business analytics society

SQL Workshop

October 22nd, 2019

Announcements

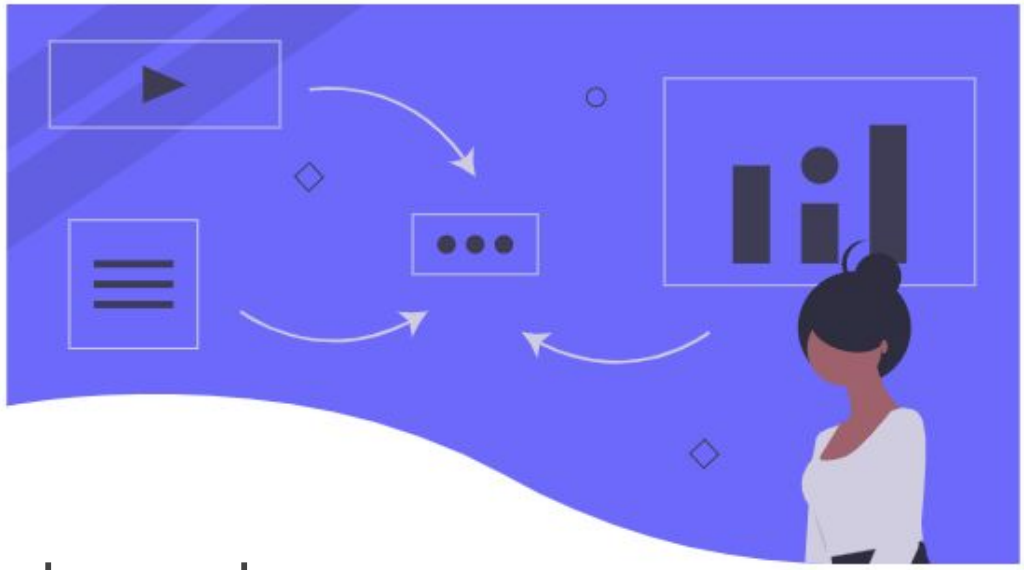
- SQL Meeting- Now
- Data Warehouse Tour
- HCA Meeting

What is SQL?

SQL stands for Structured Query Language and is a standard language for storing, manipulating and retrieving data in databases.

It can be used with MySQL, SQL Server, MS Access, Oracle, and many other database systems.

Why learn SQL?



SQL is one of the most in-demand skills for employees of all backgrounds, especially in business and programming fields!

INMT Courses

INMT 341 Business Process Analysis **Business Processes** Transaction Processing Documentation Risk and Controls	INMT 342 Database Systems Database Design **SQL** System Controls Big Data/Unstructured Databases
INMT 442 e-Enterprise Survey of Tools Enterprise-level Applications Business Process Analytics	INMT 443 Business Application Logic **Structured Program Logic** Controls and Testing Application Architecture

SQL Basics

“Customers” Table

Primary Key

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
1	Alfreds Futterkiste	Maria Anders	Obere Str. 57	Berlin	12209	Germany
2	Ana Trujillo Emparedados y helados	Ana Trujillo	Avda. de la Constitución 2222	México D.F.	05021	Mexico
3	Antonio Moreno Taquería	Antonio Moreno	Mataderos 2312	México D.F.	05023	Mexico
4	Around the Horn	Thomas Hardy	120 Hanover Sq.	London	WA1 1DP	UK
5	Berglunds snabbköp	Christina Berglund	Berguvsvägen 8	Luleå	S-958 22	Sweden

SQL Basics

```
SELECT column
FROM table ;

SELECT *
FROM table ;
```

SQL Basics

```
SELECT CustomerName
FROM Customers;
```

CustomerName
Alfreds Futterkiste
Ana Trujillo Emparedados y helados
Antonio Moreno Taquería
Around the Horn
Berglunds snabbköp

SQL Basics

```
SELECT column
FROM table ;
WHERE column = condition
```

WHERE Operators

AND - must meet both conditions

OR - one or the other

BETWEEN - in between 2 values

IN - in a list

LIKE - for text functions, use a wildcard also (we will use%)

WHERE Operators

= equals

!= does not equal

> greater than
< less than

>= greater than or equal to
<= less than or equal to

SQL Basics

```
SELECT CustomerName
FROM Customers
WHERE CustomerID = 4;
```

CustomerName
Around the Horn

Let’s Get Started!

