

Introduction to Database Systems

EECS3421-B

York University

Fall 2019

Project 3 (10%)

In this project, you will work with an existing database, the *York River Bookseller's Database* (YRB DB). Students will install their own *copy* of the database on which to work. For *this project*, you are to implement a number of SQL queries over the YRB DB.

There are ten queries that you are to write. Each is worth two points for a total of 20 points for the project. You have successfully implemented the SQL query if your query generates the correct result. Otherwise, your query is unsuccessful. Grading per query is *all-or-nothing*. **Either your query produces the right results, or it does not.**

For projects, you are permitted to confer with others, seek advice, and (to a reasonable extent) help. However, remember that copying someone else's queries and claiming them as your own work is plagiarism. You must do your own work.

The YRB Database

Two scripts are provided on the course web page. A SQL script is a set of SQL statements saved in a file. Download and execute them to create your database schema in the database c3421a.

The script `yrb_create.sql` will create the YRB DB schema. It will also populate the tables with mock data. The script `yrb_drop.sql` is provided for convenience. It will drop your copy of YRB DB from your DB2 schema space. If you mess things up, you can always drop YRB DB and then re-create it easily.

Create a directory for Project 3 (`project3`) and copy the `yrb_create.sql` and `yrb_drop.sql` scripts to this directory. Execute the following command when you are in your `project3` directory.

To create the YRB schema in your DB2 schema space:

```
% db2 -tf yrb_create.sql
```

To drop the YRB tables in your DB2 schema space:

```
% db2 -tf yrb_drop.sql
```

To see the list of tables created in your DB2 schema:

- Connect to c3421a

```
% db2
db2 => connect to c3421a
```

If you are successfully connected you will see the following message:

```
Database Connection Information

Database server          = DB2/LINUX8664 11.1.1
SQL authorization ID    = Nasim
Local database alias    = C3421A
```

- Execute the following command to see the list of tables:

```
db2 => list tables
```

The list of created tables will be displayed:

Table/View	Schema	Type	Creation time
PRETTY_PURCHASE	NASIM	V	2019-11-11-10.30.19.597493
YRB_BOOK	NASIM	T	2019-11-11-10.30.19.119006
YRB_CATEGORY	NASIM	T	2019-11-11-10.30.19.050941
YRB_CLUB	NASIM	T	2019-11-11-10.30.18.869828
YRB_CUSTOMER	NASIM	T	2019-11-11-10.30.18.467875
YRB_MEMBER	NASIM	T	2019-11-11-10.30.18.941960
YRB_OFFER	NASIM	T	2019-11-11-10.30.19.405189
YRB_PURCHASE	NASIM	T	2019-11-11-10.30.19.496569
YRB_SHIPPING	NASIM	T	2019-11-11-10.30.19.662120

To see if data is inserted to your tables execute the following SQL query:

```
db2 => select * from yrb_club
```

The result of the query:

CLUB	DESC
AARP	Association of American Retired Persons
AAA	American Automobile Association
CNU Club	University club for Christopher Newport University
W&M Club	University club for College of William and Mary
UVA Club	University club for Univeristy of Virginia
VaTech Club	University club for Virginia Tech
Readers Digest	The Readers Digest club
Oprah	The Oprah Winfrey book club
Basic	Our basic club
YRB Gold	Our gold club
YRB Silver	Our silver club
YRB Bronze	Our bronze club

Read the schema definition in `yrb_create.sql` for YRB DB to understand the design and what the YRB DB is about.

York River Booksellers is an online bookstore. Customers belong to various clubs. Everybody belongs to at least the club *basic*. Books are available via different offers per club. Thus the price of a book is determined by which offer (thus club) it was bought under.

Consider an *order* to be all the books a customer bought at the same time (*when* attribute in table *purchase*). These will be shipped together.

Queries

1. Customers with Specific Names

List customer ID, name, and city for the members whose name's second character is 'a' as the last one is 'e'. (1 point)

Sample Result:

CID	NAME	CITY
11	Sally Mae	Richmond
12	Fanny Mae	Roanoke
13	Garp Google	Williamsburg
25	Margaret Mitchie	Richmond

2. Most popular category

Show the most popular category and the number of books sold in that category. (1 point)

CAT	QNTY_SOLD
romance	57

3. Customer with at most Two Membership

Show customer ID, customer name, and the club name for customers who are the member of at most two clubs. Sort the result by customer id. (1 point)

Sample result:

CID	NAME	CLUB
11	Sally Mae	Basic
11	Sally Mae	YRB Silver
14	Kathy Lee Gifford	Basic
14	Kathy Lee Gifford	Oprah
17	George Gush	Basic
18	Al Bore	Basic
23	Lux Luthor	Basic
23	Lux Luthor	Oprah
24	Clark Kent	Basic
24	Clark Kent	Readers Digest
40	Walter Wynn	Basic
40	Walter Wynn	VaTech Club
41	Xia Xu	AAA
41	Xia Xu	Basic

43 Zachary Zoxx Basic
 43 Zachary Zoxx YRB Gold

4. Disfavored Categories

Show the categories that customer with ID 9 has not purchased any books from those categories. (1 point)

Sample result:

```
CAT
-----
children
drama
guide
horror
humor
mystery
```

5. Most Expensive and Cheapest Books

List title and year of most expensive and cheapest books and the clubs that offers these books. (1 point)

Sample result:

CLUB	TITLE	YEAR	PRICE
Oprah	Flibber Gibber	2000	1.20
Basic	Transmorgifacation	2000	288.73

6. Shipping Cost

For each customer calculate the shipping cost of each of their orders. All purchases made on the same time (*when*) by the same customer are in one order. Sort the result based on the customer number and the purchase time (*when*) (1 point)

