

6/10/21

Table 8:

NORMALIZING DATABASES

USING FUNCTIONAL DEPENDENCIES

upto BCNF!

Aim: To normalize the Employee database up to BCNF we decompose the schema using functional dependencies to estimate Redundancy.

Initial Relation Schema.

Employee (EmployeeID, Name, Department,
Job-Title, manager-ID, Hire-Date
Salary.)

Functional Dependencies:

* Employee - ID \rightarrow Name, Department, Job-Title
manager - ID, Hire-Date
Salary.

* Department \rightarrow manager-ID

* manager - ID \rightarrow Name

Step by step Normalization

1NF. (First Normal Form)

- No repeating groups or arrays in Schema.

- Already in 1NF

2NF (Second Normal Form)

- Remove partial dependencies.

However, FD2 & FD3 suggest

dependencies not on primary key.

decomposition

- employee (Employee-ID, Name, Department-ID, Job-TITLE, Hire-Date, Salary)
 - Employee-ID, Name, Department-ID
 - Job-TITLE, Hire-Date, Salary
- department (Department-ID, Manager-ID, phone)

3NF (3rd Normal Form)

- eliminate transitive dependencies
 - o Manager-ID, Name
 - (transitive via)
 - o Department → Manager-ID

updated Table:

Employee (Employee-ID, Name, Department-ID, Job-TITLE, Hire-Date, Salary).

Department (Department-ID, Manager-ID)

Manager (Manager-ID, phone)

BCNF:

- Every determinate must be a candidate key
- all remaining FDs have determinants that are candidate keys.

* Employee-ID.

* Department-ID

* Manager-ID

No decomposition is needed.

selection: / Quantify +
 A value | Shows
 For . . . Propositions Value
 Measures

Final BCNF

employee (Employee-ID, Name, Department-ID,
Job-Title, Hire Date, Salary),

Department (Department-ID, Manager-ID),

Manager (Manager-ID, Name)

VEL TECH-CSE
EX NO.
PERFORMANCE (5)
REPORT AND ANALYSIS (5)
VISUALISE (5)
INTERVIEW
TEST PAPER
STYLING

6/10/17

Result: thus, the database was normalized to
BCNF by decomposing it into employee,

department & manager tables based on

functional dependencies.

A value Proposition / Quantify the value.
Identify the measurable benefits.