



I've Said "Hello World!"

Now What?

Charlotte Sutton

08/23/05, Session 8357

Choice Hotels International



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Objectives

- Demonstration of free resources
 - Learning
 - Development Tools
 - Deployment
- Tips for getting started with these free tools
- Basic description of servlets, JSP pages, HTTP servers, and servlet containers
- Deployment Task Overview

Introduction

- A new toy!
- A great idea!
- No clue where to start!





Free Learning Resources

- Sun Developer Network
 - Online Tutorials
 - Code Samples
 - <http://java.sun.com>
- KickJava.com
 - API, Class, and Package Descriptions
 - Free Java Books
 - Searchable Code Samples

Sun Developer Network



Address <http://developers.sun.com/index.html> Go Links Web assistant Norton AntiVirus

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The Source for Developers

Products & Technologies

- Java Technology
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 - Web Services Platform, Developer Edition
- Web & Directory Servers
 - Identity Server
 - Web Server
 - Directory Server
 - Portal Server
 - Web Proxy Server
 - Active Server Pages
- Application & Integration Servers
 - Application Server
 - Integration Server
 - Connector Builder
 - Message Queue
- Regional Sites
 - 中国
 - 韩国

Technical Topics

The following topics organize advice, best practices, and other resources to enhance your productivity, provide information about our products and technologies, and help solve your critical business and computing problems.

Identity **Web Services**
Security **Globalization**
Mobility **Emerging Technologies**
Desktop **Game Technologies**

Sun Java Studio Creator - Get it Now! The Java Studio Creator Early Access release is now available for download. Be the first to evaluate this new Java development tool from Sun.
» Download now

What's New

June 16, 2004 **JavaOne** Sun's 2004 Worldwide Java Developer Conference. **The Mobility Track at JavaOne 2004** Learn more about the JavaOne 2004 Conference 45 technical, business, and BOF Mobility sessions.
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June 16, 2004 **Best Practices Guide for Enabling Single Sign-On with Sun Java System Access Manager** This article offers best-practice tips on how to efficiently integrate applications with Sun Java System Access Manager and implement Single Sign-on.
» Read more

June 9, 2004 **Porting Guidelines for Solaris Operating System, x86 Platform Edition (PDF)** This white paper provides guidelines for porting applications, with real-world case studies from a number of ISVs.
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June 9, 2004 **Who's the Best Coder?** Developers will compete to see who's the best coder, at the JavaOne Coding Challenge.
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- Technical Articles & Tips
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- Case Studies
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Related Links

Sun Resources

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- Sun Student Developer Program
- Sun Open Source
- Download Center
- Tech Support
- Product Documentation
- Training
- System Administration
- Sun and Microsoft

For Developers Get a server FREE

JavaOne June 28-July 1, 2004

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Online Tutorials

Address <http://java.sun.com/learning/new2java/index.html>

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Learning New to Java Center

Downloads

- Early Access
- Tools

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- API Specifications
- Documentation
- FAQs
- BluePrints
- White Papers
- Case Studies
- Glossary
- Code Samples & Apps
- Presentations & Audiocasts

Community

- Forums
- Bug Database
- Chats
- User Groups
- Newsletters
- Books & Authors

News & Updates

Learning

- **New to Java Center**
- Tutorials & Code Camps
- Online Sessions & Courses
- Course Certification
- Instructor-Led Courses
- Quizzes

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The Java programming language is robust and versatile, enabling developers to:

- Write software on one platform and run it on another.
- Create programs to run within a web browser.
- Develop server-side applications for online forums, stores, polls, processing HTML forms, and more.
- Write applications for cell phones, two-way pagers, and other consumer devices.

It's no wonder the Java platform attracts so many new developers.

What do you need to get started? Which Java technology should you use? This collection of links to articles, tutorials, online and software downloads helps you find what you need to start writing applications.

STEP 1
Java Platform Overview

A general introduction to the Java platform.

STEP 2
Getting Started

How to set up the Java platform on your computer.

STEP 3
Step-by-Step Programming

Learn the basics of the Java programming language, or learn by specific technologies.

STEP 4
Review What You've Learned

Test your Java programming knowledge with these online interactive quizzes and puzzles.

Java Terminology



Address <http://java.sun.com/developer/onlineTraining/new2java/programming/learn/unravelingjava.html> Go Links Web

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New to Java Programming Center - Unraveling Java Terminology

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Programming Center
New-to-Java Programming Center

[Java Platform Overview](#) | [Getting Started](#) | [Step-by-Step Programming](#)
[Learning Paths](#) | [References & Resources](#) | [Certification](#)

Unraveling Java Terminology
by Dana Nourie
October 2000
Updated May 2002
JavaServer Pages, JDBC, RMI, JDK--Java technology names and acronyms can be confusing for newcomers and experienced developers. This article defines common Java terminology in easy-to-scan, alphabetical order, and provides links for more information and downloads.

