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Application Development With Data Studio

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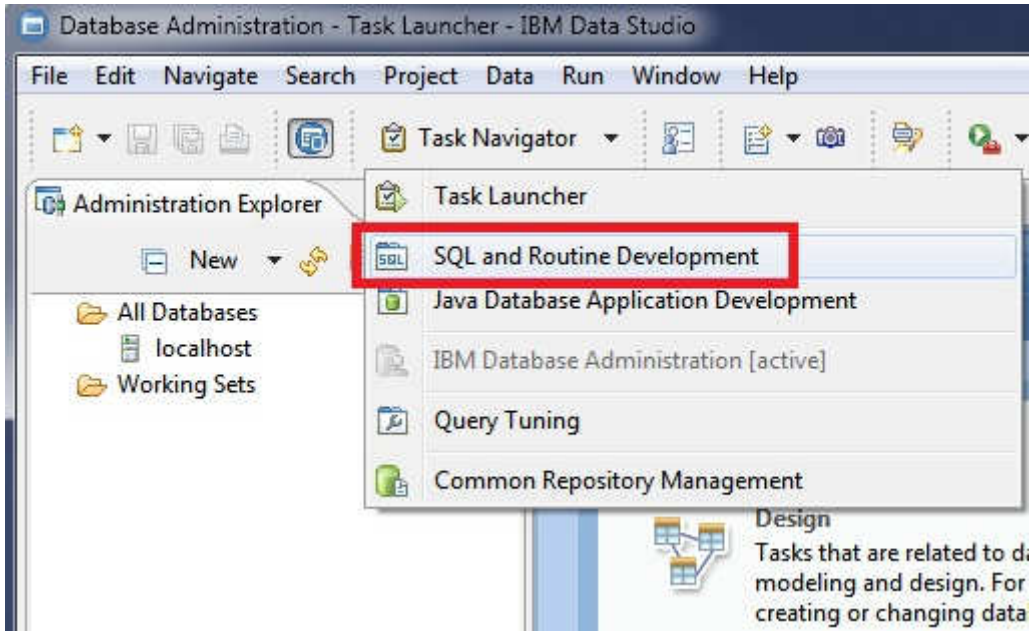
SHARE in San Francisco 2013

Developing Application

- Application Development
  - Stored Procedures
  - Java Applications
- Query Tuner Integration
  - SQL Formatting
  - Query Tuner Invocation in Context

Developing Stored Procedures

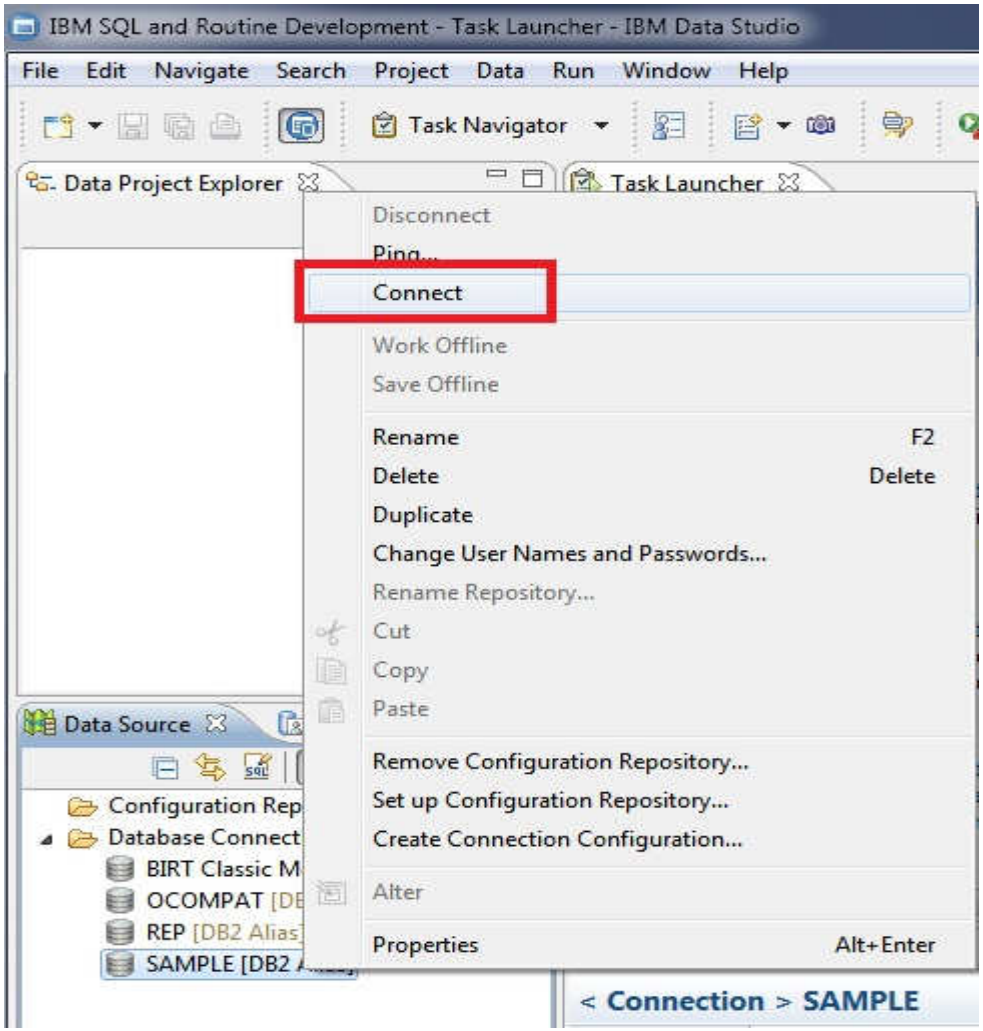
Launch Data Studio and switch to Routine Development



- Data Studio has different perspectives for developers and administrators

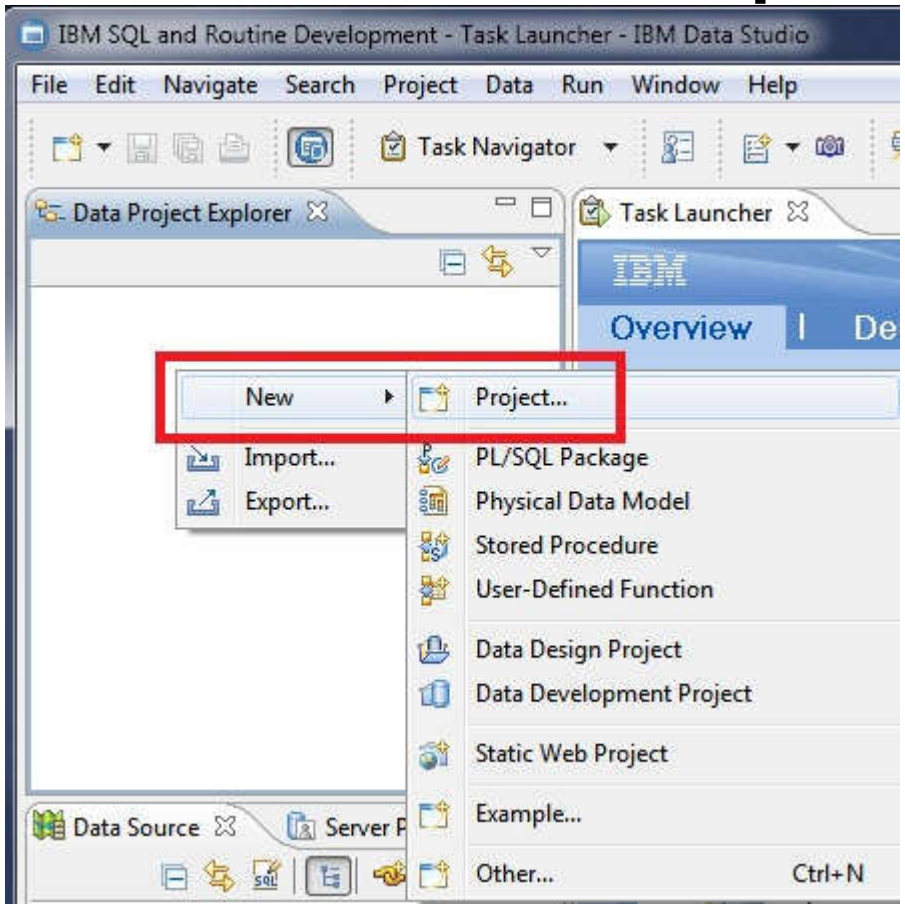
- Switching to Routine Development perspective gives you the views necessary for routine development

