Date 6/10/2025

TASK no :8

NORMALIZING DATABASE USING FUNCTIONAL DIPENDENCIES UPTO BCNF

AIM : To normalize database using functional dependeneies upto BCNF

Hospital Database:

1. Identity hospital attributes:

Patient_ID, Patient_Name, Doctor_ID, Doctor_Name, Department, ROOM_NO, Treatment, Bill_Amount

2. Define relational schema:

Hospital (Patient_ID, Patient_Name, Doctor_ID, Doctor_Name, Department, Room-no, Treatment, Bill Amount)

3. Determine functional dependencies (FDs) between attributs:

Patient_ID → Patient_Name, Doctor_ID, Room_No, Treatment, Bill_amount.

Doctor_ID → Doctor-Name, Department. ROOM-N

→ Department.

step 2: convert to INF

- Elimibate Nepeating groups or array.
- Create separate table's for each repeating group C.

Step 3: Convert to 2NF

- Ensure each non-key attributte depend on the entire primary key.
- Move non-key attributes to seperate tables it they depends only part of the primary key.
- Create Doctor table: Doctor (Doctor_ID, Doctor_Name, Department)
- create patient table: patient (patient_ID, patient name, Doctor_ID, Room_NO, Treatment, Bill Amount)

Step 4: convert to 3NF

- Ensure there are no Transitive dependencies
- More non-key attributes to seperate tables if they depend on another non-key attributes
  - Create Room table: Room (Room_No, Department)
  - update Doctor table: Doctor (Doctor_ID, Doctor, Nb)

Step 5: convert of BCNF

- Ensure every determination is a candidate key.
- check for orulapping candidate key.
- Decompose relation to eliminate reducdaniey. No further decomposition needed.

using Griffith fod:-

- Input relation schema and functional dependeneices
- Griffith fool generates as dependancy graph
- Analyze the generates as dependancy grapy
- Apply normalization rules to transform

The schemes

- Verify the resulting schema meets BCNF criteins.

Griffith tool steps:-

- Create a new project in Griffith
- Define the relational schema and FD's
- Run the "Dependency Graph" tool
- Analyse the graph for normalization issuess
- Apply transformation using the "Normalize tool
- verify BCNf compliance using the "BCNF check" tool.
- Normalized schema:-
- patient (patient_ID, patient_Name, Doctor_I
- Doctor (Doctor_ID, Doctor_Name)
- ROOM (Room_No, Dept)

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EX NO.	8
PERFORMANCE (5)	5
RESULT AND ANALYSIS (5)	5
VIVA VOCE (5)	5
RECORD (5)	-
TOTAL (20)	18
WITH DATE	

Result: Thus the Normalizis database using function dependencies upto BCNF executed succfully.

6/2/23