

COMP-421 Database Systems, Winter 2019

Project 2: Creating Your Database

SAAS Shoe Store Database

Group 37

1. Modified Relational Schema

- Shoes(product_id, model_id, gender, status, size)
 - model_id, gender ref Models
- Models(model_id, gender, name, description, price)
- Colors(color_id, model_id, gender, media1, media2, media3)
 - model_id, gender ref Models
- Casual_Shoes(model_id, gender)
 - model_id, gender ref Models
- Sport_Shoes(model_id, gender)
 - model_id, gender ref Models
- Dress_Shoes(model_id, gender)
 - model_id, gender ref Models
- Customers(email, username, password, gender, birthdate, address)
- Items(item_id, email, status, product_id)
 - email ref Customers
 - product_id ref Shoes
- Invoices(invoice_id, total, date_time, shipment_type, card_number, email, shipment_id)
 - card_number, email ref Credit Cards
 - shipment_id ref Shipments
- Purchase(item_id, email, invoice_id)
 - item_id and email ref Items
 - invoice_id ref Invoices
- Credit_Cards(card_number, email, type, name, address, CVV2, postal_code)
 - email ref Customer
- Review(email, model_id, gender, comment, rating)
 - email ref Customers
 - model_id, gender ref Models
- Shipments(shipment_id, departure, arrival, status)

2. CREATE TABLE Statements

```
CREATE TABLE models (
    model_id INTEGER NOT NULL,
    gender VARCHAR(1) NOT NULL,
    name VARCHAR(50) NOT NULL,
    description VARCHAR(1000),
    price FLOAT NOT NULL,
    PRIMARY KEY (model_id, gender)
);
```

```
cs421=> \d models
      Table "cs421g37.models"
 Column |          Type          | Modifiers
-----+---------------------+-----
model_id | integer            | not null
gender   | character varying(1) | not null
name    | character varying(50) | not null
description | character varying(1000) |
price   | double precision     | not null
Indexes:
"models_pkey" PRIMARY KEY, btree (model_id, gender)
Referenced by:
TABLE "casual_shoes" CONSTRAINT "casual_shoes_model_id_fkey" FOREIGN KEY (model_id, gender) REFERENCES models(model_id, gender)
TABLE "colors" CONSTRAINT "colors_model_id_fkey" FOREIGN KEY (model_id, gender) REFERENCES models(model_id, gender)
TABLE "dress_shoes" CONSTRAINT "dress_shoes_model_id_fkey" FOREIGN KEY (model_id, gender) REFERENCES models(model_id, gender)
TABLE "shoes" CONSTRAINT "shoes_model_id_fkey" FOREIGN KEY (model_id, gender) REFERENCES models(model_id, gender)
TABLE "sport_shoes" CONSTRAINT "sport_shoes_model_id_fkey" FOREIGN KEY (model_id, gender) REFERENCES models(model_id, gender)
```

```
CREATE TABLE colors (
    color_id INTEGER NOT NULL,
    model_id INTEGER NOT NULL,
    gender VARCHAR(1) NOT NULL,
    medial VARCHAR(200),
    media2 VARCHAR(200),
    media3 VARCHAR(200),
    FOREIGN KEY (model_id, gender) REFERENCES models(model_id, gender),
    PRIMARY KEY (color_id, model_id, gender)
);
```

```
cs421=> \d colors
      Table "cs421g37.colors"
 Column |          Type          | Modifiers
-----+-----+-----+
color_id | integer            | not null
model_id | integer            | not null
gender   | character varying(1) | not null
medial  | character varying(200) |
media2  | character varying(200) |
media3  | character varying(200) |
Indexes:
"colors_pkey" PRIMARY KEY, btree (color_id, model_id, gender)
Foreign-key constraints:
"colors_model_id_fkey" FOREIGN KEY (model_id, gender) REFERENCES models(model_id, gender)
```

```
CREATE TABLE shoes (
    product_id INTEGER NOT NULL,
    model_id INTEGER NOT NULL,
    gender VARCHAR(1) NOT NULL,
    status VARCHAR(50),
    size_ float NOT NULL,
    FOREIGN KEY (model_id, gender) REFERENCES models(model_id, gender),
    PRIMARY KEY (product_id)
);
```

```
cs421=> \d shoes
      Table "cs421g37.shoes"
 Column | Type          | Modifiers
-----+-----+-----+
 product_id | integer      | not null
 model_id | integer      | not null
 gender | character varying(1) | not null
 status | character varying(50)
 size_ | double precision | not null
Indexes:
 "shoes_pkey" PRIMARY KEY, btree (product_id)
Foreign-key constraints:
 "shoes_model_id_fkey" FOREIGN KEY (model_id, gender) REFERENCES models(model_id, gender)
Referenced by:
 TABLE "items" CONSTRAINT "items_product_id_fkey" FOREIGN KEY (product_id) REFERENCES shoes(product_id)
```

```
CREATE TABLE casual_shoes (
    model_id INTEGER NOT NULL,
    gender VARCHAR(1) NOT NULL,
    FOREIGN KEY (model_id, gender) REFERENCES models(model_id, gender),
    PRIMARY KEY (model_id, gender)
);
```

```
cs421=> \d casual_shoes
      Table "cs421g37.casual_shoes"
 Column | Type          | Modifiers
-----+-----+-----+
 model_id | integer      | not null
 gender | character varying(1) | not null
Indexes:
 "casual_shoes_pkey" PRIMARY KEY, btree (model_id, gender)
Foreign-key constraints:
 "casual_shoes_model_id_fkey" FOREIGN KEY (model_id, gender) REFERENCES models(model_id, gender)
```

```
CREATE TABLE sport_shoes (
    model_id INTEGER NOT NULL,
    gender VARCHAR(1) NOT NULL,
    FOREIGN KEY (model_id, gender) REFERENCES models(model_id, gender),
    PRIMARY KEY (model_id, gender)
);
```

```
cs421=> \d sport_shoes
      Table "cs421g37.sport_shoes"
 Column | Type          | Modifiers
-----+-----+-----+
 model_id | integer      | not null
 gender | character varying(1) | not null
Indexes:
 "sport_shoes_pkey" PRIMARY KEY, btree (model_id, gender)
Foreign-key constraints:
 "sport_shoes_model_id_fkey" FOREIGN KEY (model_id, gender) REFERENCES models(model_id, gender)
```

```
CREATE TABLE dress_shoes (
    model_id INTEGER NOT NULL,
    gender VARCHAR(1) NOT NULL,
    FOREIGN KEY (model_id, gender) REFERENCES models(model_id, gender),
    PRIMARY KEY (model_id, gender)
);
```

```
cs421=> \d dress_shoes
      Table "cs421g37.dress_shoes"
 Column |          Type          | Modifiers
-----+---------------------+-----+
 model_id | integer           | not null
 gender   | character varying(1) | not null
Indexes:
 "dress_shoes_pkey" PRIMARY KEY, btree (model_id, gender)
Foreign-key constraints:
 "dress_shoes_model_id_fkey" FOREIGN KEY (model_id, gender) REFERENCES models(model_id, gender)
```

```
CREATE TABLE customers (
    email VARCHAR(50) NOT NULL,
    username VARCHAR(50) NOT NULL,
    password VARCHAR(16) NOT NULL,
    gender VARCHAR(1) NOT NULL,
    birthdate DATE NOT NULL,
    address VARCHAR(200) NOT NULL,
    PRIMARY KEY (email)
);
```

```
cs421=> \d customers
      Table "cs421g37.customers"
 Column |          Type          | Modifiers
-----+-----+-----+
 email  | character varying(50) | not null
 username | character varying(50) | not null
 password | character varying(16) | not null
 gender  | character varying(1) | not null
 birthdate | date | not null
 address | character varying(200) | not null
Indexes:
 "customers_pkey" PRIMARY KEY, btree (email)
Referenced by:
 TABLE "credit_cards" CONSTRAINT "credit_cards_email_fkey" FOREIGN KEY (email) REFERENCES customers(email)
 TABLE "items" CONSTRAINT "items_email_fkey" FOREIGN KEY (email) REFERENCES customers(email)
```

```
CREATE TABLE items (
    item_id INTEGER NOT NULL,
    email VARCHAR(50) NOT NULL,
    status VARCHAR(50),
    product_id INTEGER NOT NULL,
    FOREIGN KEY (email) REFERENCES customers(email),
    FOREIGN KEY (product_id) REFERENCES shoes(product_id),
    PRIMARY KEY(item_id, email)
);
```

```
cs421=> \d items
      Table "cs421g37.items"
 Column |          Type          | Modifiers
-----+-----+-----+
 item_id | integer           | not null
 email   | character varying(50) | not null
 status  | character varying(50) |
 product_id | integer | not null
Indexes:
 "items_pkey" PRIMARY KEY, btree (item_id, email)
Foreign-key constraints:
 "items_email_fkey" FOREIGN KEY (email) REFERENCES customers(email)
 "items_product_id_fkey" FOREIGN KEY (product_id) REFERENCES shoes(product_id)
Referenced by:
 TABLE "purchases" CONSTRAINT "purchases_item_id_fkey" FOREIGN KEY (item_id, email) REFERENCES items(item_id, email)
```

```

CREATE TABLE credit_cards (
    card_number VARCHAR(16) NOT NULL,
    email VARCHAR(50) NOT NULL,
    name VARCHAR(50) NOT NULL,
    address VARCHAR(100) NOT NULL,
    CVV2 INTEGER NOT NULL,
    postal_code VARCHAR(8) NOT NULL,
    FOREIGN KEY (email) REFERENCES customers(email),
    PRIMARY KEY(card_number, email)
);


