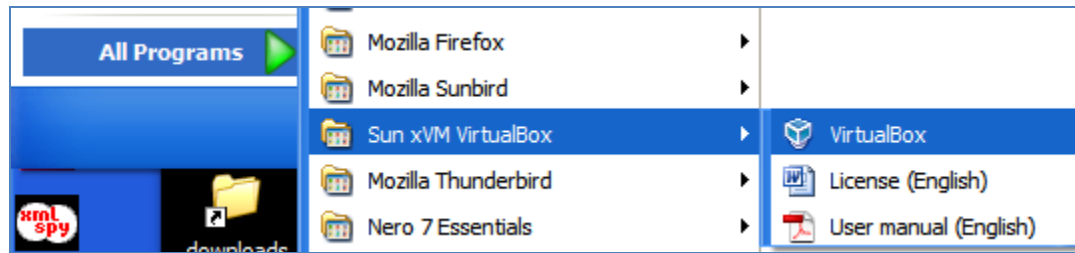


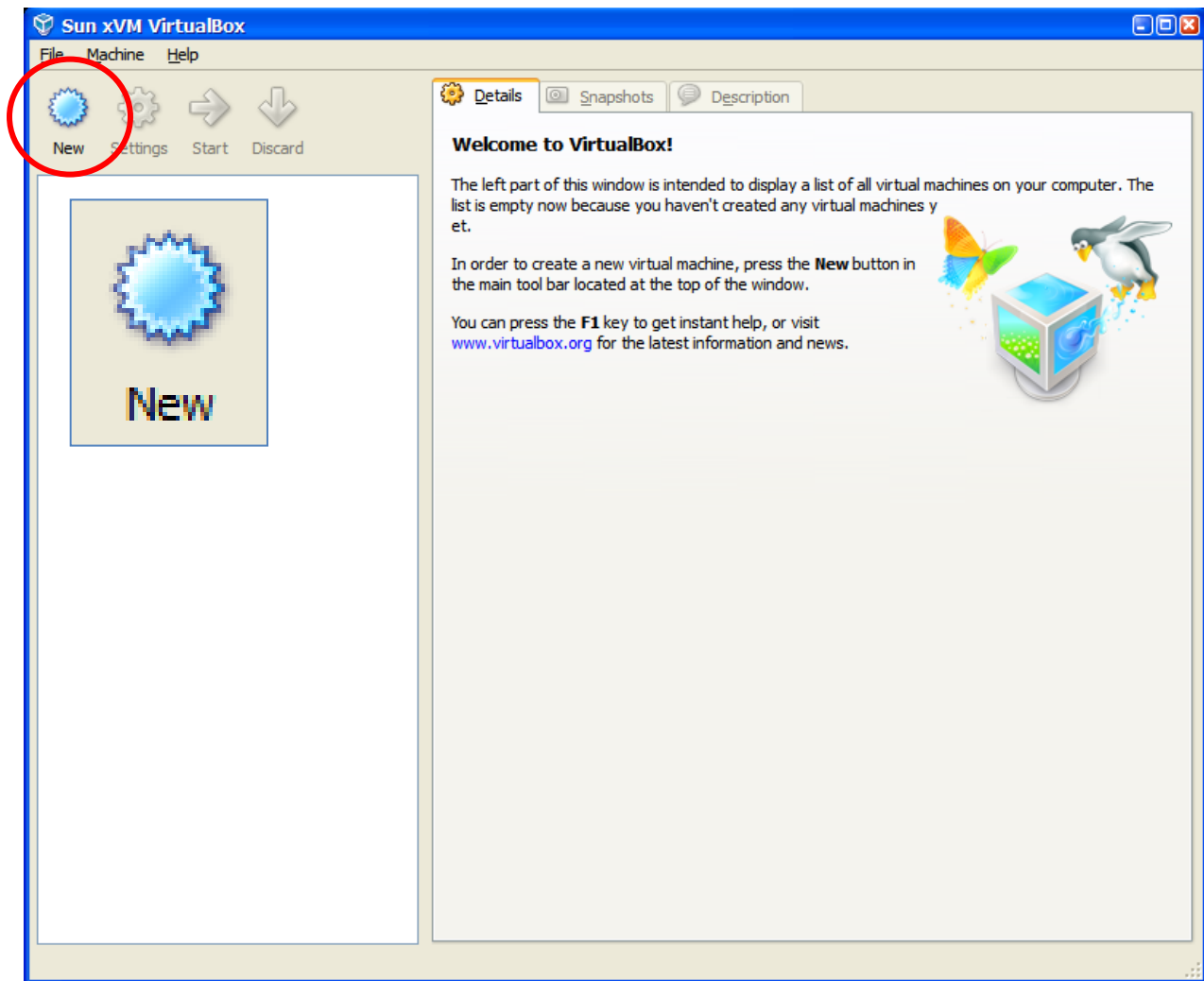
COMP5323 - Web Database & Applications

Using DB2 to Manage XML Files

Start Virtual Box first.



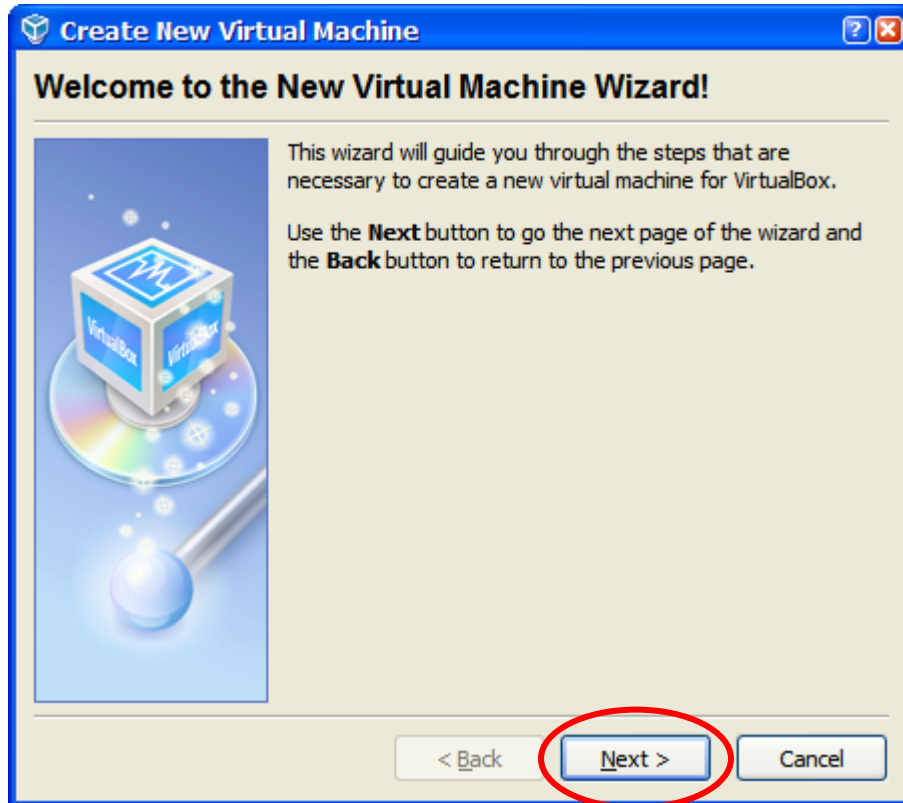
Select [Programs] → [Sun xVM VirtualBox] → [VirtualBox].



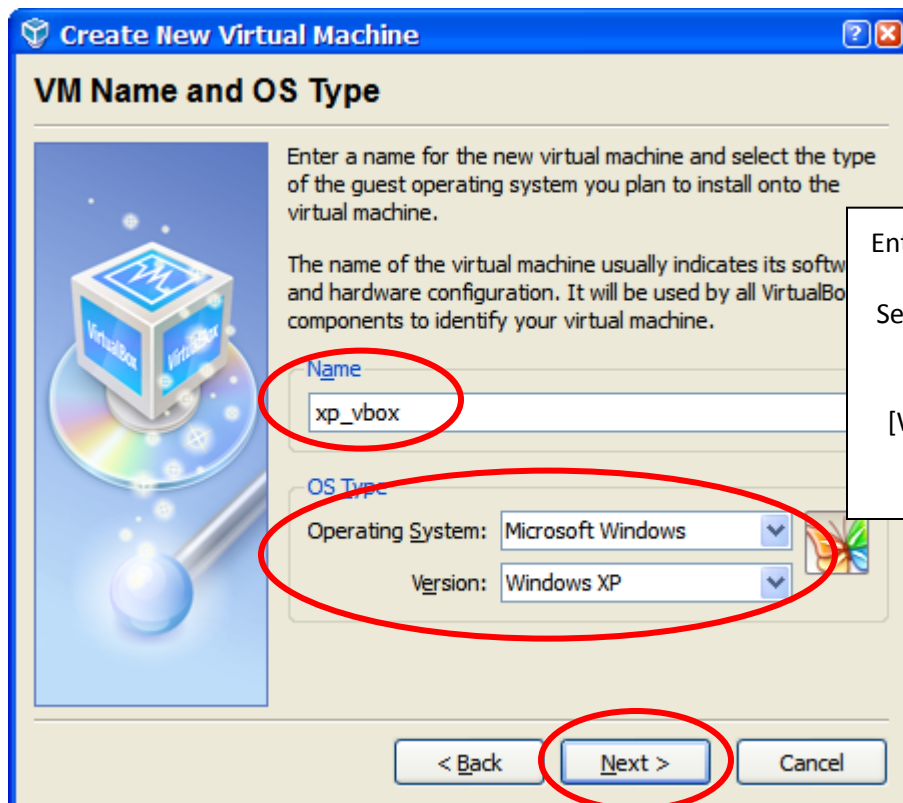
Create a new virtual machine. Click [New].
It is going to define some settings of the machine.

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Using DB2 to Manage XML Files



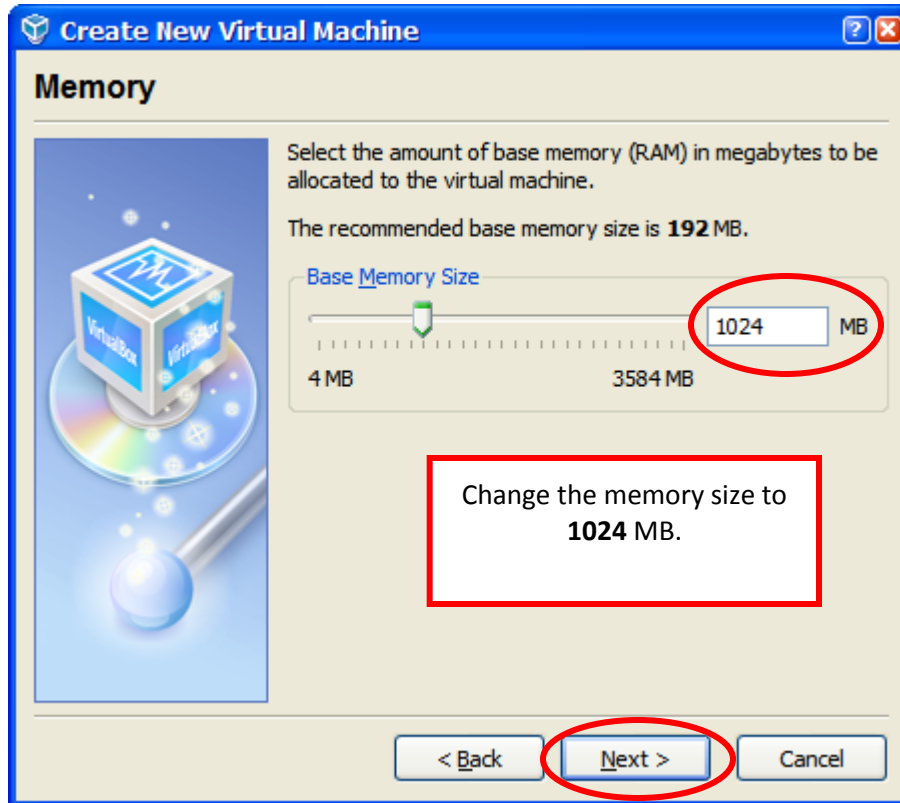
Click [Next]



Enter [xp_vbox] for [Name] box.

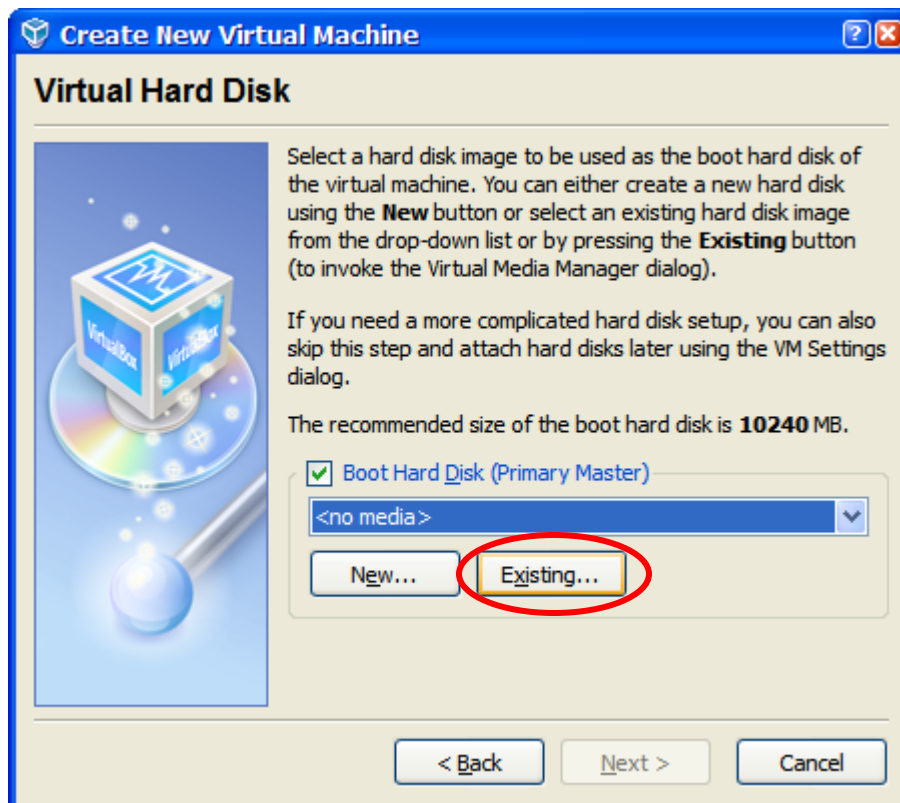
Select [Microsoft Windows] for
Operating System
and
[Windows XP] as the Version.