Java Term	Definition	More Info
Applet	An applet is a Java program that runs within the web browser. Applets use a graphical user interface and may have text, images, buttons, scrollbars, and sound. AWT and SWING are frequently associated with articles and tutorials about creating applets.	<ol style="list-style-type: none">1. Building App2. Trail Writing3. Package java
AWT	The Abstract Window Toolkit (AWT) is a package of classes for creating components such as buttons, menus, and scrollbars for applets and standalone applications.	<ol style="list-style-type: none">1. AWT Fundamentals2. Using the AWT to Create a GUI3. Package java.awt4. AWT Forum
Java API	The Java Application Programming Interface (API) is prewritten code, organized into packages of similar topics. For instance, the Applet and AWT packages include classes for creating fonts, menus, and buttons. The full API is available here .	<ol style="list-style-type: none">1. API Documentation2. Building an Applet

Application to Applet

The following code is the applet equivalent to the [LessonTwoB](#) application from Lesson 2. The figure below shows how the running applet looks. The structure and elements of the applet code are discussed after the section on how to run the applet just below.



```
import java.applet.Applet;
import java.awt.Graphics;
import java.awt.Color;

public class SimpleApplet extends Applet {

    String text = "I'm a simple applet";

    public void init() {
        text = "I'm a simple applet";
        setBackground(Color.cyan);
    }
    public void start() {
        System.out.println("starting... ");
    }
    public void stop() {
        System.out.println("stopping... ");
    }
}
```

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Setting Up & Getting Started



Address <http://java.sun.com/developer/onlineTraining/new2java/programming/learn/>

developers.sun.com

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Developers Home > Products & Technologies > Java Technology > Learning > New to Java Programming > Setting Up and Getting Started

Article
Setting Up and Getting Started in Java Programming

Programming Center
New to Java Programming Center

[Java Platform Overview](#) | [Getting Started](#) | [Step-by-Step Programming](#)
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Setting Up and Getting Started
by Dana Nourie
To write a Java program, you need to download the development kit for J2SE for Windows, Linux, or Mac OS X. Development kits are also available in other languages.

Next set up the software, and then configure your system.

- Installation Notes for Microsoft Windows UPDATER
- More instructions on setting the CLASSPATH environment on Windows 95/98 platforms
- Instructions to set up the UNIX or Solaris environment.
- Instructions for setting up the Mac environment.
- Bringing your Java Application to Mac OS X

Next you need to learn how to invoke the compiler and interpreter.

The following three examples use the `javac` and `java` commands and illustrate how to compile and run Java programs.

When compiling and running, be sure to `cd` into the directory where you saved your `.java` file.

Application
Compile the `ExampleProgram.java` application with the `javac` command and run it with the `java` command.

Address <http://java.sun.com/j2se/1.4.2/install-windows.html>

developers.sun.com

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Developers Home > Products & Technologies > Java Technology > J2SE > Core Java > J2SE 1.4.2 > Reference > Documentation > Java 2 SDK 1.4.2 Installation

Java 2 SDK 1.4.2 Installation
Java 2 SDK 1.4.2 Installation Notes for Microsoft Windows

Installation Notes
Java 2 SDK, Standard Edition
Version 1.4.2
Microsoft Windows

[System Requirements](#) | [Installation Instructions](#) | [Troubleshooting](#)

System Requirements
Software - Java 2 SDK Standard Edition, 1.4.2 is supported on i586 Intel and 100% compatible platforms running Microsoft Windows. [System Configurations](#).

Hardware - Intel and 100% compatible processors are supported. A Pentium 166MHz or faster processor with at least 32 megabytes of RAM is recommended for applets running within a browser using the Java Plug-in. Running with less memory may cause programs to run slowly.

For the amount of disk space required, see [Windows Disk Space Requirements](#).

Note - Trying to install the Java 2 SDK on a non-supported version of Microsoft Windows or on a machine that doesn't have a supported processor will generate this warning: "We recommend that you do not install this Java Platform for the following reasons: This Java Platform is not supported on this machine."

Installation Instructions
In this procedure, you will run the self-installing executable to unpack and install the Java 2 SDK software bundle. As part of the Java 2 SDK, you will also receive the Java 2 Runtime Environment. (The Java 2 SDK also contains a private J2RE for use only by its applications.)

For issues related to Windows Installation (J2TM) and Java Update, see the [Windows Installation \(J2TM\)](#) and [Java Update FAQ](#). See [J2SE 1.4.2 Installation Notes for Microsoft Windows](#) for more information.

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Code Samples



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Index of Code Samples

Java Servlets Code Samples

Servlets Code Samples

Java Servlets extend a server program to enhance its functionality. One very common use of Java Servlets is to generate dynamic Web content.

- You can download code samples from the Java Series book [The J2EE™ Java™ Platform, Enterprise Edition](#).
- [Servlets and Serialization](#) shows how to incorporate Servlets and Serialization with RMI.