```

```

cs421=> \d credit_cards
      Table "cs421g37.credit_cards"
 Column | Type | Modifiers
-----+-----+-----
card_number | character varying(16) | not null
email | character varying(50) | not null
name | character varying(50) | not null
address | character varying(100) | not null
cvv2 | integer | not null
postal_code | character varying(8) | not null
Indexes:
"credit_cards_pkey" PRIMARY KEY, btree (card_number, email)
Foreign-key constraints:
"credit_cards_email_fkey" FOREIGN KEY (email) REFERENCES customers(email)
Referenced by:
    TABLE "invoices" CONSTRAINT "invoices_card_number_fkey" FOREIGN KEY (card_number, email) REFERENCES credit_cards(card_number, email)


```

```

CREATE TABLE shipments (
    shipment_id INTEGER NOT NULL,
    departure TIMESTAMP NOT NULL,
    arrival TIMESTAMP,
    status VARCHAR(1),
    PRIMARY KEY(shipment_id)
);


```

```

cs421=> \d shipments
      Table "cs421g37.shipments"
 Column | Type | Modifiers
-----+-----+-----
shipment_id | integer | not null
departure | timestamp without time zone | not null
arrival | timestamp without time zone |
status | character varying(1)
Indexes:
"shipments_pkey" PRIMARY KEY, btree (shipment_id)
Referenced by:
    TABLE "invoices" CONSTRAINT "invoices_shipment_id_fkey" FOREIGN KEY (shipment_id) REFERENCES shipments(shipment_id)


```

```

CREATE TABLE invoices (
    invoice_id INTEGER NOT NULL,
    total FLOAT NOT NULL,
    date_time TIMESTAMP NOT NULL,
    card_number VARCHAR(16) NOT NULL,
    email VARCHAR(50) NOT NULL,
    shipment_id integer,
    FOREIGN KEY (card_number, email) REFERENCES credit_cards(card_number, email),
    FOREIGN KEY (shipment_id) REFERENCES shipments(shipment_id),
    PRIMARY KEY(invoice_id)
);


```

```

cs421=> \d invoices
      Table "cs421g37.invoices"
 Column | Type          | Modifiers
-----+---------------+-----------
 invoice_id | integer       | not null
 total | double precision | not null
 date_time | timestamp without time zone | not null
 card_number | character varying(16) | not null
 email | character varying(50) | not null
 shipment_id | integer       |
Indexes:
 "invoices_pkey" PRIMARY KEY, btree (invoice_id)
Foreign-key constraints:
 "invoices_card_number_fkey" FOREIGN KEY (card_number, email) REFERENCES credit_cards(card_number, email)
 "invoices_shipment_id_fkey" FOREIGN KEY (shipment_id) REFERENCES shipments(shipment_id)
Referenced by:
 TABLE "purchases" CONSTRAINT "purchases_invoice_id_fkey" FOREIGN KEY (invoice_id) REFERENCES invoices(invoice_id)

```

```

CREATE TABLE purchases (
    item_id INTEGER NOT NULL,
    email VARCHAR(50) NOT NULL,
    invoice_id INTEGER NOT NULL,
    FOREIGN KEY (item_id, email) REFERENCES items(item_id, email),
    FOREIGN KEY (invoice_id) REFERENCES invoices(invoice_id),
    PRIMARY KEY(item_id, email, invoice_id)
);

```

```

cs421=> \d purchases
      Table "cs421g37.purchases"
 Column | Type          | Modifiers
-----+---------------+-----------
 item_id | integer       | not null
 email | character varying(50) | not null
 invoice_id | integer       | not null
Indexes:
 "purchases_pkey" PRIMARY KEY, btree (item_id, email, invoice_id)
Foreign-key constraints:
 "purchases_invoice_id_fkey" FOREIGN KEY (invoice_id) REFERENCES invoices(invoice_id)
 "purchases_item_id_fkey" FOREIGN KEY (item_id, email) REFERENCES items(item_id, email)

```

```

CREATE TABLE reviews (
    email VARCHAR(50) NOT NULL,
    model_id INTEGER NOT NULL,
    gender VARCHAR(1) NOT NULL,
    comment_ VARCHAR(1000) NOT NULL,
    rating INTEGER,
    FOREIGN KEY (email) REFERENCES customers(email),
    FOREIGN KEY (model_id, gender) REFERENCES models(model_id, gender),
    PRIMARY KEY(email, model_id, gender)
);

```

```

cs421=> \d reviews
      Table "cs421g37.reviews"
 Column | Type          | Modifiers
-----+---------------+-----------
 email | character varying(50) | not null
 model_id | integer       | not null
 gender | character varying(1) | not null
 comment_ | character varying(1000) | not null
 rating | integer       |
Indexes:
 "reviews_pkey" PRIMARY KEY, btree (email, model_id, gender)
Foreign-key constraints:
 "reviews_email_fkey" FOREIGN KEY (email) REFERENCES customers(email)
 "reviews_model_id_fkey" FOREIGN KEY (model_id, gender) REFERENCES models(model_id, gender)

```

3. INSERT Commands for Customers Table

```
INSERT INTO customers VALUES (
    'saleh.bakhit@mail.mcgill.ca',
    'saleh bakhit',
    '123',
    'O',
    '1995-11-22',
    '3445 Hutchison Street, H2X 2G2, Montreal, QC, Canada'
);

INSERT INTO customers VALUES (
    'afreen.aliya@mail.mcgill.ca',
    'afreen aliya',
    '456',
    'M',
    '1987-01-01',
    '123 random street, H2X 2GG, Montreal, QC, Canada'
);

INSERT INTO customers VALUES (
    'sami.sahnoune@mail.mcgill.ca',
    'samisahnoune',
    'sami123',
    'M',
    '1997-03-15',
    '3484 rue Hutchison, H2X 2G8, Montreal, QC, Canada'
);

INSERT INTO customers VALUES (
    'ahmed.jamoussi@mail.mcgill.ca',
    'jamouss',
    'instagramboi',
    'M',
    '1997-11-05',
    '3476 Drummond St, H2X 2G8, Montreal, Q, Canada'
);

INSERT INTO customers VALUES (
    'emily.rando@mail.mcgill.ca',
    'erando',
    'randomwoman',
    'F',
    '1997-05-05',
    '3476 Drummond St, H2X 2G8, Montreal, Q, Canada'
);
```

The above query was run via the insertCustomers.sql file.

```
cs421=> \i insertCustomers.sql
INSERT 0 1
cs421=> SELECT * FROM customers;
```

4. INSERT Commands for Database

Models table:

```
cs421=> SELECT * FROM models LIMIT 10;
+-----+-----+-----+-----+
| model_id | gender | name | description | price |
+-----+-----+-----+-----+
| 8770 | M | White shoes | White casual shoes with a zipper | 45
| 8771 | M | White Smoke shoes | Shoes with three stripes on the side | 100
| 8772 | M | Nike Soccer shoes | Nike red cleat | 65
| 8773 | F | NB Running shoes | NB running shoes multicolor | 89
| 8774 | M | Brown Dress Shoes | Brown dress shoes with no lace | 78
| 8775 | M | Formal Brown Shoes | Formal brown shoes with lace | 90
| 8776 | M | Casual White shoe | High-rise vintage shoe with brown tread | 150
| 8777 | M | Comfortable gray shoe | Speckled gray shoe with stripes | 125
| 8778 | M | Multi-color athletic shoe | Vibrant shoe for sports | 99
| 8779 | F | Casual boot shoe | Perfect for any terrain | 125
+-----+-----+-----+-----+
(10 rows)
```

