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UID	23BCS13252
CLASS	622-A
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;

student_id	student_name	course_id	enrollment_date
1	Ashish	CSE101	2024-07-10T00:00:00.000Z
2	Smaran	CSE102	2024-07-03T00:00:00.000Z
3	Vaibhav	CSE103	2024-06-01T00:00:00.000Z