Database Systems – Lab2 Ryan Owens

Key Explanations:

**Primary Key** – Uniquely identified column that uniquely represents each row.

**Candidate Key** – Minimal superkey pairing, where you break into smallest number of columns needed to identify each row uniquely.

**Superkey** – Any number of columns that uniquely identify every row when the columns are used together.

Short Essay:

The table I have chosen is cars, and the fields that pertain to the table are: VIN, make, model, year, quality, reqMaintenanceUSD, avgCostUSD, totalCostUSD. The VIN will act as the Primary Key for the table, with a char data type that is non-nullable. The make and model fields will both have text data types which are non-nullable. The quality field will have an int data type for a numeric rating system that is non-nullable. Required maintenance cost as represented by reqMaintenanceUSD is in units of USD with a data type of decimal, and this field is nullable (if it's a new car or in pristine condition). Average cost is also presented in units of USD with its data type also being decimal, but it is non-nullable. Total cost in USD will have a decimal data type, with a non-nullable value possibility as it represents the combination of required maintenance and average cost.

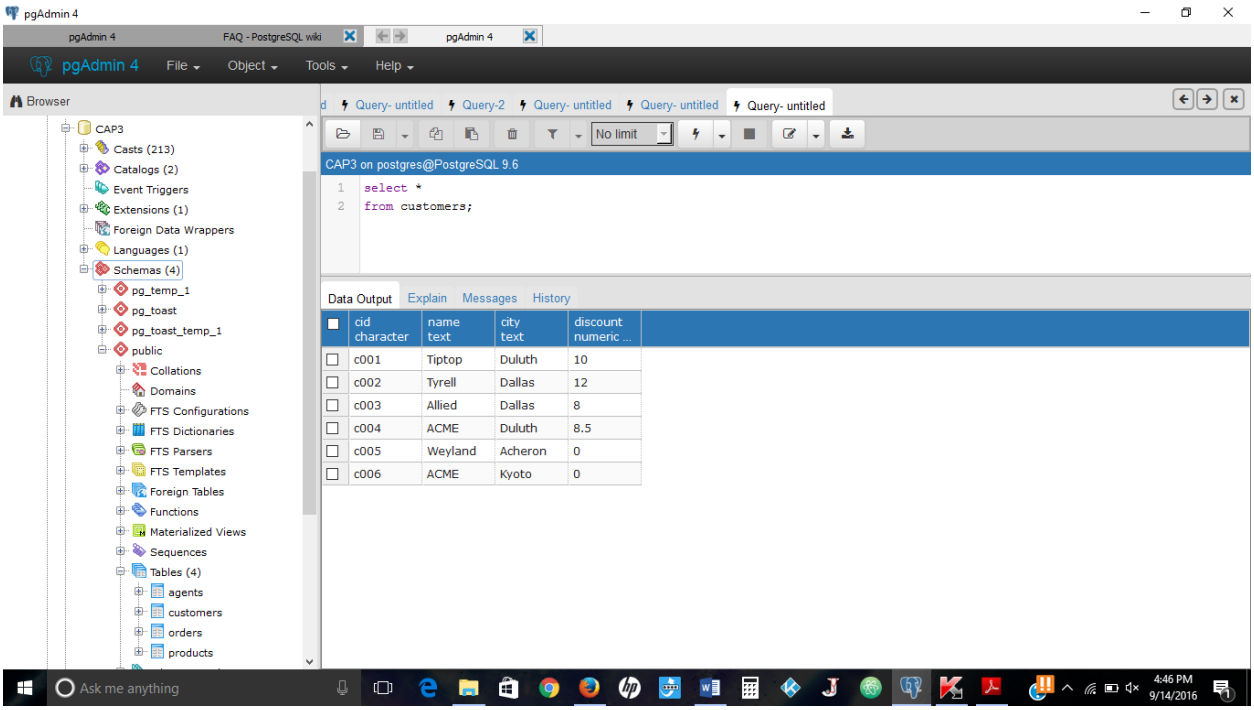
Relational Rules:

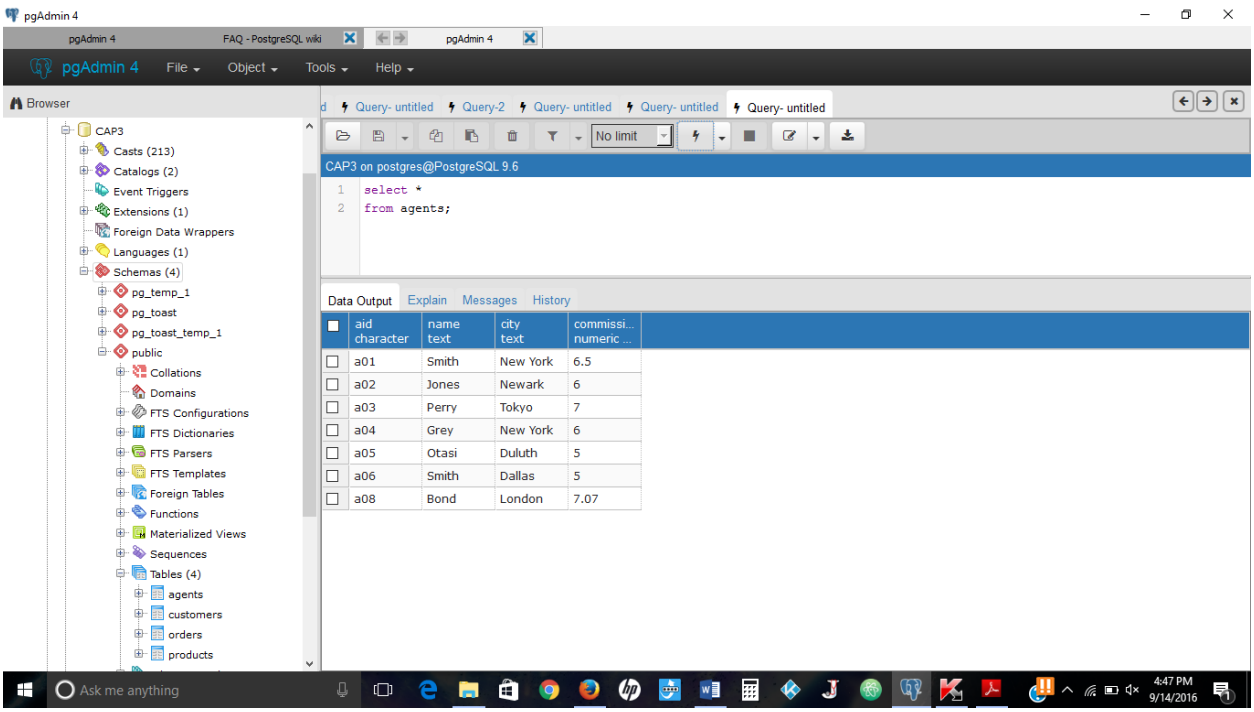
a. **First normal form rule** – All data must be atomic with no internal structure, while also containing no repeating groups.
- (i.e. - Data is broken down into a base structure where data stands alone in its table location, such as having a column for name and a column for city instead of grouping name and city within a single column.)
- This ensures that data is singularized so we are storing relevant data singularly which gives us the ability to query specific data without receiving additional data that may not pertain to our search.

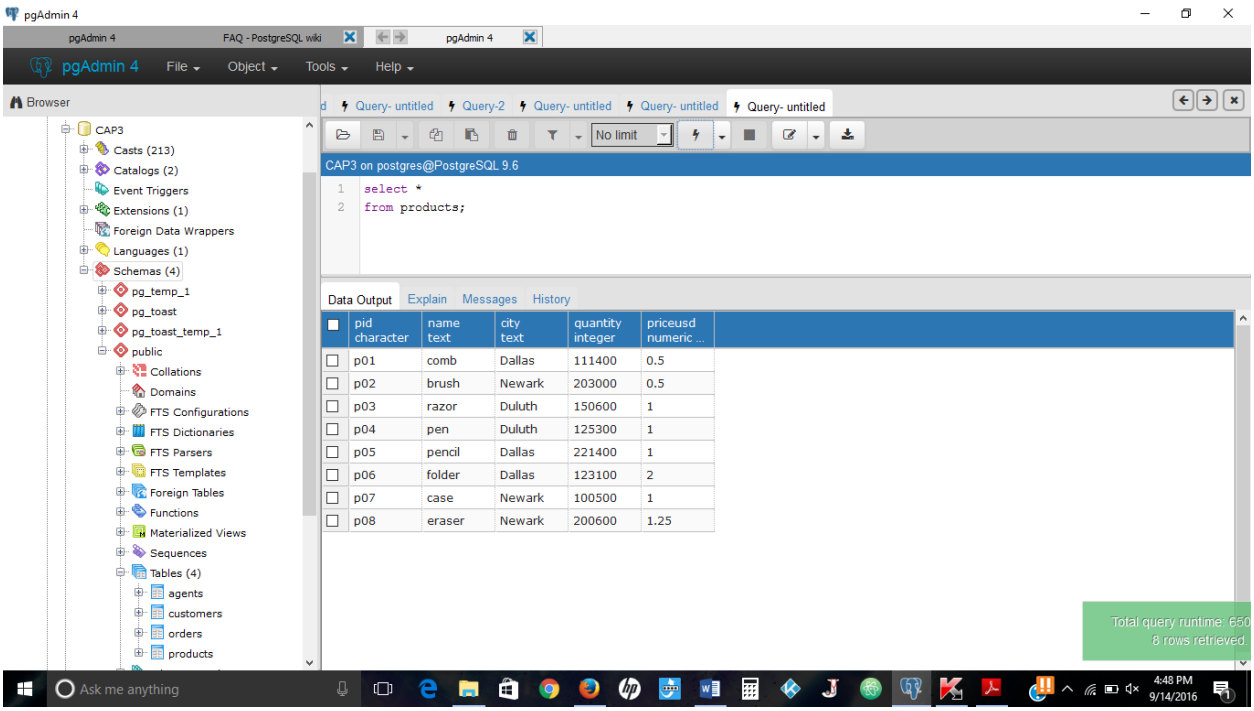
b. **Access rows by content only rule** – Data is accessed from data content, not data location.
- (i.e. - Data is not accessed by specifying row and column information, but accessed by specified data values.)
- This allows us to locate data through conditional query statements for data organization and grouping data to give us information.

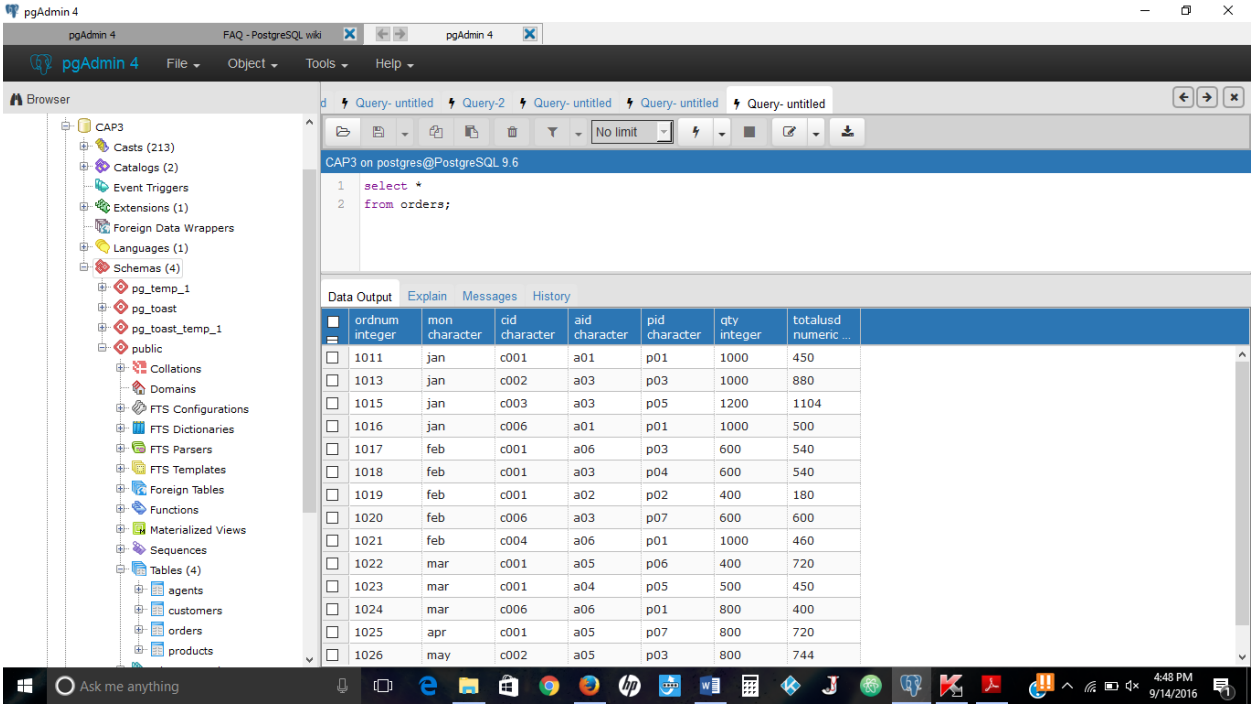
c. **All rows must be unique rule** – Requires that all data contained in rows of a table is unique for at least one column.
- (i.e. - One column(at least) must contain unique data which acts as a key for accessing data within the tables rows, and this unique key relates to data from and/or within another table.)
- This requires a table to have at least one unique column that maps to all data for a given row. This uniqueness allows us to have tables relate to other tables by using this unique column as a key for that table.

## Screenshots:




pgAdmin 4
File
Object
Tools
Help
Browser
CAP3
Casts (213)
Catalogs (2)
Event Triggers
Extensions (1)
Foreign Data Wrappers
Languages (1)
Schemas (4)
pg_temp_1
pg_toast
pg_toast_temp_1
public
Collations
Domains
FTS Configurations
FTS Dictionaries
FTS Parsers
FTS Templates
Foreign Tables
Functions
Materialized Views
Sequences
Tables (4)
agents
customers
orders
products
Query- untitled
Query-2
Query- untitled
Query- untitled
Query- untitled
No limit
CAP3 on postgres@PostgreSQL 9.6
1 select *
2 from products;
Data Output
Explain
Messages
History
pid character
name text
city text
quantity integer
priceusd numeric ...
p01 comb Dallas 111400 0.5
p02 brush Newark 203000 0.5
p03 razor Duluth 150600 1
p04 pen Duluth 125300 1
p05 pencil Dallas 221400 1
p06 folder Dallas 123100 2
p07 case Newark 100500 1
p08 eraser Newark 200600 1.25
Total query runtime: 650
8 rows retrieved.
Ask me anything
4:48 PM
9/14/2016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Data Output
Explain
Messages
History
ordnum integer
mon character
cid character
aid character
pid character
qty integer
totalusd numeric ...
1011 jan c001 a01 p01 1000 450
1013 jan c002 a03 p03 1000 880
1015 jan c003 a03 p05 1200 1104
1016 jan c006 a01 p01 1000 500
1017 feb c001 a06 p03 600 540
1018 feb c001 a03 p04 600 540
1019 feb c001 a02 p02 400 180
1020 feb c006 a03 p07 600 600
1021 feb c004 a06 p01 1000 460
1022 mar c001 a05 p06 400 720
1023 mar c001 a04 p05 500 450
1024 mar c006 a06 p01 800 400
1025 apr c001 a05 p07 800 720
1026 may c002 a05 p03 800 744
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