

# IBM Inter-University Programming Contest 2012

## Chapter 1: Contest Environment Walkthrough

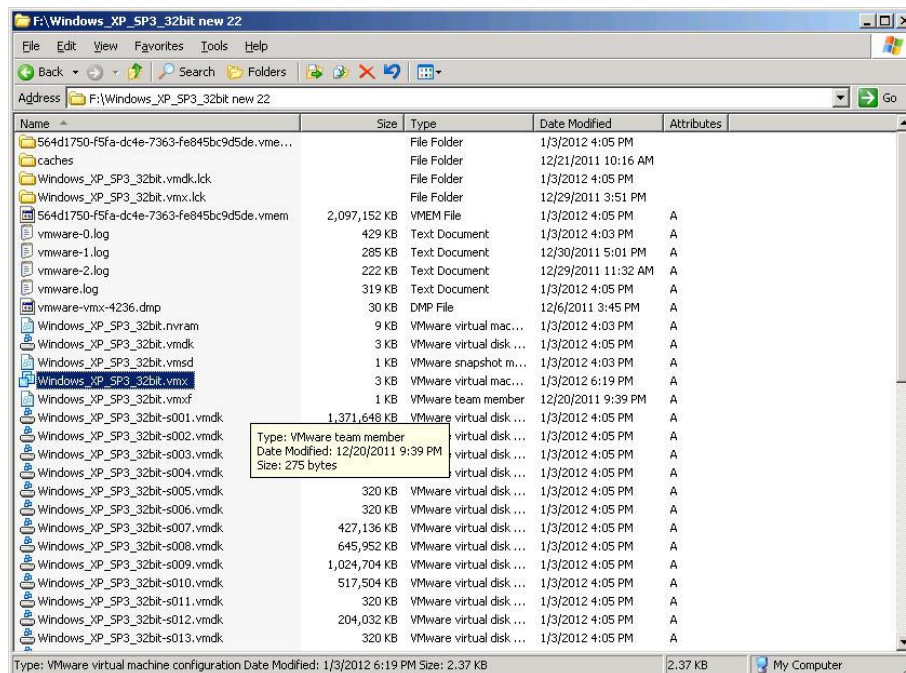
### Objectives

In this exercise, we will learn:

- How to boot up the programming environment using VMware
- How to log in and start up necessary services and system software
- Examine the sample application which will be used in the programming contest
- How to perform programming using the GUI environment
- How to use DB2 in command line mode and GUI mode

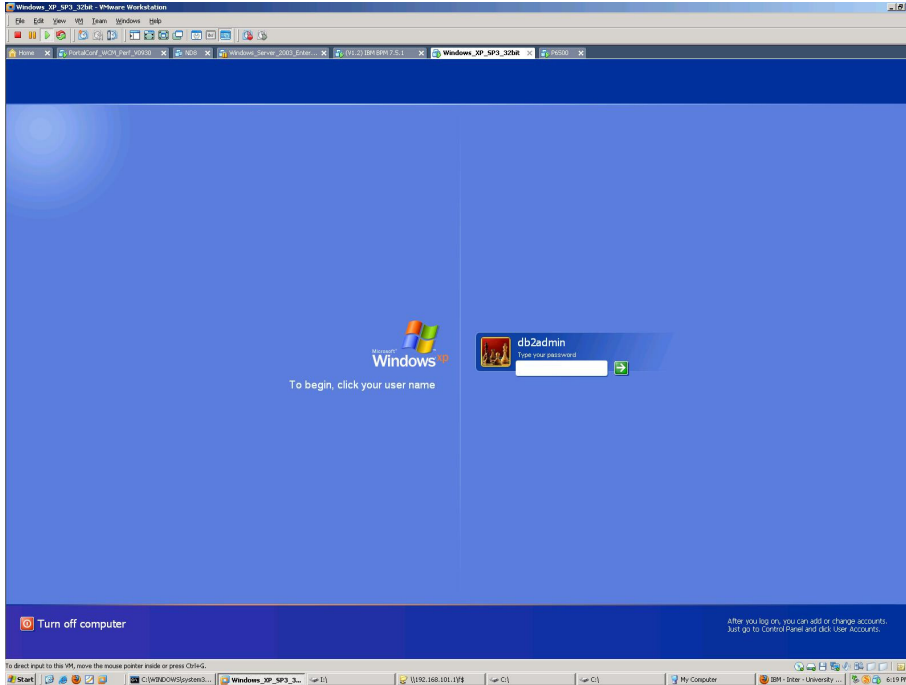
### Exercises

1. Using the Explorer, navigate to the **VM folder** and the double click the VMware virtual machine configuration file with name "**Windows\_XP\_SP3\_32bit.vmx**" and then boot up the VMware.



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2. When the Windows XP is booted up, the following login screen appears:



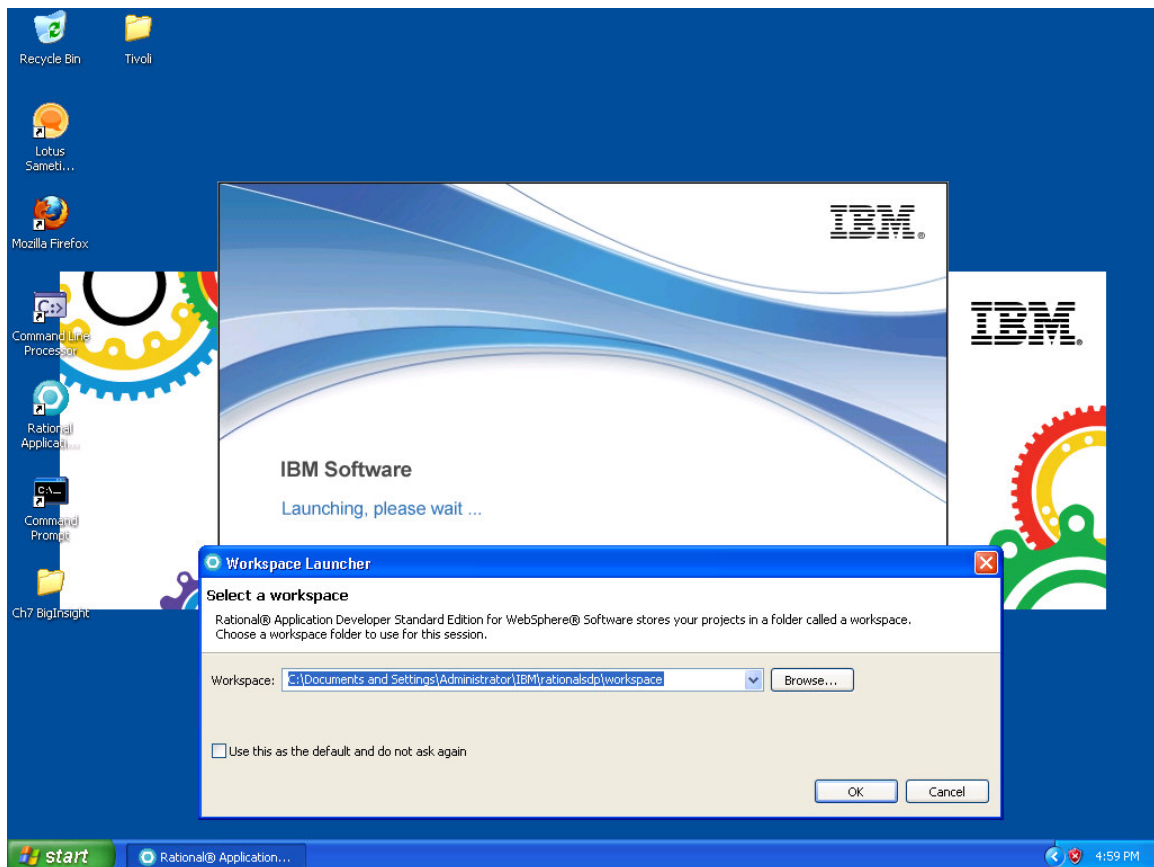
3. Click "**db2admin**" and enter the password "**password**" to log into the programming contest environment. The following screen is displayed:



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- The next task we should perform is to can start the RAD (i.e., Rational Application Developer) to look at a J2EE application which will be used during the programming contest. RAD is a GUI development environment which is used to perform J2EE programming. The resultant programs will be published to WAS (WebSphere Application Server) so that it can be executed in the web environment.

