

# Judd Solutions

Development, Mentoring and Training



Interacting with  
relational databases  
using WST

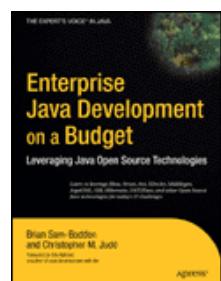
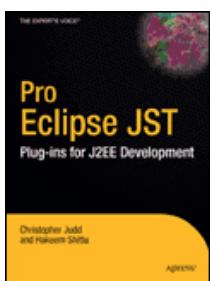
Christopher M. Judd

President/Consultant  
Judd Solutions, LLC



Christopher M. Judd

Available  
Sept 14, 2005



Bearable  
Moments

Illustrated by Dale Herron



Available  
Dec 1, 2005

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## House Keeping

- 404 - Developing Web Services with the WTP
  - Tuesday 3:30 pm – 5:00 pm
  - Chris Judd
- 501 – Developing Enterprise JavaBeans with JST
  - Wednesday 9:15 am – 10:45 am
  - Chris Judd
- 701 - Building With the Data Tools Project
  - Wednesday 2:00 pm – 3:30 pm
  - Der-Ping Chou and John Graham

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## Agenda

- WTP Overview
- RDB Overview
- Apache Derby Database
- Using RDB
- Conclusion

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## Web Tools Platform Project (WTP)

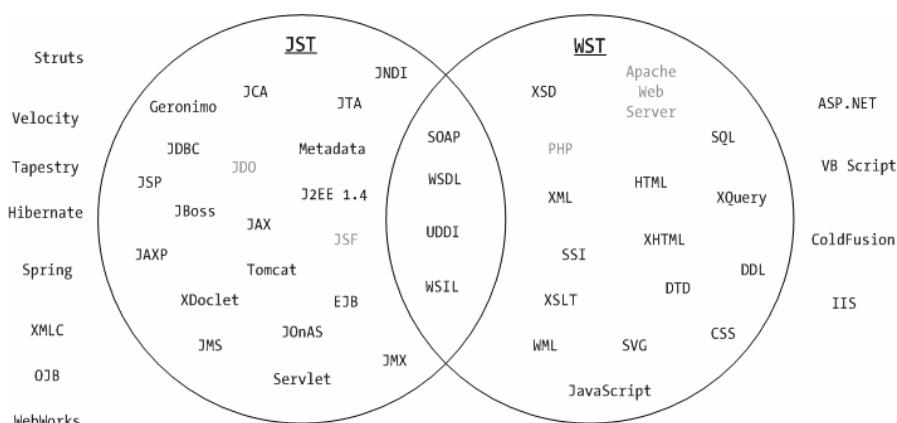
- Top Level Eclipse Project
  - [www.eclipse.com/webtools/](http://www.eclipse.com/webtools/)
  - Development tools for web development
    - No runtime dependencies
    - Vendor extensible
  - Subprojects
    - Web Standard Tools (WST)
    - J2EE Standard Tools (JST)
  - Version 0.7 was released August 2, 2005.
  - Dependencies
    - Eclipse 3.1
    - Eclipse Modeling Framework (EMF) 2.1.0
    - Graphic Editor Framework (GEF) 3.1
    - Java EMF Model (JEM) 1.1

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WTP Scope



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## WTP Installation Options

- All-in-one
  - Eclipse 3.1
  - Eclipse Modeling Framework (EMF) 2.1.0
  - Graphic Editor Framework (GEF) 3.1
  - Java EMF Model (JEM) 1.1
- Update Manager
  - Eclipse.org update site
- Piecemeal

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## RDB Overview

- JDBC based database explorer and editor
- Execute SQL and DDL
- View database elements
- View and modify result sets
- Import/Export
- Not complete
- Future Eclipse Data Tools Platform (DTP)