Connect to the database



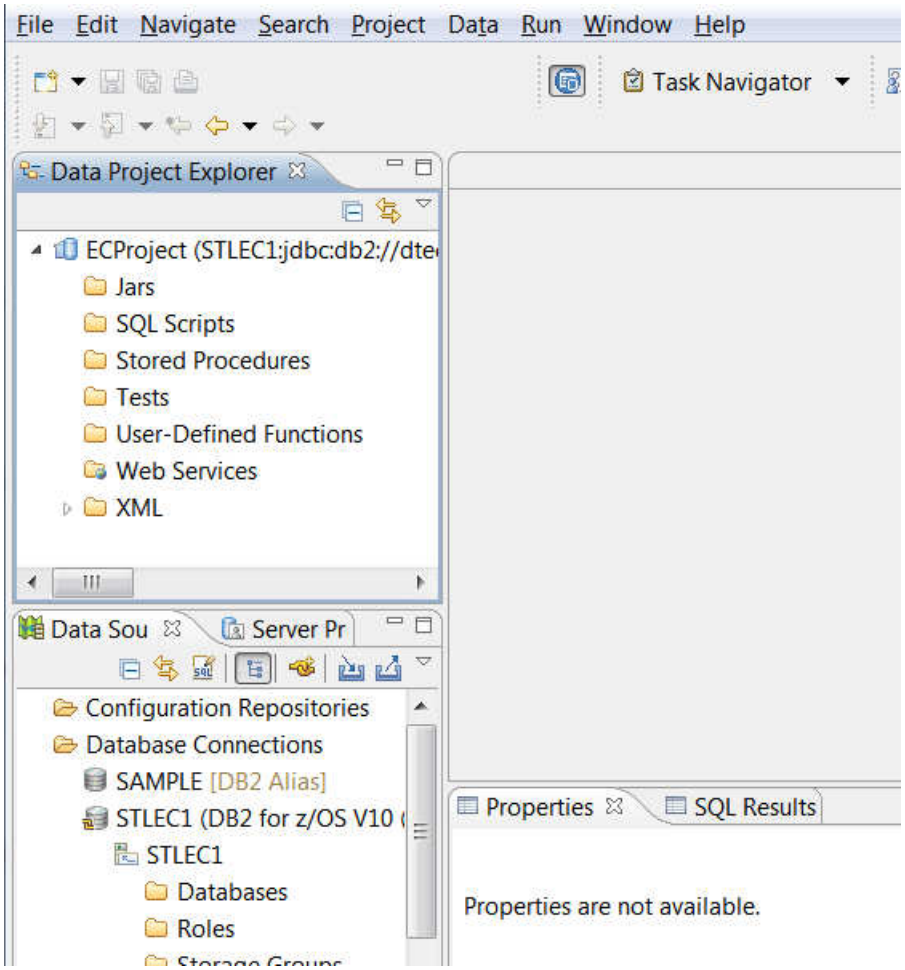
- Connecting to the database allows Data Studio to detect the version of the database
- Data Studio uses the database version in the connection profile to determine the capability of the database
- A database alias does not contain version information unless it has been used to connect to the database at least once

Create a Data Development Project



- Create a Data Development Project to hold your source
- Users can also edit/run/debug existing routines from Data Source Explorer or Administration Explorer in Data Studio
- Create a project if you want to keep track of your routines without a connection or you want source control integration

Data Development Project for DB2 Z



- Data Development Project has different folders depending on database platforms

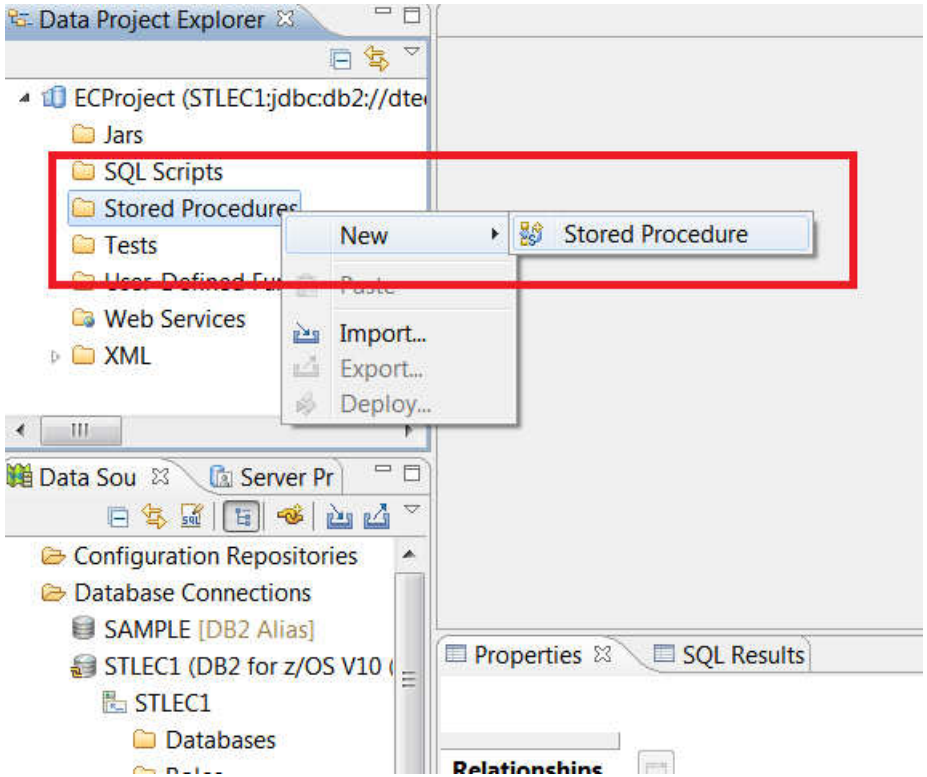
Data Development Project Folders

- Jars
  - Deploy Jar to DB2
- SQL Scripts
  - Develop SQLs using Query builder or Query editor
- Stored Procedures
  - Develop and Debug Stored Procedures
- Tests
  - Develop regression test cases for routines

Data Development Project (contd)

- User-Defined Functions
  - Develop and Debug User-Defined Functions
- Web Services
  - Create Web Services wrapper for routines or SQL Scripts
- XML
  - Edit and deploy XML Schema

