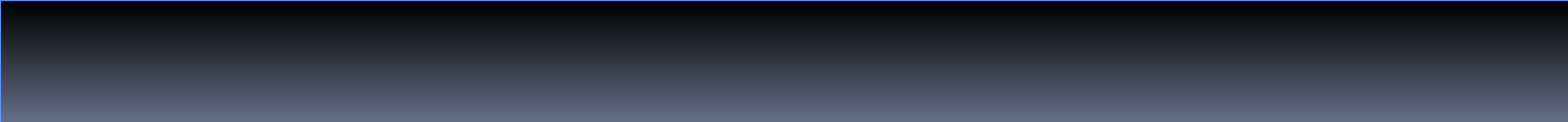
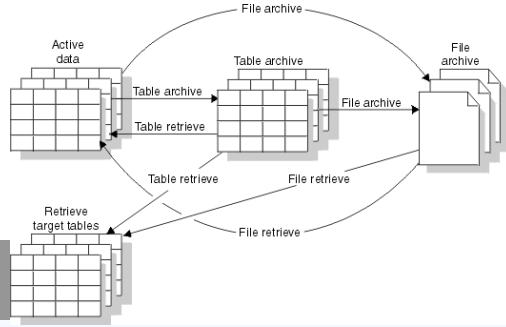
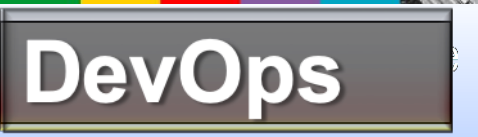


IBM Software Group

IBM Developer for z Systems – for ISPF Developers

Module 8 – Using the Data Source Explorer





Jon Sayles, IBM - jsayles@us.ibm.com

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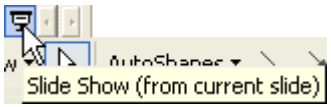
Learning DB2 and SQL

- Many (in the thousands of) books exist that do an excellent job teaching SQL.
- Additionally, sites exist on the Internet (GOOGLE: "SQL tutorials" – or "Learn SQL") for online (and typically free) education.

- IBM Also supplies *excellent* SQL and DB2 documentation:
  - DB2 Documentation
  - SQL Getting Started
  - SQL Reference Manual
  - Message (error code) Reference. Cached pdf version of full guide.
  - DB2 Application Development Guide with example embedded SQL programs.
  - Triggers in DB2
  - Constraints in DB2
- And there are plenty of non-IBM sites to learn about SQL:
  - Http://en.wikipedia.org/wiki/SQL

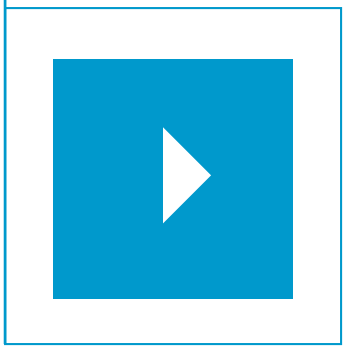
- Note: In order for you to get the above links to work, view the PowerPoint in Slide Show mode.



- Here is an example of COBOL database access:
  - http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/index.jsp?topic=/com.ibm.db29.doc.apsg/db2z_samplecoboldrdathreepartnames.htm

UNIT

The IDz Workbench



Topics:

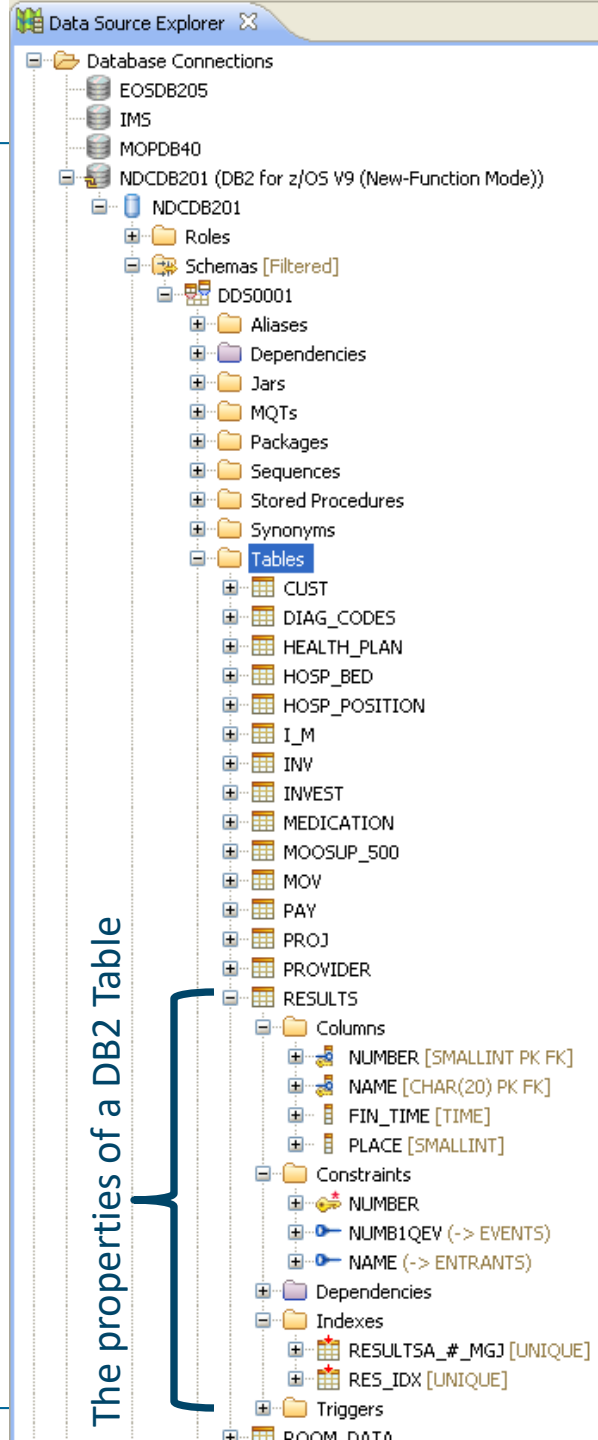
- The Data Perspective and Connecting to DB2
- **Understanding DB2 objects and dependencies**
- Editing and managing DB2 table data
- Coding and testing SQL
- Extract/Load and Managing Test Data & Decision Support

The Data Source Explorer – Tree Control

Once you're connected, the Data Source Explorer presents "meta-data" about the database objects accessible through your connection:

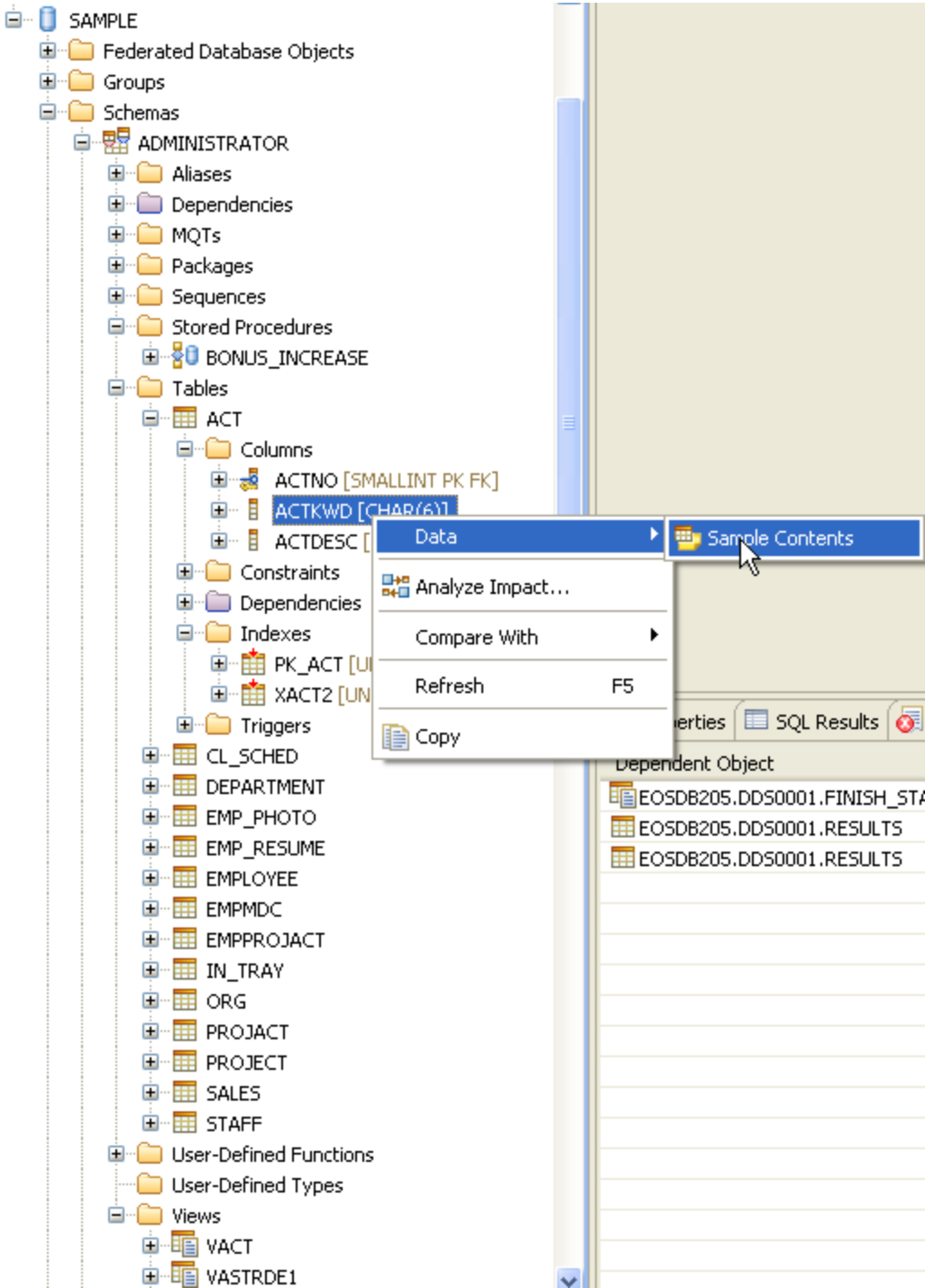
- Databases within the connection – and within the database:
  - **Schemas** (the high-level qualifier of the resource owner)
  - Within each Schema relational object resources (DBMS-dependent):
    - **Synonyms**
    - **Stored Procedures**
    - (if DB2 for z) – Federated Stored Procedures
    - **Tables** and the elements of a table and related objects:
      - **Column definitions**
      - **Relational constraints** (primary and foreign key rules)
      - **Indexes**
      - **Triggers**
      - **User-defined functions**
    - **Views**