CORBA Example

- [Arith.idl](#) defines an interface in the OMG Interface Definition Language.
- [Servlet Inter-Communication with CORBA](#).
- [MathServer.java](#) implements the CORBA server to initialize the ORB, connect to the Naming Service (COS Naming), print a status message, and wait for incoming requests.
- [MathServlet.java](#) acts as a CORBA client by looking up the server. For example, it can calculate the sum of two numbers.
- [MultiplyServant.java](#) implements a multiply operation. For supporting it, it uses the [Arith](#) interface.

The Example Servlets

This chapter uses the Duke's Bookstore application to illustrate the tasks involved in programming servlets. [Table 10-1](#) lists the servlets that make up the Duke's Bookstore application.

Table 10-1 Duke's Bookstore Example Servlets

Function	Servlet
Enter the bookstore	BookStoreServlet
Create the bookstore banner	BannerServlet
Browse the bookstore catalog	CatalogServlet
Put a book in a shopping cart	CatalogServlet, BookDetailsServlet
Get detailed information on a specific book	BookDetailsServlet
Display the shopping cart	ShowCartServlet
Remove one or more books from the shopping cart	ShowCartServlet
Buy the books in the shopping cart	CashierServlet
Receive an acknowledgement for the purchase	ReceiptServlet

The data for the bookstore application is maintained in a database and accessed through the helper class `database.BookDB`. The database contains the class `BookDetails`, which represents a book. The shopping cart and shopping cart items are represented by the classes `cart.ShoppingCart` and `cart.ShoppingCartItem`, respectively.

The source code for the bookstore application is located in the `j2etutorial/examples/src/web/bookstore1` directory created when you installed the tutorial bundle (see [Downloading the Examples](#)). To build, deploy, and run the example, follow these steps.

- Go to `j2etutorial/examples` and build the example by running `ant bookstore1` (see [How to Build and Run the Examples](#)).
- Start the `j2ee` server.
- Start `deploytool`.
- Start the Cloudscape database server by running `cloudscape -start`.
- Load the bookstore data into the database by running `ant create-web-db`.

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KickJava™ Java API By Example, From Geeks To Geeks.

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Layout

Top - The A-Z API index is listed in the top frame.

Left - The APIs for the selected index are listed in alphabetical order in the left frame.

Right - The whole class that the selected API belongs to is listed in the right frame, the current class name is displayed in the title bar.

Links for each API

Description - This site puts all the Java APIs from J2SE, J2EE, J2ME, Java TV, Java Phone, and Java Card under one roof, you can browse all of them in one place by API, class, and package. The 'Description' link under each API will take you to Sun's Java documentation for that API in a separate pop-up window.

Submit - Submit your code snippet for the current API in a separate pop-up window. You may choose to enter your

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API, Class, and Package Descriptions



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[API](#) | [Class](#) | [Page](#)

ServletException(java.lang.String, java.lang.Throwable)

ServletException(java.lang.Throwable): javax.servlet.ServletException

ServletInputStream(): javax.servlet.ServletInputStream

ServletOutputStream(): javax.servlet.ServletOutputStream

ServletRequestWrapper(javax.servlet.ServletRequest): javax.servlet.ServletRequestWrapper

ServletResponseWrapper(javax.servlet.ServletResponse): javax.servlet.ServletResponseWrapper

session: javax.mail.Message

session: javax.mail.Service

SESSION: javax.servlet.jsp.PageContext

sessionCreated(javax.servlet.http.HttpSessionEvent)

sessionDestroyed(javax.servlet.http.HttpSessionEvent)

sessionDidActivate(javax.servlet.http.HttpSessionEvent)

sessionWillPassivate(javax.servlet.http.HttpSessionEvent)

SESSION_SCOPE: javax.servlet.jsp.PageContext

set: javax.mail.search.FlagTerm

set(byte, int): java.awt.image.renderable.ParameterBlock

set(char, int): java.awt.image.renderable.ParameterBlock

set(double, int): java.awt.image.renderable.ParameterBlock

set(float, int): java.awt.image.renderable.ParameterBlock

set(int): java.util.BitSet

set(int, boolean): java.util.BitSet

set(int, int): java.awt.image.renderable.ParameterBlock

set(int, int): java.util.BitSet

set(int, int): java.util.Calendar

set(int, int, boolean): java.util.BitSet

set(int, int, int): java.util.Calendar

set(int, int, int, int): java.util.Calendar

SESSION_SCOPE

Description [Submit your code](#)

setAttribute(java.lang.String, java.lang.Object)

Description [Submit your code](#)

*Submitted by **Anonymous** on 2002/10/28 18:07:41* [Rate](#)

```
import java.util.List;
import java.util.ArrayList;
import javax.servlet.jsp.tagext.TagSupport;

public class DepartmentTag extends TagSupport {

    public int doStartTag() {

        List department = new ArrayList();
        department.add("");
        department.add("Client Server");
        department.add("E-Commerce");
        department.add("Legacy Integration");

        pageContext.setAttribute("departmentList", department);

        return 0;
    }
}
```

setAttribute(java.lang.String, java.lang.Object, int)

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API, Class, and Package Descriptions



