**PostgreSQL Functions for Manipulating Data**

Course outline proposition

By Joe Ganser

Github repo: <https://github.com/JoeGanser/Postgresql_sample_exercises>

\*Note: the exercises here are a work in progress, more will be added as I make the course.

Data set used: <https://archive.ics.uci.edu/ml/datasets/Online+Retail>

**Introduction**

The course will be oriented towards people with an intermediate understand of SQL It will be assumed students have gone through at least the introduction to SQL course. A total of 9-14 unique Postgresql functions will be introduced, each with one example and two exercises. At the end a case study will be made.

**Student Background**

The pre-requisites are a knowledge of SQL basics. More specifically, it is assumed they understand the following SQL concepts:

* Select Statement
* The Where clause
* Grouping
* Having Clauses
* Aggregation Functions

**Target Personas**

Two target personas are identified:

* The SQL beginner who is exploring data camp and knows SQL basics and wants to advance their skill. This type of person may simply be curious and wants to see a new application of SQL
* The data analyst who has been working with SQL in different forms but wants to know what’s different about postgresql. They may have worked with MySQL, but want to see how to work with date, numerical and text functions in postgresql.
* Coder Chen and Mathematical Marta are approximately the two I am talking about.

**Chapter 1: Introduction to Postgresql**

This chapter introduces postgresql and explains what makes it different than other forms of SQL. It explains how there are subtle differences in syntax, and situations when it is better to use postgresql than mysql. This ends with 4-5 multiple choice questions

* 1.1 How postgresql is different from other forms of SQL
* 1.2 When to use postgresql
* 1.3 When not to use postgresql

**Chapter 2: Date functions**

This chapter introduces the concept of a time stamp, as well as three key date functionalities:

* 2.1 Extract function (extracting a month/date/etc. from a time stamp)
* 2.2 Age function (difference in time)
* 2.3 How to add time to a time stamp.

Examples and exercises will be applied to dates of when items were sold online.

**Chapter 3: Text functions**

This chapter introduces three text functions:

* 3.1 Left/Right functions that get the first/last few characters of a string
* 3.2 CONCAT functions that bring strings together
* 3.3 SPLIT\_APART function that splits strings on delimiters

Exercises will be focused on description texts of items sold online.

**Chapter 4: Numerical Functions**

This chapter brings forth multiple numerical functions and gives some examples

* 4.1 ROUND function to convert floats to integers
* 4.2 Avg, Max, Min
* 4.3 Add and multiple numbers

Exercises will be focused on measuring the prices and quantities sold of items sold online.

**Chapter 5: Case Study;**

* 5.1 Introduce case study
* 5.2 Demonstrate how numerical, date and text functions can be combined into one query
* 5.3 Use these combined queries to represent retail data in a meaningful way

This chapter applies all the aforementioned functions introduced to a case study using the data set previously mentioned. A final “capstone exercise” could be formed by using a query that produces a string containing text and numerical/date functions. See the last cell of my “sample\_questions” notebook in the above github repo to see an example of what I am referring to.