Colors table:

```
cs421=> SELECT * FROM colors LIMIT 10;
+-----+-----+-----+-----+
| color_id | model_id | gender | media1 | media2 | media3 |
+-----+-----+-----+-----+
| 255255255 | 8770 | M | https://unsplash.com/photos/VJIL_YZrpyQ | https://unsplash.com/photos/VJIL_YZrpyQ | https://unsplash.com/photos/VJIL_YZrpyQ
| 245245245 | 8771 | M | https://unsplash.com/photos/82fp_wYFxuo | https://unsplash.com/photos/82fp_wYFxuo | https://unsplash.com/photos/82fp_wYFxuo
| 220220220 | 8772 | M | https://unsplash.com/photos/GgeTibD0hVo | https://unsplash.com/photos/GgeTibD0hVo | https://unsplash.com/photos/GgeTibD0hVo
| 211211211 | 8773 | F | https://unsplash.com/photos/fUEP0djbihA | https://unsplash.com/photos/fUEP0djbihA | https://unsplash.com/photos/fUEP0djbihA
| 192192192 | 8774 | M | https://unsplash.com/photos/WfRT1QTFEE | https://unsplash.com/photos/WfRT1QTFEE | https://unsplash.com/photos/WfRT1QTFEE
| 169169169 | 8775 | M | https://unsplash.com/photos/ZIW_wcbjKLw | https://unsplash.com/photos/ZIW_wcbjKLw | https://unsplash.com/photos/ZIW_wcbjKLw
| 255255255 | 8776 | M | https://unsplash.com/photos/ad047kyPBh8 | https://unsplash.com/photos/ad047kyPBh8 | https://unsplash.com/photos/ad047kyPBh8
| 272155255 | 8777 | M | https://unsplash.com/photos/MpqYV0fCfa | https://unsplash.com/photos/MpqYV0fCfa | https://unsplash.com/photos/MpqYV0fCfa
| 312211232 | 8778 | M | https://unsplash.com/photos/Cbh93Npfweg | https://unsplash.com/photos/Cbh93Npfweg | https://unsplash.com/photos/Cbh93Npfweg
| 169169169 | 8779 | F | https://unsplash.com/photos/Uc4RBL4edEc | https://unsplash.com/photos/Uc4RBL4edEc | https://unsplash.com/photos/Uc4RBL4edEc
+-----+-----+-----+-----+
(10 rows)
```

Shoes table:

```
cs421=> SELECT * FROM shoes LIMIT 10;
+-----+-----+-----+-----+
| product_id | model_id | gender | status | size_ |
+-----+-----+-----+-----+
| 6789 | 8770 | M | Available | 8
| 6790 | 8770 | M | Available | 8
| 6791 | 8770 | M | Available | 12
| 5678 | 8771 | M | Available | 9
| 7853 | 8772 | M | Available | 8
| 7854 | 8772 | M | Out of stock | 9
| 7855 | 8772 | M | Available | 8
| 1254 | 8773 | F | Available | 10
| 5742 | 8774 | M | Available | 11
| 6855 | 8775 | M | Out of stock | 9
+-----+-----+-----+-----+
(10 rows)
```

Casual Shoes table:

```
cs421=> SELECT * FROM casual_shoes LIMIT 10;
+-----+-----+
| model_id | gender |
+-----+-----+
| 8770 | M
| 8771 | M
| 8776 | M
| 8777 | M
| 8779 | F
| 8781 | F
+-----+-----+
(6 rows)
```

Sport Shoes table:

```
cs421=> SELECT * FROM sport_shoes LIMIT 10;
model_id | gender
-----+-----
 8772 | M
 8773 | F
 8778 | M
(3 rows)
```

Dress Shoes table:

```
cs421=> SELECT * FROM dress_shoes LIMIT 10;
model_id | gender
-----+-----
 8774 | M
 8775 | M
 8780 | F
(3 rows)
```

Customers table:

```
cs421=> SELECT * FROM customers LIMIT 10;
email           | username | password | gender | birthdate | address
-----+-----+-----+-----+-----+-----+
saleh.bakhit@mail.mcgill.ca | salehbakh | 123456 | M | 1995-11-22 | 3445 Hutchison Street, H2X 2G2, Montreal, QC, Canada
afreen.aliya@mail.mcgill.ca | afreenal | 654321 | F | 1990-10-12 | 123 random street, H2X 2G6, Montreal, QC, Canada
sami.sahnoune@mail.mcgill.ca | samisahn | hasdi | M | 1993-01-01 | 3484 rue Hutchison, H2X 2G8, Montreal, QC, Canada
ahmed.jamoussi@mail.mcgill.ca | ahmedjam | 21836dg! | M | 1994-12-05 | 3476 Drummond St, H2X 2G8, Montreal, Q, Canada
emily.rando@mail.mcgill.ca | emily | iudv3 | M | 1995-01-01 | 3477 Drummond St, H2X 2G8, Montreal, Q, Canada
johnny.smith@mail.mcgill.ca | johnnysmith | iudv3 | M | 1995-01-02 | 3478 Drummond St, H2X 2G8, Montreal, Q, Canada
jon.smith@mail.mcgill.ca | jonsmith | iudv3 | M | 1995-01-03 | 3479 Drummond St, H2X 2G8, Montreal, Q, Canada
jack.smith@mail.mcgill.ca | jacksmith | iudv4 | M | 1995-01-04 | 3480 Drummond St, H2X 2G8, Montreal, Q, Canada
jill.smith@mail.mcgill.ca | jillsmith | iudv5 | F | 1995-01-05 | 3481 Drummond St, H2X 2G8, Montreal, Q, Canada
ja.rando@mail.mcgill.ca | jarando | iudv6 | F | 1995-01-06 | 3482 Drummond St, H2X 2G8, Montreal, Q, Canada
(10 rows)
```

Items table:

```
cs421=> SELECT * FROM items LIMIT 10;
item_id | email | status | product_id
-----+-----+-----+-----+
 100 | saleh.bakhit@mail.mcgill.ca | In-Cart | 6789
 101 | afreen.aliya@mail.mcgill.ca | In-Cart | 6789
 102 | sami.sahnoune@mail.mcgill.ca | In-Cart | 6789
 103 | ahmed.jamoussi@mail.mcgill.ca | In-Cart | 6789
 104 | ahmed.jamoussi@mail.mcgill.ca | In-Cart | 5742
(5 rows)
```

Credit Cards table:

```
cs421=> SELECT * FROM credit_cards LIMIT 10;
card_number | email | name | address | cvv2 | postal_code
-----+-----+-----+-----+-----+-----+
5721267011784937 | saleh.bakhit@mail.mcgill.ca | saleh bakhit | 3445 Hutchison Street, H2X 2G2, Montreal, QC, Canada | 765 | H1A6A1
2903968483676975 | afreen.aliya@mail.mcgill.ca | afreen aliya | 123 random street, H2X 2G6, Montreal, QC, Canada | 786 | H1A5N4
7654343456547886 | sami.sahnoune@mail.mcgill.ca | sami sahnoune | 3484 rue Hutchison, H2X 2G8, Montreal, QC, Canada | 235 | H1C1G1
9485938086485604 | ahmed.jamoussi@mail.mcgill.ca | jamouss | 3476 Drummond St, H2X 2G8, Montreal, Q, Canada | 234 | H1A2H7
6845768947645876 | emily.rando@mail.mcgill.ca | erando | 3477 Drummond St, H2X 2G8, Montreal, Q, Canada | 248 | H1B5W3
6845768931212321 | johnny.smith@mail.mcgill.ca | johnny smith | 3478 Drummond St, H2X 2G8, Montreal, Q, Canada | 123 | H1B5W3
2132193231912393 | jon.smith@mail.mcgill.ca | jon smith | 3479 Drummond St, H2X 2G8, Montreal, Q, Canada | 322 | H1B5W3
1231231212312322 | jack.smith@mail.mcgill.ca | jack smith | 3480 Drummond St, H2X 2G8, Montreal, Q, Canada | 121 | H1B5W3
3210123921031931 | jill.smith@mail.mcgill.ca | jill smith | 3481 Drummond St, H2X 2G8, Montreal, Q, Canada | 123 | H1B5W3
1232132193121313 | ja.rando@mail.mcgill.ca | ja rando | 3482 Drummond St, H2X 2G8, Montreal, Q, Canada | 719 | H1B5W3
(10 rows)
```

Shipments table:

```
cs421=> SELECT * FROM shipments LIMIT 10;
+-----+-----+-----+-----+
| shipment_id | departure | arrival | status |
+-----+-----+-----+-----+
| 45 | 2019-02-26 02:10:11 | 2019-03-27 16:02:12 | A
| 67 | 2019-02-27 02:10:11 | 2019-03-28 16:02:12 | A
| 90 | 2019-02-28 02:10:11 | 2019-03-29 16:02:12 | A
| 34 | 2019-03-01 02:10:11 | 2019-03-30 16:02:12 | A
| 66 | 2019-03-02 02:10:11 | 2019-03-31 16:02:12 | A
+-----+
(5 rows)
```

Invoices table:

```
cs421=> SELECT * FROM invoices LIMIT 10;
+-----+-----+-----+-----+-----+-----+-----+
| invoice_id | total | date_time | card_number | email | shipment_id |
+-----+-----+-----+-----+-----+-----+
| 678 | 86 | 2019-02-20 16:02:12 | 5721627011784937 | saleh.bakhit@mail.mcgill.ca | 45
| 679 | 122 | 2019-02-21 16:02:12 | 2903968403676975 | afreen.aliya@mail.mcgill.ca | 67
| 680 | 320 | 2019-02-22 16:02:12 | 7654343456547886 | sami.sahnoune@mail.mcgill.ca | 90
| 681 | 45 | 2019-02-23 16:02:12 | 9485938086485604 | ahmed.jamoussi@mail.mcgill.ca | 34
| 682 | 189 | 2019-02-24 16:02:12 | 5721627011784937 | saleh.bakhit@mail.mcgill.ca | 66
+-----+
(5 rows)
```

