

30/9/25

TASK-8

Normalizing database using functional dependencies upto BCNF. L100 :- 1 GU / Table Normalization today

Aim:- To perform normalization upto BCNF based on given dependencies.

mobile phone database :-

1. identify mobile phone attributes: phone-ID, mobile-Name, mobile-Price, Date.
2. Define relational schema: Mobile (Phone-ID, mobile-Name, mobile-Data, mobile-Price).
3. Determine functional dependencies (FDs) between attributes:
 - mobile-Name, Phone-ID, mobile-Price, mobile-Data

Step 2:- Convert to 1NF

- * NO repeating groups or arrays
- * All attributes are atomic
- * The schema in 1NF

Step 3:- Convert to 2NF

- * All primary keys are single-column keys, so no partial dependence exist
- * However, we ensure foreign-key

attributes are managed directly

Q4.1: The schema is already in 3NF

Step 1: Convert to 3NF

Eliminate transitive dependencies

* Product - ID \rightarrow Category ID \Rightarrow

Category - Name

\rightarrow Move Category - Name to a separate
categories - vehicle table.

* Uses - ID \rightarrow Name, Email, Address, Phone

\rightarrow Already inspect uses table

* Phone - ID \rightarrow Uses \rightarrow Uses Details.

\rightarrow No redundancy, as only use - ID is
stored in phone.

All transitive dependencies removed

Step 2: Convert to BCNF

Check if every determinant is a candidate
key:

* Uses for their respective tables.

* Foreign keys like category - ID, Uses - ID

ex. ... do not violate BCNF rules.

All FD's comply with BCNF no further
decomposition needed.

Using Griffith Tool:-

1. INPUT relational Schema and Functional dependencies

2. Griffith tool generates a dependency graph

3. Analyze the graph to identify normalization issues

4. All FDs empty with BCNF no further decomposition needed.

5. Verify the resulting Schema meets BCNF criteria

Griffith TOOL steps:

1. create a new project in Griffith

2. Define the relational Schema and FD;

3. Run the "Dependency Graph" tool

4. Analyze the graph for normalization issues.

5. Apply transformations using the "Normalization" tool

6. Verify BCNF compliance using the "BCNF Check" tool

Normalized Schema:-


Users (User ID, Name, Email, Address)

Categories (Category ID, Name of the Category)

mobile (phone-id, name category-p, price)

mobile details (phone-id, quantity, price)

payment-ip, total-amount)



VEL TECH	
EX NO.	8
PERFORMANCE (5)	5
RESULT AND ANALYSIS (5)	5
VIVA VOCE (5)	5
RECORD (5)	1
TOTAL (20)	16
SIGN WITH DATE	30/1/15

Result:- Thus, the implementation of normalizing the database upto BCNF based on given dependencies was executed successfully.