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Cross Platform

Java for The DB2 DBA

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Session: J30

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2:00 PM

DISCLAIMER

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- JAVA is a registered trademark of Sun Microsystems
- Visual C++ is a registered trademark of Microsoft Corporation
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- Enterprise Java Servlets is a registered trademark of Sun Microsystems
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OUTLINE

- This session will briefly outline the history of Java and then address the basics of object oriented programming and design as it pertains to JAVA
- The Java Enterprise Architecture will be outlined
- Inheritance, Polymorphism, and Encapsulation will be discussed
- We will learn “JAVA Speak”
- Object Oriented (OO) “Speak” and Terminology will be discussed
- Java Stored Procedures (SPs), Java Database Connectivity (JDBC) in relation to DB2 and DB2 setup for Java access will be discussed.

HISTORY

- Originally designed to run appliances by a team at Sun Microsystems
- Something called the World Wide Web came along
- Became a popular Web language
- Can run in a Web Browser
- Portability
- Source converted to byte codes
- Runs on a JVM



OBJECT SPEAK

OBJECT

POLYMORPHISM

CLASS

INHERITANCE

METHOD

ABSTRACT

INSTANTIATION

ENCAPSULATION

SUPERCLASS



OBJECT SPEAK

OBJECT

POLYMORPHISM

CLASS

INHERITANCE

METHOD

ABSTRACT

INSTANTIATION

ENCAPSULATION

SUPERCLASS

JAVA SPEAK

METHOD

BYTECODE

JVM

INTERPRETER



CLASSPATH

דאן

JRE

CONTAINER

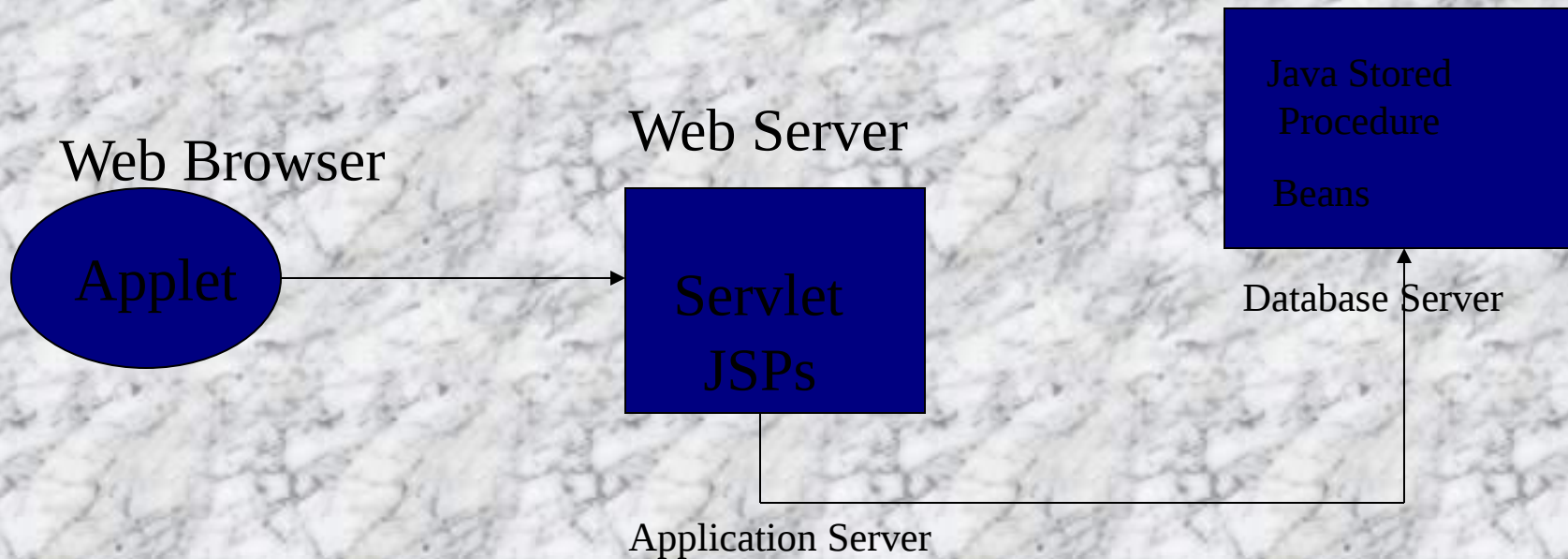
JDK



IMPORT

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JAVA ENTERPRISE EDITION (J2EE) ARCHITECTURE



SOFTWARE DEVELOPMENT KIT (SDK)