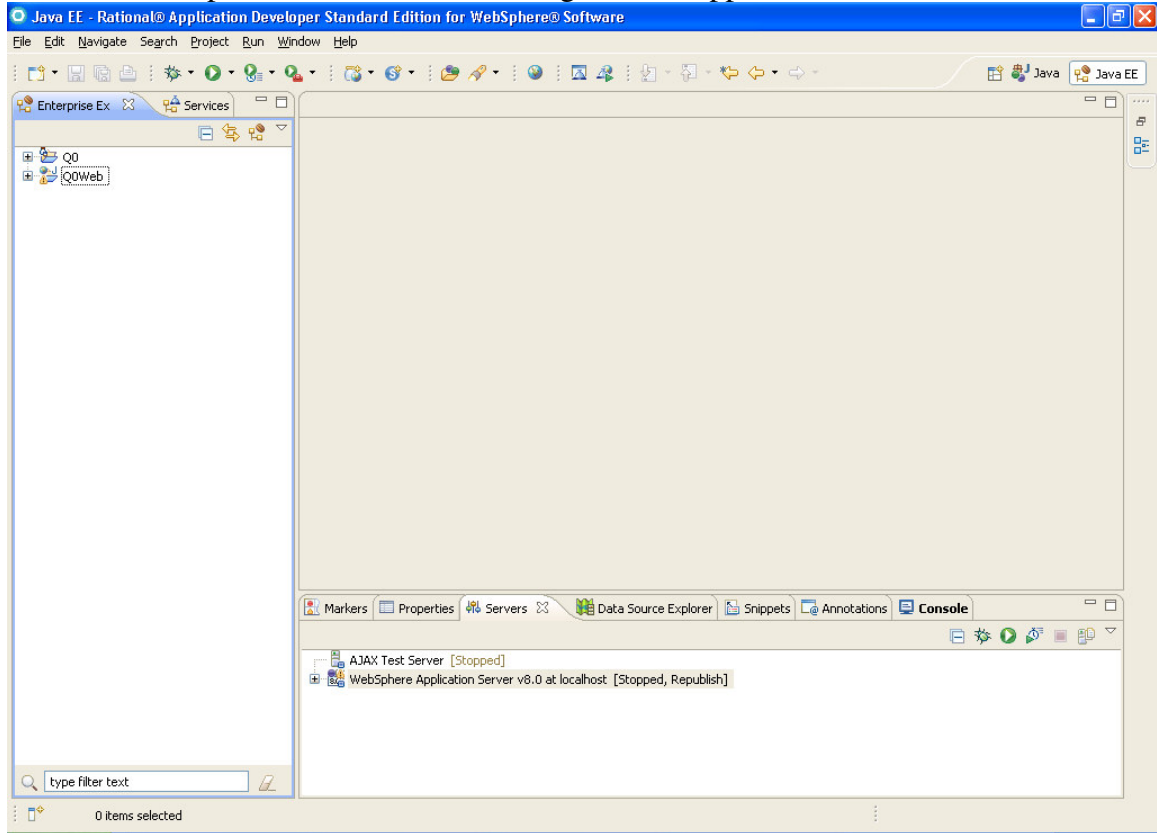
Double clicked the icon "IBM Rational Application Developer" to start RAD. A banner will appear and a Workspace Launcher window will appear which allows you to choose the base location of the workspace:



Click the "OK" button to adopt the default value which is "C:\Documents and Settings\Administrator\IBM\rationalsdp\workspace".

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5. After the workspace is loaded, the following window appears:

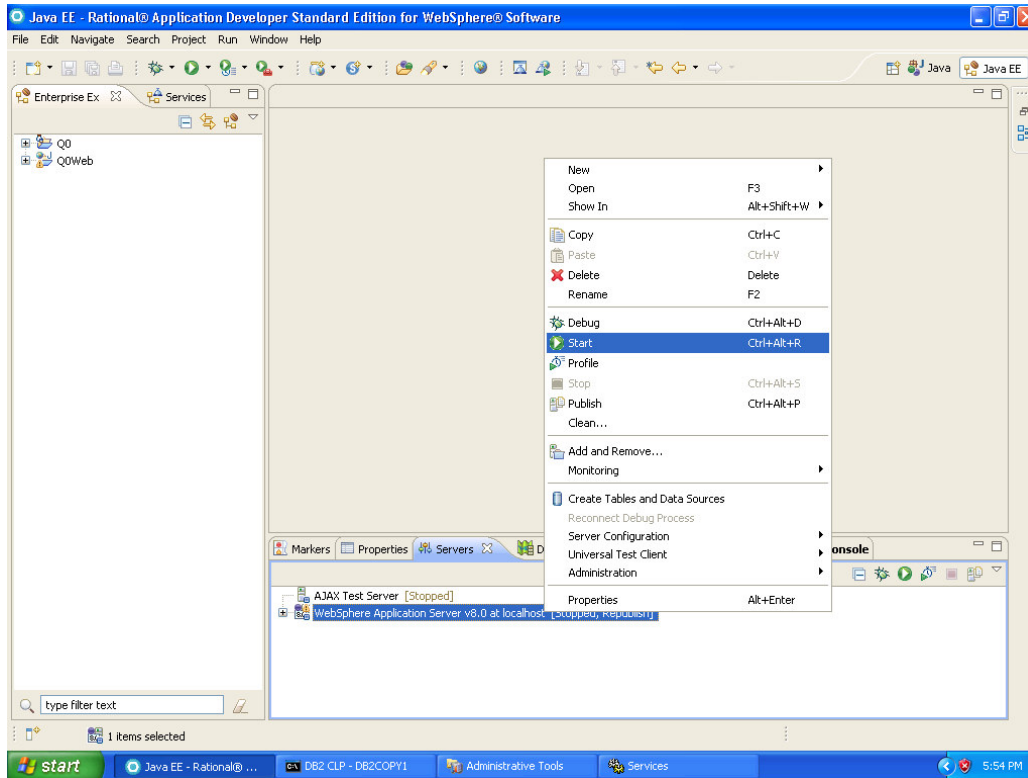


On the left side is the "Project Explorer" folder which contains a list of all available projects. In the above window, there are two available projects (i.e., Q0, Q0Web). Q0 is an application which is **“Login Page”** for user to access the administration page.

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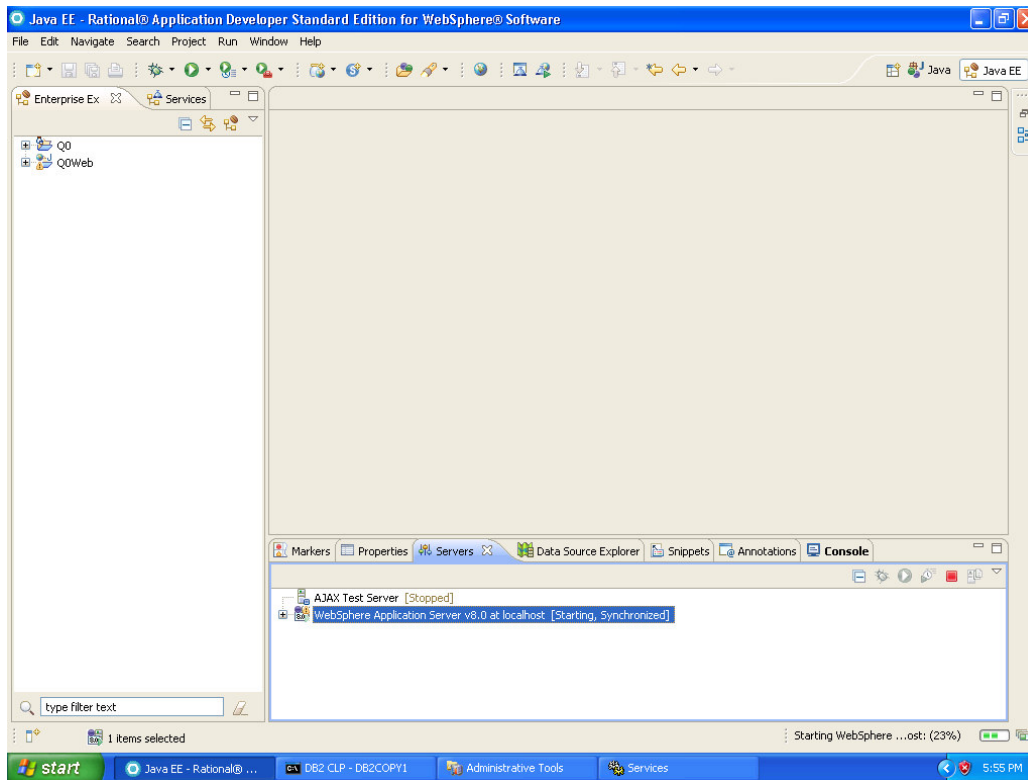
- Before we start to review the program, we should start WAS (i.e., WebSphere Application Server) such that the program can be run via a web browser (i.e., Internet Explorer in our case).