Purchases table:

```
cs421=> SELECT * FROM purchases LIMIT 10;
+-----+-----+-----+
| item_id | email | invoice_id |
+-----+-----+-----+
| 100 | saleh.bakhit@mail.mcgill.ca | 678
| 101 | afreen.aliya@mail.mcgill.ca | 679
| 102 | sami.sahnoune@mail.mcgill.ca | 680
| 103 | ahmed.jamoussi@mail.mcgill.ca | 681
| 104 | ahmed.jamoussi@mail.mcgill.ca | 682
+-----+
(5 rows)
```

Reviews table:

```
cs421=> SELECT * FROM reviews LIMIT 10;
+-----+-----+-----+-----+-----+
| email | model_id | gender | comment_ | rating |
+-----+-----+-----+-----+-----+
| saleh.bakhit@mail.mcgill.ca | 8778 | M | "The shoe fit splendidly." | 5
| afreen.aliya@mail.mcgill.ca | 8773 | F | "A bit of a small fit - its still very comfortable!" | 4
| sami.sahnoune@mail.mcgill.ca | 8771 | M | "Terrible shoe. Delete this." | 1
| ahmed.jamoussi@mail.mcgill.ca | 8772 | M | "Could have been better, but overall very happy with it" | 4
| saleh.bakhit@mail.mcgill.ca | 8778 | M | "Trash." | 2
+-----+
(5 rows)
```

The insertion was done using a python script the team wrote as well as csv data files. See attached SQLGen.zip for script, sql statements and data files

5. Queries

Query 1

Table Descriptions

Models:

model_id	gender	name	description	price
8770	M	White shoes	White casual shoes with a zipper	45
8771	M	White Smoke shoes	Shoes with three stripes on the side	100
8772	M	Nike Soccer shoes	Nike red cleat	65
8773	F	NB Running shoes	NB running shoes multicolor	89
8774	M	Brown Dress Shoes	Brown dress shoes with no lace	78
8775	M	Formal Brown Shoes	Formal brown shoes with lace	90
8776	M	Casual White shoe	High-rise vintage shoe with brown tread	150
8777	M	Comfortable gray shoe	Speckled gray shoe with stripes	125
8778	M	Multi-color athletic shoe	Vibrant shoe for sports	99
8779	F	Casual boot shoe	Perfect for any terrain	125
8781	F	Shiny shoes	Shimmering casual shoes	99
8780	F	Elegant womens heels	High heels for a special occasion	197.01

Shoes:

product_id	model_id	gender	status	size_
6789	8770	M	Available	8
6790	8770	M	Available	8
6791	8770	M	Available	12
5678	8771	M	Available	9
7853	8772	M	Available	8
7854	8772	M	Out of stock	9
7855	8772	M	Available	8
1254	8773	F	Available	10
5742	8774	M	Available	11
6855	8775	M	Out of stock	9
2133	8776	M	Available	9
2134	8776	M	Available	8
2135	8776	M	Available	8.5
2136	8776	M	Available	11
2139	8777	M	Available	10
2140	8777	M	Available	10
2141	8777	M	Available	9
2142	8777	M	Available	8
1233	8778	M	Out of stock	10.5
2123	8779	F	Out of stock	8
9832	8780	F	Available	10
9833	8780	F	Available	10
9834	8780	F	Available	10
10210	8780	F	Available	8.5
1243	8781	F	Available	7
1244	8781	F	Available	8
1245	8781	F	Available	7
1246	8781	F	Available	8
1247	8781	F	Available	8

Query Description

This query returns the model information for all models that are offered in a particular size (here, in size 9). This allows users to see which shoes are available in their size.

SQL Statement

```
Select * from models where model_id in (select model_id from shoes where size_ = 9);
```

Execution

```
cs421=> Select * from models where model_id in (select model_id from shoes where size_ = 9);
model_id | gender | name | description | price
-----+-----+-----+-----+-----+
 8775 | M | Formal Brown Shoes | Formal brown shoes with lace | 90
 8777 | M | Comfortable gray shoe | Speckled gray shoe with stripes | 125
 8772 | M | Nike Soccer shoes | Nike red cleat | 65
 8771 | M | White Smoke shoes | Shoes with three stripes on the side | 100
 8776 | M | Casual White shoe | High-rise vintage shoe with brown tread | 150
(5 rows)
```

Query 2

Table Descriptions

Models:

```
cs421=> SELECT * FROM models;
model_id | gender | name | description | price
-----+-----+-----+-----+-----+
 8770 | M | White shoes | White casual shoes with a zipper | 45
 8771 | M | White Smoke shoes | Shoes with three stripes on the side | 100
 8772 | M | Nike Soccer shoes | Nike red cleat | 65
 8773 | F | NB Running shoes | NB running shoes multicolor | 89
 8774 | M | Brown Dress Shoes | Brown dress shoes with no lace | 78
 8775 | M | Formal Brown Shoes | Formal brown shoes with lace | 90
 8776 | M | Casual White shoe | High-rise vintage shoe with brown tread | 150
 8777 | M | Comfortable gray shoe | Speckled gray shoe with stripes | 125
 8778 | M | Multi-color athletic shoe | Vibrant shoe for sports | 99
 8779 | F | Casual boot shoe | Perfect for any terrain | 125
 8781 | F | Shiny shoes | Shimmering casual shoes | 99
 8780 | F | Elegant womens heels | High heels for a special occasion | 197.01
(12 rows)
```

Invoices:

```
cs421=> SELECT * FROM invoices LIMIT 10;
invoice_id | total | date_time | card_number | email | shipment_id
-----+-----+-----+-----+-----+-----+
 678 | 86 | 2019-02-20 16:02:12 | 5721627011784937 | saleh.bakhit@mail.mcgill.ca | 45
 679 | 122 | 2019-02-21 16:02:12 | 2903968403676975 | afreen.aliya@mail.mcgill.ca | 67
 680 | 320 | 2019-02-22 16:02:12 | 7654343456547886 | sami.sahnoune@mail.mcgill.ca | 90
 681 | 45 | 2019-02-23 16:02:12 | 9485938086485604 | ahmed.jamoussi@mail.mcgill.ca | 34
 682 | 189 | 2019-02-24 16:02:12 | 5721627011784937 | saleh.bakhit@mail.mcgill.ca | 66
(5 rows)
```

Shipments:

```
cs421=> SELECT * FROM shipments LIMIT 10;
shipment_id | departure | arrival | status
-----+-----+-----+-----+
 45 | 2019-02-26 02:10:11 | 2019-03-27 16:02:12 | A
 67 | 2019-02-27 02:10:11 | 2019-03-28 16:02:12 | A
 90 | 2019-02-28 02:10:11 | 2019-03-29 16:02:12 | A
 34 | 2019-03-01 02:10:11 | 2019-03-30 16:02:12 | A
 66 | 2019-03-02 02:10:11 | 2019-03-31 16:02:12 | A
(5 rows)
```

Query Description

This query returns the username of customers whose emails are associated with invoices that reflect items that shipped before a certain date and time. This is useful in determining which users were expecting a shipment as of that particular date.

SQL Statement

```
Select username from customers where email in (select email from invoices where shipment_id in (select shipment_id from shipments where departure <= '2019-02-28 11:59:59'));
```

Execution

```
cs421=> Select username from customers where email in (select email from invoices where shipment_id in (select shipment_id from shipment
s where departure <= '2019-02-28 11:59:59'));
username
-----
salehbakh
afreenal
samiyah
(3 rows)
```

