

AIRS MySQL and Access Integration

Tak Auyeung

September 15, 2003

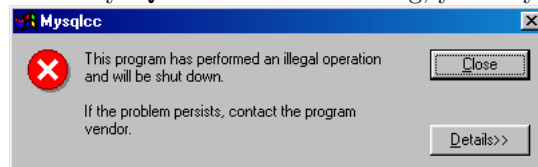
1 Creating a New MySQL Database

1.1 Starting MySQL

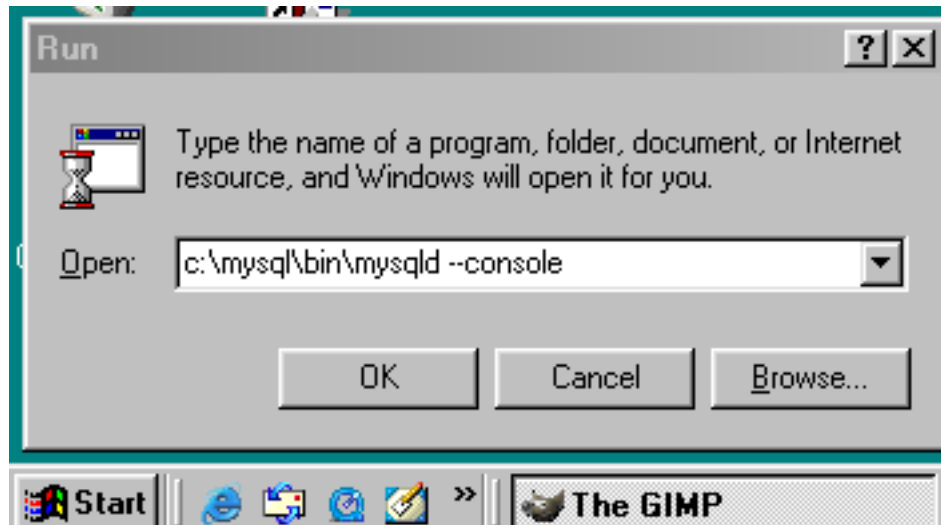
First, see if MySQL is already running. You can check this by trying to run “MySQL Control Center”. “MySQL Control Center” has an icon like this



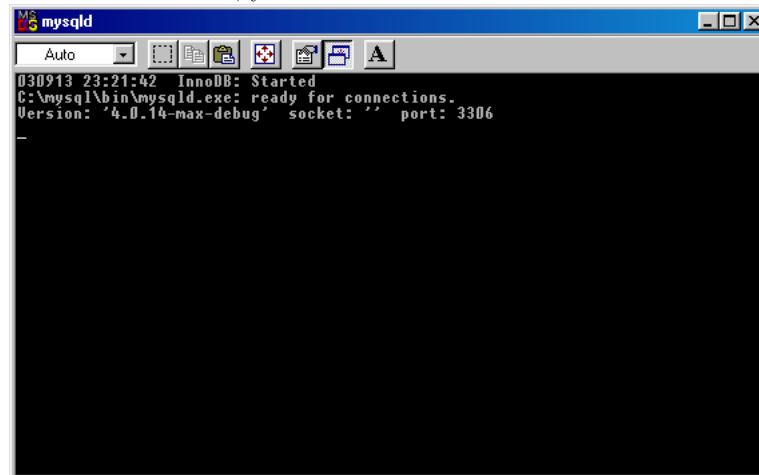
If the MySQL server is not running, you may see the following dialog box:



If you see the above dialog box, don't worry. Click “Close”. Then click the “Start” button, choose “Run...” and enter `c:\mysql\bin\mysqld --console`.