Sample result:

CID	WHEN	TOTALWEIGHT	COST	TOTALCOST
1	1999-04-20-12.12.00.000000	459	2.00	918.00
1	2001-12-01-11.59.00.000000	772	3.00	2316.00
2	1998-08-08-17.33.00.000000	290	2.00	580.00
2	1999-02-13-15.13.00.000000	119	2.00	238.00
2	1999-04-16-11.46.00.000000	461	2.00	922.00
2	2001-02-23-12.37.00.000000	393	2.00	786.00
2	2001-04-24-17.02.00.000000	942	3.00	2826.00
2	2001-10-21-11.05.00.000000	959	3.00	2877.00
2	2001-12-01-15.39.00.000000	79	2.00	158.00
3	1998-01-27-09.19.00.000000	1290	5.00	6450.00
3	2001-10-06-11.12.00.000000	883	3.00	2649.00
4	2000-06-13-09.45.00.000000	147	2.00	294.00
4	2001-06-30-13.58.00.000000	806	3.00	2418.00
4	2001-08-11-17.40.00.000000	659	3.00	1977.00
5	2001-07-17-16.27.00.000000	3776	8.00	30208.00

7. Different Books with the Same Title

Show the title of books that have the same title but different years. (1 point)

Sample result:

TITLE	YEAR1	YEAR2
Are my feet too big?	1989	1993

Note: remove duplicates from your result. See the following rows. We consider the following two rows the same.

Are my feet too big?	1989	1993
Are my feet too big?	1993	1989

8. Active and Inactive Members

List customer ID, customer name, and number of purchases for each customer. First, list the active customers sorted by the number of purchases from low to high and then inactive customers sorted by their names in a descending order. (1 point)

Note: Inactive customers are customers who do not have any purchases.

Sample result:

CID	NAME	number of purchase
27	Jorge Lobo	2
34	Quency Quark	2
18	Al Bore	3
24	Clark Kent	3
7	Cary Cizek	4
12	Fanny Mae	4
25	Margaret Mitchie	4
35	Renee Riztp	4
45	Jack Daniels	4
1	Tracy Turnip	5
4	Suzy Sedwick	5
10	Egbert Engles	5
11	Sally Mae	5
13	Garp Google	5
15	Henrietta Hogg	5
17	George Gush	5
20	Finwick Cooper	5
6	Boswell Biddles	6
22	Klive Kittlehart	6
29	Nigel Nerd	6
36	Steve Songheim	6
38	Ulya Umbrigde	6
43	Zachary Zoxx	6
5	Andy Aardverk	7
8	Jack Daniels	7
16	Ingrid Iverson	7
30	Pretence Parker	7
39	Valerie Vixen	7
3	Fuzzy Fowles	8
9	Doris Daniels	8
14	Kathy Lee Gifford	8
28	Phil Regis	8

32 Mark Dogfurry	8
33 Oswald Orson	8
37 Trixie Trudeau	8
40 Walter Wynn	8
42 Yves Yonge	8
44 Zebulon Zilio	8
2 Qfwfq	11
19 Ekksdwl Qjksynn	11
21 Jackie Johassen	11
23 Lux Luthor	11
26 George Wolf	11
41 Xia Xu	11
31 Parker Posey	0

9. Clubs with Offers over Average

Show club name, total number of offers and the total prices for each club that its average price is over the average price of all available offers. (1 point)

Sample result:

CLUB	Number of Offers	Total Price
Basic	100	3617.07
CNU Club	98	3316.94
UVA Club	97	3285.93
VaTech Club	98	3286.25
W&M Club	100	3346.92
YRB Bronze	100	3504.47
YRB Silver	100	3391.87

10. Loyal Customers (1 point)

List customer ID, name, and total purchase amount for the customers who have total purchase amount over \$300. Sort the result from the highest amount of purchase to the lowest.

Sample result:

CID	NAME	TOTALPRICE
21 Jackie Johassen		715.50
19 Ekksdwl Qjksynn		597.60
32 Mark Dogfurry		547.59
44 Zebulon Zilio		511.93
25 Margaret Mitchie		510.85
37 Trixie Trudeau		468.65
40 Walter Wynn		466.19
41 Xia Xu		425.20
5 Andy Aardverk		363.70
28 Phil Regis		341.10
9 Doris Daniels		334.50
23 Lux Luthor		310.95

Deliverable

Your submission will be a single text-based SQL file with the solutions provided. Each SQL query terminates with a *semicolon*.

yrb_query.sql

The *yrb_query.sql* script is a text file with *.sql* extension containing ten SQL queries.

Submit

```
% submit 3421B p3 yrb_query.sql
```

You also need to hand in a printed version of your queries.

Online Submission Due: by 11:59pm Thursday 21 November 2019.

In Class Submission Due: 10:00am Friday 22 November 2019.

Your project report should include the following.

- **Cover Page**
A *cover page* should have your name and student#, and should indicate it is for the *SQL Queries Project* of **EECS-3421B** for *Fall 2019*.
- Your solutions (SQL queries) to questions 1 to 10.
- **Documentation (optional)**
Any clarifications about your queries.

Your project must be *typeset*; that is, no *hand-writing* submission. The cover page for submitting your work should look something as follows.

Student#:

Sur (Family) Name:

Given Name:

EECS Account:

Class: EECS-3421B

Term: Fall 2019

Project: SQL Queries

yrb_query.sql Example:

```
-- *****
-- EECS3421B
-- Project 3
-- Name:
-- ID:
-- EECS Account:
-- *****
-- Question 1
SELECT * FROM TABLE1;
-- Question 2
SELECT * FROM TABLE2;
```