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## RDB Features

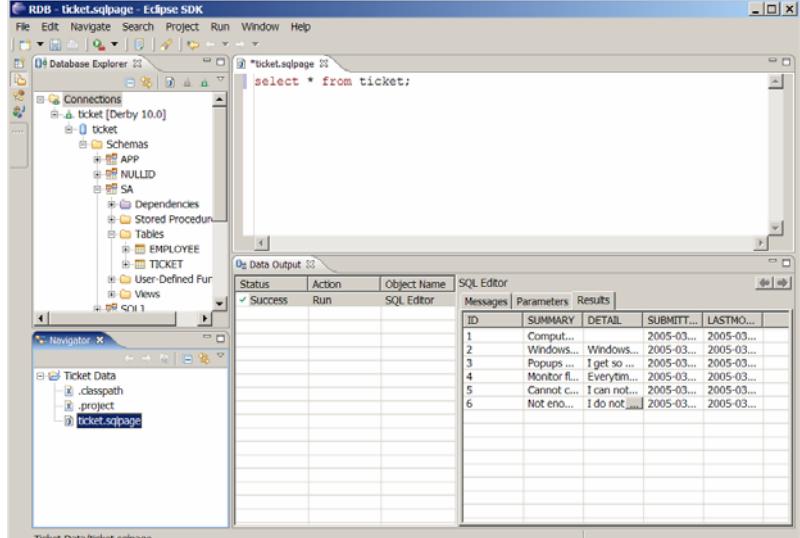
- Perspective
  - none
- Views
  - Database Explorer
  - Data Output
- Editors
  - SQL Editor
- Wizards
  - SQL Scrapbook Page

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## RDB Perspective



The screenshot shows the Eclipse RDB perspective. At the top, there's a toolbar with File, Edit, Navigate, Search, Project, Run, Window, Help. Below the toolbar is a menu bar with File, Edit, Navigate, Search, Project, Run, Window, Help. The main area has several views: Database Explorer (left), SQL Editor (top right), Data Output (bottom right), and Navigator (bottom left). In the Database Explorer, under Connections > ticket [Derby 10.0] > ticket > Tables, there are entries for EMPLOYEE and TICKET. In the SQL Editor, the query 'select \* from ticket;' is entered. In the Data Output view, there is a table with columns ID, SUMMARY, DETAIL, SUBMITT..., and LASTMO... containing 6 rows of data. The Navigator view shows 'Ticket Data' with '.classpath', 'project', and 'ticket.sqlpage'. The status bar at the bottom says '© 2004 Judd Solutions, LLC. All rights reserved.' and the Judd Solutions logo.



## Create RDB Perspective

1. Open Resource perspective
2. Save perspective as "RDB"
3. Add Database Explorer and Data Output views
4. Arrange views to taste
5. Save perspective as "RDB"

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## Apache Derby

- Relational database
- 100% Java
- Small footprint
- Open Source
- Apache License Version 2.0
- <http://db.apache.org/derby/>

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## Database Features

- ANSI SQL Standards
  - SQL-92 core subset
  - some SQL-99 features
- Security
- Schema
- Transactional
- Stored Procedures
- Views
- Triggers
- Drivers
  - JDBC
  - ODBC

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## Uses

- Unit Testing
- Proofs of concepts
- Embedded database
- Small applications
  - Web
  - Desktop
- Java Web Start (JWS) deployment

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## Competition

- hsqldb
- IBM Cloudscape
- Borland JDataStore
- MySQL
- PostgreSQL
- Oracle
- IBM DB2
- Microsoft SQLServer

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## Architecture

- Embedded
- Network Server

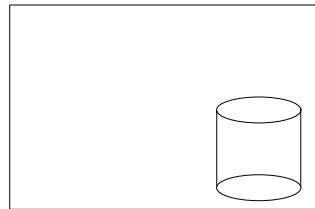
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## Embedded

- Single JVM
- Classpath
  - derby.jar
- Connection string
  - jdbc:derby:ticket



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## Embedded Connection Information

- Driver
  - org.apache.derby.jdbc.EmbeddedDriver
- URL
  - jdbc:derby:[subsubprotocol:][databaseName][;attribute=value]\*
  - subprotocol
    - directory
    - classpath
    - jar

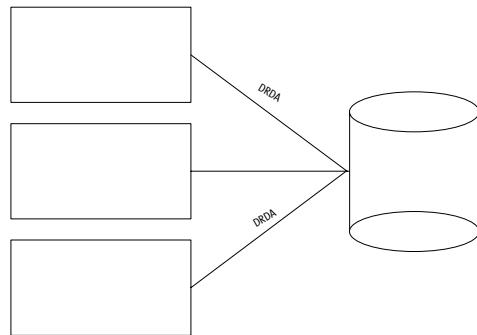
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## Network Server