- The Properties view can be helpful in expanding the information presented.
- Many additional context menu options exist off these entries



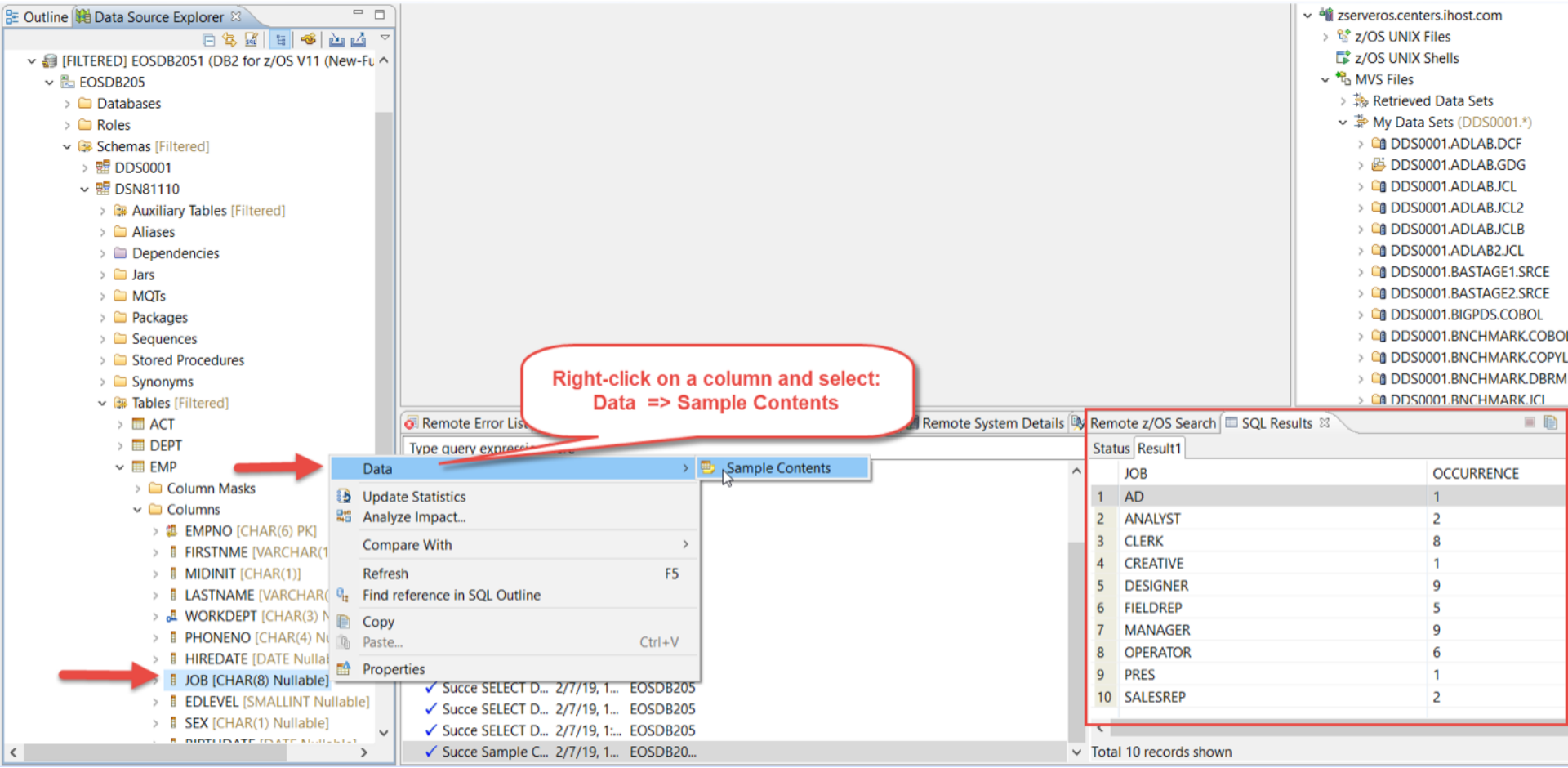
Exploring DB2 Meta Data

- Use your mouse to expand/collapse DB2 object meta-data categories
- Information is presented through a hierarchical tree-control – modeling the structure in the DDL that was used to create the object
- All of the meta-data shown in the Explorer is pulled dynamically from the DB2 Catalog, making it 100%
