

Judd Solutions

Development, Mentoring and Training



Consuming and Producing Web Services with WST and JST

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Judd Solutions, LLC



Christopher M. Judd

Available
Sept 14, 2005



Bearable Moments



Available
Dec 1, 2005

Illustrated by Dale Herron

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House Keeping

- 201 – Interacting with Relational Databases
 - Tuesday 11:00 am – 12:30 pm
 - Chris Judd
- 501 – Developing Enterprise JavaBeans with J2EE Standard Tools
 - 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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House Keeping

- 204 – Developing Web Services with Eclipse
 - Tuesday 11:00 am – 12:30 pm
 - Arthur Ryman
- 404 – Developing Web Services with the Web Tools Platform
 - Tuesday 3:30 pm – 5:00 pm
 - David Gallardo
- 502 – 602 – Web Application Development with Web Tools Platform
 - Wednesday 9:15 am – 10:45 am & 11:00 am – 12:30 pm
 - Tim Wagner

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Agenda

- WTP Overview
- Web Services Overview
- Producing Web Services (bottom up)
- Testing
- Consuming
- Conclusion

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Web Tools Platform Project (WTP)

- Top Level Eclipse Project
- 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 Subprojects

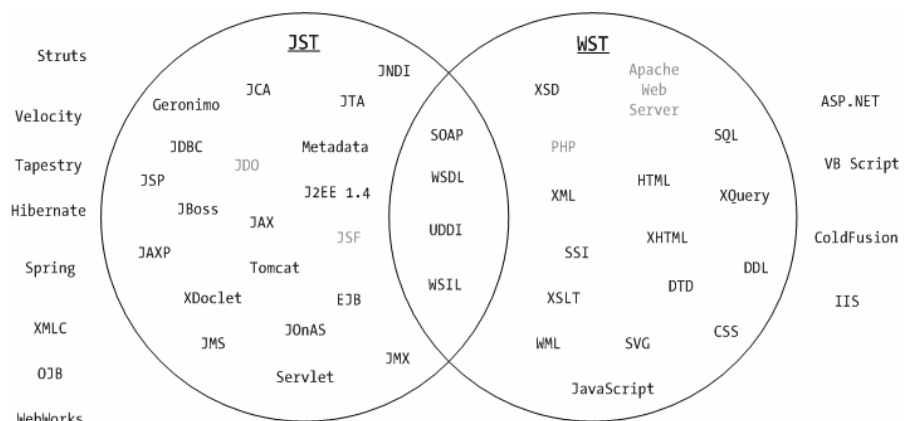
- Web Standard Tools (WST)
 - Web artifacts
 - Defined by open standards bodies
- J2EE Standard Tools (JST)
 - J2EE components
 - Java Community Process (JSP)
 - Depends on WST
- JavaServer Faces Tools (JSF)

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WTP Scope



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WTP Web Services Scope

- World Wide Web Consortium (W3C)
 - <http://www.w3.org>
 - HTML, XHTML, CSS, XML, XSLT, XML Schema, XML Query
- Organizations for Advancement of Structured Information Standards (OASIS)
 - <http://www.oasis-open.org>
 - e-Business standards for web services
- Web Services Interoperability Organizations (WS-I)
 - <http://www.ws-i.org>
 - Interoperable message exchange between web services
- Java Community Process (JCP)
 - <http://www.jcp.org>
 - Java Web Services APIs

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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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Simple Object Access Protocol

From the draft W3C specification:

SOAP is a lightweight protocol for exchange of information in a decentralized, distributed environment. It is an XML based protocol that consists of three parts: an envelope that defines a framework for describing what is in a message and how to process it, a set of encoding rules for expressing instances of application-defined datatypes, and a convention for representing remote procedure calls and responses.

