e-business Application Solutions on OS/390
Using Java: Samples

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Using Java: Samples

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Take Note!

Before using this information and the product it supports, be sure to read the general information in Appendix A, “Special Notices” on page 13.

First Edition (May 1999)

This edition applies to the following products:

- OS/390 Version 2 Release 5
- Java Development Kit Version 1.1.6 for OS/390
- DB2 for OS/390 Java Database Connectivity
- Lotus Domino Go Webserver Release 5.0
- WebSphere Application Server for OS/390 Version 1.1 (beta)
- IBM CICS Transaction Server for OS/390 Release 3 (LA)
- CICS Gateway for Java Version 2.0
- IBM DB2 Server for OS/390 Version 5
- IBM DB2 Connect (Personal Edition), Version 5.0
- IBM IMS Transaction Server for OS/390 Version 6
- IMS TCP/IP OTMA Connection
- MQSeries for MVS/ESA V1.2
- MQSeries Bindings for Java for OS/390 (beta)
- VisualAge for Java Enterprise Edition for OS/390
- Windows NT Version 4.00 Workstation (with fix pack 3)

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Preface

This publication includes a CD-ROM with samples, documentation and links to
documentation related to using Java in e-business applications on OS/390.

Installing, using and examining the samples on this CD-ROM is a very
effective way to get started with e-business solutions on OS/390 using Java
and WebSphere Application Server. The samples include applications using
servlets, JavaServer Pages, Java Database Connectivity, SQLJ, CICS
Gateway for Java, Java Record I/O and more.

We recommend you to refer to e-business Application Solutions on OS/390
Using Java, Vol. I, SG24-5342, for technical information about the required
subsystems and connectors.

The sample code associated with this redbook is also available in softcopy on
the Internet from the redbooks Web server.

Point your Web browser to:
ftp://www.redbooks.ibm.com/redbooks/sg245342

Alternatively, you can go to the following URL and select Additional
Materials:
http://www.redbooks.ibm.com

The Team That Wrote The Samples

The CD-ROM was produced by a team of specialists from around the world
working at the International Technical Support Organization Poughkeepsie
Center.

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and teaches and writes extensively on Java in relation to the OS/390 platform.

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Rich Conway is an Advisory Technical Support Specialist at the International Technical Support Organization, Poughkeepsie Center. He has 19 years experience in MVS and OS/390 as a systems programmer. While working at the ITSO, he has been a project leader and has written on e-business and UNIX Systems Services on the OS/390 platform.

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Bill O'Donnell is one of the owners of OAS Software Consulting in the USA, specializing in Java and Web deployment on OS/390. He has 15 years of experience in Technical Support for OS/390. His areas of expertise include the OS/390 Operating System and Java and Web deployment on OS/390.

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Egide Van Aerschot has 30 years of field experience with many Finance and Government customers. He was responsible for many projects involving S/390 mainframes related to IMS, DB2 and MQSeries. He designed and installed several client server projects with Distributed Computer Environment (DCE) and Advanced Program-to-Program Communication (APPC). In recent years he participated in several residencies at the International Technical Support Organization and was involved in the design of solutions to access existing data and transactions from the Internet.

Thanks to the following people for their invaluable contributions to this project:

Terry Barthel
International Technical Support Organization, Poughkeepsie Center

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IBM, Toronto Lab

Ella Buslovich
International Technical Support Organization, Poughkeepsie Center

Clarence Clark
IBM, Poughkeepsie

Christine Casey
IBM, Endicott

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International Technical Support Organization, San Jose Center

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Comments Welcome

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We want our redbooks to be as helpful as possible. Please send us your comments about this or other redbooks in one of the following ways:

- Fax the evaluation form found in “ITSO Redbook Evaluation” on page 21 to the fax number shown on the form.
- Use the online evaluation form found at http://www.redbooks.ibm.com/
- Send your comments in an Internet note to redbook@us.ibm.com
Chapter 1. Installing the Contents of the CD-ROM

This booklet contains information regarding the contents of the enclosed CD-ROM. The samples on this CD have been developed in conjunction with the writing of redbook *e-business Application Solutions on OS/390 Using Java, Vol. I*, SG24-5342. You may find it necessary to refer to that book for further information on the required environment in which the samples run.

