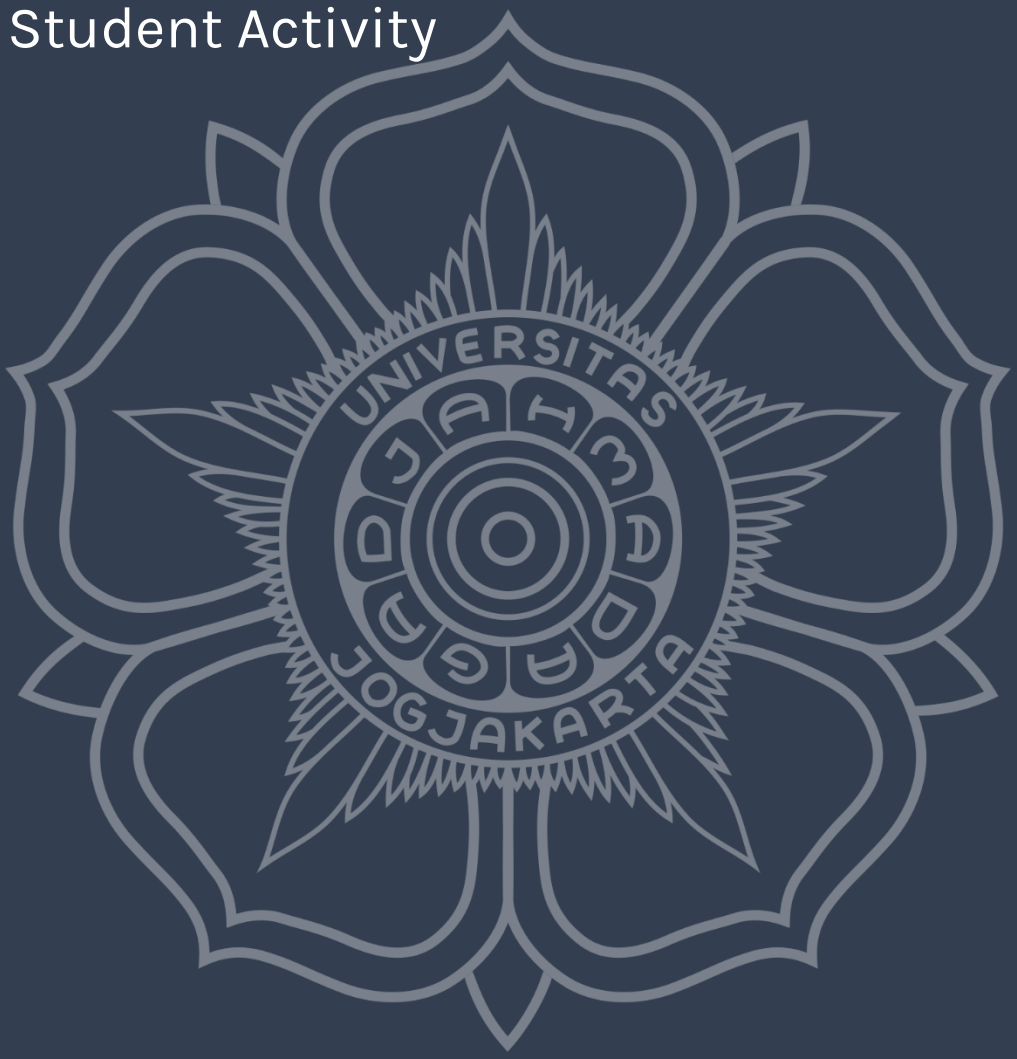
Praktikum Basis Data

(MII2502)

6.3 | Student Activity



Chrystian

18/430257/PA/18770

Screenshot

Data Test For Queries

Users Table

```
MariaDB [library]> SELECT * FROM users;
+--------+----------+--------------------+--------------------+
| userID | userName | numberOfBorrowing | numberOfReturning |
+--------+----------+--------------------+--------------------+
|      1 | Fara     |                  2 |                  1 |
|      2 | Gavin    |                  1 |                  0 |
|      3 | Haley    |                  0 |                  0 |
|      4 | Irwin    |                  0 |                  0 |
|      5 | Jackob   |                  1 |                  0 |
+--------+----------+--------------------+--------------------+
5 rows in set (0.00 sec)
```

Books Table

```
MariaDB [library]> SELECT * FROM books;
+--------+-------------------+------------+----------------+
| bookID | bookTitle         | authorName | borrowedStatus |
+--------+-------------------+------------+----------------+
|      1 | How To C++        | Arthur     | available      |
|      2 | How To Java       | Bob        | borrowed       |
|      3 | How To JavaScript | Chris      | borrowed       |
|      4 | How To Python     | Darwin     | available      |
|      5 | How To Zzzzz      | Ezra       | borrowed       |
+--------+-------------------+------------+----------------+
5 rows in set (0.00 sec)
```