- An SDK is required in order to compile and run Java programs and SPs
- Provided with DB2 by IBM
- Contains compiler and components to develop application programs
- Found in \sqllib\java\jdk\bin

JAVA AND DB2

- Stored Procedure Builder
 - Launched from the program menu or Control Center or Visual C++
- Can be used to develop Java SPs for Windows, Unix, and Z/OS
- Can create a procedure by stepping through panels and building a project
- Path and CLASSPATH must be setup correctly
- JDK11_PATH field in the DBM CFG must be set:
JDK11_PATH /home/db2inst/jdk11

JDBC API

- DB2 supports JDBC and SQLJ
- Supports the JDBC-ODBC Bridge Driver
- JDBC programs use dynamic SQL
- SQLJ supports static embedded SQL

JDBC/SQLJ

JDBC

- SQL via API calls
- Dynamic SQL
- No precompiling

SQLJ

- SQL is embedded
- Static SQL
- Translate SQLJ and create package

JDBC DRIVERS

- COM.ibm.db2.jdbc.app.DB2Driver
 - Applications
- COM.ibm.db2.jdbc.net.DB2Driver
 - applets

JDBC APPLICATIONS

- Six Step Process
 - Import appropriate packages and classes, java.sql.*
 - Load the appropriate driver
 - Connect to the database
 - Pass SQL to the database
 - Receive the results
 - Close the connection
- DB2Appl.java sample program in /samples/java directory

JDBC APPLICATIONS

- A connection is accomplished using the following convention:

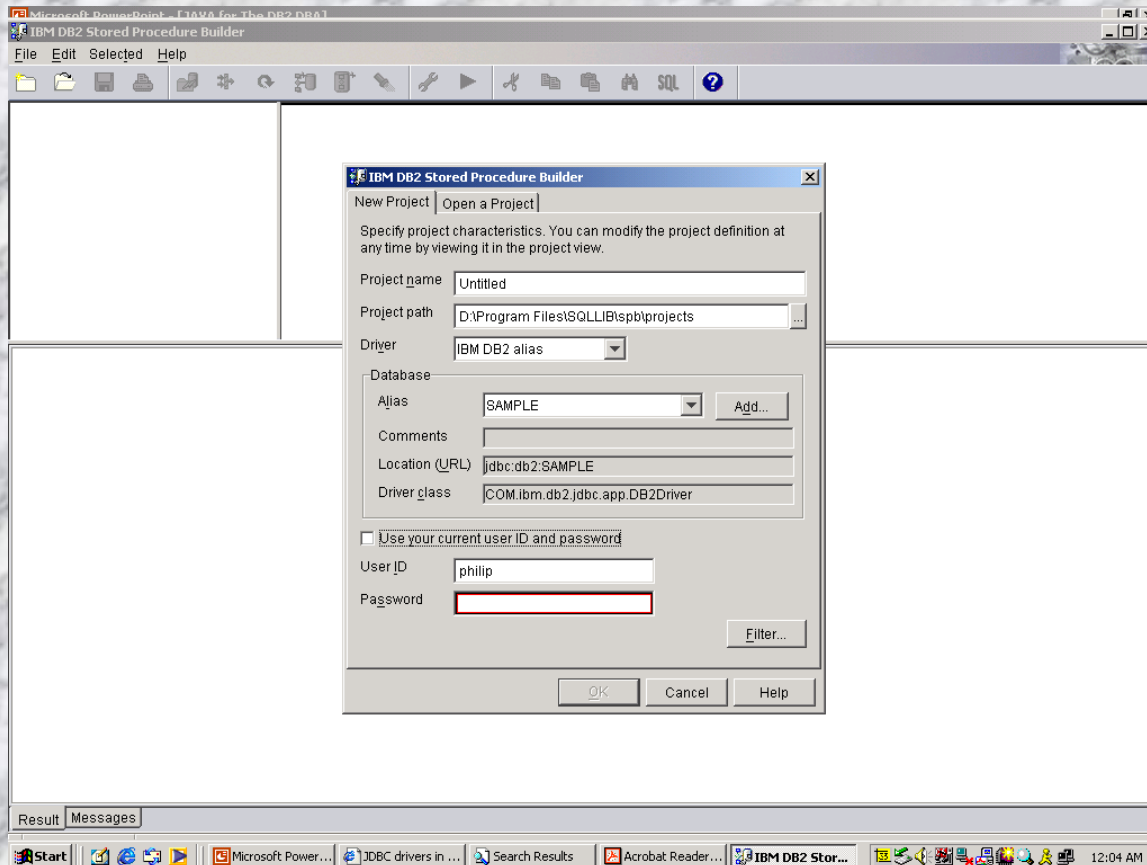
`jdbc:db2:<dbname>`

- Example:
 - `String url = "jdbc:db2:baseball";`
 - `Connection con =
DriverManager.getConnection(url);`

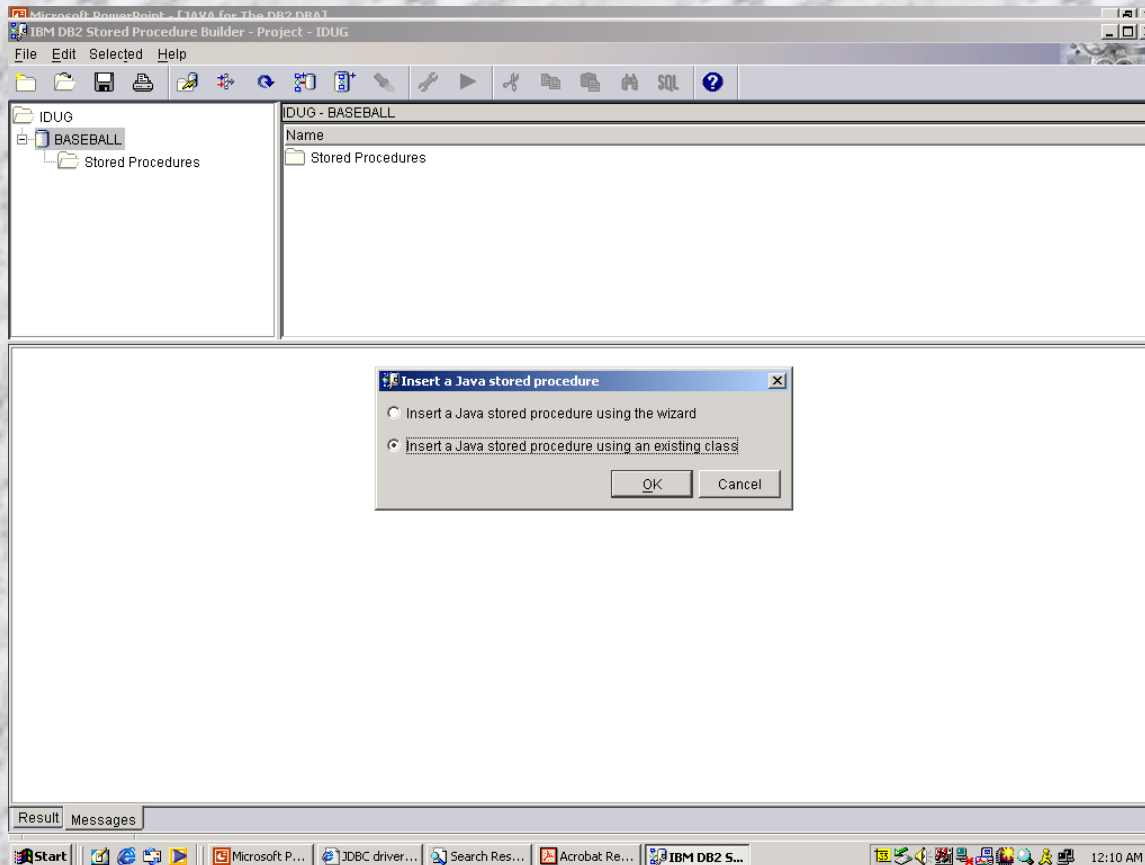
SQLJ APPLICATIONS

- Seven step process
 - Import the SQLJ runtime classes, `sqlj.runtime.*`
 - Register the driver
 - Declare and initialize iterators
 - Connect to the database specifying URL
 - Issue executable clauses to process data
 - Process the results
 - Close the iterators

STORED PROCEDURES



STORED PROCEDURES



STORED PROCEDURES

Microsoft PowerPoint - [JAVA for The DB2 DBA]

IBM DB2 Stored Procedure Builder - Project - IDUG

File Edit Selected Help

Stored Procedures - PHILIP.PROCEDURE1

Row 10	Column 1
/* Project 4: Arrays Programmer: Philip K. Gunning Date: April 2001 Program Name: Donna */ import java.io.*; import java.applet.*; import java.awt.event.*;	

Error, CREATE PROCEDURE statement must be the first code in the procedure and on the first line.