The CD-ROM has three parts:

- A directory structure containing sample code (sources) and documentation
- A “tar” file containing the samples (both sources and run versions) for installation on the OS/390 server
- A readme file in both PDF format and html format, containing the same text as this chapter

1.1 Directory Contents

The directory structure on the CD-ROM contains sample code, documentation and links to other resources. If you have a browser installed on your workstation, your system will automatically show the front page, `index.html`, after you have inserted the CD-ROM.

It is highly recommended to have a TCP/IP connection to the Internet, because some of the links point to URLs on the Internet.

1.2 The tar File

The tar file on the CD contains basically the same components as the directory described in 1.1, “Directory Contents”; however, the tar file is packaged in such a way that you can easily unpack it on your OS/390 system. If you succeed in installing the package on your OS/390 system, you can:

- Access the “content” on OS/390 from your browser
- Run the samples on the OS/390 system

1.3 Installing the Package on OS/390

In this section we describe the steps to follow to install the package on your OS/390 system. We will not describe the installation and configuration of the required subsystems, but we will refer to sources of information, if appropriate.
The following assumes some level of understanding of the UNIX System Services environment. It also assumes that you have a working knowledge of Java and the WebSphere Application Server running on OS/390.

Because selected demos use DB2 and CICS, you will need to have those subsystems customized as well. It is beyond the scope of this section to discuss how to install and configure DB2 and CICS, but we explain some important prerequisites to running the Java and JSP demos.

**Note:** For IMS and MQSeries we have only included source code examples. They are not meant to be installable demos or samples.

### 1.3.1 Prerequisite Software on OS/390

We used the following products in the development and testing of the samples.

<table>
<thead>
<tr>
<th>Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>We mention the versions of the products that we used for the development and testing of our samples. However, you may be able to use them with higher versions of the products mentioned, but a newer version of a product may require another setup or may not even support the samples as we developed them.</td>
</tr>
</tbody>
</table>

- OS/390 Version 2 Release 5
- IBM WebSphere Application for OS/390 Version 1.1 (beta)
- Java for OS/390 (JDK Version 1.1.6)
- CICS Gateway for Java Version 2.0
- IBM DB2 Server for OS/390 Version 5.1
- IBM CICS Transaction Server for OS/390 Release 3 (LA)
- IBM IMS Transaction Server for OS/390 Version 6.1
- MQSeries for MVS/ESA V1.2
- MQSeries Bindings for Java for OS/390 (beta)
- DB2 for OS/390 Java Database Connectivity
- SQLJ support for DB2 Version 5 on OS/390

Refer to the following URL for availability of SQLJ:

1.3.2 Installing the tar File on your OS/390 Server

The size of the tar file is approximately 28 MB. Perform the following steps to install the tar file on OS/390:

1. Logon to OS/390 and go into the omvs shell.

2. Create a directory to hold the tar file and its unpacked contents.

   We recommend that you create a subdirectory inside /u, like SG245342. Also, you may find it useful to create a separate HFS data set for the sample package. The following JCL can be used to do this:

   ```
   //HFSALLOC JOB (POK,999),HFSALL,MSGLEVEL=(1,1),MSGCLASS=X,
   // CLASS=A,NOTIFY=userid
   //*
   //STEP01 EXEC PGM=IEFBR14
   //HFS DD DSN=OMVS.SG245342.HFS,SPACE=(CYL,(160,5,1)),
   // DDTYPE=HFS,DCB=DSORG=PO,
   // DISP=(NEW,CATLG,DELETE),
   // STORCLAS=OPENMVS,VOL=SER=volser,UNIT=unit
   ```

   **Notes:**

   Depending on your type of DASD, allocate sufficient space to be able to hold about 30 MB.

