**EGCI321 Database system**

Lab Quiz II (v1)

2 November 2024, 10:00-11:50

- 10 Marks (10%) -

**Part I: Normal Form and Concurrency**

1. Create a database called “quiz2\_StudentID” such as quiz2\_6481234.

Answer

|  |
| --- |
| CREATE DATABASE quiz2\_6580043; |

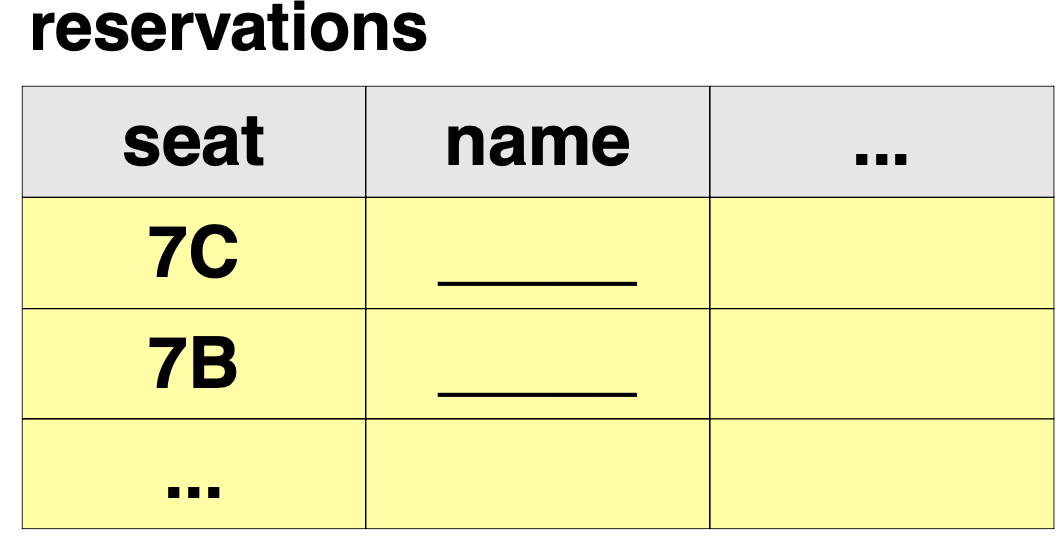
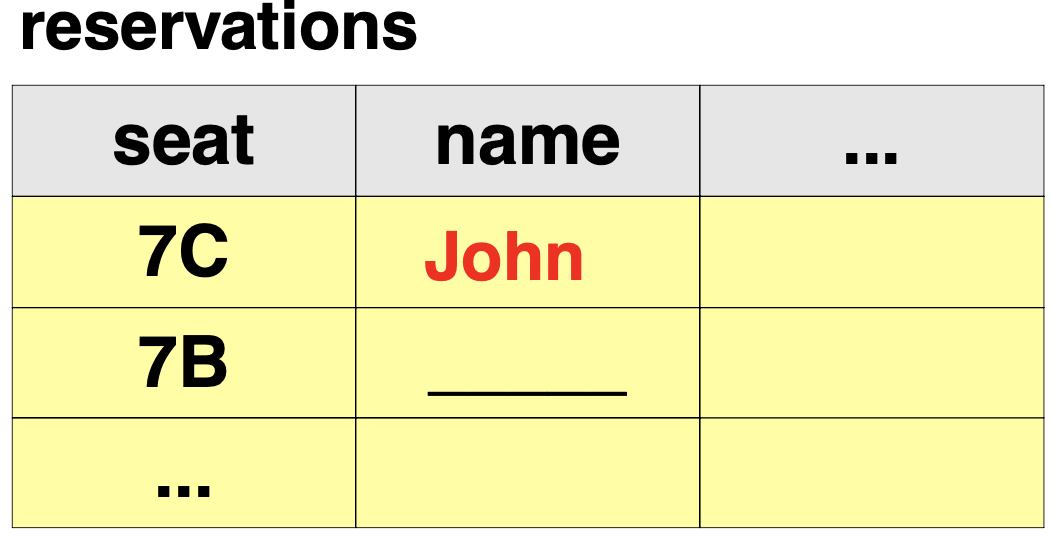
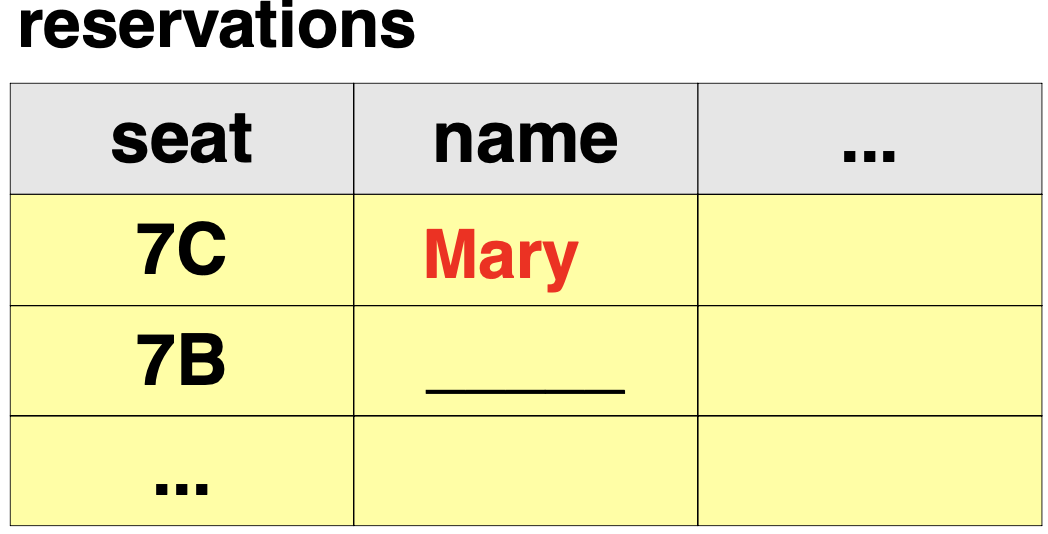
1. (2 marks) According to the table below, create a set of decomposed tables to satisfy the 3rd Normal Form.
   * The primary keys and foreign keys must be set to the decomposed tables.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Eid | Firstname | Did | Dept | Pid | Projectname |
| E001 | Bob | D01 | Biology | P01, P02 | IOT, Laser |
| E002 | Sue | D02 | Computer Science | P04, P06 | Voice Ordering, AI |
| E003 | Mary | D02 | Computer Science | P04, P05 | Voice Ordering, NLP |
| E004 | Tom | D01 | Biology | P03 | Med. Image Processing |

