

NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA

SURATHKAL, MANGALORE - 575 025

Course Code – CS254

Course Name – Database Systems Lab

Lab - 05

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**1. Build a basic database (of your choice) and explore the usage of following string function:**

**CHAR\_LENGTH()**

**CONCAT()**

**INSERT()**

**LCASE()**

**LENGTH()**

**LIKE**

**TRIM()**

**STRCMP()**

**SUBSTR()**

SELECT

    CONCAT(first\_name, " ", last\_name) as concat,

    CHAR\_LENGTH(first\_name) as char\_length,

    LENGTH(first\_name) as length,

    LCASE(first\_name) as lcase,

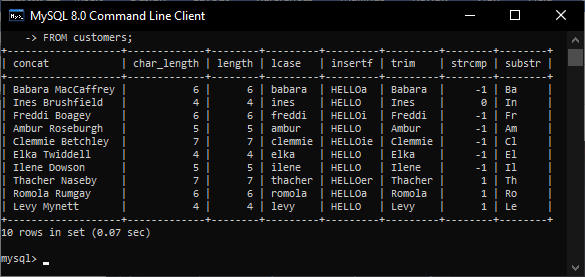
    INSERT(first\_name, 1, 5, "HELLO") as insertf,

    TRIM(first\_name) as trim,

    STRCMP(first\_name, "Ines") as strcmp,

    SUBSTR(first\_name, 1, 2) as substr

FROM customers;

