DBMS Project - 2

Topic: - Hospital
Submission Date: - 12 Feb’ 2018
Submission To: - T. Ramakrishnudu

Submitted By : -

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Tables:-

INTERN

Attribute	Datatype	Constraints and Characteristics
E_ID	NUMERIC	Primary Key, Foreign Key
DEPT	VARCHAR(20)	NOT NULL
SUPERVISOR_ID	NUMERIC	FOREIGN KEY, NOT NULL
POST	VARCHAR(10)	NOT NULL
COLLEGE/INSTITUTION	VARCHAR(50)	NOT NULL
DoJ	DATE	NOT NULL

NON-TECHNICAL STAFF

Attribute	Datatype	Constraints and Characteristics
E_ID	NUMERIC	PRIMARY KEY, FOREIGN KEY
DEPT	VARCHAR(20)	NOT NULL
SUPERVISOR_ID	NUMERIC	FOREIGN KEY, NOT NULL
POST	VARCHAR(10)	NOT NULL

BRANCH

Attribute	Datatype	Constraints and Characteristics
B_ID	NUMERIC	PRIMARY KEY
NAME	VARCHAR(20)	NOT NULL
ADDRESS	VARCHAR(50)	NOT NULL
DATE_OF_EST	DATE	NOT NULL

SALARY

Attribute	Datatype	Constraints and Characteristics
E_ID	NUMERIC	PRIMARY KEY, FOREIGN KEY
BASE	NUMERIC	NOT NULL
HRA	NUMERIC	NOT NULL

PF	NUMERIC	NOT NULL
TOTAL	NUMERIC	NOT NULL

PATIENTS

Attribute	**Datatype**	**Constraints and Characteristics**
P_ID	NUMERIC	PRIMARY KEY
NAME	VARCHAR(20)	NOT NULL
SEX	VARCHAR(1)	NOT NULL
ADDRESS	VARCHAR(50)	NOT NULL
AGE	NUMERIC	NOT NULL
DEPT	VARCHAR(20)	NOT NULL
DISEASE	VARCHAR(50)	NOT NULL
D_o_RELEASE	DATE	
D_o_ADMISSION	DATE	NOT NULL
BILL_ID	NUMERIC	FOREIGN KEY
STATUS	VARCHAR(10)	NOT NULL

REFER

Attribute	**Datatype**	**Constraints and Characteristics**
P_ID	NUMERIC	PRIMARY KEY(1), FOREIGN KEY
E_ID	NUMERIC	PRIMARY KEY(2), FOREIGN KEY

EMPLOYEE

Attribute	**Datatype**	**Constraints and Characteristics**
E_ID	NUMERIC	PRIMARY KEY
NAME	VARCHAR(20)	NOT NULL
ADDRESS	VARCHAR(50)	NOT NULL
PROFESSION	VARCHAR(20)	NOT NULL
PNO	NUMERIC	NOT NULL

D_o_B	DATE	NOT NULL
D_o_J	DATE	NOT NULL
B_ID	NUMERIC	FOREIGN KEY

DOCTORS

Attribute	Datatype	Constraints and Characteristics
E_ID	NUMERIC	PRIMARY KEY, FOREIGN KEY
DEPT	VARCHAR(30)	NOT NULL
POST	VARCHAR(30)	NOT NULL

NURSE

Attribute	Datatype	Constraints and Characteristics
E_ID	NUMERIC	PRIMARY KEY, FOREIGN KEY
DEPT	VARCHAR(20)	NOT NULL
POST	VARCHAR(30)	NOT NULL
SUP_ID	NUMERIC	FOREIGN KEY

BILLS

Attribute	Datatype	Constraints and Characterist
BILL_ID	NUMERIC	PRIMARY KEY
FEE	NUMERIC	NOT NULL
T_COST	NUMERIC	NOT NULL
D_o_T	DATE	NOT NULL
LAB_ID	NUMERIC	FOREIGN KEY
TEST_NAME	VARCHAR(20)	FOREIGN KEY

