

Jake Litts

9/10/17

Database Management Lab 2

The screenshot shows the pgAdmin 4 interface. On the left, the 'Browser' pane displays the database structure for 'PostgreSQL 9.6 (x86)', including 'Databases (2)', 'CAP', 'CAP Database', 'Columns', 'Constraints', 'Indexes', 'Rules', 'Triggers', 'Trigger Functions', 'Types', 'Views', 'Sequences', 'Materialized Views', 'Foreign Tables', 'Functions', 'Foreign Data Wrappers', 'Extensions', 'Event Triggers', 'Catalogs', 'Casts', 'Languages', 'Schemas (1)', 'public', 'Collations', 'Domains', 'FTS Configurations', 'FTS Dictionaries', 'FTS Parsers', 'FTS Templates', 'Login/Group Roles', and 'Tablespaces'. The main pane shows a SQL query titled 'Query - CAP on postgres@PostgreSQL 9.6 (x86)'. The query is as follows:

```
1 DROP TABLE IF EXISTS Orders;
2 DROP TABLE IF EXISTS Customers;
3 DROP TABLE IF EXISTS Agents;
4 DROP TABLE IF EXISTS Products;
5
6
7 -- Customers --
8 CREATE TABLE Customers (
9   cid          char(4) not null,
```

The 'Data Output' pane shows the following data:

cid	character (4)	name	city	discount	numeric (5,2)
1	c001	Tipt...	Dul...	10.00	
2	c002	Tyrell	Dall...	12.00	
3	c003	Eldon	Dall...	8.00	
4	c004	ACME	Dul...	8.50	
5	c005	We...	Risa	0.00	
6	c006	ACME	Beij...	0.00	

The screenshot shows the pgAdmin 4 interface. On the left, the 'Browser' pane displays the database structure for 'PostgreSQL 9.6 (x86)', including 'Databases (2)', 'CAP', 'CAP Database', 'Columns', 'Constraints', 'Indexes', 'Rules', 'Triggers', 'Trigger Functions', 'Types', 'Views', 'Sequences', 'Materialized Views', 'Foreign Tables', 'Functions', 'Foreign Data Wrappers', 'Extensions', 'Event Triggers', 'Catalogs', 'Casts', 'Languages', 'Schemas (1)', 'public', 'Collations', 'Domains', 'FTS Configurations', 'FTS Dictionaries', 'FTS Parsers', 'FTS Templates', 'Login/Group Roles', and 'Tablespaces'. The main pane shows a SQL query titled 'Query - CAP on postgres@PostgreSQL 9.6 (x86)'. The query is as follows:

```
133
134
135 select *
136 from Agents;
137
138 select *
139 from Products;
140
141 select *
142 from Orders;
```

The 'Data Output' pane shows the following data:

aid	character (3)	name	city	commission	numeric (5,2)
1	a01	Smith	Ne...	5.60	
2	a02	Jon.	Ne...	6.00	
3	a03	Perry	Ho...	7.00	
4	a04	Gray	Ne...	6.00	
5	a05	Otsu	Dul...	5.00	
6	a06	Smith	Dall...	5.00	
7	a08	Bond	Lon...	7.07	

pgAdmin 4

pgAdmin 4 File Object Tools Help

Browser

- Servers (1)
 - PostgreSQL 9.6 (x86)
 - Databases (2)
 - CAP
 - Casts
 - Catalogs
 - Event Triggers
 - Extensions
 - Foreign Data Wrappers
 - Languages
 - Schemas (1)
 - public
 - Collations
 - Domains
 - FTS Configurations
 - FTS Dictionaries
 - FTS Parsers
 - FTS Templates
 - Foreign Tables
 - Functions
 - Materialized Views
 - Sequences
 - Tables (1)
 - CAP Database
 - Columns
 - Constraints
 - Indexes
 - Rules
 - Triggers
 - Trigger Functions
 - Types
 - Views

postges

LoginGroup Roles

Tablespaces

Dashboard Properties SQL Statistics Dependencies Dependents Query - CAP on postgres@PostgreSQL 9.6 (x86)

CAP on postgres@PostgreSQL 9.6 (x86)

```

133
134 select *
135 from Agents;
136
137 select *
138 from Products;
139
140 select *
141 from Orders;

```

Data Output Explain Messages History

pid	name	city	qty	pricesud
character (3)	text	text	integer	numeric (10,2)
1	p01	Hel...	Dall...	111400
2	p02	uni...	Ne...	203000
3	p03	Co...	Dul...	150600
4	p04	LCA...	Dul...	125300
5	p05	pen...	Dall...	221400
6	p06	tra...	Dall...	123100
7	p07	flux...	Ne...	100500
8	p08	HAL...	Ne...	200600