   Once you have created the HFS data set, you can mount it with the following command from TSO:

   ```
   MOUNT FILESYSTEM(OMVS.SG245342.HFS) MOUNTPOINT(/u/SG245342) TYPE(HFS)
   ```

3. Open an ftp connection between your workstation and your OS/390 server.

4. Go to the directory you just created.

5. Transfer the file in binary format into the preferred subdirectory.

6. Unpack the tar file with the command:

   ```
   tar -xvf SG245342.tar
   ```

   This command will lead to the creation of all the subdirectories and files, as follows:

```
drwxr-xr-x 3 ALEX TSO 0 Apr 23 15:12 config
drwxr-xr-x 13 ALEX TSO 0 Feb 16 16:36 html
drwxr-xr-x 5 ALEX TSO 0 Apr 23 15:27 imsmq
drwxr-xr-x 3 ALEX TSO 0 Feb 19 09:26 java
drwxr-xr-x 2 ALEX TSO 0 Apr 23 14:28 mvs
```
7. Once the unpacking is done, you may want to change the permission bits and the owner of the directories and files in the package. Useful commands are:

- `chown <userid> <name>` for changing the ownership
- `chmod xxx <name>` for changing the permission bits

The unpacking of the tar file will result in five other subdirectories to be created:

- **config**  Contains sample configuration files
- **html**    Contains the Web content
- **imsmq**  Contains sample sources on how to use IMS and MQ
- **java**   Contains the Java source and class files that make up the samples
- **mvs**    Contains MVS components needed to set up and use the back-end systems

### 1.3.3 Moving the MVS Components to Data Sets

The `mvs` directory contains the components that you will need to set up the MVS side of some samples. Most of them are stored in a special format called TSO TRANSMIT OUTDATA.

You will find the following files in the `mvs` subdirectory:

<table>
<thead>
<tr>
<th>Mode</th>
<th>User</th>
<th>Group</th>
<th>Size</th>
<th>Date</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>rwxr-xr-x</td>
<td>ALEX TSO</td>
<td>6480 Apr 26 15:10</td>
<td>cobol.copybook.xmit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rwxr-xr-x</td>
<td>ALEX TSO</td>
<td>112080 Apr 26 15:10</td>
<td>cobol.source.xmit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rwxr-xr-x</td>
<td>ALEX TSO</td>
<td>690400 Apr 26 15:10</td>
<td>db2.data.xmit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rwxr-xr-x</td>
<td>ALEX TSO</td>
<td>67500 Apr 26 15:12</td>
<td>db2.unload</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rwxr-xr-x</td>
<td>ALEX TSO</td>
<td>13840 Apr 26 15:11</td>
<td>dbrmlib.xmit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rwxr-xr-x</td>
<td>ALEX TSO</td>
<td>2240 Apr 26 15:12</td>
<td>dsnaoini</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rwxr-xr-x</td>
<td>ALEX TSO</td>
<td>50800 Apr 26 15:09</td>
<td>jcl.xmit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rwxr-xr-x</td>
<td>ALEX TSO</td>
<td>30240 Apr 26 15:14</td>
<td>load.xmit</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In order to work with these files, they must be copied to traditional MVS data sets. You can use the TSO OGET command to pull these files out of the HFS and put them in data sets.

You can use the following JCL to pre-allocate the data sets on OS/390.