PATIENT-BILL RELATION

Attribute	Datatype	Constraints and Characteristics

BILL_ID	NUMERIC	PRIMARY KEY(1), FOREIGN KEY
P_ID	NUMERIC	PRIMARY KEY(2), FOREIGN KEY

TEST

Attribute	**Datatype**	**Constraints and Characteristics**
LAB_ID	NUMERIC	PRIMARY KEY(1), FOREIGN KEY
TEST_NAME	VARCHAR(20)	PRIMARY KEY(2)
COST	NUMERIC	NOT NULL

LAB

Attribute	**Datatype**	**Constraints and Characteristics**
LAB_ID	NUMERIC	PRIMARY KEY
DEPT	VARCHAR(20)	NOT NULL

RESEARCH

Attribute	**Datatype**	**Constraints and Characteristics**
LAB_ID	NUMERIC	PRIMARY KEY(1), FOREIGN KEY
FIELD	VARCHAR(20)	NOT NULL
TOPIC	VARCHAR(20)	NOT NULL
ALLOWANCE	NUMERIC	NOT NULL
E_ID	NUMERIC	PRIMARY KEY(2), FOREIGN KEY
DURATION	NUMERIC	NOT NULL

***FUNCTIONAL DEPENDENCIES AND PRIMARY KEY**

1)INTERN :-

- E_ID -> {DEPT, SUPERVISOR_ID, POST, DoJ}

Since all fields depend on E_ID, (E_ID)+ -> R. Hence, E_ID is the primary key.

2)NON - TECHNICAL STAFF :-

- E_ID -> {DEPT, SUPERVISOR_ID, POST}

Since all fields depend on E_ID, (E_ID)+ -> R. Hence, E_ID is the primary key.

3)BRANCH :-

- B_ID -> {NAME, ADDRESS, DATE_OF_EST}
- ADDRESS -> NAME

Since all fields depend on B_ID, (B_ID)+ -> R. Hence, B_ID is the primary key.

4)SALARY :-

- E_ID -> {BASE, HRF, PF, TOTAL}
- {BASE, HRF, PF} -> TOTAL

Since all fields depend on E_ID, (E_ID)+ -> R. Hence, E_ID is the primary key.

5)PATIENTS :-

- P_ID -> {NAME, AGE, ADDRESS, DISEASE, DEPT, D_o_ADMISSION, D_o_RELEASE, BILL_ID, STATUS}
- {NAME, AGE, ADDRESS, AGE} -> DISEASE
- DISEASE -> DEPT

Since all fields depend on P_ID, (P_ID)+ -> R. Hence, P_ID is the primary key.

6)REFER

7)EMPLOYEE:-

- EID -> { NAME, ADDRESS, PNO, B_ID,PROFESSION, D_o_J, D_o_B}

Since all fields depend on E_ID, (E_ID)+->R. Hence, E_ID is the primary key.

8)DOCTORS:-

- E_ID -> { DEPT, POST}

Since all the fields depend on E_ID, (E_ID)+ ->R. Hence, E_ID is the primary key.

9)NURSE:-

- E_ID -> {DEPT, SUP_ID, POST}

Since all the fields depend on E_ID, (E_ID)+ ->R. Hence, E_ID is the primary key.

10)BILLS:-

- BILL_ID -> {FEE, T_COST, D_o_T, LAB_ID, TEST_NAME}
- {FEE, LAB_ID, TEST_NAME} -> T_COST

Since all the fields depend on BILL_ID, (BILL_ID)+ ->R. Hence, BILL_ID is the primary key.

11)PATIENT-BILL RELATION

12)TEST:-

- {LAB_ID, TEST_NAME} -> {COST}

Since all the fields depend on{LAB_ID, TEST_NAME}, {LAB_ID, TEST_NAME}+ ->R. Hence, {LAB_ID, TEST_NAME}is the primary key.

13)LAB:-

- {LAB_ID} -> DEPT

Since all the fields depend on LAB_ID, LAB_ID+ ->R. Hence, LAB_IDis the primary key.

