Name:	Arshdeep Singh
UID:	23BCS14221
Subject:	ADBMS
Section:	622-B

Ans 4.2:

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) --
ensures uniqueness

) ENGINE=InnoDB;

INSERT INTO StudentEnrollments VALUES

```sql
(1, 'Ashish', 'CSE101', '2024-07-01'),

(2, 'Smaran', 'CSE102', '2024-07-01'),

(3, 'Vaibhav', 'CSE101', '2024-07-01');


-- Part A

START TRANSACTION;

INSERT INTO StudentEnrollments VALUES (4, 'Ashish', 'CSE101', '202407-02'); -- duplicate

COMMIT;

--PART B

  --USER A

  START TRANSACTION;

SELECT * FROM StudentEnrollments

WHERE student_name = 'Ashish' AND course_id = 'CSE101'

FOR UPDATE;

--user B

START TRANSACTION;

UPDATE StudentEnrollments

SET enrollment_date = '2024-07-05'

WHERE student_name = 'Ashish' AND course_id = 'CSE101';



COMMIT;


-- Now User B's query executes and updates the row.

COMMIT;
```

```sql
SELECT * FROM StudentEnrollments;

--PART C
    --USER A
    START TRANSACTION;
UPDATE StudentEnrollments
SET enrollment_date = '2024-07-10'
WHERE enrollment_id = 1;
-- Not committed yet

--USER B
UPDATE StudentEnrollments
SET enrollment_date = '2024-07-15'
WHERE enrollment_id = 1;
COMMIT;


SELECT * FROM StudentEnrollments WHERE enrollment_id = 1


START TRANSACTION;
SELECT * FROM StudentEnrollments WHERE enrollment_id = 1 FOR UPDATE;
UPDATE StudentEnrollments
SET enrollment_date = '2024-07-20'
WHERE enrollment_id = 1;
-- Keep open
```

-- User B tries to update (will be blocked until A commits):

UPDATE StudentEnrollments

SET enrollment_date = '2024-07-25'

WHERE enrollment_id = 1;

-- When User A commits:

COMMIT;

-- Now User B executes

COMMIT;

-- Final state remains consistent:

SELECT * FROM StudentEnrollments WHERE enrollment_id = 1;

(a) PART A

```
Error: Duplicate entry 'Ashish-CSE101' for key 'studentenrollments.unique_student_course'
```

(b) PART B

enrollment_id	student_name	course_id	enrollment_date
1	Ashish	CSE101	2024-07-01T00:00:00.000Z
2	Smaran	CSE102	2024-07-01T00:00:00.000Z
3	Vaibhav	CSE101	2024-07-01T00:00:00.000Z

(c) PART C

enrollment_id	student_name	course_id	enrollment_date
1	Ashish	CSE101	2024-07-25T00:00:00.000Z