Click [Next].



It is recommended to have at least ONE GB memory size to run the virtual machine. If you don't have sufficient memory, please try to upgrade it. If not, don't use it.

Click [Next].

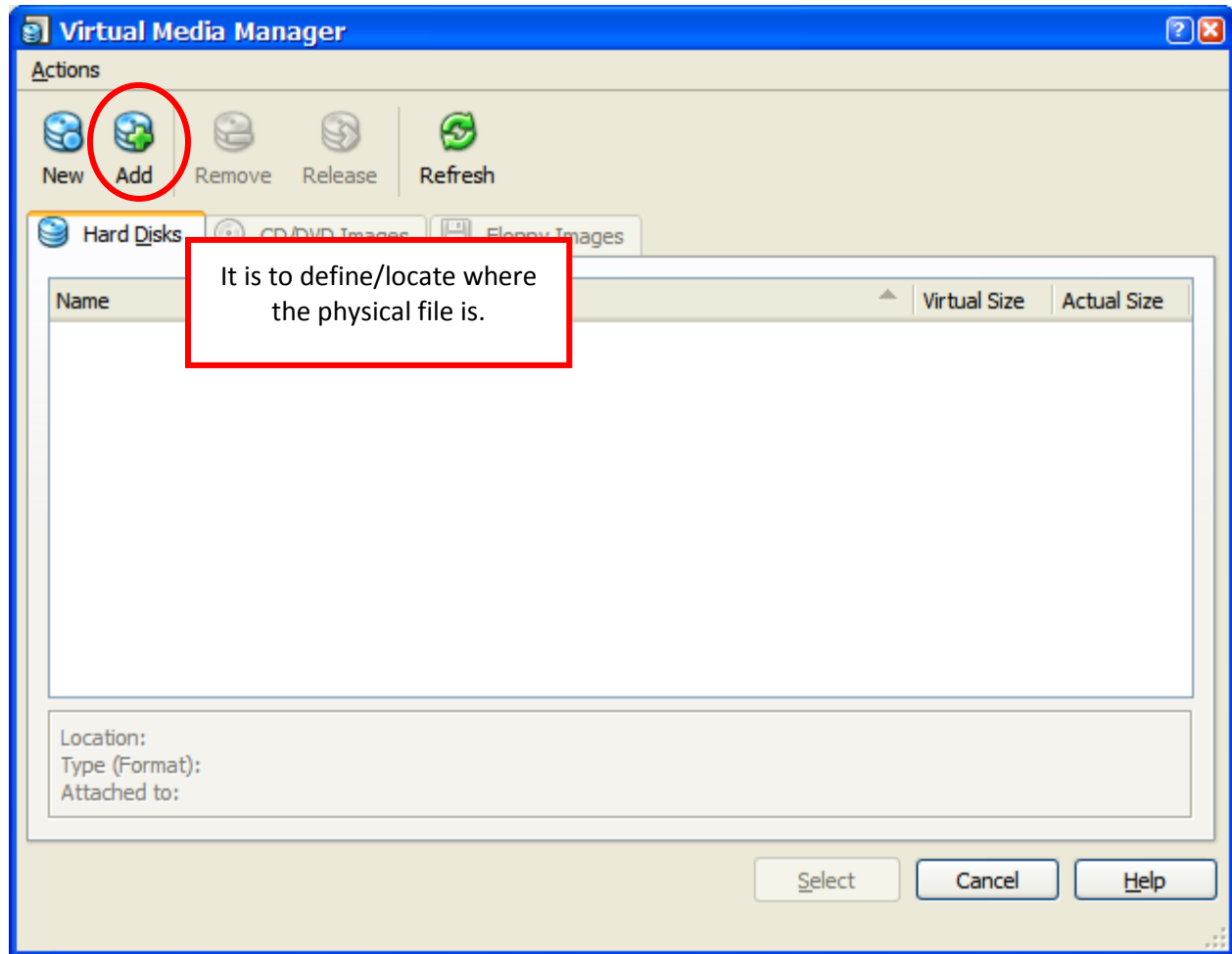


Here, we create or define the physical file storing the virtual machine.

Click [Existing...].

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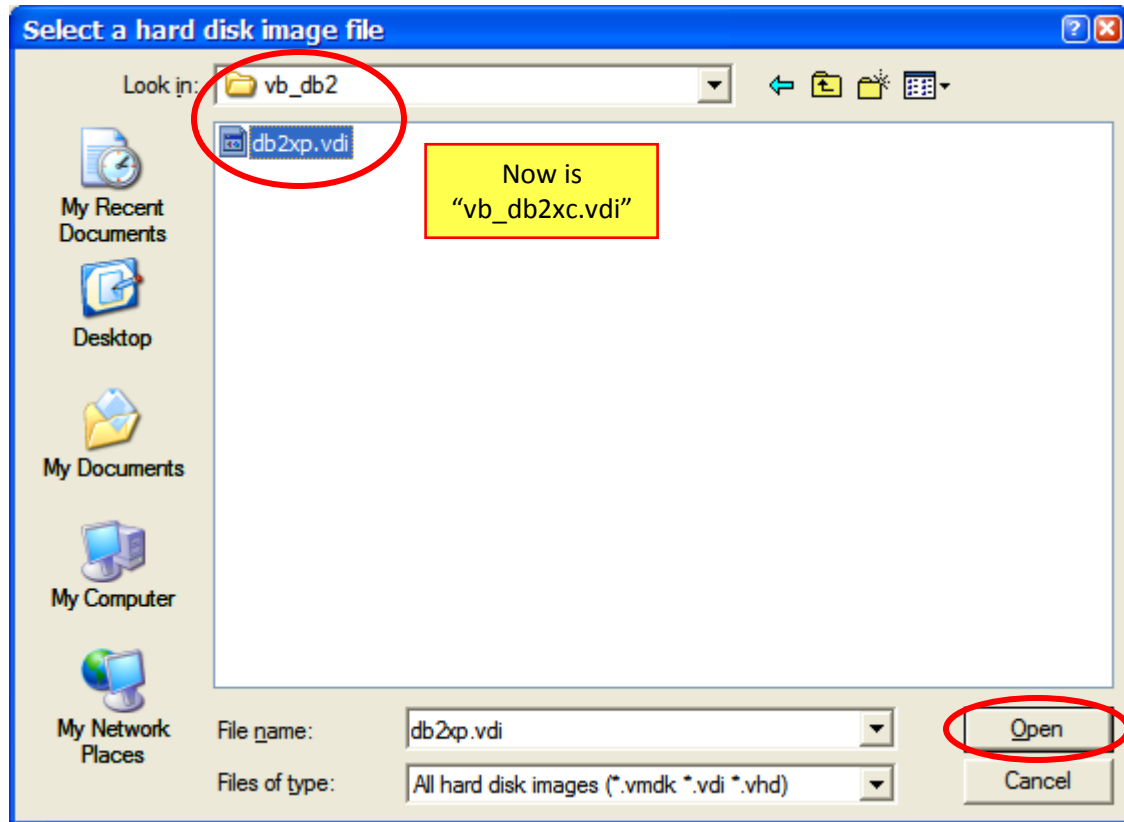
Using DB2 to Manage XML Files



Click [Add].

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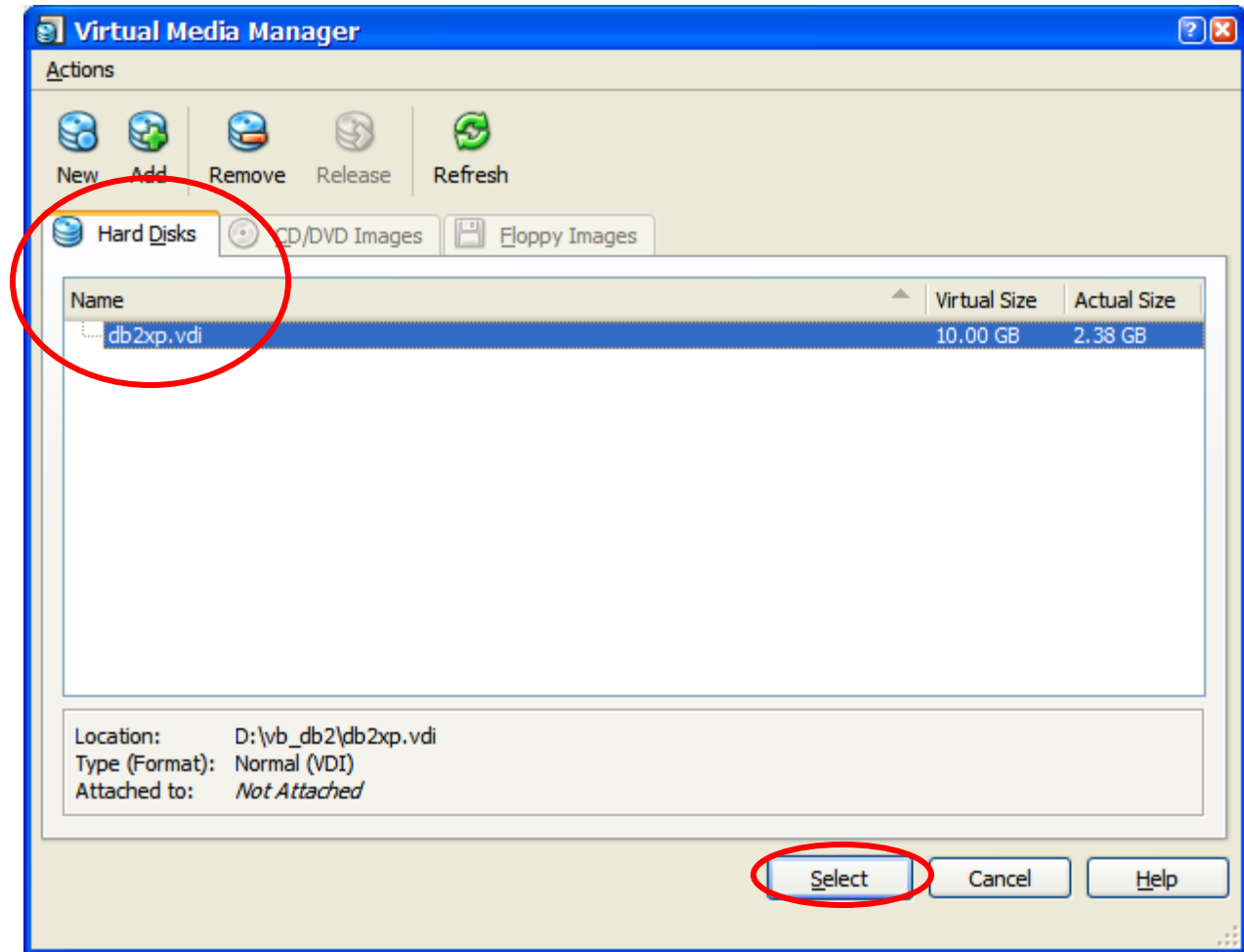
Using DB2 to Manage XML Files



Locate where the [vdi] file is (location where you have copied the file). Click [Open].

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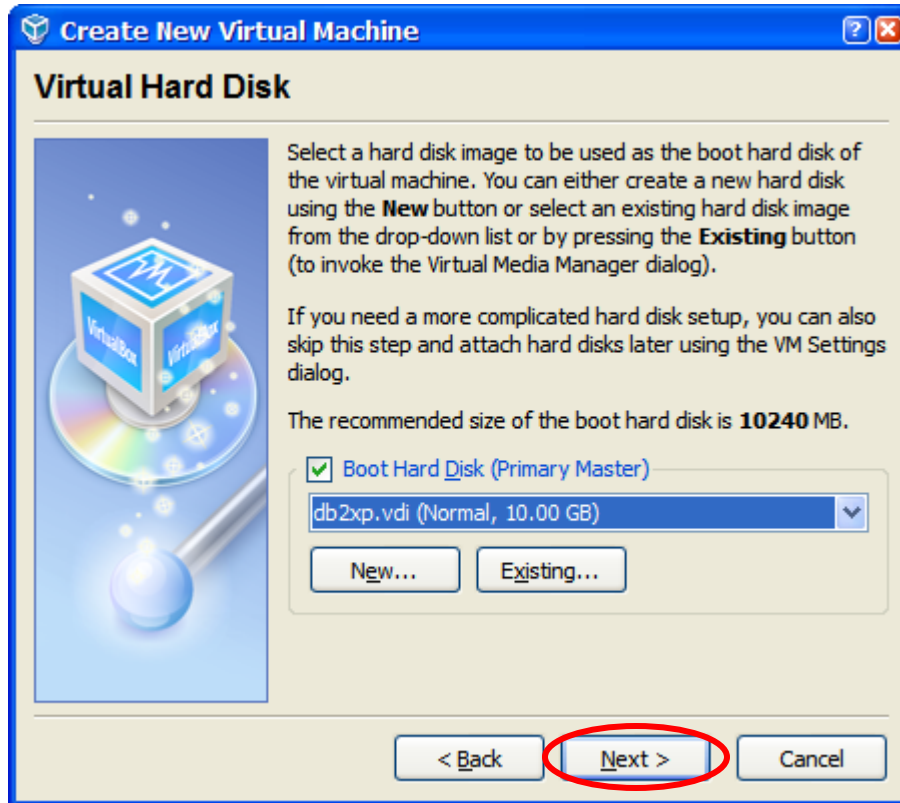
Using DB2 to Manage XML Files



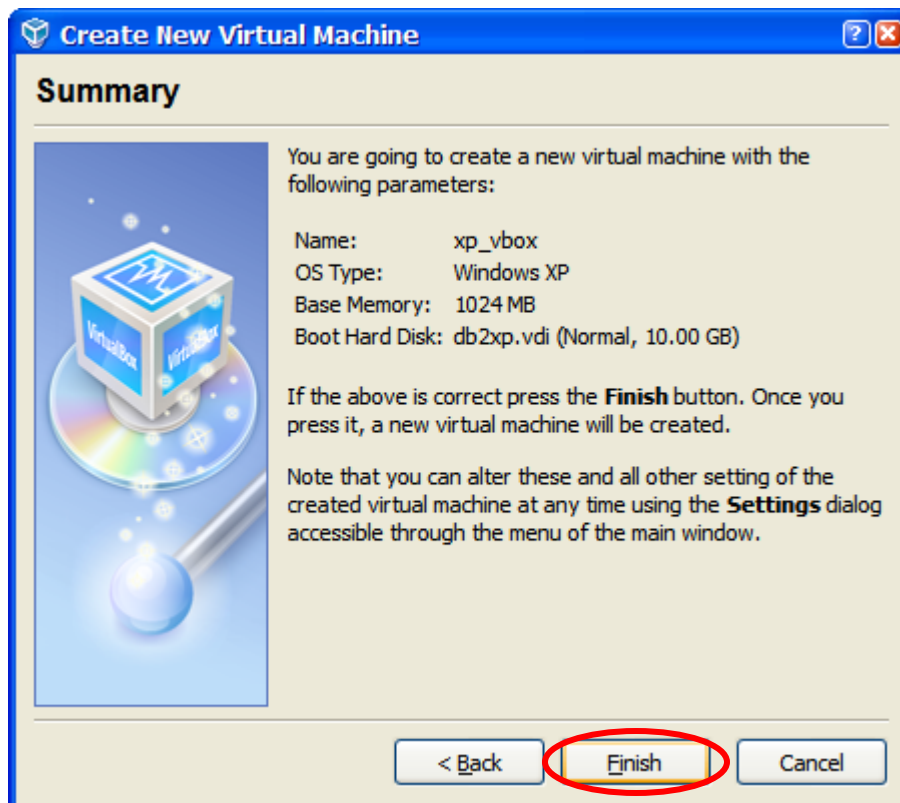
Click [Select].