Flow Table

```
MariaDB [library]> SELECT * FROM flow;
+--------+-----------------+----------------+------------+------------+
| flowID | userIDBorrowing | bookIDBorrowed | borrowDate | returnDate |
+--------+-----------------+----------------+------------+------------+
|      1 |               1 |              2 | 2019-10-08 | 2019-10-14 |
|      2 |               1 |              3 | 2019-10-14 | NULL       |
|      3 |               2 |              2 | 2019-10-15 | NULL       |
|      4 |               5 |              5 | 2019-10-14 | NULL       |
+--------+-----------------+----------------+------------+------------+
4 rows in set (0.00 sec)
```

Queries

1. Show all book titles where status is borrowed and date of borrow is yesterday

*as writing this currentDate = 2019-10-15 -> yesterdayDate = 2019-10-14

```
MariaDB [library]> SELECT books.bookTitle
    -> FROM
    ->     flow JOIN books ON flow.bookIDBorrowed = books.bookID
    -> WHERE
    ->     flow.borrowDate = subdate(current_date, 1) AND
    ->     flow.returnDate is NULL;
+------------------+
| bookTitle        |
+------------------+
| How To JavaScript |
| How To Zzzzz     |
+------------------+
2 rows in set (0.00 sec)
```

2. Show all book title even its not borrowed and its userID borrower for which it is borrowed.

```
MariaDB [library]> SELECT books.bookTitle, flow.userIDBorrowing
    -> FROM
    ->     books LEFT JOIN flow ON flow.bookIDBorrowed = books.bookID
    -> WHERE
    ->     flow.returnDate is NULL
    -> ORDER BY
    ->     bookID ASC;
+------------------+-----------------+
| bookTitle        | userIDBorrowing |
+------------------+-----------------+
| How To C++       |            NULL |
| How To Java      |               2 |
| How To JavaScript |               1 |
| How To Python    |            NULL |
| How To Zzzzz     |               5 |
+------------------+-----------------+
5 rows in set (0.00 sec)
```

3. Show all book borrowed and all user ID whether he/she is borrowing or not

```
MariaDB [library]> SELECT users.userID, results.bookIDBorrowed, results.bookTitle
    -> FROM
    ->     users LEFT JOIN (
    ->     SELECT flow.userIDBorrowing, flow.bookIDBorrowed, books.bookTitle
    ->     FROM
    ->         flow INNER JOIN books ON flow.bookIDBorrowed = books.bookID
    ->     WHERE
    ->         flow.returnDate is NULL -- not returned yet
    ->     ) as results ON results.userIDBorrowing = users.userID;
+--------+----------------+-------------------+
| userID | bookIDBorrowed | bookTitle         |
+--------+----------------+-------------------+
|      1 |              3 | How To JavaScript |
|      2 |              2 | How To Java       |
|      3 |           NULL | NULL              |
|      4 |           NULL | NULL              |
|      5 |              5 | How To Zzzzz      |
+--------+----------------+-------------------+
5 rows in set (0.00 sec)
```

4. Using one query, list all book titles and user names in which book is borrowed and user borrow more than 3 books.

```
MariaDB [library]> SELECT q1.userName, books.bookTitle, q1.numberOfBorrowing-q1.numberOfReturning as currently_borrow
    ->     FROM
    ->         (SELECT users.userID, users.userName, users.numberOfBorrowing, users.numberOfReturning, flow.bookIDBorrow
ed, flow.returnDate
    ->         FROM
    ->         users LEFT JOIN flow ON users.userID = flow.userIDBorrowing) as q1 LEFT JOIN books ON q1.bookIDBorrowed=b
ooks.bookID
    ->     WHERE
    ->         q1.returnDate is null -- hasn't returned it
    ->     HAVING
    ->         currently_borrow > 3;
Empty set (0.00 sec)
```

Empty set, because no one in the data set borrow more than 3

```
MariaDB [library]> SELECT q1.userName, books.bookTitle, q1.numberOfBorrowing-q1.numberOfReturning as currently_borrow
    ->     FROM
    ->         (SELECT users.userID, users.userName, users.numberOfBorrowing, users.numberOfReturning, flow.bookIDBorrow
ed, flow.returnDate
    ->         FROM
    ->         users LEFT JOIN flow ON users.userID = flow.userIDBorrowing) as q1 LEFT JOIN books ON q1.bookIDBorrowed=b
ooks.bookID
    ->     WHERE
    ->         q1.returnDate is null -- hasn't returned it
    ->     HAVING
    ->         currently_borrow > -1;
+----------+-------------------+-----------------+
| userName | bookTitle         | currently_borrow |
+----------+-------------------+-----------------+
| Fara     | How To JavaScript |               1 |
| Gavin    | How To Java       |               1 |
| Jackob   | How To Zzzzz      |               1 |
| Haley    | NULL              |               0 |
| Irwin    | NULL              |               0 |
+----------+-------------------+-----------------+
5 rows in set (0.00 sec)
```

Test the queries if someone borrow more or equal to 0.