  - Accurate
  - Current
- The Context Menu provides (much) additional functionality:
  - Select a DB2 object
  - Right-click
  - Context options pop-up in the menu and sub-menus



Exploring Table Values – Sample (Data) Contents in a DB2 Table/Column

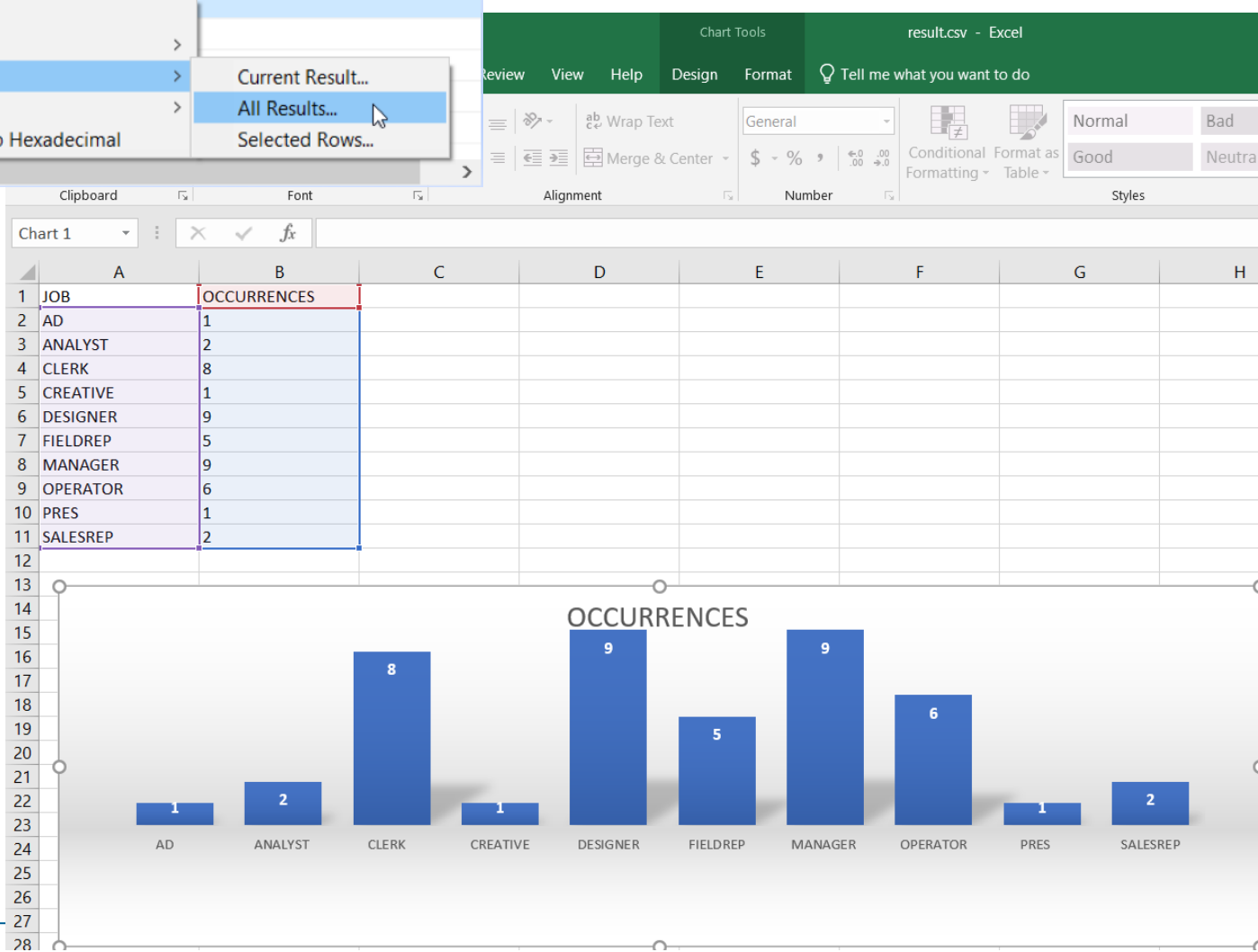
- IDz provides a canned SELECT DISTINCT/GROUP BY query
- The query results show column *cardinality*
  - The number of discrete values in each column, throughout the Table



