

Accessing MySQL from InfoPath

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1. Introduction

In this tutorial we will show you how to build an InfoPath application to access MySQL via the SOA Gateway.

2. Prerequisites

It is assumed that you are running the 3 components, MySQL, InfoPath and the SOA Gateway on Windows.

It is assumed you already have a SOA Gateway server and Control Centre installed. See [here](#) for more info about installing the SOA Gateway.

3. Setup

3.1. InfoPath

Microsoft Office InfoPath is an application used to develop XML-based data entry forms. The main feature of InfoPath is its ability to author and view XML documents with support for custom-defined XML schemata. It can connect to external systems using XML Web services through MSXML and the SOAP Toolkit, and back-end and middle-tier systems can be configured to communicate by using Web services standards such as SOAP, UDDI, and WSDL.

If you have the MS Office product then you have InfoPath available to you.

3.2. Populate MySQL Database

You will also need a MySQL database. Again, the Open Source version (known as the MySQL Community Server) can be freely downloaded from the MySQL website. See this [link](#) for download, and here to step you through the installation and configuration.

Now that you've got MySQL installed and configured, you will need to populate it with some demo data. For this we use the Risaribank sample. This is available [here](#).

- Save this file to "C:\Temp\Risaribank.sql"
- Connect to the MySQL Server using the **mysql** command.

E.g *shell> mysql -u root -p*

This command connects to the server using the MySQL `root` account to make sure that you'll have permission to create the `Risaribank` database. The `-p` option tells **mysql** to prompt you for the `root` password. Enter the password when prompted. (Remember that the MySQL `root` account is not the same as the operating system `root` account and probably will have a different password.)

- Create the `Risaribank` database.

```
mysql> CREATE DATABASE Risaribank;
```

```
mysql> use Risaribank;
```

- Load the contents of RisarisBank.sql into the RisarisBank database. E.g.

```
mysql> SOURCE c:\Temp\RisarisBank.sql
```

- After the SOURCE command finishes, you can view your new tables.

```
mysql> SHOW TABLES;
```

```
mysql> DESCRIBE CustomerInformation;
```

```
mysql> DESCRIBE Branch;
```

etc ...

3.3.Set up ODBC Access

The final thing to do with your MySQL Database is to set up an ODBC DSN which will be used by the SOA Gateway to access this database.

Click Start, Control Panel, Administrative Tools, Data Sources (ODBC)

From the resulting screen, choose the "System DSN" Tab.

Click Add

From the list of data source drivers, select "MySQL ODBC 3.51 Driver".

If you do not see this driver in the list, you need to install the MySQL Connector. See [here](#) for more information. We recommend installing v3.51.

Click Finish, and a window will appear allowing you to enter the DSN information. Add the following:

Data Source Name: RisarisBank

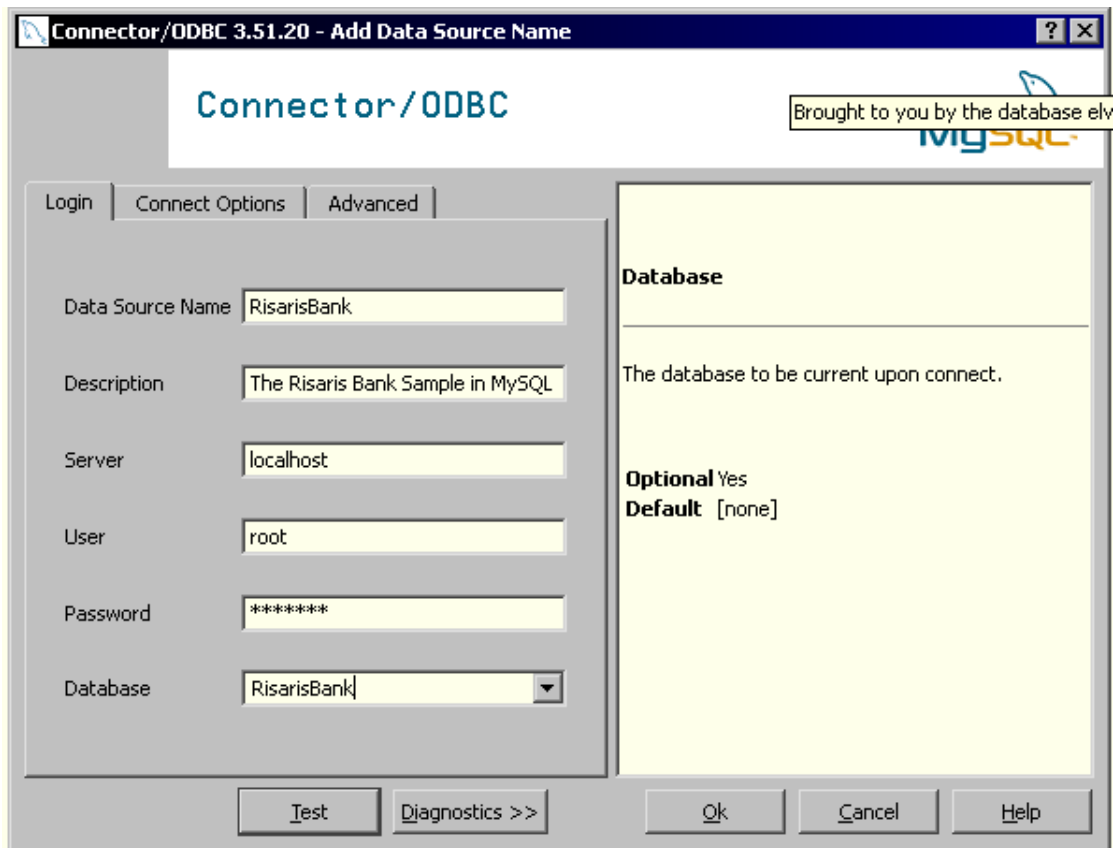
Description: The Risaris Bank Sample in MySQL

Server: localhost

User: root

Password: *** your MySQL root password ***

Database: RisarisBank (*select from the drop down list*)



All other options can be left as-is. Click OK.

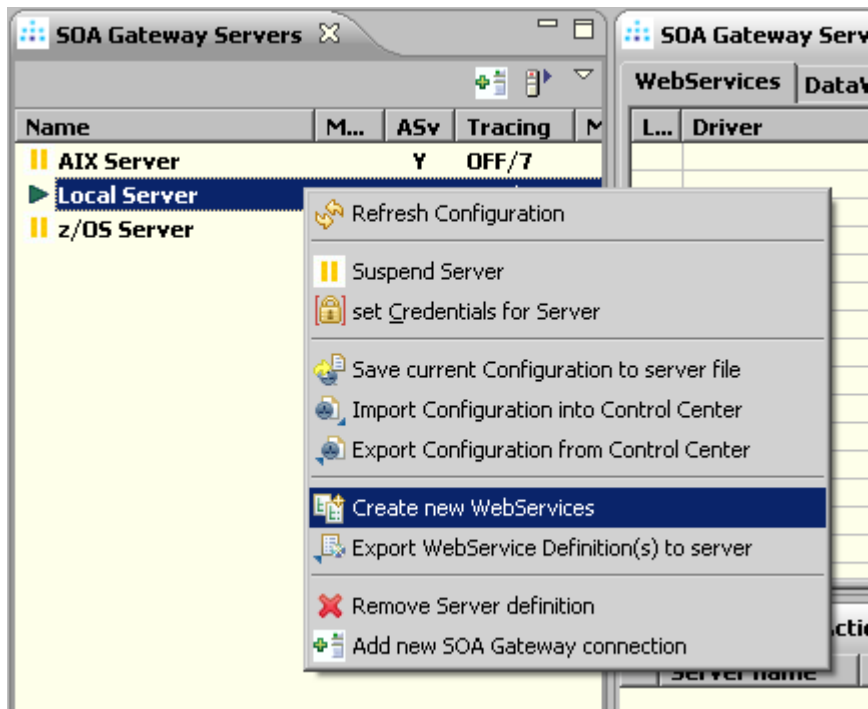
4. Discovery

At this stage you've got InfoPath installed, and a MySQL database with some sample data in it. In this section we'll show you how to create web services from each of the MySQL tables. These web services can be used by the InfoPath language (and many others) to give you direct real-time access to your MySQL Data.

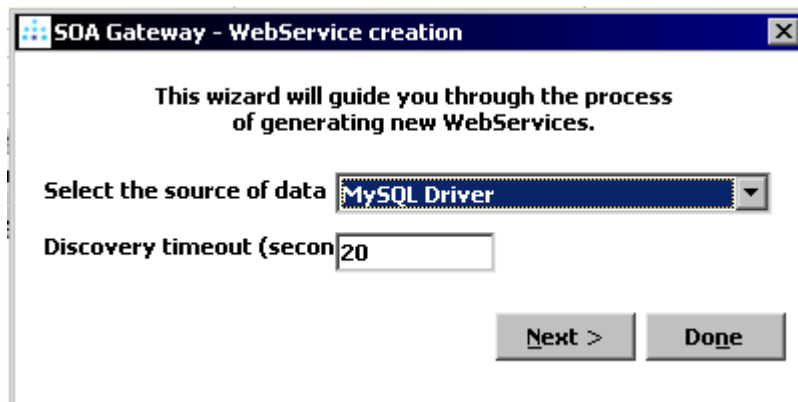
4.1. Web Service Creation using SOA Gateway

Start your SOA Gateway Control Centre. See [here](#) for an introduction to the Control Centre.