Google ‘SQL Zoo’

Google ‘W3 Schools SQL’

SQL Zoo Practice 1/15

Winners from 1950

```
SELECT yr, subject, winner
  FROM nobel
 WHERE yr = 1950
```

SQL Zoo Practice 2/15

1962 Literature

```
SELECT winner
  FROM nobel
 WHERE yr = 1962
   AND subject = 'Literature'
```

SQL Zoo Practice 3/15

Albert Einstein

```
SELECT yr, subject
FROM nobel
WHERE winner = 'Albert
Einstein';
```

SQL Zoo Practice 4/15

Recent Peace Prizes

```
SELECT winner
FROM nobel
WHERE subject = 'Peace'
AND yr >= 2000
```

SQL Zoo Practice 5/15

Literature in the 1980s

```
SELECT *
FROM nobel
WHERE subject = 'Literature'
AND yr BETWEEN 1980 AND
1989
```

SQL Zoo Practice 6/15

John

```
SELECT winner
FROM nobel
WHERE winner LIKE 'John%'
```

SQL Zoo Practice 7/15

Early Medicine, Late Literature

```
SELECT *
FROM nobel
WHERE (yr < 1910
AND subject = 'Medicine')
OR (yr >= 2004
AND subject = 'Literature')
```

SQL Aggregations

- Common in the SELECT and WHERE clauses
- May require the GROUP BY clause

SQL Aggregations

Examples

- MAX - maximum value
- MIN - minimum value
- AVG - average value
- COUNT - total values
- SUM - sum of values
- **DISTINCT - unique values

SQL Zoo Practice 8/15

Total world population

```
SELECT SUM(population)
FROM world
```

Alternate with GROUP BY

```
SELECT name, SUM(population)
FROM world
GROUP BY name
```

SQL Zoo Practice 9/15

List of continents

```
SELECT DISTINCT continent
FROM world
```

SQL Zoo Practice 10/15

GDP of Africa

```
SELECT SUM(gdp)
FROM world
WHERE continent = 'Africa'
```

SQL Zoo Practice 11/15

Count the big countries

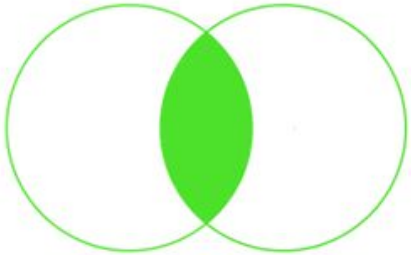
```
SELECT count(name)
FROM world
WHERE area >= 1000000
```

SQL Zoo Practice 12/15

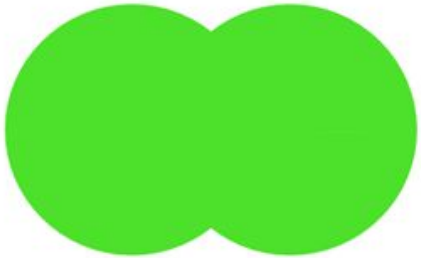
Baltic states population

```
SELECT SUM(population)
FROM world
WHERE name IN ('Estonia',
'Latvia', 'Lithuania')
```

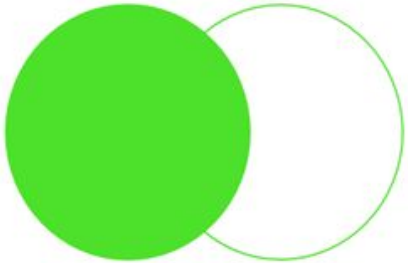
SQL Joins



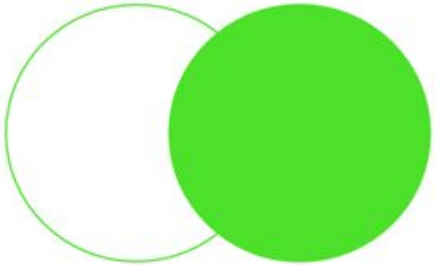
INNER JOIN



FULL OUTER JOIN



LEFT JOIN



RIGHT JOIN

SQL Zoo Practice 13/15

One

```
SELECT matchid, player FROM
goal
  WHERE teamid = 'GER'
```

SQL Zoo Practice 14/15

Two

```
SELECT
id,stadium,team1,team2
  FROM game
WHERE id = 1012
```

SQL Zoo Practice 15/15

Three

```
SELECT player, teamid,stadium,
mdate
  FROM game JOIN goal ON
(game.id=goal.matchid)
WHERE teamid = 'GER'
```

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Thank You!

Venmo: @BusinessAnalytics-UTK