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Using DB2 to Manage XML Files



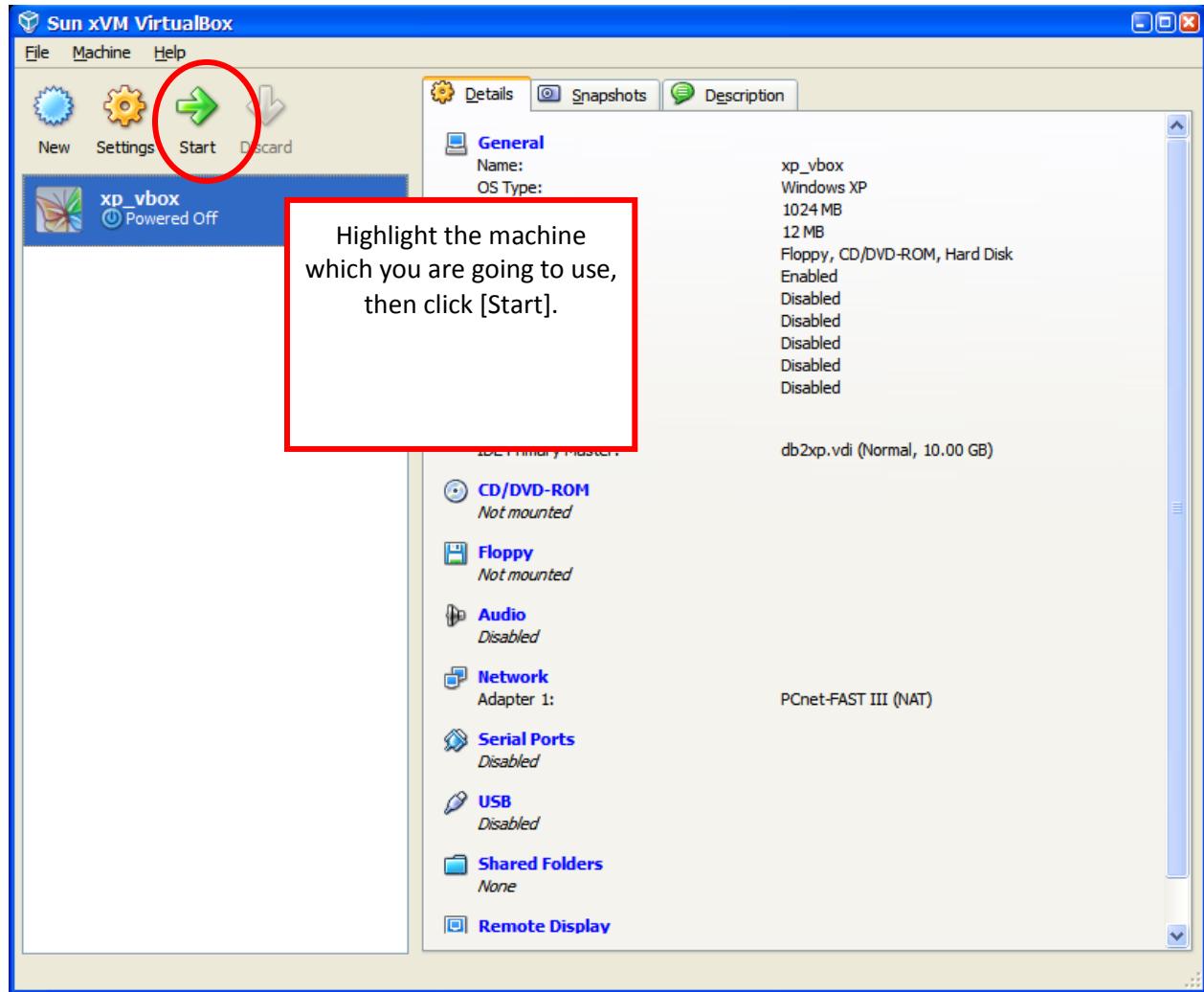
Click [Next].



Click [Finish].

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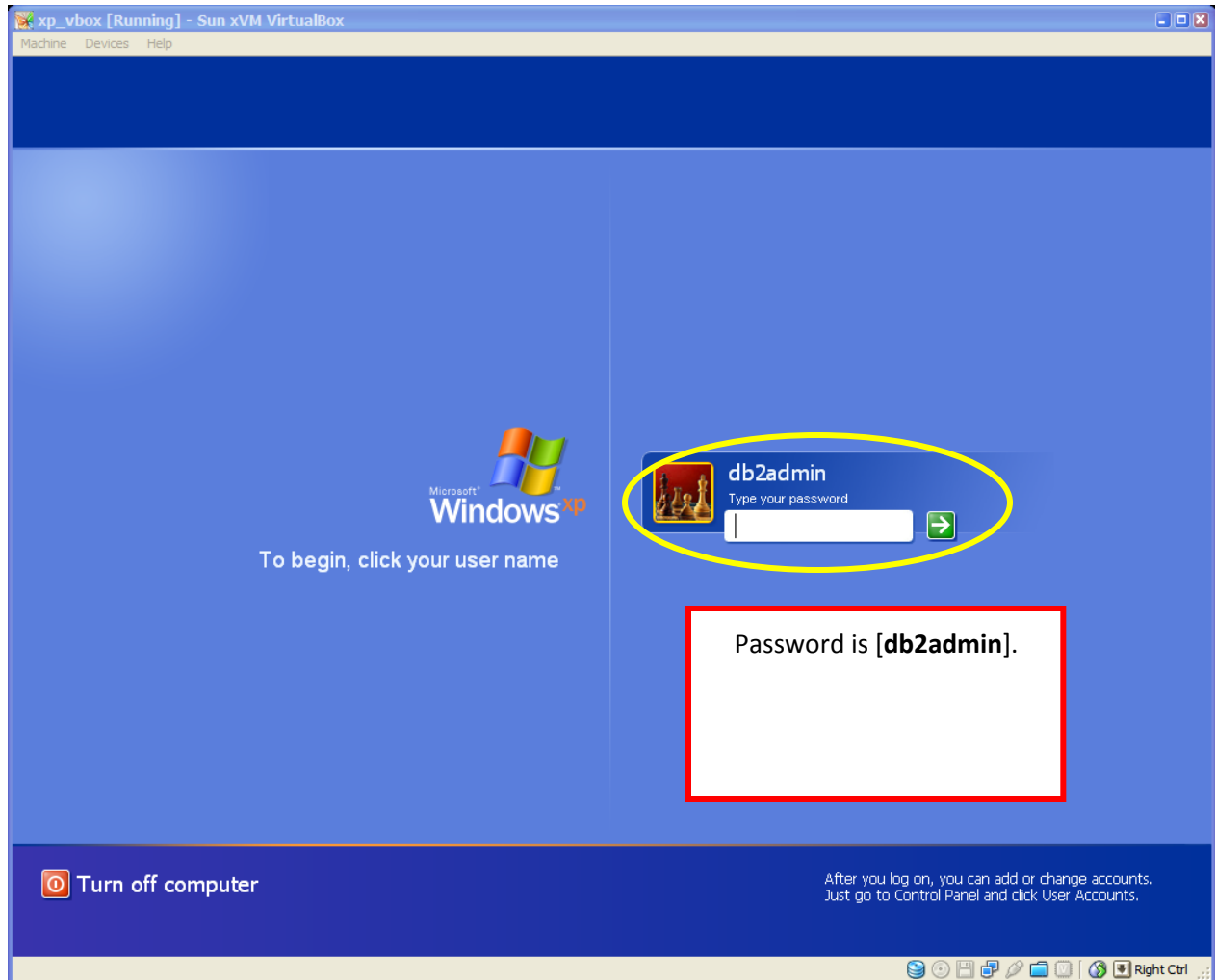
Using DB2 to Manage XML Files



Now, it is ready to run the virtual machine. Simply click [Start], then you can use the virtual machine.

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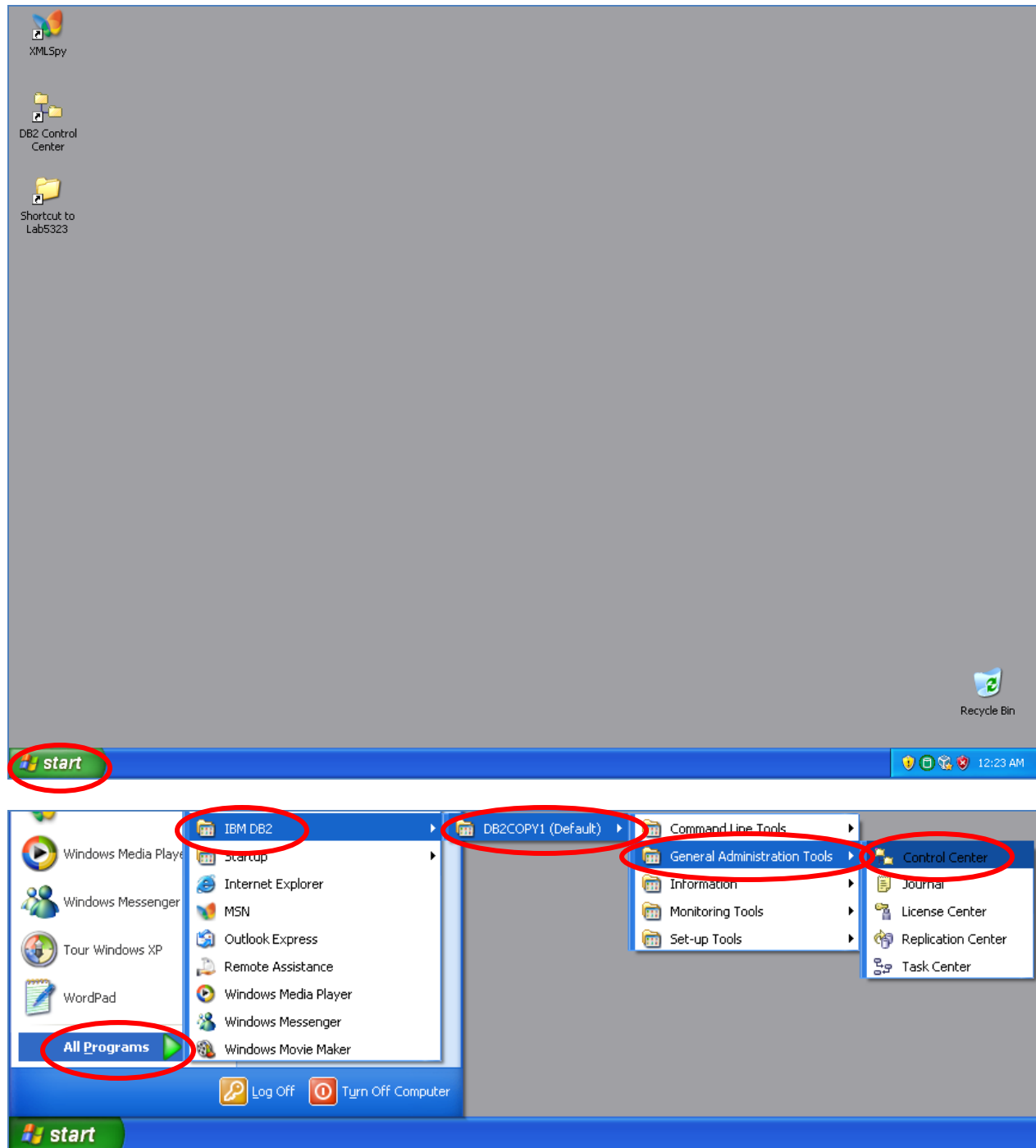
Using DB2 to Manage XML Files



Enter the password, [db2admin] to start the machine.