In your servers view, right click the entry which represents your local SOA Gateway Server. Select "Create New Web Services".

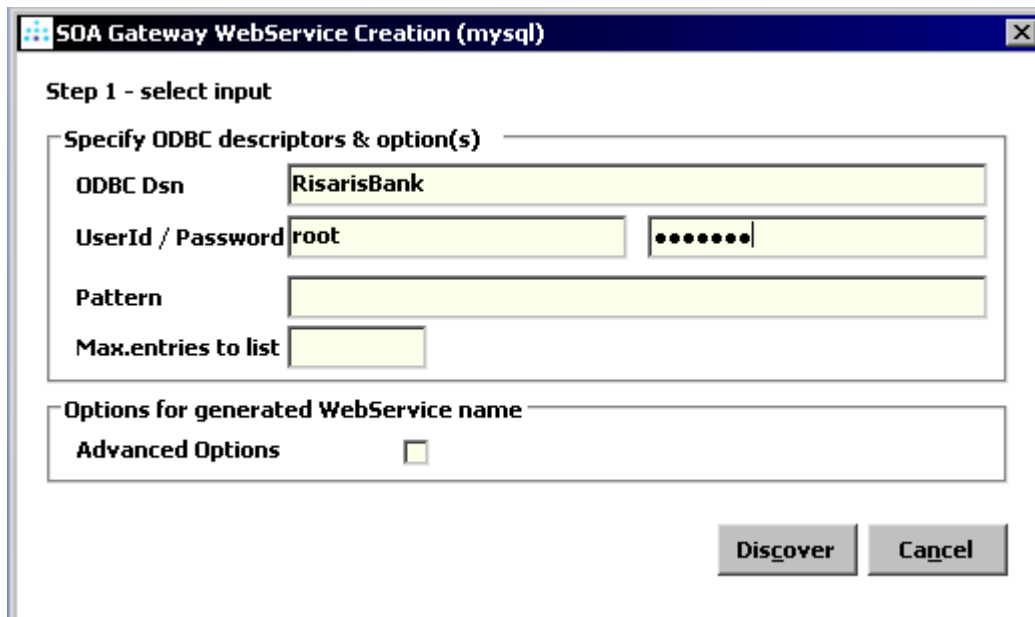


From the next dialog, choose “MySQL Driver”. If you do not see have a MySQL Driver in the list, see how to create one [here](#).



Click Next.

The next screen gives you the ability to add information about your DSN



Enter the above information and click Discover.

The wizard will display all the tables it finds at this (RisarisBank) DSN.

Click "Select All", and click "Import".

The wizard will create web services from each one of these tables.

SOA Gateway Servers			SOA Gateway Server Configuration - Local Server				
			WebServices / DataViews / XSDs / XSLs				
Name	M...	ASv	Mod	Driver	WebService	DataSource Id	DataView
AIX Server	Y		MySQL	MySQL Driver	accountsmovements	odbcDsn=RisarisBank, tableName=accountsmovements	accountsmovements
DMZ	Y		MySQL	MySQL Driver	audit	odbcDsn=RisarisBank, tableName=audit	audit
dublin dev	Y		MySQL	MySQL Driver	branch	odbcDsn=RisarisBank, tableName=branch	branch
jk server	Y		MySQL	MySQL Driver	currentaccount	odbcDsn=RisarisBank, tableName=currentaccount	currentaccount
jk server linux	Y		MySQL	MySQL Driver	customeraccountxref	odbcDsn=RisarisBank, tableName=customeraccountxref	customeraccountxref
jom server	Y		MySQL	MySQL Driver	customerinformation	odbcDsn=RisarisBank, tableName=customerinformation	customerinformation
Local Server	Y		MySQL	MySQL Driver	depositaccount	odbcDsn=RisarisBank, tableName=depositaccount	depositaccount
lxbre server	Y		MySQL	MySQL Driver	tellertable	odbcDsn=RisarisBank, tableName=tellertable	tellertable
PCRJW9	Y						
risaris.com server	Y						
vse	Y						
z/OS Server	Y						
z/vse	Y						

You've just created 8 Web Services from your 8 MySQL Tables!

4.2. Accessing the WSDL

Web Service Description Language (WSDL) is a standard, XML-based language that is used to describe a Web Service.

For each of the 8 web services you've created in the previous section, the SOA Gateway provides you with a WSDL to describe the Web Service. The WSDL itself is usually interpreted by a web

service client, such as InfoPath, but it is useful to know where to find the WSDL for each of your Web Services.

As WSDL is XML-based, it will open in your browser of choice. To see the WSDL for one of your Risaris Bank web services, do the following in your SOA Gateway Control Centre:

- Click on the web service you are interested in, for example the “branch” web service.
- The properties for this web service should appear in your [Properties View](#). If you do not see the Properties view, select Window -> Show View -> Other -> General -> Properties and click OK.
- In the properties view, there is a link to your WSDL. Click it to open the WSDL in a browser.

The screenshot displays the SOA Gateway Server Configuration interface for a local server. It is divided into three main sections:

- WebServices:** A table listing various web services. The 'branch' service is highlighted.
- SOA Gateway Action Log:** Shows messages such as 'discovery completed, 8 WebService(s) generated' and 'autosaved due to published WebService modification(s)'.
- Properties:** The 'WebService properties' view for the 'branch' service. It includes fields for Name, DataView, Driver, Read-only, SBCS-Codepage, and MBCS-Codepage. A WSDL URL is provided: <http://localhost:56000/branch?WSDL>. Below this, the 'WebService Identification and options' section shows fields for jdbcDsn (RisarisBank), schemaName, and tableName (branch).

A green arrow points from the 'branch' service in the WebServices table to the 'branch' service in the Properties view.

Mod	Driver	WebService	DataSource Id
MySQL	MySQL Driver	accountsmovements	odbcDsn=RisarisBank, tableN
MySQL	MySQL Driver	audit	odbcDsn=RisarisBank, tableN
MySQL	MySQL Driver	branch	odbcDsn=RisarisBank, tableN
MySQL	MySQL Driver	currentaccount	odbcDsn=RisarisBank, tableN
MySQL	MySQL Driver	customeraccountxref	odbcDsn=RisarisBank, tableN
MySQL	MySQL Driver	customerinformation	odbcDsn=RisarisBank, tableN
MySQL	MySQL Driver	depositaccount	odbcDsn=RisarisBank, tableN
MySQL	MySQL Driver	tellertable	odbcDsn=RisarisBank, tableN

Local Server | Message

Local Server | discovery completed, 8 WebService(s) generated

Local Server | autosaved due to published WebService modification(s)

Local Server |

WebService properties

Resource | WebService

Name | branch

DataView | branch

Driver | MySQL Driver | SBCS-Codepage |

Read-only | | MBCS-Codepage |

WSDL URL is | <http://localhost:56000/branch?WSDL>

WebService Identification and options

jdbcDsn | RisarisBank

schemaName |

tableName | branch

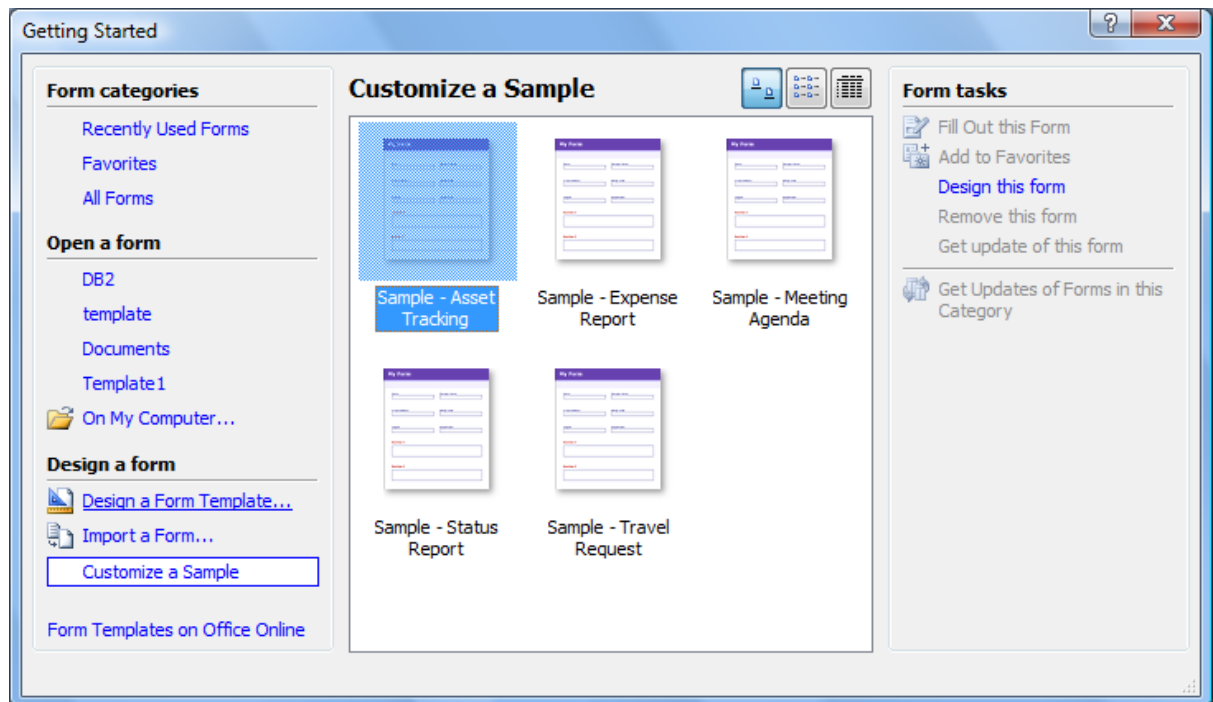
You can view the WSDL for the other web services by clicking the link from their properties view.