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API | Class | Page

Java 2 Platform EE v1.3: Class PageContext - Microsoft Internet Explorer

ServletException(java.lang.String)

ServletException(java.lang.String)

ServletInputStream(): java.io.InputStream

ServletOutputStream(): java.io.OutputStream

ServletRequestWrapper(): javax.servlet.ServletRequestWrapper

ServletResponseWrapper(): javax.servlet.ServletResponseWrapper

session: javax.mail.Message

session: javax.mail.Session

SESSION: javax.servlet.Session

sessionCreated(javax.servlet.Session)

sessionDestroyed(javax.servlet.Session)

sessionDidActivate(javax.servlet.Session)

sessionWillPassivate(javax.servlet.Session)

SESSION_SCOPE: javax.servlet.Session

set: javax.mail.search.Filter

set(byte, int): java.awt.image.PixelFormat

set(char, int): java.awt.image.PixelFormat

set(double, int): java.awt.image.PixelFormat

set(float, int): java.awt.image.PixelFormat

set(int): java.util.BitSet

set(int, boolean): java.util.BitSet

set(int, int): java.awt.image.PixelFormat

set(int, int): java.util.BitSet

set(int, int): java.util.Calendar

set(int, int, boolean): java.util.BitSet

set(int, int, int): java.util.Calendar

set(int, int, int, int): java.util.Calendar

setAttribute

```
public abstract void setAttribute(java.lang.String name,
                                    java.lang.Object attribute)
```

Register the name and object specified with page scope semantics.

Parameters:

- name - the name of the attribute to set
- attribute - the object to associate with the name

Throws:

- java.lang.NullPointerException - if the name or object is null

setAttribute

```
public abstract void setAttribute(java.lang.String name,
                                    java.lang.Object o,
                                    int scope)
```

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12



Free Development Resources

- Java SDK – download
- Eclipse – download
- Visual Paradigm - download
- DBDesigner4 – download

Note: There are lots of learning resources such as tutorials, code samples in addition to API specifications, documentations under the Sun's <http://developers.sun.com>



Tips for Java SDK Download

- Select J2SE not J2EE

J2SE v 1.4.2_04 SDK includes the JVM technology

The J2SE Software Development Kit (SDK) supports creating J2SE applications. More info... [Download J2SE SDK](#)

Installation Instructions ReadMe ReleaseNotes
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J2SE v 1.4.2_04 JRE includes the JVM technology

The J2SE Java Runtime Environment (JRE) allows end-users to run Java applications. More info... [Download J2SE JRE](#)

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J2SE v 1.4.2 Documentation

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- Review ReadMe File
(<http://java.sun.com/j2se/1.4.2/README.html>)



Tips for Eclipse Download

- Download Java SDK first
- Download Eclipse zip file into *Temp* directory
- Unzip file in *Temp*; it creates *eclipse* directory
- Move *eclipse* directory to desired location
- In *eclipse* directory, run Install Wizard

Visual Paradigm

- Integrates with Eclipse
- Follows UML specifications
- Generate code from models
- Community Version – 1 model of each type

<http://www.visual-paradigm.com/product/vpuml/index.jsp>

UML CASE Tools - Free for Learning UML, Cost-Effective for Business Solutions - Microsoft Internet Explorer

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Getting Started with Visual Paradigm

- Create new project in Eclipse
- Naming convention: *com.yoursite.yourproject*
- Highlight project in Package Explorer view
- Right click and select Open SD-EC project



