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| **NAME** | **RAHUL KUMAR** |
| **UID** | **23BCS13346** |
| **CLASS** | **622-B** |
| **SUBJECT** | **ADBMS** |

**Part A: Simulating a Deadlock Between Two Transactions**

**Part B: Applying MVCC to Prevent Conflicts During Concurrent Reads/Writes**

**Part C: Comparing Behavior With and Without MVCC in High-Concurrency**

**CODE:**

**DROP TABLE IF EXISTS StudentEnrollments;**

**CREATE TABLE StudentEnrollments (**

**student\_id INT PRIMARY KEY,**

**student\_name VARCHAR(100),**

**course\_id VARCHAR(10),**

**enrollment\_date DATE**

**);**

**INSERT INTO StudentEnrollments VALUES**

**(1, 'Ashish', 'CSE101', '2024-06-01'),**

**(2, 'Smaran', 'CSE102', '2024-06-01'),**

**(3, 'Vaibhav', 'CSE103', '2024-06-01');**

**START TRANSACTION;**

**UPDATE StudentEnrollments SET enrollment\_date = '2024-07-01' WHERE student\_id = 1;**

**START TRANSACTION;**

**UPDATE StudentEnrollments SET enrollment\_date = '2024-07-02' WHERE student\_id = 2;**

**UPDATE StudentEnrollments SET enrollment\_date = '2024-07-03' WHERE student\_id = 2;**

**UPDATE StudentEnrollments SET enrollment\_date = '2024-07-04' WHERE student\_id = 1;**

**START TRANSACTION;**

**SELECT \* FROM StudentEnrollments WHERE student\_id = 1;**

**START TRANSACTION;**

**UPDATE StudentEnrollments SET enrollment\_date = '2024-07-10' WHERE student\_id = 1;**

**COMMIT;**

**SELECT \* FROM StudentEnrollments WHERE student\_id = 1;**

**COMMIT;**

**SELECT \* FROM StudentEnrollments WHERE student\_id = 1;**

**START TRANSACTION;**

**SELECT \* FROM StudentEnrollments WHERE student\_id = 1 FOR UPDATE;**

**SELECT \* FROM StudentEnrollments WHERE student\_id = 1;**

**START TRANSACTION;**

**UPDATE StudentEnrollments SET enrollment\_date = '2024-07-20' WHERE student\_id = 1;**

**START TRANSACTION;**

**SELECT \* FROM StudentEnrollments WHERE student\_id = 1;**

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