Exporting Column “Sample Contents”

	JOB	OCCURRENCE
1	AD	1
2	ANALYST	2
3	CLERK	8
4	CREATIVE	1
5	DESIGNER	9
6	FIELDREP	
7	MANAGER	
8	OPERATOR	
9	PRES	
10	SALESREP	

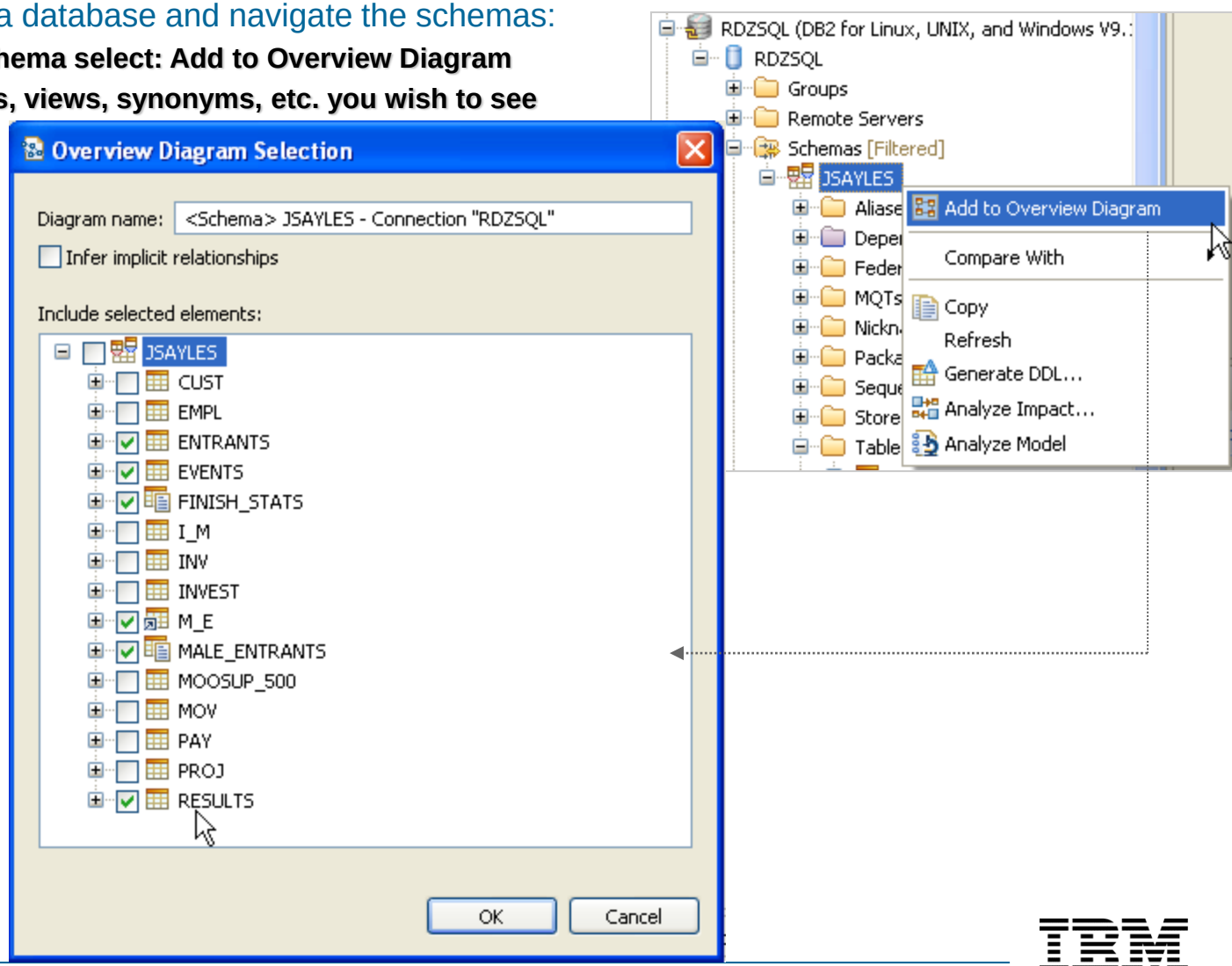
- You can Export All Results into a spreadsheet – and turn data into information