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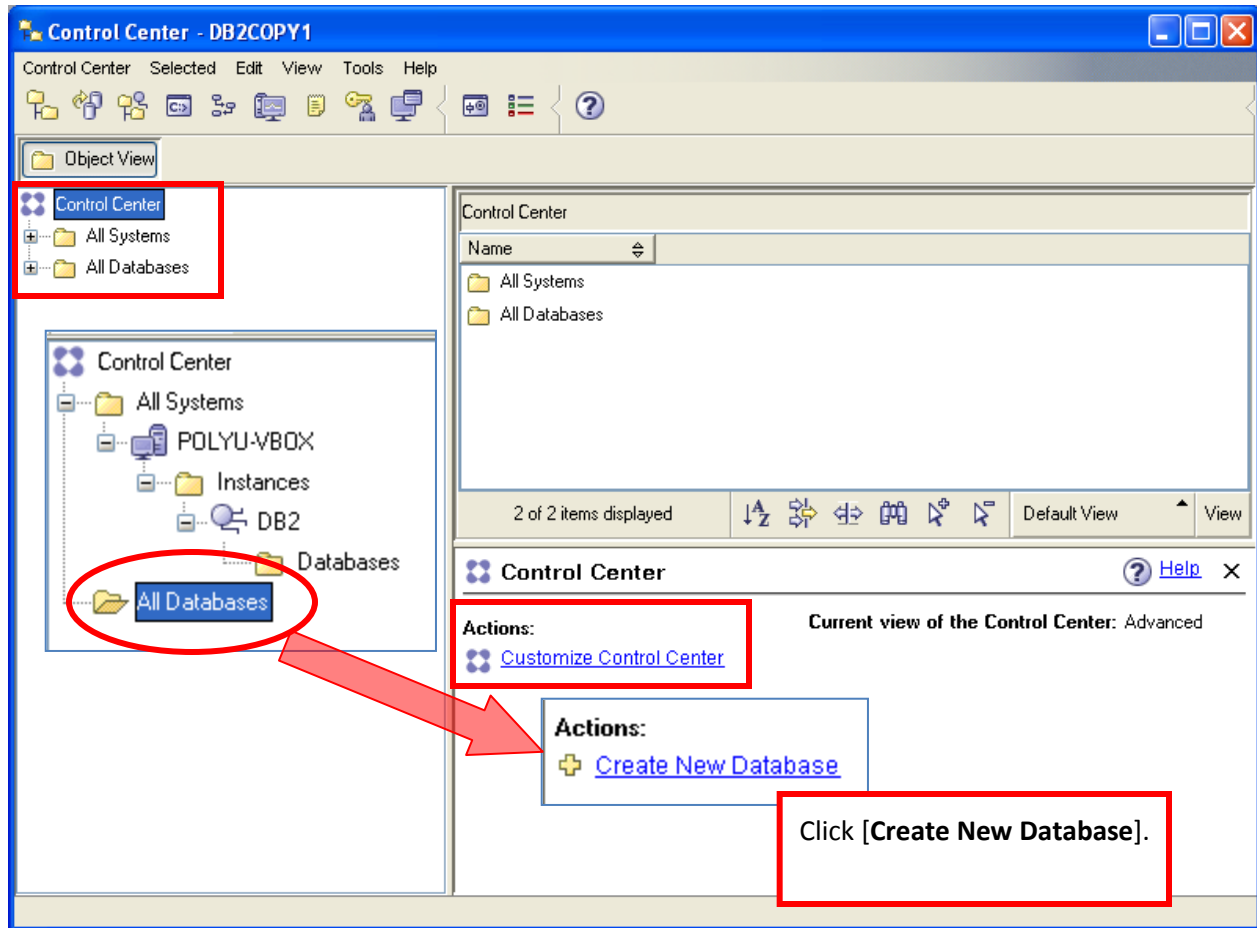
Using DB2 to Manage XML Files



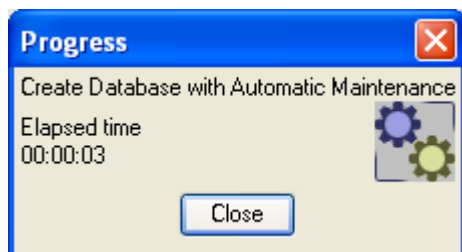
Select [Programs] → [IBM DB2] → [DB2COPY1 (Default)] →
→ [General Administration Tools] → [Control Center].

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Using DB2 to Manage XML Files



Well, we are now in the [Control Center]. Place the pointer on [All Databases], then in the [Actions:] box, [Customize Control Center] changes to [Create New Database]. Click on it to create our database.



Creation of new database is being processed.

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Using DB2 to Manage XML Files

Create Database with Automatic Maintenance

1. Name

Specify a name for your new database

This wizard helps you create a new database; assign disk space; configure automatic storage, notification, and performance options; and select a maintenance strategy.

Type a new name for your database and select the drive or directory where the database will be created. Your data will be stored on the same drive or directory. Click Next to continue.

Database name:

Default path:

Alias:

Comment:

Database name:

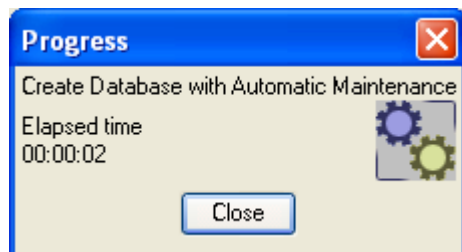
Default path:

Alias:

Comment:

Next > **Finish** Cancel

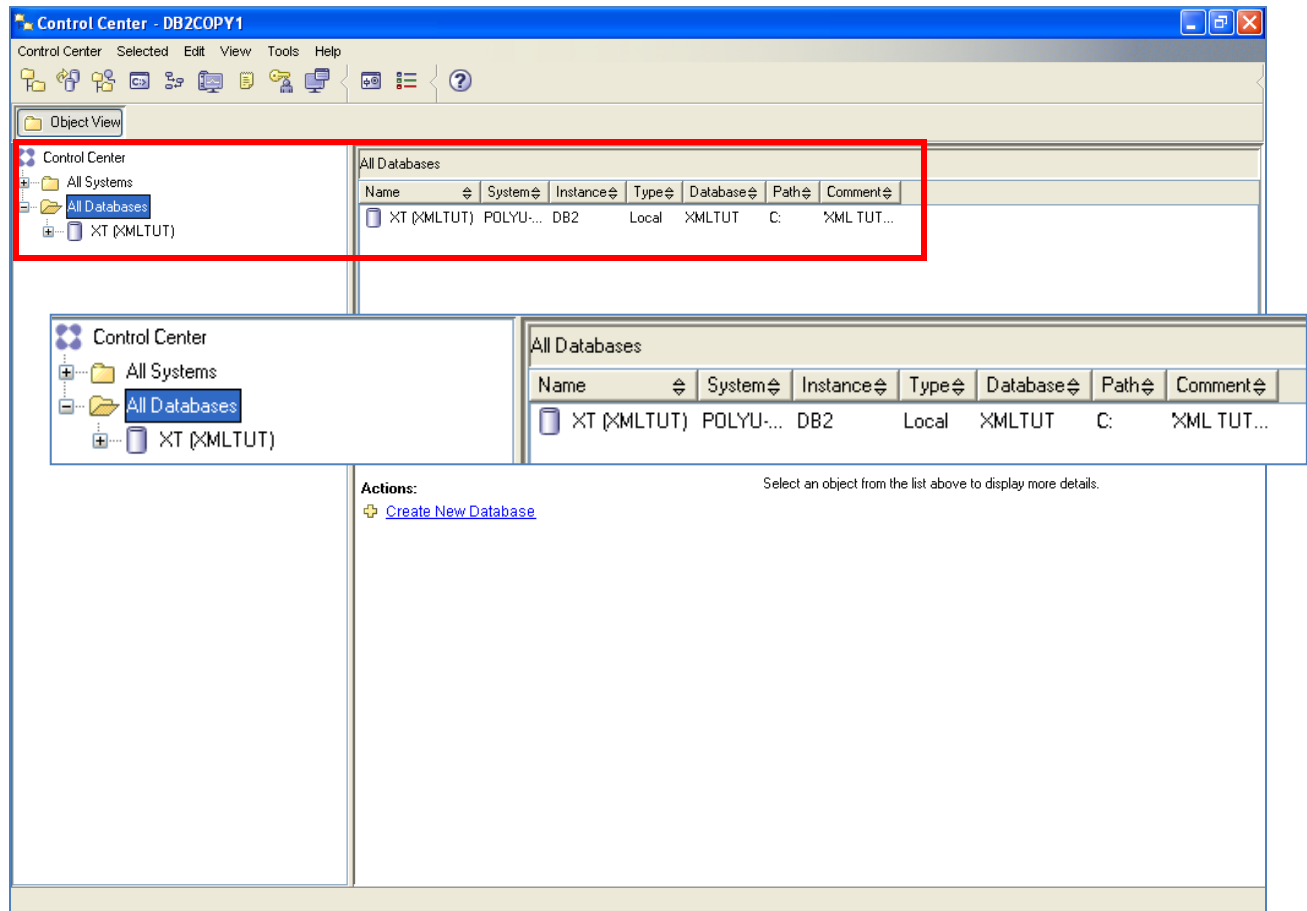
Enter details about the database as above then click [Finish].



Finally, the database file is being created.

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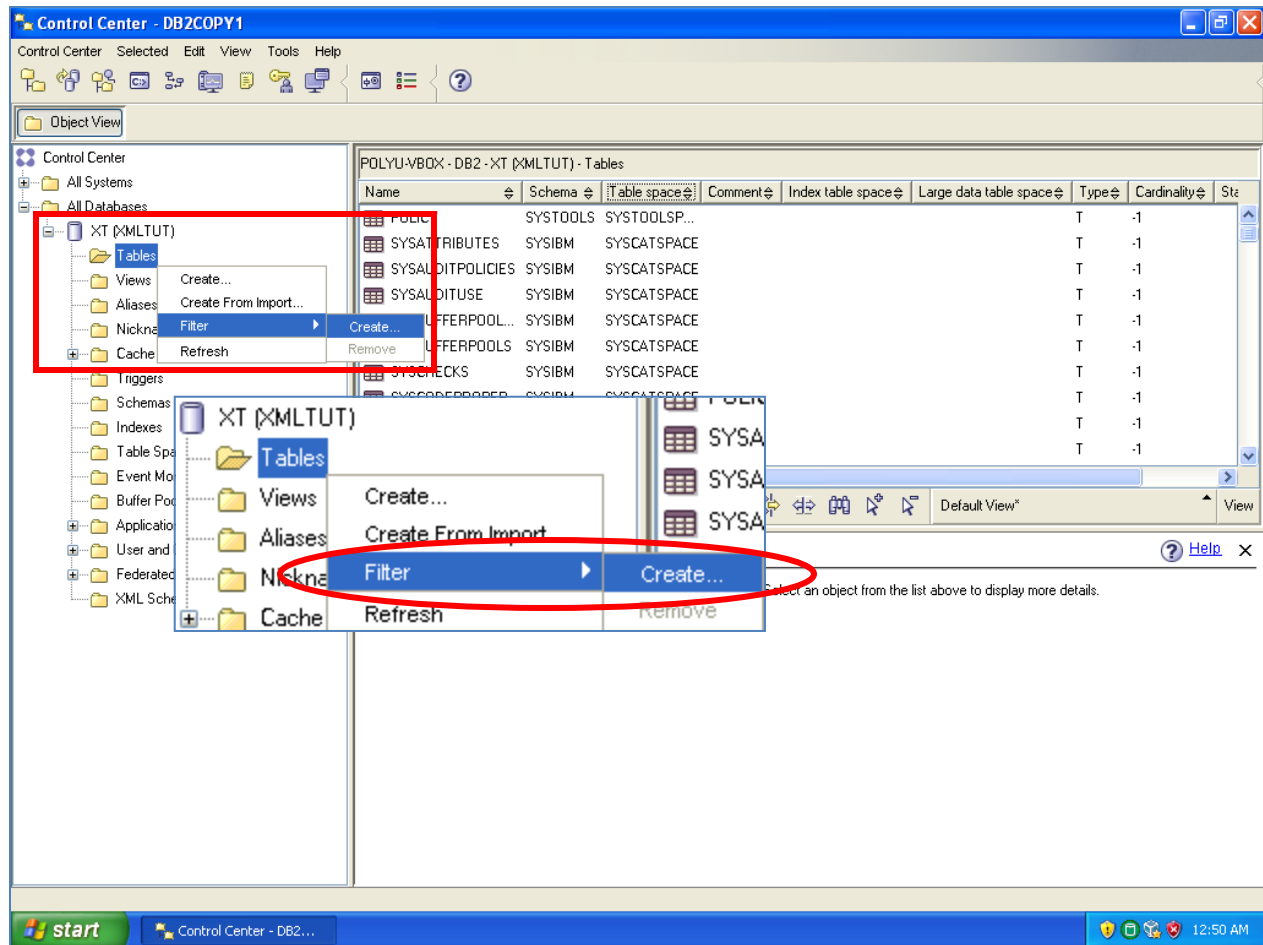
Using DB2 to Manage XML Files



Now, you can see your database created.

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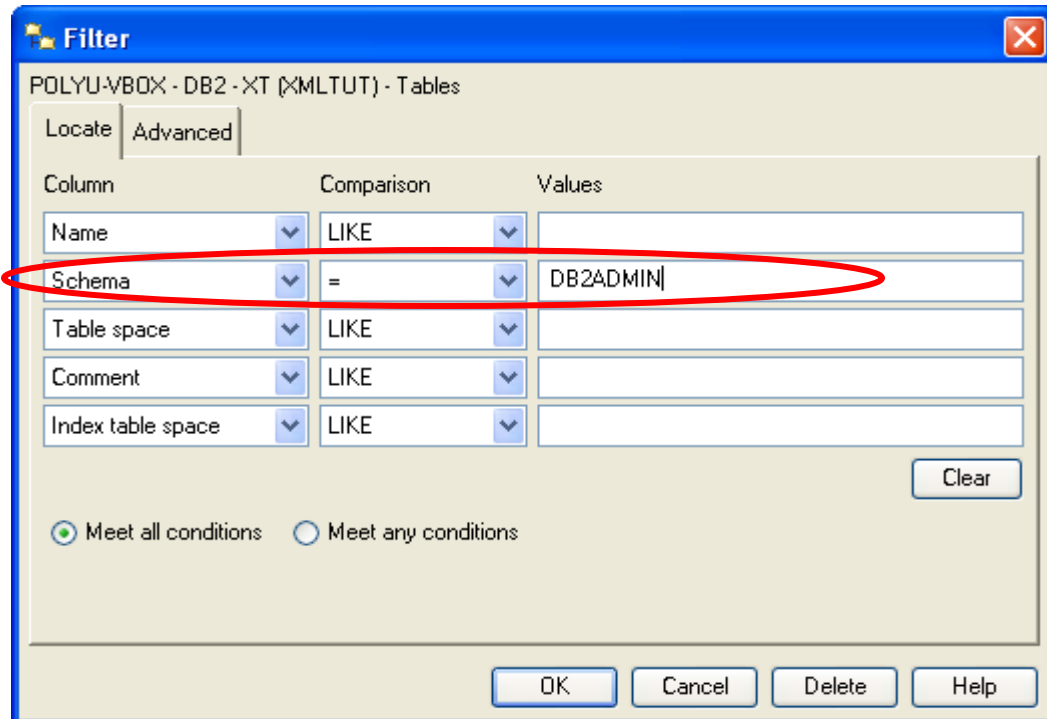
Using DB2 to Manage XML Files