This WSDL is the starting point for using Web Services, and can be used time and again by different web service clients.

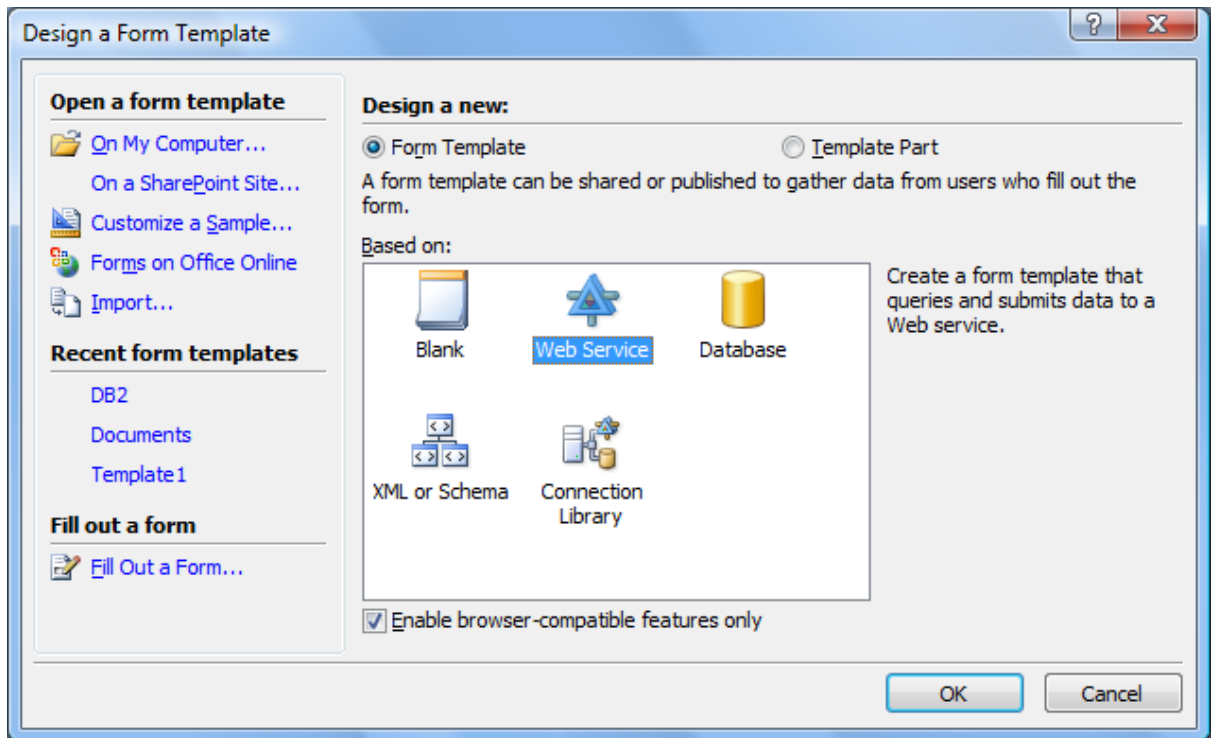
5. Accessing Web Service with InfoPath

5.1.Procedure

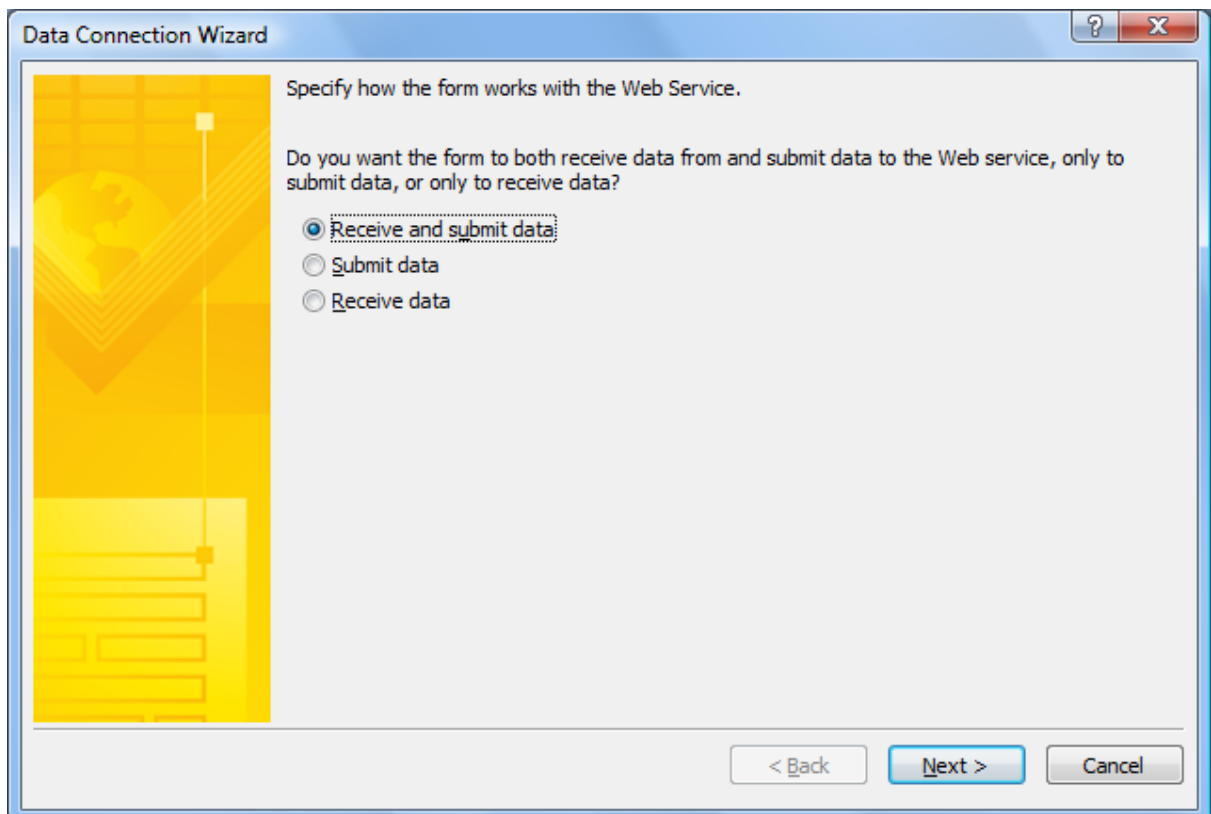
When InfoPath is first opened, it displays the following dialog box. Select the [Design a Form Template...](#) option.



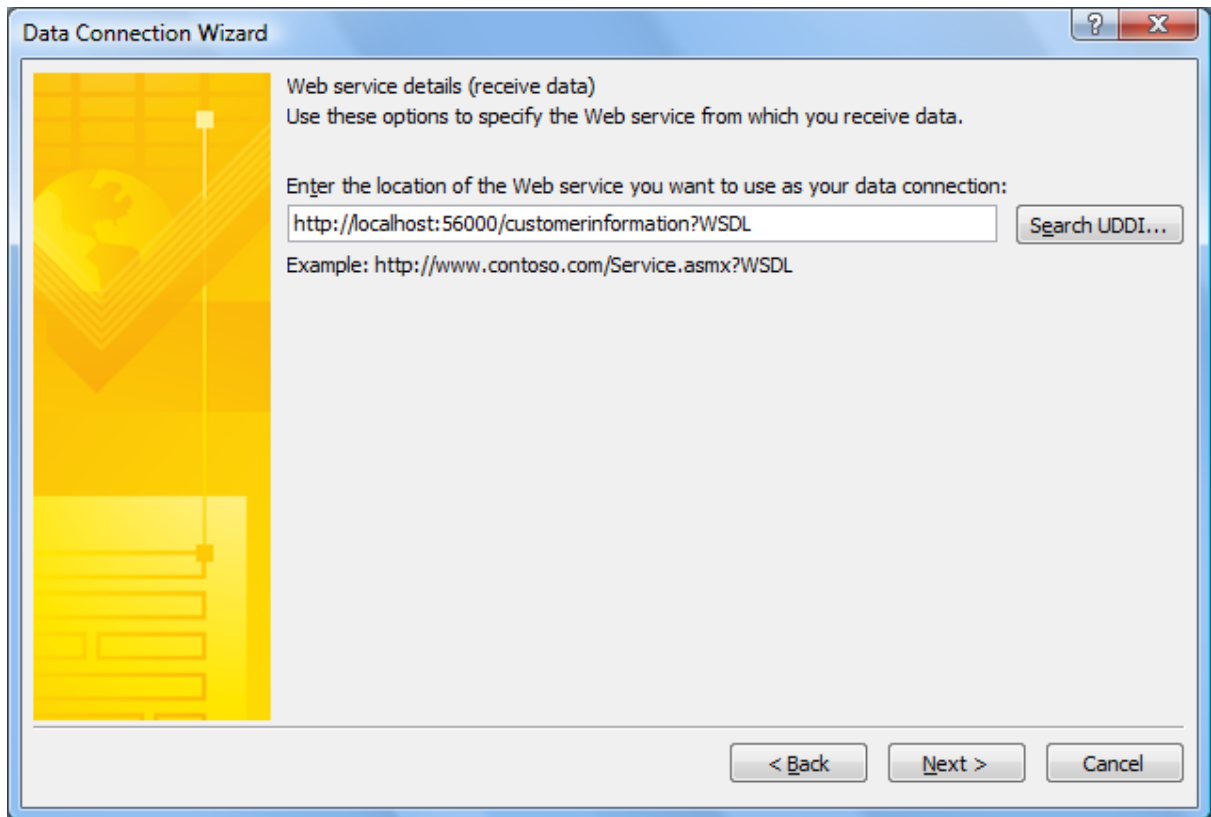
Next select Web Service as the form template required and hit **OK**.