Error, CREATE PROCEDURE statement must be the first code in the procedure and on the first line.

PHILIP.PROCEDURE1 - D:\Program Files\SQLLIB\spb\bld989813784924\Donna.java:28: Class Person not found in type declaration.
Person[] debateGroup = new Person[size];
^

D:\Program Files\SQLLIB\spb\bld989813784924\Donna.java:28: Class Person not found in type declaration.
Person[] debateGroup = new Person[size];
^

D:\Program Files\SQLLIB\spb\bld989813784924\Donna.java:61: Class Person not found in type declaration.
debateGroup[i] = new Person(firstName, lastName, content, delivery, organization, rank);
^

3 errors

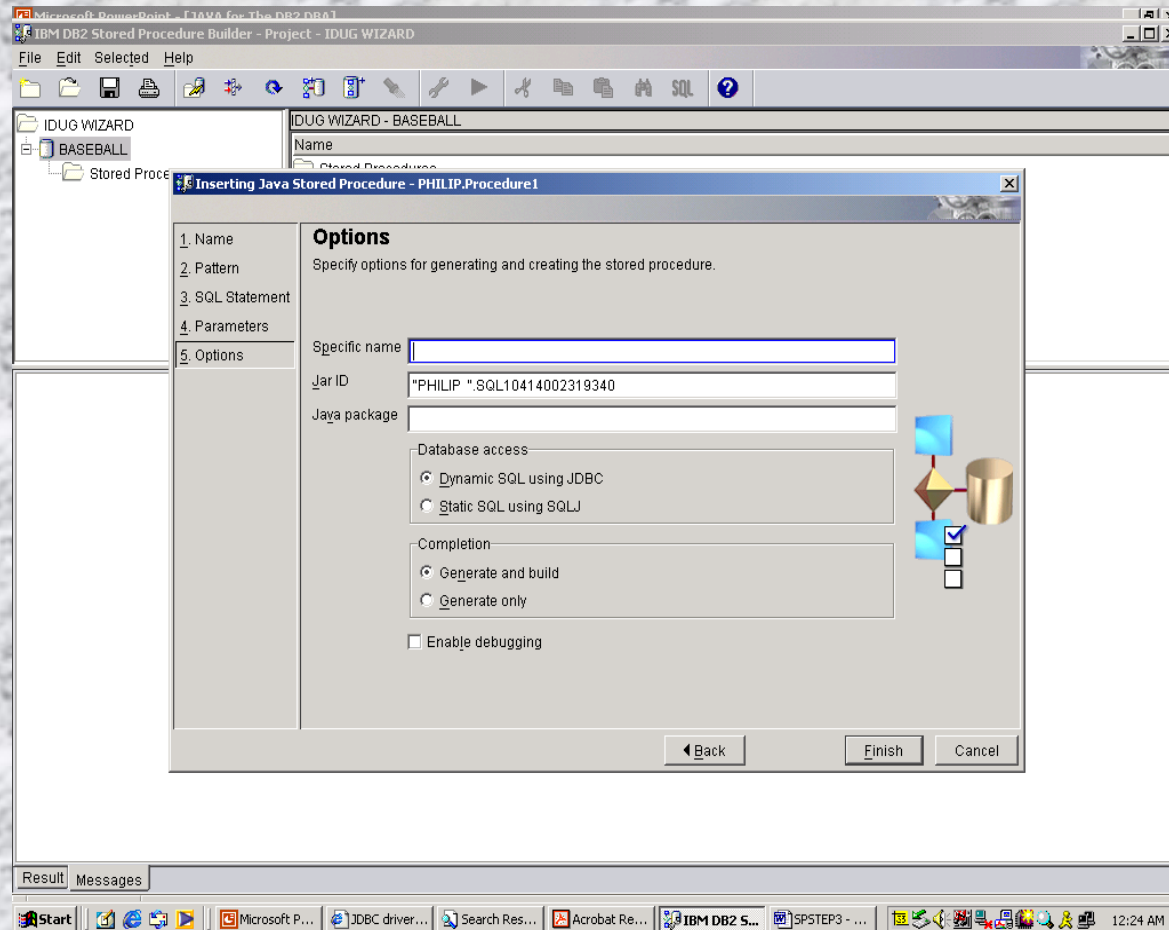
PHILIP.PROCEDURE1 - Build failed.

