SQL QUERY BUILDER Introduction

March 2009

What is the SQL Query Builder?

- The SQL Query Builder (SQB) is a component of the Data Tools Platform (DTP) SQL Development Tools project.
- The SQB is a software tool that allows end-users to create SQL queries using point-click-select and drag-drop gestures.
- The SQB supports full “round-trip” query editing by means of a built-in SQL parser and robust underlying SQL Query model.
- It's not a general-purpose SQL tool. The SQB assists with the creation of SQL DML (Data Manipulation Language) statements only. (That is, Select, Insert, Update, and Delete.)
- It can be used as-is in DTP, or it can be embedded as a component in an application or product.
- It’s flexible: it works both as an editor and as a dialog.

A Brief History

- The SQB first appeared in the IBM® WebSphere® Studio Application Developer v5 product in 2003.
- It was enhanced and included in the IBM Rational® Application Developer v6 product in 2005 and IBM Data Studio v1 product in 2007.
- IBM donated the SQB code to the DTP SQL Development Tools project in 2007 whereupon it became available with the DTP 1.6 (Ganymede) release.
- Since being donated to DTP, the SQB has been further modified and enhanced by Jeremy Lindop and Duncan Rigby of Sybase®.

What Project is it in ?

- Data Tools project:
  - Sql development tools
    - SQL editor
    - Visual SQL Builder
    - Results View
    - Script history
- Visual SQL Builder Introduction:
  - The SQL Query Builder is a component for visually editing SQL DML statements. It can be consumed by other UI components such as editors, dialogs and wizards. As input, it can accept .sql files created by the DTP SQL File Editor or it can accept SQL statements passed in the form of strings.
    - The SQL Query Builder is located in the datatools part of the Eclipse CVS repository

      Host: dev.eclipse.org

      Repository path: /cvsroot/datatools
    - The SQL Query Builder plugin is in

      org.eclipse.datatools.sqltools/plugins/org.eclipse.datatools.sqltools.sqlbuilder
    - There is also an examples plugin in

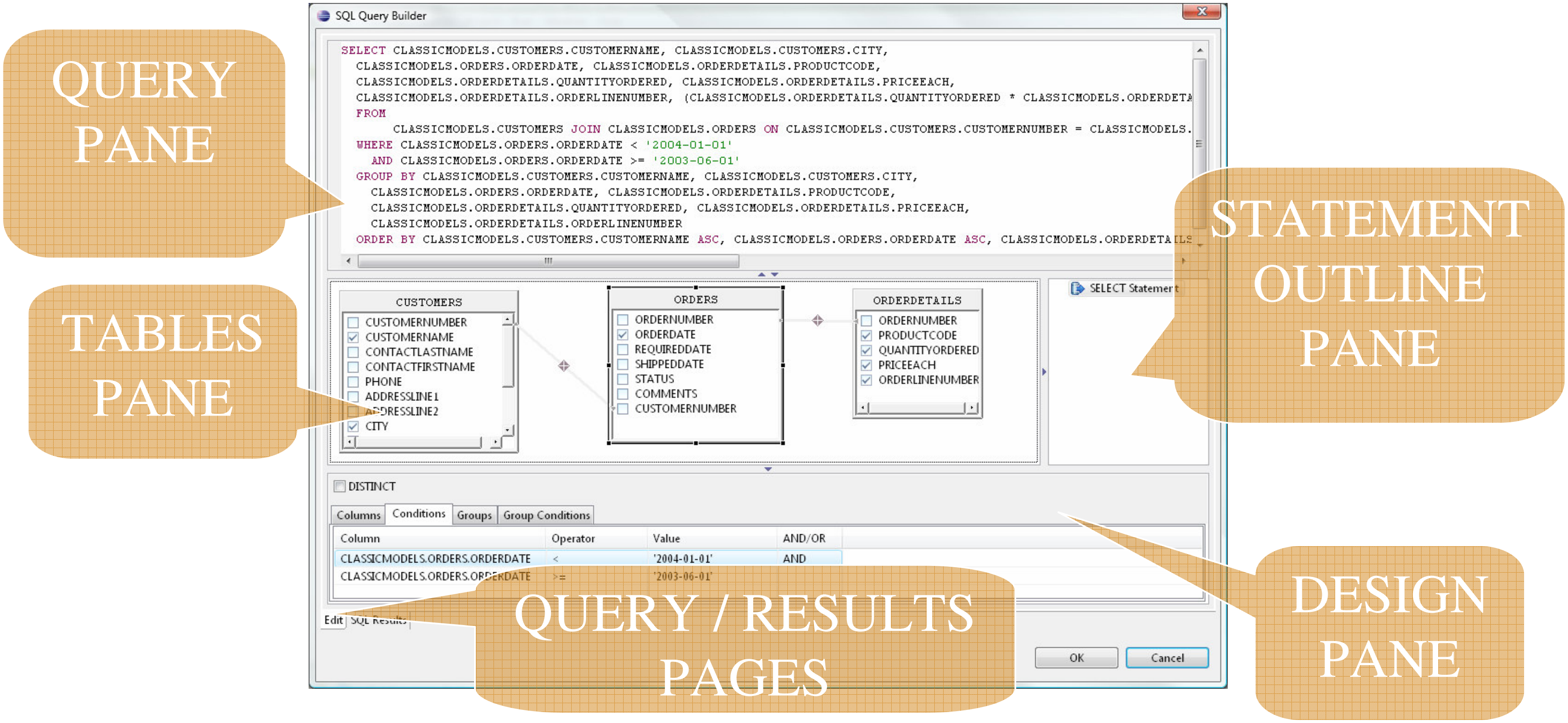
      org.eclipse.datatools.sqltools/examples/org.eclipse.datatools.sqltools.sqlbuilder.examples

