001
5003	Elena	15-SEP-20	B-	15-FEB-91	French Quarter	3001	2004
5004	Bonnie	02-DEC-20	AB+	12-DEC-87	Chicaho	3002	2001

12.P_phn

P_ID	P_PHONE
5001	12658436
5001	88548123
5002	56216444
5003	23165453
5003	52451325
5004	63564521
5005	54984564

13.Records

CASE_NO	DISEASE	BILL	RELEASE_DATE	R_ID	S_ID
101	Cancer	40000	25-SEP-20	3001	803
102	Covid19	15000	15-OCT-20	3003	802
103	AIDS	100000	25-DEC-20	3004	801
104	Liver Damage	35000	18-APR-20	3001	804
105	Fever	500	25-JUN-20	3001	805

14.Treatment

S_ID	D_ID	P_ID
801	1002	5003
802	1002	5004
803	1001	5002
804	1005	5003
805	1003	5001

Constraints

Unique:

Query -> *alter table doctors add constraints cons1_3 unique (d_mail)*

Constraint	Type	Table	Search Condition	Delete Rule	Status	Last Change	Index	Invalid
CONS1	P	DOCTORS	-	-	ENABLED	27-DEC-20	CONS1	-
CONS1_2	R	DOCTORS	-	SET NULL	ENABLED	27-DEC-20	-	-
CONS1_3	U	DOCTORS	-	-	ENABLED	27-DEC-20	CONS1_3	-

1 - 3

Not Null:

Query -> *alter table patients modify b_grp int not null*

Constraint	Type	Table	Search Condition	Delete Rule	Status	Last Change	Index	Invalid
CONS11	P	PATIENTS	-	-	ENABLED	27-DEC-20	CONS11	-
SYS_C005138	C	PATIENTS	"B_GRP" IS NOT NULL	-	ENABLED	27-DEC-20	-	-

1 - 2

Check:

Query -> *alter table doner add constraint cons6_2 check(doner_age>=18)*

Constraint	Type	Table	Search Condition	Delete Rule	Status	Last Change	Index	Invalid
CONS6	P	DONER	-	-	ENABLED	26-DEC-20	CONS6	-
CONS6_2	C	DONER	doner_age>=18	-	ENABLED	27-DEC-20	-	-
SYS_C005137	C	DONER	"DONER_AGE" IS NOT NULL	-	ENABLED	27-DEC-20	-	-

1 - 3

Default:

Query -> *alter table patients modify address default 'Bangladesh'*

Column Name	Data Type	Nullable	Default	Primary Key
P_ID	NUMBER(10,0)	No	-	1
P_NAME	VARCHAR2(30)	Yes	-	-
ADMIT_DATE	DATE	Yes	-	-
B_GRP	VARCHAR2(30)	No	-	-
DOB	DATE	Yes	-	-
ADDRESS	VARCHAR2(30)	Yes	'Bangladesh'	-
R_ID	NUMBER(10,0)	Yes	-	-
N_ID	NUMBER(10,0)	Yes	-	-

1 - 8

Questions

1. What is the salary of the nurse whom works under Dr. Bruce?
2. When did bonnie released from hospital??
3. alter the sequence "p_seq" maxvalue into 6000.
4. what is the duty schedule of the receptionistes who manages the appointment of tony?
5. What is the doner ragnars blood group??
6. What is the admit date of the patient which phn no starts with 635?
7. who earn lowest among the nurses?
8. Who doneted blood after ragnar?
9. In which date Bjorn donated blood?
10. Show the blood group and name of doner id 9001?