<http://www.w3.org/TR/soap/>

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WSDL

- Web Service Definition Language
- Describes
 - What the service can do
 - Where it resides
 - How to invoke it
- Elements
 - Types – data type definition
 - Message – definition of data being communicated
 - Port Type – abstract set of operations
 - Binding – concrete protocol and data format
 - Service – collection of related endpoints
 - Port – binding and a network address

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Apache Axis

- Apache Web Services Project
- Open Source
- SOAP implementation
- Version 1.2.1
- <http://ws.apache.org/axis/>

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Producing Web Services

- Bottom up
 - Start with Java code
 - Generate WSDL
- Top down
 - Start with WSDL
 - Generate Java code

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Bottom Up Steps

1. Create Dynamic Web Project
2. Create JavaBeans
3. Create Service
4. Generate Web Service

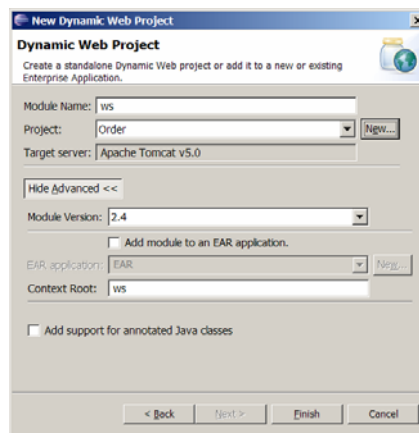
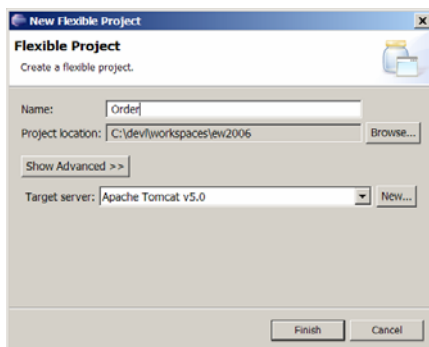
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Create Dynamic Web Project

- File > New > Other > Dynamic Web Project



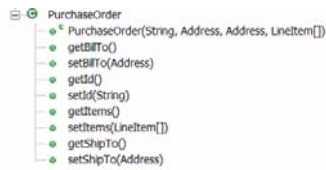
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Create JavaBeans

- Data Transfer Objects
 - Purchase Order
 - LinetItem
 - Address



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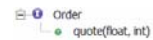
Create Service

```

public class Order {

    private static final float DISCOUNT =
    0.9f;

    public float quote(float price, int
    quantity) {
        if (quantity > 100) {
            price = price * DISCOUNT;
        }
        return price * quantity;
    }
}
  
```



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Generate Web Service

- New > File > Other > Web Services > Web Service
- Right click > Web Services > Create Web Services

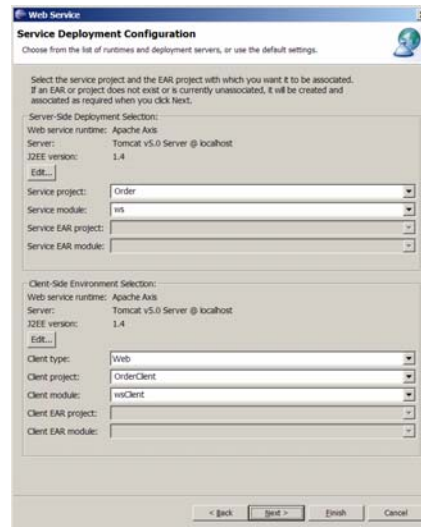


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Generate Web Service



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Generate Web Service

Web Service
Web Service Java Bean Identity

Web service URL:
WSDL Folder:
WSDL File:

Methods:
 quote(float,int)

Select All | Deselect All

Style and Use:
 Document/Literal (Wrapped)
 Document/Literal
 RPC/Encoded
 Define custom mapping for package to namespace.

< Back | Next > | Finish | Cancel

Web Service
Web Service Test Page

Select a test facility

Test facility: Launch

< Back | Next > | Finish | Cancel

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Generate Web Service

Web Service
Web Service Proxy Page

Generate proxy

Output folder:
 Define custom mapping for namespace to package.

< Back | Next > | Finish | Cancel

Web Service
Web Service Client Test

Do you want to test the generated proxy?