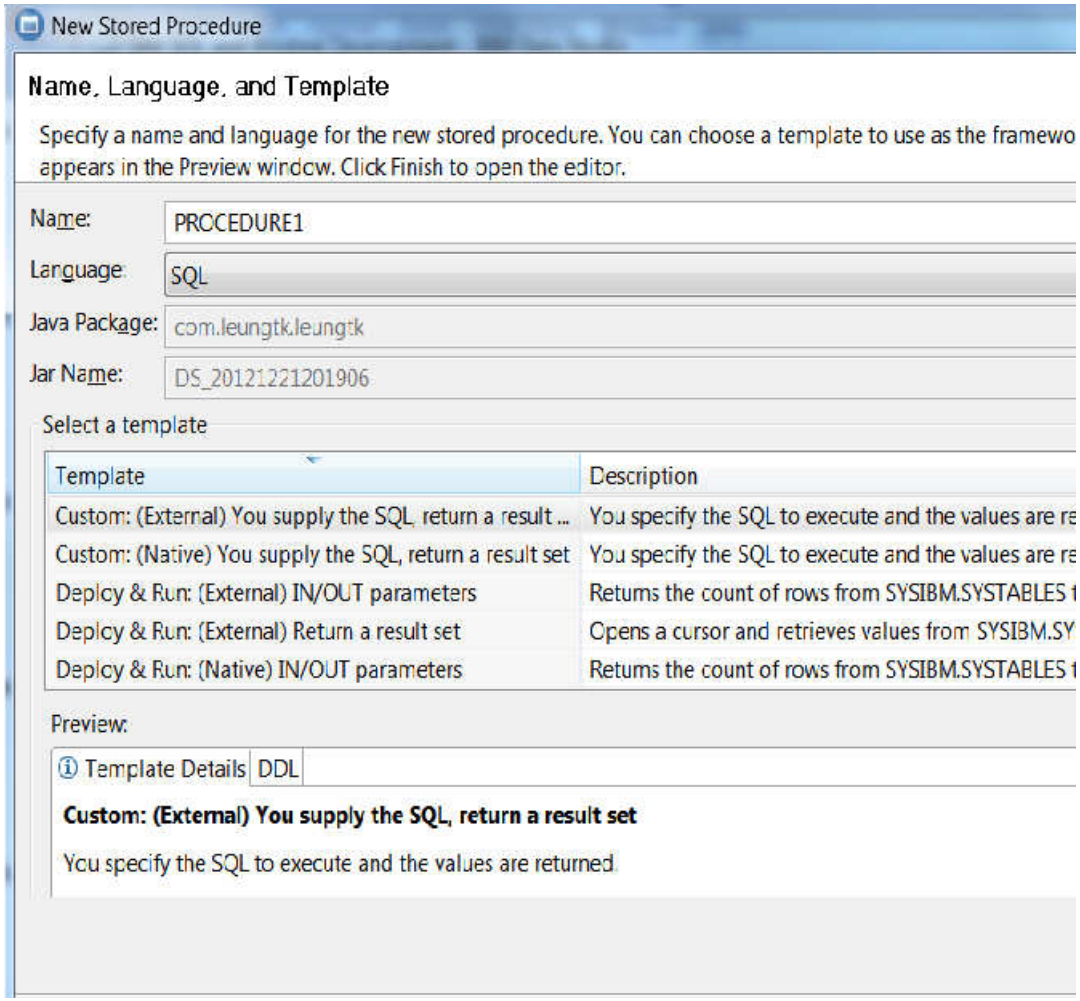
Create new Stored Procedure



Data Studio groups routines according to their types

- Stored Procedures
- User-Defined Functions
- SQL Scripts

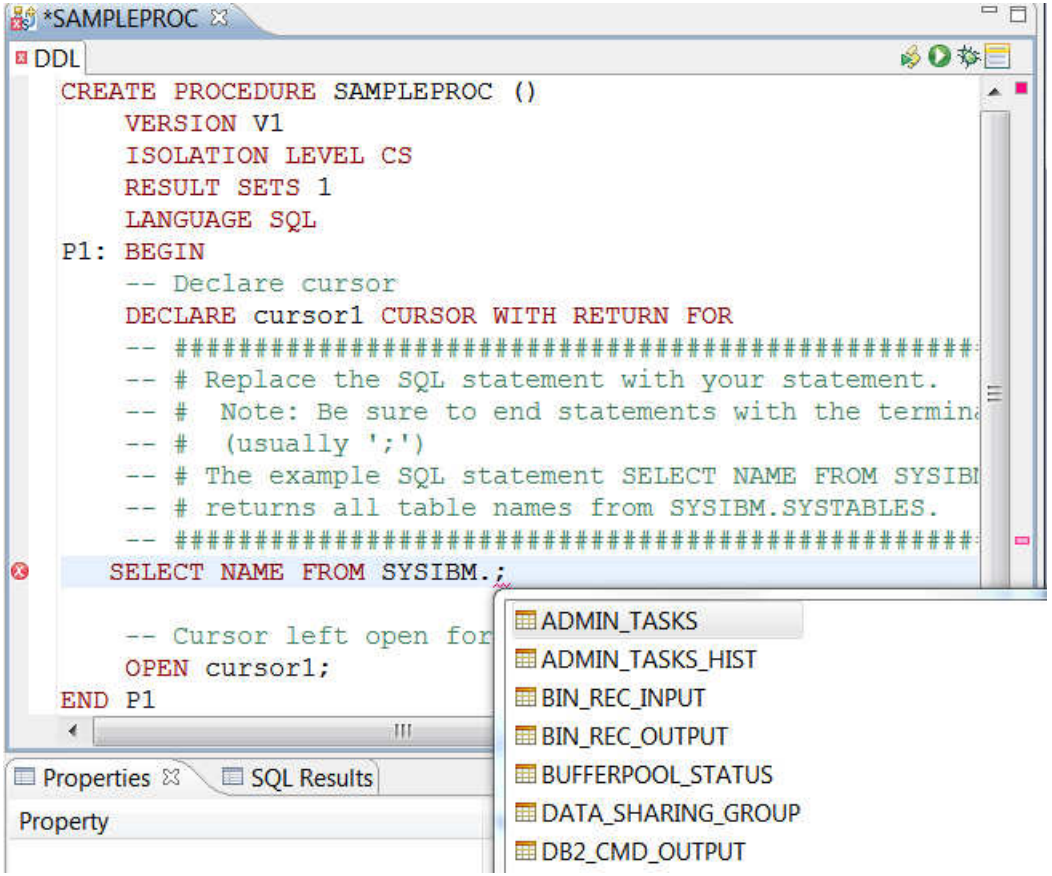
Create Routines from Templates



- Users can define their own templates according to database platforms and routine types

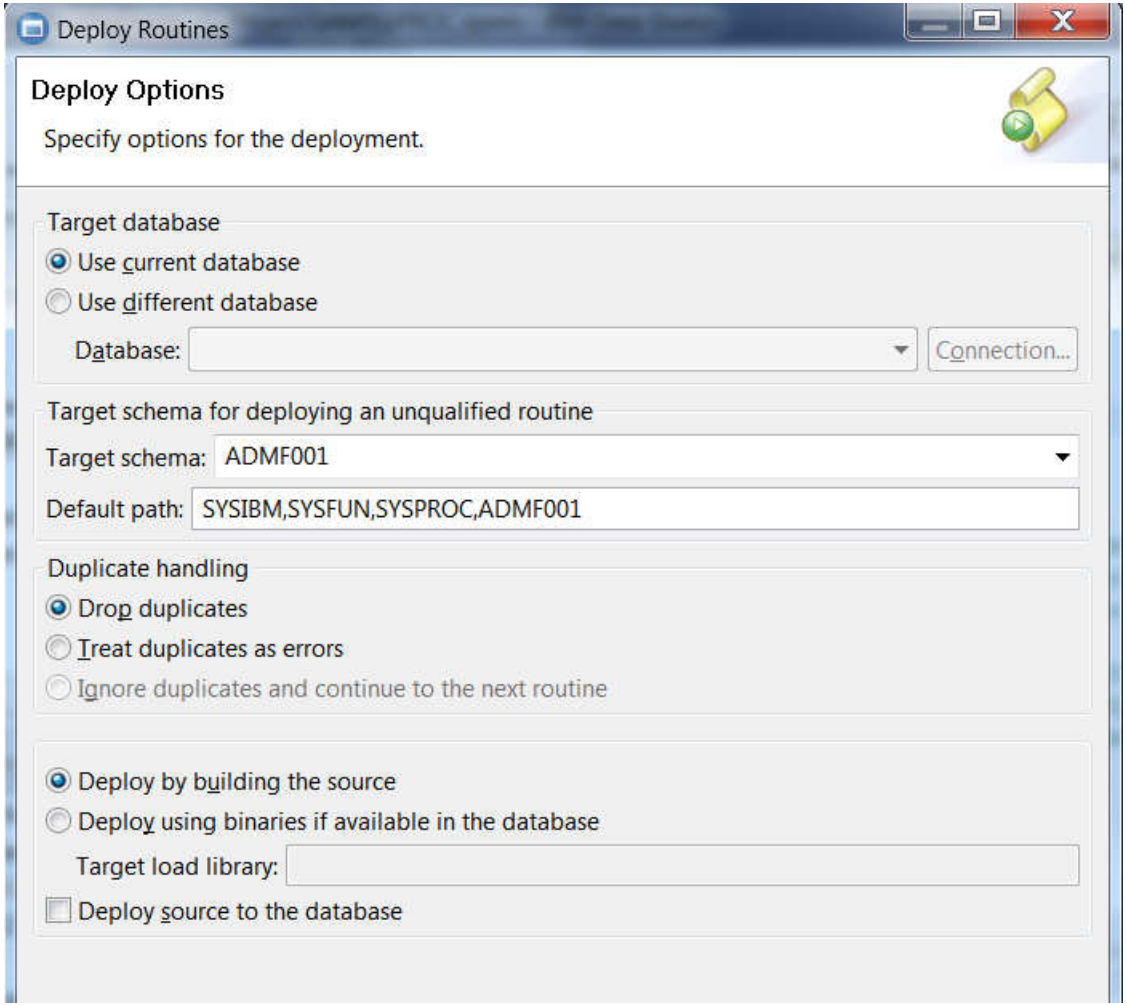
- Templates can be used to provide coding standards and hints/tips for developers when creating routines from scratch

