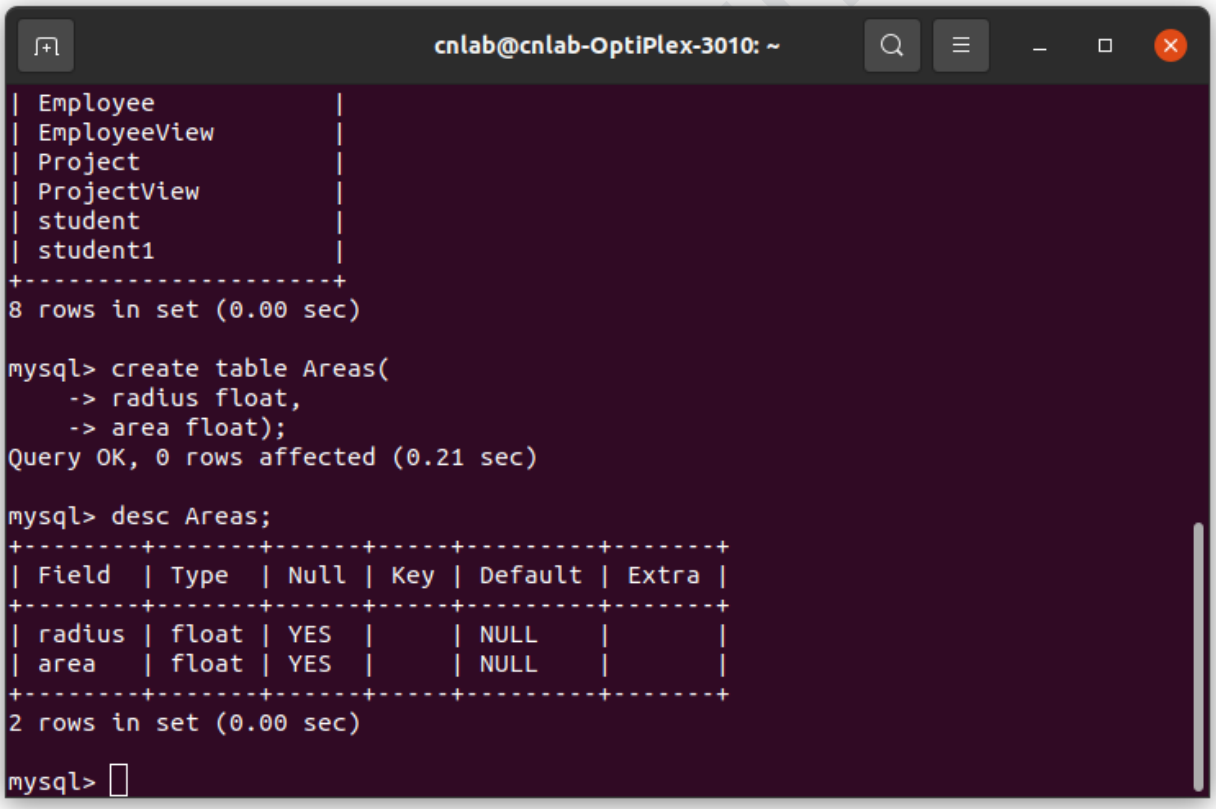
31485 – Ashwin Taras - TE 04 - N4

DBMSL

Assignment 4: Unnamed PL/SQL code block

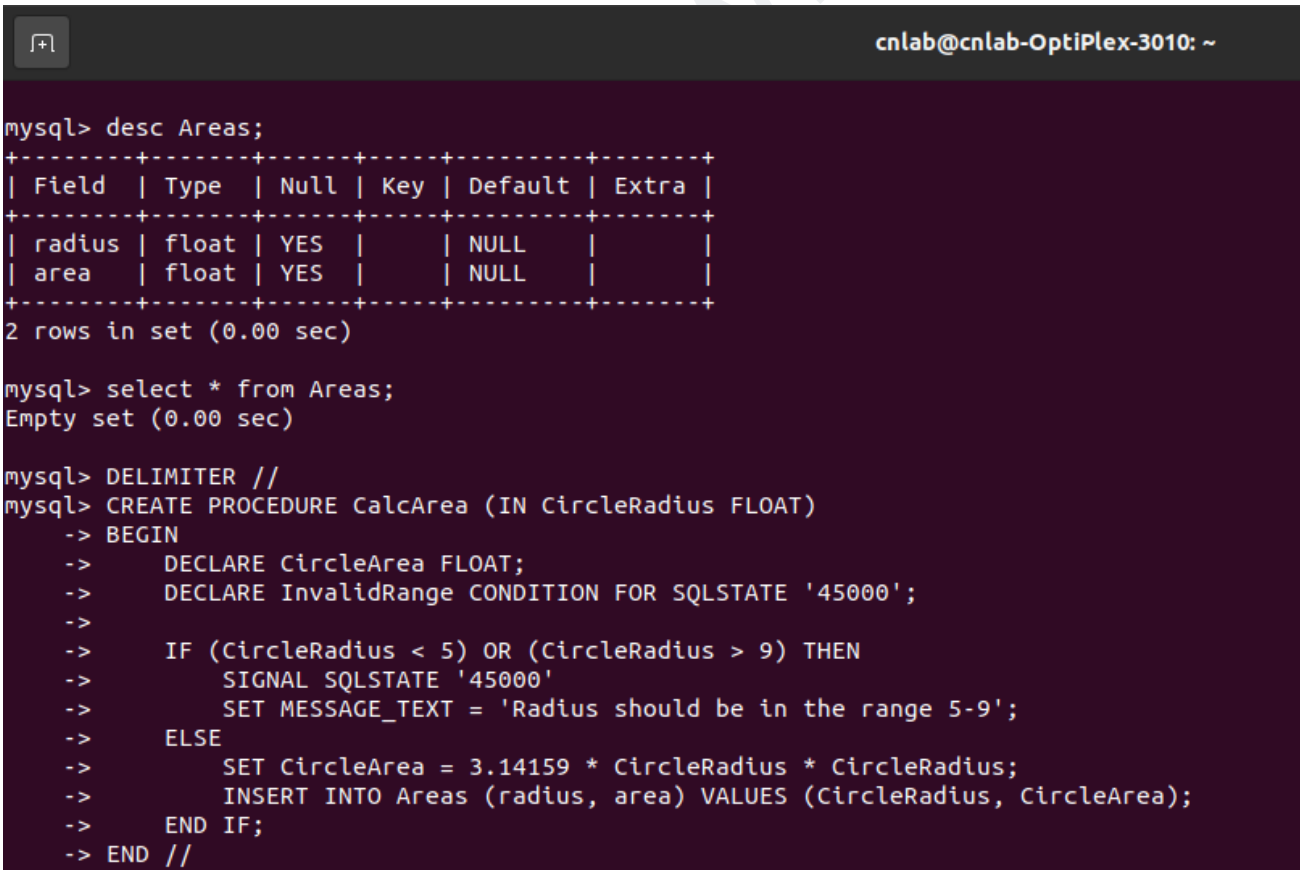
4-A) PROBLEM STATEMENT:

Write a PL/SQL code block to calculate the area of a circle for a value of radius varying from 5 to 9. Store the radius and the corresponding values of the calculated area in an empty table named areas, consisting of two columns, radius and area.



```
DELIMITER //
CREATE PROCEDURE CalcArea (IN CircleRadius FLOAT)
BEGIN
        DECLARE CircleArea FLOAT;
        DECLARE InvalidRange CONDITION FOR SQLSTATE '45000';

        IF (CircleRadius < 5) OR (CircleRadius > 9) THEN
        SIGNAL SQLSTATE '45000'
        SET MESSAGE_TEXT = 'Radius should be in the range 5-9';
        ELSE
        SET CircleArea = 3.14159 * CircleRadius * CircleRadius;
        INSERT INTO Areas (radius, area) VALUES (CircleRadius, CircleArea);
        END IF;
END //
DELIMITER ;
```

In MariaDB, we use the `DECLARE ... CONDITION` statement to define a custom exception, and the `SIGNAL SQLSTATE` statement is used to raise the exception with a custom message.

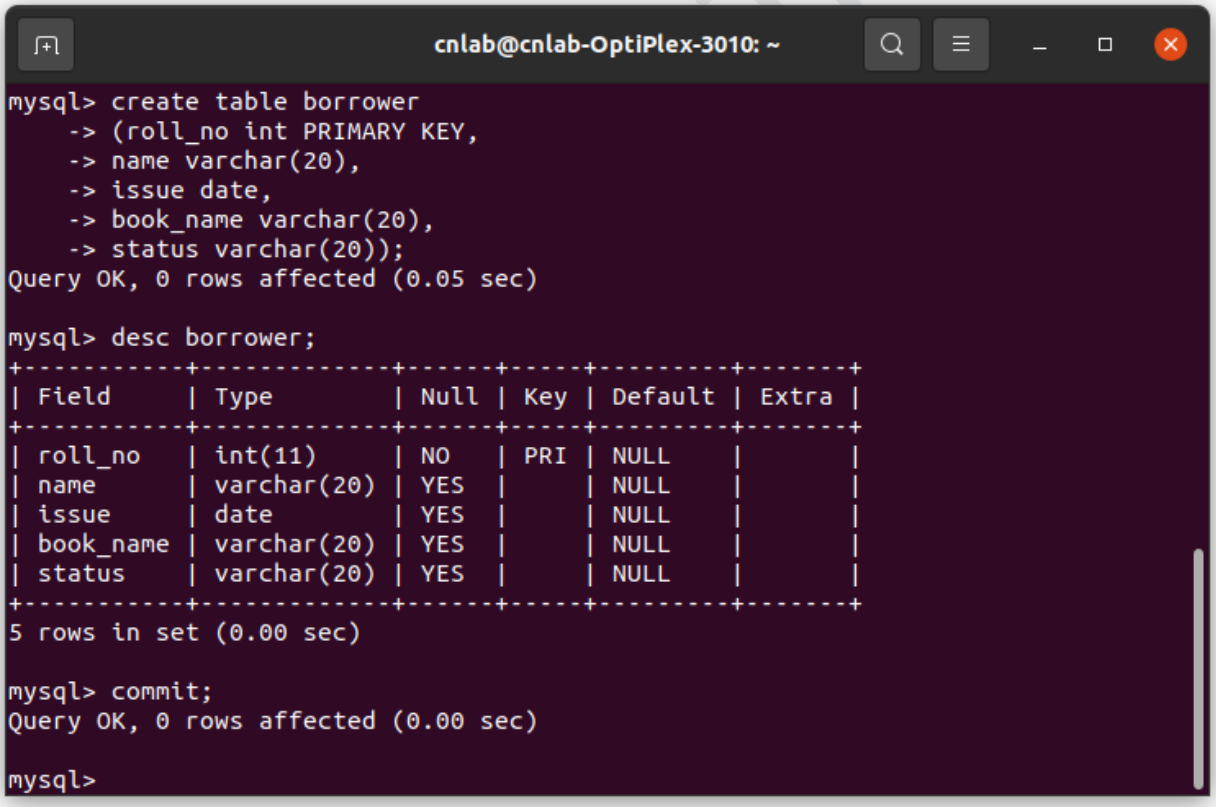


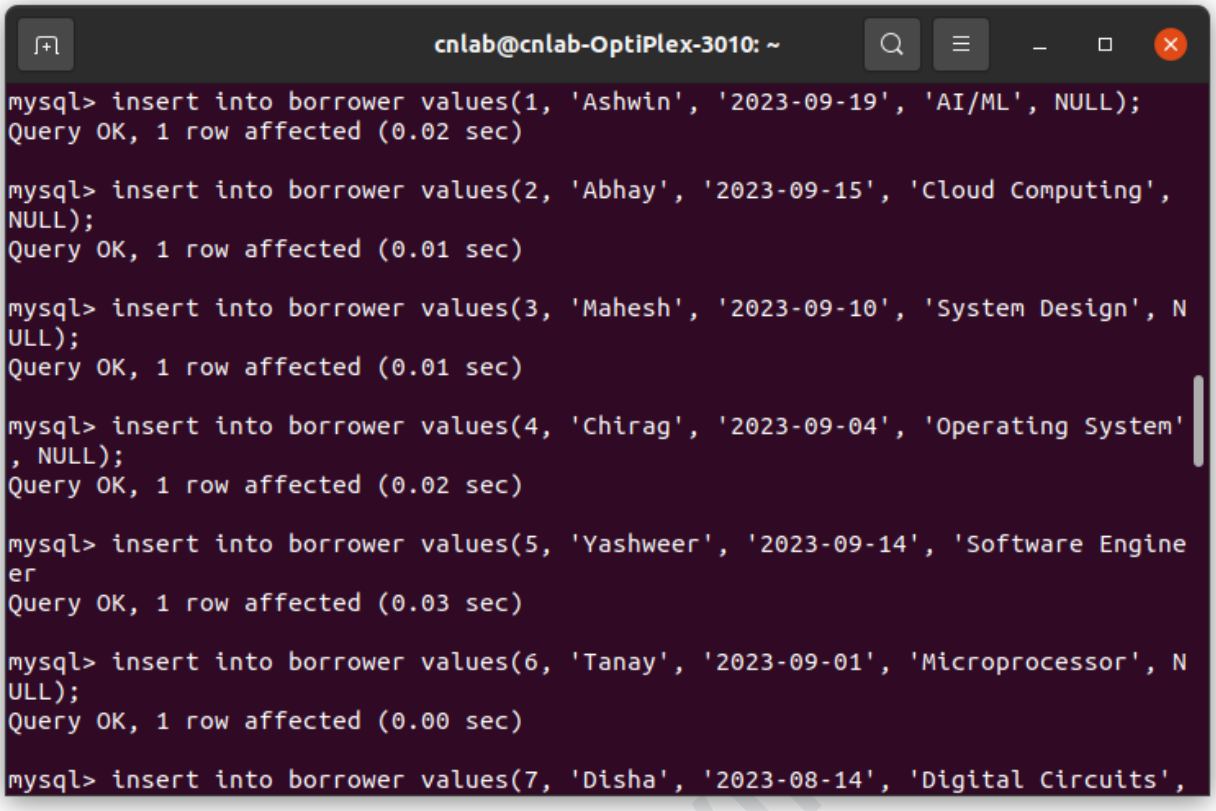
```
mysql> CALL CalcArea(5.6);
Query OK, 1 row affected (0.01 sec)

mysql> CALL CalcArea(7.3);
Query OK, 1 row affected (0.01 sec)

mysql> CALL CalcArea(9);
Query OK, 1 row affected (0.03 sec)

mysql> CALL CalcArea(5);
Query OK, 1 row affected (0.01 sec)

mysql> CALL CalcArea(10);
ERROR 1644 (45000): Radius should be in the range 5-9
mysql> CALL CalcArea(3.1);
ERROR 1644 (45000): Radius should be in the range 5-9
mysql> SELECT * FROM Areas;
+--------+---------+
| radius | area    |
+--------+---------+
|    5.6 | 98.5203 |
|    7.3 | 167.415 |
|      9 | 254.469 |
|      5 | 78.5397 |
+--------+---------+
4 rows in set (0.00 sec)

mysql>
```

