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

**Part A: Prevent Duplicate Enrollments Using Locking**

**Part B: Use SELECT FOR UPDATE to Lock Student Record**

**Part C: Demonstrate Locking Preserving Consistency in Concurrent Transactions**

**CODE:**

**DROP TABLE IF EXISTS StudentEnrollments;**

**CREATE TABLE StudentEnrollments (**

**enrollment\_id INT PRIMARY KEY,**

**student\_name VARCHAR(100) NOT NULL,**

**course\_id VARCHAR(10) NOT NULL,**

**enrollment\_date DATE NOT NULL,**

**CONSTRAINT unique\_student\_course UNIQUE (student\_name, course\_id)**

**);**

**START TRANSACTION;**

**INSERT INTO StudentEnrollments VALUES (1, 'Ashish', 'CSE101', '2024-07-01');**

**INSERT INTO StudentEnrollments VALUES (2, 'Smaran', 'CSE102', '2024-07-01');**

**INSERT INTO StudentEnrollments VALUES (3, 'Vaibhav', 'CSE101', '2024-07-01');**

**COMMIT;**

**START TRANSACTION;**

**INSERT INTO StudentEnrollments VALUES (4, 'Ashish', 'CSE101', '2024-07-02');**

**ROLLBACK;**

**START TRANSACTION;**

**SELECT \* FROM StudentEnrollments**

**WHERE student\_name = 'Ashish' AND course\_id = 'CSE101'**

**FOR UPDATE;**

**START TRANSACTION;**

**INSERT INTO StudentEnrollments VALUES (4, 'Ashish', 'CSE101', '2024-07-02');**

**COMMIT;**

**START TRANSACTION;**

**SELECT \* FROM StudentEnrollments**

**WHERE student\_name = 'Ashish' AND course\_id = 'CSE101'**

**FOR UPDATE;**

**START TRANSACTION;**

**SELECT \* FROM StudentEnrollments**

**WHERE student\_name = 'Ashish' AND course\_id = 'CSE101'**

**FOR UPDATE;**

**UPDATE StudentEnrollments**

**SET enrollment\_date = '2024-07-10'**

**WHERE student\_name = 'Ashish' AND course\_id = 'CSE101';**

**COMMIT;**

**START TRANSACTION;**

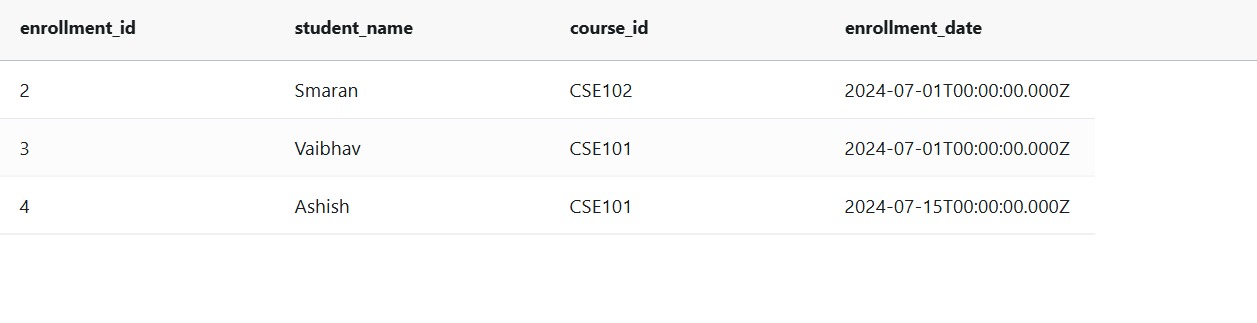
**UPDATE StudentEnrollments**

**SET enrollment\_date = '2024-07-15'**

**WHERE student\_name = 'Ashish' AND course\_id = 'CSE101';**

**COMMIT;**

**SELECT \* FROM StudentEnrollments**

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