describe borrower;

+-----------+-------------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+-----------+-------------+------+-----+---------+-------+

| roll | int(11) | YES | | NULL | |

| name | varchar(45) | YES | | NULL | |

| doi | date | YES | | NULL | |

| book\_name | varchar(45) | YES | | NULL | |

| status | varchar(45) | YES | | NULL | |

+-----------+-------------+------+-----+---------+-------+

describe fine;

+--------+---------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+--------+---------+------+-----+---------+-------+

| rollno | int(11) | YES | | NULL | |

| date | date | YES | | NULL | |

| amount | int(11) | YES | | NULL | |

+--------+---------+------+-----+---------+-------+

select \* from borrower;

| **roll** | **name** | **doi** | **book\_name** | **status** |
| --- | --- | --- | --- | --- |
| 101 | John Doe | 2024-07-10 | Introduction to SQL | I |
| 102 | Jane Smith | 2024-07-15 | Python Programming | I |
| 103 | Michael Johnson | 2024-07-20 | Data Structures and Algorithms | I |
| 104 | Emily Brown | 2024-07-25 | Machine Learning | I |
| 105 | David Wilson | 2024-07-28 | Web Development | I |
| 106 | Sophia Garcia | 2024-07-05 | Artificial Intelligence | I |
| 107 | Daniel Martinez | 2024-07-08 | Cloud Computing | I |
| 108 | Emma Davis | 2024-07-12 | Cybersecurity | I |
| 109 | Liam Rodriguez | 2024-07-18 | Database Management | I |
| 110 | Olivia Hernandez | 2024-07-22 | Software Engineering | I |

-- Create Borrower table

CREATE TABLE borrower (

roll INT(11),

name VARCHAR(45),

doi DATE,

book\_name VARCHAR(45),

status VARCHAR(45)

);

-- Create Fine table

CREATE TABLE fine (

rollno INT(11),

date DATE,

amount INT(11)

);

-- Insert sample data into Borrower table

INSERT INTO borrower (roll, name, doi, book\_name, status) VALUES

(101, 'John Doe', '2024-07-10', 'Introduction to SQL', 'I'),

(102, 'Jane Smith', '2024-07-15', 'Python Programming', 'I'),

(103, 'Michael Johnson', '2024-07-20', 'Data Structures and Algorithms', 'I'),

(104, 'Emily Brown', '2024-07-25', 'Machine Learning', 'I'),

(105, 'David Wilson', '2024-07-28', 'Web Development', 'I'),

(106, 'Sophia Garcia', '2024-07-05', 'Artificial Intelligence', 'I'),

(107, 'Daniel Martinez', '2024-07-08', 'Cloud Computing', 'I'),

(108, 'Emma Davis', '2024-07-12', 'Cybersecurity', 'I'),

(109, 'Liam Rodriguez', '2024-07-18', 'Database Management', 'I'),

(110, 'Olivia Hernandez', '2024-07-22', 'Software Engineering', 'I');

DELIMITER //

CREATE PROCEDURE processfine()

BEGIN

DECLARE v\_roll\_no INT;

DECLARE v\_name VARCHAR(100);

DECLARE v\_book\_name VARCHAR(100);

DECLARE v\_issue\_date DATE;

DECLARE v\_status VARCHAR(45);

DECLARE v\_fine\_amt INT DEFAULT 0;

DECLARE v\_days\_late INT;

DECLARE cur CURSOR FOR

SELECT roll, name, doi, book\_name, status

FROM borrower

WHERE status = 'I'; -- Process only books that are issued (status 'I')

-- Declare handler for no data condition

DECLARE CONTINUE HANDLER FOR NOT FOUND SET v\_roll\_no = NULL;

-- Open cursor

OPEN cur;

read\_loop: LOOP

FETCH cur INTO v\_roll\_no, v\_name, v\_issue\_date, v\_book\_name, v\_status;

-- Exit loop if no more data

IF v\_roll\_no IS NULL THEN

LEAVE read\_loop;