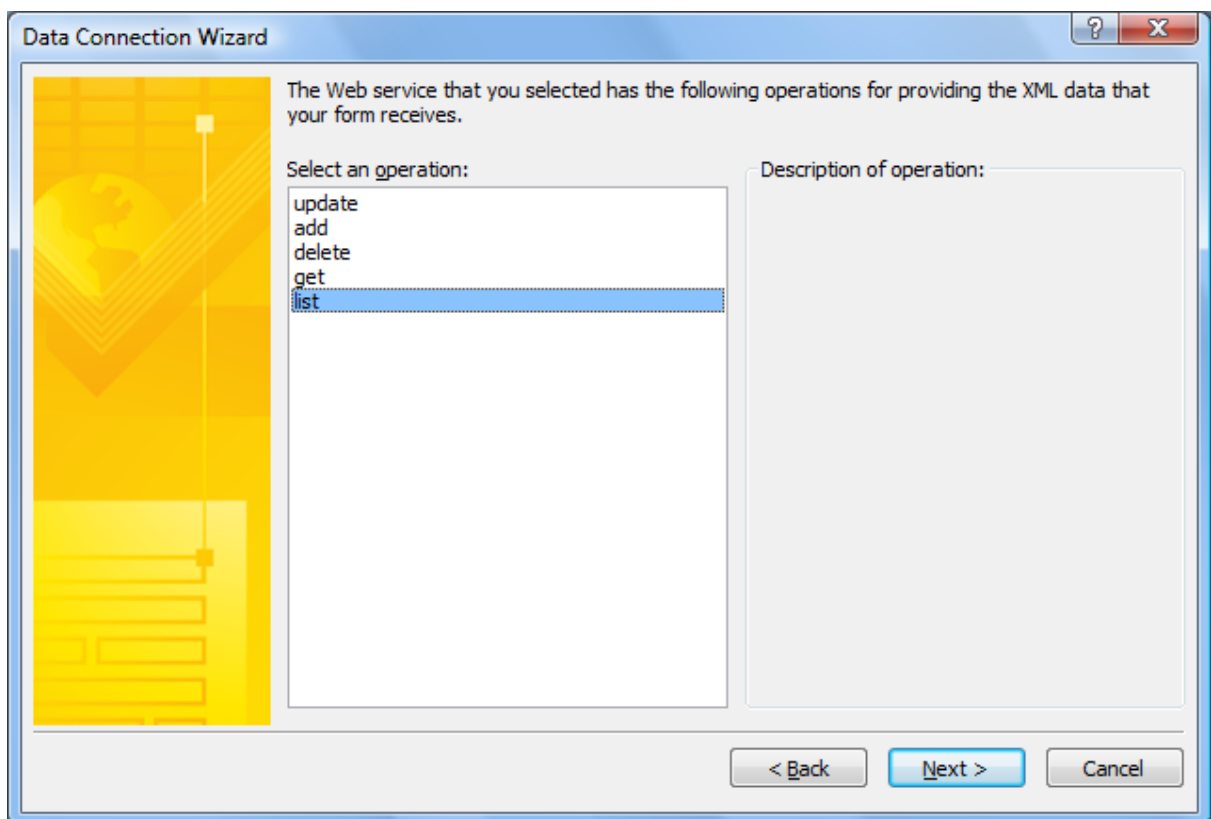
Select [Next](#).



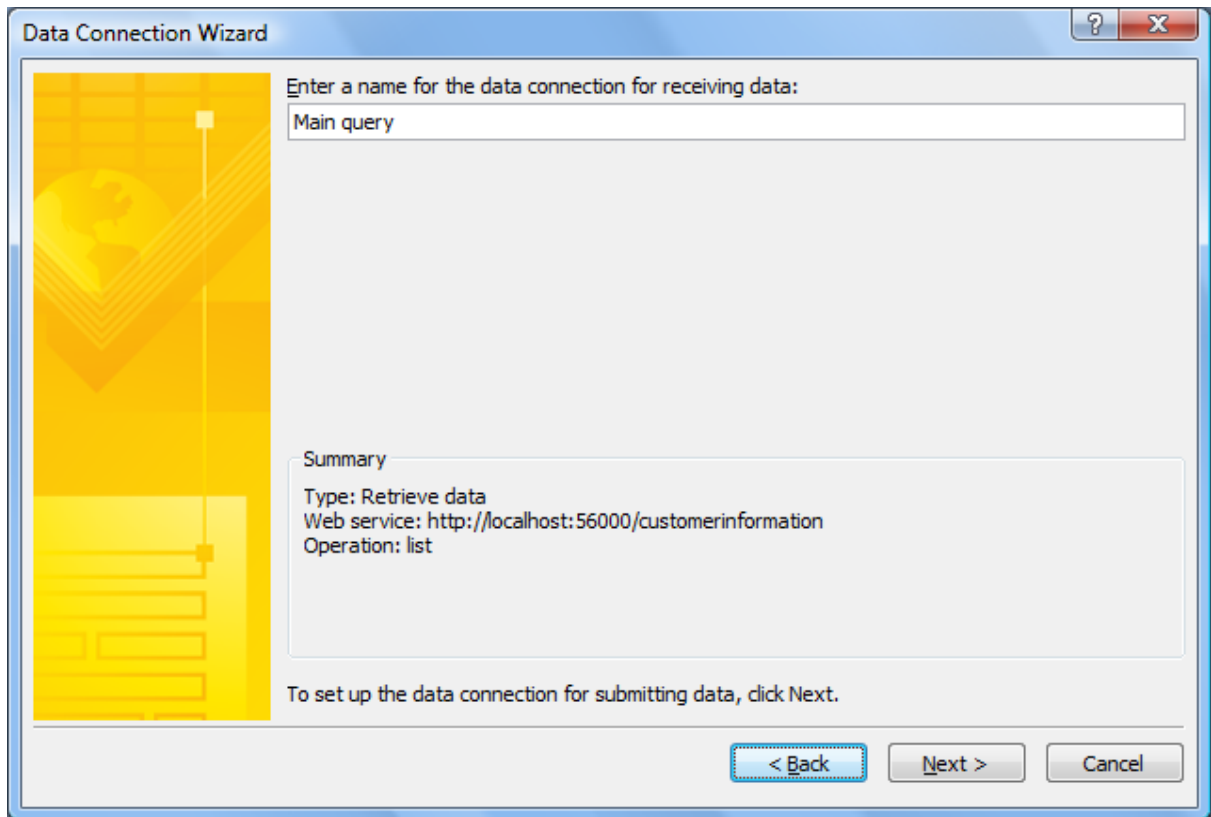
Enter the URL of the customer information web service. Change the server/port as appropriate to your environment. Hit [Next](#).