Overview Diagram – 1 of 4

So what can we do with the Data Source Explorer? Let's start by having a look at our tables and table relationships (Parent/Child tables associated by defined Primary/Foreign key constraints)

- From the Data Source Explorer:
  - Expand a folder for a database and navigate the schemas:
    - **Right-click a schema select: Add to Overview Diagram**
    - **Select the tables, views, synonyms, etc. you wish to see**



Notes:

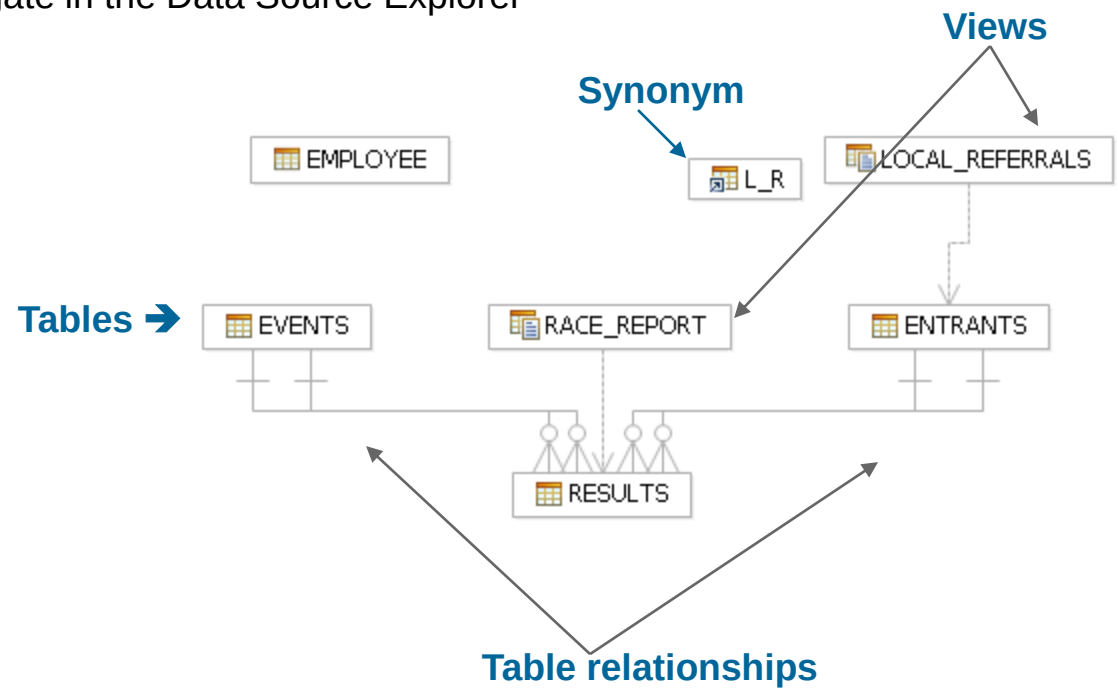
The Overview Diagram feature is available in IDz version 7.6.1 and later

This kind of diagram (see results on next slide) is often called an **"Entity-Relationship Diagram"** – because it draws out the relationships between your DB2 "entities" – tables/views/synonyms

(Data Model) **Overview Diagram – 2 of 4**

The Diagram Tool shows all of the tables, views and synonyms selected through our connection as entities, and their relationships as defined by Primary/Foreign key SQL specifications. This allows us to understand things like how to join tables, and where data exists in relation to other table values.