Routine Editor



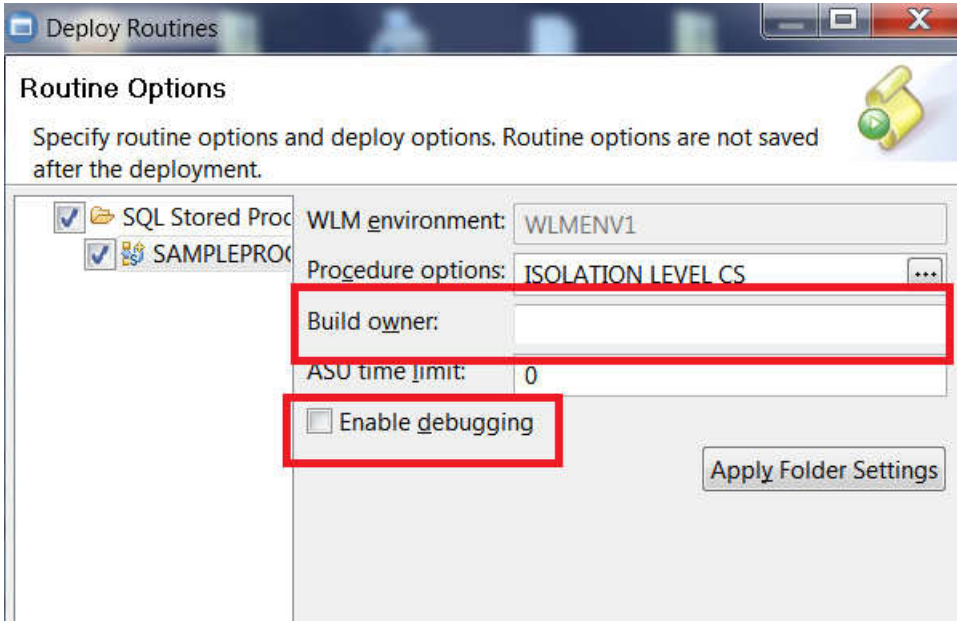
- Provides syntax check on SQL statements
- Provides content assist to complete SQL Object references

Deploy Routine to Server



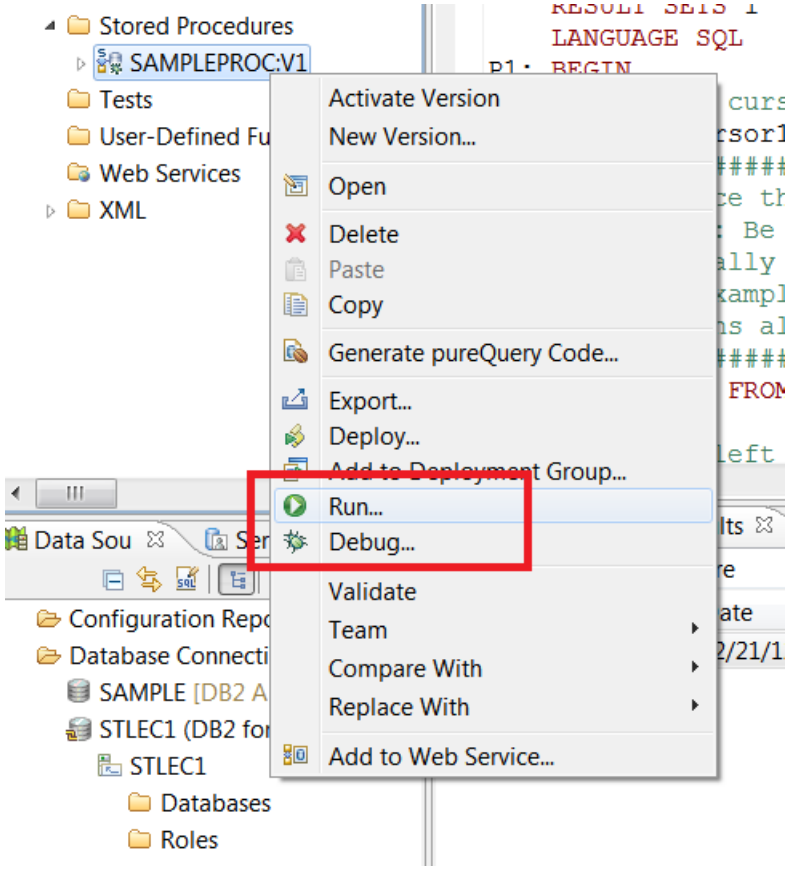
- Automatically generate Alter routine statements if routine already exists on server

Support for setting CURRENT SQLID



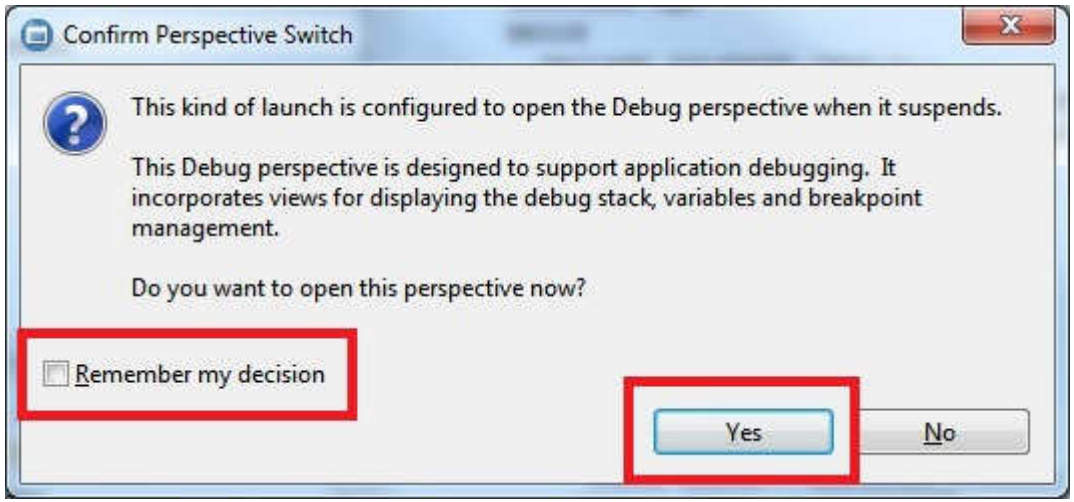
- Ability to set current sqlid during routine creation
- Ability to compile routine in Debug mode

