Advanced Data Base
8trd157

Lab5
Access – ODBC – Oracle
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Objective

Creation of an application under Access linked by an ODBC driver and a TCP/IP network to an Oracle database.

Methodology

1. With Windows XP, start *Microsoft Access 2003* and create a new database. Save it.   Create a new table with the **Attach Table** option. This option gives the possibility to use an external database. Access will have no local data in this database.

    Tables > **New** > **Attach table**   *(this sequence may change depending on Microsoft Office version and language)*

    ➔ With Windows 7/10 Access 2007-2016, the Attach option is found this way:
        ==> External data ==> odbc database)
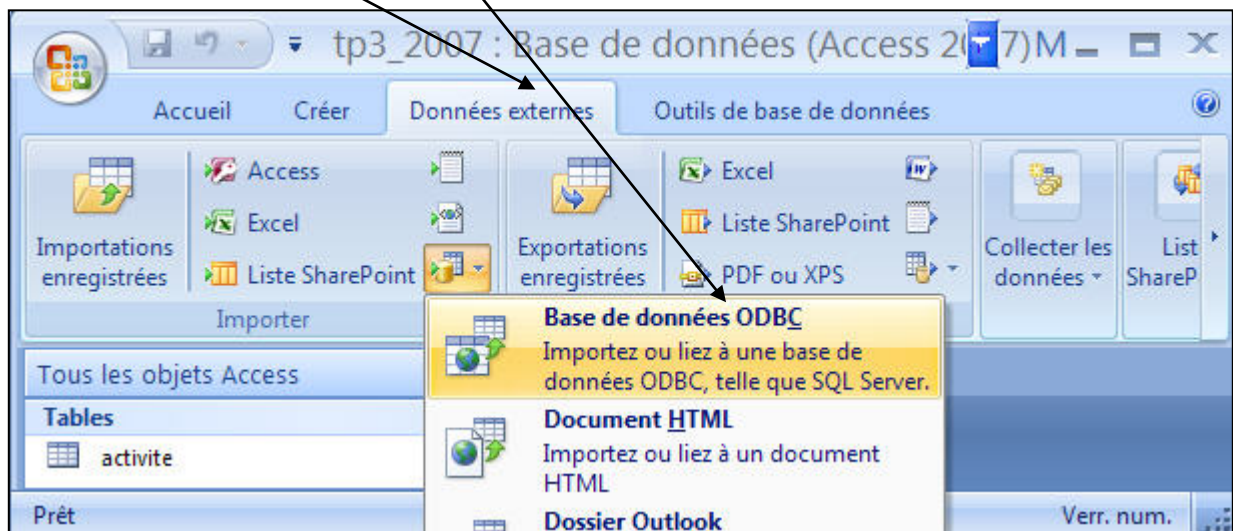
2. Now in the Attach window, choose the **ODBC type** of file. In the window identifying the data source, you may select machine data source. Create a new DSN *(Data Source Name).* Click on Next, choose the Oracle ODBC pilot *(and not the one from Microsoft).* If you do not have this driver, use the one from Microsoft *(less reliable).*