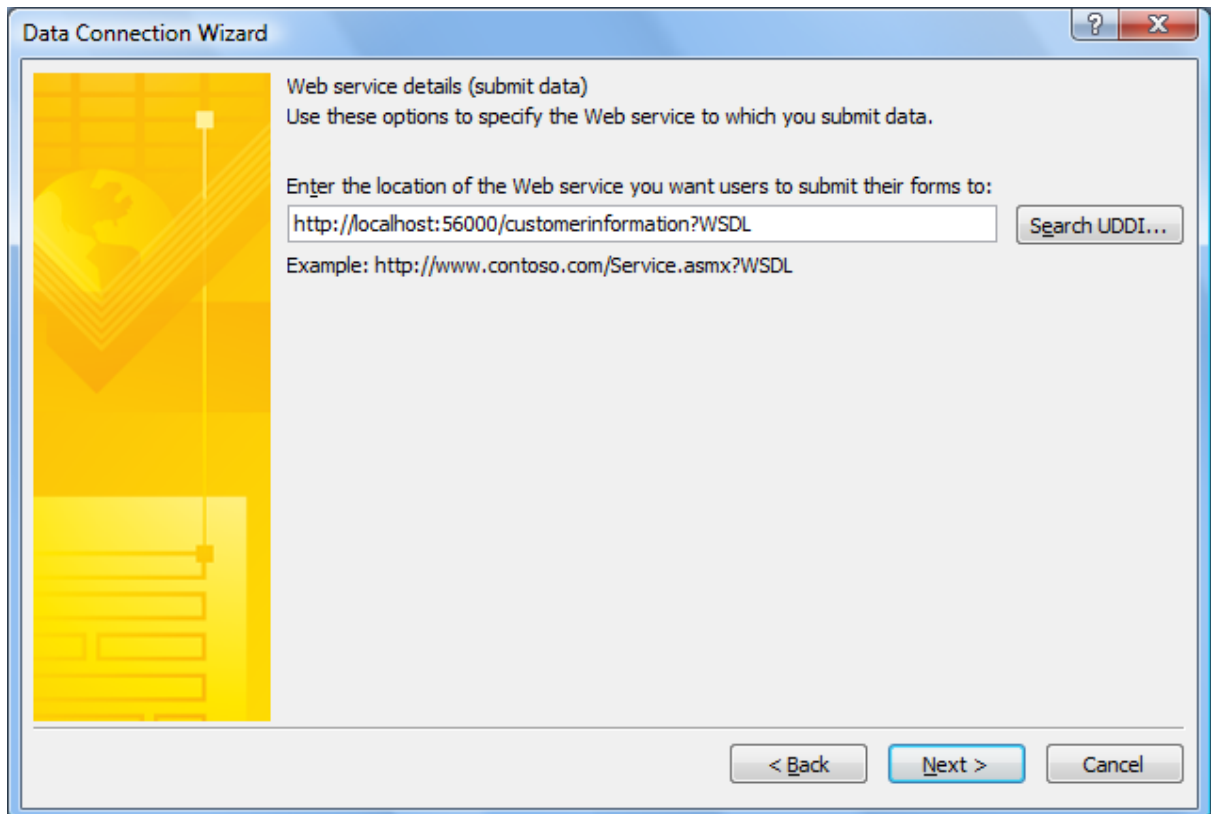
A list of web service methods is listed as shown. In this example we chose list. Hit [Next](#).



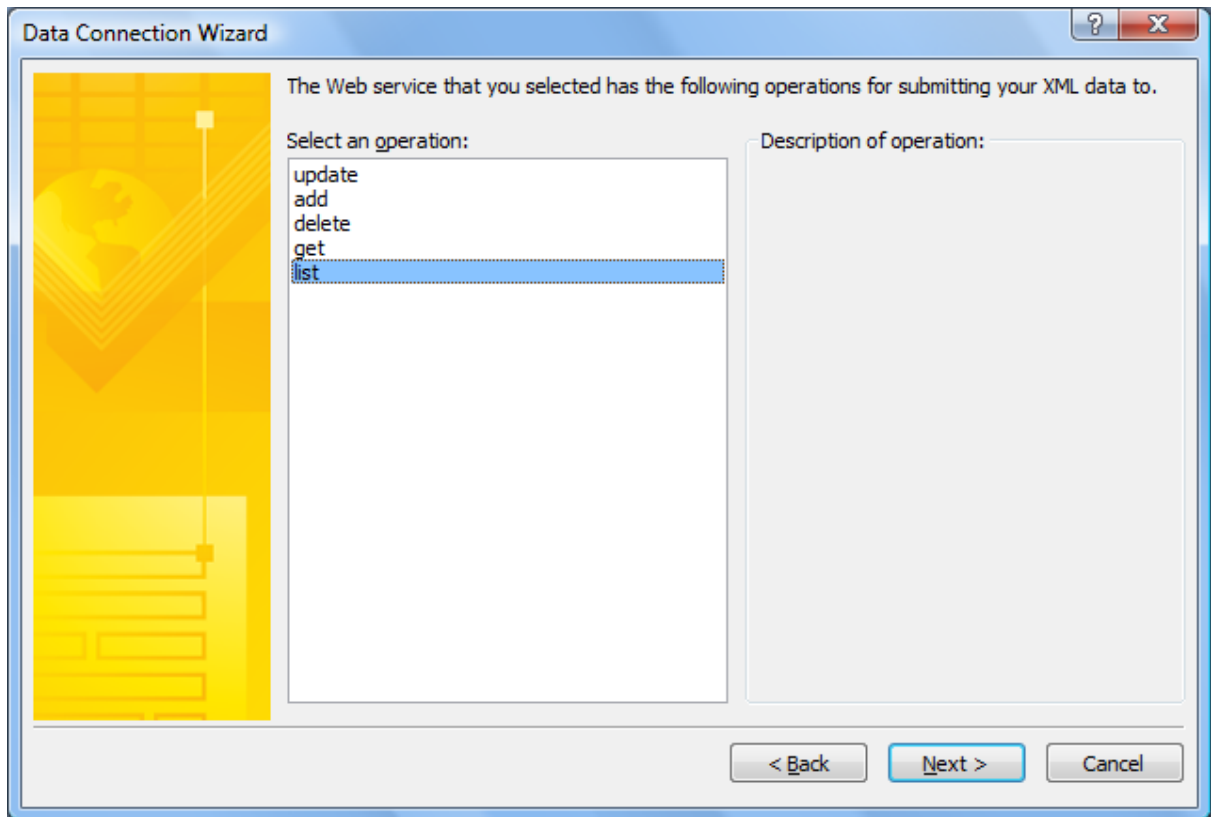
Change the query name if required. Hit [Next](#).



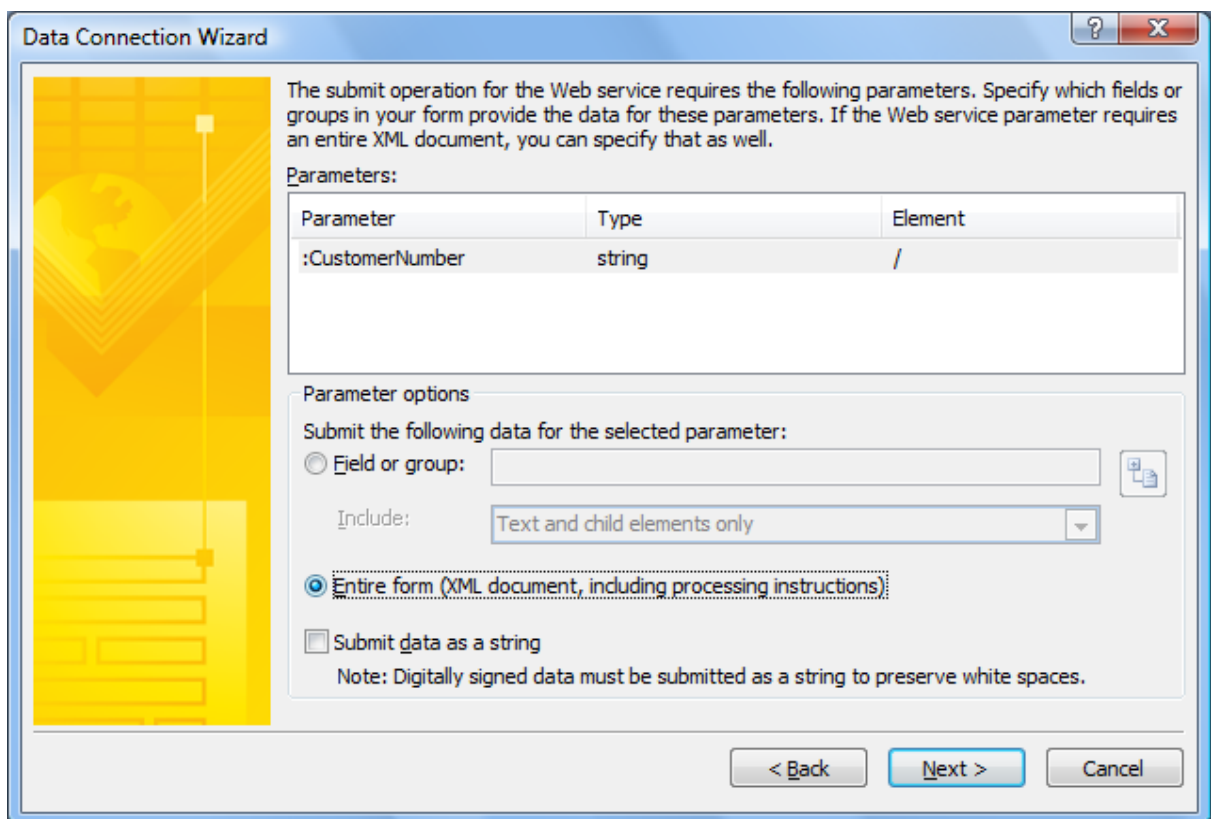
You can now enter the web service for data submission. In this instance it is as before so hit Next.