END IF;

-- Calculate the number of days since the book was issued

SET v\_days\_late = DATEDIFF(CURRENT\_DATE(), v\_issue\_date);

-- Determine fine amount based on the number of days late

IF v\_days\_late > 30 THEN

SET v\_fine\_amt = 50 \* (v\_days\_late - 30) + 5 \* 30; -- Rs. 50 per day after 30 days, Rs. 5 per day for the first 30 days

ELSEIF v\_days\_late >= 15 THEN

SET v\_fine\_amt = 5 \* v\_days\_late; -- Rs. 5 per day between 15 and 30 days

ELSE

SET v\_fine\_amt = 0; -- No fine if less than 15 days late

END IF;

-- Update status to 'R' (Returned) in Borrower table

UPDATE borrower

SET status = 'R'

WHERE roll = v\_roll\_no AND book\_name = v\_book\_name;

-- Insert fine details into Fine table if fine amount is greater than 0

IF v\_fine\_amt > 0 THEN

INSERT INTO fine (rollno, date, amount)

VALUES (v\_roll\_no, CURRENT\_DATE(), v\_fine\_amt);

END IF;

END LOOP;

-- Close cursor

CLOSE cur;

END //

DELIMITER ;

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

DECLARE

v\_roll\_no INT;

v\_name VARCHAR2(100);

v\_book\_name VARCHAR2(100);

v\_issue\_date DATE;

v\_status VARCHAR2(45);

v\_fine\_amt INT := 0;

v\_days\_late INT;

-- Cursor to select borrowers with issued books

CURSOR borrower\_cur IS

SELECT roll, name, doi, book\_name, status

FROM borrower

WHERE status = 'I'; -- Only process records with status 'I' (Issued)

BEGIN

-- Loop through each record in the cursor

FOR borrower\_rec IN borrower\_cur LOOP

v\_roll\_no := borrower\_rec.roll;

v\_name := borrower\_rec.name;

v\_issue\_date := borrower\_rec.doi;

v\_book\_name := borrower\_rec.book\_name;

v\_status := borrower\_rec.status;

-- Calculate days late

v\_days\_late := TRUNC(SYSDATE - v\_issue\_date);

-- Determine fine amount based on days late

IF v\_days\_late > 30 THEN

v\_fine\_amt := 50 \* (v\_days\_late - 30) + 5 \* 30; -- Rs. 50 per day after 30 days

ELSIF v\_days\_late >= 15 THEN

v\_fine\_amt := 5 \* v\_days\_late; -- Rs. 5 per day between 15 and 30 days

ELSE

v\_fine\_amt := 0; -- No fine if less than 15 days late

END IF;

-- Update status to 'R' (Returned) in borrower table

UPDATE borrower

SET status = 'R'

WHERE roll = v\_roll\_no AND book\_name = v\_book\_name;

-- Insert fine details if applicable

IF v\_fine\_amt > 0 THEN

INSERT INTO fine (rollno, date, amount)

VALUES (v\_roll\_no, SYSDATE, v\_fine\_amt);

END IF;

-- Display information

DBMS\_OUTPUT.PUT\_LINE('Processed Roll No: ' || v\_roll\_no || ', Fine: ' || v\_fine\_amt);

END LOOP;

EXCEPTION

WHEN OTHERS THEN

DBMS\_OUTPUT.PUT\_LINE('An error occurred: ' || SQLERRM);

END;

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

CALL processfine();

select \* from fine;

| **rollno** | **date** | **amount** |
| --- | --- | --- |

| 101 | 2024-07-31 | 105 |
| --- | --- | --- |

| 102 | 2024-07-31 | 80 |
| --- | --- | --- |

| 106 | 2024-07-31 | 130 |
| --- | --- | --- |

| 107 | 2024-07-31 | 115 |
| --- | --- | --- |

| 108 | 2024-07-31 | 95 |
| --- | --- | --- |