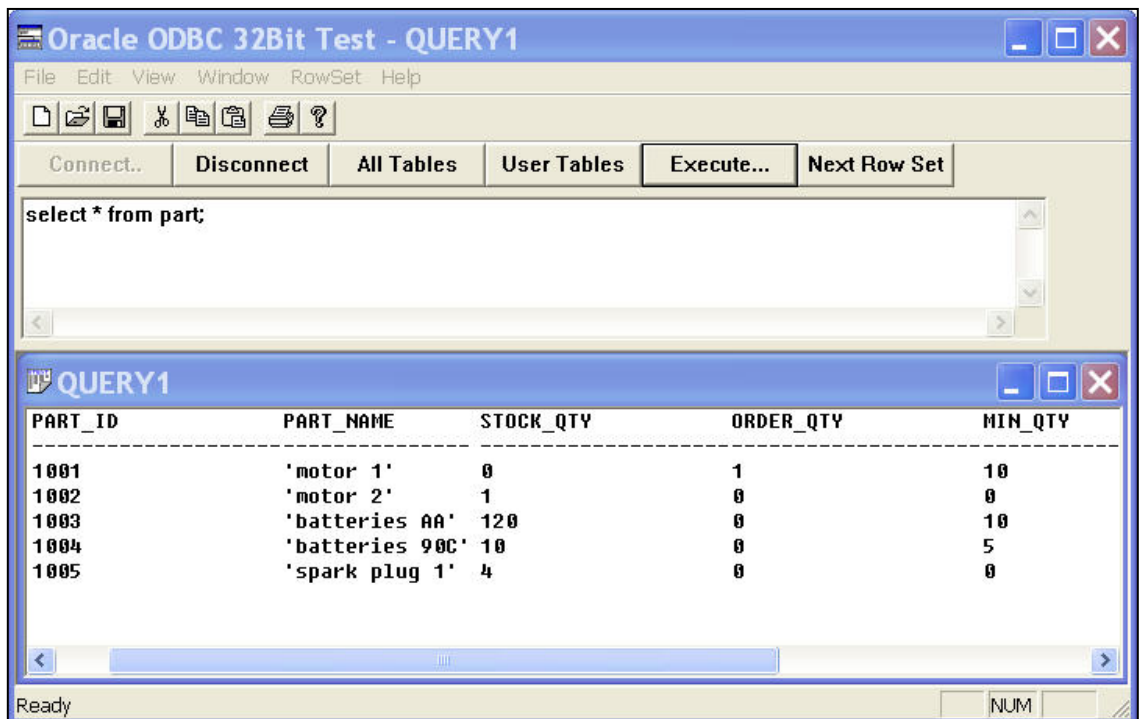3.Give a name to the DSN *(to be remembered)*

    - Specify the service *cndb* which is the name of our primary database

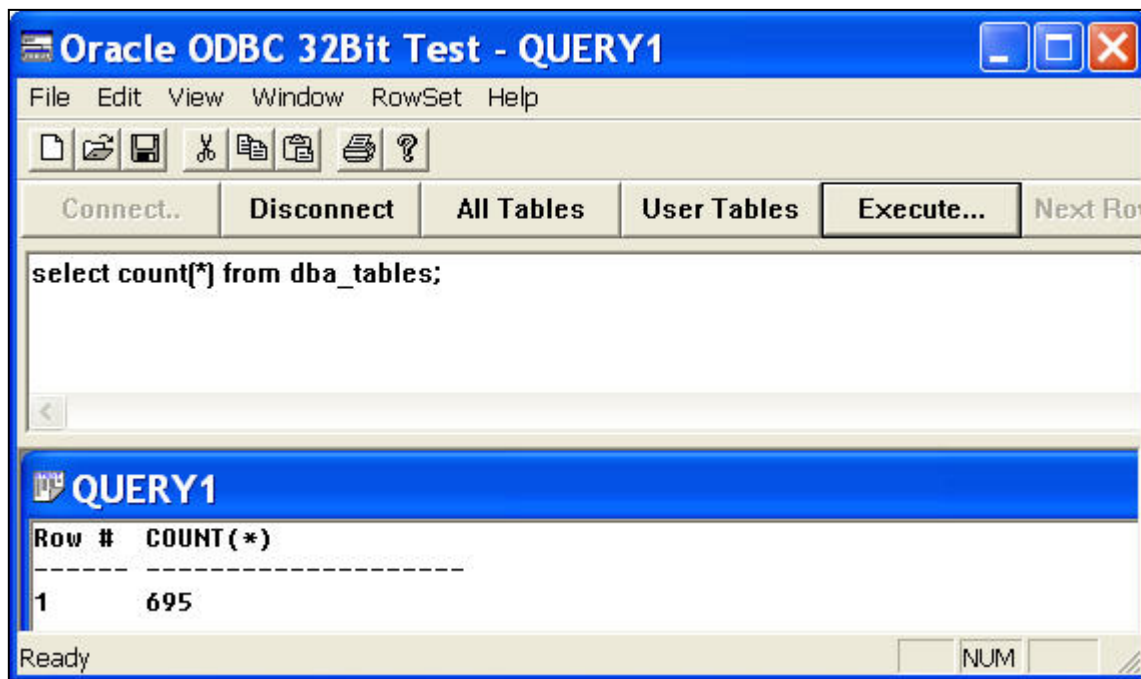   - Enter your user name and password and click OK
