CPSC 304 Project Cover Page

Milestone #: 4

Date: 04/08/2024

Group Number: 42

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By typing our names and student numbers in the above table, we certify that the work in the attached assignment was performed solely by those whose names and student IDs are included above. (In the case of Project Milestone 0, the main purpose of this page is for you to let us know your e-mail address, and then let us assign you to a TA for your project supervisor.)

In addition, we indicate that we are fully aware of the rules and consequences of plagiarism, as set forth by the Department of Computer Science and the University of British Columbia

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Project Description

A real estate management system that enables a real estate firm to store and query all its listed properties, and keeps a record of ownership of any properties it has listed in the past. This database allows employees (agents) of a real estate company to view past and current property listings, view information about said properties, and the contact information of current and former buyers and sellers (as well as the contact information of their lawyers). The web program also allows agents to update information about any given property such as listing a property from listed to sold.

The only adjustment we made to the schema was to change the relationship between Seller and Property from a many-to-one relationship to a many-to-many relationship. This was done because our group wanted to store the contact information, as well as the bought price and date of purchase, of both current owners and former owners. Thus the many-to-one relationship needed to change.

Schema

Lawyer(name:VARCHAR, firm:VARCHAR, <u>email</u>:VARCHAR)
    PK(email)

Buyer(name:VARCHAR, <u>email</u>:VARCHAR, **L_email**:VARCHAR)
    PK(email)
    FK L_email REFERENCES Lawyer

Seller(name:VARCHAR, <u>email</u>:VARCHAR, **L_email**:VARCHAR)
    PK(email)
    FK L_email REFERENCES Lawyer

Tenant(name:VARCHAR, <u>email</u>:VARCHAR, **pID**:INT UNIQUE, monthlyRent:FLOAT,
    leaseType:VARCHAR, leaseSignDate:DATE, leaseLength:INT)
    PK(email)
    FK pID REFERENCES Property

Disclosures(<u>dID</u>:INT, type:INT, location:VARCHAR, dateLogged:DATE, resolved:BOOLEAN,
    pID: INT UNIQUE)
    PK(dID, pID)
    FK pID REFERENCES Property

Agent(<u>email</u>:VARCHAR, name:VARCHAR, licenseRenewalDate:DATE)
    PK(email)

BuildingManager(<u>email</u>:VARCHAR, name:VARCHAR)
    PK(email)

Apartment(**pID**:INT, floorNum:INT NOT NULL, aptNum:INT NOT NULL,
    maintenanceFee:DECIMAL(19,2), **BM_email**:VARCHAR NOT NULL)
    PK(pID)
    FK pID REFERENCES Property
    FK BM_email REFERENCES BuildingManager

House(**pID**:INT, yardSize:FLOAT)
    PK(pID)
    FK pID REFERENCES Property

Property(<u>pID</u>:INT, numBed:INT NOT NULL, numBath:FLOAT NOT NULL,
    govtValuation:DECIMAL(19,2), sqft:FLOAT, postalCode:VARCHAR,
    street#:VARCHAR, city:VARCHAR, province:VARCHAR,
    boughtPrice:DECIMAL(19,2), dateOfPurchase:DATE, salePrice:DECIMAL(19,2),
    dateOfSale:DATE, listDate:DATE, listPrice:DECIMAL(19,2), B_email, S_email NOT
    NULL, A_email NOT NULL)
    PK(pID)
    FK B_email REFERENCES Buyer
    FK S_email REFERENCES Seller

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Relations

```
SQL> select * from agent;

EMAIL                                     NAME                    PASSWORD                    LICENSERE
----------------------------------------- ----------------------- --------------------------- ---------
augustusjulius@manderburnsleo.com         Augustus Julius         secretpass                  01-JAN-22
tiberiusclaudius@manderburnsleo.com       Tiberius Claudius       password                    01-JAN-23
domitianusflavius@manderburnsleo.com      Domitianus Flavius      flavius00                   01-JAN-24
genghiskhan@manderburnsleo.com            Genghis Khan            mongoliarulestheworld       01-JAN-24
commodusaurelius@manderburnsleo.com       Commodus Aurelius       romeismine                  01-JAN-20
```

```
SQL> select * from apartment1;

       PID     APTNUM MAINTENANCEFEE BM_EMAIL
---------- ---------- -------------- ------------------------------------
       100        302          49.99 johnsmith@bluemanagement.com
       102          6           35.5 michaelbay@bluemanagement.com
       104        808             72 cassius_clay@hamptonplace.com
       110        100          27.25 drexler_clyde@trailblazer.mgmt.com
       112        501          49.99 clark.caitlin@atira.com
```

```
SQL> select * from apartment2;

    APTNUM    FLOORNUM
---------- ----------
       302          3
         6          0
       808          8
       100          1
       501          5
```

```
SQL> select * from buildingmanager;

EMAIL                                     COMPANYNAME
----------------------------------------- --------------------------
johnsmith@bluemanagement.com              Blue Management
michaelbay@bluemanagement.com             Blue Management
cassius_clay@hamptonplace.com             Hampton Place
drexler_clyde@trailblazer.mgmt.com        Trailblazer Management
clark.caitlin@atira.com                   Atira Property Management
```

```
SQL> select * from buyer;

EMAIL                                    NAME                                     L_EMAIL
---------------------------------------- ---------------------------------------- --------------------------------
johnsmith@gmail.com                      John Smith                               johnsmith2@bakermckenzie.com
joeforte@gmail.com                       Joe Forte                                johnsmith2@bakermckenzie.com
johnsmith42@gmail.com                    John Smith                               sarasmith@bakermckenzie.com
donaldduck@gmail.com                     Donald Duck                              donaldduck@mickeymouse.com
alicebaker@gmail.com                     Alice Baker                              johnsmith1@bakermckenzie.com

SQL> select * from disclosures;

       DID       TYPE LOCATION                              DATELOGGE  RESOLVED       PID
---------- ---------- ------------------------------------- --------- ---------- ----------
         1       1001 bathroom #1                           03-MAY-19          1        100
         2       1002 kitchen                               03-MAY-19          0        100
         3       1001 bathroom #2                           03-MAY-19          1        100
         4       1004 bathroom #3                           03-MAY-19          1        100
         5       1005 bathroom #3                           03-MAY-19          1        100
         1       1005 master bedroom                        06-JUN-24          0        102
         2       1004 yard                                  06-JUN-24          0        102

SQL> select * from lawyer;

NAME                                     FIRM                                     EMAIL
---------------------------------------- ---------------------------------------- --------------------------------
John Smith                               Baker Mckenzie                           johnsmith1@bakermckenzie.com
Sara Smith                               Baker McKenzie                           sarasmith@bakermckenzie.com
John Smith                               johnsmith@gmail.com                      johnsmith2@bakermckenzie.com
Donald Trump                             Temple Chambers                          donaldtrump@templechambers.com
Donald Duck                              Mickey Mouse and Son                     donaldduck@mickeymouse.com

SQL> select * from owns;

       PID S_EMAIL                                  BOUGHTPRICE DATEOFPUR P_STATUS
---------- ---------------------------------------- ----------- --------- --------------
       100 alicesmith@gmail.com                          150000 02-SEP-17 Current Owner
       102 donaldduck@gmail.com                          120000 03-MAY-24 Current Owner
       104 donaldduck@gmail.com                          325000 09-JAN-21 Current Owner
       106 emmalau@outlook.com                           450000 03-MAY-18 Current Owner
       108 bobshaw@gmail.com                             660000 05-MAR-17 Current Owner
       110 xialong@baidu.com                             150000 03-MAY-20 Former Owner
       112 donaldduck@gmail.com                          400000 05-MAR-06 Current Owner
       114 emmalau@outlook.com                           825000 09-OCT-22 Current Owner
       116 donaldduck@gmail.com                         1000000 10-SEP-13 Current Owner
       118 bobshaw@gmail.com                            1100000 06-FEB-10 Former Owner
```

```
SQL> select * from property;

      PID    NUMBED   NUMBATH GOVTVALUATION    SQFT POSTALC STREETNUM                              SALEPRICE DATEOFSAL LISTDATE   LISTPRICE B_EMAIL
---------- ---------- ---------- ------------- ---------- ------- ---------------------------------------- ---------- --------- --------- ---------- --------------------
A_EMAIL
----------------------------------------
      100        2        2       220000     800 V6T 1Z4 105 W 10th                                                   03-MAY-19    270000
genghiskhan@manderburnsleo.com
      102        1      1.5       120000     650 V5J 0A3 #11 Dunbar                                                    06-JUN-24    200000
genghiskhan@manderburnsleo.com
      104        2      2.5       400000    1024 V5K 0BT #3 W 49                                                       08-DEC-23    270000
genghiskhan@manderburnsleo.com

      PID    NUMBED   NUMBATH GOVTVALUATION    SQFT POSTALC STREETNUM                              SALEPRICE DATEOFSAL LISTDATE   LISTPRICE B_EMAIL
---------- ---------- ---------- ------------- ---------- ------- ---------------------------------------- ---------- --------- --------- ---------- --------------------
A_EMAIL
----------------------------------------
      106        2        1       620000     900 V6T 2H2 #28 EB 13th                                                  23-FEB-21    720000
genghiskhan@manderburnsleo.com
      108        3        2       780000    1300 S0K 0Y0 #2 Sunny Rd                                                  02-NOV-18    850000
genghiskhan@manderburnsleo.com
      110        1        2       230000    1200 V5K 004 #123 Main St                              300000 21-JUL-24 02-JAN-24    330000 johnsmith@gmail.com
genghiskhan@manderburnsleo.com

      PID    NUMBED   NUMBATH GOVTVALUATION    SQFT POSTALC STREETNUM                              SALEPRICE DATEOFSAL LISTDATE   LISTPRICE B_EMAIL
---------- ---------- ---------- ------------- ---------- ------- ---------------------------------------- ---------- --------- --------- ---------- --------------------
A_EMAIL
----------------------------------------
      112        3        3      1000000    1500 V3S 0H2 34 52nd Ave                                                  11-JUL-23   1200000
genghiskhan@manderburnsleo.com
      114        4      3.5       900000    1350 V3Z 04T 2842 32nd Ave                                                01-APR-24    925000
commodusaurelius@manderburnsleo.com
      116        4        4      1800000    2120 H1A 0A1 #123 W 4th                                                   31-JUL-22   2000000
augustusjulius@manderburnsleo.com

      PID    NUMBED   NUMBATH GOVTVALUATION    SQFT POSTALC STREETNUM                              SALEPRICE DATEOFSAL LISTDATE   LISTPRICE B_EMAIL
---------- ---------- ---------- ------------- ---------- ------- ---------------------------------------- ---------- --------- --------- ---------- --------------------
A_EMAIL
----------------------------------------
      118        4      4.5      2800000    3140 M4C 1B5 #54 193 Ave                              3000000 06-FEB-24 16-MAY-24   3200000 joeforte@gmail.com
augustusjulius@manderburnsleo.com

10 rows selected.
```

PropertyAddress

```
POSTALC CITY                                     PROVINCE
------- ---------------------------------------- ----------
V6T 1Z4 Vancouver                                BC
V5J 0A3 Vancouver                                BC
V5K 0BT Vancouver                                BC
V5K 004 Vancouver                                BC
S0K 0Y0 Saskatoon                                SK
V6T 2H2 Vancouver                                BC
V3S 0H2 Surrey                                   BC
V3Z 04T Surrey                                   BC
H1A 0A1 Montreal                                 QC
M4C 1B5 Toronto                                  ON
```

```
SQL> select * from seller;

EMAIL                                    NAME                                     L_EMAIL
---------------------------------------- ---------------------------------------- ----------------------------
alicesmith@gmail.com                     Alice Smith                              johnsmith1@bakermckenzie.com
bobshaw@gmail.com                        Bob Shaw                                 johnsmith2@bakermckenzie.com
xialong@baidu.com                        Cherry Li                                sarasmith@bakermckenzie.com
donaldduck@gmail.com                     Donald Duck                              donaldduck@mickeymouse.com
emmalau@outlook.com                      Emma Lau
```

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Tenant

```
EMAIL                            NAME                      PID MONTHLYRENT LEASETYPE                      LEASESIGN LEASELENGTH
-------------------------------- ------------------------- --- ----------- ------------------------------ --------- -----------
adamjames@hotmail.com            Adam James                100    5040.12  Monthly                        03-JUN-19          14
bethanylau@gmail.com             Bethany Lau               102       6000  Annually                       10-JUN-24          24
cassiebones@yahoo.com            Cassandra Bones           104       8000  Monthly                        25-DEC-23           6
lepetitdominique@hotmail.com     Dominique Rousseau        106    5040.12  Annually                       28-JUN-20          36
thegreatbanana@gmail.com         Esther James              108    1234.56  Monthly                        03-FEB-19           2
```

Queries

INSERT Operation

List New Property

Agent Email:	augustusjulius@manderburnsleo.com
● House ○ Apartment	
Yard Size:	
Square Footage	
# Bed(s)		# Bath(s)	
Street	123 Main St	Postal Code	1A2 3B4
City	Vancouver	Province	BC
Government Valuation	500 000	List Price	500 000	List Date	04/08/2024
Seller Email	alicesmith@gmail.com	

Add Property

[newProperty.php (349-403)](newProperty.php)

DELETE Operation

Before

Current Lawyers

Name	Firm	Email
John Smith	Baker Mckenzie	johnsmith1@bakermckenzie.com
Sara Smith	Baker McKenzie	sarasmith@bakermckenzie.com
John Smith	johnsmith@gmail.com	johnsmith2@bakermckenzie.com
Donald Trump	Temple Chambers	donaldtrump@templechambers.com
Donald Duck	Mickey Mouse and Son	donaldduck@mickeymouse.com

DELETE Lawyer

This action is irreversible!!

Lawyer Email: johnsmith1@bakermckenzie.com DELETE

`

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After

Current Lawyers

Name	Firm	Email
Sara Smith	Baker McKenzie	sarasmith@bakermckenzie.com
John Smith	johnsmith@gmail.com	johnsmith2@bakermckenzie.com
Donald Trump	Temple Chambers	donaldtrump@templechambers.com
Donald Duck	Mickey Mouse and Son	donaldduck@mickeymouse.com

[lawyer.php (287-298)](lawyer.php)

UPDATE Operation

Before

Email	Name	Lawyer
alicesmith@gmail.com	bob	johnsmith2@bakermckenzie.com
bobshaw@gmail.com	Bob Shaw	johnsmith2@bakermckenzie.com
xialong@baidu.com	Cherry Li	sarasmith@bakermckenzie.com
donalduck@gmail.com	Donald Duck	donaldduck@mickeymouse.com
emmalau@outlook.com	Emma Lau	

Add new Seller

Email: [　　　　　]

Name: [　　　　　]

Lawyer: [　　　　　]

[Add]

Update Seller

Seller Email: [alicesmith@gmail.com ▲▼]

New Email: [　　　　　]

New Name: [Alice Smith]

New Lawyer: [donaldduck@mickeymouse]

[Update]

After

Email	Name	Lawyer
alicesmith@gmail.com	Alice Smith	donaldduck@mickeymouse.com
bobshaw@gmail.com	Bob Shaw	johnsmith2@bakermckenzie.com
xialong@baidu.com	Cherry Li	sarasmith@bakermckenzie.com
donalduck@gmail.com	Donald Duck	donaldduck@mickeymouse.com
emmalau@outlook.com	Emma Lau	

[seller.php (292-317)](seller.php)

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Selection
Before

Show Property Attributes

☐ Listing Date	☐ Listing Price	☑ Property ID
☐ # Bath(s)	☐ Gov. Valuation	☑ Sq. footage
☐ Street #	☐ Sale Price	☐ Date of Sale
☐ Agent Email	☑ City	☐ Province
☐ # Bed(s)	☑ Postal Code	☐ Buyer Email

[Show Properties]

Filter Properties

[Add Filter]

| City ⇕ | = ⇕ | Vancouver | AND ⇕ | Sq. Footage ⇕ | >= ⇕ | 1000 |

After

Property ID	Sq. footage	city	Postal Code
110	1200	Vancouver	V5K 004
104	1024	Vancouver	V5K 0BT

propertyList.php(400-425)

Projection
Before

Show Property Attributes

☐ Listing Date	☐ Listing Price	☑ Property ID
☐ # Bath(s)	☐ Gov. Valuation	☑ Sq. footage
☐ Street #	☐ Sale Price	☐ Date of Sale
☑ Agent Email	☑ City	☑ Province
☐ # Bed(s)	☐ Postal Code	☐ Buyer Email

[Show Properties]

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After

Property ID	Sq. footage	Agent Email	city	Province
122	1234	augustusjulius@manderburnsleo.com	asdf	bc
120	1234	augustusjulius@manderburnsleo.com	asdf	bc
116	2120	augustusjulius@manderburnsleo.com	Montreal	QC
118	3140	augustusjulius@manderburnsleo.com	Toronto	ON
108	1300	genghiskhan@manderburnsleo.com	Saskatoon	SK
112	1500	genghiskhan@manderburnsleo.com	Surrey	BC
114	1350	commodusaurelius@manderburnsleo.com	Surrey	BC
102	650	genghiskhan@manderburnsleo.com	Vancouver	BC
110	1200	genghiskhan@manderburnsleo.com	Vancouver	BC
104	1024	genghiskhan@manderburnsleo.com	Vancouver	BC
100	800	genghiskhan@manderburnsleo.com	Vancouver	BC
106	900	genghiskhan@manderburnsleo.com	Vancouver	BC

propertyList.php(332-397)

Join

Show Property Attributes

☐ Listing Date	☐ Listing Price	☑ Property ID
☐ # Bath(s)	☐ Gov. Valuation	☐ Sq. footage
☐ Street #	☐ Sale Price	☐ Date of Sale
☐ Agent Email	☑ City	☐ Province
☐ # Bed(s)	☑ Postal Code	☐ Buyer Email

[Show Properties]

Filter Properties

[Add Filter]

| City ⇕ | = ⇕ | Vancouver |

Demo Queries

Gets average list price of cities with average listed prices higher than the average c

◯ See highest property price per city ◯ See lowest property price per city ◯ See a

[GET]

Property ID	city	Postal Code
102	Vancouver	V5J 0A3
110	Vancouver	V5K 004
104	Vancouver	V5K 0BT
100	Vancouver	V6T 1Z4
106	Vancouver	V6T 2H2

propertyList.php(332-397)

Aggregation with Group By

Before

Demo Queries

Gets average list price of cities with average listed prices higher than the average of all properties: [GET]

◉ See highest property price per city ◯ See lowest property price per city ◯ See average property sq. ft per city

[GET]

After

city	max(listPrice)
Saskatoon	850000
Toronto	3200000
Montreal	2000000
asdf	1234
Surrey	1200000
Vancouver	720000

propertyList.php(297-330)

Aggregation with HAVING

Demo Queries

Get Property's listed price with at more than one disclosure: GET

Get all Properties with which contain all disclosure types: GET

View

Property #	List Price	#. Disclosures
100	270000	5
102	200000	2

disclosure.php (368-380)

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Nested Aggregation with GROUP BY

Demo Queries

Gets average list price of cities with average listed prices higher than the average of all properties: GET

Add New Property

Filter Properties

Add Filter   Apply Filter(s)

City	Average List Price
Toronto	3200000
Montreal	2000000
Surrey	1062500

propertyList.php (525-537)

Division

Demo Queries

Get Property's listed price with at more than one disclosure: GET

Get all Properties with which contain all disclosure types: GET

View

Property ID	Postal Code	Street #.
100	V6T 1Z4	105 W 10th

disclosure.php (382-393)