Query 3

Table Descriptions

Credit Cards:

card_number	email	name	address	cvv2	postal_code
5721627011784937	saleh.bakhit@mail.mcgill.ca	saleh bakhit	3445 Hutchison Street, H2X 2G2, Montreal, QC, Canada	765	H1A0A1
290368403676975	afreen.aliya@mail.mcgill.ca	afreen aliya	123 random street, H2X 2G6, Montreal, QC, Canada	786	H1A5N4
7654343456547886	sami.sahnoune@mail.mcgill.ca	sami sahnoune	3484 rue Hutchison, H2X 2G8, Montreal, QC, Canada	235	H1C1G1
9485938086485694	ahmed.jamoussi@mail.mcgill.ca	jamouss	3476 Drummond St, H2X 2G8, Montreal, Q, Canada	234	H1A2H7
6845768947645876	emily.rando@mail.mcgill.ca	erando	3477 Drummond St, H2X 2G8, Montreal, Q, Canada	248	H1B5W3
6845768931212321	johnny.smith@mail.mcgill.ca	johnny smith	3478 Drummond St, H2X 2G8, Montreal, Q, Canada	123	H1B5W3
2132193219121393	jon.smith@mail.mcgill.ca	jon smith	3479 Drummond St, H2X 2G8, Montreal, Q, Canada	322	H1B5W3
1231231212312322	jack.smith@mail.mcgill.ca	jack smith	3480 Drummond St, H2X 2G8, Montreal, Q, Canada	121	H1B5W3
3210123921031931	jill.smith@mail.mcgill.ca	jill smith	3481 Drummond St, H2X 2G8, Montreal, Q, Canada	123	H1B5W3
1232132193121313	ja.rando@mail.mcgill.ca	ja rando	3482 Drummond St, H2X 2G8, Montreal, Q, Canada	719	H1B5W3
8992821829318292	emily.smith@mail.mcgill.ca	emily smith	3483 Drummond St, H2X 2G8, Montreal, Q, Canada	231	H1B5W3
1239292912882932	smith.emily@mail.mcgill.ca	smith emily	3484 Drummond St, H2X 2G8, Montreal, Q, Canada	222	H1B5W3
2139129123812932	trser.rando@mail.mcgill.ca	trser	3485 Drummond St, H2X 2G8, Montreal, Q, Canada	120	H1B5W3
1293129399219312	smads@mail.mcgill.ca	smads	3486 Drummond St, H2X 2G8, Montreal, Q, Canada	843	H1B5W3
5721627011784937	testCustomer1@mail.mcgill.ca	test1	1 imaginary road, H2X 2G2, Montreal QC, Canada	765	H2X2G2
5721627011784937	testCustomer2@mail.mcgill.ca	test2	2 imaginary road, H2X 2G2, Montreal QC, Canada	765	H2X2G3
5721627011784937	testCustomer3@mail.mcgill.ca	test3	3 imaginary road, H2X 2G2, Montreal QC, Canada	765	H2X2G4
5721627011784937	testCustomer4@mail.mcgill.ca	test4	4 imaginary road, H2X 2G2, Montreal QC, Canada	765	H2X2G5
5721627011784937	testCustomer5@mail.mcgill.ca	test5	5 imaginary road, H2X 2G2, Montreal QC, Canada	765	H2X2G6
5721627011784937	testCustomer6@mail.mcgill.ca	test6	6 imaginary road, H2X 2G2, Montreal QC, Canada	765	H2X2G7
5721627011784937	testCustomer7@mail.mcgill.ca	test7	7 imaginary road, H2X 2G2, Montreal QC, Canada	765	H2X2G8
5721627011784937	testCustomer8@mail.mcgill.ca	test8	8 imaginary road, H2X 2G2, Montreal QC, Canada	765	H2X2G9
5721627011784937	testCustomer9@mail.mcgill.ca	test9	9 imaginary road, H2X 2G2, Montreal QC, Canada	765	H2X2G10
(23 rows)					

Customers:

email	username	password	gender	birthdate	address
saleh.bakhit@mail.mcgill.ca	salehbakh	123456	M	1995-11-22	3445 Hutchison Street, H2X 2G2, Montreal, QC, Canada
afreen.aliya@mail.mcgill.ca	afreenal	654321	F	1990-10-12	123 random street, H2X 2G6, Montreal, QC, Canada
sami.sahnoune@mail.mcgill.ca	samiyah	hasd!	M	1993-01-01	3484 rue Hutchison, H2X 2G8, Montreal, QC, Canada
ahmed.jamoussi@mail.mcgill.ca	ahmedjam	21836dg!	M	1994-12-05	3476 Drummond St, H2X 2G8, Montreal, Q, Canada
emily.rando@mail.mcgill.ca	emily	iudv3	M	1995-01-01	3477 Drummond St, H2X 2G8, Montreal, Q, Canada
johnny.smith@mail.mcgill.ca	johnnysmith	iudv3	M	1995-01-02	3478 Drummond St, H2X 2G8, Montreal, Q, Canada
jon.smith@mail.mcgill.ca	jonsmith	iudv3	M	1995-01-03	3479 Drummond St, H2X 2G8, Montreal, Q, Canada
jack.smith@mail.mcgill.ca	jacksmith	iudv4	M	1995-01-04	3480 Drummond St, H2X 2G8, Montreal, Q, Canada
jill.smith@mail.mcgill.ca	jillsmith	iudv5	F	1995-01-05	3481 Drummond St, H2X 2G8, Montreal, Q, Canada
ja.rando@mail.mcgill.ca	jarando	iudv6	F	1995-01-06	3482 Drummond St, H2X 2G8, Montreal, Q, Canada
emily.smith@mail.mcgill.ca	emilysmith	iudv7	F	1995-01-07	3483 Drummond St, H2X 2G8, Montreal, Q, Canada
smith.emily@mail.mcgill.ca	smithemily	iudv8	F	1995-01-08	3484 Drummond St, H2X 2G8, Montreal, Q, Canada
trser.rando@mail.mcgill.ca	trserrr	iudv9	M	1995-01-09	3485 Drummond St, H2X 2G8, Montreal, Q, Canada
smads@mail.mcgill.ca	smadsss	iudv10	F	1995-01-10	3486 Drummond St, H2X 2G8, Montreal, Q, Canada
testCustomer1@mail.mcgill.ca	test1	test1	F	1990-01-01	1 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer2@mail.mcgill.ca	test2	test2	M	1990-01-02	2 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer3@mail.mcgill.ca	test3	test3	F	1990-01-03	3 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer4@mail.mcgill.ca	test4	test4	M	1990-01-04	4 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer5@mail.mcgill.ca	test5	test5	F	1990-01-05	5 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer6@mail.mcgill.ca	test6	test6	M	1990-01-06	6 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer7@mail.mcgill.ca	test7	test7	F	1990-01-07	7 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer8@mail.mcgill.ca	test8	test8	M	1990-01-08	8 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer9@mail.mcgill.ca	test9	test9	F	1990-01-09	9 imaginary road, H2X 2G2, Montreal QC, Canada
(23 rows)					

Query Description

This query returns credit cards stored in the database with their respective number of corresponding users. So, if a number of users are using a particular credit card, this number will be present in the 'noofusers' column.

SQL Statement

```
select C.card_number, count(*) as NoOfUsers from credit_cards C, customers M WHERE C.email = M.email GROUP BY
C.card_number;
```

Execution

```
cs421=> select C.card_number, count(*) as NoOfUsers from credit_cards C, customers M WHERE C.email = M.email GROUP BY C.card_number;
   card_number | noofusers
-----+-----
 6845768947645876 |      1
 2139129123812932 |      1
 7654343456547886 |      1
 1232132193121313 |      1
 5721627011784937 |     10
 892821829318292 |      1
 2132193231912393 |      1
 3218123921031931 |      1
 6845768931212321 |      1
 1293129399219312 |      1
 2903968483676975 |      1
 9485938086485684 |      1
 1239292912882932 |      1
 1231231212312322 |      1
(14 rows)
```

Query 4

Table Descriptions

Models:

```
cs421=> SELECT * FROM models;
   model_id | gender | name | description | price
-----+-----+-----+-----+-----+
    8770 | M | White shoes | White casual shoes with a zipper | 45
    8771 | M | White Smoke shoes | Shoes with three stripes on the side | 100
    8772 | M | Nike Soccer shoes | Nike red cleat | 65
    8773 | F | NB Running shoes | NB running shoes multicolor | 89
    8774 | M | Brown Dress Shoes | Brown dress shoes with no lace | 78
    8775 | M | Formal Brown Shoes | Formal brown shoes with lace | 90
    8776 | M | Casual White shoe | High-rise vintage shoe with brown tread | 150
    8777 | M | Comfortable gray shoe | Speckled gray shoe with stripes | 125
    8778 | M | Multi-color athletic shoe | Vibrant shoe for sports | 99
    8779 | F | Casual boot shoe | Perfect for any terrain | 125
    8781 | F | Shiny shoes | Shimmering casual shoes | 99
    8780 | F | Elegant womens heels | High heels for a special occasion | 197.01
(12 rows)
```

Shoes:

```
cs421=> SELECT * FROM SHOES;
   product_id | model_id | gender | status | size_
-----+-----+-----+-----+-----+
    6789 | 8770 | M | Available | 8
    6790 | 8770 | M | Available | 8
    6791 | 8770 | M | Available | 12
    5678 | 8771 | M | Available | 9
    7853 | 8772 | M | Available | 8
    7854 | 8772 | M | Out of stock | 9
    7855 | 8772 | M | Available | 8
    1254 | 8773 | F | Available | 10
    5742 | 8774 | M | Available | 11
    6855 | 8775 | M | Out of stock | 9
    2133 | 8776 | M | Available | 9
    2134 | 8776 | M | Available | 8
    2135 | 8776 | M | Available | 8.5
    2136 | 8776 | M | Available | 11
    2139 | 8777 | M | Available | 10
    2140 | 8777 | M | Available | 10
    2141 | 8777 | M | Available | 9
    2142 | 8777 | M | Available | 8
    1233 | 8778 | M | Out of stock | 10.5
    2123 | 8779 | F | Out of stock | 8
    9832 | 8780 | F | Available | 10
    9833 | 8780 | F | Available | 10
    9834 | 8780 | F | Available | 10
    10210 | 8780 | F | Available | 8.5
    1243 | 8781 | F | Available | 7
    1244 | 8781 | F | Available | 8
    1245 | 8781 | F | Available | 7
    1246 | 8781 | F | Available | 8
    1247 | 8781 | F | Available | 8
(29 rows)
```

Query Description

This query returns the model information for shoes that are available. This is useful to allow the user to know which models are available.