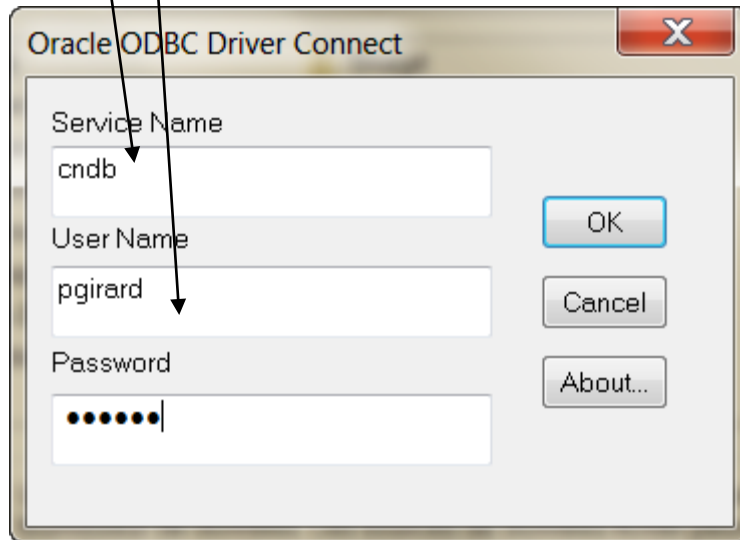
4. A test can be made with the client program **Oracle** Microsoft **ODBC Administrator** which connects to the DSN and gives an access to SQL.
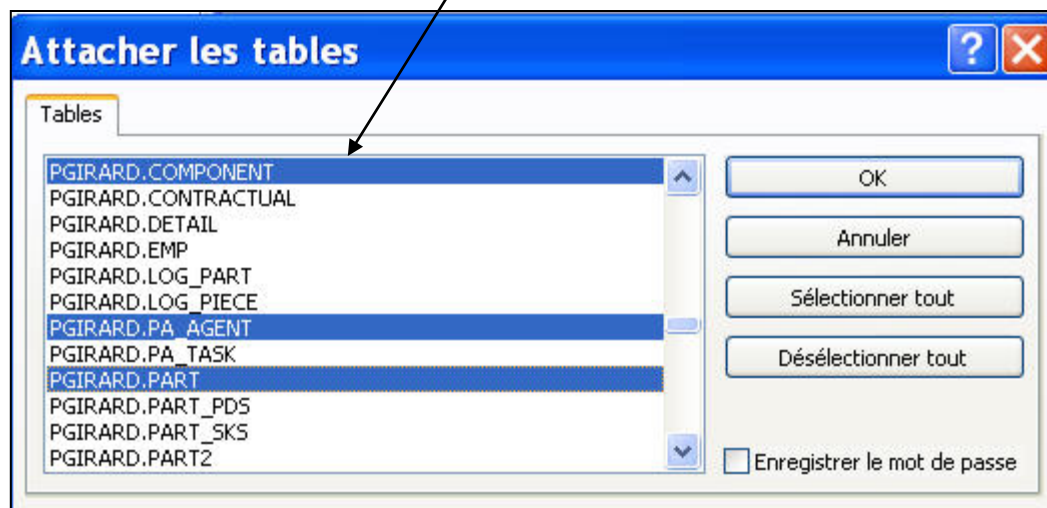
Example with cndb