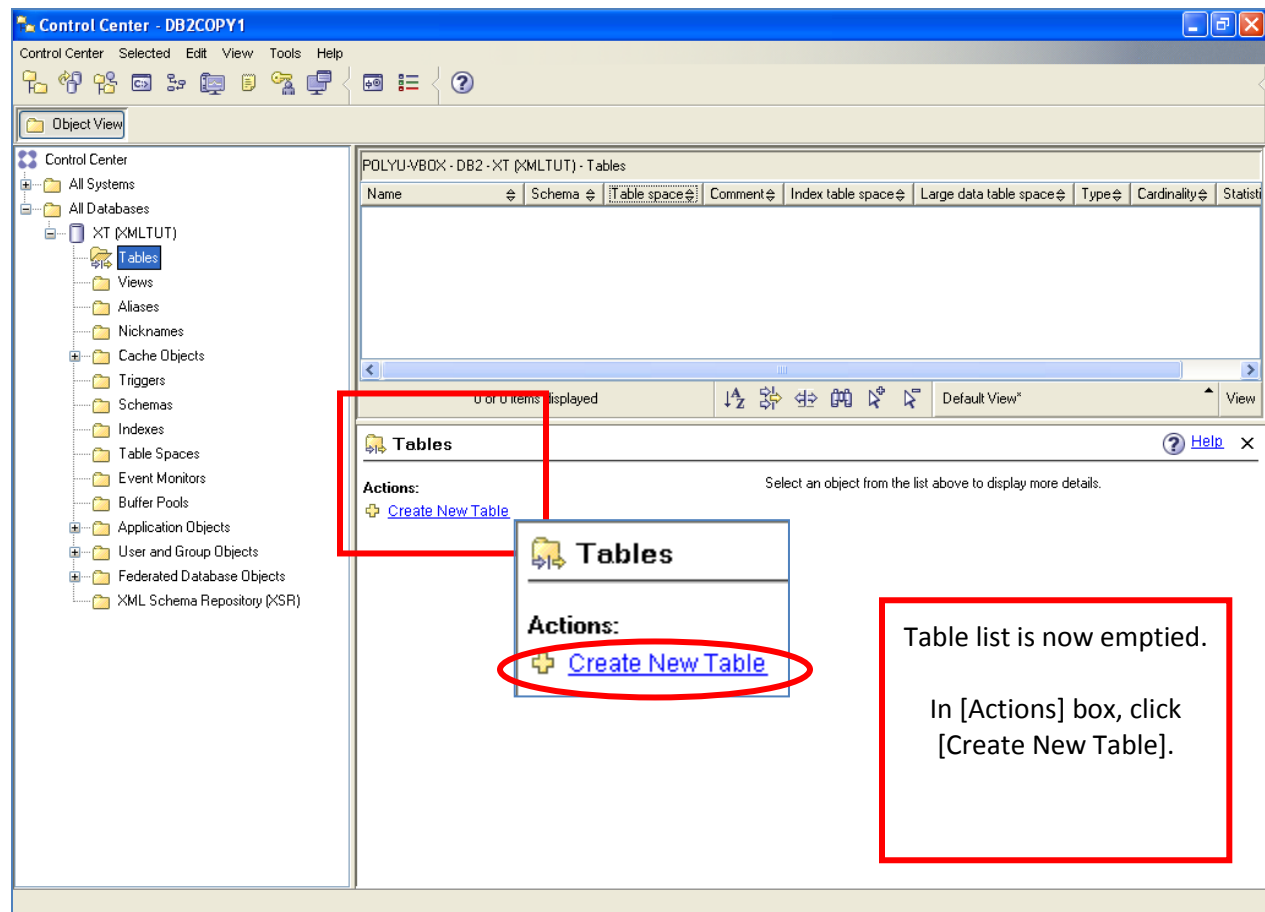
Expand the database, choose [Tables].
Right click on it and choose [Filter] → [Create...].

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Using DB2 to Manage XML Files

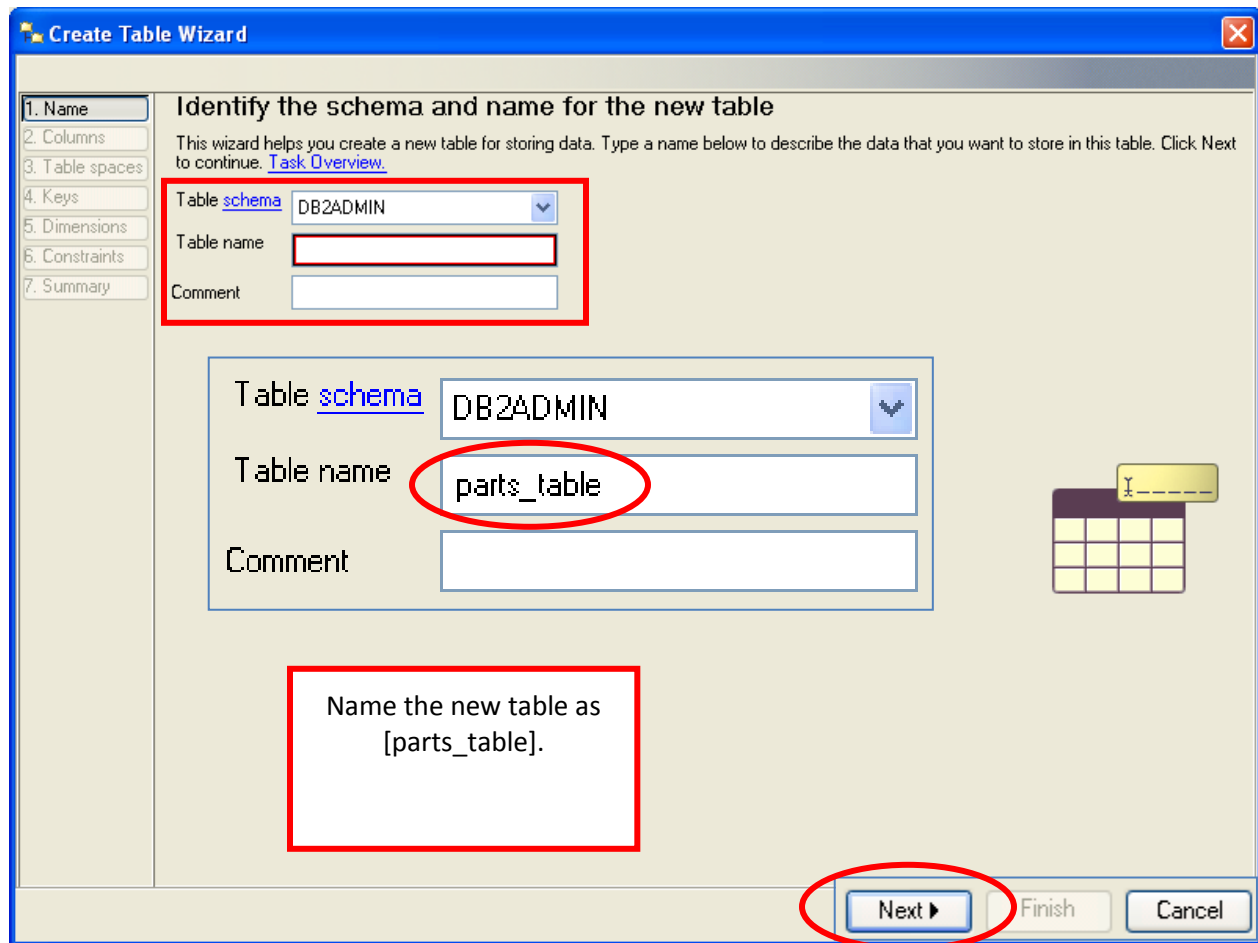


For [Schema], use [=] in [Comparison] and enter [db2admin] in the [Values] box.



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Using DB2 to Manage XML Files



Create Table Wizard

1. Name
2. Columns
3. Table spaces
4. Keys
5. Dimensions
6. Constraints
7. Summary

Identify the schema and name for the new table

This wizard helps you create a new table for storing data. Type a name below to describe the data that you want to store in this table. Click Next to continue. [Task Overview](#).

Table schema: DB2ADMIN
Table name: parts_table
Comment:

Table schema: DB2ADMIN
Table name: parts_table
Comment:

Name the new table as [parts_table].

Next > Finish Cancel

Click [Next].

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Using DB2 to Manage XML Files

Create Table Wizard

Change column definitions for the new table.

You can add, change, remove, or rearrange the columns. To change a column, select the column and then click Change. To rearrange the columns, click Move Up or Move Down.

Column name	Data type	Length	Precision	Scale	Nullable	Identity

Add Column

Column name: parts_xml

Data type: XML

Value generated: ☒ None

☐ Default value

☐ Formula

☐ Identity

Initial value: 0

Cache size: 0

☐ Nullable

☐ Store system default values using minimal space

Comment:

OK **Cancel** **Apply** **Reset** **Help**

Click [Add...].

Enter [parts_xml] as the [Column name].

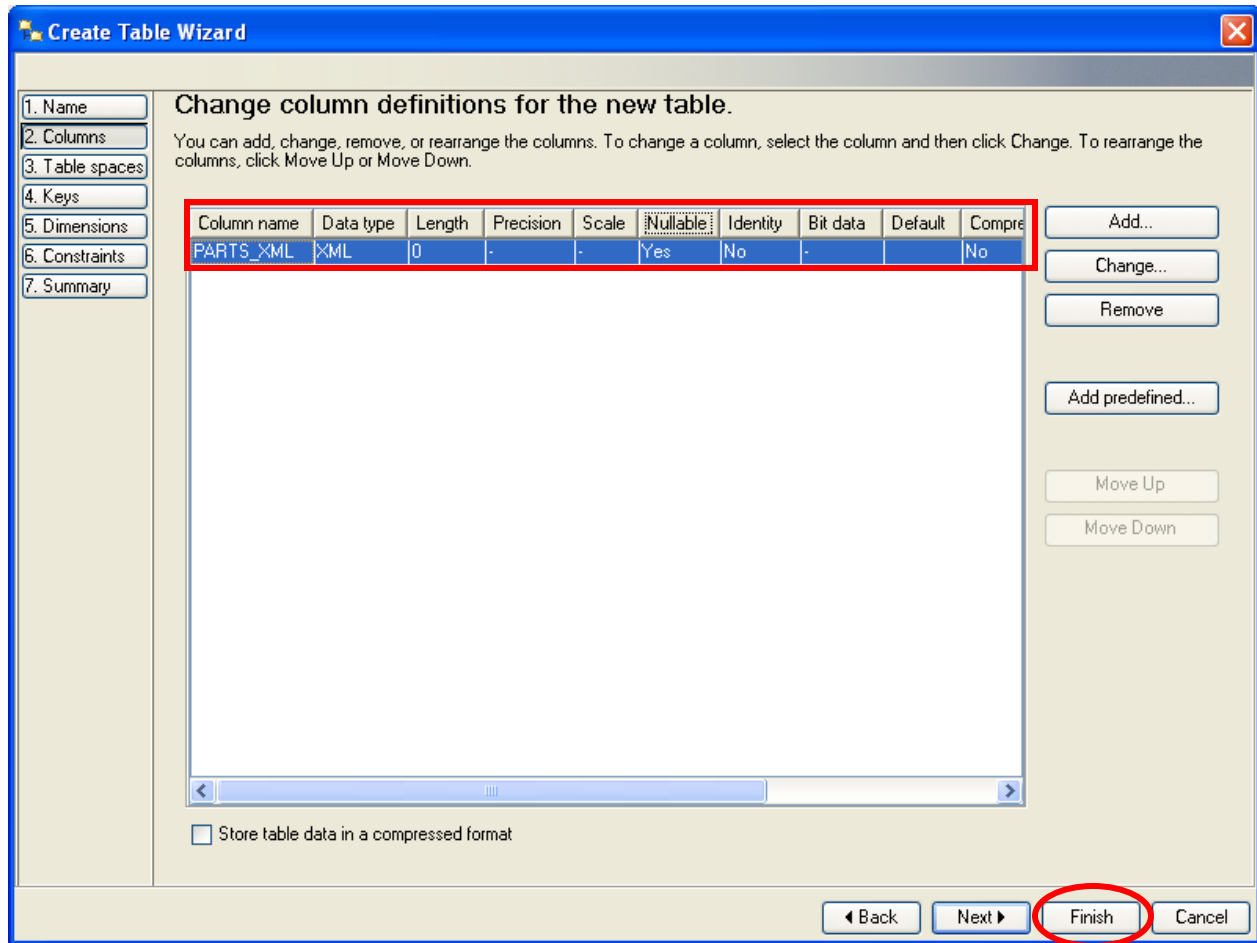
Choose [XML] as the [Data type].

Click [OK].

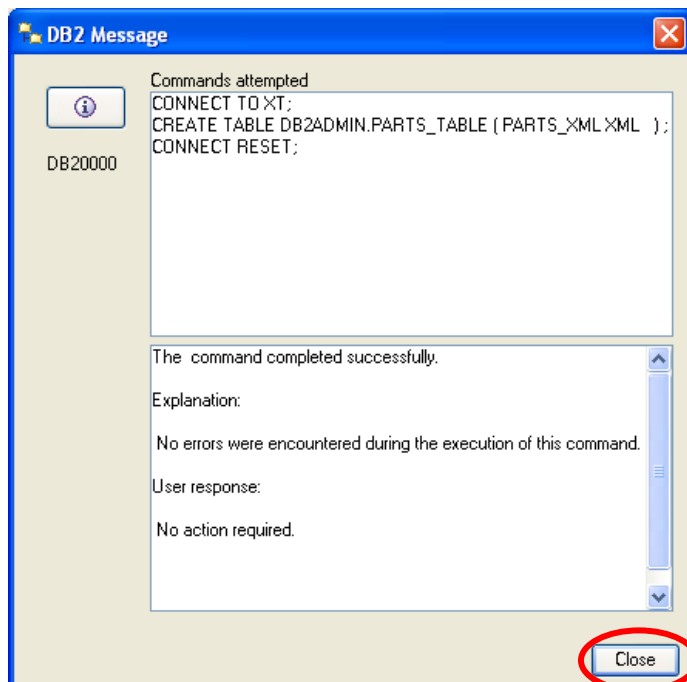
Column name	Data type	Length	Precision	Scale	Nullable	Identity	Bit data	Default	Complete
PARTS_XML	XML	0	-	-	Yes	No	-		No

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Using DB2 to Manage XML Files



Click [Finish].



Click [Close].

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Using DB2 to Manage XML Files

The screenshot shows the DB2 Control Center interface. In the left pane, the 'PARTS_TABLE' is selected under the 'XT (XMLTUT)' database. A red circle highlights 'PARTS_TABLE' in the table list, and a red arrow points from it to the 'Open Table - PARTS_TABLE' dialog box. The dialog box shows the table's schema (DB2ADMIN) and columns (PARTS_XML). A red box highlights the 'Close' button at the bottom right of the dialog.

Control Center - DB2COPY1

Object View

POLYU-VBOX - DB2 - XT (XMLTUT) - Tables

Name	Schema	Table space	Comment	Index table space	Large data table space	Type	Cardinality	Statistics
PARTS_TABLE	DB2ADMIN	USERSPACE1				T	-1	

1 of 1 items displayed

Table - PARTS_TABLE

Schema : DB2ADMIN
Creator : DB2ADMIN
Columns : 1

Columns

Key	Name	Data type	Length	Nullable
	PARTS_XML	XML	0	Yes

Actions:

- Open
- Query
- Show Related Objects
- Create New Table

You may have a look on the table and column.