**Note:** Pre-allocation is necessary to give the data sets the correct LRECL, RECFM and BLKSIZE. You must use the LRECL and RECFM as indicated in the following JCL.
//ALLOC JOB (POK,999),MSGCLASS=T,NOTIFY=USERID
/**
 * Allocate the demo data sets
 */
//NCXALLO EXEC PGM=IEFBR14
//JCL DD DISP=(NEW,CATLG),SPACE=(TRK,(10,5)),UNIT=SYSDA,
// DCB=(LRECL=80,RECFM=FB,BLKSIZE=3120),DSN=hlq.JCL.XMIT
//DATA DD DISP=(NEW,CATLG),SPACE=(TRK,(5,2)),UNIT=SYSDA,
// DCB=(LRECL=80,RECFM=FB,BLKSIZE=3120),DSN=hlq.DB2.DATA.XMIT
//COBSRC DD DISP=(NEW,CATLG),SPACE=(TRK,(10,5)),UNIT=SYSDA,
// DCB=(LRECL=80,RECFM=FB,BLKSIZE=3120),DSN=hlq.COBSRC.XMIT
//COBCPY DD DISP=(NEW,CATLG),SPACE=(TRK,(10,5)),UNIT=SYSDA,
// DCB=(LRECL=80,RECFM=FB,BLKSIZE=3120),DSN=hlq.COBCPY.XMIT
//DBRMPY DD DISP=(NEW,CATLG),SPACE=(TRK,(10,5)),UNIT=SYSDA,
// DCB=(LRECL=80,RECFM=FB,BLKSIZE=3120),DSN=hlq.DBRMLIB.XMIT
//LOADPY DD DISP=(NEW,CATLG),SPACE=(TRK,(20,10)),UNIT=SYSDA,
// DCB=(LRECL=80,RECFM=FB,BLKSIZE=3120),DSN=hlq.LOAD.XMIT
//DSNAOI DD DISP=(NEW,CATLG),SPACE=(TRK,(5,5)),UNIT=SYSDA,
// DCB=(LRECL=80,RECFM=FB,BLKSIZE=3120),DSN=hlq.DSNAOINI
//DB2UNL DD DISP=(NEW,CATLG),SPACE=(TRK,(10,5)),UNIT=SYSDA,
// DCB=(LRECL=4092,RECFM=VB,BLKSIZE=4096),DSN=hlq.DB2.UNLOAD

After you have allocated the data sets, use the TSO OGET command to copy the files from the HFS to MVS data sets. Following is a sample of the commands.

Menu List Mode Functions Utilities Help
-----------------------------------------------

Enter TSO or Workstation commands below:

==>

Place cursor on choice and press enter to Retrieve command

=> OGET '/u/SG245342/mvs/jcl.xmit' 'hlq.JCL.XMIT' BINARY
=> OGET '/u/SG245342/mvs/db2.data.xmit' 'hlq.DB2.DATA.XMIT' BINARY
=> OGET '/u/SG245342/mvs/cobol.source.xmit' 'hlq.COBSRC.XMIT' BINARY
=> OGET '/u/SG245342/mvs/cobol.copybook.xmit' 'hlq.COBCPY.XMIT' BINARY
=> OGET '/u/SG245342/mvs/dbrmlib.xmit' 'hlq.DBRMLIB.XMIT' BINARY
=> OGET '/u/SG245342/mvs/load.xmit' 'hlq.LOAD.XMIT' BINARY
=> OGET '/u/SG245342/mvs/dsnaoini' 'hlq.DSNAOINI'
=> OGET '/u/SG245342/mvs/db2.unload' 'hlq.DB2.UNLOAD'
=>

F1=Help  F3=Exit  F10=Actions  F12=Cancel
Note: Notice the binary option on the OGET command in case of xmit files. The dsnaoini and db2.unload files must not be copied in binary mode.

Use the TSO RECEIVE command to unpack the XMIT data sets. These data sets were compressed using TSO TRANSMIT OUTDATASET and must be received with TSO RECEIVE INDATASET.

Enter the command TSO RECEIVE INDATASET('<data set name>') for example, TSO RECEIVE INDATASET('SG245342.DB2.DATA.XMIT').

TSO will now prompt you for the data set name to store the data set being received. If the hlq you are using for your installation is the same as your TSO PREFIX, then just press Enter to use the default values for receiving the data set.

If you are using a different hlq for the installation of the sample code, enter DSN('hlq.DB2.DATA'). A sample of the command is shown here.

Note: Repeat this command for every xmit data set. The dsnaoini and db2.unload files must not be received, as they are not in TSO TRANSMIT OUTDATASET format.
1.3.4 Configuring the Environment

In this section we describe the steps to perform in order to be able to use the samples in your WebSphere Application Server. It is assumed that your HTTP Server and the WebSphere Application Server supporting servlets are up and running on your system. However, we give you some key additions that must be made to your configuration files.

1.3.4.1 Configuring the WebSphere Application Server

In order to run the samples, you need to make some updates in the httpd.conf, httpd.envvars and jvm.properties files and the started procedure.

