Course Title: PostgreSQL Essential Training

Description: PostgreSQL is one of the world’s most popular open-source database platforms. This highly flexible and scalable relational database management system (RDBMS) supports everything from general purpose databases to machine learning applications and geospatial map servers. In this course, instructor Adam Wilbert helps you get up and running with PostgreSQL. Adam covers the essential first steps of setting up a PostgreSQL server and working with the graphical interface, pgAdmin. He then shows how to work with pgAdmin to create new database objects, populate them with data, and retrieve records from the database. If you're new to the platform (or relational databases in general), this course serves as an entry point and provides a solid foundation for further exploration in database administration.

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Chapter: 1. Getting Started with PostgreSQL
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Video: Connect to the server with psql

Note Time: Note Text:

0:03:08 End SQL statements in terminal with semicolon to execute. Ex: "SELECT version();" to see version of PostgreSQL installed. If semicolon is left out, statement won't execute- can just type a semicolon in the following line and it will do so

0:04:10 To create a database: "CREATE DATABASE nameOfDatabase;" command. The terminal will then print "CREATE DATABASE" to show it was created successfully

0:04:17 To see list of current databases on server: \l (lower case L)

0:04:55 To switch into a database (no semicolon needed since it's not a SQL command- same for previous): \c nameOfDatabase

0:05:58 Command to create a table: CREATE TABLE nameOfTable (Variable1 int, Variable2 char(20)); (int and char as examples, 20 indicates storing up to 20 characters). Variables passed in are definitions of the columns of the table

0:06:43 Enter text in postgreSQL in single quotation marks

0:07:24 To see everything in the table: SELECT * FROM

nameOfTable;

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Chapter: 2. An Introduction to Relational Databases
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Video: The structure of a database table

Note Time: Note Text:

0:01:08 Convention to use lowercase letters for table and column names, and to separate multiple words with underscore (_)

0:01:37 Each row in a table in SQL represents an item. To uniquely identify an item, include an ID column called nameOfTable_id. This is the table's primary key: unique (integer) value for each row in table, typically doesn't have real-world significance (doesn't imply a ranking, sequence, or count of items)

Video: PostgreSQL native data types

Note Time: Note Text:

0:02:58 Numerical data types: "integer" (default for whole numbers; range from -2 billion to +2 billion), "decimal" or "numeric" (ex. the value 123.45 requires a numeric(5,2) data type- 5 digits, 2 to the right of decimal), "real" and "double precision" for floating point

0:04:27 Character data types: "character(n)" or "char(n)" used when strings in a column are of same length- (n) where n = number of characters, "character varying(n)" or "varchar(n)" for strings of varying lengths- (n) being maximum number of characters, "text" for unlimited number of characters (ideal for blogs/articles)

0:04:52 Date and time data types: "date", "type", "timestamp" stores time and date in one column, "timestamp with time zone" adds time zone awareness

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Video: Join tables together with relationships

Note Time: Note Text:

0:03:03 A foreign key is the primary key of another table, that allows for a relationship with the current table (cross-referencing values). Minimizes redundancies and inconsistencies throughout data

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Chapter: 3. Building a Database
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Video: Link primary and foreign keys

Note Time: Note Text:

0:04:04 To make changes to a table that already has data, good practice to turn Validated? to Yes (under constraints -> foreign key -> definition) so that changes made are applied to existing values

0:06:08 To maintain relationship between tables if a change is made (ex. a different category id), choose On update: CASCADE (under constraints -> action)

Video: Enforce referential integrity on related records

Note Time: Note Text:

0:03:56 When typing in data to table, bold font indicates changes haven't been saved yet into database. To save, click icon that looks like spreadsheet with downward-pointing arrow

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Chapter: 4. Retrieve Information with Queries
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Video: Import data from a CSV

Note Time: Note Text:

0:00:19 Process of retrieving data called querying the database

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Video: Retrieve information with a SELECT query

Note Time: Note Text:

0:00:54 SELECT keyword used to ask for specific columns from a table, FROM keyword specifies which table. * retrieves all columns, otherwise can specify which columns (separated by comma) and they will be returned in that order. WHERE keyword selects for certain rows against some criteria (example: WHERE category_id = 3)

Video: Join tables for additional information

Note Time: Note Text:

0:03:03 ON keyword specifies which columns hold the related values. Ex: ON products.category_id = categories.category_id

0:04:45 Use AS keyword to add an alias for two columns from different tables with the same name- specifies which comes from which table

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Video: Save a query as a database view

Note Time: Note Text:

0:01:38 Once tables are joined, can save that query as a database view with command in first line of query editor: CREATE VIEW manufacturing.name_of_database_view AS

0:02:34 Can run SELECT * FROM command on a database view

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Chapter: 5. Managing Data
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Video: Add indexes to a table

Note Time: Note Text:

0:04:51 Column used in creating index typically the one with the table's primary key

0:05:48 Naming convention for a table index:

nameOfTable_name_of_primary_key_idx

Video: Constrain acceptable input values

Note Time: Note Text:

0:02:11 To add constraint on input values: table -> right click on constraints -> check

0:02:29 Convention for naming checks: nameOfTable_nameOfColumn_check

0:05:43 Note: line breaks entered in table cell may invalidate it- must be exactly the same text as the check constraint

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Chapter: 6. Database Administration in PostgreSQL
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Video: Grant privileges to a role

Note Time: Note Text:

0:00:41 Comments in sql denoted by -- followed by the comment text

0:01:07 Highlighting a certain line in the Query Editor then executing it executes only that line

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Video: Back up and restore a database

Note Time: Note Text:

0:02:29 Backing up a database: "Tar" = format used by most users, -> Dump options: "Pre-data" includes table structures and schemas, "Post-data" for objects like indexes