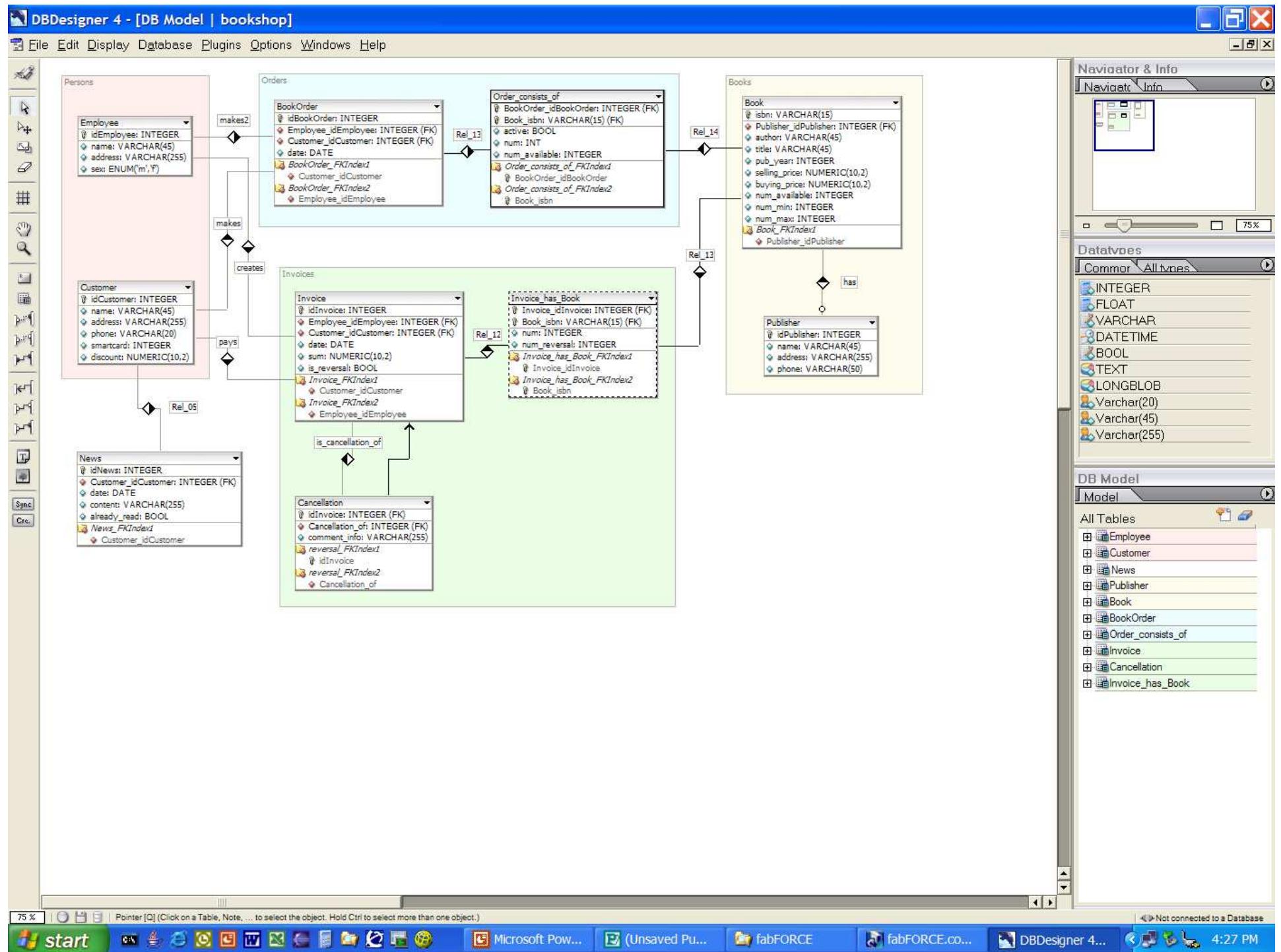
DBDesigner4

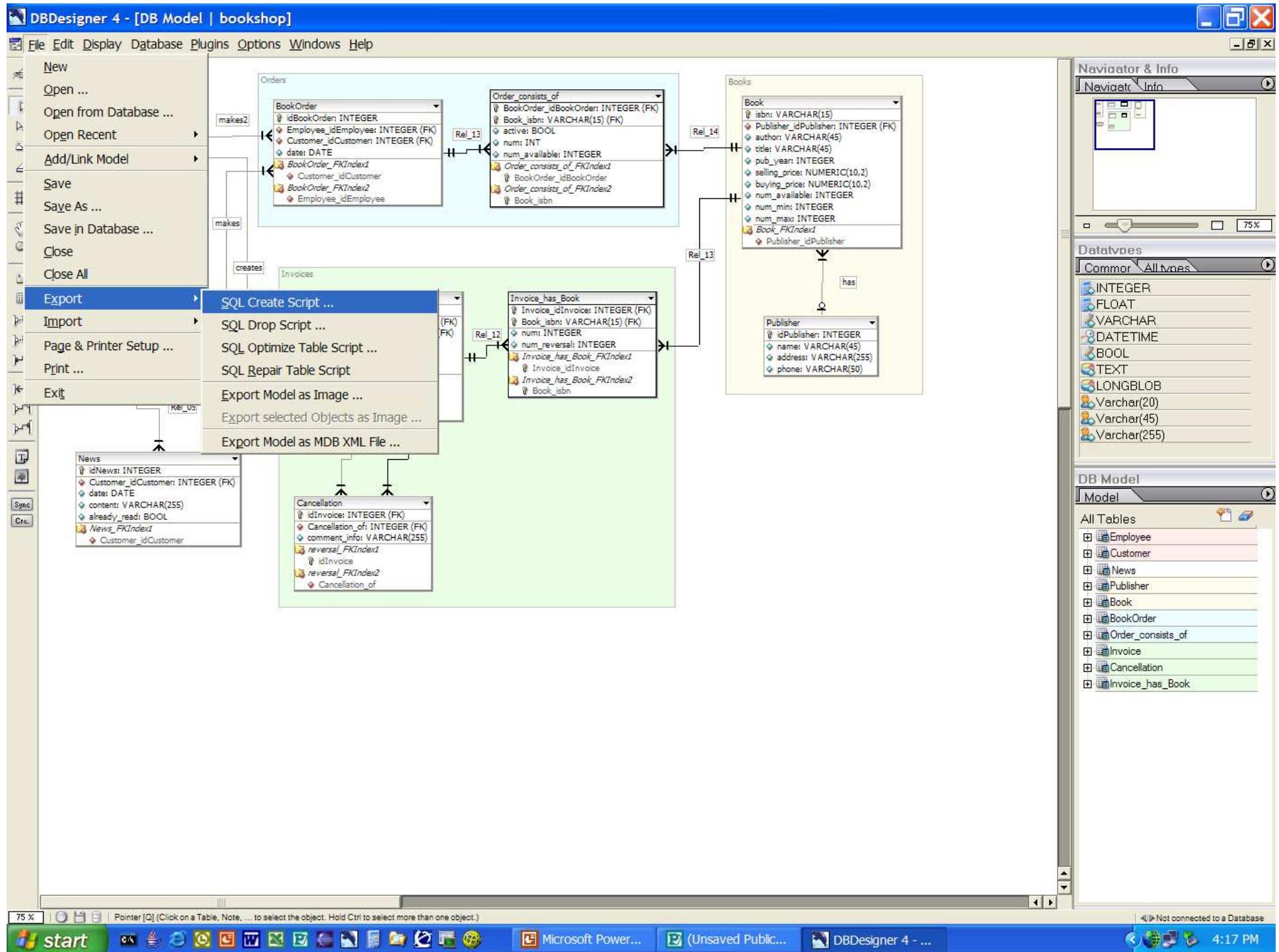
- <http://www.fabforce.net/dbdesigner4>
- Built-in tools for MySQL
- Generate SQL statements from design
- Plug-ins for extra features
 - HTML report generator
 - Web Front End
 - Data Importer

