

CS333 Application Software Development Lab

Laboratory Manual

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KTU SYLLABUS

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1. Syllabus

1.1 Course Objectives

- To introduce basic commands and operations on database
- To introduce stored programming concepts PL-SQL using Cursors and Triggers
- To familiarise front end tools of database

1.2 Course Outcomes

1. Design and implement a database for a given problem using database design principles
2. Apply stored programming concepts PL-SQL using Cursors and Triggers
3. Use Graphical user Interface, Event Handling and Database connectivity to develop and deploy application and applets
4. Develop medium-sized project in a team

1.3 List of Experiments

1. Creation of database using DDL commands and writes DQL queries to retrieve information from database
2. Performing DML commands like Insertion, Deletion, Modifying, Altering, and Updating records based on conditions
3. Creating relationship within databases. *
4. Creating a database to set various constraints. *
5. Practise of SQL TCL commands like Rollback, Commit, Savepoint
6. Practise of SQL DCL commands for granting and revoking user privileges
7. Creation of Views and Assertions *
8. Implementation of Built-in functions in RDBMS *
9. Implementation of various aggregate functions in SQL. *
10. Implementation of Order By, Group By and Having Clause. *
11. Implementation of set operators, nested queries and Join Queries. *
12. Implementation of various control structures using PL/SQL *

13. Creation of Procedures and Functions *
14. Creation of Packages *
15. Creation of Database Triggers and Cursors *
16. Practise various front-end tools with report generation.
17. Creating Forms and Menus
18. Mini Project (Application Development using Oracle/MySQL using Database connectivity)*
 - (a) Inventory Control System
 - (b) Material Requirement Processing
 - (c) Hospital Management System
 - (d) Railway Reservation System
 - (e) Personal Information System
 - (f) Web-based User Identification System
 - (g) Timetable Management System
 - (h) Hotel Management System



2. Brief Outline

2.1 History

MariaDB is a community-developed fork of the MySQL relational database management system intended to remain free under the GNU GPL. The lead developer of MariaDB is Michael "Monty" Widenius, one of the founders of MySQL AB and the founder of Monty Program AB. On 16 January 2008, MySQL AB announced that it had agreed to be acquired by Sun Microsystems for approximately \$1 billion.

The acquisition completed on 26 February 2008. MariaDB is named after Monty's younger daughter Maria, similar to how MySQL is named after his other daughter My. The developers of MySQL forked it due to concerns over its acquisition by Oracle Corporation. Contributors are required to share their copyright with the MariaDB Foundation.

	Windows	Mac OS X	Linux	BSD	UNIX
DB2	Yes	No	Yes	No	Yes
Microsoft SQL Server	Yes	No	No	No	No
MySQL	Yes	Yes	Yes	Yes	Yes
MariaDB	Yes	Yes	Yes	Yes	Yes
Oracle	Yes	Yes	Yes	No	Yes
PostgreSQL	Yes	Yes	Yes	Yes	Yes
Teradata	Yes	No	Yes	No	Yes

Figure 2.1: RDMS and Operating Systems

MariaDB intends to maintain high compatibility with MySQL, ensuring a drop-in replacement capability with library binary equivalency and exact matching with MySQL APIs and commands. It includes the XtraDB storage engine for replacing InnoDB,[8] as well as a new storage engine, Aria, that intends to be both a transactional and non-transactional engine perhaps even included in

future versions of MySQL.

MariaDB is used at DBS Bank, Google, Mozilla and the Wikimedia Foundation since 2013 and is emerging as the most preferred RDBMS for many establishments and professionals worldwide.



3. EER Schema and DDL Commands

3.1 EER Schema

Exercise 3.1 Download an existing database and generate an EER schema for it. ■

R An Entity Relationship (ER) Diagram is a type of flowchart that illustrates how “entities” such as people, objects or concepts relate to each other within a system. ER Diagrams are most often used to design or debug relational databases in the fields of software engineering, business information systems, education and research.