****

**2. Create database with**

**PATIENT (p\_id, r\_id, d\_id, p\_name, city, contact, p\_date),**

**DOCTORS (d\_id, name, salary, specification),**

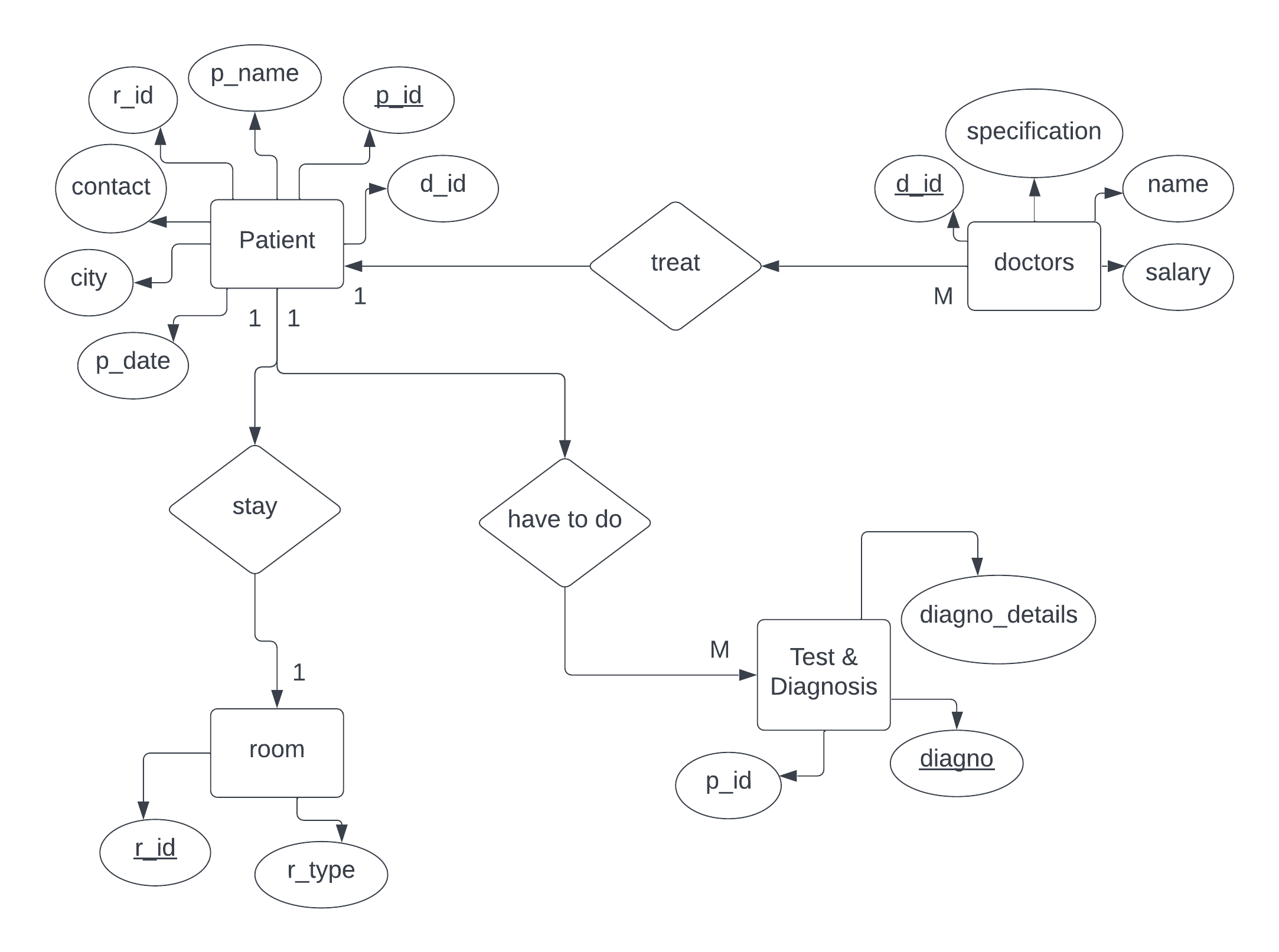
**ROOM (r\_id, room\_type)**

**TEST & DIAGNOSIS (p\_id, diagno, diag\_details),**

**(Insert new five values for each table. Assume the necessary values related to below mentioned questions.)**

**(Add 10 entries for each table)**

**Draw the ER diagram for the above database.**

****

CREATE DATABASE hospital;

USE hospital;

CREATE TABLE doctors (

    d\_id INT NOT NULL,

    name VARCHAR(50),

    salary INT,

    specification VARCHAR(50),

    PRIMARY KEY (d\_id));

CREATE TABLE room (

    r\_id INT NOT NULL,

    room\_type VARCHAR(20),

    PRIMARY KEY (r\_id))

CREATE TABLE patient (

    p\_id INT NOT NULL,

    r\_id INT NOT NULL,

    d\_id INT NOT NULL,

    p\_name VARCHAR(50),

    city VARCHAR(50),

    contact VARCHAR(50),

    p\_date DATE,

    PRIMARY KEY (p\_id),

    FOREIGN KEY (r\_id) REFERENCES room(r\_id),

    FOREIGN KEY (d\_id) REFERENCES doctors(d\_id));

CREATE TABLE test\_diag (

    p\_id INT NOT NULL,

    diagno INT NOT NULL,

    diag\_details VARCHAR(50),

    PRIMARY KEY (diagno),

    FOREIGN KEY (p\_id) REFERENCES patient(p\_id));

INSERT INTO doctors

    VALUES (201, "Doc A", 100000, "Heart"),

    (202, "Doc B", 100000, "Ear"),

    (203, "Doc C", 80000, "Eye"),

    (204, "Doc D", 12100, "Skin"),

    (205, "Doc E", 12000, "AA"),

    (206, "Doc F", 10100, "BB"),

    (207, "Doc G", 10010, "CC"),

    (208, "Doc H", 10080, "DD"),

    (209, "Doc I", 10090, "EF"),

    (210, "Doc J", 100100, "GH");

INSERT INTO room

    VALUES (1, "Room A"),

    (2, "Room B"),

    (3, "Room C"),

    (4, "Room D"),

    (5, "Room E"),

    (6, "Room F"),

    (7, "Room G"),

    (8, "Room H"),

    (9, "Room I"),

    (10, "Room J");