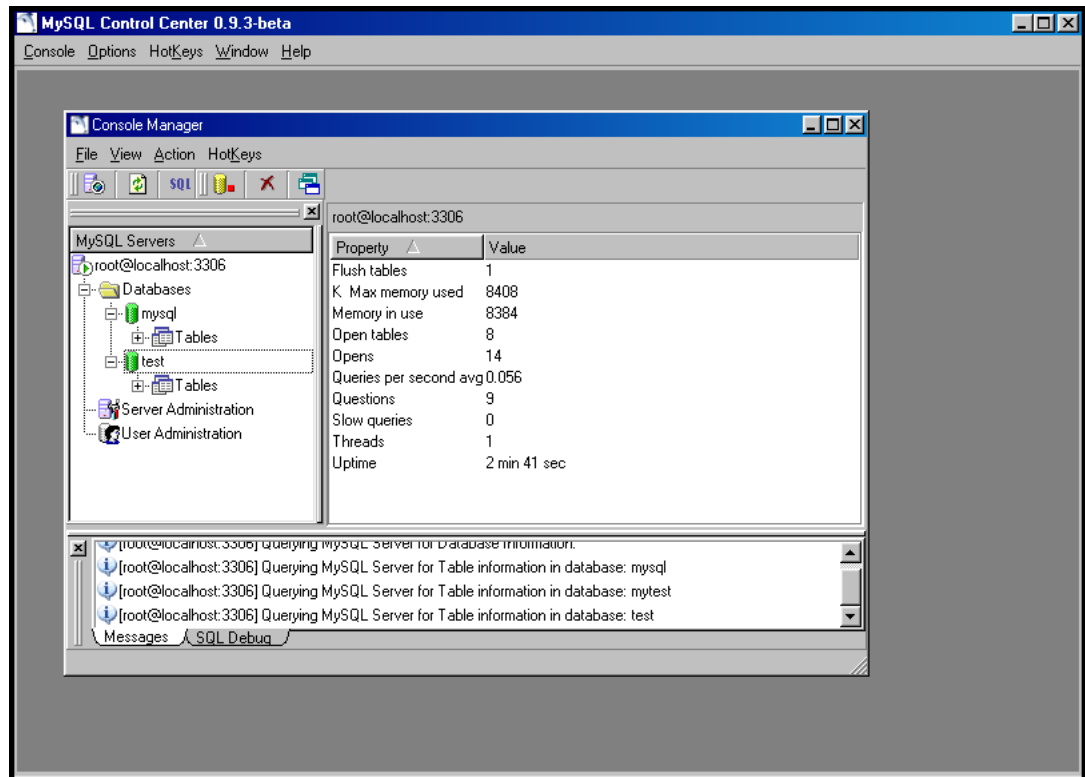


After a few seconds, you should see a DOS command box like the following:



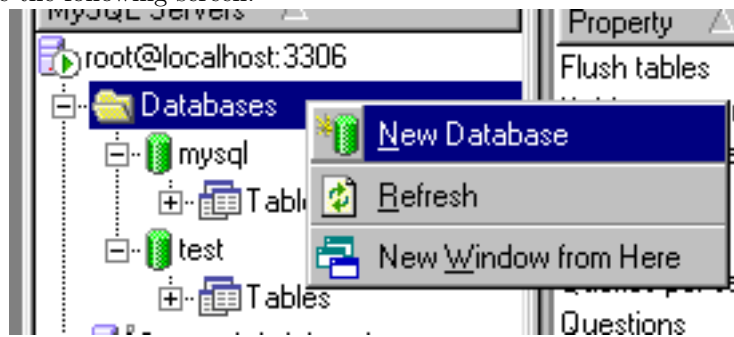
You can minimize (not to close!) this screen. Then, try to run “MySQL Control Center” again.

When “MySQL Control Center” runs successfully, you should see the following screen:

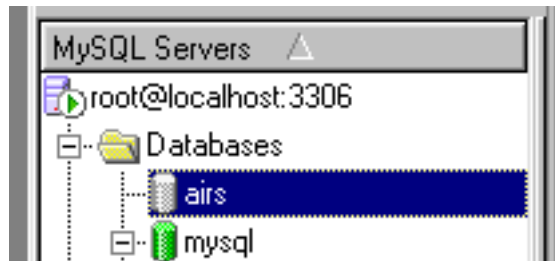


1.2 Creating a Database in MySQL

In the Control Center, right click on "Databases" and select "New Database" like the following screen:



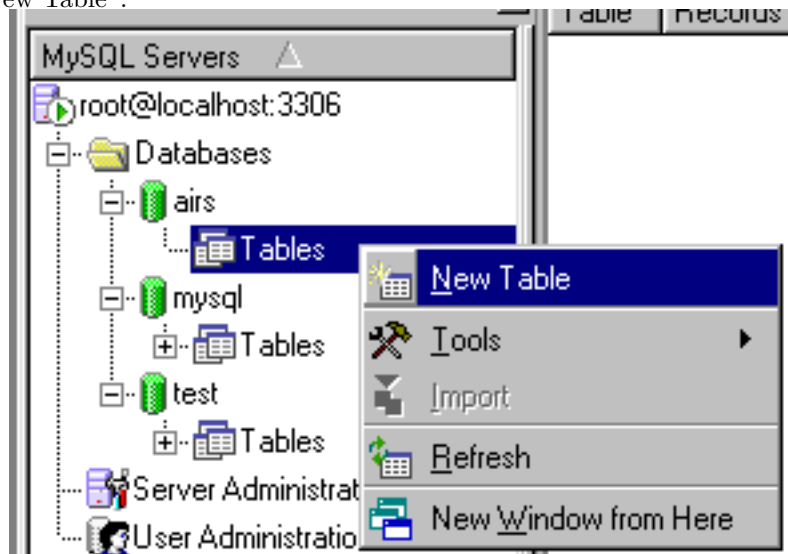
When prompted for the name of the database, type in a reasonable name. For our example, I use `airs` as the name of the database. Then click OK. You should now see that the new database is created as a gray cylinder like follows:



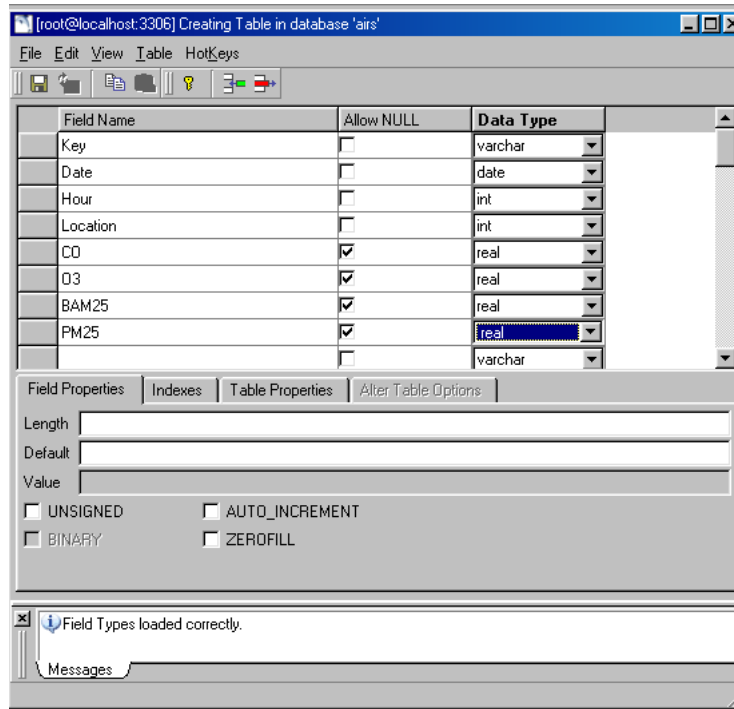
Right click on the new database and select “Connect”. Now the cylinder should turn green and you should be able to see the Tables link.

1.3 Creating a New Table

Once you have created a new MySQL database, we can create a table in it. The following screen illustrates how to right click on the “Tables” link and select “New Table”:



Enter the names and data type of each field. Be sure to check “Allow NULL” for the actual data fields. The following diagram illustrates a part of this table. More data fields can be added later.



Next, select the row named “key”, then use the “key” tool to make this row a key. See the following screen shot for the highlighted button.



When you are done, click the close button of the window, and choose to save the table. Name the table “pollutants”.