1. Updates to your httpd.conf file:

   /u/SG245342/config/webas/httpd.conf is a sample httpd.conf file that we used for the development and testing of the samples. It contains additional PASS statements that must be added to your Webserver's httpd.conf file.

2. Updates to your httpd.envvars file:

   /u/SG245342/config/webas/httpd.envvars is a sample httpd.envvars file and contains paths that need to be added to your Webserver's httpd.envvars file.

3. Updates to your jvm.properties file:

   /u/SG245342/config/webas/jvm.properties is a sample jvm.properties file and contains paths that need to be added to your Webserver's jvm.properties file.

The minimum to be included on top of your default WebAS class libraries in your ncf.jvm.classpath directive are the following class libraries:

- /usr/lpp/java16/J1.1.1/lib/classes.zip
  This contains the JDK 1.1.6 classes.
- /usr/lpp/db2/db2510/classes/db2jdbcclasses.zip
  This is required for JDBC access to DB2 on OS/390.
- /usr/lpp/db2/db2510/classes/db2sqljclasses.zip
  This is required for SQLJ access to DB2 on OS/390.
- /u/SG245342/java
  This directory contains the Java sample classes.

**Note:** In case you decided to use another subdirectory for the sample package, you need to use that name.
In these directories, you must have installed the JRIO classes downloadable from URL: http://www.ibm.com/s390/java

Note: The names of the directories may be different on your system.

The minimum to be included on top of your default WebAS executables libraries in your ncf.jvm.libpath directive are the following:

1.3.4.2 SG245342.ini File
In /u/SG245342/config there is a file called SG245342.ini. This file is critical for the operation of the samples. All Java servlets read this file in order to retrieve environment variables. This file needs to be in the root directory of your Webserver. This directory is normally the same directory as where you have the httpd.conf file.

Important
You need to edit the SG245342.ini file to reflect your environment.

1.3.4.3 Configuring DB2
It is beyond the scope of this section to discuss how to install and configure DB2 on your system, but there are some key prerequisites to running the Java and JSP demos.

1. DB2 prerequisite customization.
1. Install and customize DB2 CLI support. See *DB2 for OS/390 Call Level Interface Guide and Reference*, SC26-8959 for instructions.

2. Install and customize DB2 JDBC support. See the JDBC README file for more information.

3. Install and customize DB2 SQLJ support. See the SQLJ README file for more information.

2. Load the DB2 database with sample data.

   Run job DB2LOAD in your unpacked JCL data set. Before running, modify the JCL to conform to your local standards.

3. Rebind the SQLJ samples and the CICS/COBOL sample.

   Jobs BINDAPP and BINMANC in your unpacked JCL data set are provided for this purpose.

4. Copy the sample DSNAOCLI file from /u/SG245342/mvs/dsnaoini to an MVS sequential data set, as follows:

   ```
   Menu List Mode Functions Utilities Help
   -----------------------------------------------
   ISPF Command Shell
   Enter TSO or Workstation commands below:
   ===> OGET '/u/SG245342/mvs/dsnaoini' 'hlq.DSNAOINI'
   ```

5. Customize this data set by filling in your DB2 subsystem identifier and CLI planname. Add this data set to your Webserver's started procedure with the following DD name:

   ```
   //DSNAOINI DD DSN=hlq.DSNAOINI,DISP=SHR
   ```

6. Allocate DB2 libraries to the Webserver's procedure. Add a STEPLIB or JOBLIB to the Webserver's procedure with the following data sets, or add them to the system link list concatenation:

   ```
   hlq.SDSNEXIT
   hlq.SDSNLOAD
   ```

### 1.3.4.4 Configuring CICS

A few of the supplied samples in this package require CICS and the CICS Java Gateway to be customized. It is beyond the scope of this section to discuss how to install and configure CICS and the CICS Java Gateway on your system, but there are some key prerequisites to running the demos with CICS.
1. Install and initialize the External CICS Interface (EXCI).