INSERT INTO patient

    VALUES (101, 1, 201, "Patient A", "Dhaka", "01521", "2010-01-01"),

    (102, 2, 202, "Patient B", "Tangail", "01521001", "2012-01-01"),

    (103, 3, 201, "Patient C", "Rajshahi", "0152147", "2013-01-01"),

    (104, 4, 203, "Patient D", "Mymensingh", "01520111", "2014-01-01"),

    (105, 5, 203, "Patient E", "Chandpur", "0152146", "2017-01-01"),

    (106, 6, 201, "Patient F", "Cumilla", "01146461", "2010-02-01"),

    (107, 7, 204, "Patient G", "Kolkata", "046421", "2010-05-01"),

    (108, 8, 201, "Patient H", "Dilhi", "01589", "2010-09-01"),

    (109, 9, 205, "Patient I", "Karnataka", "01571", "2010-04-01"),

    (110, 10, 206, "PatientJA", "Mangalore", "0821", "2010-07-01");

INSERT INTO test\_diag

    VALUES (101, 501, "ECG"), (102, 502, "XA"), (102, 503, "XB"),

    (104, 504, "XC"),

    (105, 505, "XD"),

    (105, 506, "XE"),

    (107, 507, "XF"),

    (108, 508, "XI"),

    (104, 509, "XJ"),

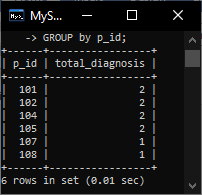
    (101, 510, "XK");

**List the patient details with multiple diagnosis records.**

SELECT p\_id, COUNT(\*) AS total\_diagnosis

FROM test\_diag

GROUP by p\_id

****

**Add a new attribute p\_date (i.e hospital joining date) to the PATIENT table.**

**Fetch the doctors who do not have any patients.**

SELECT \*

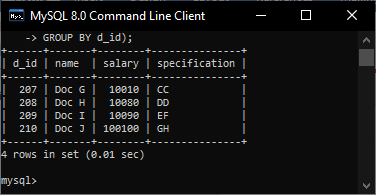
FROM doctors

WHERE d\_id NOT IN (

    SELECT d\_id

    FROM patient

    GROUP BY d\_id)

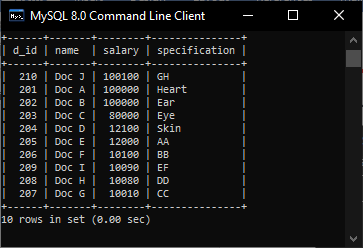
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**Display doctors’ salary in ascending order.**

SELECT \*

FROM doctors

ORDER BY salary DESC

****

**Display each patient details through diagd\_details.**

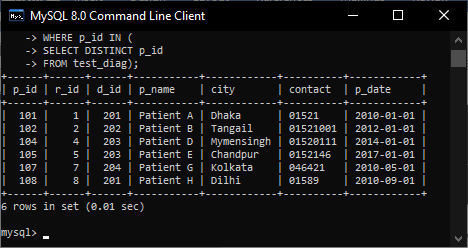
SELECT \*

FROM patient

WHERE p\_id IN (

    SELECT DISTINCT p\_id

    FROM test\_diag)

****

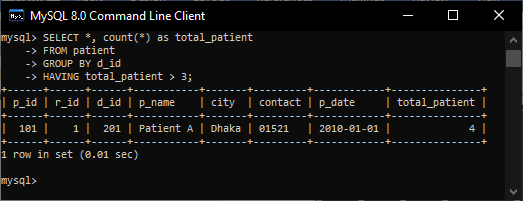
**Display the number of patients for each doctor. Only include doctors with more than 3 patients.**