Test the generated proxy

Test facility:
JSP project:
EAR projects:
Folder: Browse...
JSP folder:

Methods:
 getEndpoint()
 setEndpoint(java.lang.String)
 getOrder()
 quote(float,int)

Select All | Deselect All

Run test on server

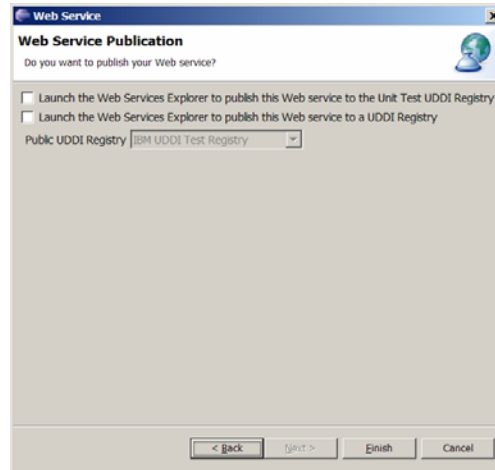
< Back | Next > | Finish | Cancel

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Generate Web Service



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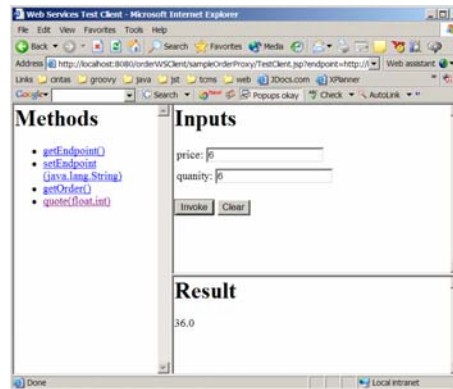
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Test Client

- <http://localhost:8080/orderWSClient/sampleOrderProxy/TestClient.jsp?endpoint=http://localhost:8209/orderWS/services/Order>



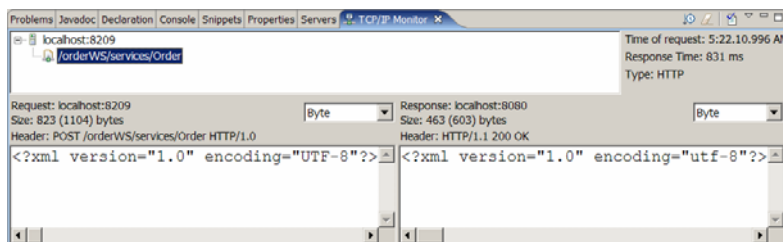
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TCP/IP Monitoring

- View SOAP request and response



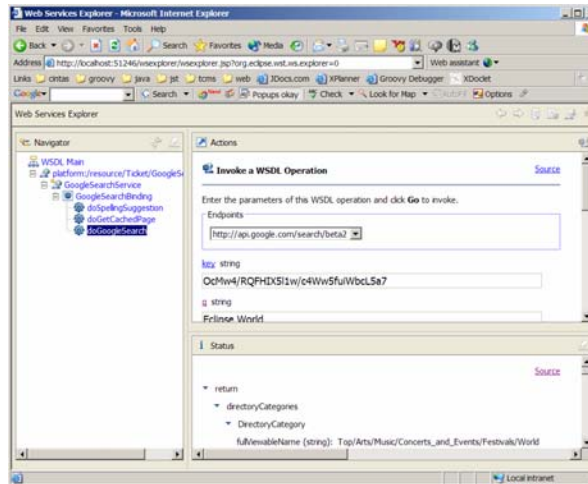
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Web Service Explorer Testing

- Test any Web Services



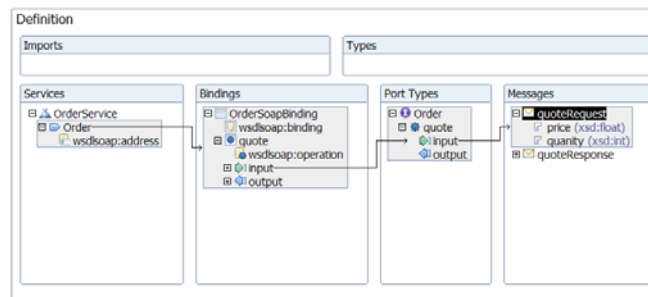
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WSDL Editor

