CSC 675/755-02 Database Project

Phase 2 Final Report

Spring 2021

Cindy Fung Chan

Rhetta Mae Sevilla

Utkrisht Sharma

Abraham Zepeda

Create Database:

CREATE DATABASE csc675;

Use Database:

USE csc675;

Create Tables, Indexes and Constraints:

Tables

```
CREATE TABLE User (
 name varchar(20) NOT NULL,
 username varchar(20) NOT NULL,
 u id varchar(20) NOT NULL,
 login varchar(20) NOT NULL,
 password varchar(20) NOT NULL,
 phone varchar(20) NOT NULL,
 address varchar(20) NOT NULL,
 email varchar(20) NOT NULL,
 PRIMARY KEY (u id)
);
CREATE TABLE Seller (
 u id varchar(20) NOT NULL,
 post varchar(20) DEFAULT NULL,
 profile pic blob,
 about seller varchar(20) DEFAULT NULL,
PRIMARY KEY (u id),
CONSTRAINT Seller ibfk 1 FOREIGN KEY (u id) REFERENCES User (u id)
);
CREATE TABLE Buyer (
 u id varchar(20) NOT NULL,
comment varchar(20) DEFAULT NULL,
PRIMARY KEY (u id),
CONSTRAINT Buyer ibfk 1 FOREIGN KEY (u id) REFERENCES User (u id)
);
CREATE TABLE Product (
 p id varchar(20) NOT NULL,
```

```
picture varchar(200) DEFAULT NULL,
 p name varchar(20) NOT NULL,
 price FLOAT NOT NULL,
 category varchar(20) NOT NULL,
 quantity INTEGER(20) NOT NULL.
 p description varchar(20) NOT NULL,
 u id varchar(20) NOT NULL,
PRIMARY KEY (p id),
KEY u id (u id),
CONSTRAINT Product ibfk 1 FOREIGN KEY (u id) REFERENCES User (u id)
);
CREATE TABLE Cart (
 cart id varchar(20) NOT NULL,
 p name varchar(20) NOT NULL,
 quantity INTEGER(20) NOT NULL,
 price FLOAT NOT NULL,
 total cost FLOAT NOT NULL,
 u id varchar(20) DEFAULT NULL,
PRIMARY KEY (cart id),
UNIQUE KEY u id (u id),
CONSTRAINT Cart ibfk 1 FOREIGN KEY (u id) REFERENCES Buyer (u id) ON
DELETE CASCADE ON UPDATE NO ACTION
);
CREATE TABLE Ordered (
 p name varchar(20) NOT NULL,
 quantity int(20) NOT NULL,
 price float NOT NULL,
 p id varchar(20) NOT NULL,
 transaction id varchar(20) NOT NULL,
 cart id varchar(20) NOT NULL,
PRIMARY KEY (transaction id),
KEY cart id (cart id).
CONSTRAINT Ordered ibfk 1 FOREIGN KEY (cart id) REFERENCES Cart (cart id) ON
DELETE CASCADE ON UPDATE NO ACTION
);
```

CREATE TABLE Has (

u id varchar(20) NOT NULL,

```
p id varchar(20) NOT NULL,
KEY u id (u id),
KEY p id (p id),
CONSTRAINT Has ibfk 1 FOREIGN KEY (u id) REFERENCES User (u id) ON
DELETE CASCADE ON UPDATE NO ACTION.
CONSTRAINT Has ibfk 2 FOREIGN KEY (p id) REFERENCES Product (p id) ON
DELETE CASCADE ON UPDATE NO ACTION
);
CREATE TABLE Search (
 u id varchar(20) NOT NULL,
p id varchar(20) NOT NULL,
UNIQUE KEY u id (u id, p id),
UNIQUE KEY u id 2 (u id, p id)
);
CREATE TABLE Added (
u id varchar(20) NOT NULL,
 cart id varchar(20) NOT NULL,
p id varchar(20) NOT NULL
);
CREATE TABLE Place (
 transaction id varchar(20) NOT NULL,
 cart id varchar(20) NOT NULL
);
View
CREATE VIEW LowStockProduct
AS SELECT P.p name, P.category
 FROM Product P
 WHERE P.quantity <= 5;
Index
This version of CREATE INDEX gave a syntax error for some reason:
CREATE INDEX IndCategPrice
ON Product
WITH STRUCTURE = BTREE
KEY = (category, price);
```

This version of CREATE INDEX worked: **CREATE INDEX** IndCategPrice **ON** Product (category, price) **USING BTREE**;

Inserting Data into the Tables:

INSERT INTO User (name, username, u id, login, password, phone, address, email) VALUES ('Gina Stevens', 'gina', '401', 'user1', 'pwbuyer1', '5102233321', '31 4th st', 'stu1@sfsu.edu'), ('Samantha Smith', 'sam', '402', 'user2', 'pwbuyer2', '9252277321', '32 5th st', 'stu2@sfsu.edu'), ('Will Miller', 'will', '403', 'user3', 'pwbuyer3', '4152233333', '33 6th st', 'stu3@sfsu.edu'), ('Don Escobar', 'descobar', '301', 'user4', 'pwseller1', '4151234567', '34 6th st', 'stu4@sfsu.edu'), ('Eduardo Barnaby', 'bbarnaby', '302', 'user5', 'pwseller2', '4269853705', '35 6th st', 'stu5@sfsu.edu'),('Liz Cortez', 'itsLiz', '303', 'user6', 'pwseller3', '4151237891', '36 6th st', 'stu6@sfsu.edu');

INSERT INTO Seller (u id, post, profile pic, about seller) VALUES ('301', 'I sell good stuff', 'images/seller1.jpg', 'cool seller'),

('302', 'Buy my products', 'images/seller2.jpg', 'best seller'),

('303', 'Enjoy buying', 'images/seller3.jpg', 'great seller');

INSERT INTO Buyer (u id, comment) VALUES

('401', 'Good chocolate'), ('402', 'It's good'), ('403', 'best chocolate');

INSERT INTO Product (p id, picture, p name, price, category, quantity, p description, u id) **VALUES**

```
('101', 'images/1.jpg', 'chocolate', 15, 'chocolate', 1000, 'good product', '301'),
('102', 'images/2.jpg', 'almond', 20, 'chocolate', 1000, 'smooth and good', '301'),
('103', 'images/3.jpg', 'tangy', 4, 'chocolate', 1000, 'tastes very well', '301'),
('104', 'images/4.jpg', 'black', 10, 'chocolate', 1000, 'special occasions', '302').
('105', 'images/5.jpg', 'roasted', 5, 'chocolate', 1000, 'best choc flavor', '302'),
('106', 'images/6.jpg', 'coconut', 11, 'chocolate', 1000, 'every day goodness', '301').
('107', 'images/7.jpg', 'rose', 100, 'party', 1000, 'large size', '302'),
```

('108', 'images/8.jpg', 'party', 2, 'party', 1000, 'large size', '301'),

('109', 'images/9.jpg', 'tasty', 5, 'party', 1000, 'large size', '303'),

('110', 'images/10.jpg', 'large', 30, 'party', 1000, 'large size', '303');

INSERT INTO Cart (cart id, p name, quantity, price, total cost, u id) **VALUES**

('1', 'chocolate', 2, 15, 30, '401'), ('2', 'almond', 10, 20, 200, '402'), ('3', 'tangy', 15, 4, 60, '403');

```
INSERT INTO Ordered (p_name, quantity, price, p_id, transaction_id, cart_id) VALUES ('chocolate', 2, 15, '101', '201', '1'), ('almond', 10, 20, '102', '202', '2'), ('tangy', 15, 4, '103', '203', '3');
```

SQL Queries:

Queries involving HAVING, GROUP BY, AGGREGATE OP.:

1) Find the most expensive product from each seller

```
SELECT P.u_id, MAX(P.price)
FROM Product P
GROUP BY P.u id;
```

2) Find users id and username that sell more than two products

```
SELECT U.u_id, U.username
FROM User U
WHERE U.u_id IN ( SELECT P.u_id
FROM Product P
GROUP BY P.u_id
HAVING COUNT(*) > 2);
```

Nested queries involving IN, EXIST, op ANY, op ALL:

3) Find users that sell products that cost \$5

```
SELECT * FROM User U
WHERE EXISTS ( SELECT P.u_id
FROM Product P
WHERE P.u_id = U.u_id
AND P.price = 5);
```

4) Find the most expensive product

```
SELECT * FROM Product P
WHERE P.price >= ALL ( SELECT P.price
FROM Product P);
```

Snapshots:

Table structure of csc675 database:

```
mysql> SHOW TABLES;
| Tables_in_csc675 |
 Buyer
 Cart
 Has
  lowstockproduct
 Ordered
 Place
 Product
 Search
  Seller.
 User
11 rows in set (0.00 sec)
mysql> DESCRIBE ADDED;
| Field
        | Type
                         | Null | Key | Default | Extra |
 u_id
          | varchar(20) | NO
 cart id | varchar(20)
                          NO
                                         NULL
 p_id
                                        NULL
          | varchar(20)
                         I NO
3 rows in set (0.00 sec)
mysql> DESCRIBE BUYER;
 Field | Type
                         | Null | Key | Default | Extra |
 u_id | varchar(20) | NO
comment | varchar(20) | YES
                                | PRI | NULL
u id
                                       NULL
2 rows in set (0.00 sec)
mysql> DESCRIBE CART;
| Field
                           | Null | Key | Default | Extra |
             | Type
                                     PRI |
 cart_id
              | varchar(20) | NO
                                           NULL
 p_name
               varchar(20)
                                            NULL
 quantity
                              NO
                                            NULL
                              NO
 price
               float
                                            NULL
                              NO
                                            NULL
  total_cost
               float
 u_id
               varchar(20)
                                    i UNI i
                                            NULL
6 rows in set (0.00 sec)
mysql> DESCRIBE HAS;
| Field | Type
                      | Null | Key | Default | Extra |
       | varchar(20) | NO
                              | MUL | NULL
                              | MUL | NULL
 p_id | varchar(20) | NO
2 rows in set (0.00 sec)
mysql> DESCRIBE LOWSTOCKPRODUCT;
                          | Null | Key | Default | Extra |
 p_name | varchar(20) | NO
category | varchar(20) | NO
                                         NULL
  category | varchar(20)
                                         NULL
2 rows in set (0.00 sec)
```

```
mysql> DESCRIBE ORDERED;
| Field
                                | Null | Key | Default | Extra |
                   Type
 p_name
                                                NULL
                   varchar(20)
                                  NO
                                  NO
 quantity
                                                NULL
                    float
                                  NO
                                                NULL
                                                NULL
 p id
                   varchar(20)
                                  NO
 transaction_id
                   varchar(20)
                                  NO
                                         PRI
                                                NULL
cart_id
                  | varchar(20)
                                  NO
                                         MUL
                                               NULL
6 rows in set (0.01 sec)
mysql> DESCRIBE PLACE;
                                | Null | Key | Default | Extra |
| Field
| transaction_id | varchar(20)
                                  NO
                                                NULL
                                  NO
 cart_id
                   varchar(20)
                                                NULL
2 rows in set (0.00 sec)
mysql> DESCRIBE PRODUCT;
Field
                                 Null | Key | Default | Extra |
                | Type
                  varchar(20)
varchar(200)
 p_id
                                  NO
                                         PRI
                                                NULL
                                  YES
 picture
                                                NULL
 p_name
                  varchar(20)
                                  NO
                                                NULL
 price
                                  NO
                                                NULL
                  float
                                         MUL
                                                NULL
                  varchar(20)
                                  NO
 category
 quantity
                  int
                                  NO
                                                NULL
 p_description
                  varchar(20)
                                  NO
                                                NULL
                                  NO
                                         MUL
                  varchar(20)
                                               NULL
 u_id
8 rows in set (0.00 sec)
mysql> DESCRIBE SEARCH;
| Field | Type
                      | Null | Key | Default | Extra
 u_id
        | varchar(20) | NO
                                PRI | NULL
        | varchar(20) | NO
                                PRI | NULL
 p_id
2 rows in set (0.00 sec)
mysql> DESCRIBE SELLER;
| Field
                              | Null | Key | Default | Extra |
               | Type
                 varchar(20) | NO
 u_id
                                       PRI
                                             NULL
                                YES
 post
                | varchar(20)
                                             NULL
 profile_pic
                                YES
                 blob
                                             NULL
 about_seller | varchar(20) |
                                YES
                                             NULL
4 rows in set (0.00 sec)
mysql> DESCRIBE USER;
 Field
                          | Null | Key | Default | Extra |
             Type
 name
             varchar(20)
                            NO
                                         NULL
             varchar(20)
                                         NULL
 username
                            NO
             varchar(20)
 u id
                            NO
                                   PRI
                                         NULL
 login
             varchar(20)
                            NO
                                         NULL
             varchar(20)
                            NO
                                         NULL
 password
             varchar(20)
 phone
                            NO
                                         NULL
  address
             varchar(20)
                            NO
                                         NULL
  email
             varchar(20)
 rows in set (0.00 sec)
```