Example with dbcs_202.113.72.5
**(tut Oracle 9i under Windows server)**

- You can now attach any tables in <u>your own Oracle schema</u> to your Access database.

- Select all desired tables of your schema by clicking once on each of them. Then click OK and they will be attached to your access database.

- If no primary key has been declared, Access will ask you for each table to identify a column or a combination of columns to make unique each row.

- A special icon will show the difference between a local table and an attached table. You can use normal functionalities of Access with all these tables.
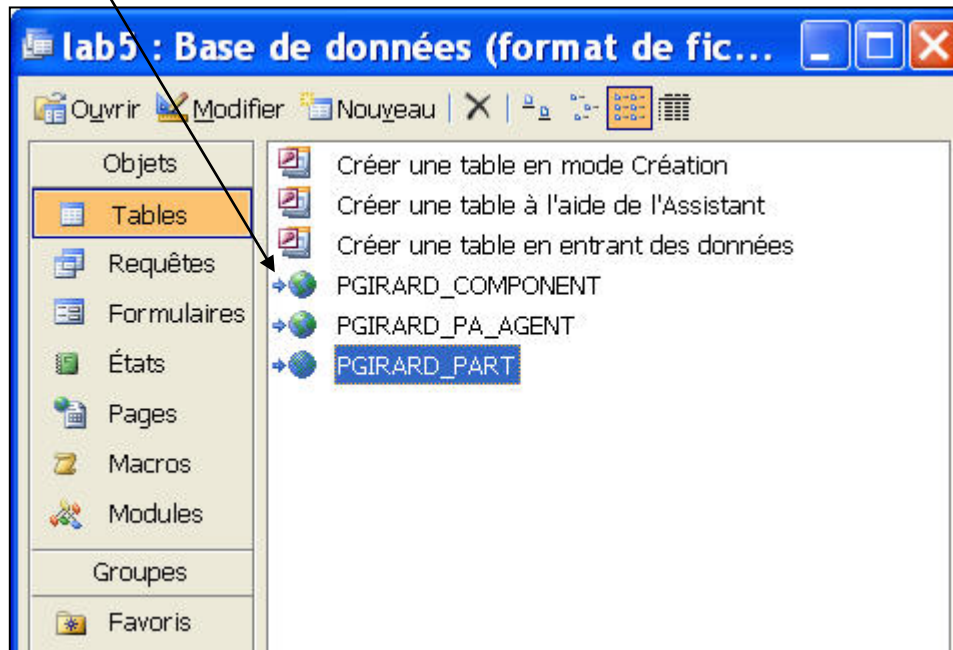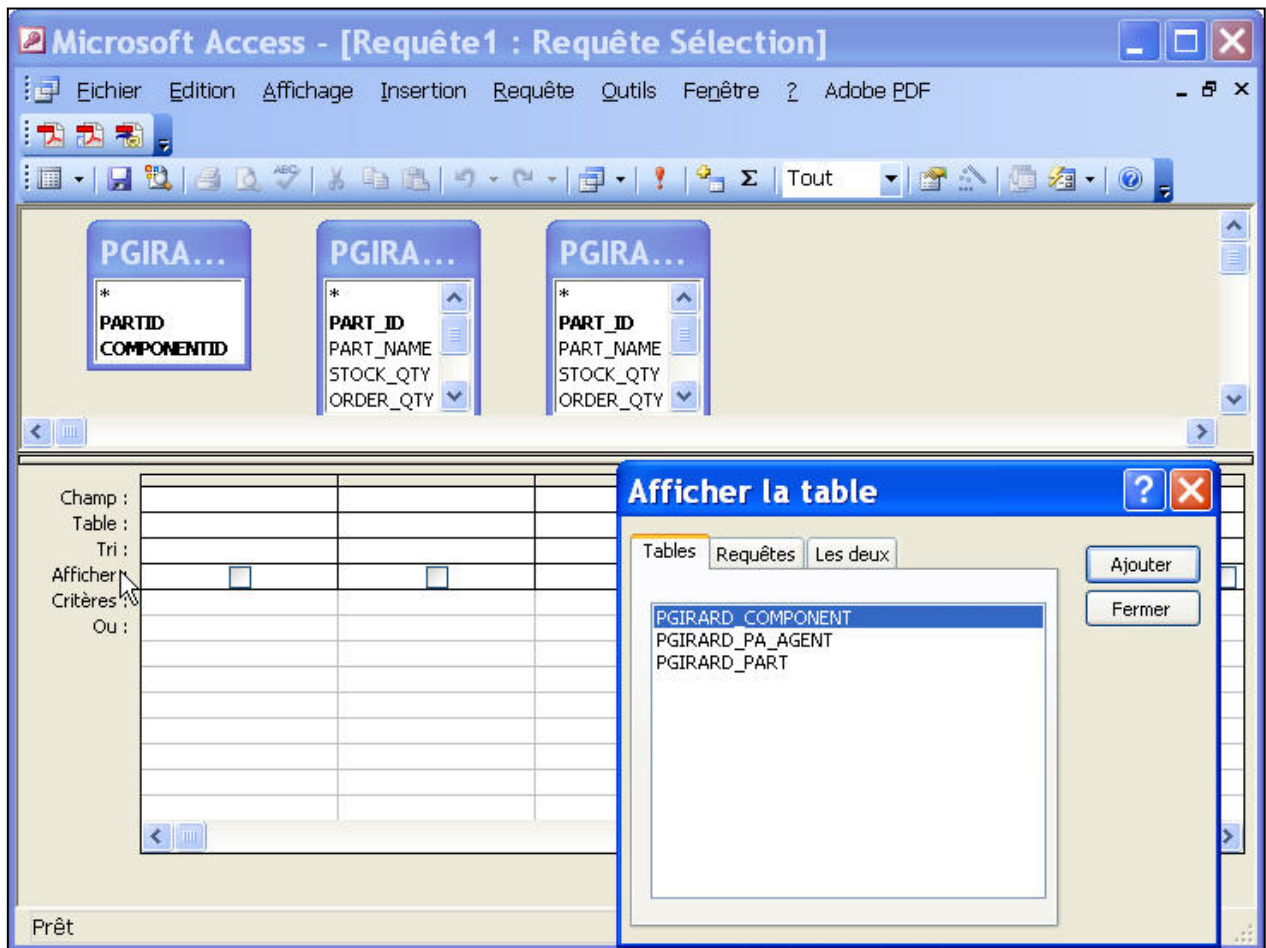