Queries Source Code

```
create database library;
use library;

create table books(
    bookID int AUTO_INCREMENT,
    bookTitle char(50) NOT NULL,
    authorName char(50) NOT NULL,
    borrowedStatus ENUM ('borrowed', 'available') NOT NULL,
    PRIMARY KEY(bookID)
);

create table users(
    userID int AUTO_INCREMENT,
    userName char(50) NOT NULL,
    numberOfBorrowing int, /*many times borrow*/
    numberOfReturning int, /*many times already returned*/
    PRIMARY KEY(userID)
);

create table flow(
    flowID int AUTO_INCREMENT,
    userIDBorrowing int NOT NULL,
    bookIDBorrowed int NOT NULL,
    borrowDate date NOT NULL,
    returnDate date,
    PRIMARY KEY(flowID),
    FOREIGN KEY(userIDBorrowing) REFERENCES users(userID),
    FOREIGN KEY(bookIDBorrowed) REFERENCES books(bookID)
);

INSERT books(bookTitle, authorName, borrowedStatus) VALUE
('How To C++', 'Arthur', 'available'),
('How To Java', 'Bob', 'available'),
('How To JavaScript', 'Chris', 'available'),
('How To Python', 'Darwin', 'available'),
('How To Zzzzz', 'Ezra', 'available');

INSERT users(userName) VALUE
('Fara'),
('Gavin'),
('Haley'),
('Irwin'),
('Jackob');

-- test case
-- fara borrow Java a Week Ago return it yesterday
-- fara borrow javaScript yesterday hasn't return it
-- Gavin borrow Java Today hasn't returned it
-- Jackob borrow Zzzz Yesterday hasn't returned it

-- Borrowing Query
INSERT flow(userIDBorrowing, bookIDBorrowed, borrowDate) VALUE
((SELECT userID FROM users WHERE userName = 'Fara'), (SELECT bookID FROM books WHERE book
ID=2), (SELECT NOW() - INTERVAL 7 DAY)),
((SELECT userID FROM users WHERE userName = 'Fara'), (SELECT bookID FROM books WHERE book
ID=3), (SELECT NOW() - INTERVAL 1 DAY)),
```

```
((SELECT userID FROM users WHERE userName = 'Gavin'), (SELECT bookID FROM books WHERE boo
kID=2), (SELECT NOW())),
((SELECT userID FROM users WHERE userName = 'Jackob'), (SELECT bookID FROM books WHERE bo
okID=5), (SELECT NOW() - INTERVAL 1 DAY));
-- edit returned book
UPDATE flow
SET
    returnDate = subdate(current_date, 1)
WHERE
    flowID = 1;

-- edit book availability
UPDATE books
SET
    borrowedStatus = 'borrowed'
WHERE
    bookID = 2 OR
    bookID = 3 OR
    bookID = 5;

-- edit user status
UPDATE users
SET
    numberOfBorrowing = 0
WHERE
    userName = 'Haley' OR
    userName = 'Irwin';

UPDATE users
SET
    numberOfBorrowing = 1
WHERE
    userName = 'Gavin' OR
    userName = 'Jackob';

UPDATE users
SET
    numberOfBorrowing = 2
WHERE
    userName = 'Fara';

UPDATE users
SET
    numberOfReturning = 1
WHERE
    userName = 'Fara';

UPDATE users
SET
    numberOfReturning = 0
WHERE
    userName != 'Fara';


SELECT * FROM users;
SELECT * FROM books;
SELECT * FROM flow;
```

```sql
--QUERY
-- 1 --
SELECT books.bookTitle
FROM
    flow JOIN books ON flow.bookIDBorrowed = books.bookID
WHERE
    flow.borrowDate = subdate(current_date, 1) AND
    flow.returnDate is NULL;

-- 2 --
SELECT books.bookTitle, flow.userIDBorrowing
FROM
    books LEFT JOIN flow ON flow.bookIDBorrowed = books.bookID
WHERE
    flow.returnDate is NULL
ORDER BY
    bookID ASC;

-- 3 --
SELECT users.userID, results.bookIDBorrowed, results.bookTitle
FROM
    users LEFT JOIN (
    SELECT flow.userIDBorrowing, flow.bookIDBorrowed, books.bookTitle
    FROM
        flow INNER JOIN books ON flow.bookIDBorrowed = books.bookID
    WHERE
        flow.returnDate is NULL -- not returned yet
    ) as results ON results.userIDBorrowing = users.userID;

-- 4 --

SELECT q1.userName, books.bookTitle, q1.numberOfBorrowing-
q1.numberOfReturning as currently_borrow
    FROM
        (SELECT users.userID, users.userName, users.numberOfBorrowing, users.numberOfRetu
rning, flow.bookIDBorrowed, flow.returnDate
        FROM
        users LEFT JOIN flow ON users.userID = flow.userIDBorrowing) as q1 LEFT JOIN book
s ON q1.bookIDBorrowed=books.bookID
    WHERE
        q1.returnDate is null -- finding the books that haven't been returned.
    HAVING
        currently_borrow > 3;
        --
if want to know currently how much they are borrowing and what books they are borrowing.
```