The CICS Java Gateway requires that the External CICS Interface (EXCI) be customized. EXCI is available with CICS/ESA version 4.1 and all subsequent versions of CICS/ESA. The use of the EXCI interface is documented in *CICS TS for OS/390 V1R2 CICS Internet and External Interfaces Guide*, SC33-1944. This publication describes the operation of the EXCI sample programs, as well as the installation steps required to use the interface. EXCI must be installed and initialized before you can use the samples.

2. Add Language Environment/370 support for CICS.

The COBOL sample programs have been linked with the COBOL runtime library stubs that are shipped with Language Environment (LE). See *CICS Transaction Server for OS/390 V1R2 CICS System Definition Guide*, SC33-1682 for complete information on how to install Language Environment/370 support for CICS.

3. Add the CICS sample application data set to your CICS procedure. The data set in which you unpacked the LOADS can be added to the DFHRPL concatenation as follows:

```
//STEPLIB DD DSN=CICSTS12.SDFHAUTH,DISP=SHR
// DD DSN=SYS1.CSSLIB,DISP=SHR
// DD DSN=CEE.SCEECICS,DISP=SHR
//DFHRPL DD DSN=CICSTS12.SDFLOAD,DISP=SHR
// DD DSN=SYS1.CSSLIB,DISP=SHR
// DD DSN=CEE.SCEERUN,DISP=SHR
// DD DSN=CEE.SCEECICS,DISP=SHR
// DD DSN=hlq.LOAD,DISP=SHR
```

4. Data set hlq.JCL contains an assembler module called DFHCNV. This module is responsible for codepage conversion of the passed CICS COMMAREA. Each program called from “outside” needs to have an entry in DFHCNV. The example in hlq.JCL needs to be linked. You need to restart your CICS region or just refresh this particular program in order to activate your new version.

5. Add PROGRAM and TRANSACTION definitions.

In order to use the CICS application programs that are supplied in hlq.LOAD, you have to define them to CICS. Run job hlq.JCL(ADDDEFS) to add PROGRAM and TRANSACTION definitions for the supplied CICS application programs.

6. Add a STEPLIB or JOBLIB to the WebSphere Application Server for OS/390 procedure with the following data set, or add it to the system link list concatenation:
7. Configure the CICS Attachment Facility.

The sample CICS transactions that are supplied on the CD-ROM access data in a DB2 database. The CICS Attachment facility needs to be configured. See DB2 for OS/390 V5 Installation Guide, GC26-8970 for more information on how to configure this attachment.

8. Reinitialize the WebSphere Application Server for OS/390.

You will need to stop and start WebAS to make the changes effective.

### 1.3.4.5 Configuring the VSAM Sample

In order to make the VSAM sample work, you have to define a VSAM cluster and load it with data. Job DEFVSAM in data set hlq.JCL takes care of the following:

1. Deleting any existing VSAM cluster with the same name
2. Defining a new cluster
3. Copying a flat file with input data into the VSAM file
   
   **Note:** The data provided is an unload of the DB2 manufacturer table.

4. Printing the contents of the file

### 1.3.5 MVS Datasets on the CD-ROM

Once you have unpacked the MVS datasets, you will find the following helpful datasets:

**hlq.JCL**

This dataset contains JCL for the samples. All jobs need to be modified before they can run. The instructions are in the JCL. The following jobs are provided:

- **ADDDEFS** This job adds the definitions for the COBOL/CICS sample transactions in CICS.
- **BINDAPP** This job binds an application that uses static SQL to access DB2. Running this job is mandatory to be able to run an SQLJ program.
- **BINDMANCE** Running this job is mandatory to be able to run the CICS samples on this CD-ROM.
- **DB2LOAD** This job defines the DB2 table and loads its contents for the samples.
**DEFVSAM**  This job defines a VSAM cluster and copies a flat file with records into it.