Run or Debug



- Use popup menu on the routine to run or debug the routine

Launch the Debugger



- Remember to switch to the debug perspective

  If you do not switch perspective, the debug views may be hidden

Developing Java Stored Procedure

Edit DDL and Java Source

SELECPROC

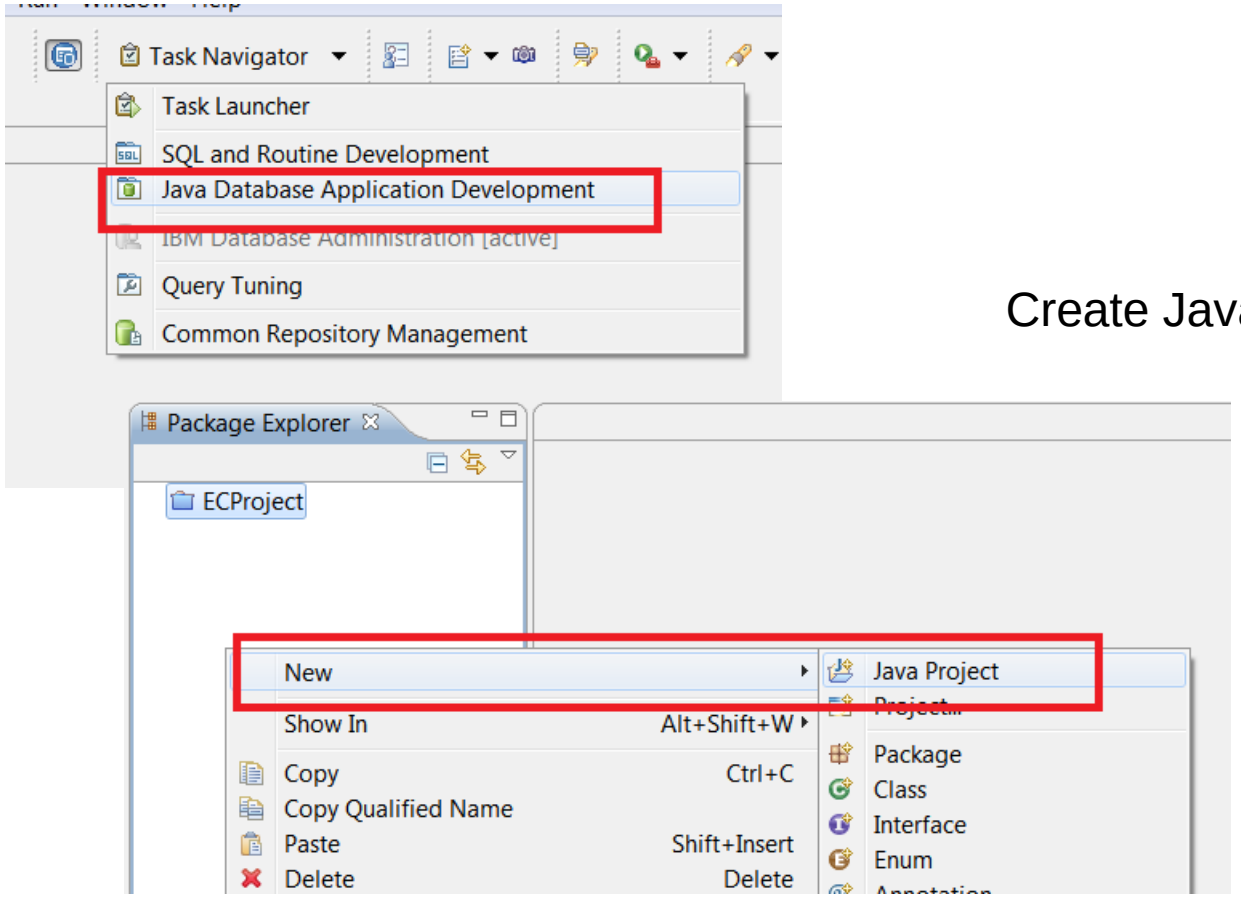
DDL | Java

```
CREATE PROCEDURE SELECPROC (  )
    RESULT SETS 1
    EXTERNAL NAME 'DS_20130204152508:com.leungtk.
    LANGUAGE Java
    PARAMETER STYLE JAVA
    NOT DETERMINISTIC
    COLLID DSNJDBC
    WLM ENVIRONMENT WLMENVJU
```

- Developer and edit both the DDL and the Java Source concurrently
- Routine Editor checks for consistency between Java source and DDL