SELECT \*, count(\*) as total\_patient

FROM patient

GROUP BY d\_id

HAVING total\_patient > 3

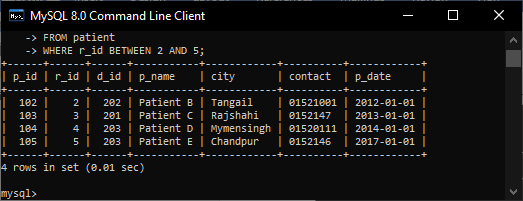
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**Display the doctors who are treating patients from r\_id 102 to 105.**

SELECT \*

FROM patient

WHERE r\_id BETWEEN 2 AND 5

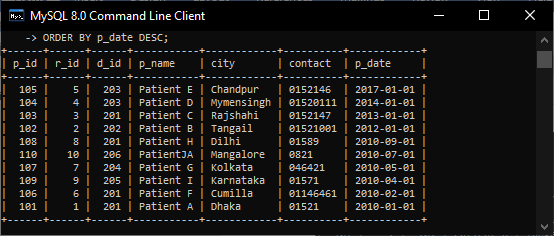
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**Display the patients details according to their joining dates.**

SELECT \*

FROM patient

ORDER BY p\_date DESC

****

**Count the patients who took deluxe rooms.**

SELECT count(\*) AS deluxe\_room\_taken

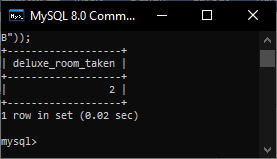
FROM patient

WHERE r\_id IN (

    SELECT r\_id

    FROM room

    WHERE room\_type IN ("Room A", "Room B"))

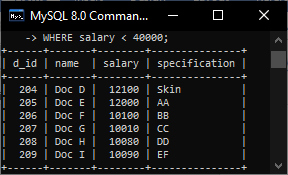
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**Display name of the doctor with salary less than 40000**

SELECT \*

FROM doctors

WHERE salary < 40000

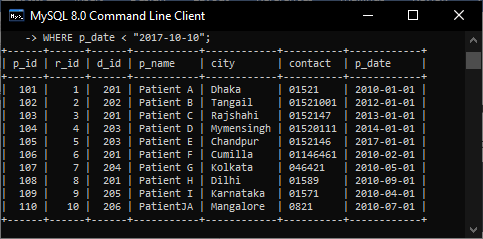
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**Display the patients joined before 10.10.2017.**

SELECT \*

FROM patient

WHERE p\_date < "2017-10-10"

****

**Create database for below Schema**

**(Add 10 entries for each table)**

**BOOK (Book\_id, Title, Publiser\_name, pub\_date)**

**BOOK\_AUTHORS (book\_id, author\_name)**

**PUBLISHER (fname, lname, address, phone)**

**BOOK\_COPIES (book\_id, programme\_id, no\_of\_copies)**

**BOOK\_LENDING (book\_id, programme\_id, card\_no, date\_out, due\_date)**

CREATE DATABASE library;

USE library;

CREATE TABLE book (

    book\_id INT NOT NULL,

    title VARCHAR(255),

    publisher\_name VARCHAR(255),

    pub\_date DATE,

    PRIMARY KEY (book\_id));

CREATE TABLE book\_authors (

    book\_id INT NOT NULL,

    author\_name VARCHAR(255),

    FOREIGN KEY (book\_id) REFERENCES book(book\_id)

ON DELETE CASCADE

ON UPDATE CASCADE

);

CREATE TABLE publisher (

    fname VARCHAR(50),

    lname VARCHAR(50),

    address VARCHAR(50),

    phone VARCHAR(20));

CREATE TABLE BOOK\_COPIES (

    book\_id INT NOT NULL,

    programme\_id INT NOT NULL,

    no\_of\_copies INT,

    primary key (programme\_id),

    FOREIGN KEY (book\_id) REFERENCES book(book\_id)

ON DELETE CASCADE

ON UPDATE CASCADE);

CREATE TABLE BOOK\_LENDING (

    book\_id INT NOT NULL,

    programme\_id INT NOT NULL,

    card\_no INT NOT NULL,

    date\_ouT DATE,

    due\_date DATE,

    FOREIGN KEY (programme\_id) REFERENCES book\_copies(programme\_id)