- A test on this table can be made by double-clicking on one attached table and visualize the content

5. This example shows how to create the transaction *explosion* for the maintenance technician.

- Create a new request in a creation mode. Click on the tables needed for your select. This example needs the table *part* twice and the table *component*.
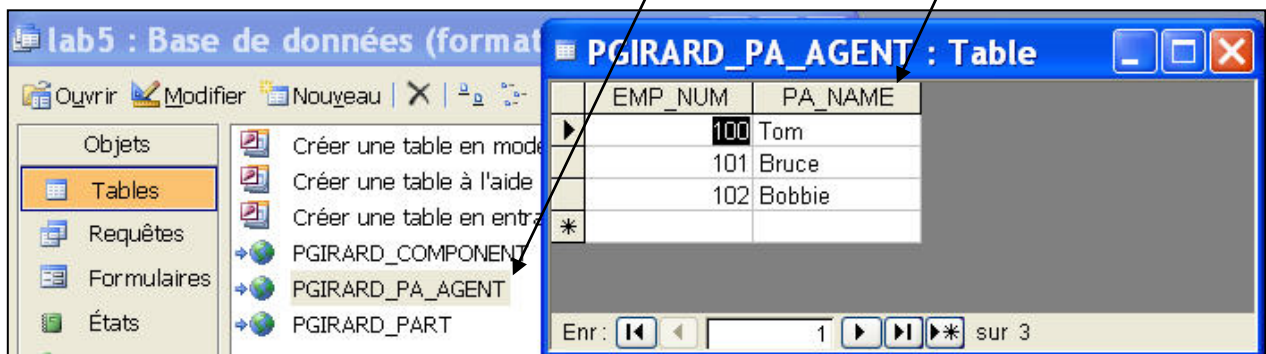
- First identify the corresponding attributes in each table *(for an Access joint),* select the columns to be displayed and the criteria

      - from *part_id* in the table *pgirard.part* to *partid* in the table *pgirard.component*. and