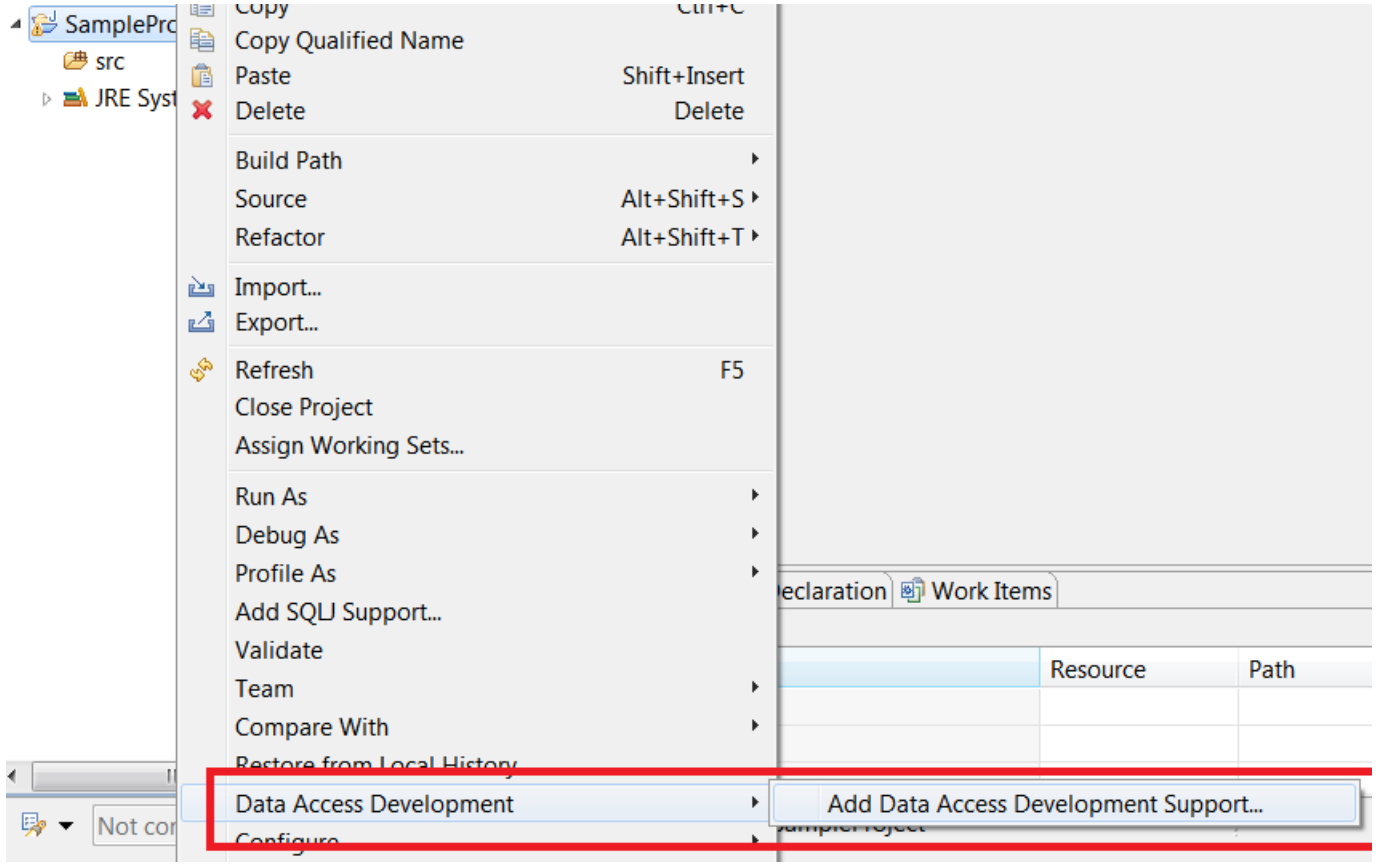
Developing Java Applications

Switch to Java Perspective

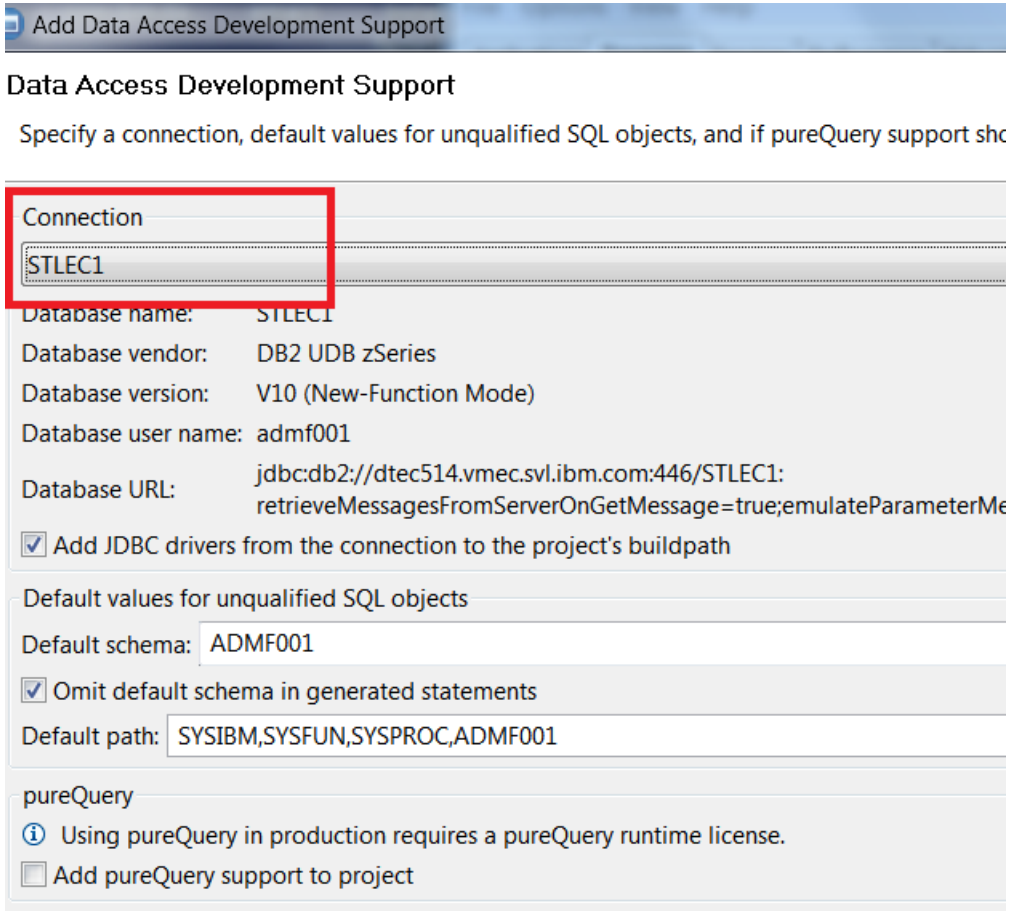


Create Java project

Add Data Access Development Support



Data Access Development Support

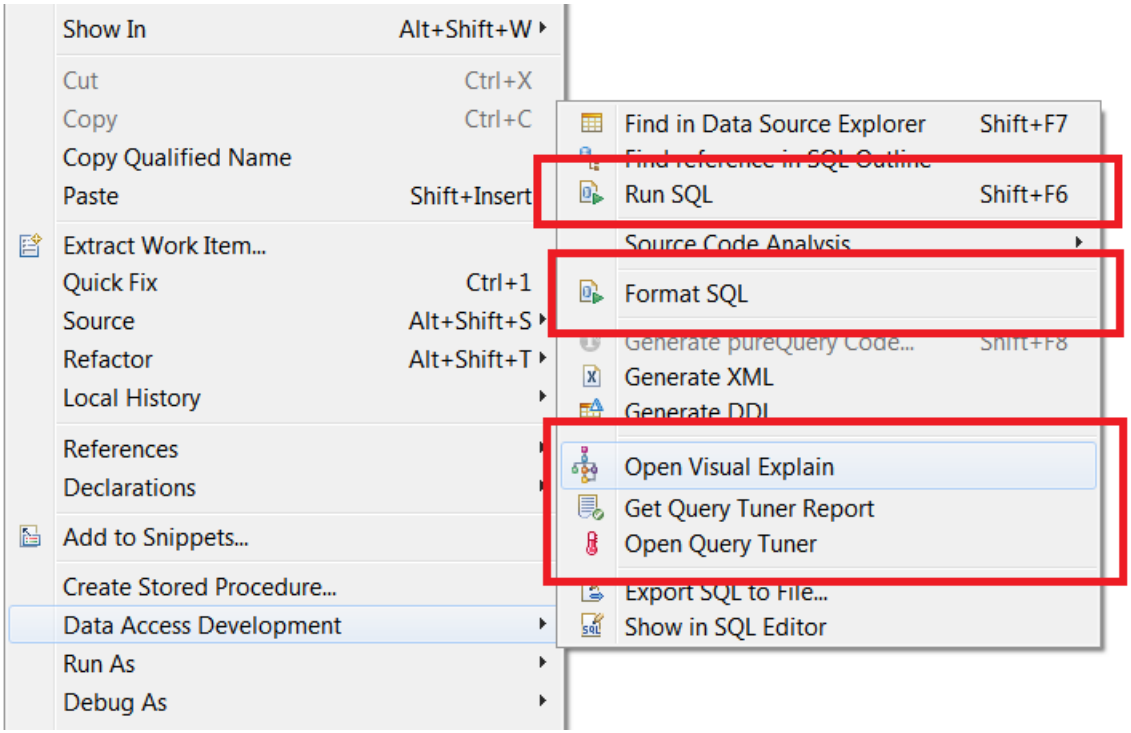


- Specify connection used for SQL Content Assist and Syntax checks

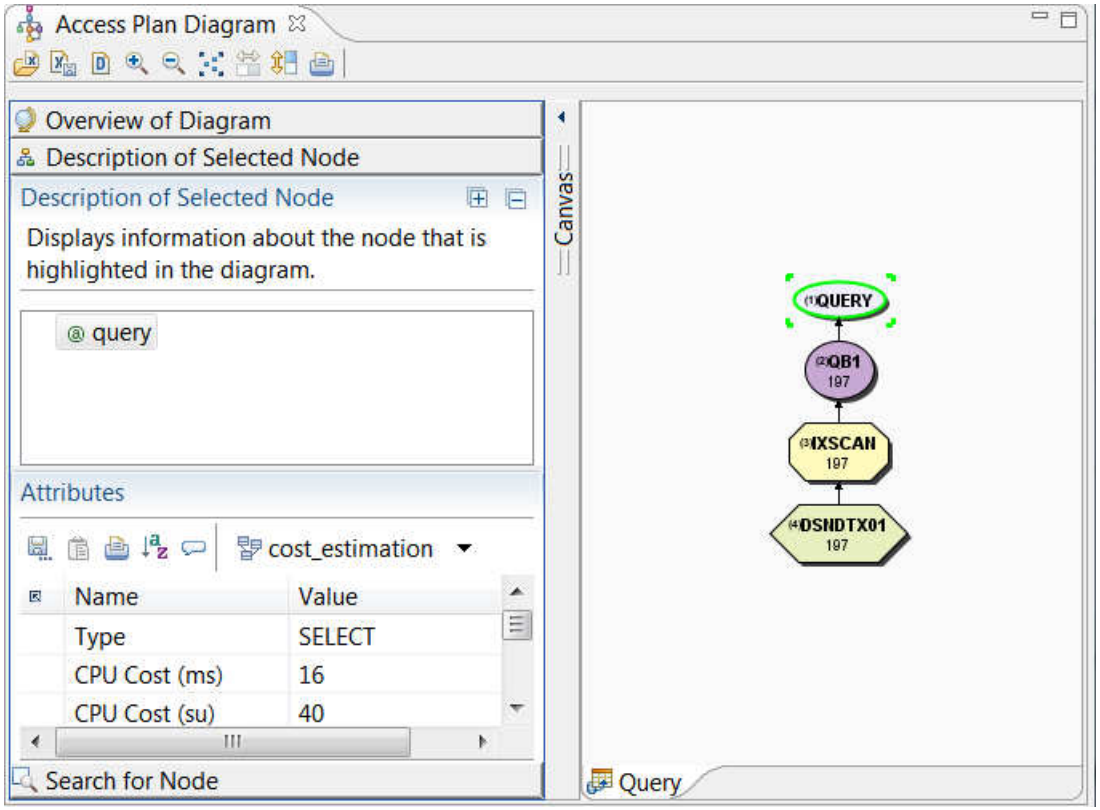
Syntax and Table Reference Validation

```
public class JDBCSample {

    private static void run1(Connection connection) throws SQLExcept
        // show non-variable SQL
        Statement statement = connection.createStatement();
        ResultSet resultSet =
Unable to find table "DUMMYTABLE".uteQuery("SELECT DEPTNO FROM DUMMYTABLE");
        while (resultSet.next());
        resultSet.close();
    }
```