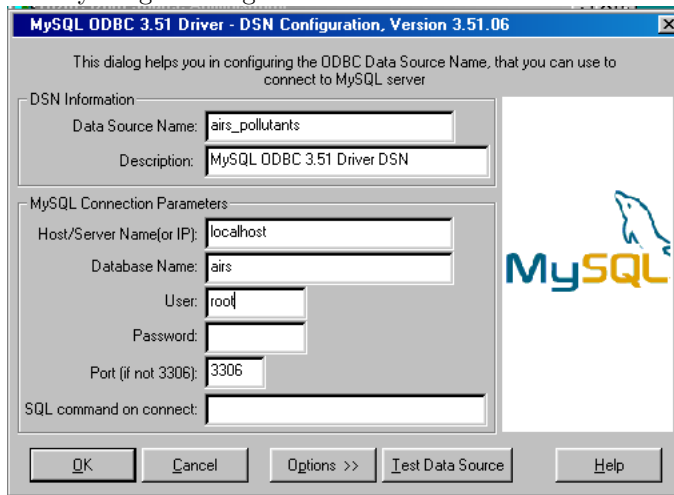
1.4 Creating a Data Source Name

Once the MySQL database and table are created, it is time to make this database accessible to Access. Use the Control Panel and open the tool called “ODBC Data Sources (32bit)” as illustrated below:



Unless you plan to make the database accessible to others via the network, you can select the “User DSN” tab (by default) and click the “Add” button. Be sure to select “MySQL ODBC x.xx Driver” and then click “Finish”.

In the “DSN Configuration” screen, you can use any name as “Data Source Name”. I use `airs_pollutants` in this article. Be sure to change the “Database Name” to the actual name, which is `airs` in our example. Specify `root` as “User” and leave “Password” empty. You should have a screen similar to the following after everything is configured:



Now, click the “Test Data Source” button. It should report a success if you have everything configured correctly. If the test was successful, click OK to complete this step. Click OK again in the “ODBC Data Source Administrator” dialog.

2 Integration into Access

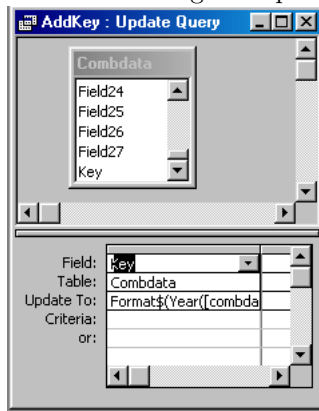
2.1 Preparing the Access Master Table

Before data is imported to the MySQL table, the Access table must be prepared. A field indicating the date, time and location must be added to match the “key” field of the MySQL table. To do this, first add a field called “key” with a type of “text” in the Access table. Do *not* make this a key field.

Next, create a query that uses the master table (called Combdata). Specify the “key” field. Then, change the query to an update query by selecting “Update Query” under the “Query” menu. In the row named “Update to”, type in the following:

```
Format$(Year([combdata].[date]),"0000") &  
Format$(Month([combdata].[date]),"00") &  
Format$(Day([combdata].[date]),"00") & " " &  
Format$(Hour([combdata].[time]),"00") & ' ' &  
Format$([combdata].[field5],"0000")
```

See the following for a picture of the update query:

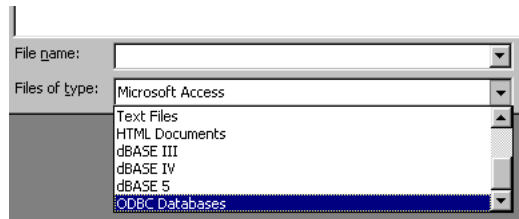


Close the query editor, give it a name and open the query. Access will ask if you want to modify the table, answer “yes”. The process may take tens of seconds.

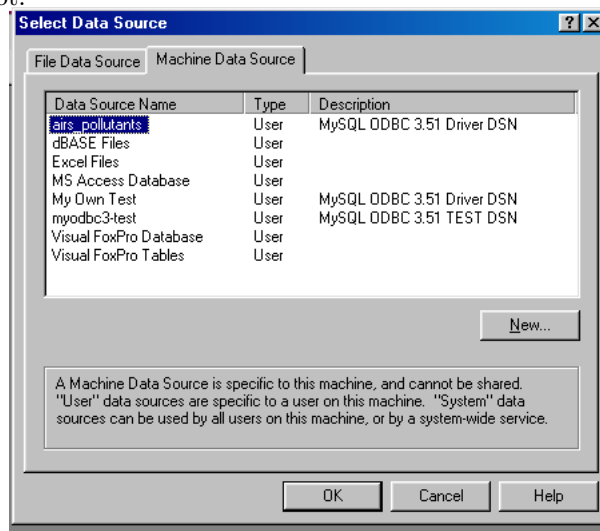
After this is all done, go to the “Tables” tab of Access and view the table Combdata again. Scroll all the way to the right and you should see the newly updated field “key”.

