Use database booksDB to complete queries in SQL

1.) Determine which orders haven't yet shipped and the name of the customer who placed the order. Sort the results by the date on which the order was placed. List the order number, the corresponding customer name, and order date.

```
SELECT
    Order_num, FirstName, LastName, OrderDate
FROM
    ORDERS o, CUSTOMERS c
WHERE
    o.Customer_num = c.Customer_num
AND
    ShipDate IS NULL
ORDER BY
    OrderDate;
```

Order_num	FirstName	LastName	OrderDate
1012	BECCA	NELSON	2009-04-03
1015	KENNETH	FALAH	2009-04-04
1016	LEILA	SMITH	2009-04-04
1018	BONITA	MORALES	2009-04-05
1019	GREG	MONTIASA	2009-04-05
1020	KENNETH	JONES	2009-04-05

2.) Find a list of all customers who live in the state of FL and have ordered books about COMPUTERs (i.e., category = 'COMPUTER'). List the customer number, the customer name, and the corresponding order number

```
SELECT DISTINCT
    c.Customer_num, c.FirstName, c.LastName, o.Order_num
FROM
    BOOKS b, CUSTOMERS c, ORDERITEMS i, ORDERS o
WHERE
    c.Customer_num = o.Customer_num
AND
    o.Order_num = i.Order_num
AND
    i.isbn = b.isbn
AND
    c.State = 'FL'
AND
    b.Category = 'COMPUTER'
;
```
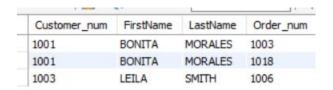
Customer_num	FirstName	LastName	Order_num
1001	BONITA	MORALES	1003
1001	BONITA	MORALES	1018
1003	LEILA	SMITH	1006

3.) Determine which books customer JAKE LUCAS has purchased. If he has purchased multiple copies of the same book, unduplicate the results. List the book title.

```
SELECT DISTINCT
        b.title
FROM
        BOOKS b, CUSTOMERS c, ORDERITEMS i, ORDERS o
WHERE
        c.Customer_num = o.Customer_num
AND
        o.Order_num = i.Order_num
AND
        i.isbn = b.isbn
AND
        c.LastName = 'LUCAS'
AND
        c.FirstName = 'JAKE'
;
```

title
HOW TO MANAGE THE MANAGER
PAINLESS CHILD-REARING

4.) Identify the authors of the books BECCA NELSON has ordered. List the name of the author and the book title.

```
 1 •   SELECT
 2         a.Fname, a.Lname, b.Title
 3     FROM
 4         BOOKS b, CUSTOMERS c, ORDERITEMS oi, ORDERS o,
 5         AUTHOR a, BOOKAUTHOR ba
 6     WHERE
 7         c.Customer_num = o.Customer_num
 8     AND
 9         o.Order_num = oi.Order_num
10     AND
11         oi.ISBN = b.ISBN
12     AND
13         c.LastName = 'NELSON'
14     AND
15         c.FirstName = 'BECCA'
16     AND
17         ba.AuthorID = a.AuthorID
18     AND
19         b.ISBN = ba.ISBN
20     ;
```

Fname	Lname	Title
ROBERT	ROBINSON	BIG BEAR AND LITTLE DOVE
WILLIAM	WHITE	HANDCRANKED COMPUTERS
LISA	WHITE	HANDCRANKED COMPUTERS
JACK	BAKER	PAINLESS CHILD-REARING
OSCAR	FIELDS	PAINLESS CHILD-REARING
ROBERT	ROBINSON	PAINLESS CHILD-REARING
JANICE	JONES	REVENGE OF MICKEY

5.) Display a list of all books. If a book has been ordered by a customer, list the book title, and the corresponding order number and the state in which the customer resides. If a book has not been ordered by a customer, only list the book title. The correct answer includes 35 tuples.

```
SELECT
    b.Title, o.Order_num, c.State
FROM
    BOOKS b LEFT JOIN (CUSTOMERS c JOIN ORDERITEMS oi JOIN ORDERS o)
ON
    c.Customer_num = o.Customer_num
AND
    o.Order_num = oi.Order_num
AND
    oi.ISBN = b.ISBN
;
```