      - from *part_id* in the table *pgirard.part1* to *componentid* in the table *pgirard.component*.
       by selecting the attributes
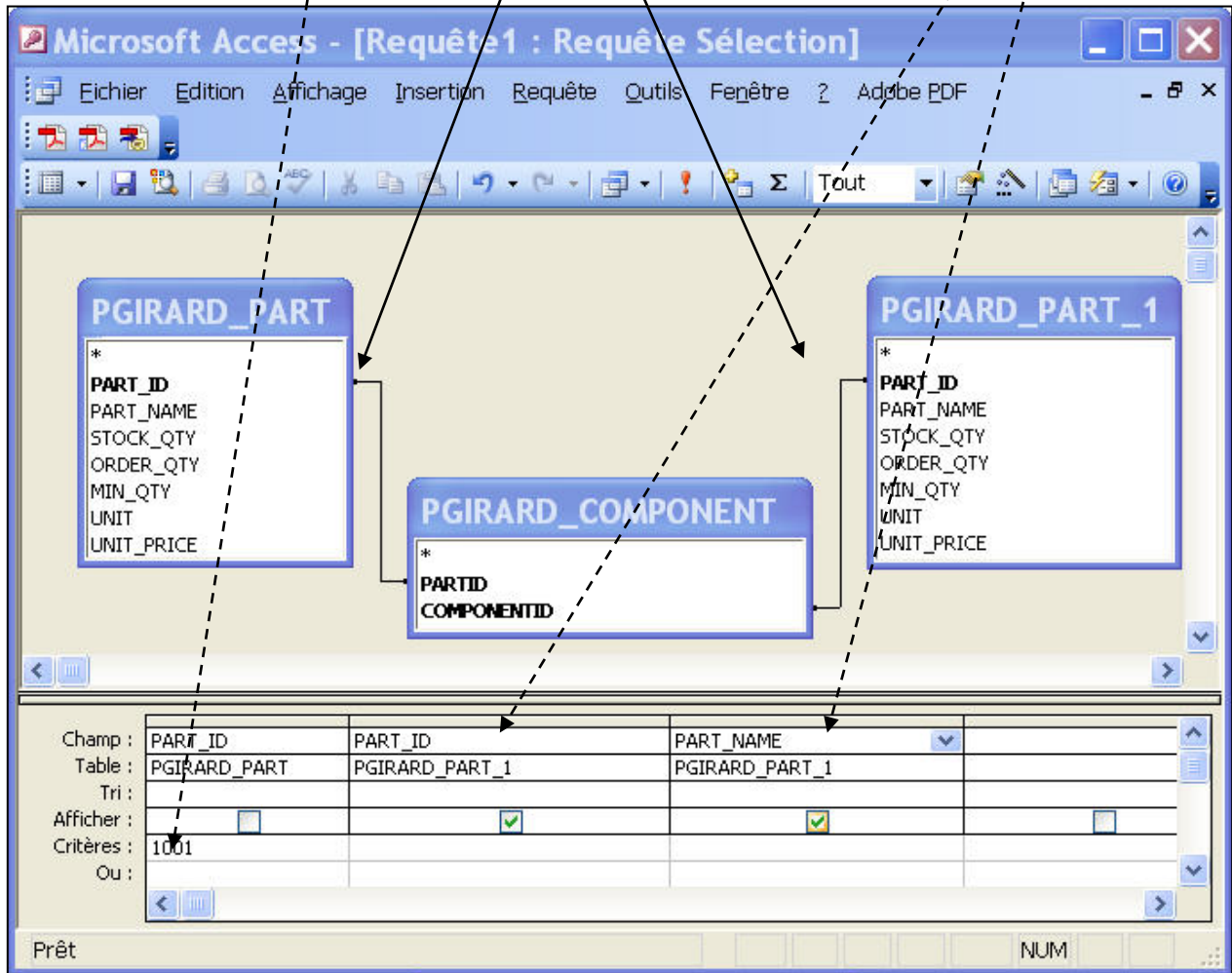
- The equivalent SQL request *(not compatible with Oracle or Ingres)* for this diagram is

```
SELECT PGIRARD_PART_1.PART_ID, PGIRARD_PART_1.PART_NAME
FROM PGIRARD_PART AS PGIRARD_PART_1 INNER JOIN (PGIRARD_PART INNER JOIN
        PGIRARD_COMPONENT ON PGIRARD_PART.PART_ID = PGIRARD_COMPONENT.PARTID) ON
        PGIRARD_PART_1.PART_ID = PGIRARD_COMPONENT.COMPONENTID
WHERE (((PGIRARD_PART.PART_ID)=1001));
```

This request could also be in a client program *(Delphi, Visual Basic, ...)* accessing Access for its programming facilities and Oracle for its large data support.