2.2 Adding a Link to the MySQL Table

Use the “Get External Data” item under “File”, then select “Link Table”. Click the “Files of type” drop down box, and select “ODBC Databases”. Refer to the following screen shot.



In the “Select Data Source” dialog box, click on the “Machine Data Source” tab, then select the database named “airs_pollutants” like the following screen shot.

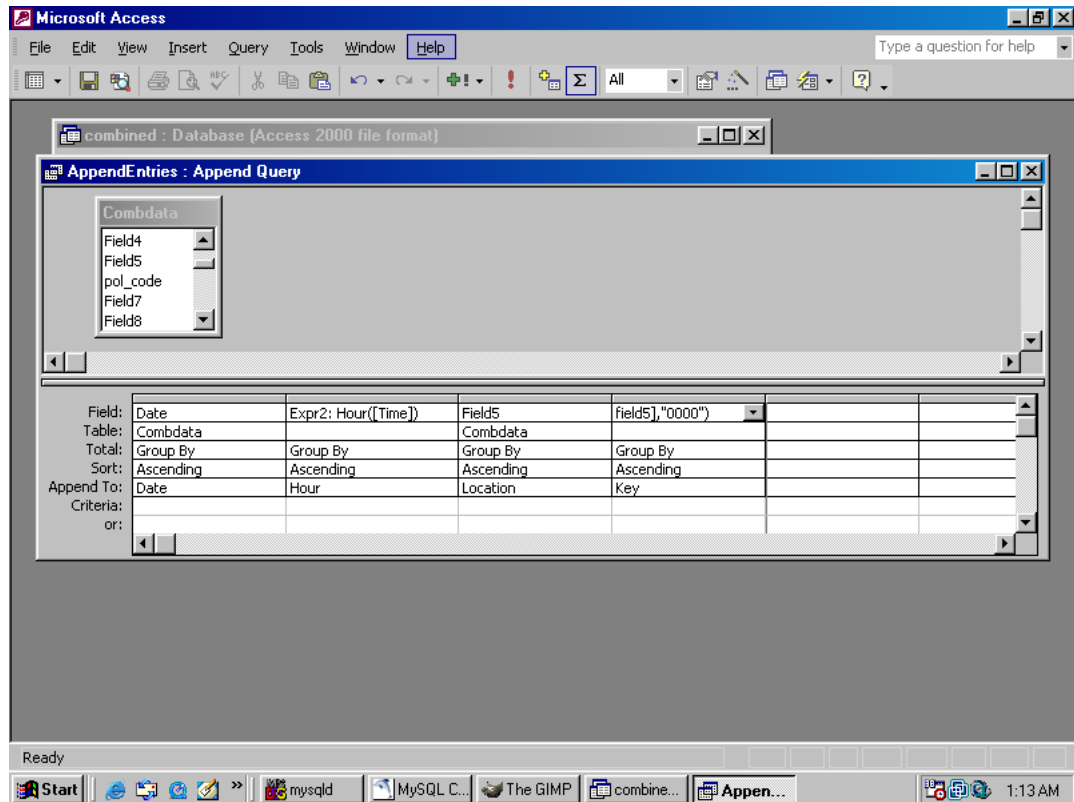


Once you click OK, the “Link Tables” dialog box appears. Select “pollutants”, then click OK again. Go back to the “Tables” tab in Access. You should now see the table “pollutants” with a globe icon like the following:



2.3 Create Empty “Shell” Rows

First, we need to create empty shell rows in the MySQL “pollutants” table. This can be done with an “append query”. Create a new query in design view. Add the table “Combdata” and close the table view. Specify “Append Query” under the “Query” menu. Select “pollutants” as the table to append to. Then click the sigma button so the query is also grouped. See the following screen for a general idea:



“Expr1” has a definition that is identical to the one listed in subsection 2.1. Close the query, give it a name and save it. Open this query to let it create the shell rows. This step may take a few minutes, depending on the speed of your machine.