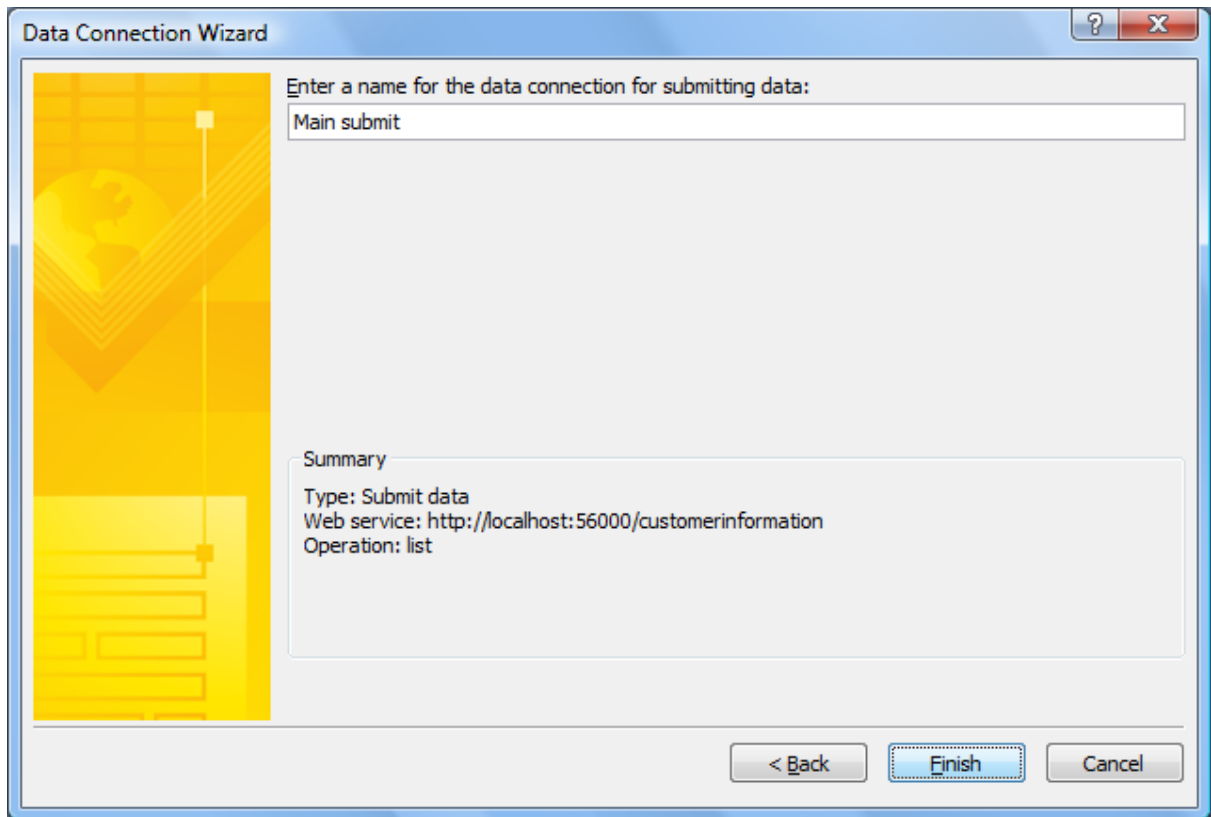
Select list and hit Next.



For the parameter dialog select [Entire form](#) and hit [Next](#).

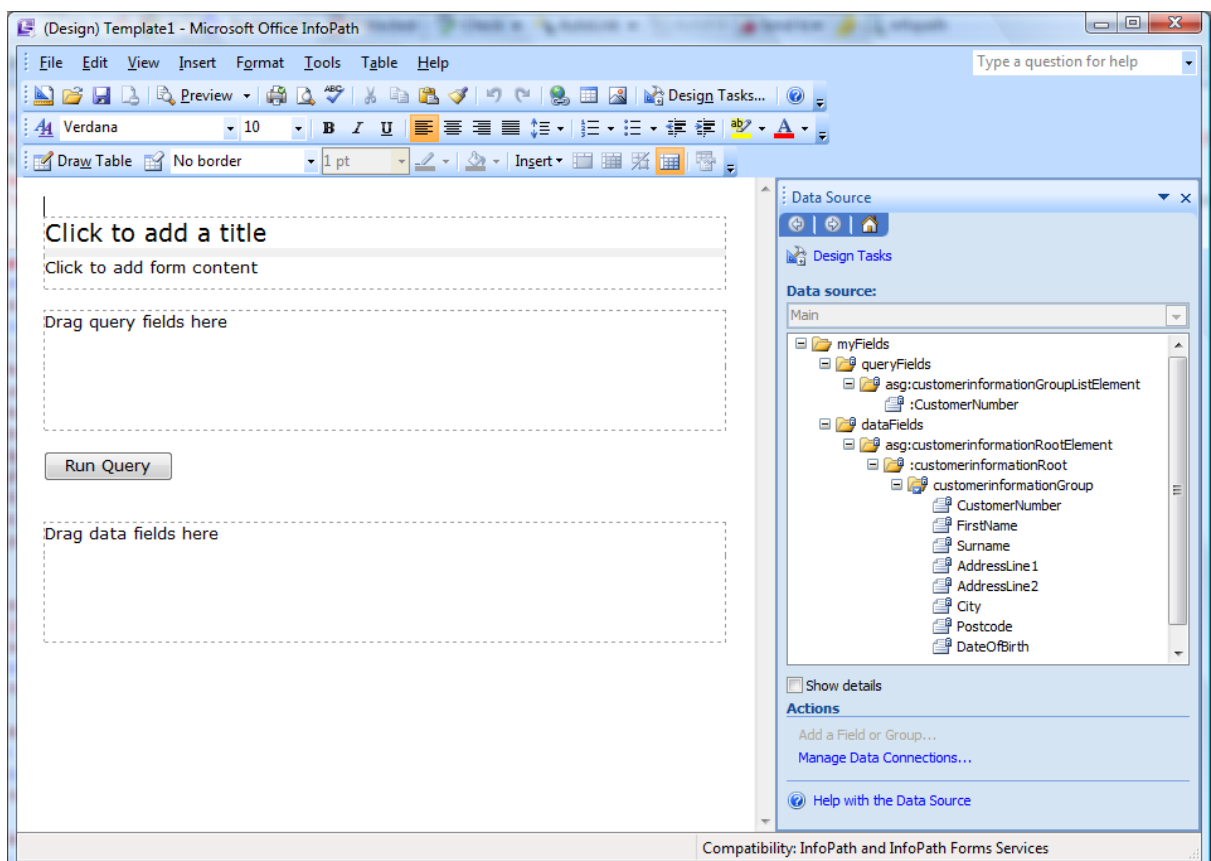


Finally choose a name for the submit query or accept default name and hit [Finish](#).



5.2. Form details

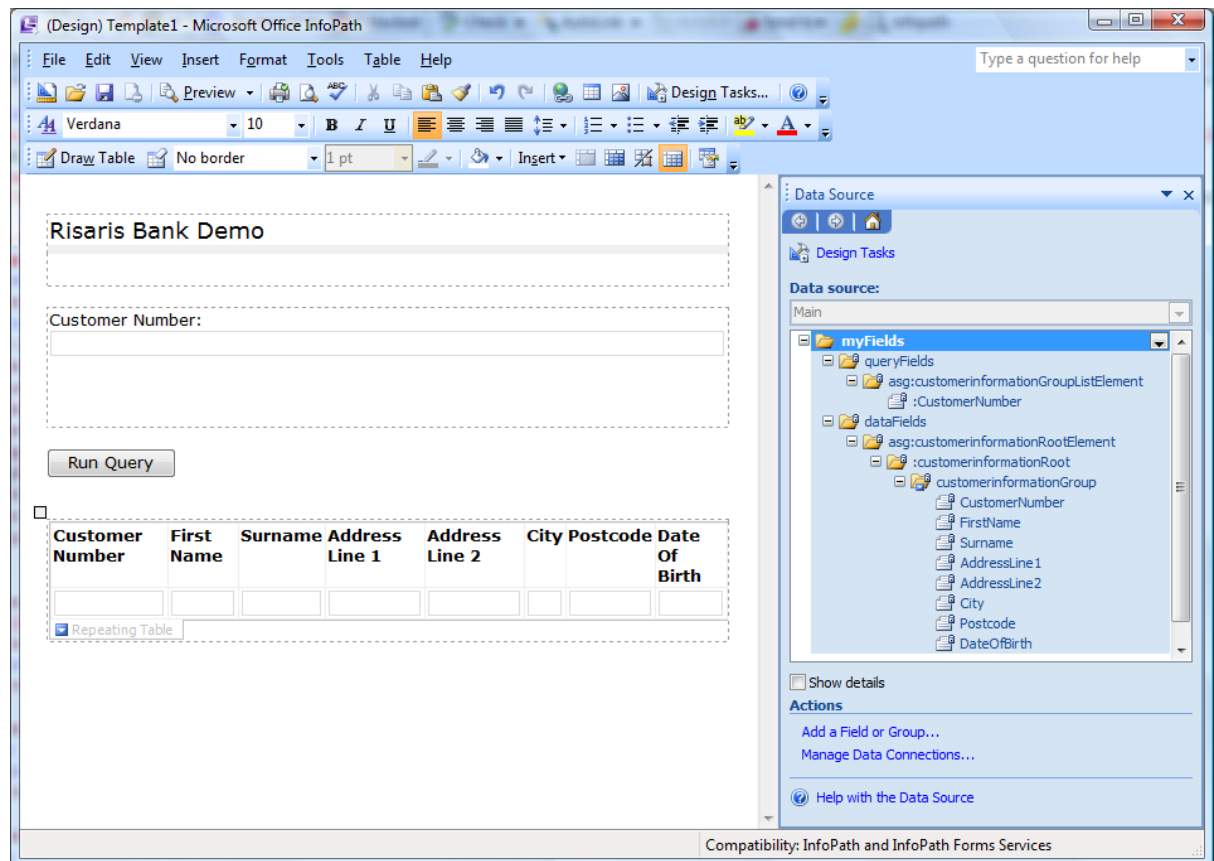
The form template is now displayed as shown below. Note that we have opened the queryFields and the dataFields datasources to show the input parameter and the output from the query.