SQL QUERY BUILDER

- Functional Requirements:
  - Create a SQL Statement.
  - Execute current SQL statement from within SQL Query Builder .
  - Visually edit/modify an existing SQL statement.
- UI Design Requirements:
  - Launch/integrate SQB in different places.
- Framework Requirements:
  - Designed so that adopters can enable it for their own database SQL, and such that their enablement work isn't invalidated by future work on the core SQB.

SQL QUERY BUILDER (SQB)

- What the SQL Query Builder is:
  - “All in one” panes & pages, textual editor and Graphical builder for the known database catalog supplied by the connected JDBC data source via a profile in the Data Tooling Project.



SQL Query Builder

```
SELECT CLASSICMODELS.CUSTOMERS.CUSTOMERNAME, CLASSICMODELS.CUSTOMERS.CITY,
  CLASSICMODELS.ORDERS.ORDERDATE, CLASSICMODELS.ORDERDETAILS.PRODUCTCODE,
  CLASSICMODELS.ORDERDETAILS.QUANTITYORDERED, CLASSICMODELS.ORDERDETAILS.PRICEEACH,
  CLASSICMODELS.ORDERDETAILS.ORDERLINENUMBER, (CLASSICMODELS.ORDERDETAILS.QUANTITYORDERED * CLASSICMODELS.ORDERDETA
  FROM
       CLASSICMODELS.CUSTOMERS JOIN CLASSICMODELS.ORDERS ON CLASSICMODELS.CUSTOMERS.CUSTOMERNUMBER = CLASSICMODELS.
  WHERE CLASSICMODELS.ORDERS.ORDERDATE < '2004-01-01'
    AND CLASSICMODELS.ORDERS.ORDERDATE >= '2003-06-01'
  GROUP BY CLASSICMODELS.CUSTOMERS.CUSTOMERNAME, CLASSICMODELS.CUSTOMERS.CITY,
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    CLASSICMODELS.ORDERDETAILS.ORDERLINENUMBER
  ORDER BY CLASSICMODELS.CUSTOMERS.CUSTOMERNAME ASC, CLASSICMODELS.ORDERS.ORDERDATE ASC, CLASSICMODELS.ORDERDETAILS
```

CUSTOMERS
- □ CUSTOMERNUMBER
- ☑ CUSTOMERNAME
- □ CONTACTLASTNAME
- □ CONTACTFIRSTNAME
- □ PHONE
- □ ADDRESSLINE1
- □ ADDRESSLINE2
- ☑ CITY