Answer

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| --- |
| USE quiz2\_6580043;  CREATE TABLE Departments(  Did varchar(50) NOT NULL,  Dept varchar(255) NOT NULL,  PRIMARY KEY (Did)  );  CREATE TABLE Projects(  Pid varchar(50) NOT NULL,  Projectname varchar(255) NOT NULL,  PRIMARY KEY (Pid)  );  CREATE TABLE Employees(  EID varchar(50) NOT NULL,  Firstname varchar(255) NOT NULL,  Did varchar(50) NOT NULL,  PRIMARY KEY(Eid),  FOREIGN KEY(Did) REFERENCES Departments(Did)  );  CREATE TABLE Working\_on (  Eid varchar(50) NOT NULL,  Pid varchar(50) NOT NULL,  CONSTRAINT PK\_working\_on PRIMARY KEY (Eid,Pid),  FOREIGN KEY(Eid) REFERENCES Employees (Eid),  FOREIGN KEY(Pid) REFERENCES Projects(Pid)  ); |

1. (2 marks) Show SQL statement that demonstrates the lost update problem according to the data below.

Answer

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| -- USER1  SET SESSION TRANSACTION ISOLATION LEVEL READ UNCOMMITTED;  START TRANSACTION;  UPDATE Reservations  SET `Name`= 'John'  WHERE Seat = '7C';  SELECT SLEEP(10);  COMMIT;  SELECT \*  FROM Reservations;  -- USER2  SET SESSION TRANSACTION ISOLATION LEVEL READ UNCOMMITTED;  START TRANSACTION;  Update Reservations  SET `Name` = 'Mary'  WHERE Seat = '7C';  SELECT SLEEP(5);  COMMIT;  SELECT \*  FROM Reservations; |

1. (1 marks) Write in the SQL statement to set lowest isolation level to solve the lost update problem in question 3.

Answer

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| --- |
| SET SESSION TRANSACTION ISOLATION LEVEL READ COMMITTED;  --need to set isolation level to read commited this for both user 1 and user2, other part of the code remain the same |

**Part II: Database security and access control**

Assume that there is a table “employee” in company database

Employee

|  |  |
| --- | --- |
| Eid | Firstname |
| E001 | Bob |
| E002 | Sue |
| E003 | Mary |
| E004 | Tom |

1. (2 mark) Write the SQL statements to create a user account (username: “bob” and password: “654321”) and grant the privilege this user to read, insert and update only “employee” table.

Answer

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| USE quiz2\_6580043;  CREATE USER Bob IDENTIFIED BY '654321';  GRANT SELECT, INSERT, UPDATE ON quiz2\_6580043.Employees TO Bob; |

1. (2 mark) Write the SQL statement to set “company” database as read-write database.

Answer

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| ALTER DATABASE company READ ONLY = 0; |