# Database In Finance: SQL

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## Introduction

- What is SQL
- Dataset Overview
- SQLite Online IDE



### **SQL FUNDAMENTALS: What is SQL?**

**SQL** is **Structured Query Language**, which is a computer language for storing, manipulating and retrieving data stored in a relational database.

**SQL** is the standard language for Relational Database System.

### **SQL FUNDAMENTALS: What is SQL?**

>> All the Relational Database Management Systems (RDMS) like MySQL, MS Access, Oracle, Sybase, Informix, Postgres and SQL Server use SQL as their standard database language.

Also, they are using different dialects, such as

- MS SQL Server using T-SQL,
- Oracle using PL/SQL,
- MS Access version of SQL is called JET SQL (native format) etc.

>> Versions

## **SQL FUNDAMENTALS: SQL Query Examples**

```
SQLQuery3.sql - T61...14 (T61\boksi (57))* → X
   SELECT p. Name AS ProductName;
     NonDiscountSales = (OrderOty * UnitPrice).
     Discounts = ((OrderOty * UnitPrice) * UnitPriceDiscount)
     FROM Production. Product AS p
     INNER JOIN Sales. SalesOrderDetail AS sod
     ON p.ProductID - sod.ProductID
     ORDER BY ProductName DESC:
   SELECT 'Total income is', ((OrderQty " UnitPrice) " (1.0 - UnitPriceDiscount)), ' for ',
     p.Name AS ProductName
     FROM Production Product AS p
     INNER JOIN Sales SalesOrderDetail AS sod
     ON p.ProductID = sod.ProductID
     ORDER BY ProductName ASC;
   SELECT DISTINCT pp.LastName, pp.FirstName
     FROM Person Person pp JOIN HumanResources Employee e
    ON e.BusinessEntityID = pp.BusinessEntityID WHERE pp.BusinessEntityID IN
     (SELECT SalesPersonID
     FROM Sales SalesOrderHeader
     WHERE SalesOrderID IN
     (SELECT SalesOrderID
     FROM Sales SalesOrderDetail
     WHERE ProductID IN
     (SELECT ProductID
     FROM Production Product p
     WHERE ProductNumber = 'BK-M688-42'))):
   SELECT ProductID, AVG(OrderQty) AS AverageQuantity, SUM(LineTotal) AS Total
     FROM Sales SalesOrderDetail
     GROUP BY ProductID
     HAVING SUM(LineTotal) > $1000000.00
    AND AVG(OrderQty) < 3;
   SELECT pp.FirstName. pp.LastName. e.NationalIDNumber
     FROM HumanResources.Employee AS e WITH (INDEX(AK Employee NationalIDNumber))
     JOIN Person Person AS pp on e.BusinessEntityID - pp.BusinessEntityID
     WHERE LastName = 'Johnson';
```

```
Select * from Apps
```

## **SQL FUNDAMENTALS: SQL query structure**

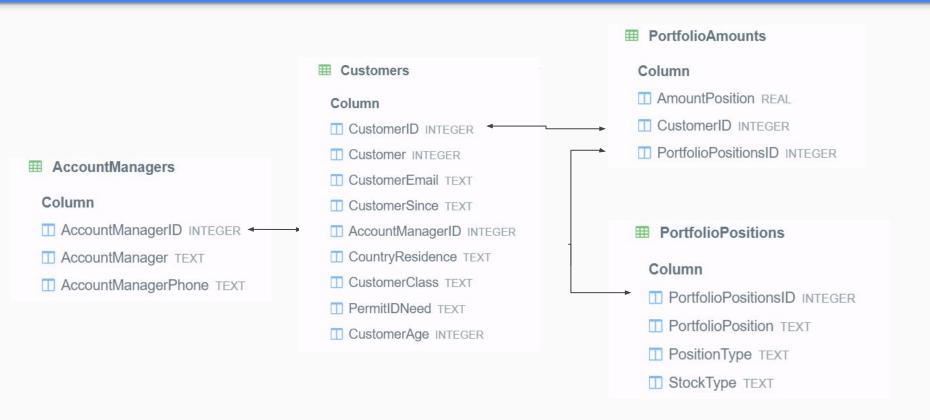
```
SELECT DISTINCT column list
FROM table list
  JOIN table ON join condition
      row filter
WHERE
ORDER BY column
LIMIT count OFFSET offset
GROUP BY column
HAVING group_filter;
```