ORDERS
- □ ORDERNUMBER
- ☑ ORDERDATE
- □ REQUIREDDATE
- □ SHIPPEDDATE
- □ STATUS
- □ COMMENTS
- □ CUSTOMERNUMBER

ORDERDETAILS
- □ ORDERNUMBER
- ☑ PRODUCTCODE
- ☑ QUANTITYORDERED
- ☑ PRICEEACH
- ☑ ORDERLINENUMBER

SELECT Statement

□ DISTINCT

Columns | Conditions | Groups | Group Conditions

Column	Operator	Value	AND/OR
CLASSICMODELS.ORDERS.ORDERDATE	<	'2004-01-01'	AND
CLASSICMODELS.ORDERS.ORDERDATE	>=	'2003-06-01'	

QUERY PANE

TABLES PANE

STATEMENT OUTLINE PANE

DESIGN PANE

QUERY / RESULTS PAGES

SQL QUERY BUILDER (SQB)

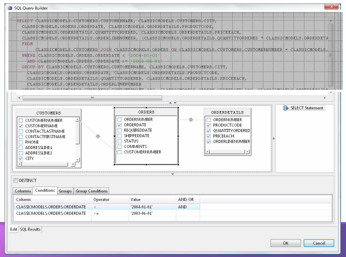
▪The SQL Query Builder benefits:

- Easy visual access to statement parts raising the level of abstraction, increasing developer productivity, and making query construction possible for a wider user base.
- Create, edit, or run SQL statements using the SQL Query Builder graphical interface, access to your database schema and objects so that you can quickly create or edit SQL statements without actually typing any SQL code, you also have the flexibility to add or modify the SQL code in the editor window.

SQL QUERY BUILDER (SQB)

SQL Query pane

- The SQL Query pane contains the source code of the SQL statement. You can type the SQL statement in this pane, or use the features that are provided by the SQL Query Builder to build the statement.
  - Content assist is available as you type and through the pop-up menu in the SQL Query pane. This pane also provides content tips through the pop-up menu.
  - Content tip shows a simple example for the type of statement that you are creating.
- If you modify the statement in this pane, the statement syntax is checked and the interface is updated when you switch the focus to another pane or to another view.



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  CLASSICMODELS.ORDERS.ORDERDATE, CLASSICMODELS.ORDERDETAILS.PRODUCTCODE,
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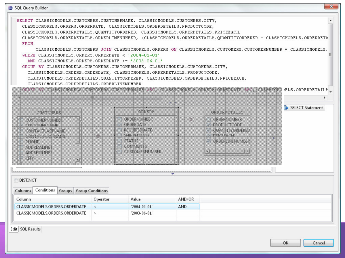
SQL QUERY BUILDER (SQB)

▪Tables Pane

- The Tables pane provides a graphical representation of the table references that are used in the statement.
- In this pane.
  - Add or remove a table.
  - Give a table an alias name.
  - Select or exclude columns from the table.
  - You can also define joins between tables in this pane (SELECT Statements).



SQL Query Builder

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☐ DISTINCT

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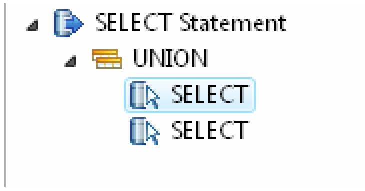
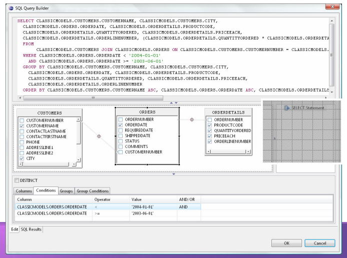
SQL QUERY BUILDER (SQB)

▪Outline Pane

- The Outline pane provides a tree representation of the statement. In this pane, you can select areas of the statement , then the Design,Query & Tables panes context changes to reflect the selected part.

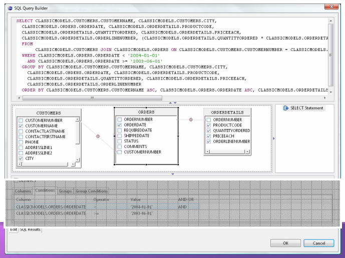




SQL QUERY BUILDER (SQB)

▪Design Pane:

- The options in the Design pane vary depending on the type of statement that you are using. When more than one set of options is available, the design options appear as tabbed notebook pages with cell editors.
- E.g. SELECT statement, some of the options include:
  - Selecting columns,
  - Creating conditions,
  - Creating groups, and
  - Creating group conditions.



