

# FACULTY OF COMPUTING & INFORMATION TECHNOLOGY

UNIVERSITY OF THE PUNJAB



## Database Systems: Lab 11

BS-DS Fall-22 (Afternoon)

Date: 29-05-2024

### Instructions

- Work on this quiz/lab individually.
- You are NOT allowed to use internet, mobile phone.
- You are NOT allowed to borrow anything from your peer student.
- You are NOT allowed to use **Chat GPT** , **Gemini** etc.
- In case of any ambiguity, benefit will be given to the students.
- First read the query statement carefully before solving it.
- In case of Cheating or sharing of lab solution may leads to **ZERO** marks.
- During lab TAs should entertained any query , no need to talk to peers.

You have to do following tasks:

Total marks: 100

**QUESTION 1:**

**Convert this into First Normal form.**

Suppose a company wants to store the names and contact details of its employees. It creates a table that looks like this:

| employee_id | employee_name | employee_address | employee_mobile          |
|-------------|---------------|------------------|--------------------------|
| 201         | Kiran         | New Delhi        | 8912312390               |
| 202         | Alex          | Kanpur           | 8812121212<br>9900012222 |
| 203         | Jhon          | Chennai          | 7778881212               |
| 204         | Bob           | Bangalore        | 9990000123<br>8123450987 |

**QUESTION 2:**

**Convert this into Second Normal form.**

Suppose a school wants to store the data of teachers and the subjects they teach. They create a table that looks like this: Since a teacher can teach more than one subjects, the table can have multiple rows for a same teacher.

| teacher_id | subject   | teacher_age |
|------------|-----------|-------------|
| 111        | Maths     | 38          |
| 111        | Physics   | 38          |
| 222        | Biology   | 38          |
| 333        | Physics   | 40          |
| 333        | Chemistry | 40          |

**QUESTION 3:****Convert this into Third Normal form.**

Suppose a company wants to store the complete address of each employee, they create a table named employee\_details that looks like this:

| emp_id | emp_name | emp_zip | emp_state | emp_city | emp_district |
|--------|----------|---------|-----------|----------|--------------|
| 1001   | Jhon     | 282005  | UP        | Agra     | Dayal Bagh   |
| 1002   | Ajeet    | 222008  | TN        | Chennai  | M-City       |
| 1006   | Lora     | 282007  | TN        | Chennai  | Urrapakkam   |
| 1101   | Lilly    | 292008  | UK        | Pauri    | Bhagwan      |
| 1201   | Steve    | 222999  | MP        | Gwalior  | Ratan        |

**QUESTION 4:**

What is Data Normalization? What condition is to satisfy that a relation is to be in 4<sup>th</sup> NF, 5th NF and Domain-key NF.

**QUESTION 5:**

Is the following table is normalized? If not, then apply normalization on following table. Make all relations again. And clearly define all normalization forms step by step.

| Module | Dept | Lecturer | Text  |
|--------|------|----------|-------|
| M1     | D1   | L1       | T1,T2 |
| M2     | D1   | L1       | T1,T3 |
| M3     | D1   | L2       | T4    |
| M4     | D2   | L3       | T1,T5 |
| M5     | D2   | L4       | T6    |

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