SQL Statement

```
Select * from models where model_id in (select model_id from shoes where status = 'Available');
```

Execution

model_id	gender	name	description	price
8773	F	NB Running shoes	NB running shoes multicolor	89
8774	M	Brown Dress Shoes	Brown dress shoes with no lace	78
8770	M	White shoes	White casual shoes with a zipper	45
8771	M	White Smoke shoes	Shoes with three stripes on the side	100
8780	F	Elegant womens heels	High heels for a special occasion	197.01
8781	F	Shiny shoes	Shimmering casual shoes	99
8772	M	Nike Soccer shoes	Nike red cleat	65
8776	M	Casual White shoe	High-rise vintage shoe with brown tread	150
8777	M	Comfortable gray shoe	Speckled gray shoe with stripes	125

(9 rows)

Query 5

Table Descriptions

Shoes:

product_id	model_id	gender	status	size_
6789	8770	M	Available	8
6790	8770	M	Available	8
6791	8770	M	Available	12
5678	8771	M	Available	9
7853	8772	M	Available	8
7854	8772	M	Out of stock	9
7855	8772	M	Available	8
1254	8773	F	Available	10
5742	8774	M	Available	11
6855	8775	M	Out of stock	9
2133	8776	M	Available	9
2134	8776	M	Available	8
2135	8776	M	Available	8.5
2136	8776	M	Available	11
2139	8777	M	Available	10
2140	8777	M	Available	10
2141	8777	M	Available	9
2142	8777	M	Available	8
1233	8778	M	Out of stock	10.5
2123	8779	F	Out of stock	8
9832	8780	F	Available	10
9833	8780	F	Available	10
9834	8780	F	Available	10
10210	8780	F	Available	8.5
1243	8781	F	Available	7
1244	8781	F	Available	8
1245	8781	F	Available	7
1246	8781	F	Available	8
1247	8781	F	Available	8

(29 rows)

Query Description

This query returns the model of all shoes in the database with the corresponding quantity of shoe in that model.

SQL Statement

```
Select model_id, count(shoes.product_id) from shoes group by shoes.model_id
```

Execution

model_id	count
8775	1
8772	3
8779	1
8781	5
8777	4
8771	1
8776	4
8770	3
8780	4
8778	1
8774	1
8773	1

(12 rows)

6. Data Modification Commands

All relation descriptions are presented in Objective 2.

Query 1

This modification command represents the application of a sale price for a subset of shoes.

```
UPDATE models SET price = price * 0.9 WHERE price > 100;
```

Before query:

model_id	gender	name	description	price
8770	M	White shoes	White casual shoes with a zipper	45
8771	M	White Smoke shoes	Shoes with three stripes on the side	100
8772	M	Nike Soccer shoes	Nike red cleat	65
8773	F	NB Running shoes	NB running shoes multicolor	89
8774	M	Brown Dress Shoes	Brown dress shoes with no lace	78
8775	M	Formal Brown Shoes	Formal brown shoes with lace	90
8778	M	Multi-color athletic shoe	Vibrant shoe for sports	99
8781	F	Shiny shoes	Shimmering casual shoes	99
8776	M	Casual White shoe	High-rise vintage shoe with brown tread	135
8777	M	Comfortable gray shoe	Speckled gray shoe with stripes	112.5
8779	F	Casual boot shoe	Perfect for any terrain	112.5
8780	F	Elegant womens heels	High heels for a special occasion	177.309

After query:

model_id	gender	name	description	price
8770	M	White shoes	White casual shoes with a zipper	45
8771	M	White Smoke shoes	Shoes with three stripes on the side	100
8772	M	Nike Soccer shoes	Nike red cleat	65
8773	F	NB Running shoes	NB running shoes multicolor	89
8774	M	Brown Dress Shoes	Brown dress shoes with no lace	78
8775	M	Formal Brown Shoes	Formal brown shoes with lace	90
8778	M	Multi-color athletic shoe	Vibrant shoe for sports	99
8781	F	Shiny shoes	Shimmering casual shoes	99
8776	M	Casual White shoe	High-rise vintage shoe with brown tread	121.5
8777	M	Comfortable gray shoe	Speckled gray shoe with stripes	101.25
8779	F	Casual boot shoe	Perfect for any terrain	101.25
8780	F	Elegant womens heels	High heels for a special occasion	159.5781

Query 2

This modification command inserts into the customers table new records.

```
INSERT INTO customers (email, username, password, gender, birthdate, address) VALUES
('ad@qwe.ca', 'admin10', 'admin', 'F', '1990-09-12', '10 Yemen Street, Yemen'),
('ae@qwe.ca', 'admin20', 'admin', 'M', '1990-03-02', '12 Yemen Street, Yemen'),
('af@qwe.ca', 'admin30', 'admin', 'F', '1980-07-06', '10 Yemen Street, Yemen');
```

Before query:

email	username	password	gender	birthdate	address
saleh.bakhit@mail.mcgill.ca	salehbakh	123456	M	1995-11-22	3445 Hutchison Street, H2X 2G2, Montreal, QC, Canada
afreen.aliya@mail.mcgill.ca	afreenal	654321	F	1990-10-12	123 random street, H2X 2G6, Montreal, QC, Canada
sami.sahnoune@mail.mcgill.ca	samisahn	hasd!	M	1993-01-01	3484 rue Hutchison, H2X 2G8, Montreal, QC, Canada
ahmed.jamoussi@mail.mcgill.ca	ahmedjam	21836dg!	M	1994-12-05	3476 Drummond St, H2X 2G8, Montreal, QC, Canada
emily.rando@mail.mcgill.ca	emily	iudv3	M	1995-01-01	3477 Drummond St, H2X 2G8, Montreal, QC, Canada
johnny.smith@mail.mcgill.ca	johnnysmith	iudv3	M	1995-01-02	3478 Drummond St, H2X 2G8, Montreal, QC, Canada
jon.smith@mail.mcgill.ca	jonsmith	iudv3	M	1995-01-03	3479 Drummond St, H2X 2G8, Montreal, QC, Canada
jack.smith@mail.mcgill.ca	jacksmith	iudv4	M	1995-01-04	3480 Drummond St, H2X 2G8, Montreal, QC, Canada
jill.smith@mail.mcgill.ca	jillsmith	iudv5	F	1995-01-05	3481 Drummond St, H2X 2G8, Montreal, QC, Canada
ja.rando@mail.mcgill.ca	jarando	iudv6	F	1995-01-06	3482 Drummond St, H2X 2G8, Montreal, QC, Canada
emily.smith@mail.mcgill.ca	emilysmith	iudv7	F	1995-01-07	3483 Drummond St, H2X 2G8, Montreal, QC, Canada
smith.emily@mail.mcgill.ca	smithemily	iudv8	F	1995-01-08	3484 Drummond St, H2X 2G8, Montreal, QC, Canada
trser.rando@mail.mcgill.ca	trserrrr	iudv9	M	1995-01-09	3485 Drummond St, H2X 2G8, Montreal, QC, Canada
smads@mail.mcgill.ca	smadssss	iudv10	F	1995-01-10	3486 Drummond St, H2X 2G8, Montreal, QC, Canada
testCustomer1@mail.mcgill.ca	test1	test1	F	1990-01-01	1 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer2@mail.mcgill.ca	test2	test2	M	1990-01-02	2 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer3@mail.mcgill.ca	test3	test3	F	1990-01-03	3 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer4@mail.mcgill.ca	test4	test4	M	1990-01-04	4 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer5@mail.mcgill.ca	test5	test5	F	1990-01-05	5 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer6@mail.mcgill.ca	test6	test6	M	1990-01-06	6 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer7@mail.mcgill.ca	test7	test7	F	1990-01-07	7 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer8@mail.mcgill.ca	test8	test8	M	1990-01-08	8 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer9@mail.mcgill.ca	test9	test9	F	1990-01-09	9 imaginary road, H2X 2G2, Montreal QC, Canada
aa@qwe.ca	admin1	admin	F	1990-09-12	10 Yemen Street, Yemen
ab@qwe.ca	admin2	admin	F	1990-03-02	11 Yemen Street, Yemen
ac@qwe.ca	admin2	admin	F	1980-07-06	10 Yemen Street, Yemen