Click on the 'Server' tab in the middle-bottom view. You see the '**WebSphere Application Server v8.0 at localhost**' is stopped at the moment. First click on the server, then right click to show the command manual, then choose '**Start**' to start WAS:



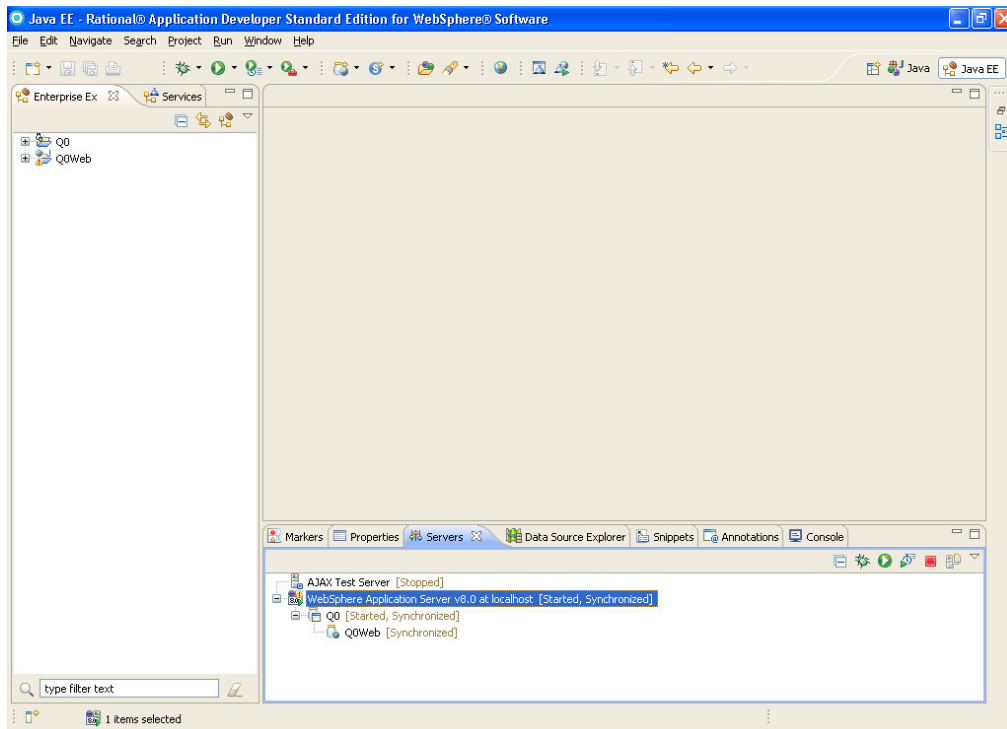
Then you will see the state of the server changing from '**Stopped**' to '**Starting**':

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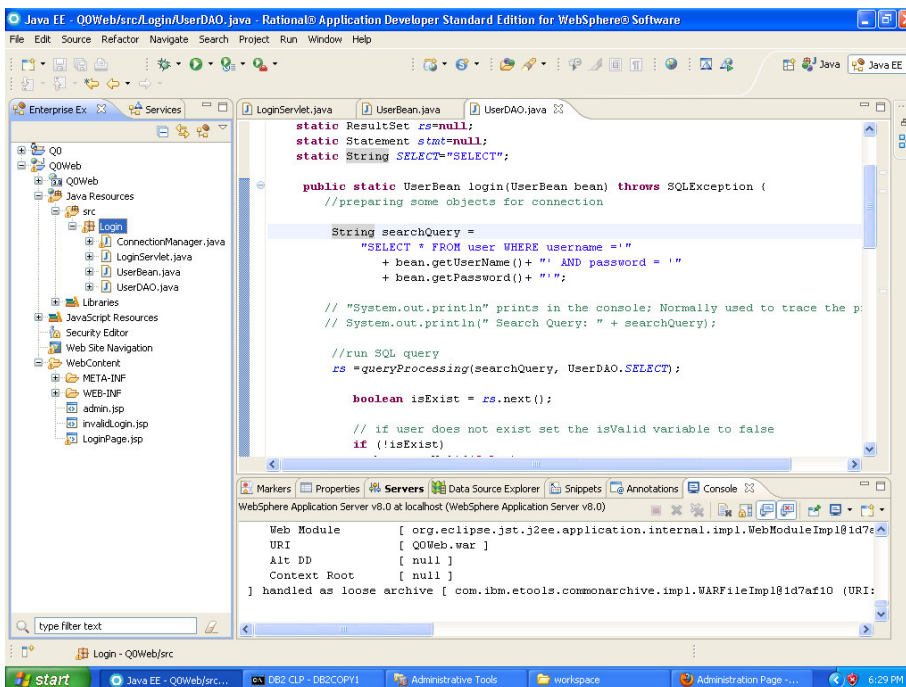
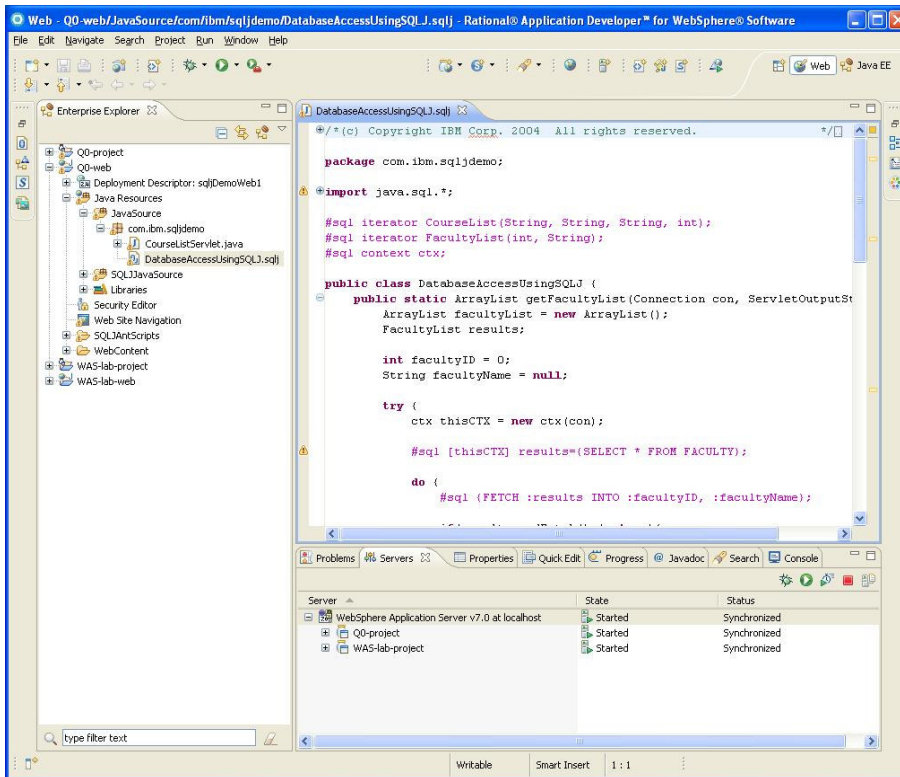
If you click on the tab '**Console**', you might be able to see the system messages generated during startup:

After a while, WAS is booted up and the state of the server is changed to '**Started**':



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- Now, we can continue to explore the project. Click the "+" signs of **Q0** and **Q0web** to view the content of the projects:

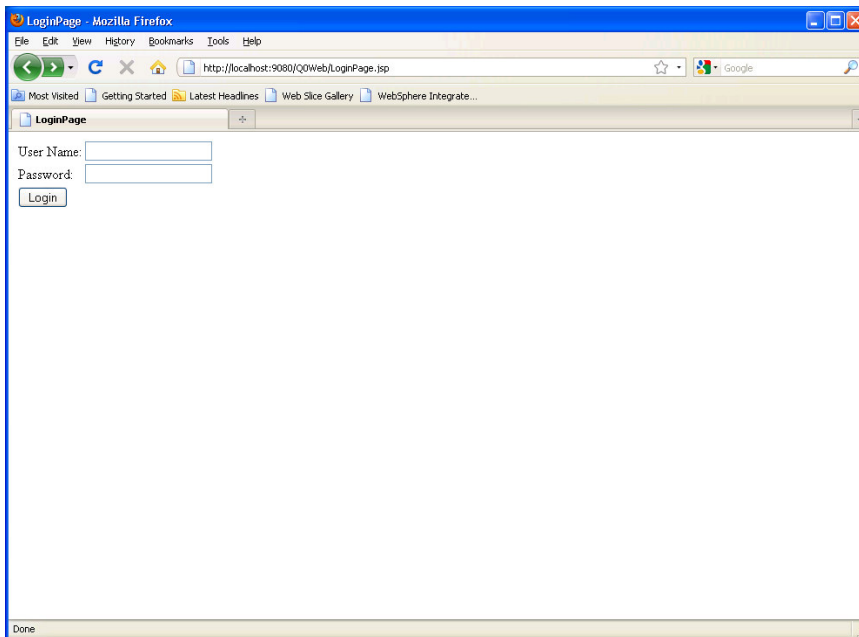


Further expand **Q0Web** by clicking the "+" signs of "Java Resources", "JavaSource", and

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"scr→Login package" until you see the 4 programs of the application (i.e., ConnectionManager.java, LoginServlet.java, UserBean.java and UserDAO.java). You can run this program now.

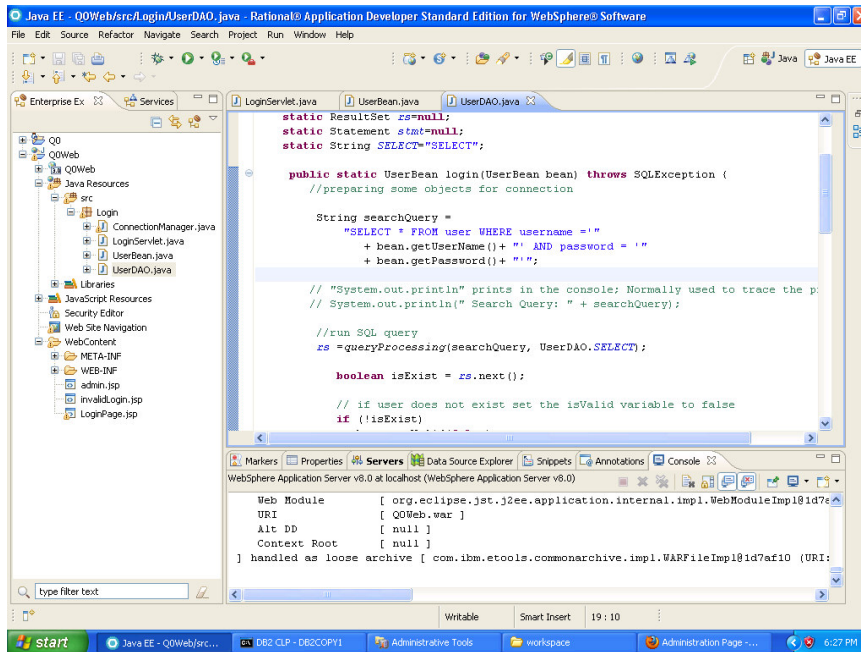
- Now, let's see the output of this program. Open a Mozilla Firefox browser, and then select '**Bookmarks -> Q0 – Login Page**' to run the program Q0. The following screen is generated:





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9. Let's make some changes to the application(e.g. Modify the SQL statement, etc). First of all, click the "Project" item under the manual. It can be seen that there is a tick beside the item "Build Automatically":



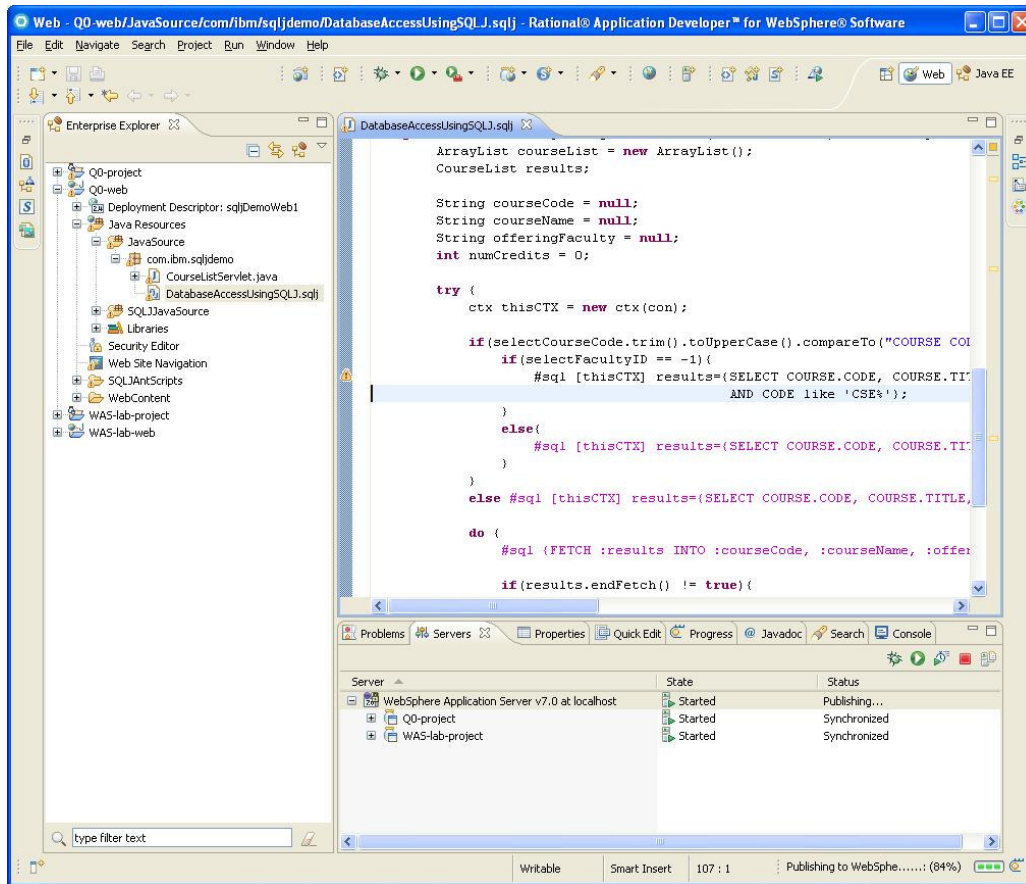
This means that after you modify something in the program and issue the save command, the project will be rebuilt automatically and the change will be deployed to WAS automatically.