- SELECT statement example is used to extract data
- Clauses: JOIN, WHERE, ORDER BY, LIMIT, GROUP BY, HAVING, etc.
- Good Practice is each clause starts from new line

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#### **DATASET OVERVIEW: BROKERAGE DATASET SCHEMA**



## **DATASET OVERVIEW: Customers**

i C	Customer	CustomerEmail	Custom	Acc	Country	CustomerClass	PermitID	Customer
1	16361014	Integer.tincidunt@euismo	2020-01-31	1	United Ki	Тор	Yes	26
2	16721110	ac.nulla@metus.ca	2019-05-06	2	Canada	Тор	Yes	25
3	16970813	adipiscing@Integerin.ca	2018-08-12	3	France	Тор	No	35
4	16211205	ultrices.iaculis.odio@Nun	2018-06-25	4	Canada	Middle	Yes	61
5	16561007	Aliquam@porttitortellus.ca	2019-11-13	4	Germany	Middle	No	46
6	16841024	luctus.Curabitur.egestas	2020-07-30	5	France	Middle	No	64
7	16940829	nulla@lacusvestibulumlo	2019-05-26	1	Germany	Bottom	No	33
8	16581108	aliquet@MaurisnullaInteg	2020-07-13	1	Germany	Bottom	No	60

## **DATASET OVERVIEW: Account Managers**

: AccountManagerID	AccountManager	AccountManagerPhone
1	Redford	(559) 915-8906
2	Green	(314) 337-4964
3	Mellow	(470) 839-7098
4	Violet	(510) 524-5590
5	Blumfield	(489) 157-1767
6	Moran	(389) 102-6318
7	Mindigo	(102) 261-1052

## **DATASET OVERVIEW: Portfolio Amounts**

: AmountPosition	CustomerID	PortfolioPositionsID
6750.81	1	1
5355.9	1	2
8499.15	1	3
7871.49	1	5
8779.32	1	11
1742.4	2	1
6341.94	2	2
5018.31	2	11

## **DATASET OVERVIEW: DEMO S&P 500**

: Symbol	Name	Sector	Price	PriceToEarnings	Dividend_Yield
MMM	3M Company	Industrials	222.89	24.31	2.3328617
AOS	A.O. Smith Corp	Industrials	60.24	27.76	1.1479592
ABT	Abbott Laboratories	Health Care	56.27	22.51	1.9089824
ABBV	AbbVie Inc.	Health Care	108.48	19.41	2.4995599
ACN	Accenture plc	Information Technology	150.51	25.47	1.7144699
ATVI	Activision Blizzard	Information Technology	65.83	31.8	0.43190324
AYI	Acuity Brands Inc	Industrials	145.41	18.22	0.35118526
ADBE	Adobe Systems Inc	Information Technology	185.16	52.31	0
AAP	Advance Auto Parts	Consumer Discretionary	109.63	19.54	0.21832074
ALID	AT THE BY		44.00	107	^

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#### **SQLite Online IDE Overview**

- SQLite section
  - Tables and columns
- Overview of the tables
- Code field
  - New tabs
  - Auto-suggestion, copy to IDE
  - o Run
- Query Result View
  - Column Widths
- History
- Export CSV

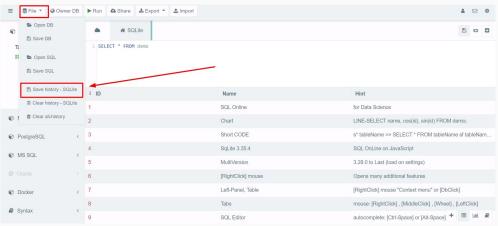
**Integrated Development Environment** 

## **SQL Online IDE**



#### **ARCHIVE YOUR DATA**

#### File >> Save History - SQL Lite



### **PRACTICE: SQLite IDE**

- Download the database file
- Upload database (File >> Open DB >> choose the downloaded file: brokerage.db)
- Review tables (test Show Table option to open each table)
- Try to open new code tabs
- Try to save individual code tab
- Try to export CSV
- Try to save history

Dataset Link:

<u>https://bit.ly/data\_db\_finance</u> also uploaded in the e-learn platform.