ON DELETE CASCADE ON UPDATE CASCADE,

    FOREIGN KEY (book\_id) REFERENCES book(book\_id)

ON DELETE CASCADE ON UPDATE CASCADE);

INSERT INTO book

    VALUES (101, "Book A", "Publishar A", "2017-01-01"),

    (102, "Book B", "Publishar B", "2013-01-01"),

    (103, "Book C", "Publishar C", "2014-01-01"),

    (104, "Book D", "Publishar D", "2015-01-01"),

    (105, "Book E", "Publishar E", "2012-01-01"),

    (106, "Book F", "Publishar F", "2011-01-01"),

    (107, "Book G", "Publishar G", "2010-01-01"),

    (108, "Book H", "Publishar H", "2003-01-01"),

    (109, "Book I", "Publishar I", "2022-01-01"),

    (110, "Book J", "Publishar J", "2021-01-01");

INSERT INTO book\_authors

    VALUES (101, "Author A"),

    (102, "Author B"),

    (103, "Author C"),

    (104, "Author D"),

    (105, "Author E"),

    (106, "Author F"),

    (107, "Author G"),

    (108, "Author H"),

    (109, "Author I"),

    (110, "Author J");

INSERT INTO publisher

        VALUES ("Pub First A", "Pub Last A", "Address A", "012"),

        ("Pub First B", "Pub Last B", "Address B", "013"),

        ("Pub First C", "Pub Last C", "Address C", "014"),

        ("Pub First D", "Pub Last D", "Address D", "015"),

        ("Pub First E", "Pub Last E", "Address E", "016"),

        ("Pub First F", "Pub Last F", "Address F", "017"),

        ("Pub First G", "Pub Last G", "Address G", "018"),

        ("Pub First H", "Pub Last H", "Address H", "019"),

        ("Pub First I", "Pub Last I", "Address I", "010"),

        ("Pub First J", "Pub Last J", "Address J", "011");

INSERT INTO BOOK\_COPIES

    VALUES (101, 201, 5), (102, 202, 4), (103, 203, 7), (104, 204, 8),

    (105, 205, 23), (106, 206, 1),

    (107, 207, 0),

    (108, 208, 10),

    (109, 209, 53),

    (110, 210, 50);

INSERT INTO book\_lending

    VALUES (101, 201, 301, "2017-01-01", "2017-02-01"),

    (102, 202, 302, "2018-01-01", "2018-02-01"),

    (103, 203, 303, "2019-01-01", "2019-02-01"),

    (104, 204, 304, "2020-01-01", "2020-02-01"),

    (105, 205, 305, "2021-01-01", "2021-02-01"),

    (106, 206, 306, "2022-01-01", "2022-02-01"),

    (107, 207, 307, "2016-01-01", "2016-02-01"),

    (108, 208, 308, "2015-01-01", "2015-02-01"),

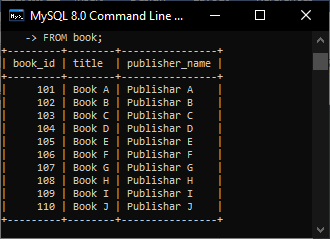
    (109, 209, 308, "2014-01-01", "2014-02-01"),

    (110, 210, 310, "2013-01-01", "2013-02-01");

**Retrieve details of all books in the library – id, title, name of publisher.**

SELECT book\_id, title, publisher\_name

FROM book;

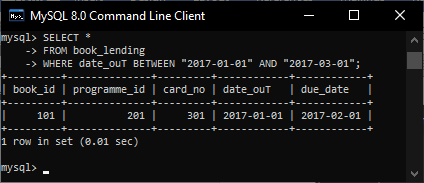
****

**Retrieve the books which have been borrowed from Jan 2017 to March 2017**

SELECT \*

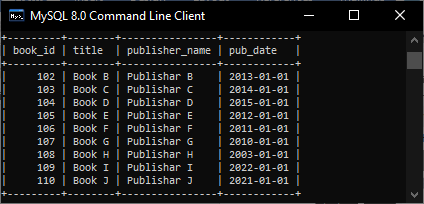
FROM book\_lending

WHERE date\_ouT BETWEEN "2017-01-01" AND "2017-03-01";

