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Java 20: Deep dive dml Select

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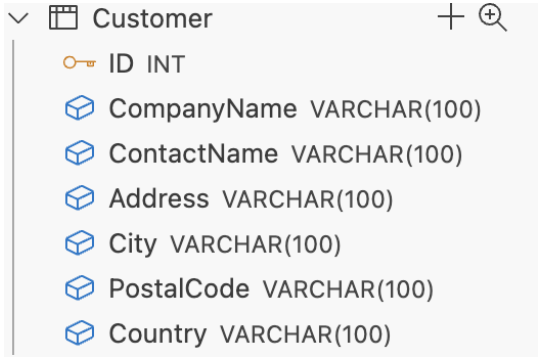
What are we doing today?

- Last lesson
  - We did the first step in understanding a rel. DB Model by checking a 1 relation isolated
  - We also created ”Create Table …” cmds based text
- Today we have a deep dive into the DML cmd “Select” => Very important in big data area

Preparation I

- Create Table Customer so it looks like this:
  - Consiter “ID” is Primary_Key and filled automatically
  - Country can be null as well as ContactName
  - All other fields are not null
- Please see the Insert cmd:




```
INSERT INTO table_name (column1, column2, column3, ...)
VALUES (value1, value2, value3, ...);
```

Preparation II

- Insert values into Table Customer so it looks like this:

ID	CompanyName	ContactName	Address	City	PostalCode	Country
abc Filter...	abc Filter...	abc Filter...	abc Filter...	abc Filter...	abc Filter...	abc Filter...
1	Tech Solutions Inc	Alice Johnson	123 Elm St	New York	NY10001	USA
2	Global Widgets	NULL	456 Maple Ave	Los Angeles	CA90001	USA
3	Innovatech Ltd	Robert Brown	789 Oak St	London	SW1A 1AA	UK
4	Creative Corp	Emily Davis	321 Pine Lane	Toronto	M4B 1B3	NULL
5	Dynamic Enterprises	NULL	654 Cedar Rd	Vancouver	V5K 0A1	Canada
6	NextGen Innovations	Michael Smith	987 Birch Dr	Sydney	NSW 2000	Australia

Simple Select

- It is used to Select certain data from your database
- The structure is for certain attributes:
  - Select CompanyName, ContactName From Customer;
- If you want to select all attributes of you relation
  - Select * From Customer;

Where-clause

- It is a filter criteria to only Select those records which fulfill the specified condition
- Example:
  - Select *
    From Customer
    Where Country=‘UK’;

Order By

- It is used to sort the result set in a ascending or descending order of one or more attributes
- Order by 1 attribute:
  - Select *
    From Customer
    ORDER BY Country ASC/DESC;
- Order by 2 attributes, here if one result set has the same Country it would order then by the second attribute
  - Select *
    From Customer
    ORDER BY Country ASC, ContactName;

And Or Like

- And-Operator is used in the Where-clause to add more conditions to the filter, it displays only records if all conditions are met
- Or-Operator displays records if any conditions are met
- Like is used in combination with “%” to find all data starting with a certain letter
  - Select *
    From Customer
    Where Country=‘USA’
    And ContactName LIKE ‘R%’;
- Here an example which includes them all
  - Select *
    From Customer
    Where Country=‘USA’
    And (ContactName LIKE ‘R%’ OR ContactName LIKE ‘A%’) ;

Not and Null-Operator

- Not is used in Combination with other Operators to select for the opposite result set
  - Select *
    From Customer
    Where Not Country = ‘USA’;
- Because we got Null-Values in our Customer-Table we would like to check for these by using “IS NULL” or “IS NOT NULL”
  - Select *
    From Customer
    Where ContactName IS NULL / IS NOT NULL

Alias “AS”

- Sometimes the attribute-names are too technical or you use a aggregated function, in those cases you need to rename the attribute of your result set
  - SELECT CustomerID AS ID
    From Customer;

Aggregated Functions

- Aggregated function perform a calculation on a set of values and return 1 result
  - MIN(), MAX(), COUNT(), SUM(), AVG
  - SELECT MIN(PRICE)
    FROM Product;
- In Combination with “GROUP BY” it splits the result-set into groups
  - SELECT MIN(PRICE) AS Smallest Price, Country
    From Product
    Group by Country;

Exercise

- Select all Data of you table Customer
- Select all Data of 2 random attributes of your table Customer
- Select only Data of country ‘USA’
- Select all Data and order the resultset ascending by country and descending by ContactName
- Select all Data where Country is USA, UK and Australia and where the Contactname has a starting letter of “M” or “R”
- Now select all Data where ContactName does not start with “M” or “R”
- Select all records with a Null Value
- Select all records without any Null Values
- Select all values for Attributes CompanyName and ContactName but change the attributenames into better options
- Count the number of Countries (as Number of Countries) and also return the country name