- Execute the request **request** ==> **execute**

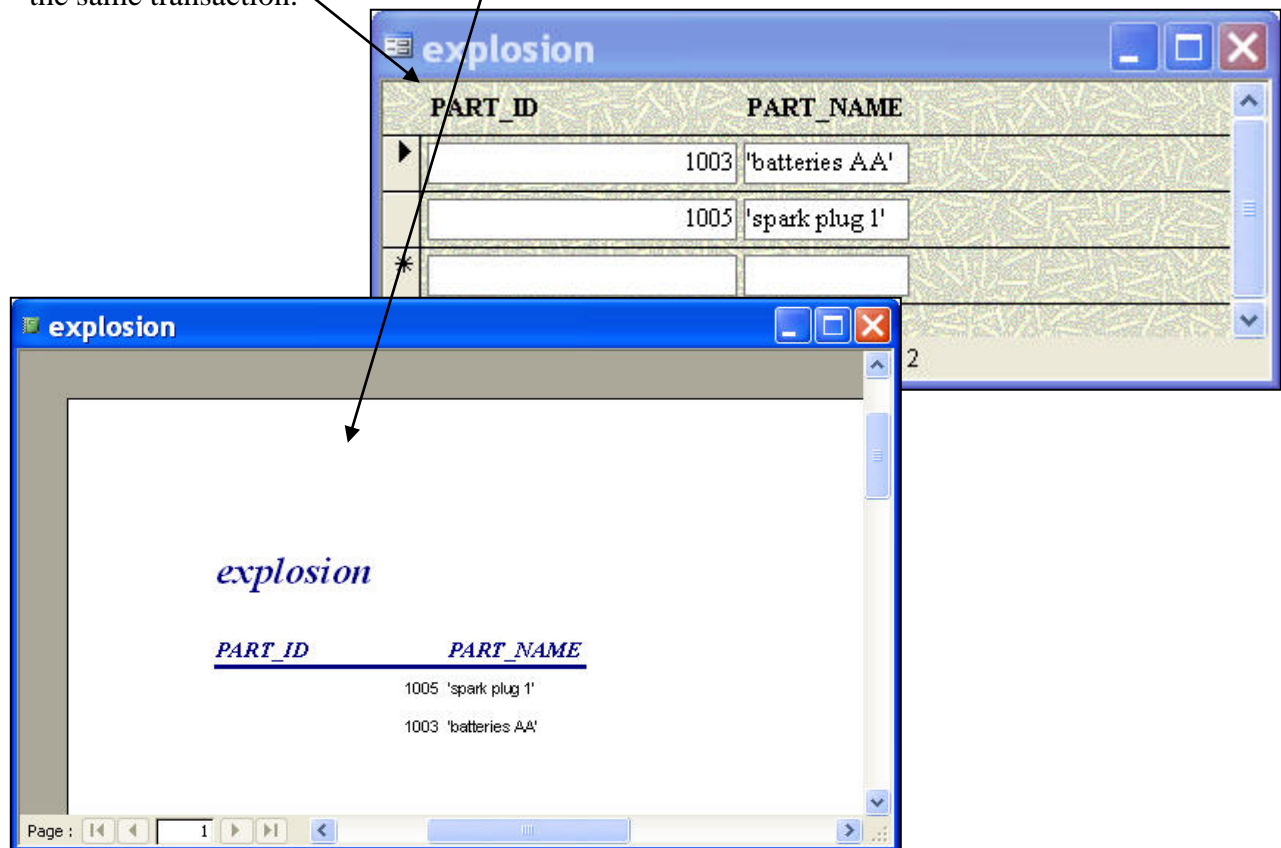**The result shows the *explosion* of part 1001**
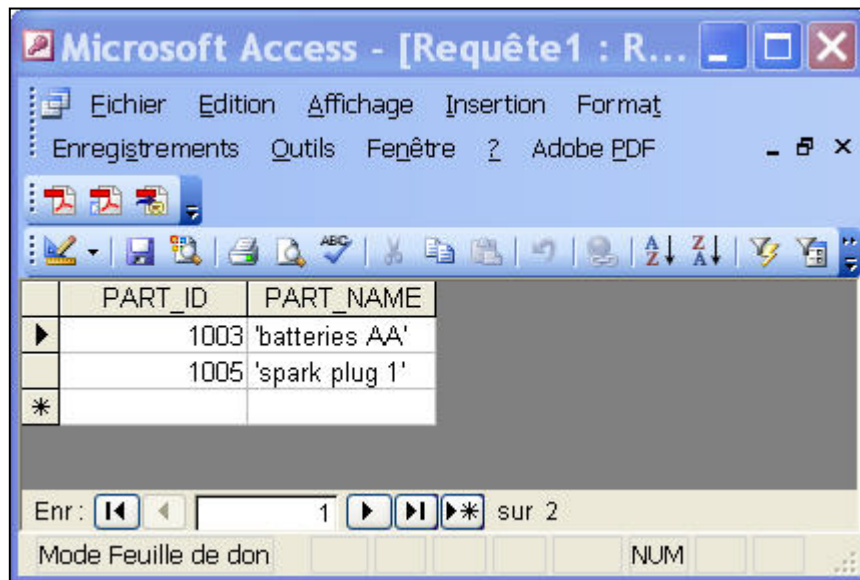
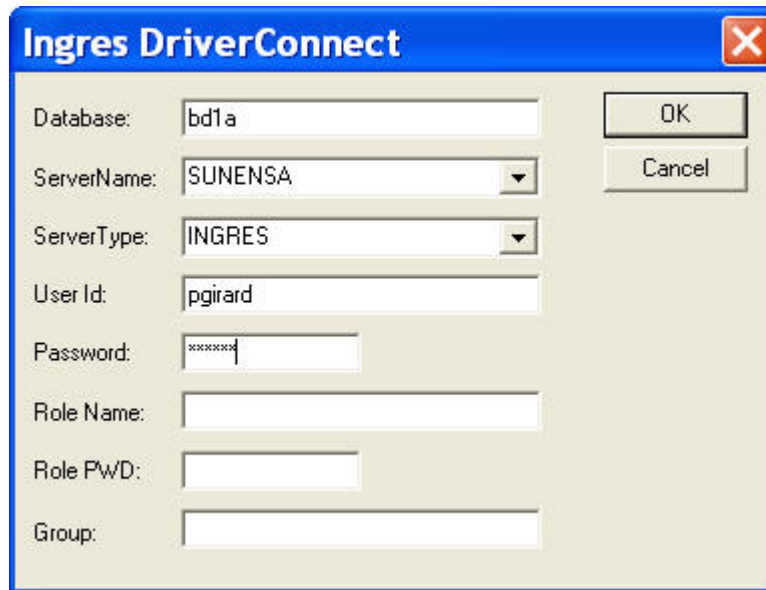**6**. You can create a entry form and a printing report easily with the standard menu of Access on the same transaction.