Popup for Highlighted SQL

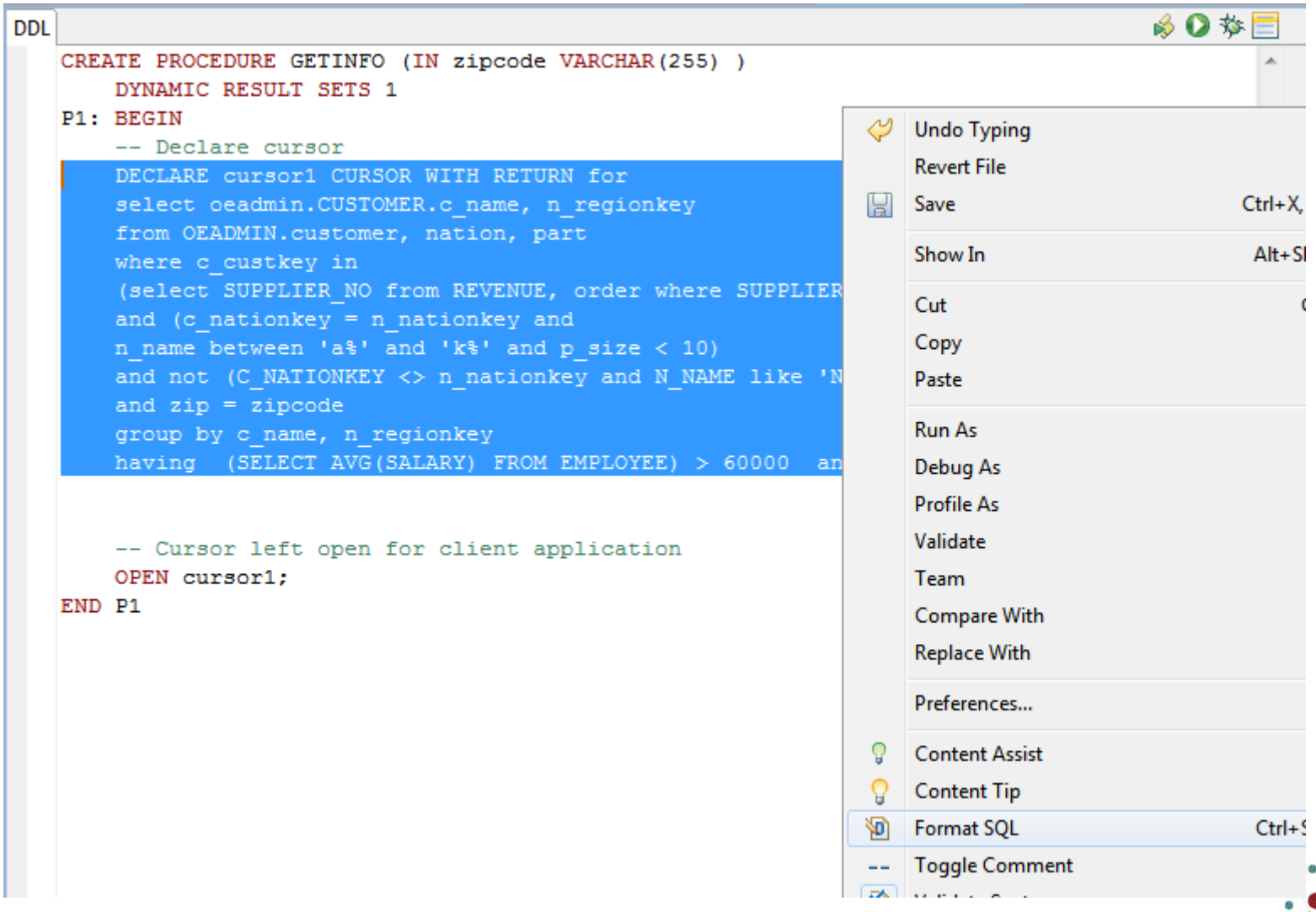


Visualize Access Plan from SQL



Query Workload Tuner Integration

SQL Formatter Integration

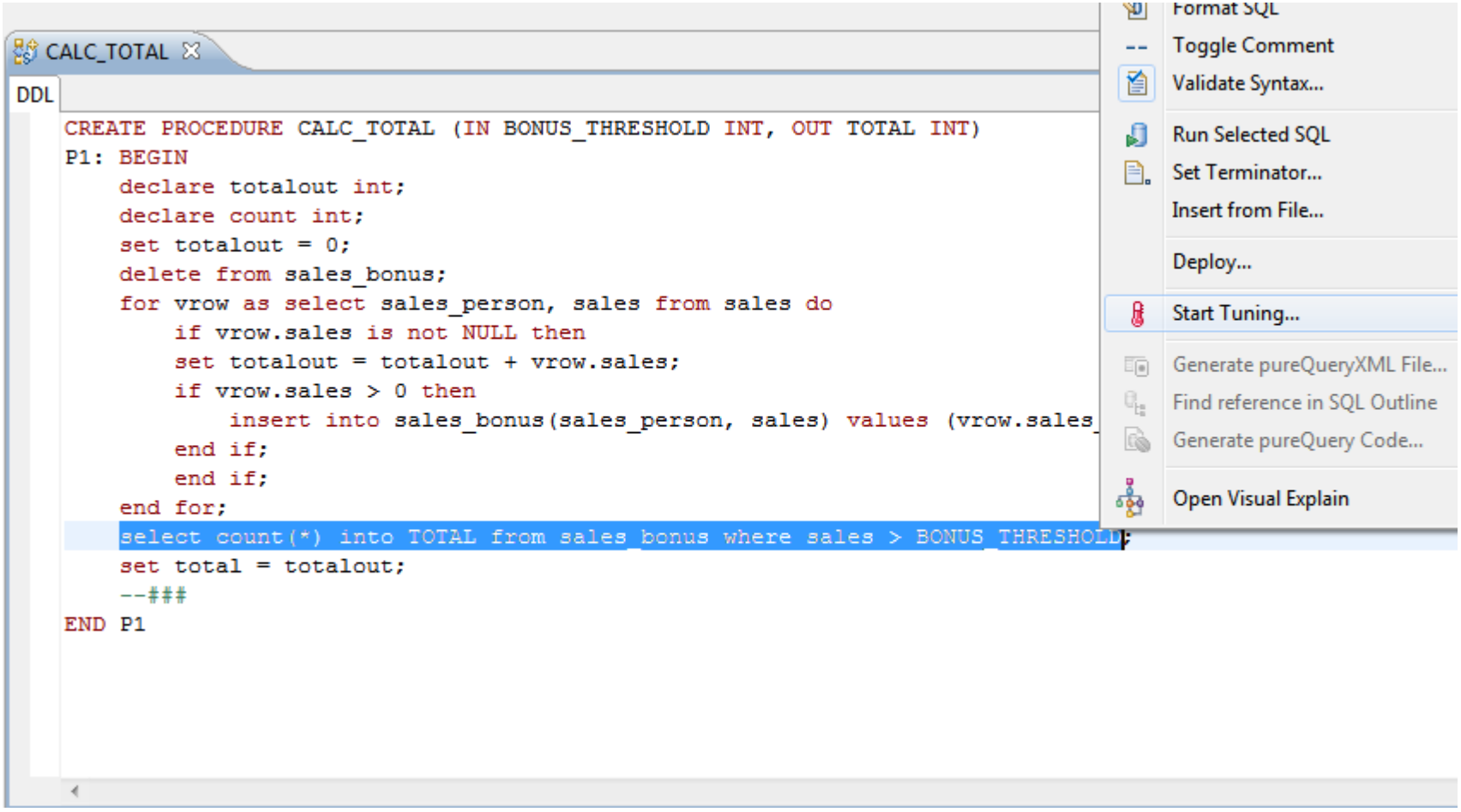


Formatted SQL

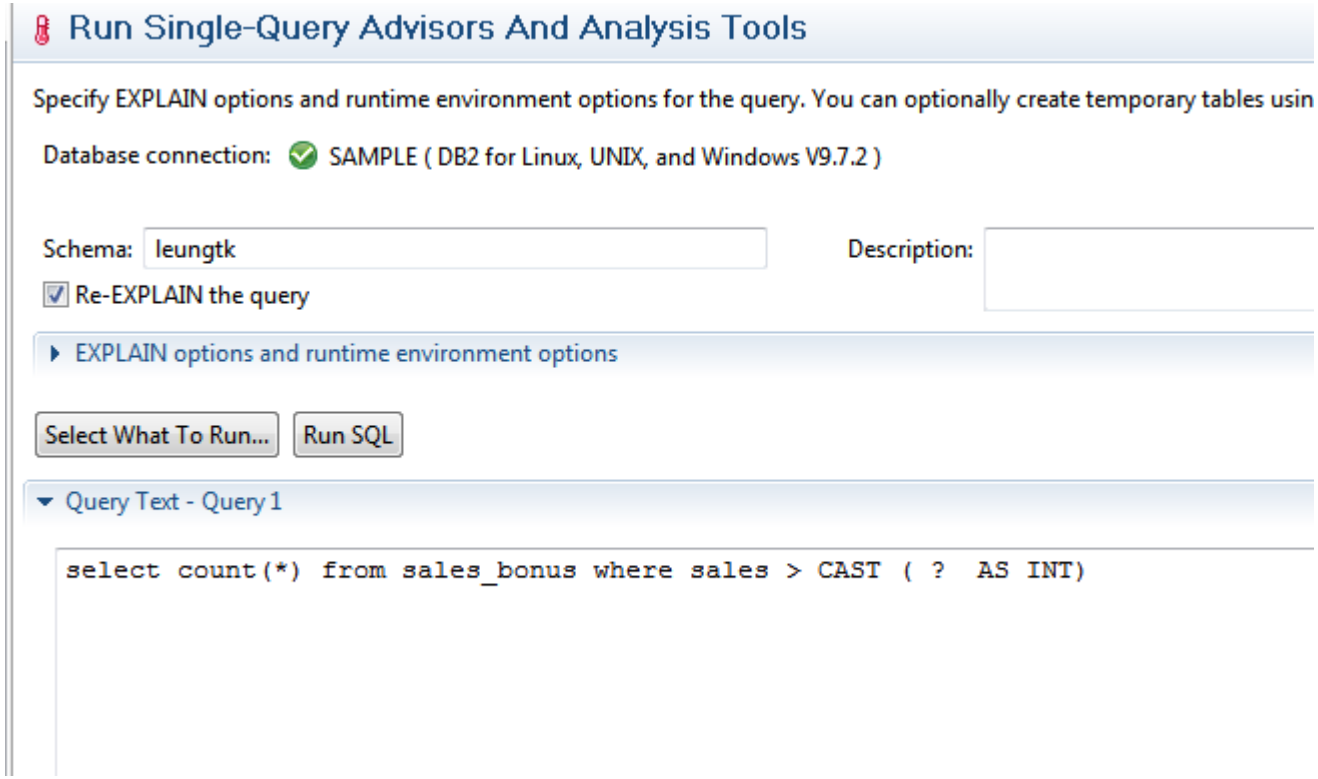
DDL

```
CREATE PROCEDURE GETINFO (IN zipcode VARCHAR(255) )
    DYNAMIC RESULT SETS 1
P1: BEGIN
    -- Declare cursor
    DECLARE cursor1 CURSOR WITH RETURN for
    SELECT OEADMIN.CUSTOMER.C_NAME
       , OEADMIN.NATION.N_REGIONKEY
    FROM OEADMIN.CUSTOMER
     , OEADMIN.NATION
     , OEADMIN.PART
    WHERE OEADMIN.CUSTOMER.C_CUSTKEY IN (
                                        SELECT OEADMIN.REVENUE.SUPPLIER_NO
                                        FROM OEADMIN.REVENUE
                                             , OEADMIN.ORDER
                                        WHERE OEADMIN.REVENUE.SUPPLIER_NO = OEADMIN.ORDER.(
                                              AND OEADMIN.REVENUE.TOTAL_REVENUE IN (10, 5)
