

Task - 8

Normalizing database using functional dependencies upto BCNF tool: (GUI table Normalization Tool)

ALM: Jig saw

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

Mobilephone Database:-

1. Identify mobile phone attributes: phone-ID, mobile-name, mobile-price, date.
2. Define relational schema: mobile (phone-ID, mobile-name, mobile-date, mobile-price, product-ID)
- 3) Determine functional dependencies (FDs)

between attributes:

- mobile-name, phone-ID : mobile-price,
mobile-date, product-ID.

Step 2: Convert to 1NF

- * No repeating groups or arrays.
- * All attributes are atomic

The schema is in 1NF

Step 2: Convert to 2NF

- * All primary keys are single-column keys, so no partial dependencies exist
- * However, we ensure foreign key attributes are managed correctly.

output:- The schema is already in 2NF

step 4 :- convert to 3NF

Eliminate Transitive dependencies

* product-ID \rightarrow category-ID \rightarrow category-name.

\rightarrow move category-name to a separate category mobile table.

* User-ID \rightarrow name, Email, Address, phone.

\rightarrow Already in separate users table.

* phone-ID \rightarrow user \rightarrow user details

\rightarrow no redundancy, as only user-ID is stored in phone.

All transitive dependencies removed

step: 5 convert to BCNF

check if every determinant is a candidate key:

* user-ID, Product ID, Payment-ID, model-name, are all unique.

keys for their respective tables.

* foreign keys like category-ID, user-ID

ex. --- do not violate BCNF rule

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

Using Griffith tool:

1. Input relational schema and functional dependencies.

2) Griffith tool generate a dependency graph

3. Analyze the graph to identify normal issues
4. Apply normalization rules to transform the schema.
5. verify the resulting schema meet BCNF criteria

Griffith Tool steps:

1. Create a new project in Griffith
2. Define the relational schema and fd
3. Run the Dependencies Graph tool
4. Analyze the graph for normalization issue
5. Apply transformation using the "normalization" tool
6. verify BCNF compliance using the BCNF Check tool

Normalized schema:

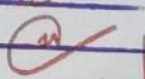
Users (user-ID, name, Email, Address)

categories (category ID, name of the category)

mobile (phone-ID, name category, -ID price)

Mobile Details (phone-ID, Quality, price)

Payment -ID, total -amount)

VEL TECH	
EX No.	8
PERFORMANCE (5)	6
RESULT AND ANALYSIS (5)	5
VIVA VOCE (5)	5
RECORD (5)	
TOTAL (20)	15
SIGN WITH DATE	

Result: Thus the implementation of 30/9/23
 Normalizing the database upto BCNF
 based on given dependencies was
 executed successfully.