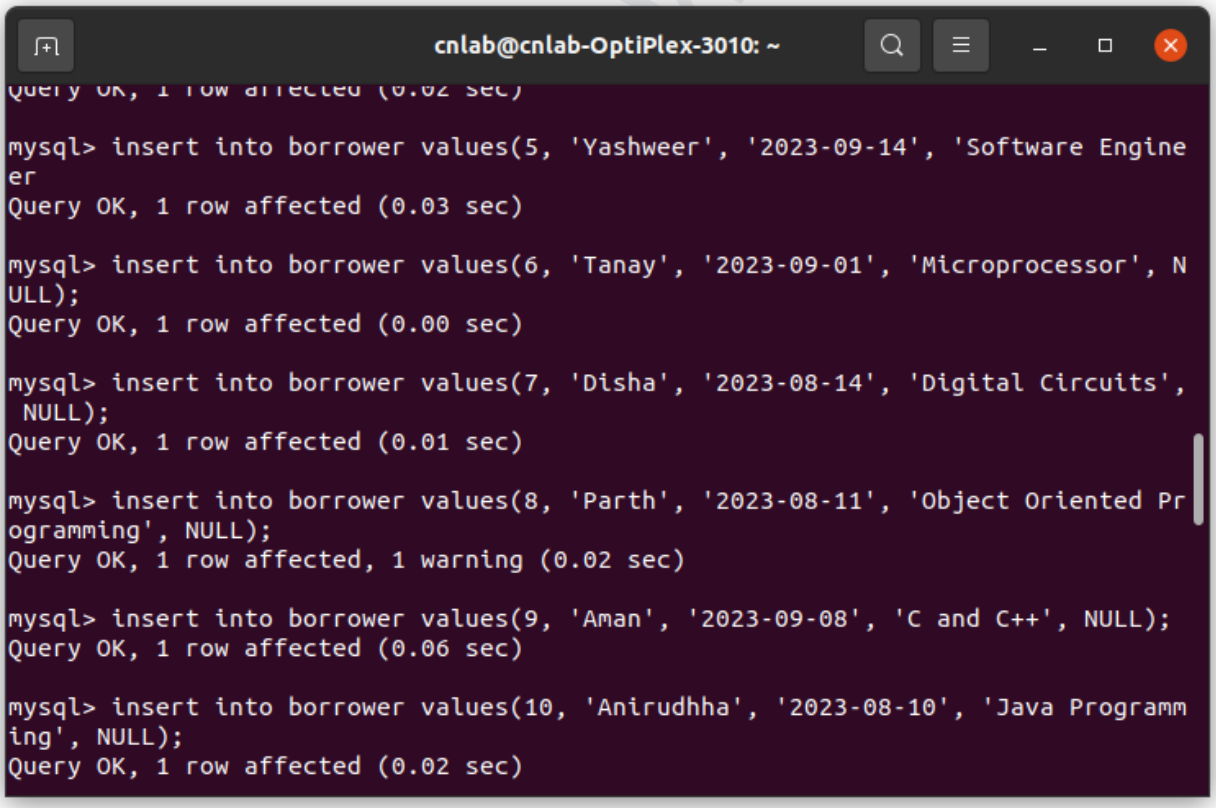
4-B) PROBLEM STATEMENT:

Write a PL/SQL block of code for the following requirements:-
Schema:
1. **Borrower** (Roll, Name, DateofIssue, NameofBook, Status)
2. **Fine** (Roll, Date, Amt)

Accept Roll & Name of book from user.
Check the number of days (from date of issue),
If days are between 15 to 30 then the fine amount will be Rs 5 per day.
If no of days > 30, per day fine will be Rs 50 per day &
for days less than 30, Rs 5 per day,
After submitting the book, status will change from I to R.
If the condition of fine is true, then the details will be stored into the fine table.




cnlab@cnlab-OptiPlex-3010: ~
mysql> insert into borrower values(1, 'Ashwin', '2023-09-19', 'AI/ML', NULL);
Query OK, 1 row affected (0.02 sec)
mysql> insert into borrower values(2, 'Abhay', '2023-09-15', 'Cloud Computing',
NULL);
Query OK, 1 row affected (0.01 sec)
mysql> insert into borrower values(3, 'Mahesh', '2023-09-10', 'System Design', N
ULL);
Query OK, 1 row affected (0.01 sec)
mysql> insert into borrower values(4, 'Chirag', '2023-09-04', 'Operating System'
, NULL);
Query OK, 1 row affected (0.02 sec)
mysql> insert into borrower values(5, 'Yashweer', '2023-09-14', 'Software Engine
er
Query OK, 1 row affected (0.03 sec)
mysql> insert into borrower values(6, 'Tanay', '2023-09-01', 'Microprocessor', N
ULL);
Query OK, 1 row affected (0.00 sec)
mysql> insert into borrower values(7, 'Disha', '2023-08-14', 'Digital Circuits',