- We can also use the Diagram Tool to navigate in the Data Source Explorer
  - Right-click over **Results**
  - Select:
    - **Navigate >**
    - **Show in >**
    - **Database Explorer**
- **Note the different icons for:**
  - **Tables:**
    - **Events, Entrants, Results**
    - **Employee**
  - **Views:**
    - **Race_Report**
    - **Local_Referrals**
  - **Synonym:**
    - **L_R**

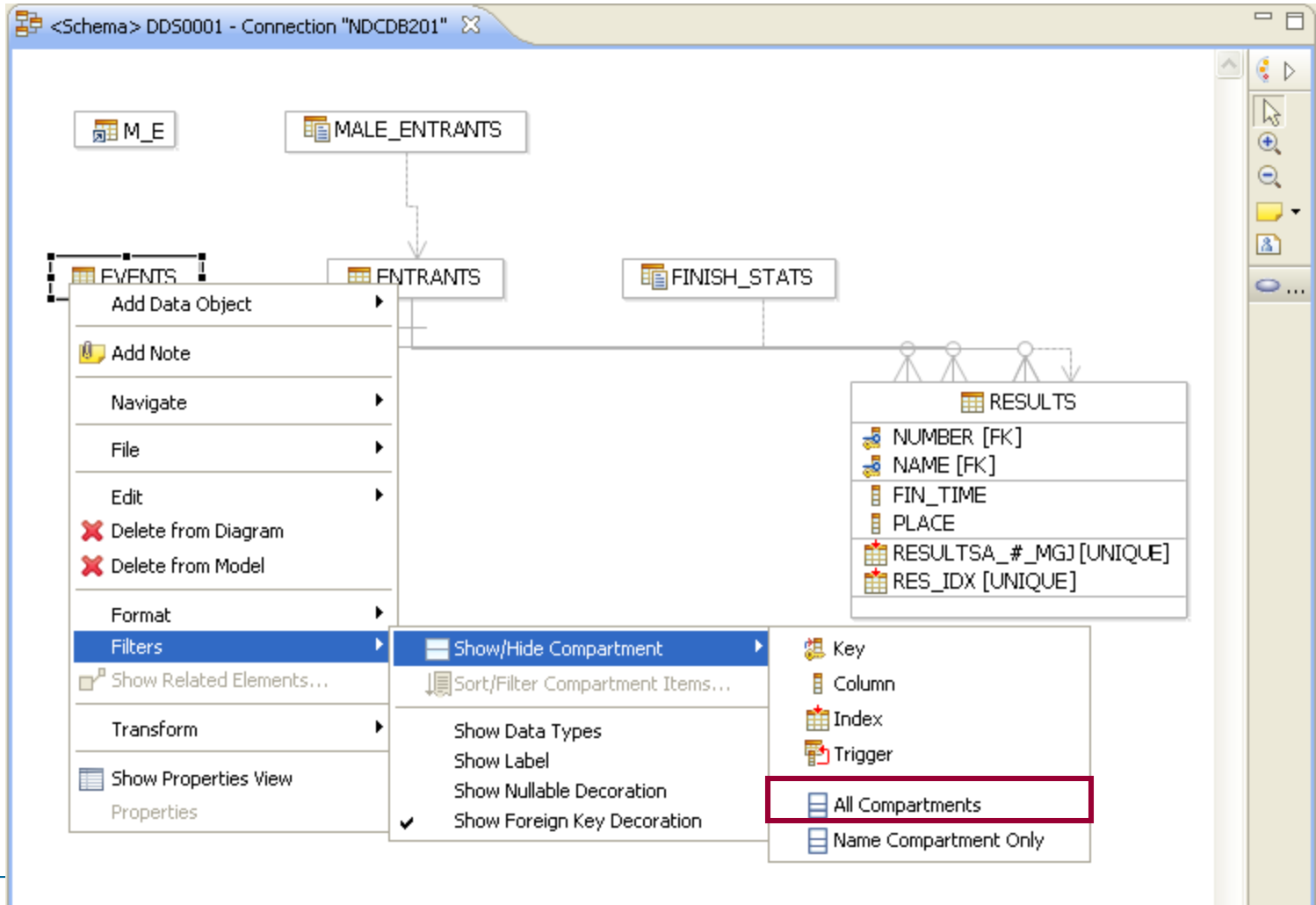


- **Notes:**
  - **If you select a large number of tables this diagram can take some time to materialize**
  - **To read the diagram shown here:**
    - **Each Entrant and Event can have many Result rows**
    - **Race_Report is a relational View based on the Results table**
    - **Local_Referrals is a relational View based on the Entrants table**