- Classic Client/Server
- Separate process/JVM
- Multi-user
- Multi-application
- Server Classpath
  - derby.jar
  - derbynet.jar
- DB2 Universal Driver  
or  
Network Client (10.1)



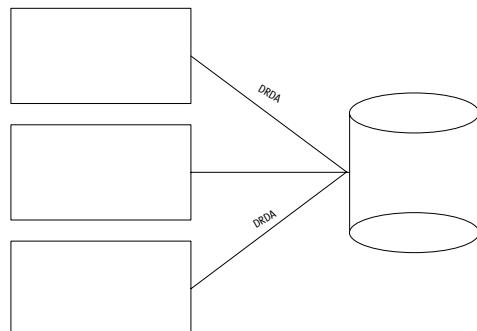
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## DB2 Universal Driver

- IBM
- <http://www.ibm.com/developerworks/cloudscape>
- Client Classpath
  - db2jcc.jar
  - db2jcc\_license\_c.jar
- Distributed Relational Database Architecture



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## Network Connection Information

- Driver
  - com.ibm.db2.jcc.DB2Driver
- Derby
  - jdbc:derby:net://<host>[:port]/<db>[;<derby attribute>=<value> [;...]][:<universal attribute>=<value>; [...;]]
- DB2
  - jdbc:db2j:net://<host>[:port]/<db>[;<derby attribute>=<value> [;...]][:<universal attribute>=<value>; [...;]]
- URL Attributes
  - create=<boolean>
  - user=<user id> (required by Universal Driver)
  - password=<password> (required by Universal Driver)
  - readOnly=<boolean>

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## Create Connection

**New Connection**

**Specify connection parameters**  
Select the database manager, JDBC driver, and required connection parameters.

**Connection identification**

Use default naming convention  
Connection Name: ticket

**Select a database manager:**

- DB2 UDB
- DB2 UDB Series
- DB2 UDB zSeries
- Derby - 10.0
- Informix
- MySQL
- Oracle
- SQL Server
- Sybase

**JDBC driver:** IBM DB2 Universal  
**Connection URL details**  
**Database:** ticket  
 Create the database if required  
**Host:** localhost  
**Port number:** 1527  
**JDBC driver class:** com.ibm.db2.jcc.DB2Driver  
**Class location:** C:\dev\db2jcc\lib\db2jcc.jar;C:\dev\dl   
**Connection URL:** jdbc:derby:net://localhost:1527/ticket;create=true;retrieve=

**Specify user information**  
**User ID:** sa  
**Password:** \*\*

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## Database Explorer

- Displays database elements
- Context menus

**Database Explorer**

**Connections**

- ticket [Derby 10.0]
- ticket
- Schemas
- APP
- NULLID
- SA
- Dependencies
- Stored Procedures
- Tables
- EMPLOYEE
- TICKET
- User-Defined Functions
- Views
- SQL
- SYS
- SYSCAT
- SYSCS\_DIAG
- SYSCS\_UTIL
- SYSRUNK
- SYSIBM
- SYSPROC
- SYSSSTAT

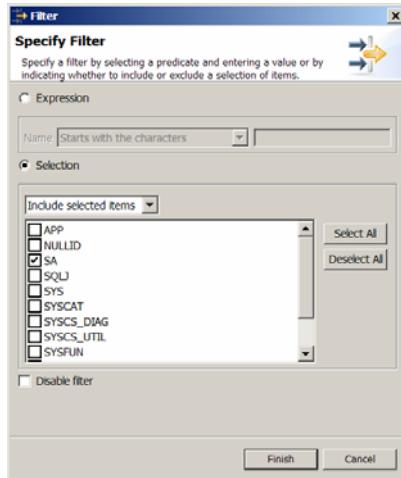
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## Filtering

- Context filters
  - Schema
  - Tables
  - Views
  - Stored procedures
- Filter Decorator



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## Data Output

- Sample Content
- Execute SQL
- Read-only

Status	Action	Object Name	Sample Contents			
			ID	SUMMARY	DETAIL	SUBMITT...
✓ Success	Run	SQL Editor	1	Comput...		2005-03...
✓ Success	Run	Sample Con...	2	Windows...	Windows...	2005-03...
✗ Failure	Run	SQL Editor	3	Popups ...	I get so ...	2005-03...
✓ Success	Run	Sample Con...	4	Monitor fl...	Everytim...	2005-03...
✗ Failure	Edit	TICKET	5	Cannot c...	I can not...	2005-03...
✓ Success	Run	Sample Con...	6	Not eno...	I do not ...	2005-03...
✓ Success	Run	SQL Editor				
✓ Success	Run	Sample Con...				
✓ Success	Run	SQL Editor				