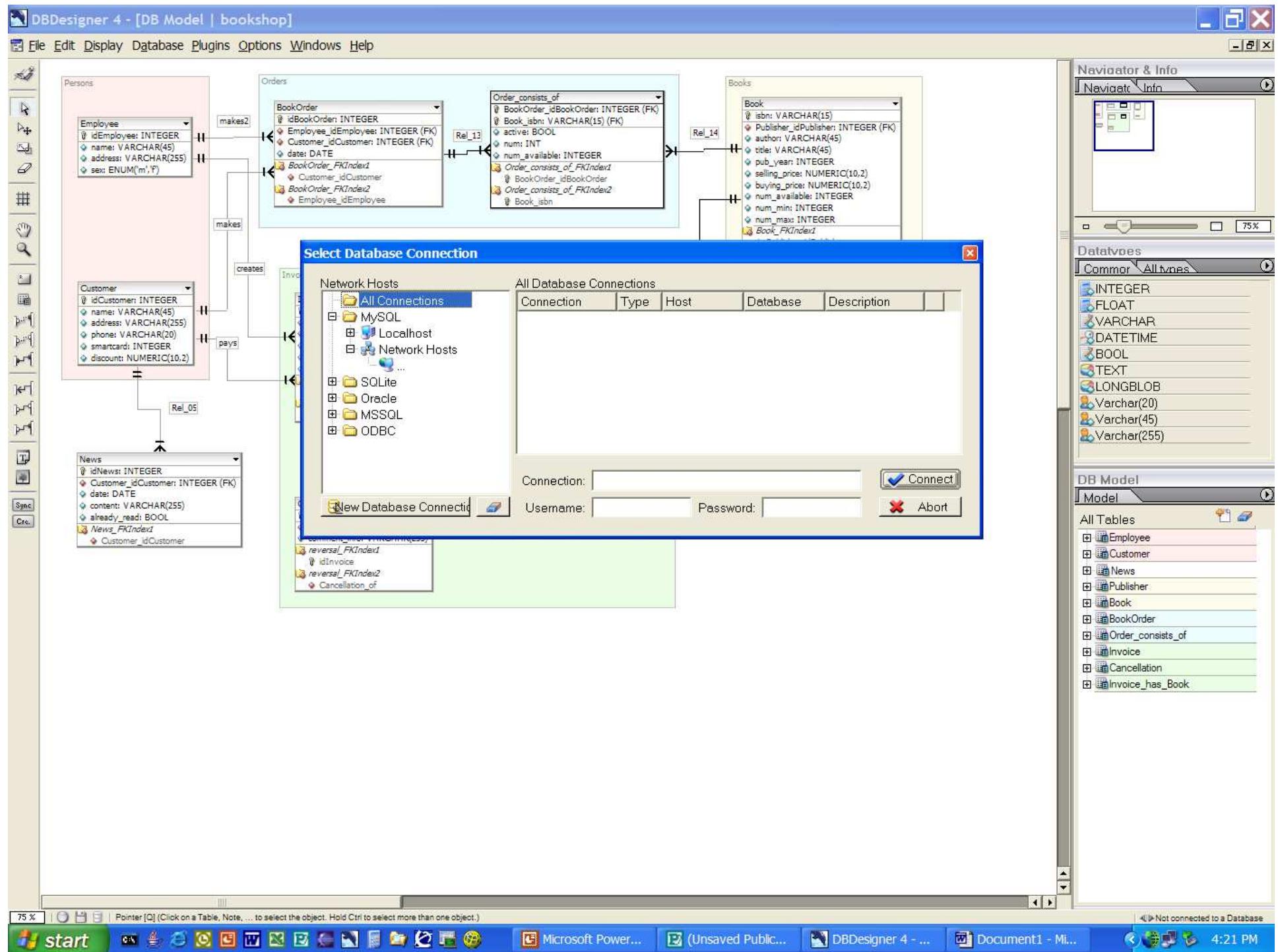


Getting Started with DBDesigner

- Click *New Table* icon then click drawing area
- Right click on the new table, select *Edit Object*
- First column is defaulted to the Primary Key
- Relationships automatically add Foreign Keys
- Build relationships before working on indexes
- Use File > Export to generate SQL script
- Alternately connect to Database