**DFHCNV**  This is a sample job to assemble the DFHCNV for CICS.

**EXECEXCI**  This job can be run to test the EXCI connection to your CICS system.

**MANUFA**  These jobs are required to pre-compile, compile, link-edit and bind the COBOL/CICS transactions.

**TIMEZONE**  This job compiles the COBOL source of the TIMEZONE program.

**hlq.LOAD**  This library contains the CICS LOADS for the samples.

**hlq.DB2.DATA**  This dataset contains a member with the DDL for the DB2 sample database.

**hlq.DBRMLIB**  This library contains DBRMs of the sample programs that use static SQL.

**hlq.COBSRC**  This library contains the source of the COBOL programs used in the CICS samples.

**hlq.COBCPY**  This library contains the source of the COBOL copybooks used in the CICS transactions.

**hlq.DSNAOINI**  This data set contains the DB2 CLI initialization file.

**hlq.DB2.UNLOAD**  This data set contains “flat” output from the DB2 manufacturer table. This file ought to be used to load the VSAM file.

### 1.3.6 Using the Samples

Once you have installed the samples, as described in Section 1.3.4, “Configuring the Environment” on page 7, and you have all the prerequisite subsystems running, you will be able to point to the html front page of the sample package with your browser, as follows:

```
<tcp/ip address>:<portnumber>
```

**Important**

You have to make sure that in your httpd.conf file, you point to the index.html file in the html directory of the sample package.
Appendix A. Special Notices

This publication is intended to help:

- Information Technology Architects understand how Network Computing applications can be deployed using Webserver and Java support on OS/390.

- Application Programmers to develop Java components for OS/390 and create solutions for connecting existing data and applications on OS/390 with Java components in an NC environment.

- Systems Programmers to set up the required infrastructure on OS/390 to use Lotus Domino Go Webserver Release 5.0, servlets, Java Server Pages, Java applications and Java connectors to OS/390 subsystems.

The information in this publication is not intended as the specification of any programming interfaces that are provided by Java, VisualAge for Java, Java Database Connectivity (JDBC), SQLJ, CICS Gateway for Java, IMS TCP/IP OTMA Connectivity, MQSeries Client for Java and Java Server Pages.

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Appendix B. Related Publications

The publications listed in this section are considered particularly suitable for a more detailed discussion of the topics covered in this redbook.

B.1 International Technical Support Organization Publications

For information on ordering these ITSO publications see “How to Get ITSO Redbooks” on page 19.

- Programming with VisualAge for Java Version 2, SG24-5264
- Integrating Java with Existing Data and Applications on OS/390, SG24-5142
- Enterprise Web Serving with the Lotus Domino Go Webserver for OS/390, SG24-2074
- OS/390 TCP/IP OpenEdition Implementation Guide, SG24-2141

B.2 Redbooks on CD-ROMs

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B.3 Other Publications

These publications are also relevant as further information sources:

- IBM HTTP Server for OS/390 Planning, SC31-8690
- Domino Go Webserver 5.0 for OS/390: Webmaster’s Guide, SC31-8691
- Domino Go Webserver 5.0 for OS/390: Messages, SC31-8692
- OS/390 V2R6.0 Planning for Installation, GC28-1726
- OS/390 V2R6.0 NFS Customization and Operation, SC26-7253

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• OS/390 V2R4.0 MVS Programming: Resource Recovery, GC28-1739
• OS/390 V2R6.0 NFS User's Guide, SC26-7254
• OS/390 Release 6 Domino Go Webserver 5.0 Web Programming Guide, SC34-4743 (available softcopy only)
• TCP/IP OpenEdition User's Guide, GC31-8305
• DB2 for OS/390 V5 Call Level Interface Guide and Reference, SC26-8959
• DB2 for OS/390 V5 Command Reference, SC26-8960
• DB2 for OS/390 Version 5 Application Programming Guide and Reference for Java, SC26-9547
• Quick Beginnings Windows NT, Documentation for TXSeries V4.2, GC33-1879
• CICS Family: Communicating from CICS on System/390, SC33-1697
• CICS TS for OS/390 V1R2 CICS Internet and External Interfaces Guide, SC33-1944
• IMS/ESA Customization Guide, SC26-8020

B.4 External Publications

• Design Patterns: Elements of Reusable Object-Oriented Software, by Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides, Grady Booch. Published by Addison-Wesley. ISBN 0-20-163361-2.
How to Get ITSO Redbooks

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