Assignment No 5

Problem Statement:

Write PL/SQL block to calculate fine for a library Book by accessing borrower information from the database.

Input:

```
CREATE TABLE borrowers (
    borrower_id INT PRIMARY KEY,
    borrower_name VARCHAR(100),
    book_id INT,
    book_title VARCHAR(100),
    due_date DATE,
    return_date DATE
);

INSERT INTO borrowers (borrower_id, borrower_name, book_id, book_title, due_date, return_date)
VALUES
(1, 'Alice', 101, 'Database Systems', '2024-10-10', '2024-10-20'),
(2, 'Bob', 102, 'Operating Systems', '2024-10-15', '2024-10-18'),
(3, 'Charlie', 103, 'AI Basics', '2024-10-05', '2024-10-21');

DELIMITER $$

CREATE PROCEDURE calculate_fine()
BEGIN
    DECLARE v_borrower_id INT;
    DECLARE v_borrower_name VARCHAR(100);
    DECLARE v_book_title VARCHAR(100);
    DECLARE v_due_date DATE;
    DECLARE v_return_date DATE;
    DECLARE v_days_overdue INT;
    DECLARE v_fine INT;
    DECLARE done INT DEFAULT 0;

    -- Cursor to iterate over borrowers' records
    DECLARE borrower_cursor CURSOR FOR
    SELECT borrower_id, borrower_name, book_title, due_date, return_date
    FROM borrowers;

    -- Handler for end of cursor
    DECLARE CONTINUE HANDLER FOR NOT FOUND SET done = 1;

    OPEN borrower_cursor;

    read_loop: LOOP
        FETCH borrower_cursor INTO v_borrower_id, v_borrower_name, v_book_title, v_due_date,
v_return_date;

        IF done THEN
            LEAVE read_loop;
        END IF;
```

```
    -- Calculate days overdue and fine
    SET v_days_overdue = DATEDIFF(v_return_date, v_due_date);

    IF v_days_overdue > 0 THEN
       SET v_fine = v_days_overdue * 5; -- 5 INR per day
    ELSE
       SET v_fine = 0;
    END IF;

    -- Display borrower details with fine
    SELECT CONCAT('Borrower: ', v_borrower_name, ' | Book: ', v_book_title,
          ' | Fine: ', v_fine, ' INR') AS result;
  END LOOP;

  CLOSE borrower_cursor;
END $$

DELIMITER ;

CALL calculate_fine();
```

Output:

```
+-----------------------------------------------------------+
| result                                                    |
+-----------------------------------------------------------+
| Borrower: Alice | Book: Database Systems | Fine: 50 INR |
+-----------------------------------------------------------+
1 row in set (0.04 sec)

+-----------------------------------------------------------+
| result                                                    |
+-----------------------------------------------------------+
| Borrower: Bob | Book: Operating Systems | Fine: 15 INR |
+-----------------------------------------------------------+
1 row in set (0.04 sec)

+-------------------------------------------------------+
| result                                                |
+-------------------------------------------------------+
| Borrower: Charlie | Book: AI Basics | Fine: 80 INR |
+-------------------------------------------------------+
1 row in set (0.04 sec)

Query OK, 0 rows affected (0.04 sec)
+------------+---------------+-----------------+----------+
| student_id | student_name  | attendance_date | status   |
+------------+---------------+-----------------+----------+
|          1 | John Doe      | 2024-10-10      | Present  |
|          2 | Jane Smith    | 2024-10-10      | Absent   |
|          3 | Alice Johnson | 2024-10-11      | Present  |
+------------+---------------+-----------------+----------+
3 rows in set (0.00 sec)
```