Task-8 Normalizing data using functional dependencies upto BCNF

Date: 6/10/25

Aim:

To Normalize database using functional dependencies upto BCNF.

Hospital database:

1, Identify hospital attributes Patient ID patient, Name, Department, Room-no, Treatment.

2, Define relational schemes:

Hospital (Patient-ID, patient Name, Doctor ID Doctorname, Department, Room-NO, Treatment, Bill Amount).

3. Determine functional dependities (FDs) between attributies.

Patient-ID -> patient Name, Doctor-ID, NO, Treatment, Bill Amount.

Doctor-ID -> Doctor-Name, Department

Room no -> Department.

Step 2: Convert to INF

1. Eliminate repeating group's of array
2. Create seperate tubies for each repeating group.

Step 3 : Convert to 2NF :

1. Ensure each non-key attributes depent on the entire primary key

2. Move non-key attributes to seperate tables if they depend 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, Bill-amount.

Slip 4: Convert to 3NF

1. Ensure the are no transitive dependcies.

2. Move onon key attributes to Seperwe table if they depend on non-key attributes.

* create Room table : Room (Room.no)
* upate doctor table. Doctor (Doctor.ID Doctor-name)

Step 5: Convert to BCNF

1. Ensure every decimal is a Coodiate Key.

2. check for overlapping wridore Key

3. Decompose reaction to elivate reediely. No further decomposition needed

using Griffith fool:

- Input relation schema and functional dependencies.
- Griffith fool generates as dependancy graph
- Analyze the generates as dependancy grapy.
- Apply normalization rules to Erans form. the schemes.

Griffith tobl steps.

- Create a new project in griffith.
- Define the "Dependency graph" Gool.
- Analyze the graph for normalization issers.

- Apply transformation using the "Normalize tod"
- Verify BCNF complicible asPng the "BCNF Check" tool.

Normalized schema:

- patient (Patient, ID, patient-Name, Doctor ID)
- Doctor (Doctor-ID; Doctor-Name)
- Room (Room-NO, Department)

VELTECH	
EX No.	8
PERFORMANCE (5)	5
RESULT AND ANALYSIS (5)	5
VIVA VOCE (5)	4
RECORD (5)	4
TOTAL (20)	14
SIGN WITH DATE	

8/4/25

Result:

Thus the Normalize database using function dependencies upto BCNF executed successfully.