During this process, you can safely switch MySQL Control Center and double click the “pollutants” table. It will display the current contents.

At the end of the process, click “Yes” to confirm that you want to append the rows.

Switch back to the “Tables” tab of Access. If you open the “pollutants” table, you should see the empty shell rows.

2.4 Adding Data for a Pollutant

Create a new query using the design view, add both the “Combdata” and “pollutants” tables. The “key” field of both tables are automatically linked. This is fine.

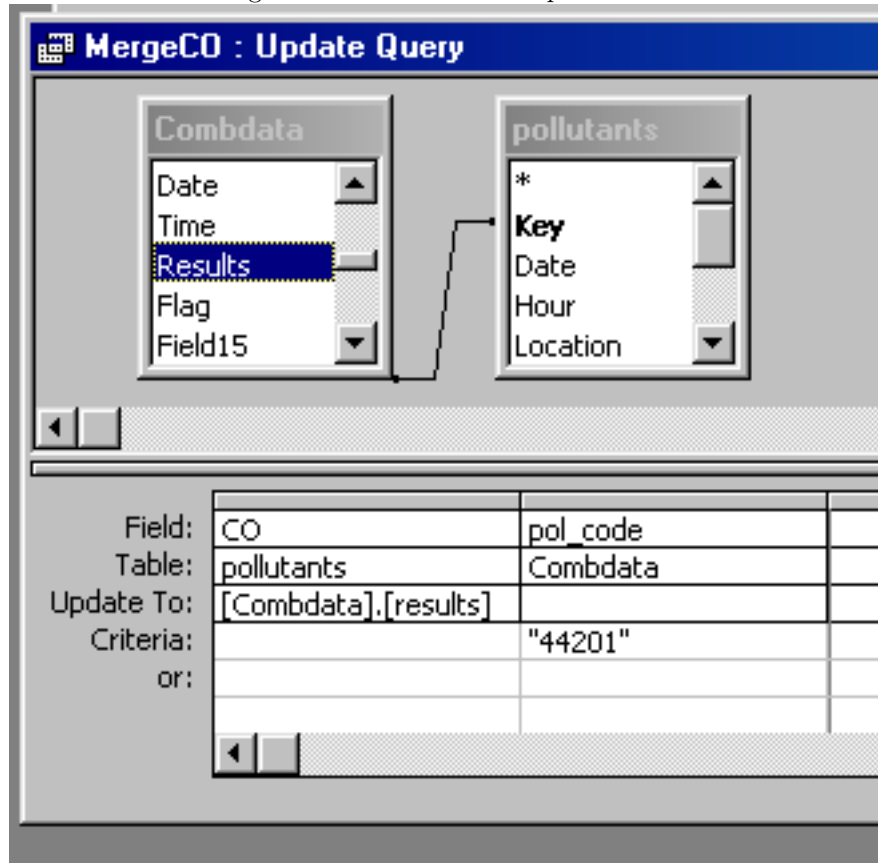
Specify the “pol.code” field (from “Combdata”) in the query. In the “Criteria” of the “pol.code” field, specify a known code for a particular pollutant. Also, add the “Key” field from “pollutants”.

Run the query. This query is a filter to extract the data for a particular

compound for a given date, hour and location.

Next, change the query to an update query by selecting “Update query” in the “Query” menu. Now add the appropriate compound field from the “pollutants” table. For example, “CO” for carbon monoxide. Specify the update field to `Combdata.results` for this column.

Refer to the following screen shot for an example:



You have just change the nature of the query to update the “pollutants” table with compound data from the “Combdata” table. Save the query with a name such as “MergeCO” to indicate that the query merges CO data to the “pollutants” table.

When you open the query, click “yes” to confirm that you wish to update the table. The merge process may take a few minutes, depending on the speed of your machine.