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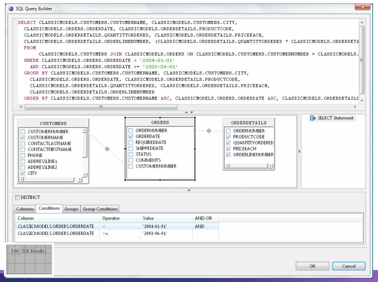
SQL QUERY BUILDER (SQB)

- **The Edit / Results Pages:**
  - Tabbed access to statement editing or the results of the executed statement.



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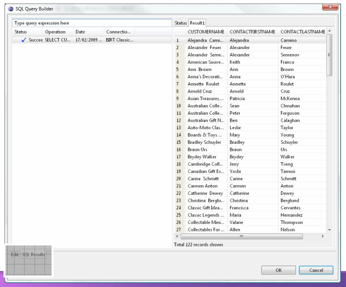


Type query expression here

Status	Operation	Date	Connectio...
✓ Succee	SELECT CU...	17/02/2009 ...	BIRT Classic...

	CUSTOMERNAME	CONTACTFIRSTNAME	CONTACTLASTNAME
1	Alejandra Cami...	Alejandra	Camino
2	Alexander Feuer	Alexander	Feuer
3	Alexander Seme...	Alexander	Semenov
4	American Souve...	Keith	Franco
5	Ann Brown	Ann	Brown
6	Anna's Decorati...	Anna	O'Hara
7	Annette Roulet	Annette	Roulet
8	Arnold Cruz	Arnold	Cruz
9	Asian Treasures,...	Patricia	McKenna
10	Australian Colle...	Sean	Clenahan
11	Australian Colle...	Peter	Ferguson
12	Australian Gift N...	Ben	Calaghan
13	Auto-Moto Clas...	Leslie	Taylor
14	Boards & Toys ...	Mary	Young
15	Bradley Schuyler	Bradley	Schuyler
16	Braun Urs	Braun	Urs
17	Brydey Walker	Brydey	Walker
18	Cambridge Coll...	Jerry	Tseng
19	Canadian Gift Ex...	Yoshi	Tamuri
20	Carine Schmitt	Carine	Schmitt
21	Carmen Anton	Carmen	Anton
22	Catherine Dewey	Catherine	Dewey
23	Christina Berglu...	Christina	Berglund
24	Classic Gift Idea...	Francisca	Cervantes
25	Classic Legends ...	Maria	Hernandez
26	Collectable Mini...	Valarie	Thompson
27	Collectables For ...	Allen	Nelson

Total 122 records shown

SQL QUERY BUILDER (SQB)

▪The SQL Query Builder features:

- Designed from the ground up for Extensibility.
- Embeddable in your own projects.
- Vendor neutrality.