Open Table - PARTS_TABLE

POLYU-VBOX - DB2 - XT (XMLTUT) - DB2ADMIN.PARTS_TABLE

Edits to these results are performed as searched UPDATEs and DELETEs. Use the Tools Settings notebook to change the form of editing.
To browse an XML document, click on a cell, then click on the "... " button.

PARTS_XML

Add Row
Delete Row

Commit Roll Back Filter Fetch More Rows

☐ Automatically commit updates

0 row(s) in memory

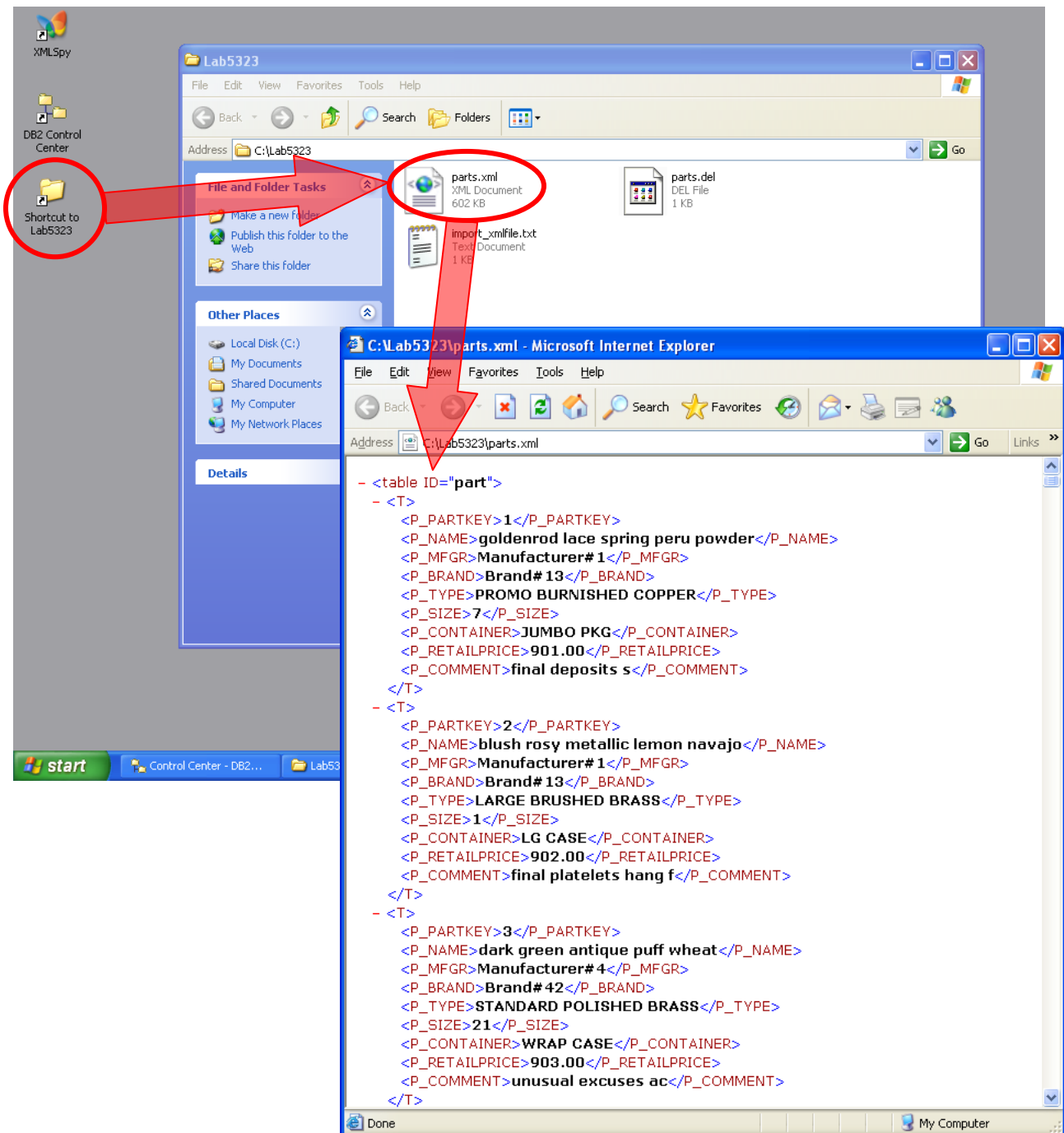
Close Help

Check the xml file and other source files.

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Using DB2 to Manage XML Files

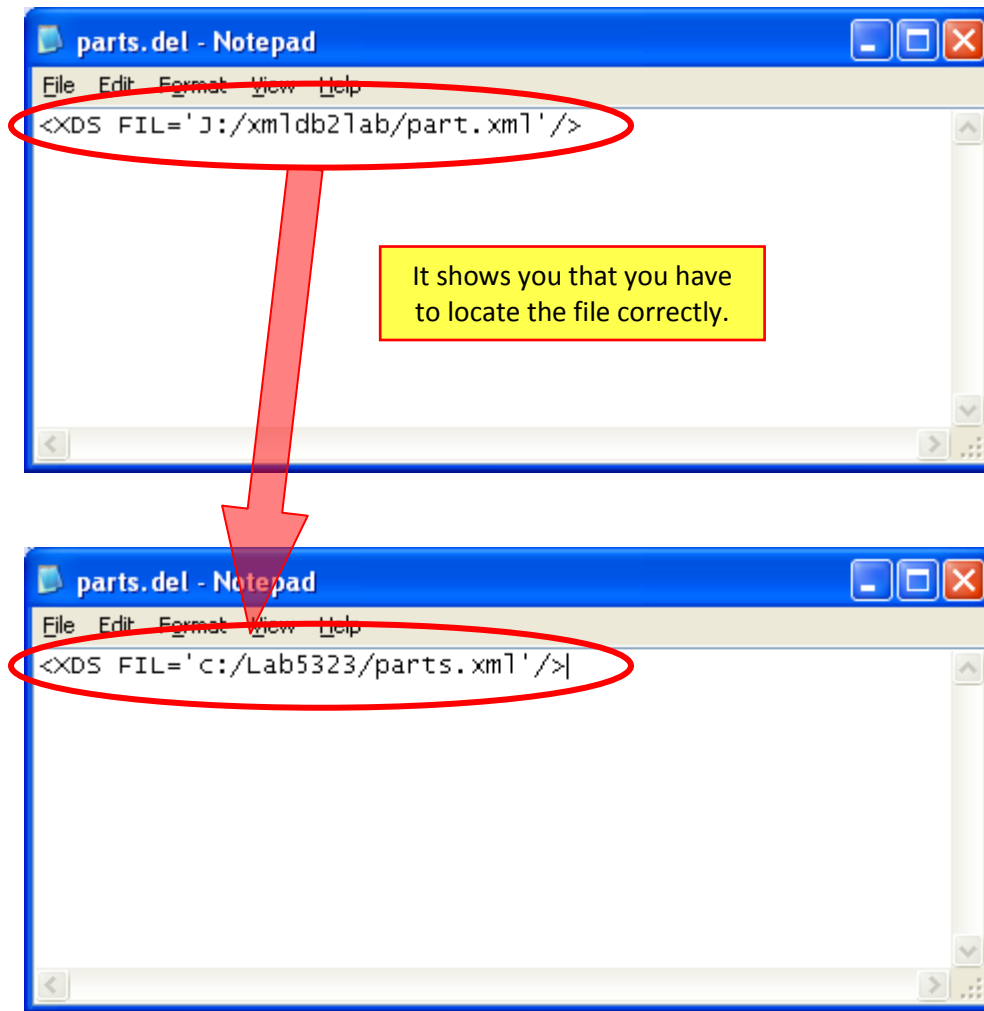
Click open the third icon, [Shortcut to Lab5323] on the desktop. There should be three files listed, [parts.xml], [parts.del] and [import_xmlfile.txt].



For [parts.del], there is one statement but we need to modify it. Or you can create a new one to overwrite the existing.

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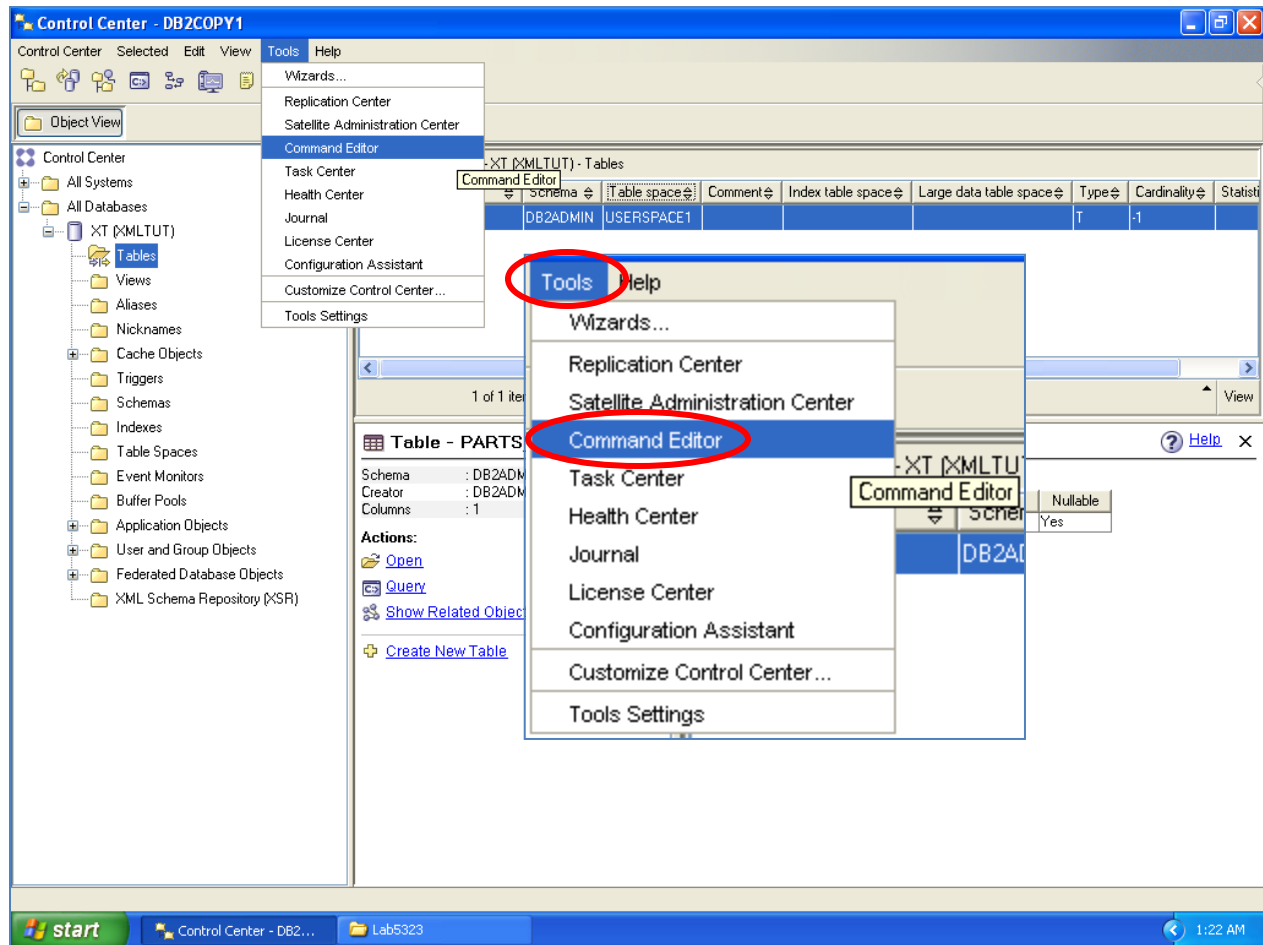
Using DB2 to Manage XML Files



We get this file ready to allow us to import the xml file into the database.

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Using DB2 to Manage XML Files



Open the [Command Editor]. From menu bar, choose [Tools] → [Command Editor].

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Using DB2 to Manage XML Files

We need to connect to a database first. Click [Add]. A window appears, choose [XT] or [XMTUT] and then click [OK].

Specify Target

Target type: DB2 Database for Linux, UNIX and Windows

Available targets:

- XMTUT
- XT

☒ Use implicit credentials

User ID:

Password:

OK Cancel Help

Command Editor 1 - DB2COPY1

Commands

Query Results Access Plan

Target: XT

IMPORT FROM "C:\Lab5323\parts.del" OF DEL
XML FROM "C:\Lab5323"
INSERT INTO DB2ADMIN.PARTS_TABLE;

Enter statement as listed in the box or copy the statement from the text file, [import_xmlfile.txt].

Then, click the [Run] button to execute the statement.