After query:

email	username	password	gender	birthdate	address
saleh.bakhit@mail.mcgill.ca	salehbakh	123456	M	1995-11-22	3445 Hutchison Street, H2X 2G2, Montreal, QC, Canada
afreen.aliya@mail.mcgill.ca	afreenal	654321	F	1990-10-12	123 random street, H2X 2G6, Montreal, QC, Canada
sami.sahnoune@mail.mcgill.ca	samisahn	hasd!	M	1993-01-01	3484 rue Hutchison, H2X 2G8, Montreal, QC, Canada
ahmed.jamoussi@mail.mcgill.ca	ahmedjam	21836dg!	M	1994-12-05	3476 Drummond St, H2X 2G8, Montreal, QC, Canada
emily.rando@mail.mcgill.ca	emily	iudv3	M	1995-01-01	3477 Drummond St, H2X 2G8, Montreal, QC, Canada
johnny.smith@mail.mcgill.ca	johnnysmith	iudv3	M	1995-01-02	3478 Drummond St, H2X 2G8, Montreal, QC, Canada
jon.smith@mail.mcgill.ca	jonsmith	iudv3	M	1995-01-03	3479 Drummond St, H2X 2G8, Montreal, QC, Canada
jack.smith@mail.mcgill.ca	jacksmith	iudv4	M	1995-01-04	3480 Drummond St, H2X 2G8, Montreal, QC, Canada
jill.smith@mail.mcgill.ca	jillsmith	iudv5	F	1995-01-05	3481 Drummond St, H2X 2G8, Montreal, QC, Canada
ja.rando@mail.mcgill.ca	jarando	iudv6	F	1995-01-06	3482 Drummond St, H2X 2G8, Montreal, QC, Canada
emily.smith@mail.mcgill.ca	emilysmith	iudv7	F	1995-01-07	3483 Drummond St, H2X 2G8, Montreal, QC, Canada
smith.emily@mail.mcgill.ca	smithemily	iudv8	F	1995-01-08	3484 Drummond St, H2X 2G8, Montreal, QC, Canada
trser.rando@mail.mcgill.ca	trserrrr	iudv9	M	1995-01-09	3485 Drummond St, H2X 2G8, Montreal, QC, Canada
smads@mail.mcgill.ca	smadssss	iudv10	F	1995-01-10	3486 Drummond St, H2X 2G8, Montreal, QC, Canada
testCustomer1@mail.mcgill.ca	test1	test1	F	1990-01-01	1 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer2@mail.mcgill.ca	test2	test2	M	1990-01-02	2 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer3@mail.mcgill.ca	test3	test3	F	1990-01-03	3 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer4@mail.mcgill.ca	test4	test4	M	1990-01-04	4 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer5@mail.mcgill.ca	test5	test5	F	1990-01-05	5 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer6@mail.mcgill.ca	test6	test6	M	1990-01-06	6 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer7@mail.mcgill.ca	test7	test7	F	1990-01-07	7 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer8@mail.mcgill.ca	test8	test8	M	1990-01-08	8 imaginary road, H2X 2G2, Montreal QC, Canada
testCustomer9@mail.mcgill.ca	test9	test9	F	1990-01-09	9 imaginary road, H2X 2G2, Montreal QC, Canada
aa@qwe.ca	admin1	admin	F	1990-09-12	10 Yemen Street, Yemen
ab@qwe.ca	admin2	admin	F	1990-03-02	11 Yemen Street, Yemen
ac@qwe.ca	admin2	admin	F	1980-07-06	10 Yemen Street, Yemen
ad@qwe.ca	admin10	admin	F	1990-09-12	10 Yemen Street, Yemen
ae@qwe.ca	admin20	admin	M	1990-03-02	12 Yemen Street, Yemen
af@qwe.ca	admin30	admin	F	1980-07-06	10 Yemen Street, Yemen

Query 3

This modification command sets all shipments sent after the current time as a different status (for example, if all shipments confirmed arrived prior to an event).

```
UPDATE shipments SET status = 'E' where arrival > CURRENT_TIMESTAMP;
```

Before query:

```
cs421=> SELECT * FROM shipments;
+-----+-----+-----+-----+
| shipment_id | departure | arrival | status |
+-----+-----+-----+-----+
| 45 | 2019-02-26 02:10:11 | 2019-03-27 16:02:12 | A
| 67 | 2019-02-27 02:10:11 | 2019-03-28 16:02:12 | A
| 90 | 2019-02-28 02:10:11 | 2019-03-29 16:02:12 | A
| 34 | 2019-03-01 02:10:11 | 2019-03-30 16:02:12 | A
| 66 | 2019-03-02 02:10:11 | 2019-03-31 16:02:12 | A
+-----+
(5 rows)
```

After query:

```
cs421=> UPDATE shipments SET status = 'E' where arrival > CURRENT_TIMESTAMP;
UPDATE 5
cs421=> SELECT * FROM shipments;
+-----+-----+-----+-----+
| shipment_id | departure | arrival | status |
+-----+-----+-----+-----+
| 45 | 2019-02-26 02:10:11 | 2019-03-27 16:02:12 | E
| 67 | 2019-02-27 02:10:11 | 2019-03-28 16:02:12 | E
| 90 | 2019-02-28 02:10:11 | 2019-03-29 16:02:12 | E
| 34 | 2019-03-01 02:10:11 | 2019-03-30 16:02:12 | E
| 66 | 2019-03-02 02:10:11 | 2019-03-31 16:02:12 | E
+-----+
(5 rows)
```

Query 4

This modification command allows us to delete potential spam from our database.

```
DELETE from customers WHERE address ~* 'Yemen';
```

Before query:

```
cs421=> INSERT INTO customers (email, username, password, gender, birthdate, address) VALUES ('ad@qwe.ca', 'admin10', 'admin', 'F', '1990-09-12', '10 Yemen Street, Yemen'), ('ae@qwe.ca', 'admin20', 'admin', 'M', '1990-03-02', '12 Yemen Street, Yemen'), ('af@qwe.ca', 'admin30', 'admin', 'F', '1980-07-06', '10 Yemen Street, Yemen');
INSERT 0 3
cs421=> SELECT * FROM Customers;
+-----+-----+-----+-----+-----+-----+
| email | username | password | gender | birthdate | address |
+-----+-----+-----+-----+-----+-----+
| saleh.bakhit@mail.mcgill.ca | salehbakh | 123456 | M | 1995-11-22 | 3445 Hutchison Street, H2X 2G2, Montreal, QC, Canada
| afreen.aliya@mail.mcgill.ca | afreenal | 654321 | F | 1990-10-12 | 123 random street, H2X 2G6, Montreal, QC, Canada
| sami.sahnoune@mail.mcgill.ca | samisahn | hasd! | M | 1993-01-01 | 3484 rue Hutchison, H2X 2G8, Montreal, QC, Canada
| ahmed.jamoussi@mail.mcgill.ca | ahmedjam | 21836gd! | M | 1994-12-05 | 3476 Drummond St, H2X 2G8, Montreal, Q, Canada
| emily.rando@mail.mcgill.ca | emily | iudv3 | M | 1995-01-01 | 3477 Drummond St, H2X 2G8, Montreal, Q, Canada
| johnny.smith@mail.mcgill.ca | johnnysmith | iudv3 | M | 1995-01-02 | 3478 Drummond St, H2X 2G8, Montreal, Q, Canada
| jon.smith@mail.mcgill.ca | jonsmith | iudv3 | M | 1995-01-03 | 3479 Drummond St, H2X 2G8, Montreal, Q, Canada
| jack.smith@mail.mcgill.ca | jacksmith | iudv4 | M | 1995-01-04 | 3480 Drummond St, H2X 2G8, Montreal, Q, Canada
| jill.smith@mail.mcgill.ca | jillsmith | iudv5 | F | 1995-01-05 | 3481 Drummond St, H2X 2G8, Montreal, Q, Canada
| ja.rando@mail.mcgill.ca | jarando | iudv6 | F | 1995-01-06 | 3482 Drummond St, H2X 2G8, Montreal, Q, Canada
| emily.smith@mail.mcgill.ca | emilysmith | iudv7 | F | 1995-01-07 | 3483 Drummond St, H2X 2G8, Montreal, Q, Canada
| smith.emily@mail.mcgill.ca | smithemily | iudv8 | F | 1995-01-08 | 3484 Drummond St, H2X 2G8, Montreal, Q, Canada
| trser.rando@mail.mcgill.ca | trserrr | iudv9 | M | 1995-01-09 | 3485 Drummond St, H2X 2G8, Montreal, Q, Canada
| smads@mail.mcgill.ca | smadssss | iudv10 | F | 1995-01-10 | 3486 Drummond St, H2X 2G8, Montreal, Q, Canada
| testCustomer1@mail.mcgill.ca | test1 | test1 | F | 1990-01-01 | 1 imaginary road, H2X 2G2, Montreal QC, Canada
| testCustomer2@mail.mcgill.ca | test2 | test2 | M | 1990-01-02 | 2 imaginary road, H2X 2G2, Montreal QC, Canada
| testCustomer3@mail.mcgill.ca | test3 | test3 | F | 1990-01-03 | 3 imaginary road, H2X 2G2, Montreal QC, Canada
| testCustomer4@mail.mcgill.ca | test4 | test4 | M | 1990-01-04 | 4 imaginary road, H2X 2G2, Montreal QC, Canada
| testCustomer5@mail.mcgill.ca | test5 | test5 | F | 1990-01-05 | 5 imaginary road, H2X 2G2, Montreal QC, Canada
| testCustomer6@mail.mcgill.ca | test6 | test6 | M | 1990-01-06 | 6 imaginary road, H2X 2G2, Montreal QC, Canada
| testCustomer7@mail.mcgill.ca | test7 | test7 | F | 1990-01-07 | 7 imaginary road, H2X 2G2, Montreal QC, Canada
| testCustomer8@mail.mcgill.ca | test8 | test8 | M | 1990-01-08 | 8 imaginary road, H2X 2G2, Montreal QC, Canada
| testCustomer9@mail.mcgill.ca | test9 | test9 | F | 1990-01-09 | 9 imaginary road, H2X 2G2, Montreal QC, Canada
| aa@qwe.ca | admin1 | admin | F | 1990-09-12 | 10 Yemen Street, Yemen
| ab@qwe.ca | admin2 | admin | F | 1990-03-02 | 11 Yemen Street, Yemen
| ac@qwe.ca | admin2 | admin | F | 1980-07-06 | 10 Yemen Street, Yemen
| ad@qwe.ca | admin10 | admin | F | 1990-09-12 | 10 Yemen Street, Yemen
| ae@qwe.ca | admin20 | admin | M | 1990-03-02 | 12 Yemen Street, Yemen
| af@qwe.ca | admin30 | admin | F | 1980-07-06 | 10 Yemen Street, Yemen
+-----+
(29 rows)
```

After query:

```
cs421=> DELETE from customers WHERE address ~* 'Yemen';
DELETE 6
cs421=> SELECT * FROM customers;
+-----+-----+-----+-----+-----+-----+-----+
| email | username | password | gender | birthdate | address |
+-----+-----+-----+-----+-----+-----+
| saleh.bakhit@mail.mcgill.ca | salehbakh | 123456 | M | 1995-11-22 | 3445 Hutchison Street, H2X 2G2, Montreal, QC, Canada |
| afreen.aliya@mail.mcgill.ca | afreenal | 654321 | F | 1990-10-12 | 123 random street, H2X 2G6, Montreal, QC, Canada |
| sami.sahnoune@mail.mcgill.ca | samisahn | hasd! | M | 1993-01-01 | 3484 rue Hutchison, H2X 2G8, Montreal, QC, Canada |
| ahmed.jamoussi@mail.mcgill.ca | ahmedjam | 21836dg! | M | 1994-12-05 | 3476 Drummond St, H2X 2G8, Montreal, QC, Canada |
| emily.rando@mail.mcgill.ca | emily | iudv3 | M | 1995-01-01 | 3477 Drummond St, H2X 2G8, Montreal, QC, Canada |
| johnny.smith@mail.mcgill.ca | johnnysmith | iudv3 | M | 1995-01-02 | 3478 Drummond St, H2X 2G8, Montreal, QC, Canada |
| jon.smith@mail.mcgill.ca | jonsmith | iudv3 | M | 1995-01-03 | 3479 Drummond St, H2X 2G8, Montreal, QC, Canada |
| jack.smith@mail.mcgill.ca | jacksmith | iudv4 | M | 1995-01-04 | 3480 Drummond St, H2X 2G8, Montreal, QC, Canada |
| jill.smith@mail.mcgill.ca | jillsmith | iudv5 | F | 1995-01-05 | 3481 Drummond St, H2X 2G8, Montreal, QC, Canada |
| ja.rando@mail.mcgill.ca | jarando | iudv6 | F | 1995-01-06 | 3482 Drummond St, H2X 2G8, Montreal, QC, Canada |
| emily.smith@mail.mcgill.ca | emilysmith | iudv7 | F | 1995-01-07 | 3483 Drummond St, H2X 2G8, Montreal, QC, Canada |
| smith.emily@mail.mcgill.ca | smithemily | iudv8 | F | 1995-01-08 | 3484 Drummond St, H2X 2G8, Montreal, QC, Canada |
| trser.rando@mail.mcgill.ca | trserrrr | iudv9 | M | 1995-01-09 | 3485 Drummond St, H2X 2G8, Montreal, QC, Canada |
| smads@mail.mcgill.ca | smadssss | iudv10 | F | 1995-01-10 | 3486 Drummond St, H2X 2G8, Montreal, QC, Canada |
| testCustomer1@mail.mcgill.ca | test1 | test1 | F | 1990-01-01 | 1 imaginary road, H2X 2G2, Montreal QC, Canada |
| testCustomer2@mail.mcgill.ca | test2 | test2 | M | 1990-01-02 | 2 imaginary road, H2X 2G2, Montreal QC, Canada |
| testCustomer3@mail.mcgill.ca | test3 | test3 | F | 1990-01-03 | 3 imaginary road, H2X 2G2, Montreal QC, Canada |
| testCustomer4@mail.mcgill.ca | test4 | test4 | M | 1990-01-04 | 4 imaginary road, H2X 2G2, Montreal QC, Canada |
| testCustomer5@mail.mcgill.ca | test5 | test5 | F | 1990-01-05 | 5 imaginary road, H2X 2G2, Montreal QC, Canada |
| testCustomer6@mail.mcgill.ca | test6 | test6 | M | 1990-01-06 | 6 imaginary road, H2X 2G2, Montreal QC, Canada |
| testCustomer7@mail.mcgill.ca | test7 | test7 | F | 1990-01-07 | 7 imaginary road, H2X 2G2, Montreal QC, Canada |
| testCustomer8@mail.mcgill.ca | test8 | test8 | M | 1990-01-08 | 8 imaginary road, H2X 2G2, Montreal QC, Canada |
| testCustomer9@mail.mcgill.ca | test9 | test9 | F | 1990-01-09 | 9 imaginary road, H2X 2G2, Montreal QC, Canada |
(23 rows)
```

7. Database Views

```
CREATE VIEW AvailableShoeModels(model_id) AS SELECT DISTINCT model_id FROM shoes WHERE
status = 'Available';
```

```
cs421=> CREATE VIEW AvailableShoeModels(model_id) AS SELECT DISTINCT model_id FROM shoes WHERE status = 'Available';
CREATE VIEW
cs421=> SELECT * FROM AvailableShoeModels;
+-----+
| model_id |
+-----+
| 8773    |
| 8774    |
| 8770    |
| 8771    |
| 8780    |
| 8781    |
| 8772    |
| 8776    |
| 8777    |
(9 rows)
```

```
CREATE VIEW HighRatingShoes(model_id) AS SELECT DISTINCT model_id FROM reviews WHERE
rating >= 4;
```

```
cs421=> CREATE VIEW HighRatingShoes(model_id) AS SELECT DISTINCT model_id FROM reviews WHERE rating >= 3;
CREATE VIEW
cs421=> SELECT * FROM HighRatingShoes;
+-----+
| model_id |
+-----+
| 8770    |
| 8772    |
| 8773    |
(3 rows)
```

8. CHECK Constraints

I. This constraint ensures that all dates are reasonable.

```
ALTER table customers ADD CONSTRAINT birthdate_check CHECK (birthdate > '1900-01-01');
```

In uploading a customer with a birthdate in 1894, there is a constraint error.

```
cs421=> ALTER table customers ADD CONSTRAINT birthdate_check CHECK (birthdate > '1900-01-01');
ALTER TABLE
cs421=> INSERT INTO customers (email, username, password, gender, birthdate, address) VALUES ('ad@qwe.ca', 'admin10', 'admin', 'F', '1894-09-12')
, '12345 Test Avenue';
ERROR: new row for relation "customers" violates check constraint "birthdate_check"
DETAIL: Failing row contains (ad@qwe.ca, admin10, admin, F, 1894-09-12, 12345 Test Avenue).
```

II. This constraint ensures that a credit card placed inside the database has the correct length.

```
ALTER table credit_cards ADD CONSTRAINT card_digits_check CHECK (LENGTH(card_number) =
16);
```

In uploading a credit card with a length of only 5 characters, there is a constraint error.

```
^
[cs421=> ALTER table credit_cards ADD CONSTRAINT card_digits_check CHECK (LENGTH(card_number) = 16);
ALTER TABLE
cs421=> INSERT INTO credit_cards VALUES ('31221', 'ab@qwe.ca', 'admin2', '11 Yemen Street', 123, 'H1A0A1');
ERROR: new row for relation "credit_cards" violates check constraint "card_digits_check"
DETAIL: Failing row contains (31221, ab@qwe.ca, admin2, 11 Yemen Street, 123, H1A0A1).
```

9. Creativity Points

To insert data into the database (for question 4 especially), we developed a python script that takes in csv data files containing mock data and generates insert statements. The script also checks for foreign key constraints so we're able to catch errors earlier on. See attached SQLGen.zip for the script files, sql statements as well data csv files uses.