cnlab@cnlab-OptiPlex-3010: ~
mysql> insert into borrower values(5, 'Yashweer', '2023-09-14', 'Software Engine
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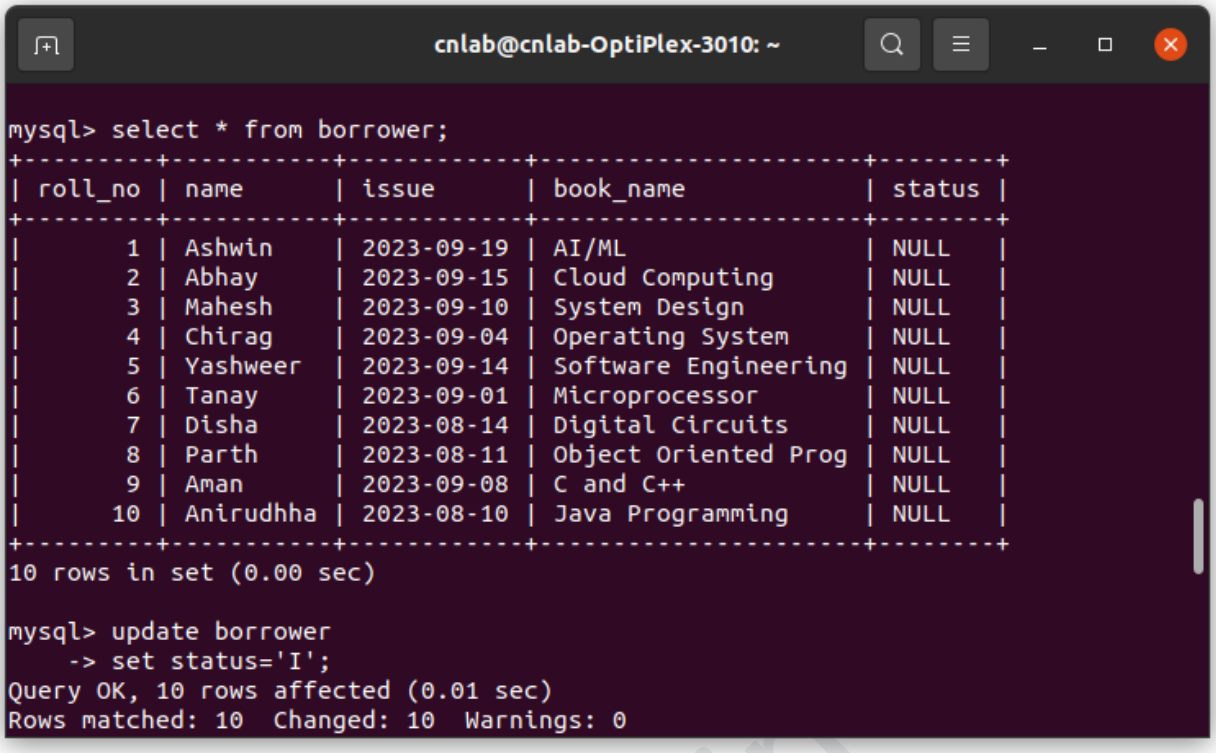
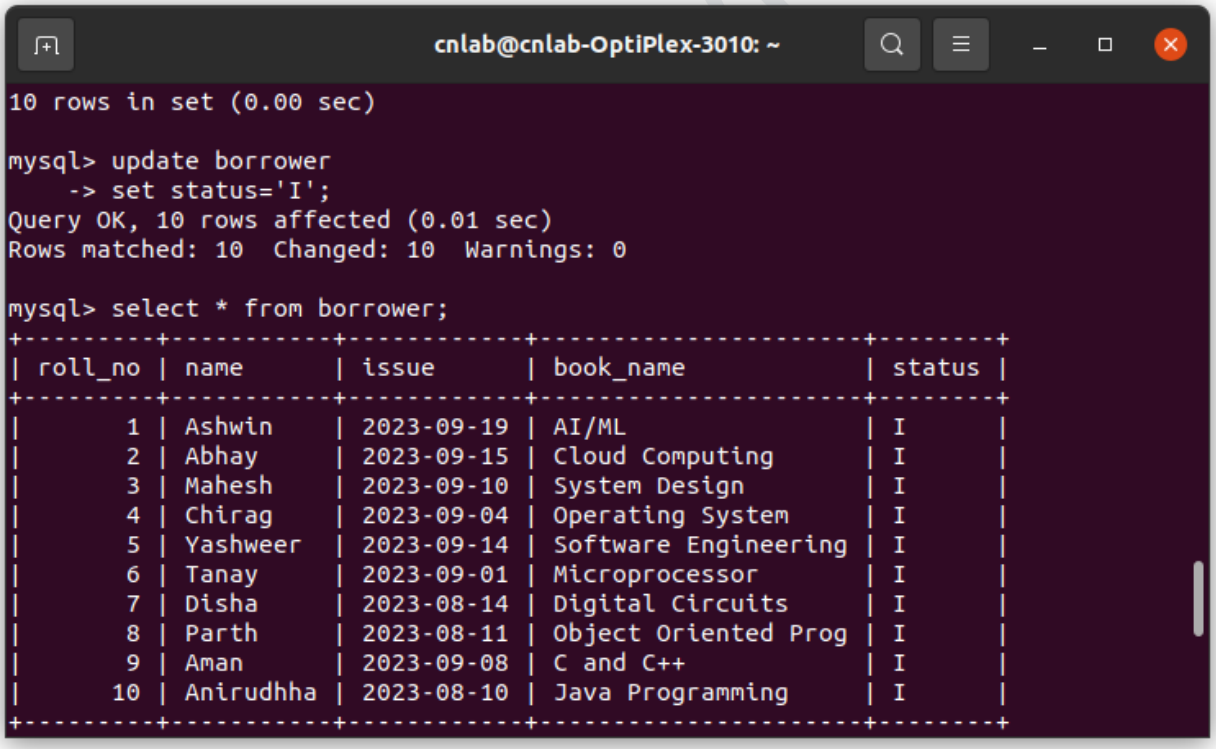
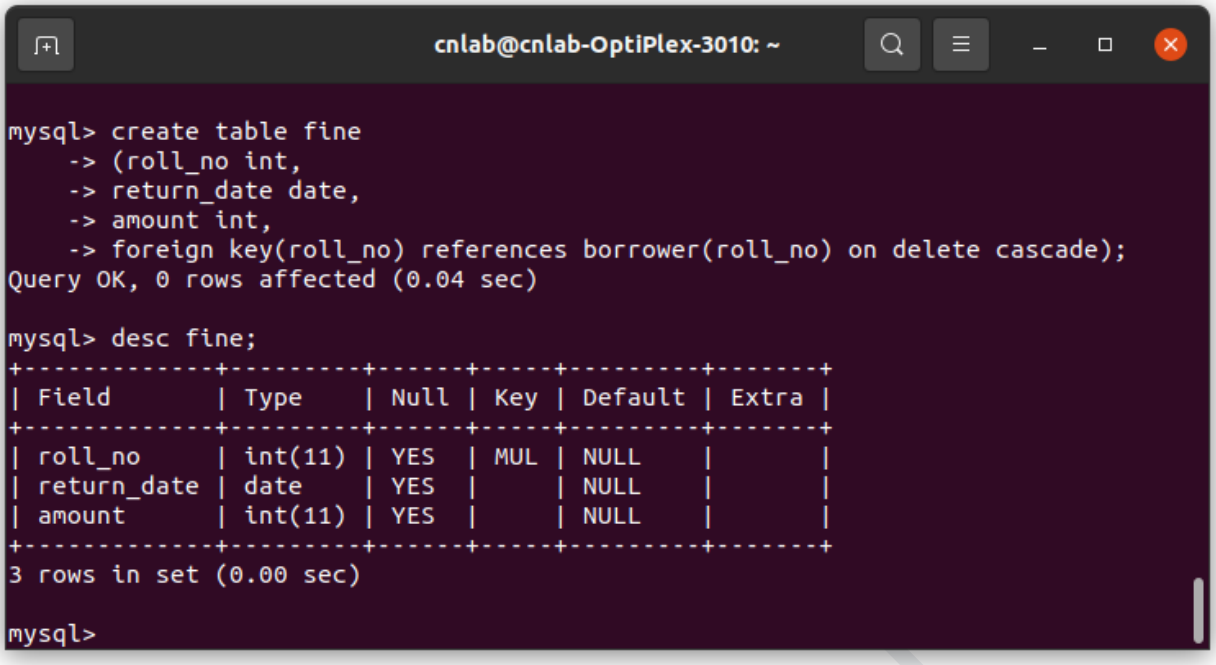
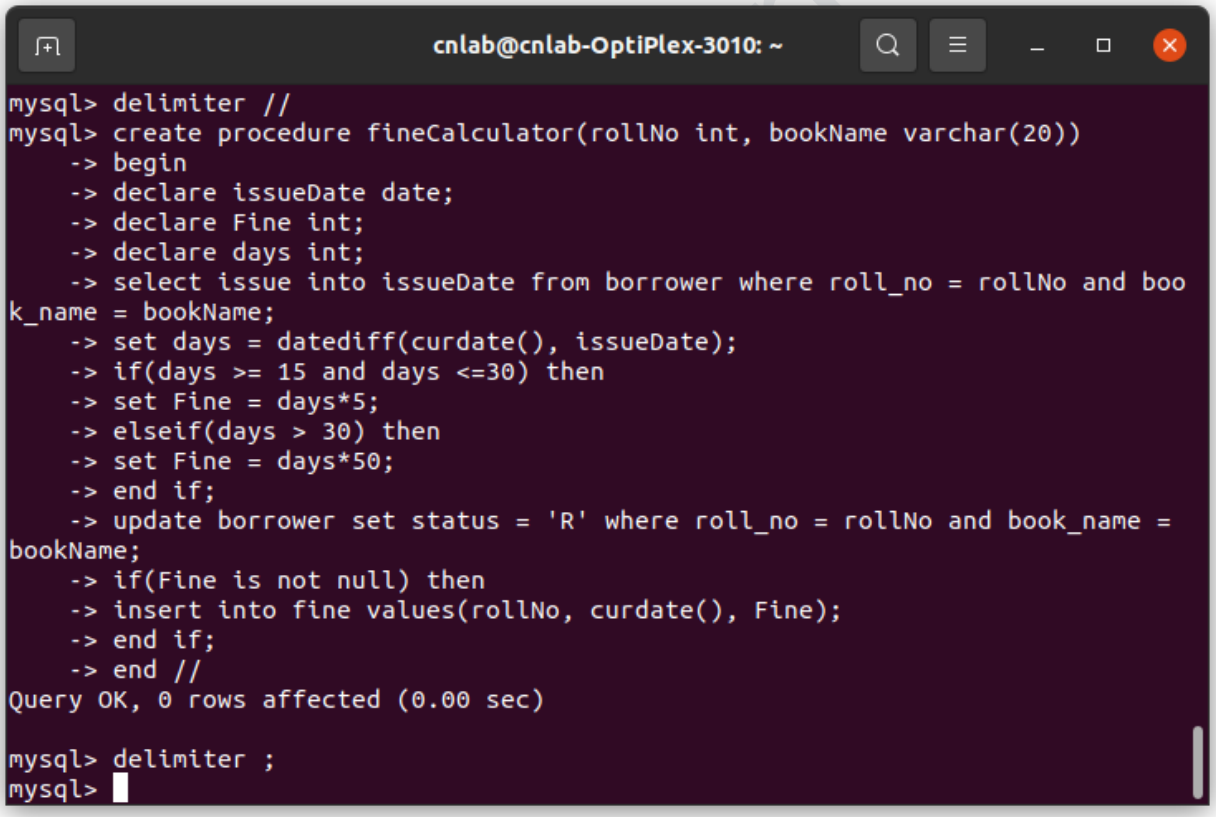
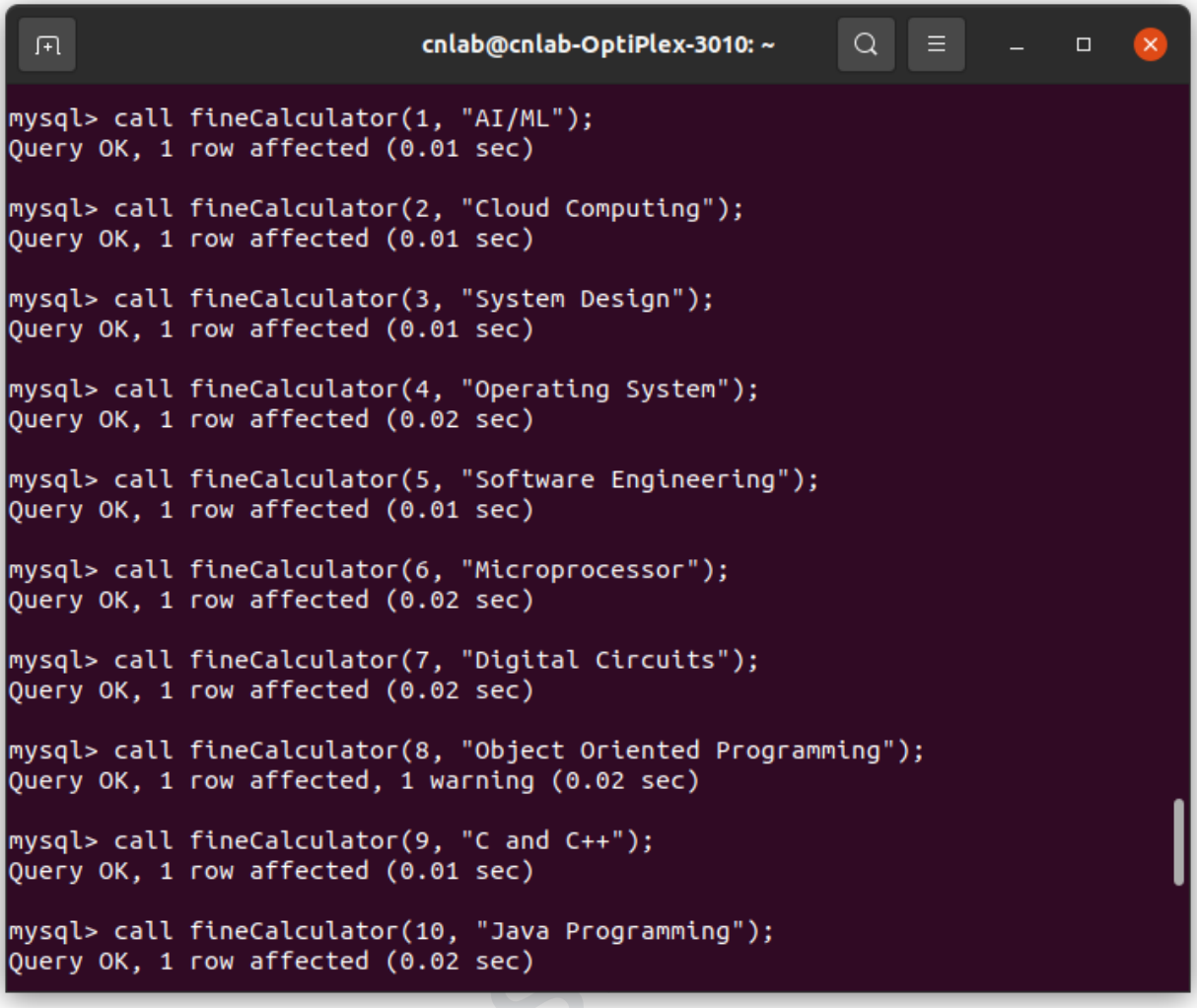
Query OK, 1 row affected (0.03 sec)
mysql> insert into borrower values(6, 'Tanay', '2023-09-01', 'Microprocessor', N
ULL);
Query OK, 1 row affected (0.00 sec)
mysql> insert into borrower values(7, 'Disha', '2023-08-14', 'Digital Circuits',
NULL);
Query OK, 1 row affected (0.01 sec)
mysql> insert into borrower values(8, 'Parth', '2023-08-11', 'Object Oriented Pr
ogramming', NULL);
Query OK, 1 row affected, 1 warning (0.02 sec)
mysql> insert into borrower values(9, 'Aman', '2023-09-08', 'C and C++', NULL);
Query OK, 1 row affected (0.06 sec)
mysql> insert into borrower values(10, 'Anirudhha', '2023-08-10', 'Java Programm
ing', NULL);
Query OK, 1 row affected (0.02 sec)


