Lab – 9: DB_Project_Assignment_6- Normalization and Schema Refinement

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IT615 Database Management System, Autumn'2024; Instructor: minal_bhise@daiict,	

Objectives: I) Normalization and Schema Refinement

II) Re-write DDL Scripts.

Submission: Each student team needs to upload a **single.pdf** file, which will contain the following things for the specific case study assigned to your team.

1) Schema Refinement Process till 3NF/BCNF.
2) New DDL Script of all tables & Insert statements.

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1. **Normalization & Schema Refinement**
   i. List all the Relations & Schemas with all details (Original Design of Database)
   ii. Identify and list all types of dependencies (PK, FK, Functional Dependencies) for each relation
   iii. Investigate every schema for the following
      1. List of redundancies existing for every schema which is part of the database (document it).
      2. List of update, delete, and insert anomalies for every schema (document it)
   iv. Normalize the database up to 1NF (scalar values)
   v. Normalize the database further to 2NF (Remove Partial Dependencies)
   vi. Identify (and document) List of redundancies exiting for the schema in 2NF
   vii. Normalize it further to 3NF/BCNF (Remove Transitive Dependencies)

Submit:

- Documentation of normalization & Schema Refinement Process upto 3NF/BCNF: This document should contain:
  1. List of redundancies existing for every schema which is part of the database.
  2. List of update, delete, and insert anomalies for every schema.
  3. Document the logic of how you arrived at the 3NF/BCNF design step by step starting from the original design.
- Write down final relations with the schema.
  4. i.e., **R1**(**A1**, A2, A3,… An).
  5. Make sure to underline the PK attributes.

2. **Re-write DDL Scripts.**
   i. Recreate database by writing all Create Table statements (DDL) to accommodate the new design, which is in 3NF/BCNF (removing your original version of relations)
   ii. Define appropriate constraints of all types (domain, PK, FK, Referential)for these tables
   iii. Create instance of this new database by populating it using appropriate INSERT INTO statements /using scripts. **Make sure that every table has at least 80-100 tuples.**

   Submit:

   - DDL Snapshots: Put the snapshot of all tables after creating them inside Postgres with DDL.
   - Data Snapshots: Put the snapshot of select * queries of all the tables after insertion of data. Mention number of records of each table.