Add a form title e.g. Risar is Bank Demo if required.

Drag CustomerNumber of queryFields to the [Drag query fields here box](#).

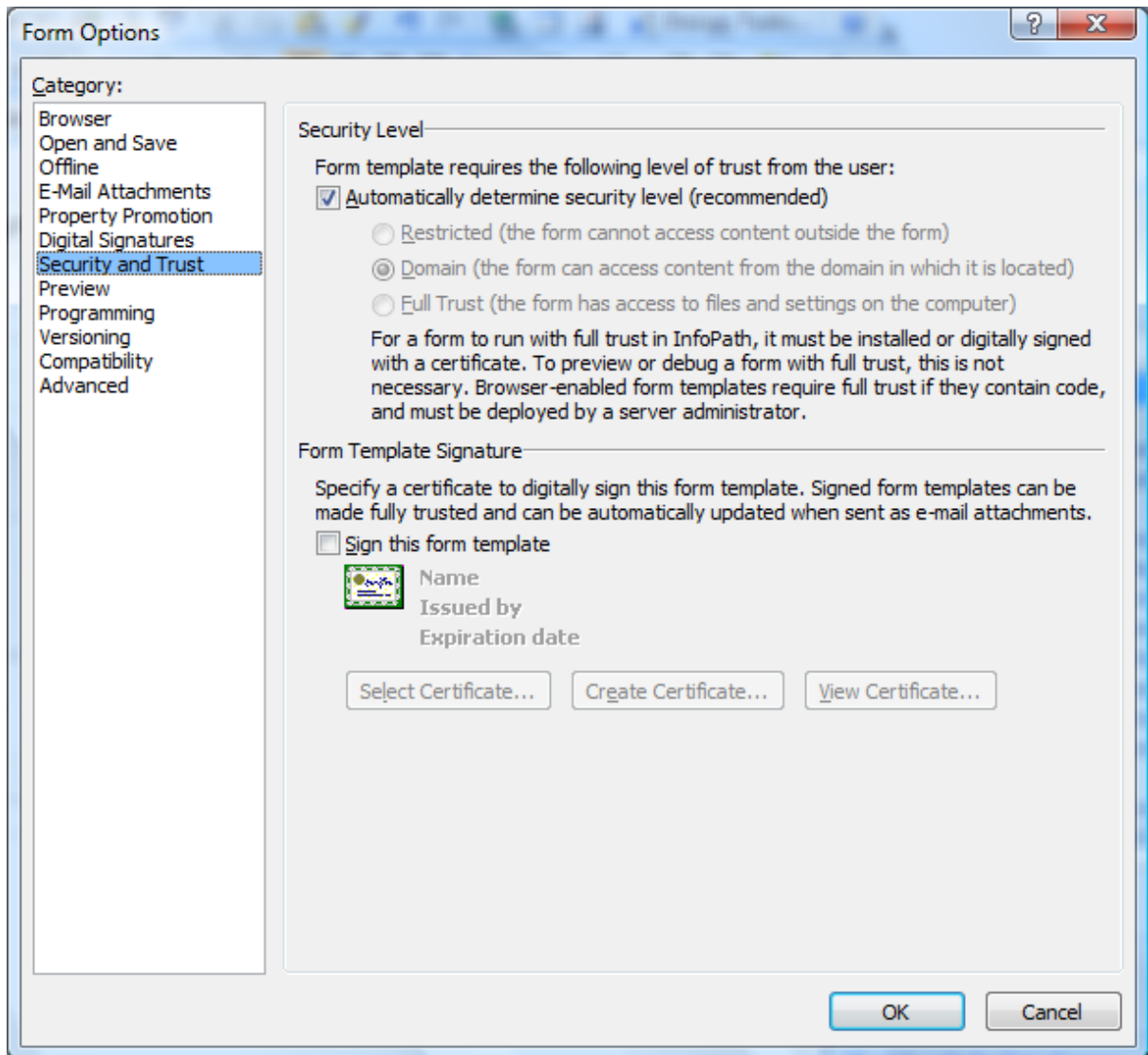
Drag customerinformationGroup to the [Drag data fields here box](#). When presented with the option select [Repeating Table](#). The form should now look like this:



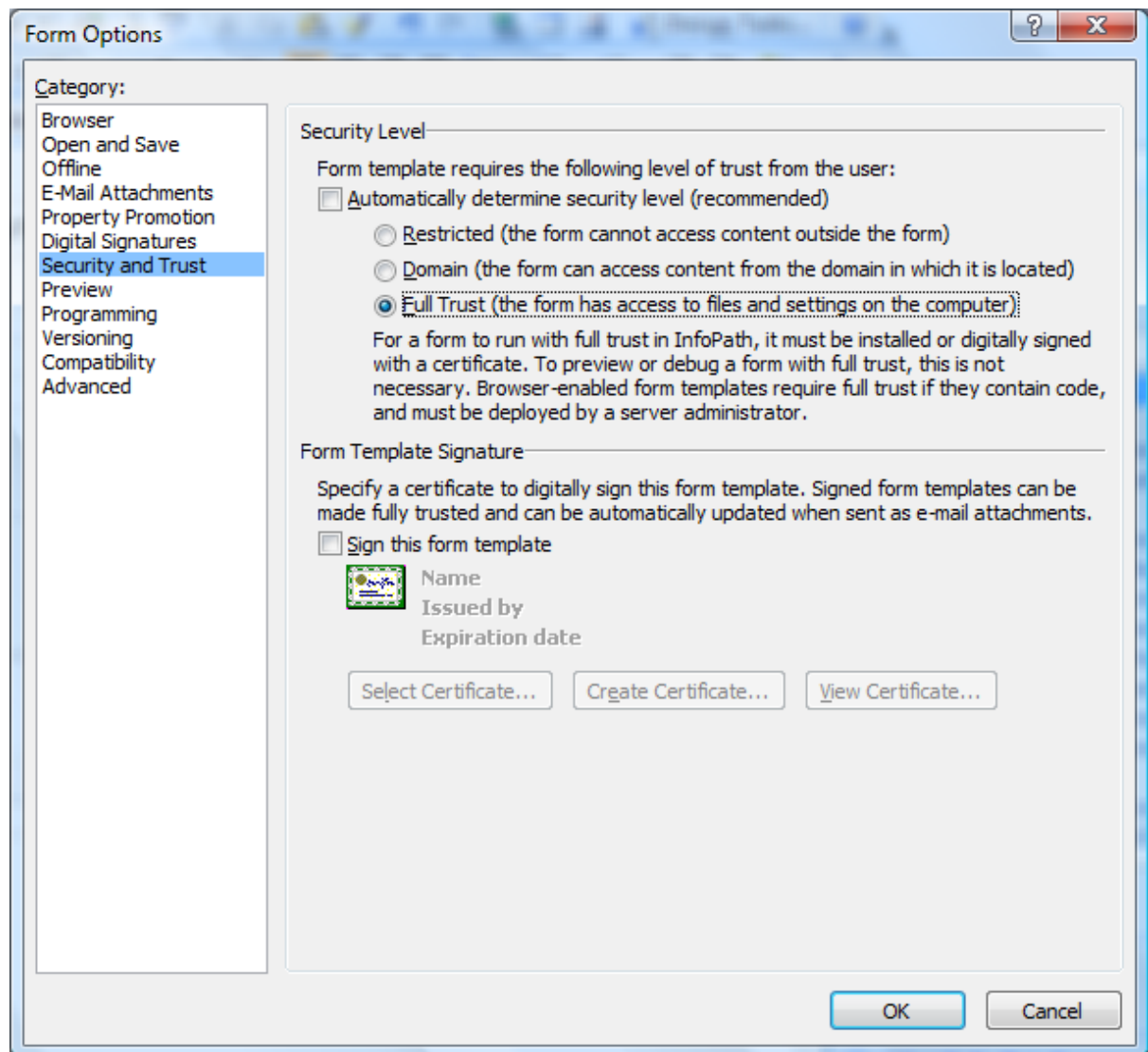
The default security setting for InfoPath is quite restrictive so it is almost certain that you will have to perform the next steps prior to previewing the form.

5.3.Trust

From the [Tools](#) menu go to [Form Options...](#) and select [Security and Trust](#) as shown.



Deselect **Automatically determine security level** and select the **Full Trust** option as below. Hit OK.



5.4. MySQL security

At this point, depending on your MySQL security settings, you may have an issue accessing the Risaribank database. Unfortunately InfoPath is very poor at providing an appropriate error message. It stems from the fact that there is no way to provide a user name or password with InfoPath so if the database requires them, the query will fail.