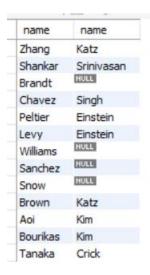| Title	Order_num	State
HOW TO GET FASTER PIZZA	NULL	NULL
THE WOK WAY TO COOK	NULL	NULL
REVENGE OF MICKEY	1009	WA
REVENGE OF MICKEY	1012	MI
REVENGE OF MICKEY	1014	TX
REVENGE OF MICKEY	1019	GA
BODYBUILD IN 10 MINUTES A DAY	1003	FL
HANDCRANKED COMPUTERS	1012	MI
SHORTEST POEMS	1005	GA
PAINLESS CHILD-REARING	1001	GA
PAINLESS CHILD-REARING	1004	NJ
PAINLESS CHILD-REARING	1011	GA
PAINLESS CHILD-REARING	1012	MI
PAINLESS CHILD-REARING	1016	FL
COOKING WITH MUSHROOMS	1000	WA
COOKING WITH MUSHROOMS	1003	FL
COOKING WITH MUSHROOMS	1008	ID
COOKING WITH MUSHROOMS	1009	WA
COOKING WITH MUSHROOMS	1015	NJ
COOKING WITH MUSHROOMS	1018	FL
COOKING WITH MUSHROOMS	1020	WY
HOLY GRAIL OF ORACLE	1007	TX
BUILDING A CAR WITH TOOTHPI...	NULL	NULL
BIG BEAR AND LITTLE DOVE	1007	TX
BIG BEAR AND LITTLE DOVE	1012	MI
BIG BEAR AND LITTLE DOVE	1017	FL
DATABASE IMPLEMENTATION	1002	IL
DATABASE IMPLEMENTATION	1003	FL
DATABASE IMPLEMENTATION	1007	TX
DATABASE IMPLEMENTATION	1010	NJ
DATABASE IMPLEMENTATION	1013	WY
DATABASE IMPLEMENTATION	1018	FL
HOW TO MANAGE THE MANAGER	1001	GA
E-BUSINESS THE EASY WAY	1006	FL
E-BUSINESS THE EASY WAY	1007	TX

Use database universityDB to complete queries in SQL
6.) Find the names of students who have taken some course sections offered by "Comp. Sci." department (i.e., course. dept_name = "Comp. Sci.").

```
SELECT DISTINCT
      s.name
FROM
      student s, takes t, course c
WHERE
      c.dept_name = 'Comp. Sci.'
AND
      t.course_id = c.course_id
AND
      s.ID = t.ID
;
```

name
Zhang
Shankar
Levy
Williams
Brown
Bourikas

7.) Find the name of each student along with their advisor's name. If a student doesn't have any advisor, leave the advisor field empty.

```
SELECT
      s.name, i.name
FROM
      student s LEFT JOIN (advisor a join instructor i)
ON
      a.s_ID = s.ID
AND
      a.i_ID = i.ID
;
```

name	name
Zhang	Katz
Shankar	Srinivasan
Brandt	NULL
Chavez	Singh
Peltier	Einstein
Levy	Einstein
Williams	NULL
Sanchez	NULL
Snow	NULL
Brown	Katz
Aoi	Kim
Bourikas	Kim
Tanaka	Crick

8.) Find the morning course sections (start_hr < 12) taught in room 101 of Packard building.

-
```
SELECT
        s.course_id, s.sec_id, s.semester, s.year,
        cl.building, cl.room_number, t.start_hr
FROM
        section s, classroom cl, time_slot t
WHERE
        t.time_slot_id = s.time_slot_id
AND
        s.room_number = cl.room_number
AND
        t.start_hr < 12
AND
        cl.room_number = 101
;
```

course_id	sec_id	semester	year	building	room_number	start_hr
CS-101	1	Fall	2009	Packard	101	10
FIN-201	1	Spring	2010	Packard	101	9
FIN-201	1	Spring	2010	Packard	101	9
FIN-201	1	Spring	2010	Packard	101	9

9.) Find the pairs of instructors who work in the same department and the first instructor's salary is higher than the second instructor's salary.

```
SELECT
    in1.name, in1.dept_name, in1.salary,
    in2.name, in2.dept_name, in2.salary
FROM
    instructor in1, instructor in2
WHERE
    in1.salary > in2.salary
AND
    in1.dept_name = in2.dept_name
;
```

name	dept_name	salary	name	dept_name	salary
Wu	Finance	90000.00	Singh	Finance	80000.00
Einstein	Physics	95000.00	Gold	Physics	87000.00
Katz	Comp. Sci.	75000.00	Srinivasan	Comp. Sci.	65000.00
Califieri	History	62000.00	El Said	History	60000.00
Brandt	Comp. Sci.	92000.00	Srinivasan	Comp. Sci.	65000.00
Brandt	Comp. Sci.	92000.00	Katz	Comp. Sci.	75000.00

10.) Find the names of students who have taken some courses in Fall 2009 and in Spring 2010.
This set of instructions would work if mySQL had an "intersect" function. However I couldn't figure out how to get this working properly without having an intersect function.

```
•   SELECT DISTINCT
        s.name
    FROM
        student s, takes t
    WHERE
        s.ID != t.ID
    AND
        t.semester = 'Fall'
    AND
        t.year = 2009


☒   INTERSECT

    SELECT DISTINCT
        s.name
    FROM
        student s, takes t
    WHERE
        s.ID != t.ID
    AND
        t.semester = 'Spring'
    AND
        t.year = 2010
    ;
```