IMPORT FROM "C:\Lab5323\parts.del" OF DEL
XML FROM "C:\Lab5323"
INSERT INTO DB2ADMIN.PARTS TABLE;

COMP5323 - Web Database & Applications

Using DB2 to Manage XML Files

```
Command Editor 1 - DB2COPY1
Command Editor Selected Edit View Tools Help
Commands Query Results Access Plan
Target XT Add...
IMPORT FROM "C:\Lab5323\parts.del" OF DEL
XML FROM "C:\Lab5323"
INSERT INTO DB2ADMIN.PARTS_TABLE;

----- Commands Entered -----
IMPORT FROM "C:\Lab5323\parts.del" OF DEL
XML FROM "C:\Lab5323"
INSERT INTO DB2ADMIN.PARTS_TABLE;
-----
IMPORT FROM "C:\Lab5323\parts.del" OF DEL XML FROM "C:\Lab5323" INSERT INTO DB2ADMIN.PARTS_TABLE
SQL3109N The utility is beginning to load data from file
"C:\Lab5323\parts.del".

SQL3110N The utility has completed processing. "1" rows were read from the
input file.

SQL3221W ...Begin COMMIT WORK. Input Record Count = "1".

SQL3222W ...COMMIT of any database changes was successful.

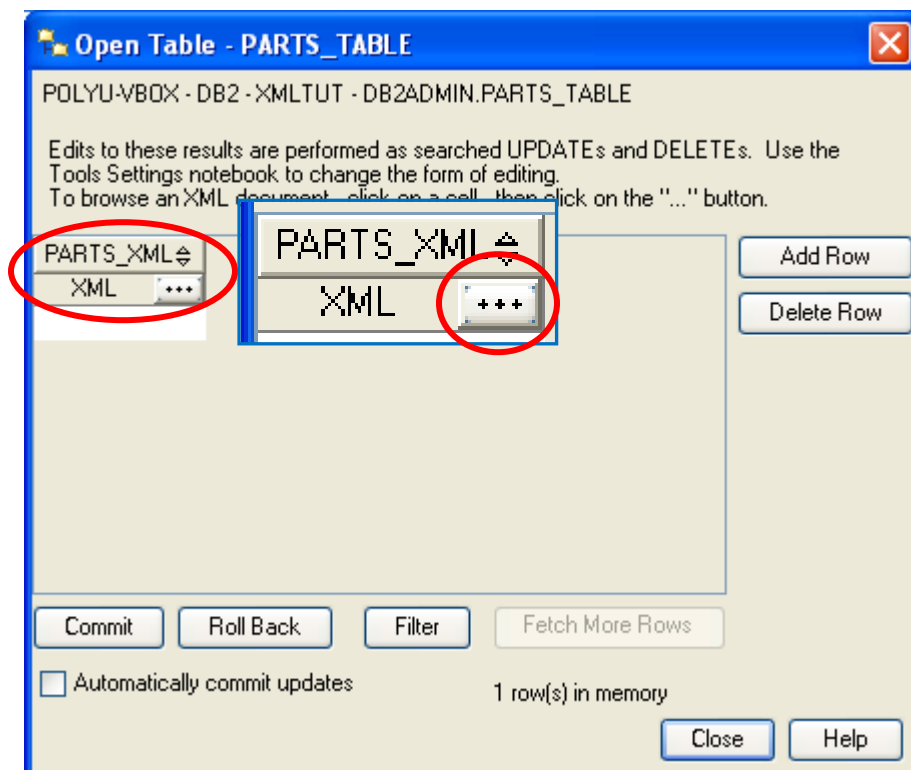
SQL3149N "1" rows were processed from the input file. "1" rows were
successfully inserted into the table. "0" rows were rejected.

Number of rows read = 1
Number of rows skipped = 0
Number of rows inserted = 1
Number of rows updated = 0
Number of rows rejected = 0
Number of rows committed = 1

Statement termination character :
```

Number of rows read	= 1
Number of rows skipped	= 0
Number of rows inserted	= 1
Number of rows updated	= 0
Number of rows rejected	= 0
Number of rows committed	= 1

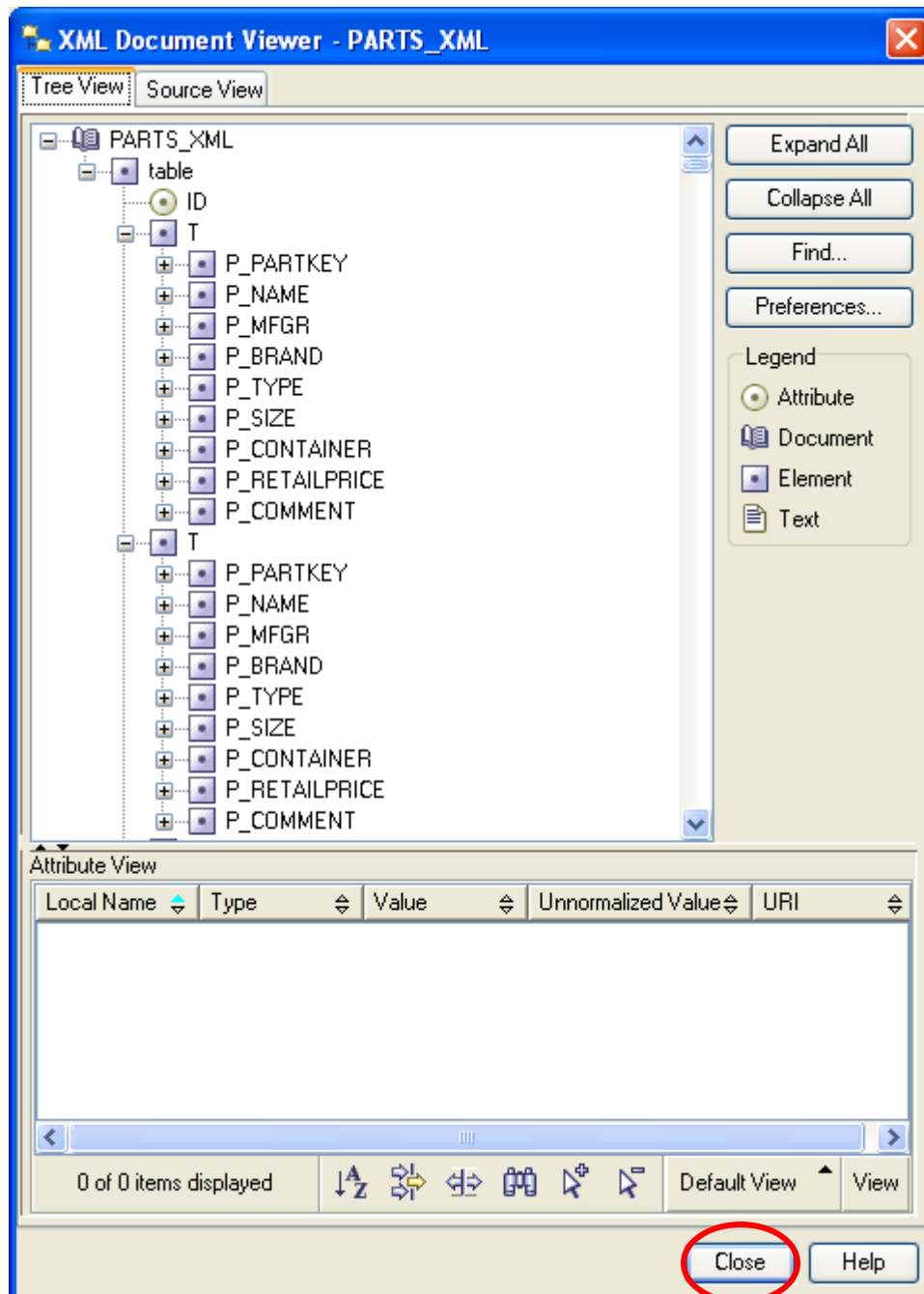
If you got this message, you have successfully imported the xml file into DB2 database.



Click [...] button.

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Using DB2 to Manage XML Files



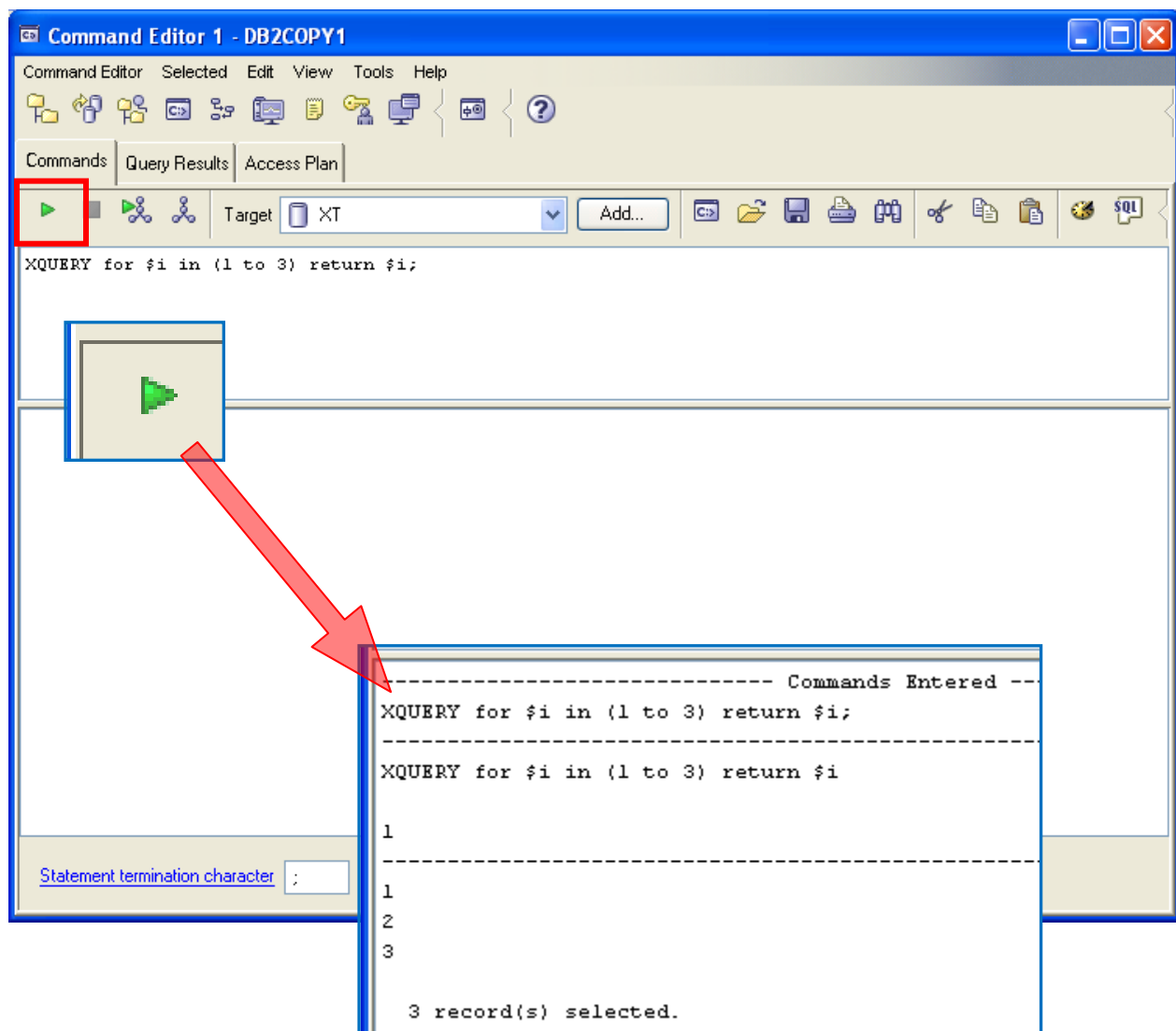
Check that the XML file is now imported. The document can be viewed through the [XML Document Viewer], i.e. press the [...] button on the record row.

XQuery

Before we explore the xml file using the XQuery, we practice some simple commands. Open a [Command Editor] and enter the following statement.

```
XQUERY for $i in (1 to 3) return $i;
```

and then press the [Play] button.



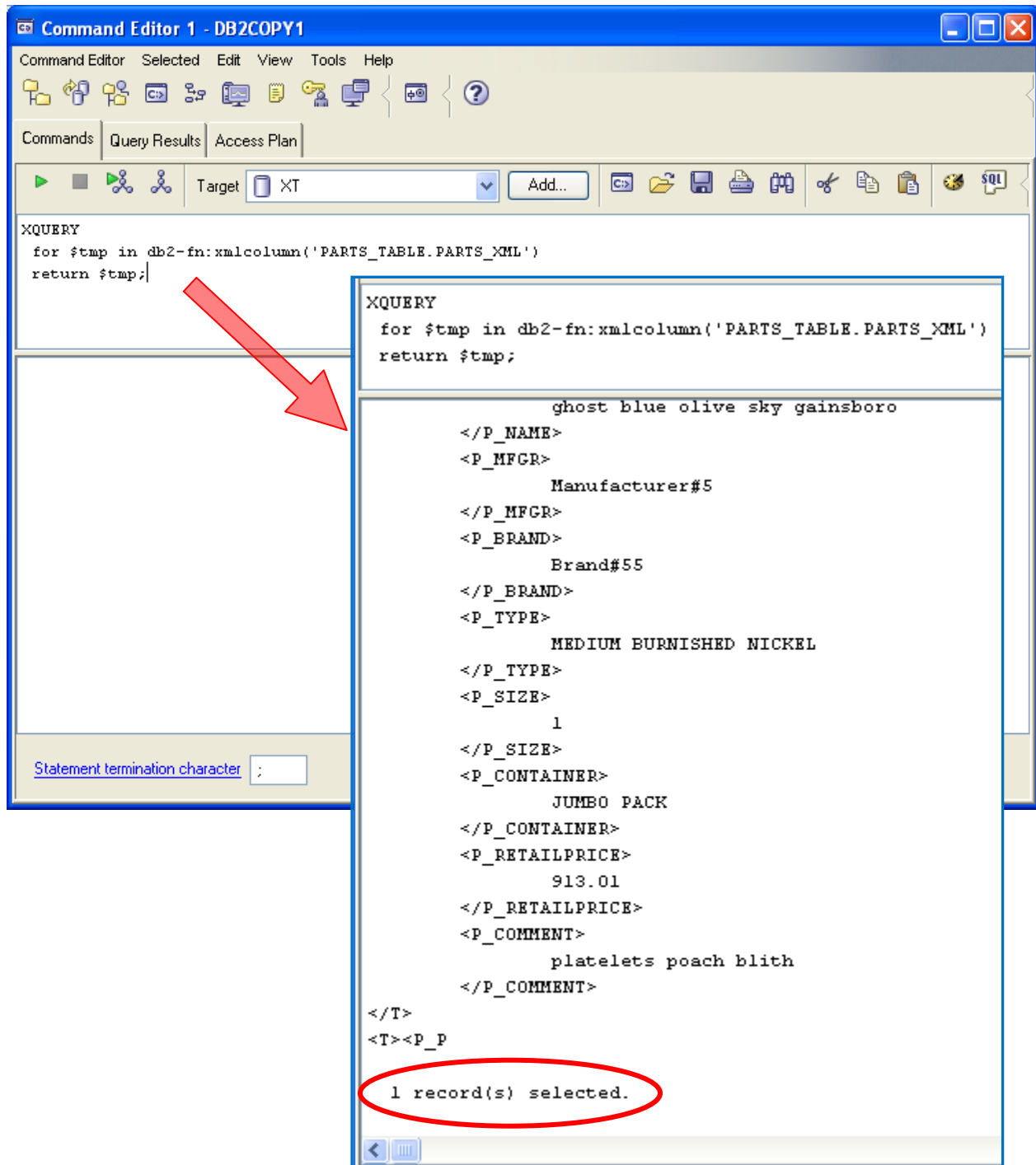
COMP5323 - Web Database & Applications

Using DB2 to Manage XML Files

Try another simple statement to retrieve records in the database. In [Command] box, enter this:

```
XQUERY for $tmp in db2-fn:xmlcolumn('PARTS_TABLE.PARTS_XML') return $tmp;
```

and press the [Play] button.