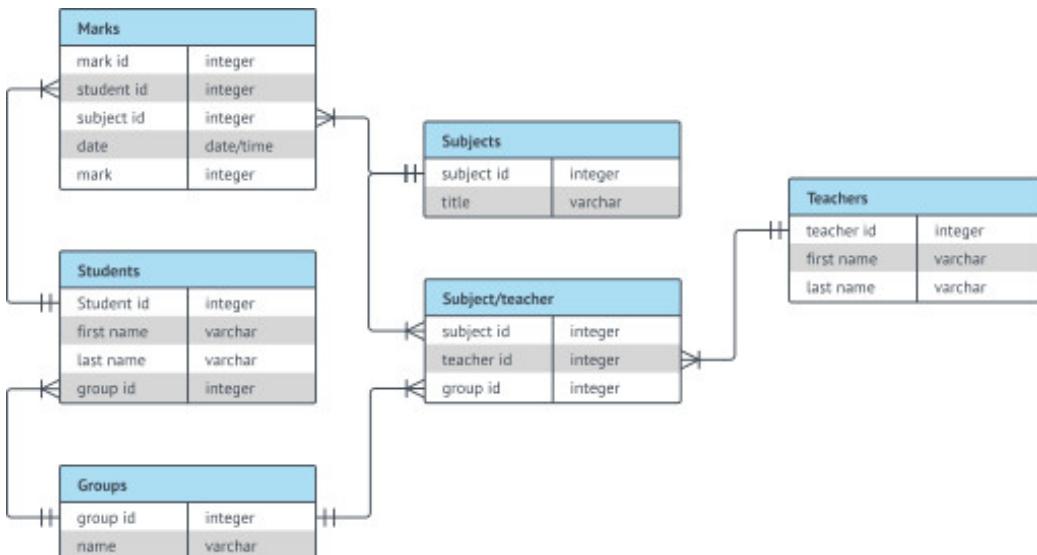


Figure 3.1: EER Schema for a school

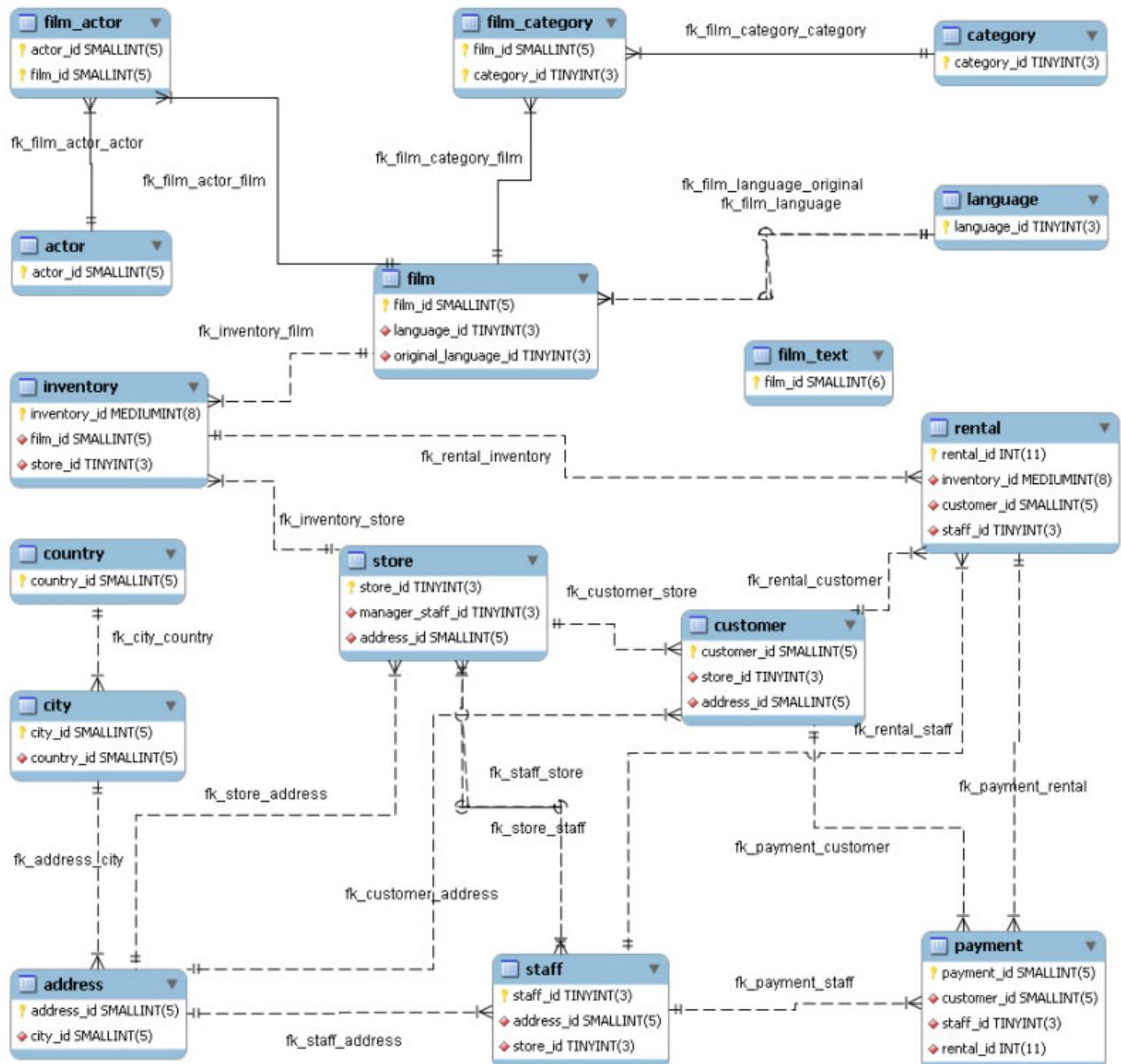


Figure 3.2: EER Schema for sakila database

3.2 DDL Commands

Theorem 3.2.1 A couple of examples from the data definition language includes creation and dropping of databases, creation and dropping of tables etc. We should also know how to create a database from its archived backup, as well as creating a backup for an existing database.

Exercise 3.2

- Create database from an existing database dump.
- Create a new user and associate privileges with it.
- Create a backup from an existing database - discuss significance



3.3 DCL Commands

Theorem 3.3.1 By using these commands, *all privileges* would be extended to *newuser* on *sakila* database.

(R)

- CREATE USER 'newuser'@'localhost' IDENTIFIED BY 'password';
- GRANT ALL PRIVILEGES ON sakila . * TO 'newuser'@'localhost';
- FLUSH PRIVILEGES;