

CPSC 304 Project Cover Page

Milestone #: 4

Date: 21-June-2023

Group Number: 17

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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

GitHub Repository Link:

https://github.students.cs.ubc.ca/CPSC304-2023S-T1/project_s7j9s_v1m0l_z8z2b

Project Description Summary

STUHOUSING is an application that helps students find housing in school areas by acting as a compiler of all housing available on different platforms and supporting search management. A school support contact (employee) will act as the middle-man for users and different platforms.

The application allows users to view units in the market, and find the contact details of the people in charge of the unit (management company, broker, owner)

The application as of now, accomplishes the following functions from a **user point of view**:

- User Sign in and Login
- Searching for units with particular search criteria
 - Price
 - Bedrooms
 - Bathrooms

The application also facilitates certain operations for managers of the unit:

- Deleting posted units
- Viewing contact details of interested searchers

Our technology stack consists of:

Backend and Frontend: PHP

OS: Linux (Undergraduate Servers)

Database: Oracle

SQL Initialization Script Link:

https://github.students.cs.ubc.ca/CPSC304-2023S-T1/project_s7j9s_v1m0l_z8z2b/blob/main/po-pulateTable.sql

Final Schema Details

The schema for the project has remained largely the same and only a few minor changes were made, that are not directly changing the schema but are related. These are mentioned below.

However for the application, functionality is built upon only certain relations. The functionality details can be found in the [SQL Implementation Section](#)

Changes

- During implementation, we identified that one of the tables was not supposed to exist (**contract_duration**) as it contained foreign keys to attributes of another table that were not unique, causing integrity constraint violations while the population of values in the database. Upon having a discussion with the professor we were advised to leave the table unpopulated.
- We increased the insert statements from milestone 3 for the Unit Searcher Entity so that there was a case in which a searcher (SearchID 1) was interested in all units. This way we could test if our divide function was working correctly.

SQL Initialization Script Output:

https://github.students.cs.ubc.ca/CPSC304-2023S-T1/project_s7j9s_v1m0l_z8z2b/blob/main/sql/output.txt

The Final Schema (With Output Data)

The schema for every entity in the database is presented below. The data displayed alongside the schema are snippets from the link attached above.

```
School(  
  SchoolID: INT,  
  Name: VARCHAR(50),  
  Address: VARCHAR(50),  
  Acronym: VARCHAR(5),  
)  
Candidate Keys: { SchoolID, ( Name, Address ) }  
Primary Key: SchoolID
```

```
SCHOOLID NAME  
-----  
ADDRESS  
-----  
1 The University of British Columbia - Vancouver  
2329 West Mall, Vancouver, BC, Canada  
  
2 The University of British Columbia - Okanagan  
3287 University Way, Kelowna, BC, Canada  
  
3 University of Southern California  
Los Angeles, CA 90007, USA
```

SupportContact(
 ContactID: INT
 FullName: VARCHAR(50),
 Email: VARCHAR(320),
 PhoneNumber: VARCHAR(20),
 Password: VARCHAR(128),
 SchoolID: INT
)

** SchoolID cannot be null

Candidate Keys: { ContactID }

Primary Key: ContactID

Foreign Key: SchoolID

CONTACTID	FULLNAME
-----	-----
EMAIL	

PHONENUMBER	

PASSWORD	

SCHOOLID	

	1 Aayush Kogar
	18aayushk@gmail.com
	7783173657

Platform(
 PlatformID: INT,
 Name: VARCHAR(50),
 Url: VARCHAR(2048)
)

Candidate Keys: { PlatformID, URL }

Primary Key: PlatformID

PLATFORMID NAME

URL

1 Rentals Canada
<https://rentals.ca>

2 Zumper
<https://zumper.com>

3 Craigslist
<https://craigslist.org>

Unit(

UnitID: INT,
Size: FLOAT(5),
NoBedrooms: INT,
NoBathrooms: INT,
Address: VARCHAR(50),
Furnished: BOOLEAN,
LeaseTerm: INT,
Sublet: BOOLEAN,
MoveInDate: DATE,
AskingPrice: INT,
ManagementID: INT

)

**ManagementID cannot be null

Candidate Keys: { UnitID }

Primary Key: UnitID

Foreign Key: ManagementID

*Address (thought of making unique but possibility of having different people renting out rooms in the same unit)

UNITID	AREA	NOBEDROOMS	NOBATHROOMS			
-----	-----	-----	-----			
ADDRESS				F	LEASETERM	S
-----	-----	-----	-----			
MOVEINDATE						
-----	-----	-----	-----			
ASKINGPRICE	MANAGEMENTID					
-----	-----	-----	-----			
1	1400	2	2			
5410 Shortcut Rd, Vancouver, BC, Canada				T	365	F
01-SEP-23 12.00.00.000000 AM						
3400	1					

Management(
ManagementID: INT,
 Name: VARCHAR(50),
 Email: VARCHAR(320),
 PhoneNumber: VARCHAR(20),
)

Candidate Keys: { ManagementID }

Primary Key: ManagementID

MANAGEMENTID	NAME
-----	-----
EMAIL	
-----	-----
PHONENUMBER	
-----	-----
3	Jovi Realty Inc
	rentalhousevan@gmail.com
4	First Choice Housing
	leasing@firstchoicehousing.com

LeasingCompany(
)

ManagementID: INT,

Url: VARCHAR(2048),

BranchName: VARCHAR(50)

)

Candidate Keys: { ManagementID }

Primary Key: ManagementID

Foreign Key: ManagementID

MANAGEMENTID	URL	BRANCHNAME
2	https://realtor.ca	Burnaby
4	https://firstchoicehousing.com	

IndividualBroker(

ManagementID: INT

)

CandidateKeys: {ManagementID}

PrimaryKey: ManagementID

Foreign Key: ManagementID

*IndividualBroker and Owner will have unique email and phone number in oppose to a Leasing Company where employees might use the same email and phone number

MANAGEMENTID

3

7

10

11

Owner(
 ManagementID: INT,
 Validated?: BOOLEAN
)

CandidateKeys: {ManagementID}
PrimaryKey: ManagementID
Foreign Key: ManagementID

MANAGEMENTID V

1 0

8 1

14 1

15 0

16 1

Visit(
 DateTime: DATETIME,
 Virtual: BOOLEAN,
 UnitID: INT,
 SearcherID: INT
)

****UnitID and SearcherID cannot be null**

CandidateKeys: {(DateTime,UnitID), (DateTime, SearcherID) }

Primary Key: (DateTime,UnitID)

Foreign Key: UnitID, SearcherID

DATETIME		V

UNITID	SEARCHERID	

05-AUG-23 05.00.00.000000 PM		0
1	3	
05-AUG-23 05.15.00.000000 PM		0
1	4	
04-SEP-23 08.15.00.000000 AM		1
2	4	

Application(

DateReceived: DATETIME,

CurrentStatus: VARCHAR(20),

UnitID: INT,

SearcherID: INT

)

**UnitID and SearcherID cannot be null

CandidateKey: { (DateReceived, UnitID, SearcherID) }

Primary Key: (DateReceived, UnitID, SearcherID)

Foreign Key: UnitID, SearcherID

DATERECEIVED		

CURRENTSTATUS	UNITID	SEARCHERID

04-JUL-23 12.00.00.000000 AM		
PENDING	1	1
04-MAY-23 12.00.00.000000 AM		
REJECTED	1	2
17-MAY-23 12.00.00.000000 AM		
ACCEPTED-AWAITING CONTRACT SIGNING	1	3

Searcher(
 SearcherID: INT,
 FullName: VARCHAR(50),
 Email: VARCHAR(320),
 PhoneNumber: VARCHAR(20),
 DateOfBirth: DATE,
 CurrentAddress: VARCHAR(50),
 ReasonForLeave: VARCHAR(100),
 MonthlyIncome: INT,
 Password: VARCHAR(128),
)

Candidate Key: {SearcherID, Email, PhoneNumber}

Primary Key: SearcherID

SEARCHERID FULLNAME

EMAIL

PHONENUMBER

DATEOFBIRTH

CURRENTADDRESS

REASONFORLEAVE

MONTHLYINCOME

PASSWORD

1 Rahul Dravid

Testimonial(
 LetterOfRecomm: VARCHAR(500),
 FullName: VARCHAR(50),
 Email: VARCHAR(320),
 Relationship: VARCHAR(100),
 SearcherID: INT
)

**SearcherID cannot be null

Candidate Key: {(Email, SearcherID)}

Primary Key: (Email, SearcherID)

Foreign Key: SearcherID

```
LETTEROFRECOMM
-----
FULLNAME
-----
EMAIL
-----
RELATIONSHIP
-----
SEARCHERID
-----
I can confidently say that he is a responsible and trustworthy individual.
Sarah Michell
smich@gmail.com
```

Contract(

ContractNumber: INT,

MoveInDate: DATE,

MoveOutDate: DATE,

Duration: INT,

MonthlyPrice: INT,

SearcherID: INT,

ManagementID: INT

)

**SearcherID cannot be null

**ManagementID can be null

Candidate Key: {ContractNumber, (SearcherID, ManagementID, MoveInDate) }

Primary Key: ContractNumber

Foreign Key: SearcherID, ManagementID

CONTRACTNUMBER	SEARCHERID	MOVEINDATE	MOVEOUTDATE	MONTHLYPRICE	MANAGEMENTID
1	5	1994	1995	3400	2
2	4	1996	1997	4100	3
3	3	1998	1999	3330	2
4	2	2000	2001	1800	4
5	1	2002	2003	1100	5

Unit_Searcher(
 SearcherID: INT,
 UnitID: INT,
)

Candidate Key: {(SearcherID, UnitID)}

Primary Key: (SearcherID, UnitID)

Foreign Key: SearcherID, UnitID

SEARCHERID	UNITID
1	1
1	2
1	4
1	5
2	1
2	2
3	1

Unit_Platform(
 UnitID: INT ,
 PlatformID: INT,
)

Candidate Key: {(UnitID, PlatformID)}

Primary Key: (UnitID, PlatformID)

Foreign Key: UnitID, PlatformID

UNITID	PLATFORMID
1	1
2	1
4	2
5	2
5	4

Unit_School(
 UnitID: INT,
 SchoolID: INT,
 Distance: FLOAT)

CandidateKey: {(UnitID, SchoolID)}

PrimaryKey: (UnitID, SchoolID)

ForeignKey: UnitID, SchoolID

UNITID	SCHOOLID	DISTANCE
1	1	3.2
1	2	12.5
2	1	6.5
4	3	12.4
5	4	22.2
5	5	.3

SQL Implementation

Planned SQL Functionality					
No	Function	Use Case	Page	SQL	Page
1	Insert	As a searcher , create a new account	Sign In	Aayush	Keshav
2	Delete	As a support contact , delete a unit	Unit Management	Aayush	Kate
3	Update	As a support contact , Update the searcher phone number	Profile Page (of searcher)	Keshav	Keshav
4	Selection	As a searcher , select units which meet specification	Unit Search	Aayush, Keshav	Kate, Keshav
		As a support contact , see information on searcher	Profile Page (of searcher)	Aayush	Aayush
5	Projection	As a searcher , see certain information on units	Unit Search	Kate	Kate
6	Projection	As a searcher , see all information on specific unit	Unit View	Aayush	Aayush
7	Join	As a searcher , display manager information for a unit	Unit View	Kate	Aayush
8	Aggregation	As a searcher , find the total number of units available.	Unit Search	Kate, Keshav	Kate, Keshav
9	Aggregation by group by (with having)	As a searcher , find the average price of all units by number of bedrooms.	Unit Search	Kate, Keshav	Kate, Keshav
10	Nested Aggregation by Group By	View the minimum price of the unit, based on lease term, that costs more than average price	Unit Search	Kate	Kate, Keshav
10	Division	As a support contact , find the names of searchers interested in all units.	Profile Searcher	Aayush	Aayush

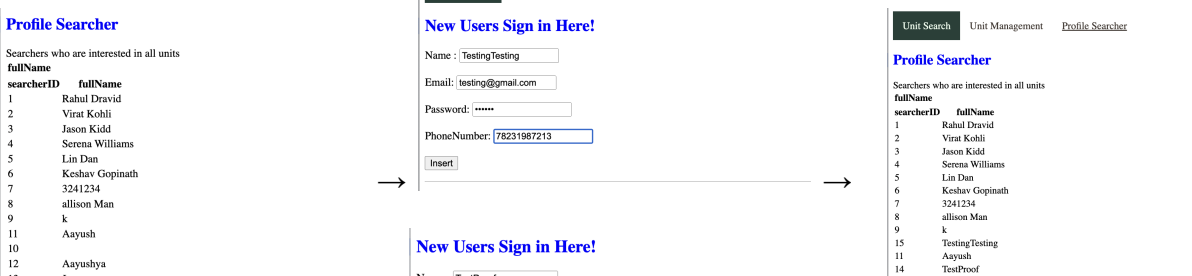
Functionality

Insert	As a searcher, create a new account
INSERT INTO Searcher (SearcherID, FullName, Email, PhoneNumber, DateOfBirth, CurrentAddress, ReasonForLeave, MonthlyIncome, Password) VALUES (" . \$newid . ", " . \$name . ", " . \$email . ", " . \$phonenumber . ", null, null, null, null, " . \$password . ")	
Delete	As a support contact, delete a unit
DELETE FROM UNIT WHERE UnitID = \$deletedUnit	
Update	As a searcher, Update the username
UPDATE Searcher SET PhoneNumber=" . \$new_PhoneNumber . " WHERE PhoneNumber=" . \$old_PhoneNumber . ""	
Selection	As a searcher, select units which meet specification
SELECT UnitID, NoBedrooms, NoBathrooms, Address, Furnished, LeaseTerm, Sublet, MoveInDate, AskingPrice, ManagementID FROM Unit WHERE NoBedrooms <= " . \$NoBedrooms . " AND NoBathrooms <= " . \$NoBathrooms . " AND AskingPrice <= " . \$AskingPrice . "	
Selection	As a support contact, see select searcher
SELECT SearcherID, FullName, DateOfBirth, Email, PhoneNumber, CurrentAddress, ReasonForLeave, MonthlyIncome FROM Searcher WHERE searcherID = \$idSearcherSelected	

Projection	As a searcher , see certain information on units
SELECT UnitID, NoBedrooms, NoBathrooms, Address, Furnished, LeaseTerm, Sublet, MoveInDate, AskingPrice, ManagementID FROM Unit	
Join	As a searcher , display manager information for units with UnitID X selected
SELECT m.ManagementID, m.Name, m.Email, m.PhoneNumber FROM Management m, Unit u WHERE m.ManagementID = u.ManagementID AND u.UnitID = . \$UnitID	

Aggregation	As a searcher, find the total number of units available.
SELECT COUNT(*) FROM Unit	
Aggregation by group by (with having)	As a searcher, find the average price of all units by number of bedrooms.
SELECT NoBedrooms, AVG(AskingPrice) FROM Unit GROUP BY NoBedrooms	
Nested Aggregation by Group By	Find the minimum price of the unit, where the average price for each lease term is more than the average price across all terms
SELECT u1.LeaseTerm, MIN(u1.AskingPrice) FROM Unit u1 GROUP BY u1.LeaseTerm HAVING AVG(u1.AskingPrice) > (SELECT AVG(u2.AskingPrice) FROM Unit u2)	
Division	As a support contact, find the names of searchers interested in all units
SELECT S.fullName FROM Searcher S WHERE NOT EXISTS (SELECT U.UnitID FROM Unit U WHERE NOT EXISTS (SELECT A.SearcherID FROM Unit_Searcher A WHERE U.UnitID = A.UnitID AND A.SearcherID = S.SearcherID))	

Proof Of Functionality

Insert	As a searcher, create a new account
	

Delete

As a support contact, delete a unit

Unit Search Unit Management Profile Searcher

Unit Management

Delete Unit:

Delete

Search Results:

UnitID	NoBedrooms	NoBathrooms	Address	Furnished	LeaseTerm	Sublet	MoveInDate	AskingPrice	ManagementID
1	2	2	5410 Shortcut Rd, Vancouver, BC, Canada	T	365	F	01-SEP-23 12.00.00.000000 AM	3400	1
2	2	1	2233 Allison Rd, Vancouver, BC, Canada	F	730	F	05-AUG-23 12.00.00.000000 AM	2800	2
3	1	1	5410 Shortcut Rd, Vancouver, BC, Canada	T	365	F	10-NOV-23 12.00.00.000000 AM	3400	1
4	3	1	1211 W 37th Dr, CA 90007, USA	T	730	F	01-SEP-23 12.00.00.000000 AM	3400	5
5	2	2	9266 University Crescent #901, Burnaby, BC, Canada	T	365	T	01-SEP-23 12.00.00.000000 AM	3500	4



Unit Management

Delete Unit: 3

Delete



Unit Management

Delete Unit:

Delete

Search Results:

string(1) "3"

UnitID	NoBedrooms	NoBathrooms	Address	Furnished	LeaseTerm	Sublet	MoveInDate	AskingPrice	ManagementID
1	2	2	5410 Shortcut Rd, Vancouver, BC, Canada	T	365	F	01-SEP-23 12.00.00.000000 AM	3400	1
2	2	1	2233 Allison Rd, Vancouver, BC, Canada	F	730	F	05-AUG-23 12.00.00.000000 AM	2800	2
4	3	1	1211 W 37th Dr, CA 90007, USA	T	730	F	01-SEP-23 12.00.00.000000 AM	3400	5
5	2	2	9266 University Crescent #901, Burnaby, BC, Canada	T	365	T	01-SEP-23 12.00.00.000000 AM	3500	4

Update

As a support contact, Update the searcher phone number

searcherID	fullName
1	Rahul Dravid
2	Virat Kohli
3	Jason Kidd
4	Serena Williams
5	Lin Dan

Input searcher ID for more details : 2

Select

Search Results:

1b	
SEARCHERID	2
FULLNAME	Virat Kohli
DATEOFBIRTH	04-JUL-98 12.00.00.000000 AM
EMAIL	vk2@gmail.com
PHONENUMBER	378-328-3283
CURRENTADDRESS	3533 Ross Drive, Vancouver, BC, Canada
REASONFORLEAVE	Cost
MONTHLYINCOME	2000

Update Phone Number in DemoTable

The values are case sensitive and if you enter in the wrong case, the update statement will not do anything.

Old Phone Number: 378-328-3283

New Phone Number: 123-456-7891

Update

Search Results:

1b	
SEARCHERID	2
FULLNAME	Virat Kohli
DATEOFBIRTH	04-JUL-98 12.00.00.000000 AM
EMAIL	vk2@gmail.com
PHONENUMBER	123-456-7891
CURRENTADDRESS	3533 Ross Drive, Vancouver, BC, Canada
REASONFORLEAVE	Cost
MONTHLYINCOME	2000

Selection

As a searcher, select units which meet specifications

Unit Search

Unit Management

Prof

Find your perfect unit!

Maximum number of bedrooms:

Maximum Number of bathrooms:

Price less than:

3475

Select

Search Results:

UnitID	NoBedrooms	NoBathrooms	Address	Furnished	LeaseTerm	Sublet	MoveInDate	AskingPrice	ManagementID
1	2	2	5410 Shortcut Rd, Vancouver, BC, Canada T	365	F		01-SEP-23 12:00:00.000000 AM	3400	1
2	2	1	2233 Allison Rd, Vancouver, BC, Canada F	730	F		05-AUG-23 12:00:00.000000 AM	2800	2
4	3	1	1211 W 37th Dr, CA 90007, USA	T	730	F	01-SEP-23 12:00:00.000000 AM	3400	5

Selection

As a support contact, see select searcher details

Unit Search

Unit Management

Profile Searcher

Profile Searcher

Searchers who are interested in all units DEF

fullName

Rahul Dravid

Update Phone Number in DemoTable

The values are case sensitive and if you enter in the wrong case, the update statement will not do anything.

Old Phone Number:

New Phone Number:

Update

searcherID	fullName
1	Rahul Dravid
2	Virat Kohli
3	Jason Kidd
4	Serena Williams
5	Lin Dan

Input searcher ID for more details :

Select

Profile Searcher

Searchers who are interested in all units DEF

fullName

Rahul Dravid

Update Phone Number in DemoTable

The values are case sensitive and if you enter in the wrong case, the update statement will not do anything.

Old Phone Number:

New Phone Number:

Update

searcherID	fullName
1	Rahul Dravid
2	Virat Kohli
3	Jason Kidd
4	Serena Williams
5	Lin Dan

Input searcher ID for more details :

Select

Search Results:

SEARCHERID	3
FULLNAME	Jason Kidd
DATEOFBIRTH	04-JUL-02 12:00:00.000000 AM
EMAIL	msd_csk@gmail.com
PHONENUMBER	238-3874-3822
CURRENTADDRESS	1405 Armacost Rd, Parkton, MD 21120, USA
REASONFORLEAVE	
MONTHLYINCOME	200

Join

As a searcher, display manager information for units with UnitID X selected

Unit Details

Variable	Value
NOBEDROOMS	3
NOBATHROOMS	1
ADDRESS	1211 W 37th Dr, CA 90007, USA
FURNISHED	T
LEASETERM	730
SUBLET	F
MOVEINDATE	01-SEP-23 12.00.00.000000 AM
ASKINGPRICE	3400

Manager Details

Variable	Value
MANAGEMENTID	5
NAME	Don Kim
EMAIL	
PHONENUMBER	8443265877

Select to Display Interest in Unit

>

Aggregation

As a searcher, find the total number of units available.

Total number of Units Available

Before Delete Function → 5

Total number of Units Available

After Delete Function → ⁴

Aggregation by group by (with having)

As a searcher, find the average price of all units by number of bedrooms.

Before the deletion of the unit above \rightarrow

Average price of units by number of bedrooms:

BHK: 1, AvgPrice: 3400
BHK: 2, AvgPrice: 3450
BHK: 3, AvgPrice: 3400

After the deletion of the unit above →

Average price of units by number of bedrooms:

BHK: 2, AvgPrice: 3233.333333333333333333333333333333
BHK: 3, AvgPrice: 3400

Nested Aggregation by Group By

Find the minimum price of the unit, where the average price for each lease term is more than the average price across all terms

Lowest price above average cost based on lease term:

LeaseTerm(Days): 365, MinimumAvgPrice: 3400

Division

As a support contact, find the names of searchers interested in all units which are X bedrooms

Profile Searcher

Searchers who are interested in all units]

fullName

Rahul Dravid