

30/09/25

Task No 8

Normalizing databases using functional dependencies upto BCNF.

Aim:- Normalizing databases using functional dependencies upto BCNF.

Mobile phone Database:-

1. Identify mobile phone Attributes : mobile name, model name from mobile phone.
2. Define relational schema : mobile phone (mobile name, phone ID, s-phone ID) model name from mobile phone.
3. Determine functional dependencies (FDs) between attributes, IMEI-No \rightarrow model-no, brand-name, price, ram, storage, processor, release-year.

~~processor~~
model-No \rightarrow Brand-Name, price ram, storage, ~~processor~~ release-year.

~~Processor \rightarrow Brand-Name.~~

Step 2:- Convert to 1NF.

Rule:- Make sure each column has only one value per

~~→ we separate the repeating groups into multiple rows.~~

~~Mobile phone (IMEI-No, model-No, Brand-Name, Price, RAM, storage, processor, release year).~~

Step 3:- Convert to 2NF.

Rule:-

A relation is in 2NF IF:

⇒ It is already in F and.

⇒ No partial dependency exists (i.e., no non-key attribute depends on part of a composite key).

Model - Details.

Attribute	Description
Model - No	Model name
Brand - name	Brand
price	model price
RAM	Memory
Storage	Internal storage.
Processor	CPU
Release - year	Launch year

Step 4 : Convert to 3NF.

Rule :- It is in 2NF.

⇒ There are no transitive dependencies i.e. no non prime attribute depends on another non-prime attribute.

Relation	Attributes
Mobile - phone	IMEI - No, model-no
Model - Details	Model - no, brand - na me, price, RAM, stor age
Brand	Brand - name, proce ssor

Step 5 : Convert to BCNF.

Rule :-

Relation in BCNF (Boyce - codd normal form)

for every non-trivial functional dependency
 $x \rightarrow y$
x must be a superkey.

Normalized schema:-

Mobile-phone (IMEI-No, primary key, model No foreign key).

Model-Details (Model-No primary key, brand-name forks).

Brand (Brand-Name primary key, processor).

VEL TECH	
EX NO.	12
PERFORMANCE (5)	2
RESULT AND ANALYSIS (5)	2
VIVA VOCE (5)	5
RECORD (5)	
TOTAL (20)	16
SIGN WITH DATE	20/07/18

Result:-

Thus, the normalizing database using functional dependencies upto BCNF has been completed successfully.