You need to create a separate “Merge??” update query for each compound. You can use copy-and-paste to duplicate the original update query. All you need to change for the other queries is to change the criterion for the “pol_code” column and specify the appropriate compound field from the “pollutants” table to update.

3 What If You Modify the MySQL Table?

Unfortunately, Access is not very smart. When you modify the “pollutants” table in “MySQL Control Center”, Access may get very confused with the linked table. As a result, whenever you modify the table “pollutants” in MySQL, you need to unlink and relink the “pollutants” table. There is no loss of data, just loss of time.

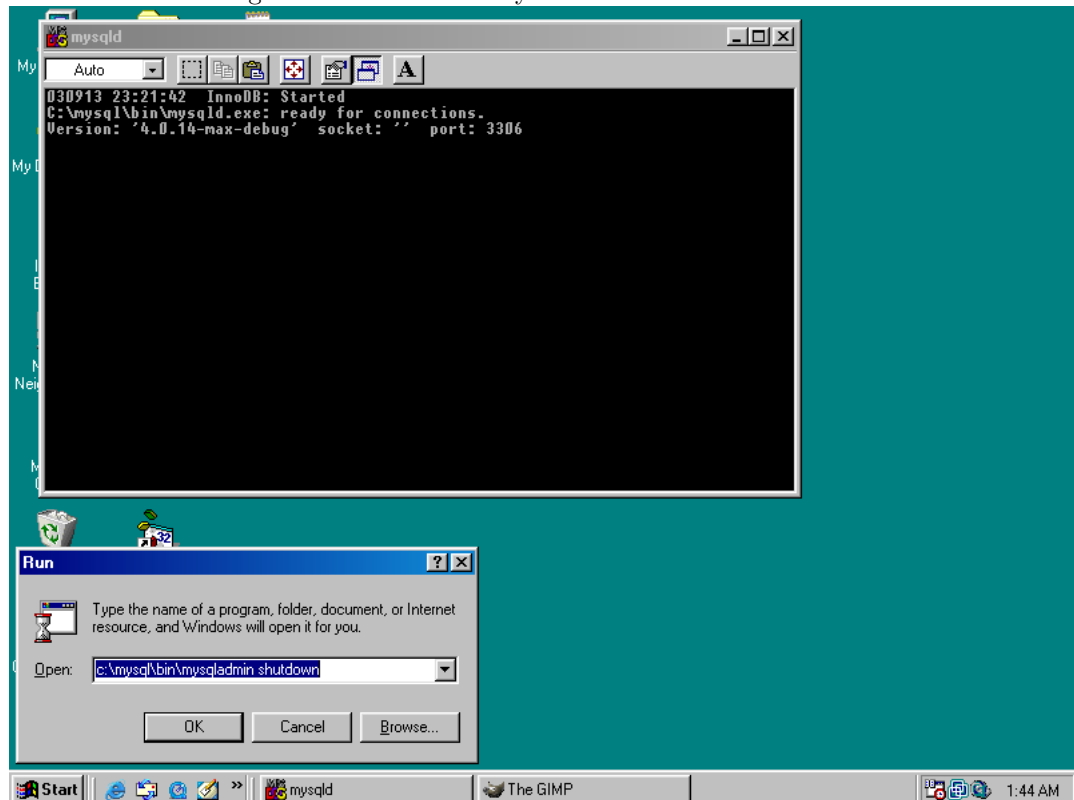
To unlink a table, simply select the linked table and press the delete key. Note that this step does not destroy any data in the linked table. Then, you can use the instructions in subsection 2.2 to relink the table from MySQL.

4 Shutting Down MySQL

Although you can simply shutdown Windows, it is better to explicitly shutdown MySQL. Before you shut down MySQL, be sure to exit all applications that may use MySQL, including Control Center and Access. Then, you can select “Run...” from the “Start” menu, then enter

```
c:\mysql\bin\mysqladmin shutdown
```

Refer to the following screen shot for what you will see.



A few seconds after you click OK in the “Run...” box, the original DOS box that you ran MySQL will disappear to indicate that MySQL is now shutdown. Alternatively, you can also use the “winmysqladmin” tool to shutdown MySQL.