cnlab@cnlab-OptiPlex-3010: ~
mysql> select * from borrower;
+---------+-----------+------------+----------------------+--------+
| roll_no | name | issue | book_name | status |
+---------+-----------+------------+----------------------+--------+
1	Ashwin	2023-09-19	AI/ML	NULL
2	Abhay	2023-09-15	Cloud Computing	NULL
3	Mahesh	2023-09-10	System Design	NULL
4	Chirag	2023-09-04	Operating System	NULL
5	Yashweer	2023-09-14	Software Engineering	NULL
6	Tanay	2023-09-01	Microprocessor	NULL
7	Disha	2023-08-14	Digital Circuits	NULL
8	Parth	2023-08-11	Object Oriented Prog	NULL
9	Aman	2023-09-08	C and C++	NULL
10	Anirudhha	2023-08-10	Java Programming	NULL
+---------+-----------+------------+----------------------+--------+
10 rows in set (0.00 sec)
mysql> update borrower
    -> set status='I';
Query OK, 10 rows affected (0.01 sec)
Rows matched: 10 Changed: 10 Warnings: 0


cnlab@cnlab-OptiPlex-3010: ~
10 rows in set (0.00 sec)
mysql> update borrower
    -> set status='I';
Query OK, 10 rows affected (0.01 sec)
Rows matched: 10 Changed: 10 Warnings: 0
mysql> select * from borrower;
+---------+-----------+------------+----------------------+--------+
| roll_no | name | issue | book_name | status |
+---------+-----------+------------+----------------------+--------+
1	Ashwin	2023-09-19	AI/ML	I
2	Abhay	2023-09-15	Cloud Computing	I
3	Mahesh	2023-09-10	System Design	I
4	Chirag	2023-09-04	Operating System	I
5	Yashweer	2023-09-14	Software Engineering	I
6	Tanay	2023-09-01	Microprocessor	I
7	Disha	2023-08-14	Digital Circuits	I
8	Parth	2023-08-11	Object Oriented Prog	I
9	Aman	2023-09-08	C and C++	I
10	Anirudhha	2023-08-10	Java Programming	I
+---------+-----------+------------+----------------------+--------+