A more user friendly way to determine if there is a security issue is to use an application such as MS Word (see [Accessing MySQL from Word](#)). It will inform you, if applicable, of the user and host involved.

```
<Title>Error</Title><p>ErrorCode = -11000</p><p>Reason = Mon Apr 21
15:46:20.00595228, pid: 00019601, tid: 00884791. ERROR: in file
src/adaptorImpl.cpp, at line 955.
odbcDSDI::workerProcessOdbcDiagnostics() returned -11000, indicating
ODBC API "SQLConnect" returned "-1", SQLSTATE is: HY000, Native error
number is: 1044, Message Text is : [unixODBC][MySQL][ODBC 5.1
Driver]Access denied for user 'jom'@'localhost' to database
'Risaribank'</p><p>Mon Apr 21 15:46:20.00595293, pid: 00019601, tid:
```

00884791. ERROR: in file src/adaptorImpl.cpp, at line 976.
odbcDSDI::contextInit() returned -11000, indicating An external ODBC API
call failed. See previous messages.</p>

The following steps should solve this issue:

- Log in to MySQL as user root.
- Issue the following 2 statements substituting 'jom'@'localhost' with the user and host in your error message:

```
grant SELECT, INSERT, DELETE, UPDATE on RisarisBank.* to 'jom'@'localhost';  
flush privileges;
```

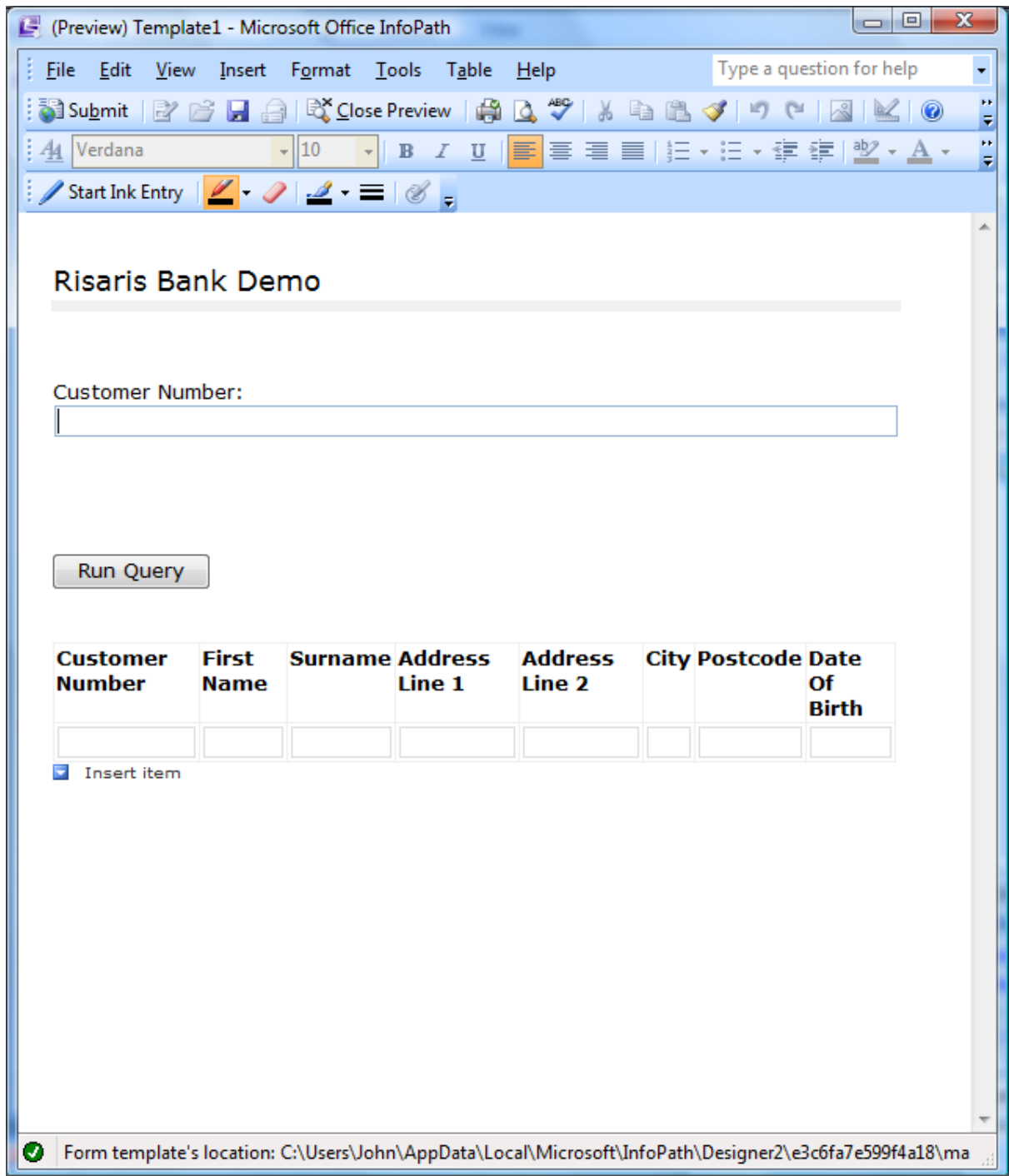
MySQL selects a user login on a hierarchical basis and you may have to repeat the above for the next user. Again we would suggest using the Word tutorial until access to the database is allowed.

If you wish to revoke the assigned privileges do the following:

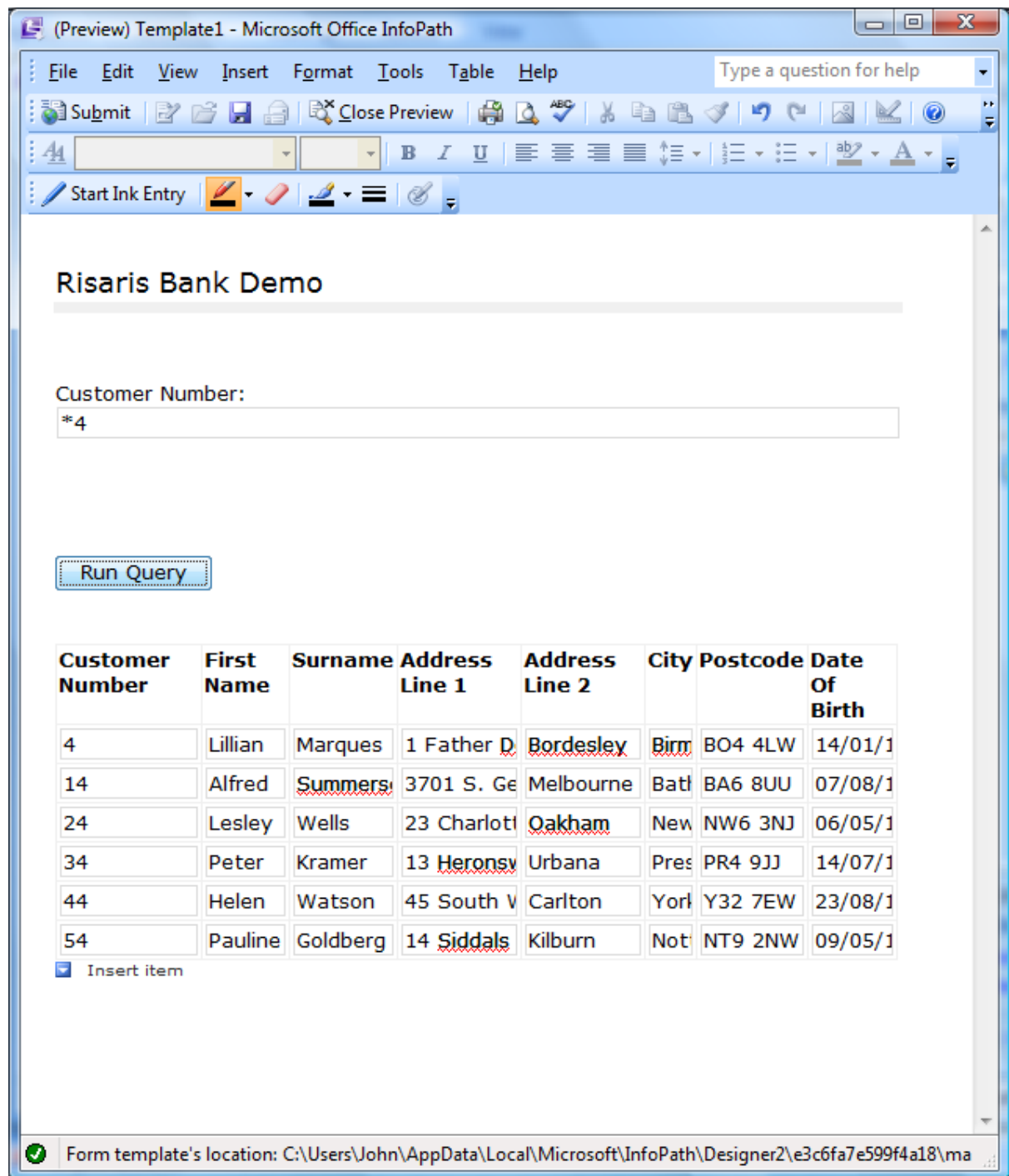
- Log in to MySQL as user root.
- Issue the following 2 statements substituting 'jom'@'localhost' with the user and host in your error message:

```
revoke SELECT, INSERT, DELETE, UPDATE on RisarisBank.* from 'jom'@'localhost';  
flush privileges;
```

Finally select Preview from the toolbar and the following form is displayed.



The customer number can be wildcarded and in our example below, we are listing those ending with 4.



The form is now ready to be published in whatever format available to you.

6. Conclusion

This tutorial has showed you how to access MySQL from InfoPath using the SOA Gateway. As you can see, you have built a powerful application that uses Web Services to retrieve information in real-time.