- Graphically edit WSDL



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Consuming steps

1. Create Java Project
2. Generate Web Service Client

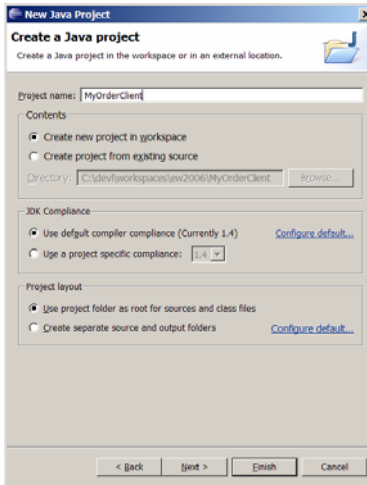
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Create Project

- File > New > Project > Java Project



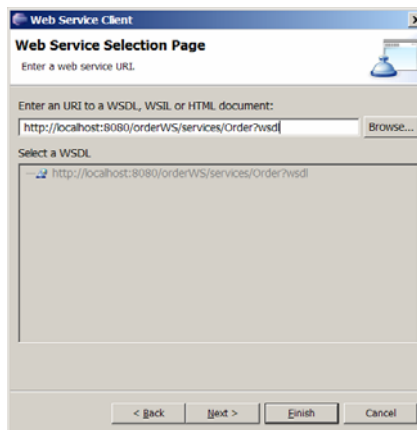
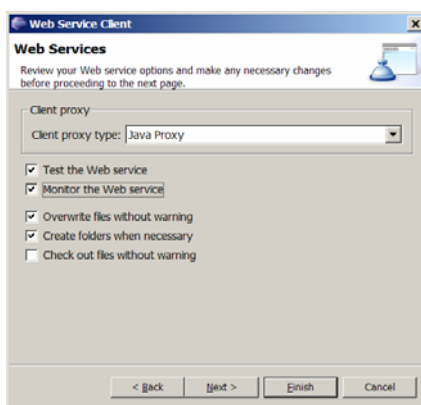
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Generate Web Service Client

- File > New > Other > Web Services > Web Service Client



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Generate Web Service Client

Web Service Client
Client Environment Configuration
Choose from the list of supported runtimes and servers for the client environment, or use the default settings.

Client-Side Environment Selection:
Web service runtime: Apache Axis
Server: Tomcat v5.0 Server @ localhost
J2EE version: 1.4
[Edit...]

Client type: Web
Client project: Order1
Client module: orderWS
Client EAR project:
Client EAR module:

< Back Next > Finish Cancel

Web Service Client
Web Service Proxy Page
Web Service Proxy Page

Generate proxy

Output folder: /Order1/orderWS/JavaSource

Define custom mapping for namespace to package.

< Back Next > Finish Cancel

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Generate Web Service Client

Web Service Client
Web Service Client Test
Do you want to test the generated proxy?

Test the generated proxy

Test facility: Web service sample JSIPs
JSP project: Order1/orderWS
EAR projects:
Folder: sampleOrderProxy [Browse...]
JSP folder: /Order1/orderWS/WebContent/sampleOrderProxy

Methods:
 getEndpoint()
 setEndpoint(java.lang.String)
 getOrder()
 quote(float,int)

Select All Deselect All

Run test on server

< Back Next > Finish Cancel

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Using Generate Classes

```
public static void main(String[] args) throws
RemoteException {
    OrderProxy proxy = new OrderProxy();
    float quote = proxy.quote(5,5);
    System.out.println("Quote is " + quote);

    System.out.println("\nDONE");
}
```

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WTP Resources

- www.eclipse.org/webtools/
- www.projst.com
- Tutorials
 - <http://www.eclipse.org/webtools/community/communityresources.html#tutorials>
- Articles
 - <http://www.eclipse.org/webtools/community/communityresources.html#articles>
- New Group
 - <news://news.eclipse.org/eclipse.webtools>

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- Pro Eclipse JST
 - <http://www.projst.com>
 - <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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