****

**Delete a book in the BOOK table. Update the contents of other tables to reflect this data manipulation operation.**

DELETE FROM book WHERE book\_id = 101

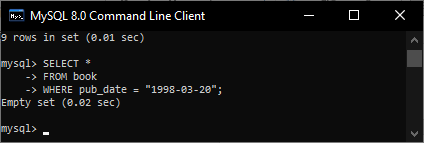
****

**Retrieve the details of the books(id, title, publisher name, year) published on the date 20-03-1998**

SELECT \*

FROM book

WHERE pub\_date = "1998-03-20"

****

**Retrieve the books published by a particular author.**

SELECT \*

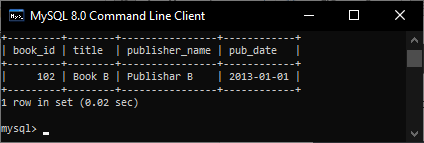
FROM book

WHERE book\_id = (

    SELECT book\_id

    FROM book\_authors

    WHERE author\_name = "Author B")

****

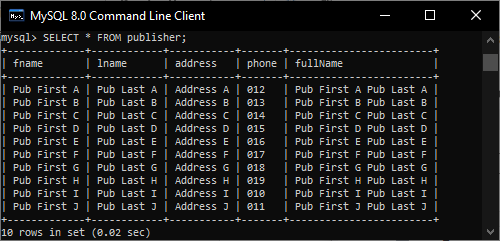
**Create a column name in the Publishers table. Combine FName and LName and print it in column name.**

ALTER TABLE publisher

ADD fullName VARCHAR(50);

UPDATE publisher

SET fullName = concat(fname," ",lname);

****

**Write a query to display the first day of the month (in datetime format) two months before the current month from the date of publication of the book “DBMS”**

SELECT pub\_date,

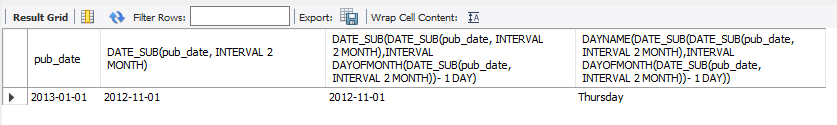
    DATE\_SUB(pub\_date, INTERVAL 2 MONTH),

    DATE\_SUB(DATE\_SUB(pub\_date, INTERVAL 2 MONTH),INTERVAL DAYOFMONTH(DATE\_SUB(pub\_date, INTERVAL 2 MONTH))- 1 DAY),

    DAYNAME(DATE\_SUB(DATE\_SUB(pub\_date, INTERVAL 2 MONTH),INTERVAL DAYOFMONTH(DATE\_SUB(pub\_date, INTERVAL 2 MONTH))- 1 DAY))

FROM book

WHERE title = "Book B"

****

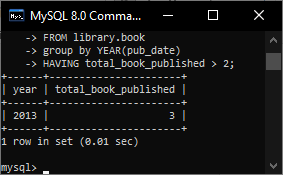
**Write a query to get years in which more than 3 books were published.**

SELECT YEAR(pub\_date) as year, count(\*) as total\_book\_published

FROM library.book

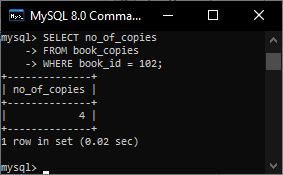
group by YEAR(pub\_date)

HAVING total\_book\_published > 2;

****

**Print the number of copies of a particular book.**

SELECT no\_of\_copies FROM book\_copies WHERE book\_id = 102;

****