14)RESEARCH:-

- {LAB_ID, E_ID} -> {FIELD, TOPIC, ALLOWANCE, DURATION}

- TOPIC -> FIELD

Since all the fields depend on{LAB_ID, E_ID}, {LAB_ID, E_ID}+ ->R. Hence, {LAB_ID, E_ID}is the primary key.

***Normalisation:-**

1)INTERN :-
Primary Key :- E_ID
All attributes depend on the E_ID, hence the table is 2NF.
All attributes depend directly on E_ID, hence the table is in 3NF.
All determinants(E_ID) are candidate keys, hence the table is in BCNF.
There are no multi-valued attributes, so the table is also in 4NF.

2)NON-TECHNICAL STAFF :-
Primary Key :- E_ID
All attributes depend on the E_ID, hence the table is 2NF.
All attributes depend directly on E_ID, hence the table is in 3NF.
All determinants(E_ID) are candidate keys, hence the table is in BCNF.
There are no multi-valued attributes, so the table is also in 4NF.

3)BRANCH :-
Primary Key :- B_ID
All attributes depend on the E_ID, hence the table is 2NF.
All attributes depend directly on E_ID, hence the table is in 3NF.
All determinants(E_ID, ADDRESS) are candidate keys, hence the table is in BCNF.
There are no multi-valued attributes, so the table is also in 4NF.

4)SALARY :-
Primary Key :- E_ID
All attributes depend on the E_ID, hence the table is 2NF.
All attributes depend directly on E_ID, hence the table is in 3NF.
All determinants are not candidate keys, hence the table is not in BCNF.
So, table is in 3NF.

5)PATIENTS :-
Primary Key :- P_ID
All attributes depend on the P_ID, hence the table is 2NF.
All attributes depend directly on P_ID, hence the table is in 3NF.
All determinants are not candidate keys, hence the table is not in BCNF.
So, table is in 3NF.

6) REFER :-
Primary Key :- {P_ID, E_ID}
Primary Key :- B_ID
All attributes depend on the E_ID, hence the table is 2NF.
All attributes depend directly on E_ID, hence the table is in 3NF.
All determinants(E_ID, ADDRESS) are candidate keys, hence the table is in BCNF.
There are no multi-valued attributes, so the table is also in 4NF.

7)EMPLOYEE:-
Primary Key :- E_ID
All attributes depend on the E_ID, hence the table is 2NF.
All attributes depend directly on E_ID, hence the table is in 3NF.
All determinants(E_ID) are candidate keys, hence the table is in BCNF.
There are no multi-valued attributes, so the table is also in 4NF.

8)DOCTORS:-
Primary Key :- E_ID
All attributes depend on the E_ID, hence the table is 2NF.
All attributes depend directly on E_ID, hence the table is in 3NF.
All determinants(E_ID) are candidate keys, hence the table is in BCNF.
There are no multi-valued attributes, so the table is also in 4NF.

9)NURSE:-
Primary Key :- E_ID
All attributes depend on the E_ID, hence the table is 2NF.
All attributes depend directly on E_ID, hence the table is in 3NF.
All determinants(E_ID) are candidate keys, hence the table is in BCNF.
There are no multi-valued attributes, so the table is also in 4NF.

10)BILLS:-
Primary Key :- BILL_ID
All attributes depend on the BILL_ID, hence the table is 2NF.
All attributes depend directly on BILL_ID, hence the table is in 3NF.
All determinants(BILL_ID) are candidate keys, hence the table is in BCNF.
There are no multi-valued attributes, so the table is also in 4NF.

11)PATIENT-BILL RELATION:-
Primary Key :- {BILL_ID, P_ID}
All attributes depend on the BILL_ID, hence the table is 2NF.
All attributes depend directly on BILL_ID, hence the table is in 3NF.
There are no multi-valued attributes, so the table is also in 4NF.

12)TEST:-
Primary Key :- {LAB_ID,TEST_NAME}
All attributes depend on the LAB_ID, hence the table is 2NF.
There are no multi-valued attributes, so the table is also in 4NF.