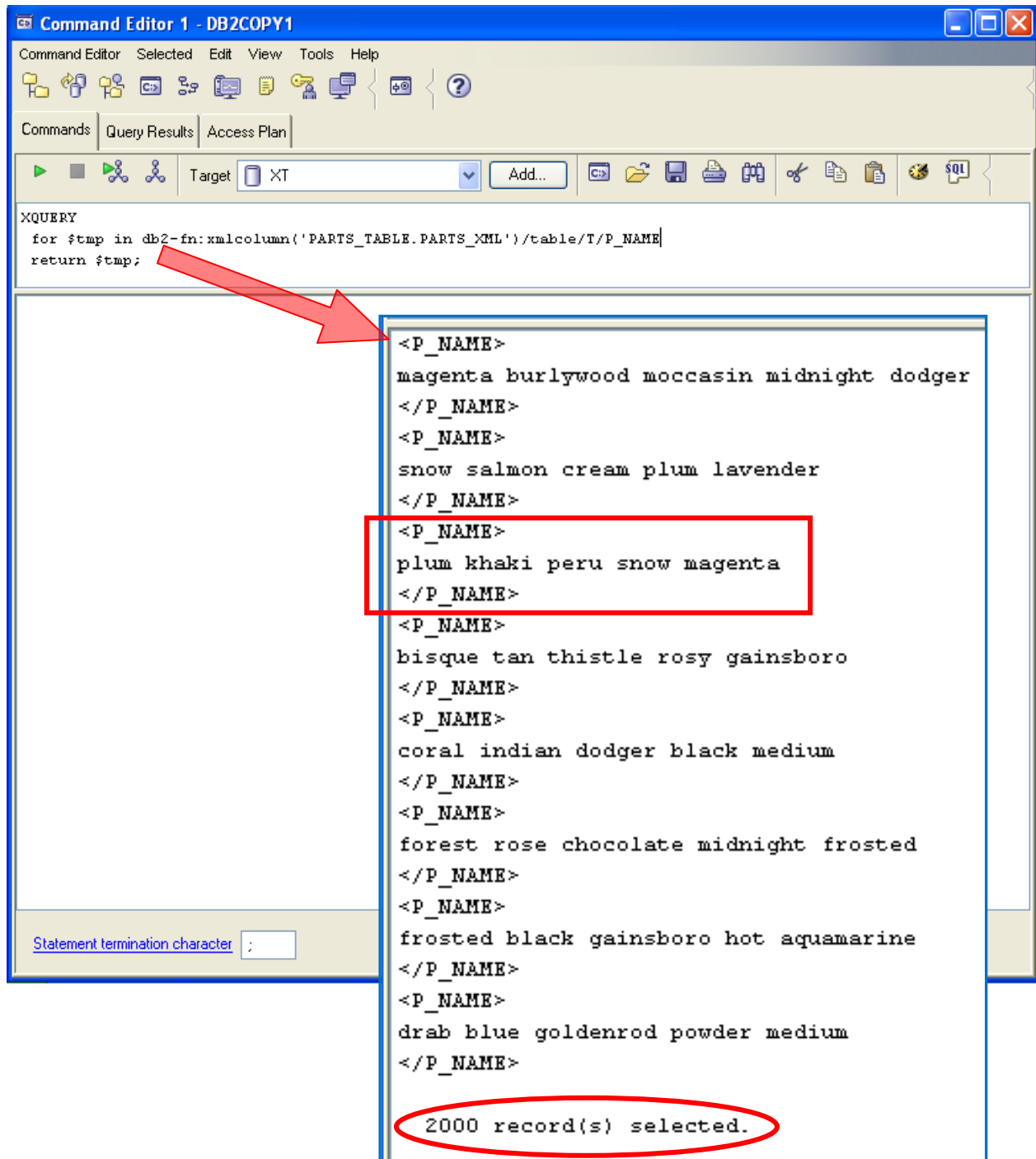
Of course, we have only one record in the table so that there is no doubt we retrieve only ONE record.

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Using DB2 to Manage XML Files

Now, we try something more specific, say retrieve only the Product Name. Use this.

```
XQUERY for $tmp in db2-fn:xmlcolumn('PARTS_TABLE.PARTS_XML')/table/T/P_NAME  
return $tmp;
```



Command Editor 1 - DB2COPY1

Command Editor Selected Edit View Tools Help

Commands Query Results Access Plan

Target XT Add...

```
XQUERY  
for $tmp in db2-fn:xmlcolumn('PARTS_TABLE.PARTS_XML')/table/T/P_NAME  
return $tmp;
```

```
<P_NAME>  
magenta burlywood moccasin midnight dodger  
</P_NAME>  
<P_NAME>  
snow salmon cream plum lavender  
</P_NAME>  
<P_NAME>  
plum khaki peru snow magenta  
</P_NAME>  
<P_NAME>  
bisque tan thistle rosy gainsboro  
</P_NAME>  
<P_NAME>  
coral indian dodger black medium  
</P_NAME>  
<P_NAME>  
forest rose chocolate midnight frosted  
</P_NAME>  
<P_NAME>  
frosted black gainsboro hot aquamarine  
</P_NAME>  
<P_NAME>  
drab blue goldenrod powder medium  
</P_NAME>  
2000 record(s) selected.
```

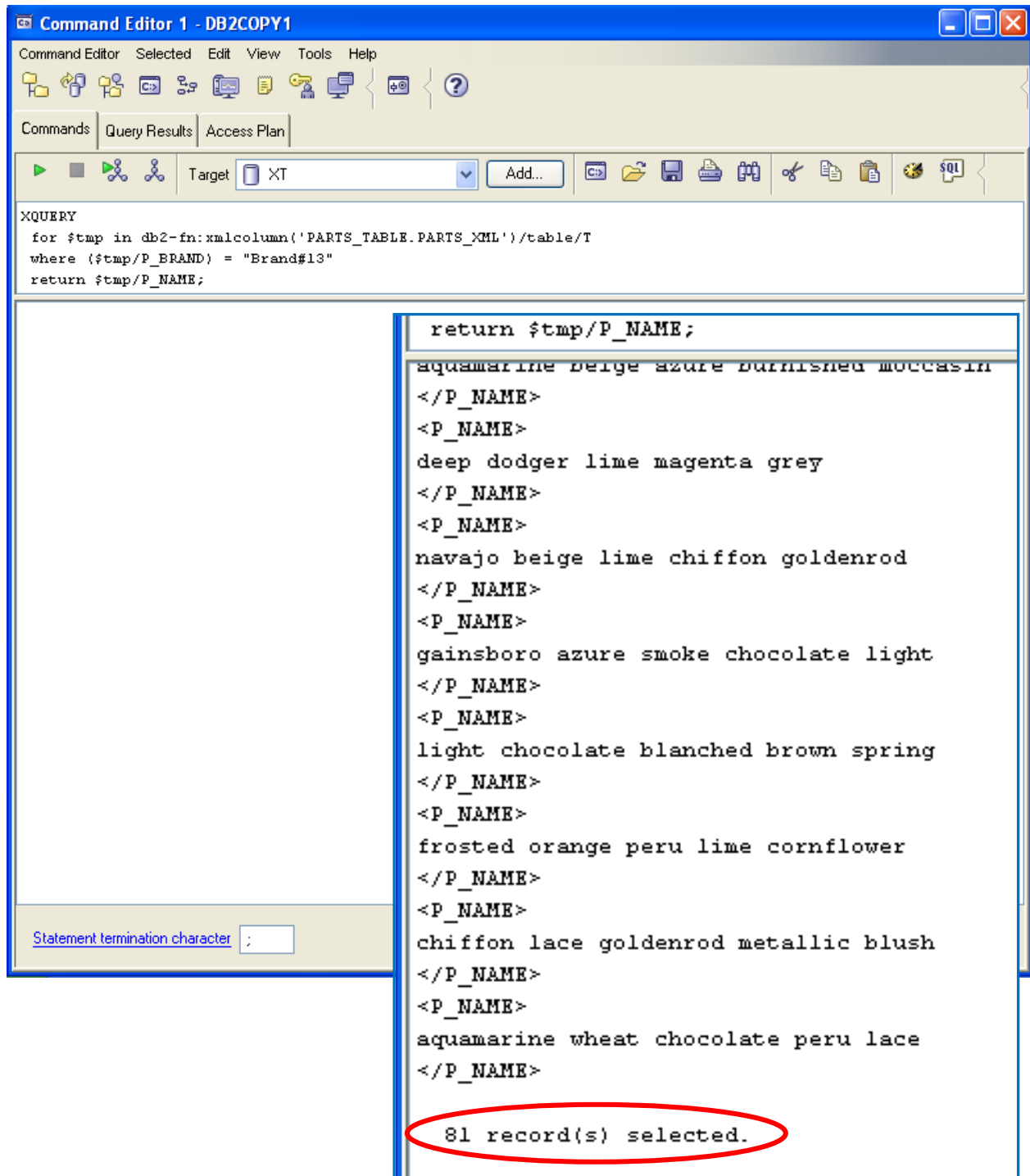
Statement termination character ;

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Using DB2 to Manage XML Files

Well, write one with the “Where” clause.

```
XQUERY for $tmp in db2-fn:xmlcolumn('PARTS_TABLE.PARTS_XML')/table/T
where ($tmp/P_BRAND) = "Brand#13" return $tmp/P_NAME;
```



The screenshot shows the DB2 Command Editor window titled "Command Editor 1 - DB2COPY1". The window has a menu bar (Command Editor, Selected, Edit, View, Tools, Help) and a toolbar with various icons. Below the toolbar are tabs for "Commands", "Query Results", and "Access Plan". The "Commands" tab is active, showing the following XQuery:

```
XQUERY
for $tmp in db2-fn:xmlcolumn('PARTS_TABLE.PARTS_XML')/table/T
where ($tmp/P_BRAND) = "Brand#13"
return $tmp/P_NAME;
```

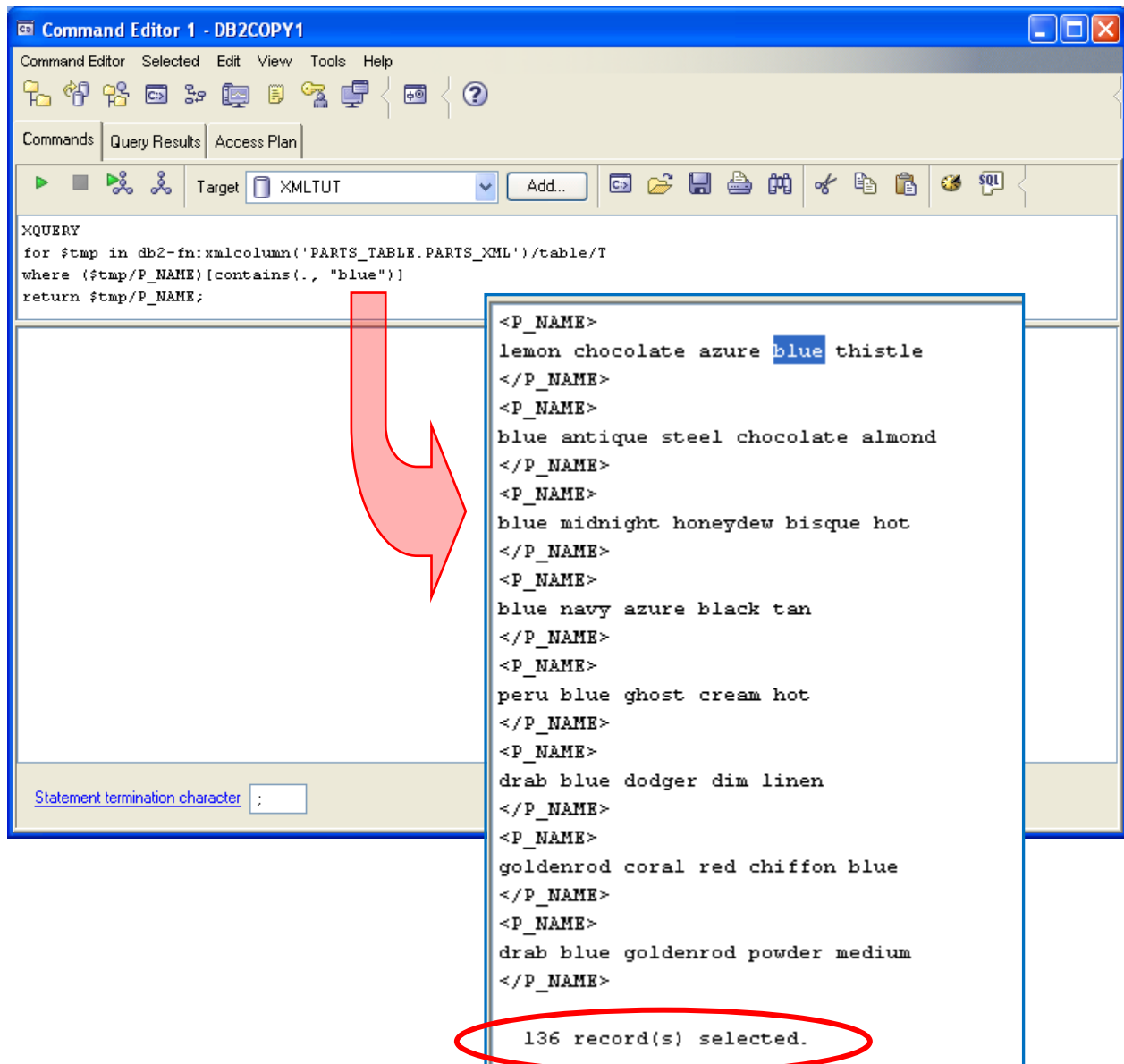
Below the query, there is a "Statement termination character" field with a semicolon (;) entered. The "Query Results" tab is active, displaying the results of the XQuery. The results are a list of 81 color names, each enclosed in an XML element: `<P_NAME>`. The names are: aquamarine, beige, azure, burnished, moccasin, deep, dodger, lime, magenta, grey, navajo, beige, lime, chiffon, goldenrod, gainsboro, azure, smoke, chocolate, light, light, chocolate, blanched, brown, spring, frosted, orange, peru, lime, cornflower, chiffon, lace, goldenrod, metallic, blush, aquamarine, wheat, chocolate, peru, lace. At the bottom of the results, a red oval highlights the text "81 record(s) selected."

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Using DB2 to Manage XML Files

One more example

```
XQUERY for $tmp in db2-fn:xmlcolumn('PARTS_TABLE.PARTS_XML')/table/T
where ($tmp/P_NAME)[contains(., "blue")]
return $tmp/P_NAME;
```



Try others by yourself to get familiar with the XQUERY. Good Luck!