                                       )
      AND OEADMIN.CUSTOMER.C_NATIONKEY = OEADMIN.NATION.N_NATIONKEY
      AND OEADMIN.NATION.N_NAME BETWEEN 'a%' AND 'k%'
      AND OEADMIN.PART.P_SIZE < 10
      AND ( OEADMIN.CUSTOMER.C_NATIONKEY = OEADMIN.NATION.N_NATIONKEY
          OR OEADMIN.NATION.N_NAME NOT LIKE 'NA'
          )
      AND ZIP = ZIPCODE
    GROUP BY OEADMIN.CUSTOMER.C_NAME,
        OEADMIN.NATION.N_REGIONKEY
    HAVING ( SELECT AVG(OEADMIN.EMPLOYEE.SALARY)
         FROM OEADMIN.EMPLOYEE
       ) > 60000
       AND OEADMIN.NATION.N_REGIONKEY IN (1, 6);



    -- Cursor left open for client application
    OPEN cursor1;
END P1
```

Routine Editor to Query Tuner



Query Transformed and Transferred to Query Tuner



Resources

- IBM Data Studio Overview
  http://www.ibm.com/software/products/us/en/data-studio

- Support Page with links to forums and documentation
  http://www.ibm.com/developerworks/downloads/im/data/support.html

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