Successfully run. Total query runtime: 91 msec. 8 rows affected.

pgAdmin 4

pgAdmin 4 File Object Tools Help

Browser

- Servers (1)
 - PostgreSQL 9.6 (x86)
 - Databases (2)
 - CAP
 - Casts
 - Catalogs
 - Event Triggers
 - Extensions
 - Foreign Data Wrappers
 - Languages
 - Schemas (1)
 - public
 - Collations
 - Domains
 - FTS Configurations
 - FTS Dictionaries
 - FTS Parsers
 - FTS Templates
 - Foreign Tables
 - Functions
 - Materialized Views
 - Sequences
 - Tables (1)
 - CAP Database
 - Columns
 - Constraints
 - Indexes
 - Rules
 - Triggers
 - Trigger Functions
 - Types
 - Views

postges

LoginGroup Roles

Tablespaces

Dashboard Properties SQL Statistics Dependencies Dependents Query - CAP on postgres@PostgreSQL 9.6 (x86)

CAP on postgres@PostgreSQL 9.6 (x86)

```

133
134 select *
135 from Agents;
136
137 select *
138 from Products;
139
140 select *
141 from Orders;

```

Data Output Explain Messages History

ordero	month	cid	aid	pid	quantity	totalsud
integer	character (3)	character (4)	character (3)	character (3)	integer	numeric (12,2)
1	1011	Jan	cd01	ao1	p01	1100
2	1012	Jan	cd02	ao3	p03	1200
3	1015	Jan	cd03	ao3	p05	1000
4	1016	Jan	cd06	ao1	p01	1000
5	1017	Feb	cd01	ao6	p03	500
6	1018	Feb	cd01	ao3	p04	600
7	1019	Feb	cd01	ao2	p02	400
8	1020	Feb	cd06	ao3	p07	600
9	1021	Feb	cd04	ao6	p01	1000
10	1022	Mar	cd01	ao5	p06	450
11	1023	Mar	cd01	ao4	p05	500
12	1024	Mar	cd06	ao6	p01	880
13	1025	Apr	cd01	ao5	p07	888
14	1026	May	cd02	ao5	p03	808

Successfully run. Total query runtime: 93 msec. 14 rows affected.

2. Explain the distinctions among the terms primary key, candidate key, and superkey.

The primary key in a database is a special database table column designated to uniquely identify all table records. Its main features are to contain a unique value for each row of data and be unable to contain null values. A candidate key in a database is a column in a table that can uniquely identify any

database record without referring to any other data. A primary key is a special type of candidate key, and there can be multiple candidate keys in a single table. A superkey is a combination of columns that uniquely identifies any row within a Relational Database Management System table. A candidate key is a closely related concept where the superkey is reduced to the minimum number of columns required to uniquely identify each row.

3. Write a short essay on data types. Select a topic for which you might create a table. Name the table and list its Wields (columns). For each Wield, give its data type and whether or not it is nullable.

If I were to make a table that would rank all of my favorite shows, I would name the table "Jake's Favorite TV Shows." Its Wields would be the ranking of the show, the name of the show, the year it was released, the amount of episodes, the length of each episode, and a short description of the show. For the Wields of the ranking of the show, the year it was released, and the amount of episodes the data type would be an int, which is a number from 1 to 2,147,483,647. For the Wield of name of the show Wield, the length of each episode, and a short description of the show, the data type would be text, which is a collection of characters and numbers. Other data types include decimal, when is a floating point number that can specify the number of permissible digits, double, which is a long double-precision floating point number, time, which is a time in YYYY-MM-DD format, and time, which is a time in HH:MM:SS format. More data types are year, which is a year 1901-2155 in either YY or YYYY format, timestamp, which is automatic date and time of last record entry, and char, which is a string of characters of fixed length up to 255 characters.

4. Explain the following relational "rules" with examples and reasons why they are important. a. The "First normal form" rule b. The "access rows by content only" rule c. The "all rows must be unique" rule

The First normal form rule states that the data is in a database table that stores information in rows and columns where one or more columns, called the primary key, uniquely identify each row. In addition, each column contains atomic values without repeating groups of columns. This is important because it is an essential property of a relation in a relational database. It eliminates repeating groups in individual tables, creates a separate table for each set of related data, and identifies each set of related data with a primary key. The "access rows by content only" rule states that there are no order to the columns. Instead, the rows are only accessed as a result of their content. This is important because it disallows "pointers" to rows. Finally, the "all rows must be unique" rule states that two tables cannot be identical in all column values at once. This is important because it prevents duplicate data.