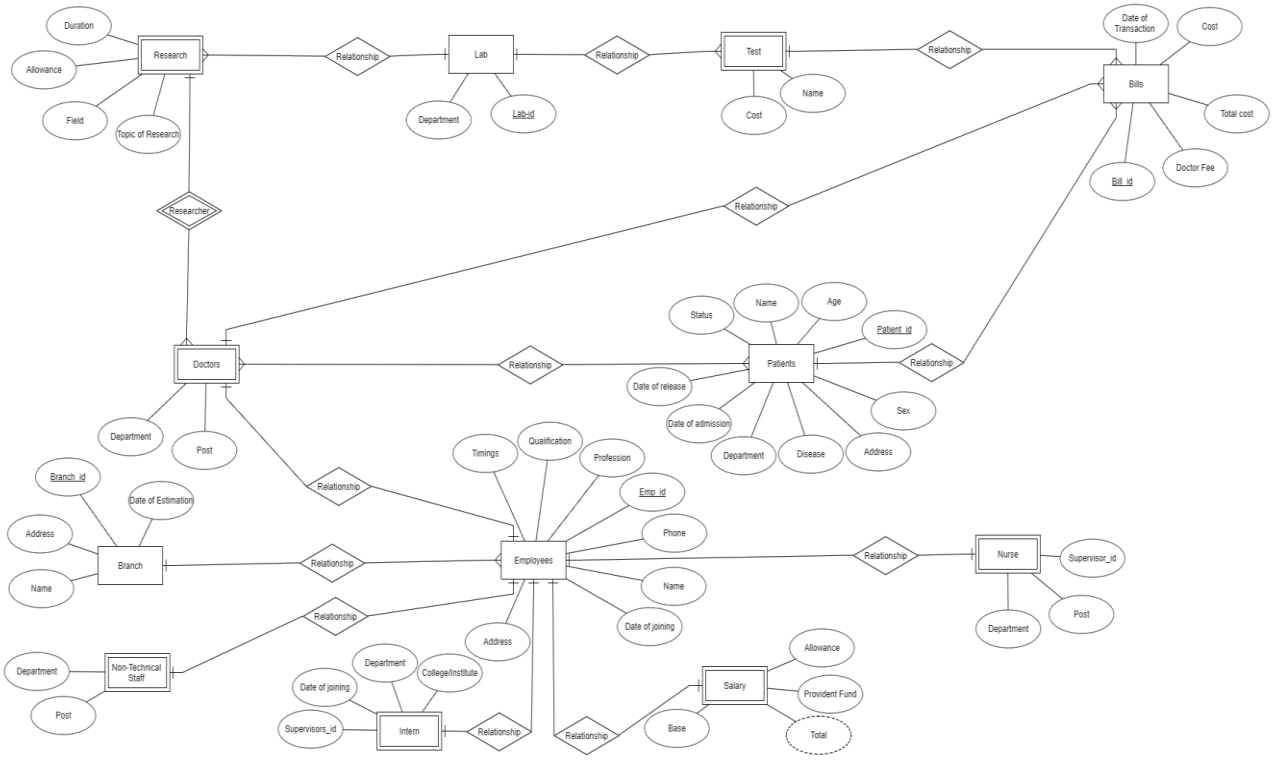
13)LAB:-
Primary Key :- LAB_ID
All attributes depend on the LAB_ID, hence the table is 2NF.
All attributes depend directly on LAB_ID, hence the table is in 3NF.

All determinants(LAB_ID) are candidate keys, hence the table is in BCNF.
There are no multi-valued attributes, so the table is also in 4NF.

14)RESEARCH:-
Primary Key :- LAB_ID,E_ID
All attributes depend on the E_ID, hence the table is 2NF.
All determinants(E_ID) are candidate keys, hence the table is in BCNF.
There are no multi-valued attributes, so the table is also in 4NF.

Entity-Relationship Diagram:-

**Diagram on next page.



**Since ER diagram is not much visible, a separate image of ER diagram has also been mailed.