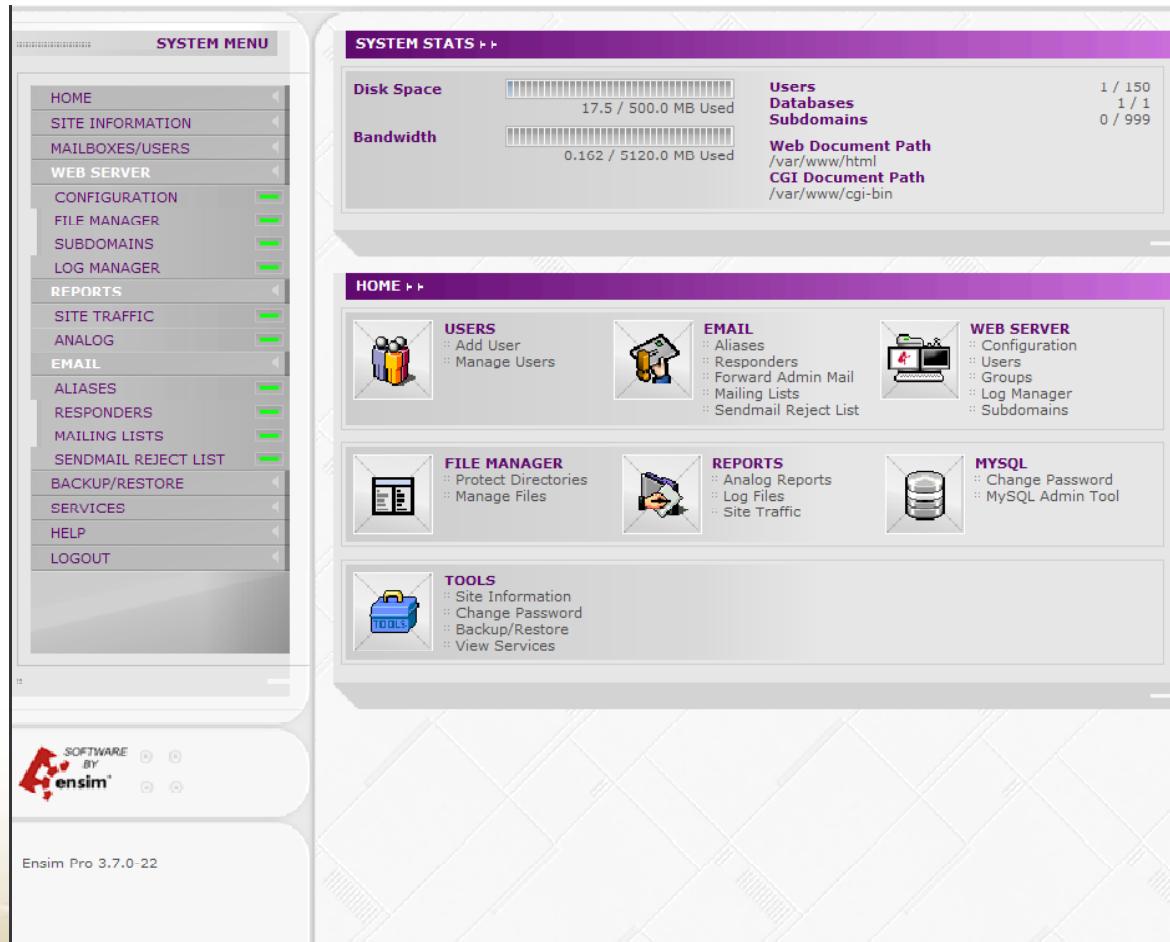




Web Hosting service

- <http://www.astrahosting.com/index-en.html>
- MySQL – database (plus PHP MyAdmin)
- PHP – scripting language
- Tomcat – servlet container
- Apache – HTTP server

Administration Tools



SYSTEM MENU

- HOME
- SITE INFORMATION
- MAILBOXES/USERS
- WEB SERVER
- CONFIGURATION
- FILE MANAGER
- SUBDOMAINS
- LOG MANAGER
- REPORTS
- SITE TRAFFIC
- ANALOG
- EMAIL
- ALIASES
- RESPONDERS
- MAILING LISTS
- SENDMAIL REJECT LIST
- BACKUP/RESTORE
- SERVICES
- HELP
- LOGOUT