(Data Model) **Overview Diagram – 3 of 4**

By default, the Overview Diagram shows only DB2 object names and their relationships. You might wish to show additional attributes. To do this:

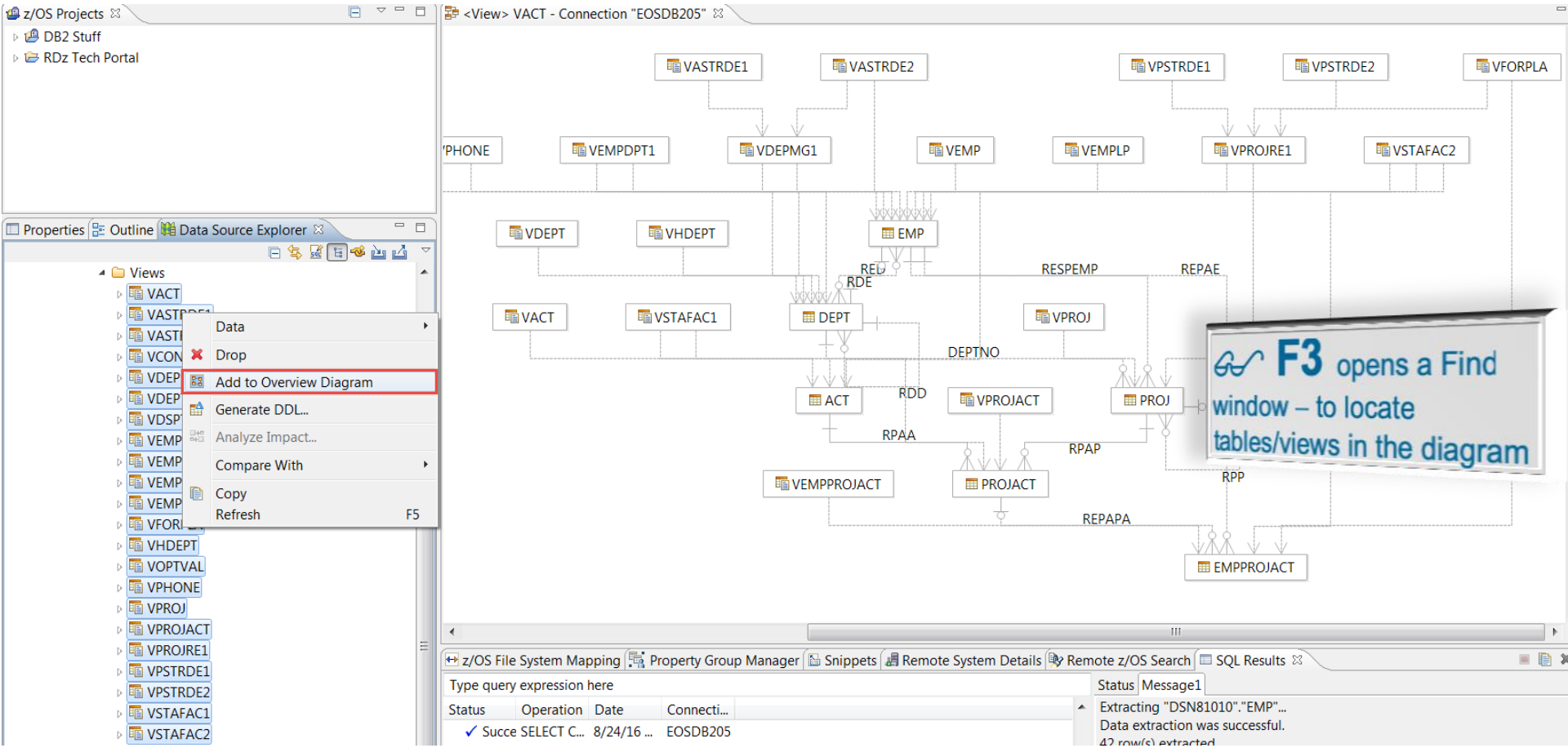
- Select the object
  - Right-click and select:
    - Filters > Show/Hide Compartment > <your option>



(Data Model) **Overview Diagram – Show View/Table Relationships – 4 of 4**

Sometimes you need to find out what base tables underlie a particular DB2 View…

- Select the View
  - Right-click and select: **Add to Overview Diagram**
  - Click **OK**



Generate Table DDL

You may wish to access/modify/etc. one or more of your DB2 table's DDL. To do this you'll need the original DDL – which is obtained from: Generate Table DDL

From the Data Source Explorer:

- **Right-click over the table name**
- Select: **Generate DDL…**
- Follow the wizard
  - **Check/Un-check selections**