

## TASK-8 Normalizing database using functional dependencies upto BCNF

Aim: To determine Possible functional dependencies (fos)

cust-ID  $\rightarrow$  cust-Name cust-Phone No, cust-city

cust-Amount-Paid

Bill-ID  $\rightarrow$  Price, cust-ID

Phone-ID  $\rightarrow$  model-Name

Admin-ID  $\rightarrow$  Password

convert to 1NF

Already in 1NF

All Attributes have atomic single values; there are no repeating groups

convert to 2NF

check for Partial dependencies - they occur only if there is composite key

Since all table have single attributes Primary keys (cust-ID, Bill-ID, Phone-ID, Admin-ID),

convert to 3NF:-

1. Ensure there are no transitive dependencies
2. Move non-key attributes to separate tables if they depend on another key

cust-ID  $\rightarrow$  cust-Name, cust-Phone No

cust-city, cust-Amount Paid

convert to BCNF

1. Ensure every determinant is a candidate key
2. Check for overlapping candidate keys
3. Decompose relations to eliminate redundancy  
No further decomposition needed. using Griffith tool.

1. Input relational schema and functional dependencies
2. Griffith the graph to identify normalization issues
3. Analyze the graph to identify normalization the schema
4. Apply normalization rules to transform the schema
5. Verify the resulting schema meets BCNF criteria.

#### Griffith Tool steps:

1. create a new Project in Griffith.
2. Define the relational schema and FDs
3. Run the dependency Graph Tool.
4. Analyze the graph for normalization issues
5. Apply information using the "Normalize" tool
6. Verify BCNF compliance using "BCNF check tools"



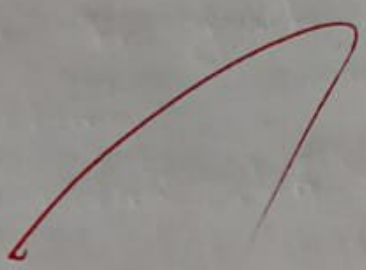
### Normalized schema:

customer (cust-ID PK, cust-Name, cust-Phone, No.  
cust-city, cust-Amount Paid)

Bill (Bill-ID PK, Price, cust-ID FK → customer cust-ID)

MOBILE (Phone-ID PK, model-Name, modelPrice)

login (Admin-ID PK, Password)



VEL TECH - CSE	
EX NO.	7
PERFORMANCE (5)	5
RESULT AND ANALYSIS (5)	5
VIVA VOCE (5)	5
RECORD (5)	16
TOTAL (20)	38
SIGN WITH DATE	30/9/20

Result: Thus the implementation of normalizing  
database dependencies has been successfully  
Executed