10. Press "**Control-S**" to save the edited content. At the same time, please note that in the bottom-right corner of the screen the following message is displayed

Building workspace (0%)

Please refer to the following window for an illustration. Please take attention to the circle on the bottom-right corner which shows the message:

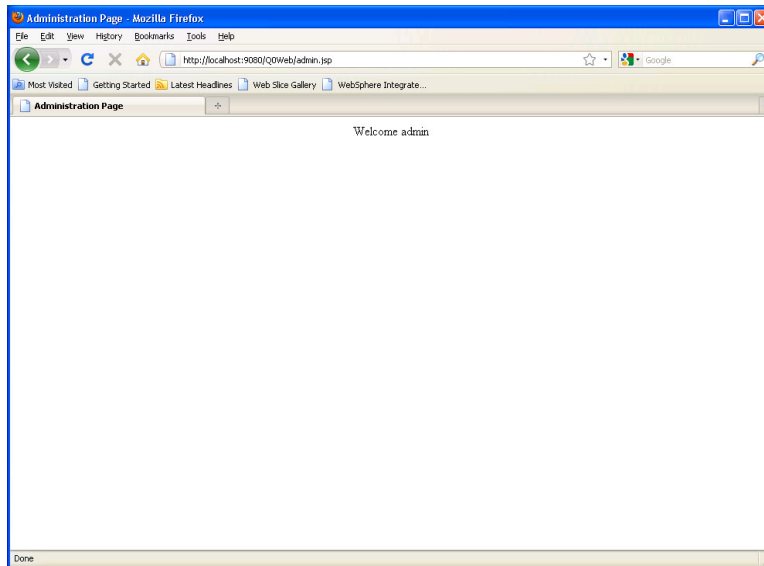
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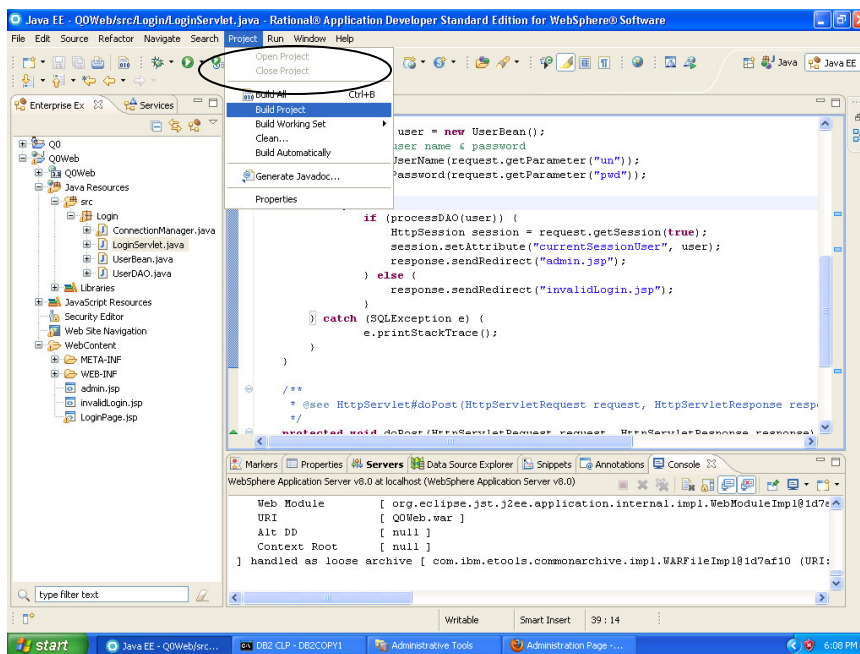
After a while, the project rebuilding process is completed and the message will disappear.

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11. Open the Firefox browser, and run the application again. Enter **User name:** admin & **Password:** password. You can see the administration page.



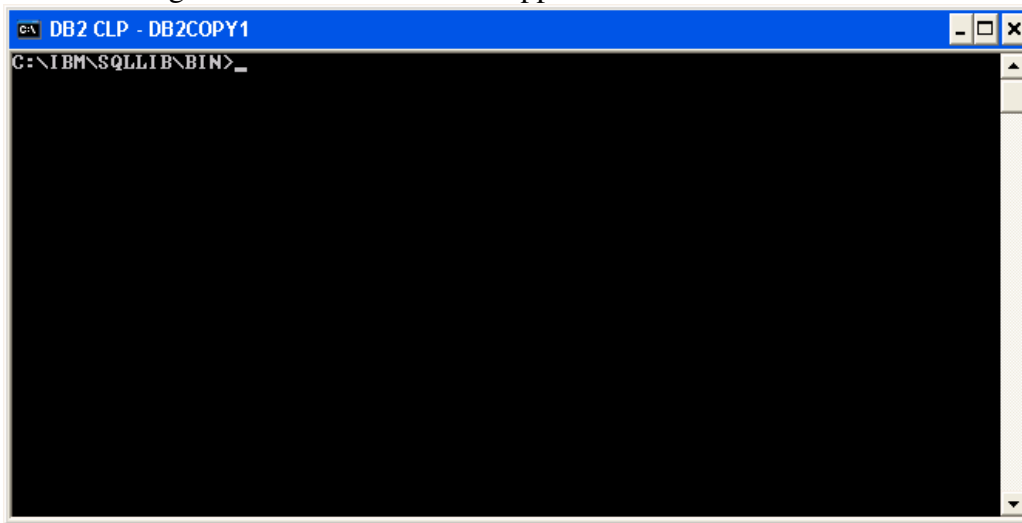
12. Since there is a tick beside the menu item "Build Automatically", the project will be rebuilt and redeployed automatically for every change to the project. If you want to perform multiple changes to the project before you rebuild the project. **You can turn off the tick of the menu item "Build Automatically"**. In this case, you have to select either "Build All" or "Build Project" to manually start the project rebuild process.



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13. To review the DB2 database environment, open a DB2 Command Window by clicking the following Windows menu button: **Start -> Programs -> IBM DB2 -> DB2COPY1 (default) -> Command Line Tools -> Command Window.**

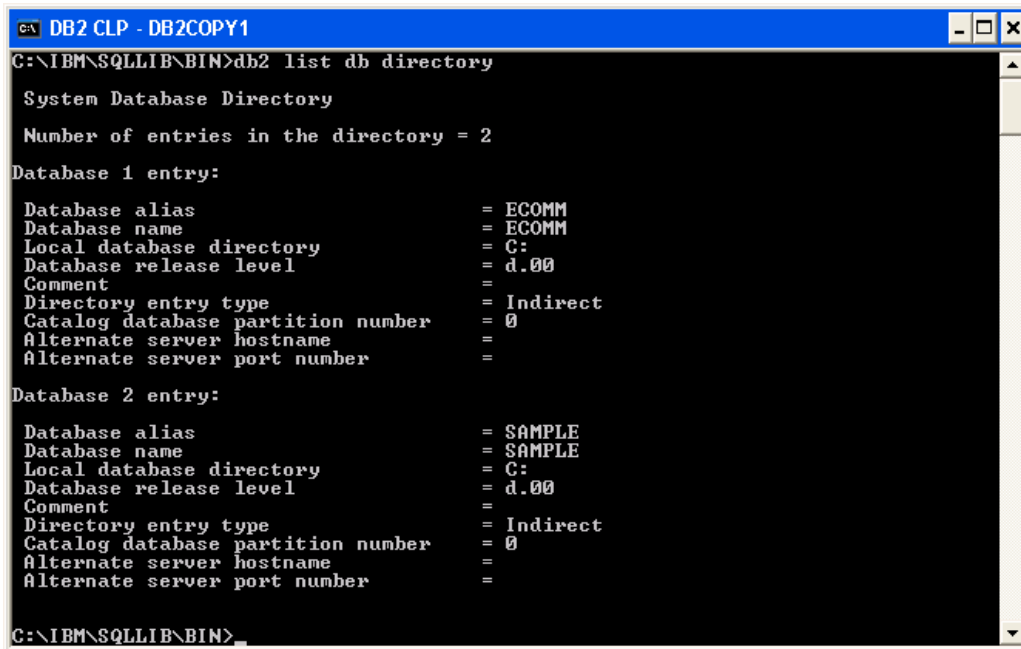
14. The following DB2 command window appears:



Please note that all DB2 SQL statements and commands must be entered to the DB2 command windows before they can be interpreted by DB2 properly (i.e., normal Windows command window does not work).