cnlab@cnlab-OptiPlex-3010: ~
mysql> create table fine
-> (roll_no int,
-> return_date date,
-> amount int,
-> foreign key(roll_no) references borrower(roll_no) on delete cascade);
Query OK, 0 rows affected (0.04 sec)
mysql> desc fine;
Field	Type	Null	Key	Default	Extra
roll_no	int(11)	YES	MUL	NULL	
return_date	date	YES		NULL	
amount	int(11)	YES		NULL	
3 rows in set (0.00 sec)
mysql>


cnlab@cnlab-OptiPlex-3010: ~
mysql> delimiter //
mysql> create procedure fineCalculator(rollNo int, bookName varchar(20))
-> begin
-> declare issueDate date;
-> declare Fine int;
-> declare days int;
-> select issue into issueDate from borrower where roll_no = rollNo and boo
k_name = bookName;
-> set days = datediff(curdate(), issueDate);
-> if(days >= 15 and days <=30) then
-> set Fine = days*5;
-> elseif(days > 30) then
-> set Fine = days*50;
-> end if;
-> update borrower set status = 'R' where roll_no = rollNo and book_name =
bookName;
-> if(Fine is not null) then
-> insert into fine values(rollNo, curdate(), Fine);
-> end if;
-> end //
Query OK, 0 rows affected (0.00 sec)
mysql> delimiter ;
mysql>


cnlab@cnlab-OptiPlex-3010: ~
mysql> call fineCalculator(1, "AI/ML");
Query OK, 1 row affected (0.01 sec)
mysql> call fineCalculator(2, "Cloud Computing");
Query OK, 1 row affected (0.01 sec)
mysql> call fineCalculator(3, "System Design");
Query OK, 1 row affected (0.01 sec)
mysql> call fineCalculator(4, "Operating System");
Query OK, 1 row affected (0.02 sec)
mysql> call fineCalculator(5, "Software Engineering");
Query OK, 1 row affected (0.01 sec)
mysql> call fineCalculator(6, "Microprocessor");
Query OK, 1 row affected (0.02 sec)
mysql> call fineCalculator(7, "Digital Circuits");
Query OK, 1 row affected (0.02 sec)
mysql> call fineCalculator(8, "Object Oriented Programming");
Query OK, 1 row affected, 1 warning (0.02 sec)
mysql> call fineCalculator(9, "C and C++");
Query OK, 1 row affected (0.01 sec)
mysql> call fineCalculator(10, "Java Programming");
Query OK, 1 row affected (0.02 sec)