SYSTEM STATS

Disk Space 17.5 / 500.0 MB Used

Bandwidth 0.162 / 5120.0 MB Used

Users 1 / 150

Databases 1 / 1

Subdomains 0 / 999

Web Document Path /var/www/html

CGI Document Path /var/www/cgi-bin

HOME

USERS

- Add User
- Manage Users

EMAIL

- Aliases
- Responders
- Forward Admin Mail
- Mailing Lists
- Sendmail Reject List

WEB SERVER

- Configuration
- Users
- Groups
- Log Manager
- Subdomains

FILE MANAGER

- Protect Directories
- Manage Files

REPORTS

- Analog Reports
- Log Files
- Site Traffic

TOOLS

- Site Information
- Change Password
- Backup/Restore
- View Services

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MySQL – PHP MyAdmin

Database **suttoncomputerspecialties_com_-main** - Table **component** running on **localhost**

[Structure](#) [Browse](#) [SQL](#) [Select](#) [Insert](#) [Export](#) [Operations](#) [Empty](#) [Drop](#)

Field	Type	Attributes	Null	Default	Extra	Action
component_id	int(10)	UNSIGNED	No		auto_increment	     
component_class_id	int(10)	UNSIGNED	No	0		     
component_name	char(65)		Yes	NULL		     

 [Check All](#) / [Uncheck All](#) [With selected:](#)  

Indexes : [\[Documentation\]](#)

Keyname	Type	Cardinality	Action	Field
PRIMARY	PRIMARY	10	Drop Edit	component_id
component_FKIndex1	INDEX	None	Drop Edit	component_class_id

Create an index on columns [Go](#)

Space usage : [\[Documentation\]](#)

Type	Usage
Data	740 Bytes
Index	3,072 Bytes
Total	3,812 Bytes

Row Statistic : [\[Documentation\]](#)

Statements	Value
Format	fixed
Rows	10
Row length σ	74
Row size σ	381 Bytes
Next Autoindex	11
Creation	Apr 30, 2004 at 11:04 PM
Last update	May 01, 2004 at 11:57 AM

• [Print view](#)
 • Add new field : [At End of Table](#) [Go](#)
 • [Propose table structure](#) [\[Documentation\]](#)

Run SQL query/queries on database **suttoncomputerspecialties_com_-main** [\[Documentation\]](#)

```
SELECT * FROM `component` WHERE 1
```

Fields:

component_id
 component_class_id
 component_name

Click on view and follow link to header & footer to enter
 Copyright and Author information

MySQL – PHP MyAdmin

Home

suttoncomputerspecialties_com_-main

- component
- component_class
- feature
- primary_use
- product
- product_feature
- product_use

Database **suttoncomputerspecialties_com_-main** - Table **component** running on **localhost**

[Structure](#) [Browse](#) [SQL](#) [Select](#) [Insert](#) [Export](#) [Operations](#) [Empty](#) [Drop](#)

Select fields (at least one):

component_id
component_class_id
component_name

• Number of rows per page

• Add search conditions (body of the "where" clause):
 [\[Documentation\]](#)

Or Do a "query by example" (wildcard: "%")

Field	Type	Function	Value
component_id	int(10)	=	
component_class_id	int(10)	=	
component_name	char(65)	LIKE	

• Display order:
 Ascending Descending

Go

[Query window](#)

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Web Development Tools

- Servlets
- JSP Pages
- HTTP (Web) Server
- Servlet Container



Servlets

- Java code that lives on the server extending the server's capabilities
- Typically used for
 - Processing forms
 - Authenticating users
 - Creating dynamic web content
- Access to all Java API's (including JDBC)
- Access to library of HTTP calls
- Learn more at:
<http://java.sun.com/developer/onlineTraining/Servlets/Fundamentals/>



JSP Pages

- Extension of servlet technology
- Supports authoring of HTML and XML pages
- Good for creating static templates with dynamic content
- Learn more at:
<http://java.sun.com/products/jsp/overview.html>



HTTP (Web) Server

- Loads your servlet class (extends `HTTPServlet` class)
- Creates an instance of your servlet class
- Calls the `init` method of your servlet class
- The `service` method of `HttpServlet` class handles communication between Java and HTTP methods
 - `Service` method called for every request
 - `Destroy` method is called at end of service



Servlet Container

- Usually a component of web/application servers like WebSphere, Sun's web server, etc.
- Also provided by third-party distributors like Apache/Tomcat and Microsoft IIS
- A servlet container does these basic things:
 - Creates a Request object
 - Creates a Response object
 - Acts as the Connector to the web client
 - Acts as the Container



Deployment Tasks - Overview

1. Find out where servlet class files must be stored.
 - a. Web hosting service must support servlets.
 - b. Web hosting service will advise of directory location.
2. Add the `servlets.jar` file to your class path
 - a. Download servlets package from java.sun.com or apache.org
3. Write your class extending `HttpServlet`
(`javax.servlet.http`)
4. Write an HTML page with a link that invokes your servlet
5. Post the servlet and HTML page on the server