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15. Execute the command "db2 list db directory" in the DB2 command window and you will see there are two databases (i.e., SAMPLE and ECOMM) defined in the system:



```
DB2 CLP - DB2COPY1
C:\IBM\SQLLIB\BIN>db2 list db directory

System Database Directory

Number of entries in the directory = 2

Database 1 entry:

Database alias           = ECOMM
Database name            = ECOMM
Local database directory = C:
Database release level  = d.00
Comment                  =
Directory entry type     = Indirect
Catalog database partition number = 0
Alternate server hostname =
Alternate server port number =

Database 2 entry:

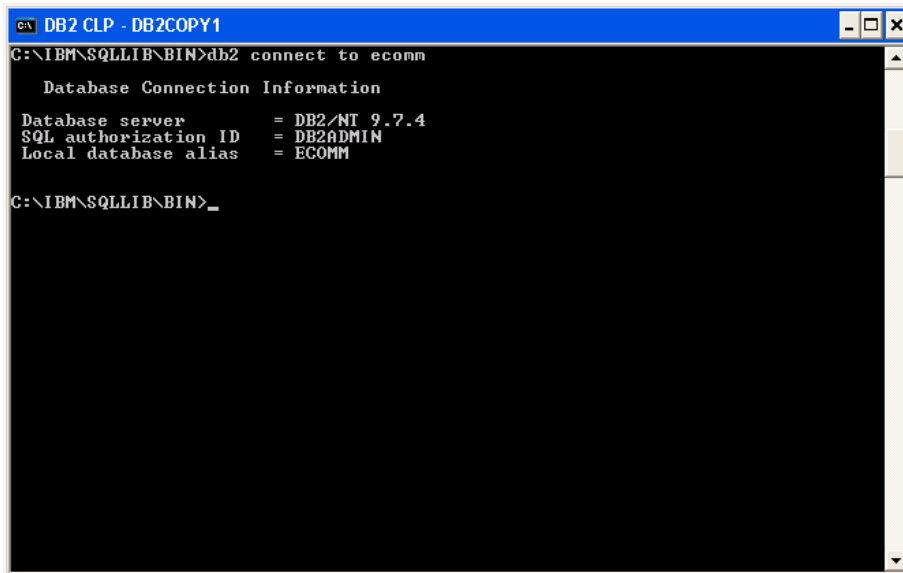
Database alias           = SAMPLE
Database name            = SAMPLE
Local database directory = C:
Database release level  = d.00
Comment                  =
Directory entry type     = Indirect
Catalog database partition number = 0
Alternate server hostname =
Alternate server port number =

C:\IBM\SQLLIB\BIN>
```

The database **ECOMM** & **SAMPLE** is a database defined in the primary instance (DB2) in the local PC. We will access **ECOMM** database in the later chapters.

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16. Enter the command "db2 connect to sample" to connect to the **ECOMM** database.  
The **Q0-project** application is configured to query the **ECOMM** database:



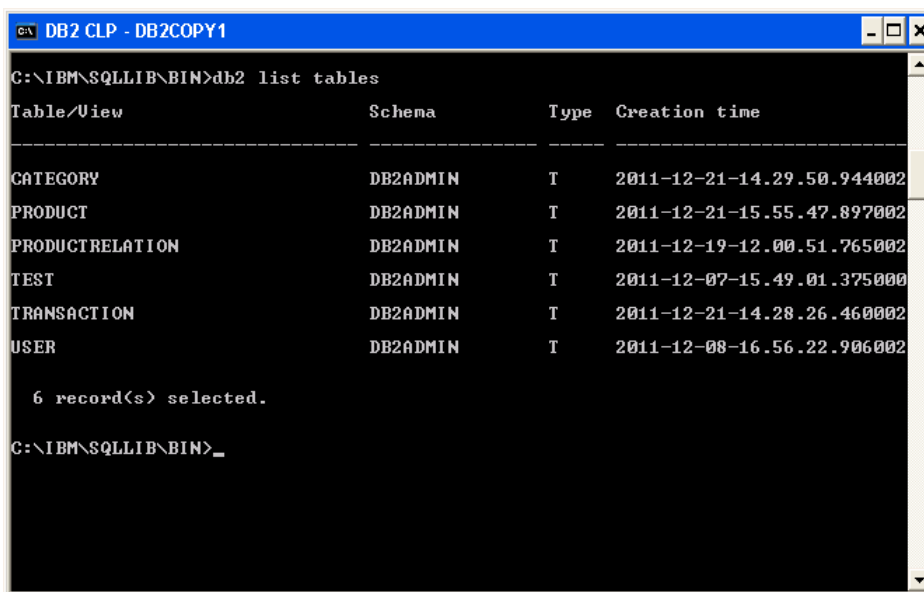
```
DB2 CLP - DB2COPY1
C:\IBM\SQLLIB\BIN>db2 connect to ecomm

Database Connection Information

Database server      = DB2/NT 9.7.4
SQL authorization ID = DB2ADMIN
Local database alias = ECOMM

C:\IBM\SQLLIB\BIN>_
```

17. Enter the command "db2 list tables" to display the list of major database objects created by the user "db2admin":



```
DB2 CLP - DB2COPY1
C:\IBM\SQLLIB\BIN>db2 list tables

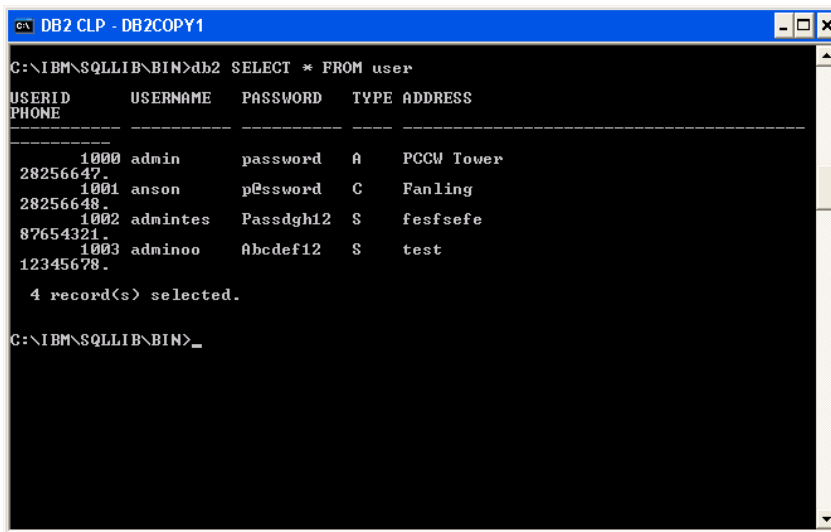
Table/View          Schema      Type  Creation time
-----
CATEGORY            DB2ADMIN    T     2011-12-21-14.29.50.944002
PRODUCT             DB2ADMIN    T     2011-12-21-15.55.47.897002
PRODUCTRELATION     DB2ADMIN    T     2011-12-19-12.00.51.765002
TEST                DB2ADMIN    T     2011-12-07-15.49.01.375000
TRANSACTION         DB2ADMIN    T     2011-12-21-14.28.26.460002
USER                DB2ADMIN    T     2011-12-08-16.56.22.906002

6 record(s) selected.

C:\IBM\SQLLIB\BIN>_
```

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18. Enter the command "db2 SELECT \* FROM User". Refer to the following screen for the results:

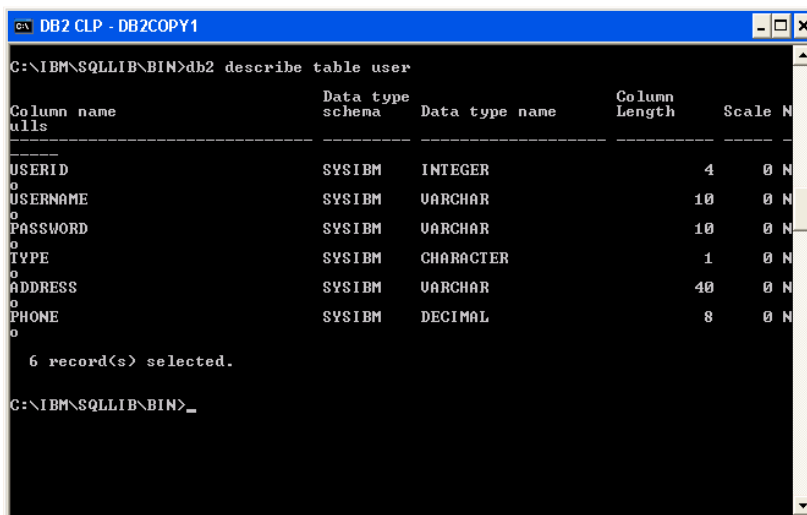


```
DB2 CLP - DB2COPY1
C:\IBM\SQLLIB\BIN>db2 SELECT * FROM user
USERID      USERNAME    PASSWORD    TYPE ADDRESS
PHONE
-----
1000 admin      password    A   PCCW Tower
28256647.
1001 anson     password    C   Fanling
28256648.
1002 admintes Passdgh12   S   fesfsefe
87654321.
1003 adminoo  abcdef12    S   test
12345678.

  4 record(s) selected.

C:\IBM\SQLLIB\BIN>_
```

19. Finally, enter the following command "db2 describe table user" to display the column definition of the table USER:



```
DB2 CLP - DB2COPY1
C:\IBM\SQLLIB\BIN>db2 describe table user
Column name      Data type      Data type name      Column      Scale N
name             schema         name                 Length      N
-----
USERID           SYSIBM        INTEGER              4           0 N
USERNAME         SYSIBM        VARCHAR              10          0 N
PASSWORD         SYSIBM        VARCHAR              10          0 N
TYPE             SYSIBM        CHARACTER             1           0 N
ADDRESS          SYSIBM        VARCHAR              40          0 N
PHONE            SYSIBM        DECIMAL              8           0 N

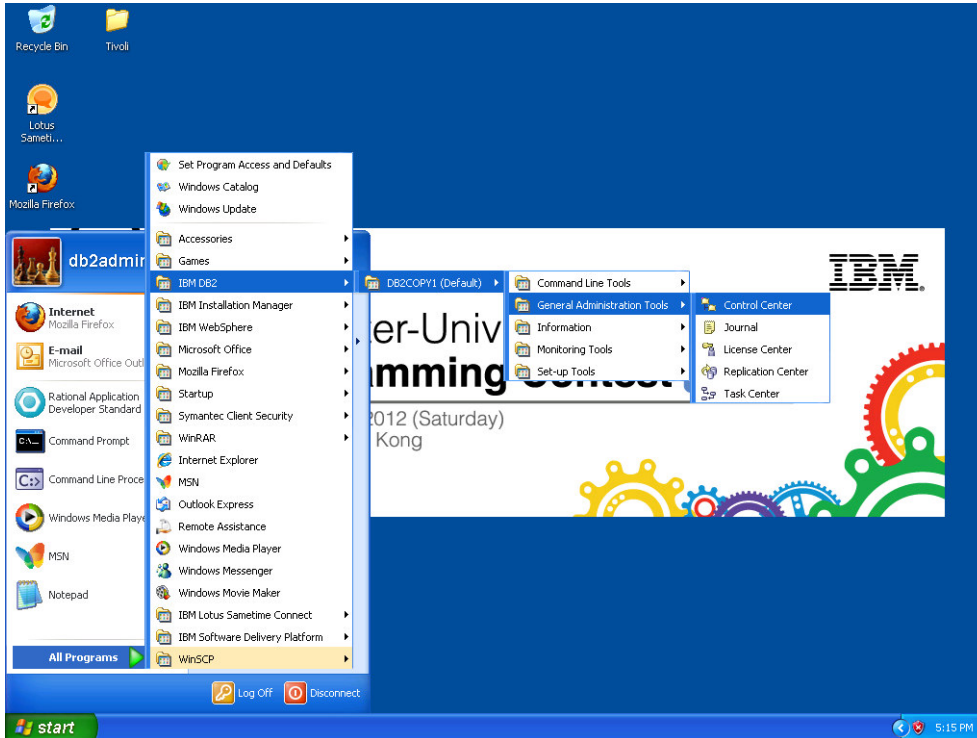
  6 record(s) selected.

C:\IBM\SQLLIB\BIN>_
```

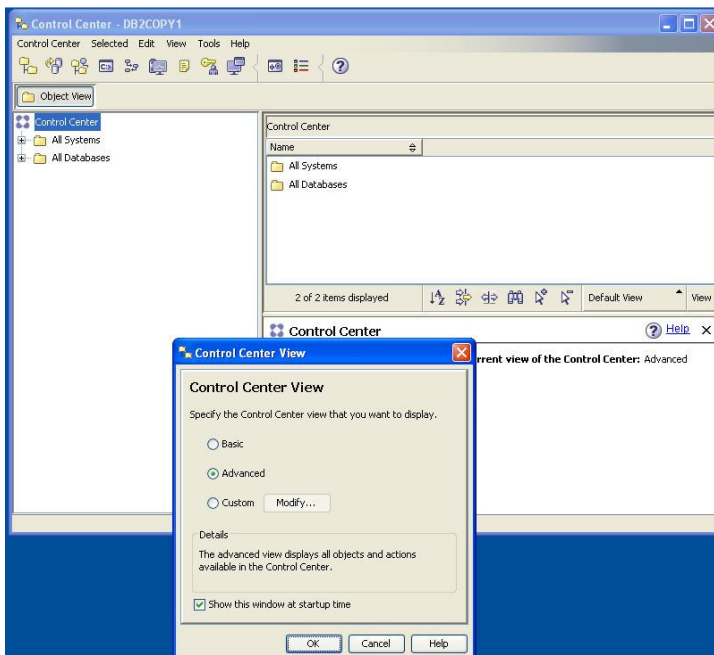
20. In general you can run SQL statements by putting each statement after the command "db2". You need to double quote the command in case it contains wildcard characters.

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21. Now we will try to use the graphical interface of DB2. Run the DB2 control center from "Start"->"All Programs"->"IBM DB2"->"DB2COPY1 (Default)"->"General Administration Tools"->"Control Center":



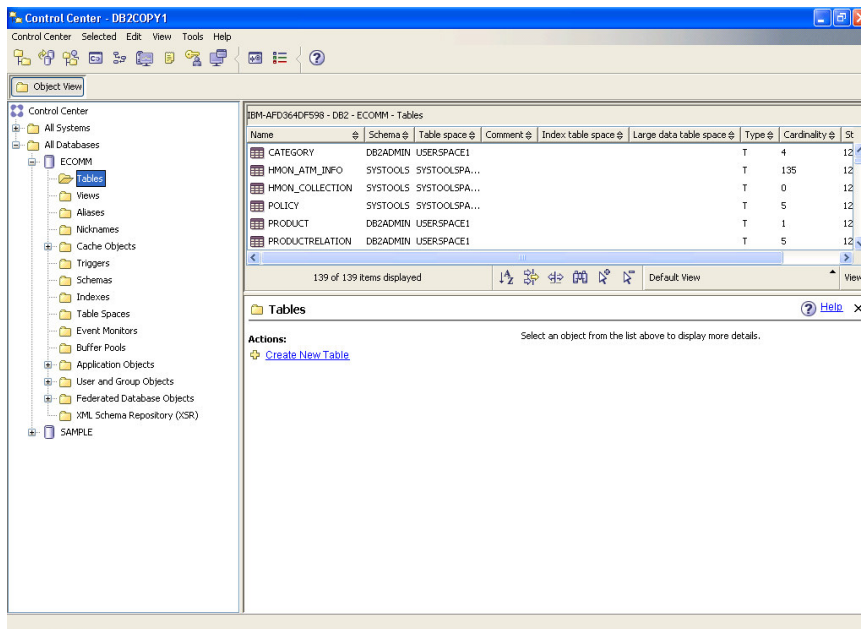
22. The DB2 control center is displayed. Press "OK" on the Control Center View to accept the default view:



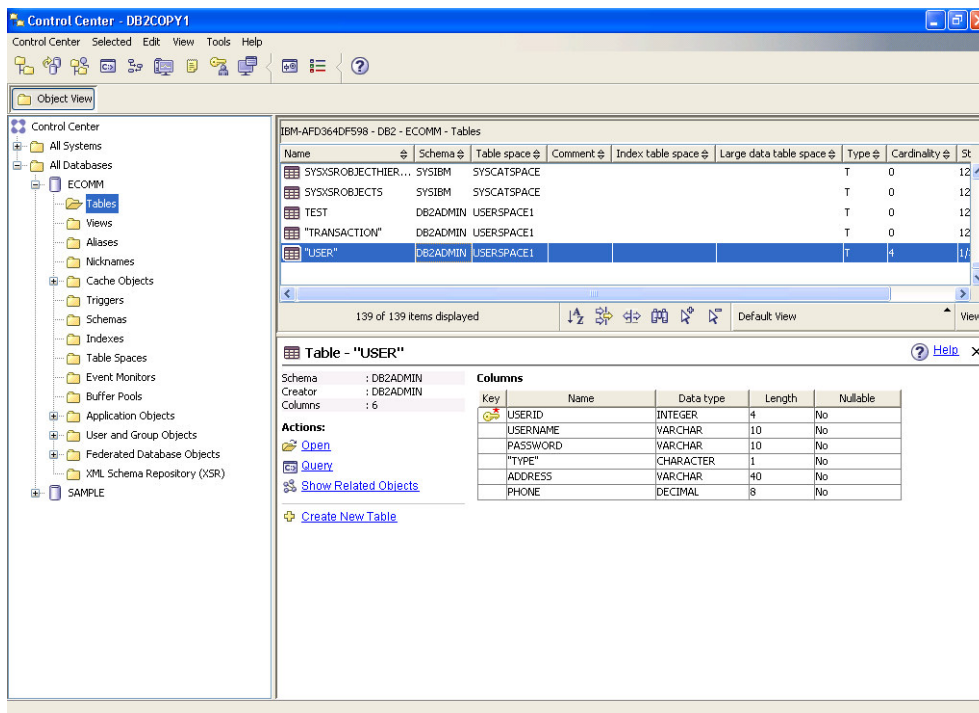


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23. In the Control Center screen, navigate to "All Databases"->"ECOMM"->"Tables" on the left pane and then the list of tables will be displayed on the top right pane:

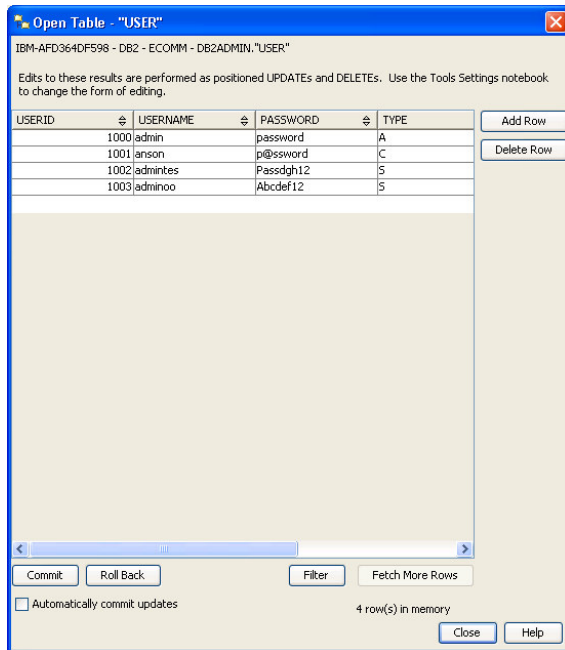


24. Click on the table **USER** and the field definition of the table will be displayed on the lower right pane:



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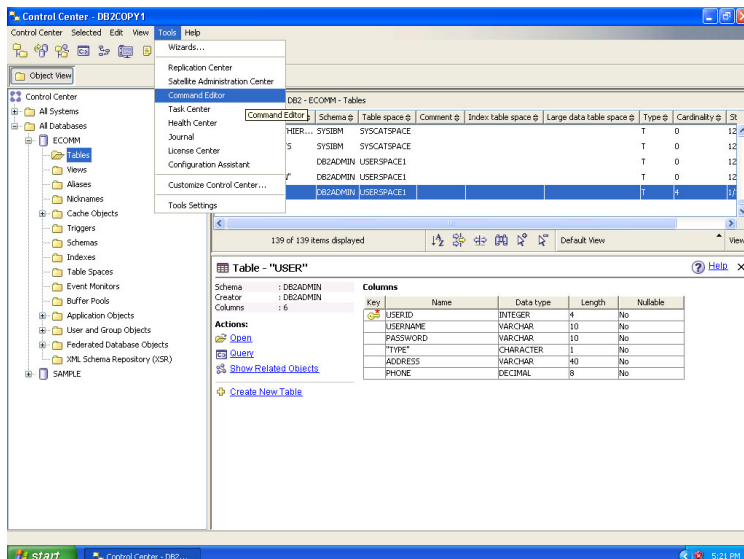
25. Double click on the table **USER** and then a new window is popped up to display the content of the table:



Spend some time on reviewing the functions of this window. Press the button "Close" to close the window.

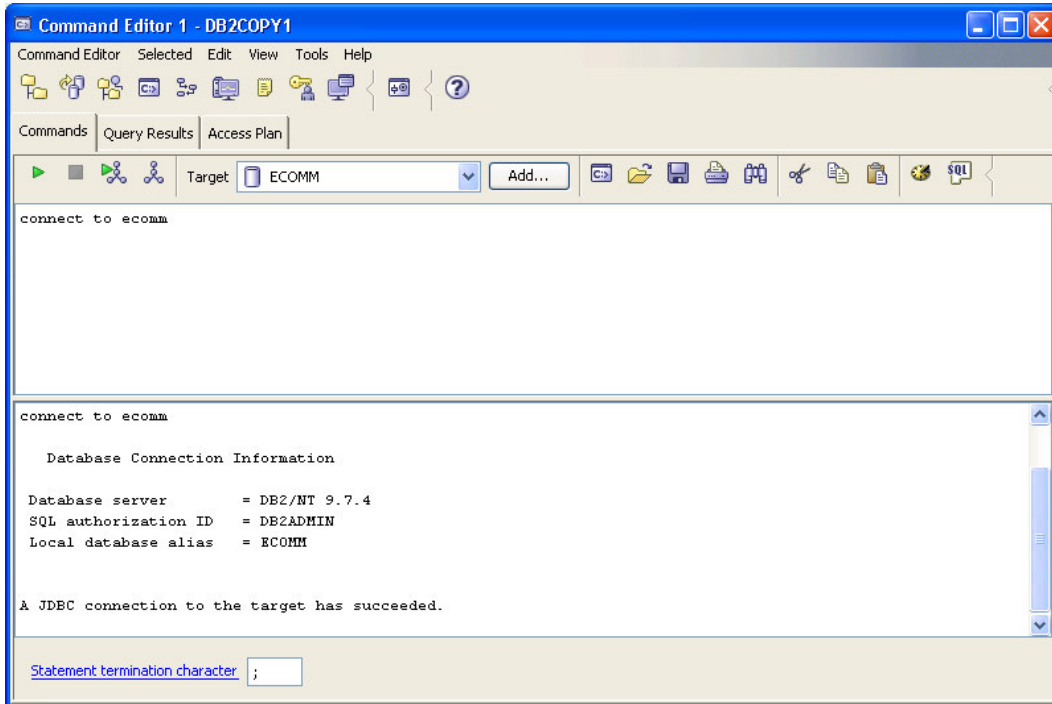
26. Spend some more time to understand the other objects (e.g., indexes) in the database and functions of Control Center.

27. Then we will review the DB2 Command Editor. Execute the Command Editor through "Tools" -> "Command Editor" from the manual bar of the Control Center:



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28. The Command Editor screen is displayed. You can type the commands in the top pane and then the result will be displayed in the bottom pane. Type the command "connect to ecomm" in the top pane and then press the run button (i.e., the green triangle button) just above the top pane:



29. The Command Editor will then log into the database **ecomm**:

You can run SQL statements just like what you did in the command window. But you do not need to prefix each command by "**db2**".

Now please try the Command Editor out by entering more commands and see how it responds.

30. This is the end of this exercise.