JDBC

SYBASE

IBM

MySQL

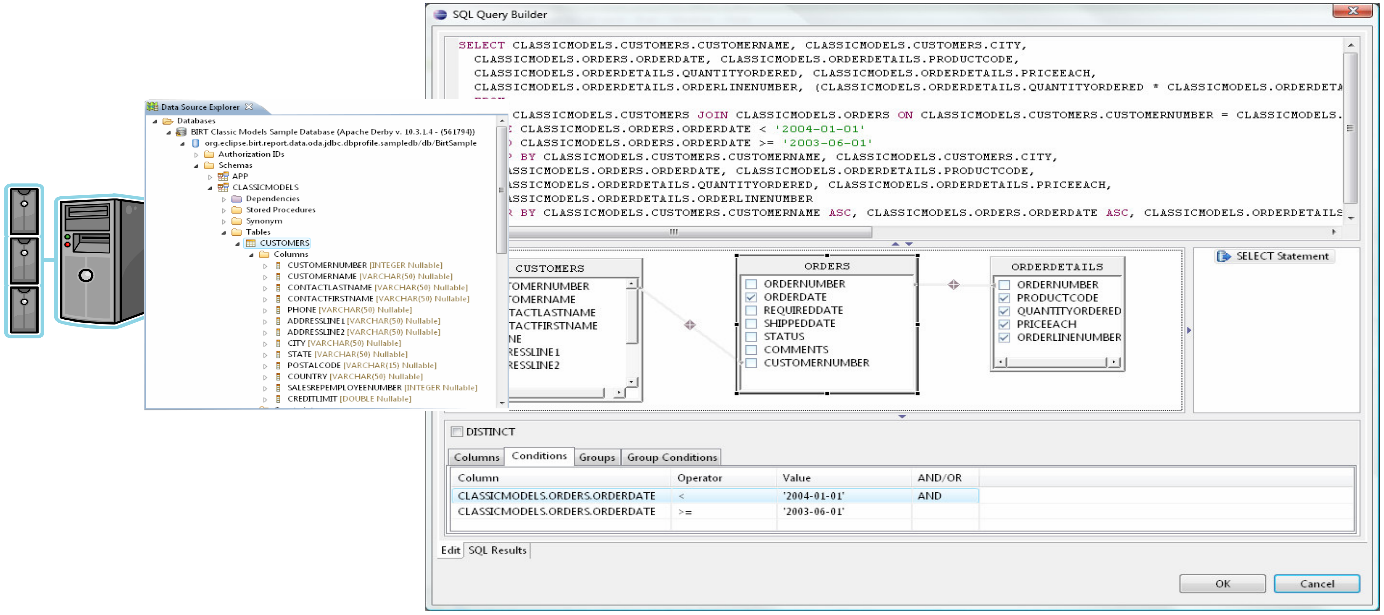
Apache Derby

Microsoft SQL Server

PostgreSQL

Informix

ORACLE



Data Source Explorer

```
Databases
  BIRT Classic Models Sample Database (Apache Derby v. 10.3.1.4 - (561794))
    org.eclipse.birt.report.data.oda.jdbc.dbprofile.sampledb/db/BirtSample
      Authorization IDs
      Schemas
        APP
        CLASSICMODELS
          Dependencies
          Stored Procedures
          Synonym
          Tables
            CUSTOMERS
              Columns
                CUSTOMERNUMBER [INTEGER Nullable]
                CUSTOMERNAME [VARCHAR(50) Nullable]
                CONTACTLASTNAME [VARCHAR(50) Nullable]
                CONTACTFIRSTNAME [VARCHAR(50) Nullable]
                PHONE [VARCHAR(50) Nullable]
                ADDRESSLINE1 [VARCHAR(50) Nullable]
                ADDRESSLINE2 [VARCHAR(50) Nullable]
                CITY [VARCHAR(50) Nullable]
                STATE [VARCHAR(50) Nullable]
                POSTALCODE [VARCHAR(15) Nullable]
                COUNTRY [VARCHAR(50) Nullable]
                SALESREPEMPLOYEENUMBER [INTEGER Nullable]
                CREDITLIMIT [DOUBLE Nullable]
```

SQL Query Builder

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☐ DISTINCT

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SQB “Ad Hoc” usage

- Tool for query building.
  - Create, edit, or run SQL statements using the SQL Query Builder graphical interface, which provides access to your database schema and objects so that you can quickly create or edit SQL statements without actually typing any SQL code.
  - You also have the flexibility to add or modify the SQL code in the editor window.

SQB "Ad Hoc" Demo

SQB embedded in BIRT usage

- **Business Intelligence and Reporting Tools**
  - BIRT is an open source Eclipse-based reporting system that integrates with your Java/J2EE application to produce compelling reports.
- Embeds SQB as an Open Data Access editor page in BIRT Data Set Editor dialog
- Preserves the SQB State to resume editing sessions
- Persists edited SQL Query in BIRT report designs
- Exposes SQL Parameter Markers as Data Set Parameters, This is BIRT Adopted feature supported in the UI.

SQB Embedded in BIRT

- The SQL Query Builder is located in the datatools part of the Eclipse CVS repository

  Host: dev.eclipse.org

  Repository path: /cvsroot/datatools

- The SQL Query Builder plugin is

  org.eclipse.datatools.sqltools/plugins/org.eclipse.datatools.sqltools.sqlbuilder

- There is also an examples plugin is

  org.eclipse.datatools.sqltools/examples/org.eclipse.datatools.sqltools.sqlbuilder.examples

- ALL IN ONE BIRT Download (latest Release)

  http://download.eclipse.org/birt/downloads/build_list.php