PHILIP.PROCEDURE1 - Changes rolled back.

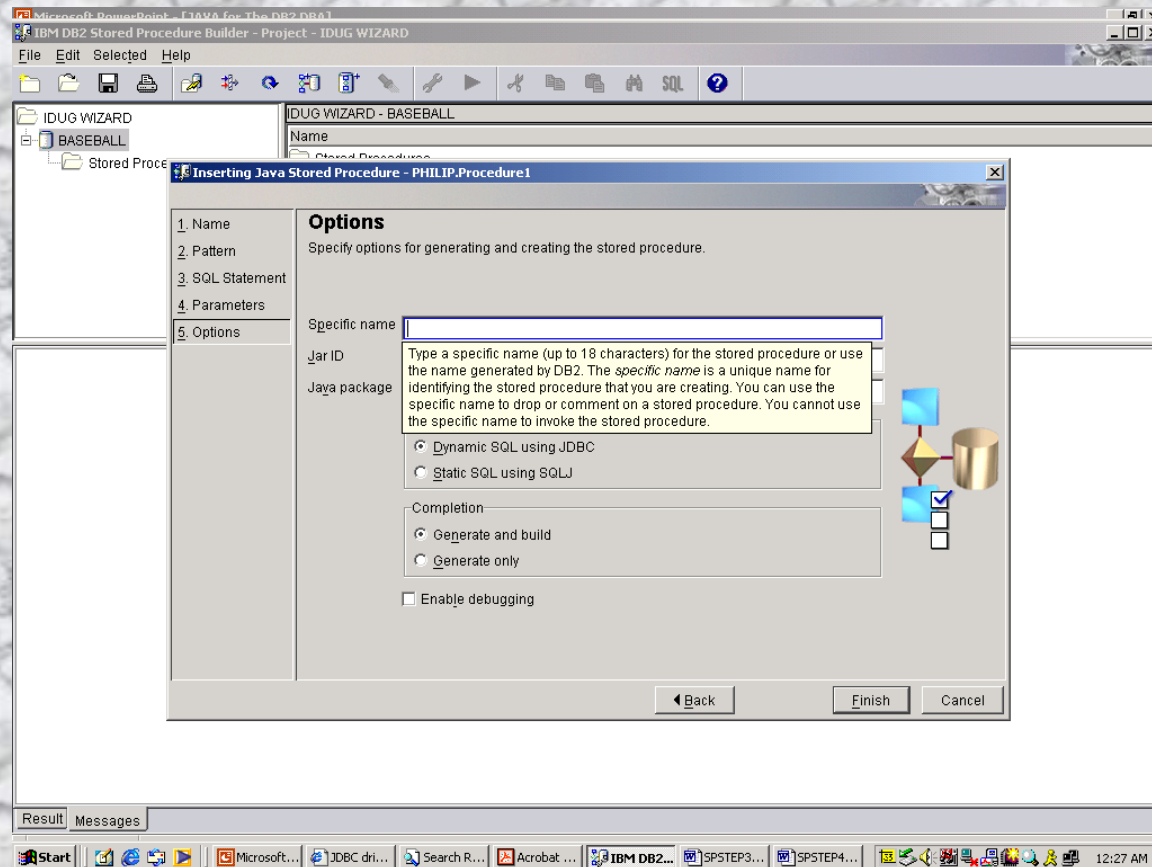
Result Messages

Start | Microsoft P... | JDBC driver... | Search Res... | Acrobat Re... | IBM DB2 5... | 12:17 AM

STORED PROCEDURES



STORED PROCEDURES



REFERENCES

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- **Java in a Nutshell, Flanagan, O'Reilly, Ca. 1999**
ISBN 1-56592-487-8
- **DB2 Universal Database in Application Development Environments, Barber, et al, Prentice Hall, NJ. 2001**
ISBN 0-13-086987-2
- **DB2 Universal Database V7.1 Application Development Certification Guide, Sanyal, et al, Prentice Hall, NJ. 2001**
ISBN 0-13-091367-7
- **java.sun.com – lots of white papers and specifications**

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