SQL Basics - DATES

PostgreSQL provides several options for storing and querying DATEs

When you create a table with a date, you must specify how you want PostgreSQL to store the date. Options:

DATE – stores a date as YYYY-MM-DD without the time
TIMESTAMP – stores a date as YYYY-MM-DD:HH:mm:SS.ssss
TIMESTAMPTZ – stores a date as YYYY-MM-DD:HH:mm:SS.ssss with timezone
TIME – stores as time of day HH:mm:SS.ssss
INTERVAL – stores the difference between two dates as years-months-days

SQL Basics - DATES

We enter dates as YYYY-MM-DD (as a text string)

PostgreSQL converts the string to a binary number

It stores the date/time value as UTC

Timestamp – 8 bytes

Date – 4 bytes

SQL Basics - CAST

Converts a column or expression to a different data type

Two formats:

```
    CAST (<value> AS <type>)
```

or

```
     <value>::<type>
```

SQL Basics – DATES examples

```
SELECT Now();

SELECT Lastname, Firstname, Birthdate, HireDate

    FROM "alanparadise/nw"."employees";

SELECT EmployeeID, Lastname, Firstname, age(HireDate, BirthDate) AS HIRE_AGE

    FROM "alanparadise/nw"."employees";

SELECT EmployeeID, Lastname, Firstname, age(HireDate, BirthDate::text AS HIRE_AGE

    FROM "alanparadise/nw"."employees";

SELECT EmployeeID, Lastname, Firstname,

          cast (age(HireDate, BirthDate)as text) AS HIRE_AGE

   FROM "alanparadise/nw"."employees";
```

SQL Basics – Date Functions

AGE	Calculates the difference between 2 dates as interval
CURRENT_DATE	Today's date
CURRENT_TIME	Time right now
CURRENT_TIMESTAMP	Current Date & Time
EXTRACT	Returns a part of a date as interval
DATE_PART	Returns part of a date as interval
DATE_TRUNC	Returns part of a date truncated to a precision
NOW	Time right now
TO_DATE	Converts a string to a date
TO_TIMESTAMP	Converts a string to a timestamp

SQL Basics – DATES examples

```
SELECT Lastname, Firstname, age (current_date, HireDate)::text
    FROM "alanparadise/nw"."employees";
SELECT EmployeeID, Lastname, Firstname, extract(year from hiredate)
    FROM "alanparadise/nw"."employees";
SELECT EmployeeID, Lastname, Firstname, date_part('year', hiredate)
    FROM "alanparadise/nw"."employees";
SELECT to_date('20201231', 'YYYYMMDD')
```

SQL Basics – Nulls

NULL – the cell (column/row) has NO VALUE

NOT blanks, NOT zeros

The presence of a NULL in a cell may affect calculations

SQL Basics – Nulls

NULL – the cell (column/row) has NO VALUE

- NOT blanks, NOT zeros

- The presence of a NULL in a cell may affect calculations
  - A cell with NULL will NOT affect an average
  - A cell with zeros WILL affect an average

- Can constrain a column with NOT NULL at creation

SQL Basics – Nulls

```
select productid, productname, discontinued
         FROM "alanparadise/nw"."products"
         where discontinued = '0';
update "alanparadise/nw"."products"
         set discontinued = NULL
         where discontinued = '0';
select productid, productname, discontinued
         from "alanparadise/nw"."products"
         where discontinued is NULL;
select productid, productname, discontinued
         from "alanparadise/nw"."products"
         where discontinued is NOT NULL;
```

SQL Basics – Lab # 3

This concludes Module 2, Lesson 4, "Dates & Nulls"

Next step: Follow the instructions for Lab # 3