Tables with inserted data of csc675 database:

```
mysql> SELECT * FROM BUYER;
 u_id | comment
 401
         Good chocolate
  402
         It's good
 403
        best chocolate
 rows in set (0.00 sec)
mysql> SELECT * FROM CART;
                        quantity | price | total_cost | u_id |
 cart_id | p_name
                                2 |
                                       15
                                                     30 I
                                                          401
 1
            chocolate
 2
                               10
                                       20
            almond
                                                    200
                                                          402
            tangy
                               15
                                                          403
 rows in set (0.00 sec)
mysql> SELECT * FROM ORDERED;
            | quantity |
                         price | p_id | transaction_id | cart_id |
 p_name
 chocolate
                             15
                                  101
                                         201
                                                           2
 almond
                    10
                             20
                                  102
                                         202
                    15
                                  103
                                         203
  tangy
 rows in set (0.00 sec)
mysql> SELECT * FROM PRODUCT;
 p id | picture
                        | p name
                                    | price | category | quantity | p description
                                                                                           | u id |
         images/1.jpg
  101
                         chocolate
                                         15 I
                                              chocolate
                                                                1000
                                                                       good product
                                                                                             301
         images/2.jpg
  102
                         almond
                                         20
                                              chocolate
                                                                1000
                                                                       smooth and good
                                                                                             301
         images/3.jpg
                                                               1000
  103
                                              chocolate
                                                                       tastes very well
                                                                                             301
                          tangy
         images/4.jpg
                                                               1000
                                                                       special occasions
  104
                                                                                             302
                         black
                                         10
                                              chocolate
         images/5.jpg
  105
                          roasted
                                          5
                                              chocolate
                                                                1000
                                                                       best choc flavor
                                                                                             302
  106
         images/6.jpg
                          coconut
                                              chocolate
                                                                1000
                                                                       every day goodness
                                                                                             301
         images/7.jpg
                                                               1000
                                                                                             302
  107
                                        100
                                              party
                                                                       large size
                          rose
         images/8.jpg
  108
                          party
                                              party
                                                               1000
                                                                       large size
                                                                                             301
  109
         images/9.jpg
                          tasty
                                              party
                                                                1000
                                                                       large size
                                                                                             303
  110
         images/10.jpg
                         large
                                                                1000
                                                                       large size
                                                                                             303
                                              party
10 rows in set (0.00 sec)
mysql > SELECT * FROM SELLER;
                            | profile_pic
                                                                       | about_seller
 u_id | post
         I sell good stuff
                              0x696D616765732F73656C6C6572312E6A7067
                                                                         cool seller
  302
        Buy my products
Enjoy buying
                              0x696D616765732F73656C6C6572322E6A7067
                                                                         best seller
 303
                              0x696D616765732F73656C6C6572332E6A7067
                                                                         great seller
 rows in set (0.00 sec)
mysql> SELECT * FROM USER;
                    username | u_id | login | password
                                                          | phone
                                                                        | address
                                                                                    | email
                                                            4151234567 |
 Don Escobar
                    descobar
                                301
                                       user4
                                                pwseller1
                                                                          34 6th st |
                                                                                      stu4@sfsu.edu
  Eduardo Barnaby
                    bbarnaby
                                302
                                       user5
                                                pwseller2
                                                            4269853705
                                                                          35 6th st
                                                                                      stu5@sfsu.edu
  Liz Cortez
                                303
                                                            4151237891
                                                                          36 6th st
                    itsLiz
                                       user6
                                                pwseller3
                                                                                      stu6@sfsu.edu
 Gina Stevens
                                401
                                       user1
                                                pwbuyer1
                                                            5102233321
                                                                          31 4th st
                                                                                      stu1@sfsu.edu
                    gina
                                402
                                                                          32 5th st
  Samantha Smith
                    sam
                                       user2
                                                pwbuyer2
                                                            9252277321
                                                                                      stu2@sfsu.edu
  Will Miller
                                403
                                       user3
                                                pwbuyer3
                                                            4152233333
                                                                          33 6th st
                                                                                      stu3@sfsu.edu
 rows in set (0.00 sec)
```

Query Screenshots:

1) Find the most expensive product from each seller:

```
mysql> SELECT P.u_id, MAX(P.price)
    -> FROM Product P
[    -> GROUP BY P.u_id;
+----+
| u_id | MAX(P.price) |
+----+
| 301 | 20 |
| 302 | 100 |
| 303 | 30 |
+----+
3 rows in set (0.00 sec)
```

2) Find users id and username that sell more than two products:

3) Find users that sell products that cost \$5:

```
mysql> SELECT * FROM User U
    -> WHERE EXISTS ( SELECT P.u_id
             FROM Product P
             WHERE P.u_id = U.u_id
             AND P.price = 5);
                                                                                | email
 name
                  | username | u_id | login | password | phone
                                                                    address
                                             pwseller2 | 4269853705 | 35 6th st | stu5@sfsu.edu |
  Eduardo Barnaby | bbarnaby | 302
                                    | user5 |
                   itsLiz
                             303
                                   | user6 | pwseller3
                                                       | 4151237891 | 36 6th st | stu6@sfsu.edu
2 rows in set (0.00 sec)
mysql>
```

4) Find the most expensive product: