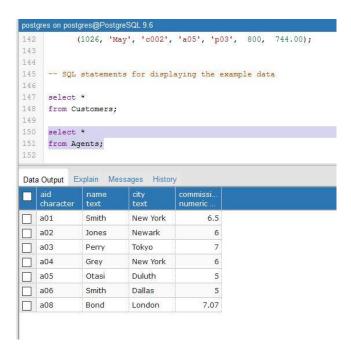
Brandon Litwin

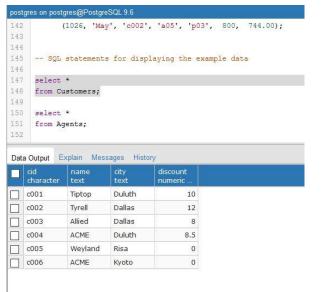
Alan Labouseur

CMPT 308N-112

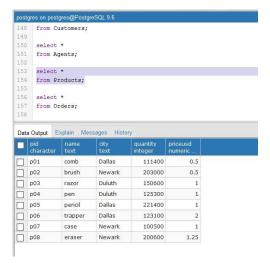
January 27, 2017



Agents



Customers



Products

148	from Customers:								
149	and our output of								
150	select *								
151	from Agents;								
152									
153	select * from Products;								
155	Irom Froducts;								
156	select *								
157	from Orders;								
158									
Data	Output Explain Messages History								
-1	ordnumb integer	month character	cid character	aid character	pid character	qty integer	totalusd numeric		
-									
	1011	Jan	c001	a01	p01	1000	450		
	1011 1012		c001	a01 a03	p01 p03	1000 1000			
		Jan					880		
	1012	Jan Jan	c002	a03	p03	1000	880 1104		
	1012 1015	Jan Jan Jan	c002 c003	a03	p03 p05	1000 1200	880 1104 500		
	1012 1015 1016	Jan Jan Jan Feb	c002 c003 c006	a03 a03 a01	p03 p05 p01	1000 1200 1000	880 1104 500 540		
	1012 1015 1016 1017	Jan Jan Jan Feb Feb	c002 c003 c006 c001	a03 a03 a01 a06	p03 p05 p01 p03	1000 1200 1000 600	880 1104 500 540		
	1012 1015 1016 1017 1018	Jan Jan Jan Feb Feb Feb	c002 c003 c006 c001	a03 a03 a01 a06 a03	p03 p05 p01 p03 p04	1000 1200 1000 600 600	880 1104 500 540 540		
	1012 1015 1016 1017 1018 1019	Jan Jan Jan Feb Feb Feb Feb	c002 c003 c006 c001 c001	a03 a03 a01 a06 a03 a02	p03 p05 p01 p03 p04 p02	1000 1200 1000 600 600 400	500 540 540 540 540 600		
	1012 1015 1016 1017 1018 1019	Jan Jan Jan Feb Feb Feb Feb Feb	c002 c003 c006 c001 c001 c001	a03 a03 a01 a06 a03 a02 a03	p03 p05 p01 p03 p04 p02 p07	1000 1200 1000 600 600 400 600	880 1104 500 540 540 180 600 460		
	1012 1015 1016 1017 1018 1019 1020	Jan Jan Jan Feb Feb Feb Feb Feb Mar	c002 c003 c006 c001 c001 c001 c006 c004	a03 a03 a01 a06 a03 a02 a03 a06	p03 p05 p01 p03 p04 p02 p07 p01	1000 1200 1000 600 600 400 600	880 1104 500 540 540 180 600 460		
	1012 1015 1016 1017 1018 1019 1020 1021	Jan Jan Jan Feb Feb Feb Feb Feb Mar Mar	c002 c003 c006 c001 c001 c001 c006 c004	a03 a03 a01 a06 a03 a02 a03 a06 a05	p03 p05 p01 p03 p04 p02 p07 p01 p06	1000 1200 1000 600 600 400 600 1000	450 880 1104 500 540 540 180 600 460 720 450		
	1012 1015 1016 1017 1018 1019 1020 1021 1022	Jan Jan Jan Feb Feb Feb Feb Mar Mar Mar	c002 c003 c006 c001 c001 c001 c006 c004 c001	a03 a01 a06 a03 a02 a03 a06 a05 a04	p03 p05 p01 p03 p04 p02 p07 p01 p06 p05	1000 1200 1000 600 600 400 600 1000 400	880 1104 500 540 540 180 600 460 720		

Orders

Keys

In a database, a primary key refers to at least one column in a table that can be used to uniquely identify all the records in the table (https://www.techopedia.com). No two pieces of data within a primary key are the same. An example of a primary key used in everyday life is a social security number. In a database of every person's social security numbers, each one would be unique, meaning that social security numbers are a primary key in the database. There can only be one primary key in each database. A candidate key is the same as a primary key, in that it is a

column or set of columns that can uniquely identify a database. A table can have multiple candidate keys. A primary key is just a candidate key that is selected to be the one that best identifies the data table as a whole. Finally, a superkey is a combination of candidate keys that can also be used to identify a database. A superkey can be any size, while a candidate key is the minimun number of rows required to uniquely identify a database.

Data Types

Each piece of data in a table has a data type. There are many different data types that refer to what kind on information is represented in the data, but the most common ones are VARCHAR, BOOLEAN, INT, and TIMESTAMP. Data types can be nullable, meaning their value can be recorded as unknown in the data table. There are some data that are not nullable because they are required to be unique values in the table. Primary keys are not nullable because they must be used to uniquely identify the items in the table. Timestamps are also not nullable because the only valid data for a timestamp data type is a time. If I made a table that stored people's flight booking information, here are the fields and data types I would use:

fid	firstName	lastName	destination	priceInUSD	timeOfReservation
(VARCHAR)	(VARCHAR)	(VARCHAR)	(VARCHAR)	(INT)	(TIMESTAMP)
(Not Nullable)	(Nullable)	(Nullable)	(Nullable)	(Nullable)	(Not Nullable)

In this example, Fid is the primary key so it cannot be null. The timeOfReservation also cannot be null because it is a timestamp data type.

Relational Rules

The rule of "first normal form" describes the basic layout of a database. In first normal form, all data items must be defined, there must be no repeating groups of data, and there must be a primary key in the table. In general, each column can only have one data item per row. If,

for example, a table had a row called "Product 1" and a column called "color", that item cannot have two colors in the same row and column. If "Product 1" comes in two colors, then there must be one row for "Product 1" and "Blue", and a row below it for "Product 1" and "Green". It would not follow first normal form if in the "Product 1" row there were colors "Blue, Green".

The rule of "access rows by content only" means that rows and columns should not be referred to by their numerical positions in the table, e.g. "the fourth row", but by their content, e.g. "numberOfPotatoes". An example that goes against this rule is having the content be a pointer to another row with the same value instead of typing the repeated value. If two positions in the table have the same value, then creating another table may be necessary. This new table would have a foreign key that directly relates to the previous table. This rule is mainly in place to encourage users to think of relations between tables as "what" instead of "where". This is one of the key differences between relational databases and older database models.

http://stackoverflow.com/questions/1546147/database-pointers-to-rows

The rule of "all rows must be unique" means that no rows in the database can have the exact same values in each column. If two rows were exactly the same, it would represent repeated data and would not make sense in a relational database. This is avoided by having a primary key such as rowID that has a different number for every row.