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## SQL Editor

- Associated with \*.ddl, \*.sql and \*.sqlpage
- SQL Scapbook
  - Open with
    - Connection context
    - New Wizard
  - Ignore version control
- Features
  - Syntax highlighting
  - Content assist
  - Format
  - Content tip

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## Other features

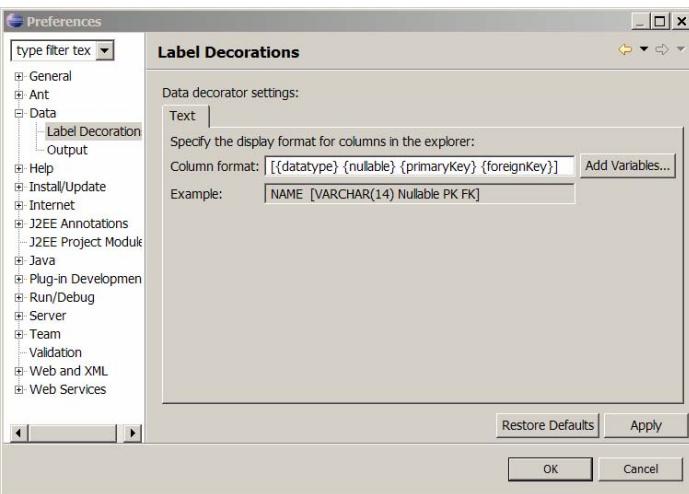
- Load/Extract
- Open (editable table)
- Drop table
- Generate DDL
- Drop table
- Work Offline

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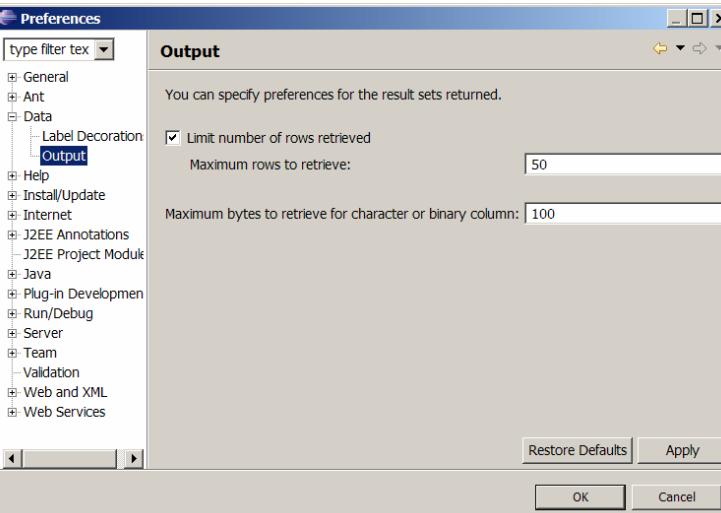
## Preferences

- Window > Preferences > Data



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## Preferences



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## Contributions

- Database Connection Wizards
  - <http://www.eclipse.org/webtools/wst/components/rdb/Data%20Tools%20Open%20Source%20Overview%20for%20Eclipse%20database%20Developer.html>
- Eclipse Data Tools Platform (DTP)

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## Conclusion

If you need simple data tools for interacting with a database such as editing and executing SQL and DDL than RDB may meet your needs. The RDB component will be replaced by the Eclipse Data Tools Platform (DTP) which will include a more comprehensive set of database tools including visual SQL builders and modeling capabilities.

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## Resources

- Eclipse Data Tools Platform (DTP)
  - [www.eclipse.org/datatools/](http://www.eclipse.org/datatools/)
- SQLEditor
  - Alternative
  - [sourceforge.net/projects/eclipsesql](http://sourceforge.net/projects/eclipsesql)

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- Pro Eclipse JST
  - <http://www.apress.com/book/bookDisplay.html?bID=447>
- Enterprise Java Development on a Budget
  - <http://www.apress.com/book/bookDisplay.html?bID=197>



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## Questions ?

Please fill out your evaluations.

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