7. We could also use another DBMS like Open /Ingres to attach some tables to Access and create a request with a join over 2 tables owned by 2 incompatible DBMS on different servers.

ODBC connection to *sunensa.uqac.ca* with database *bd1a*

View in Access to tables owned by Oracle and Open/Ingres
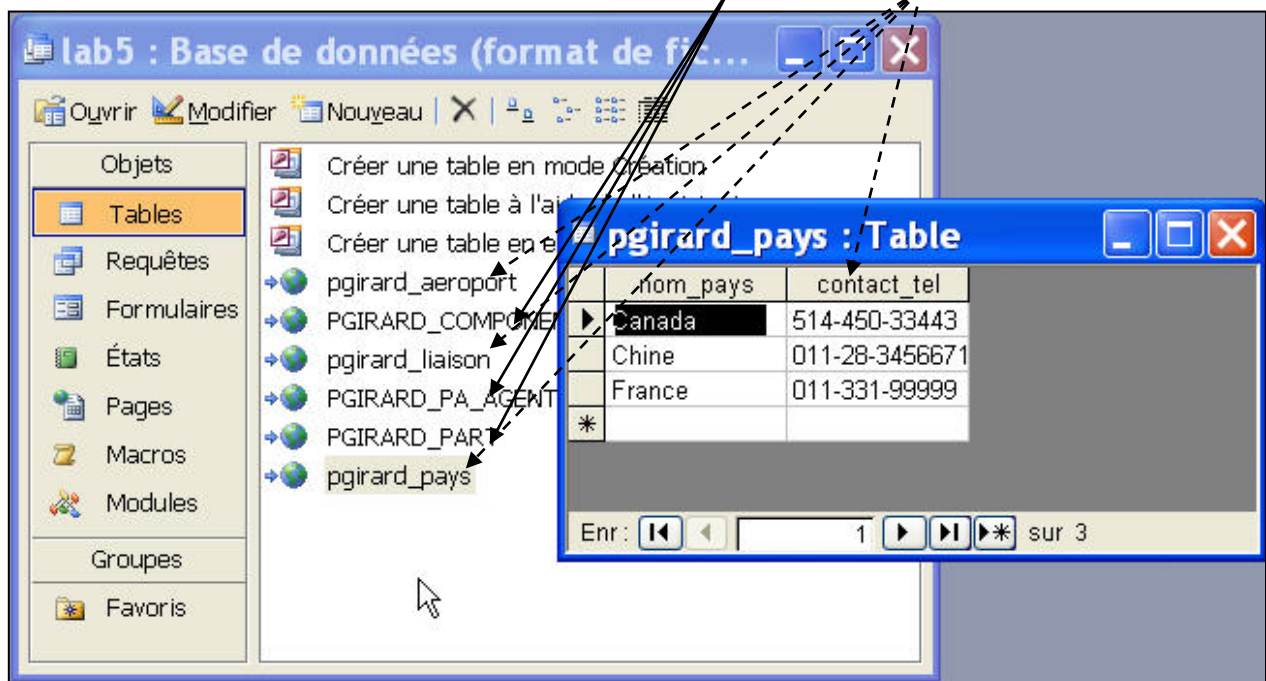
Optional Lab

- Attach to your Access database all Oracle tables from your personal schema to execute the transaction **lis_po** *(display a given purchase order)*.

- Create a request in a *creation mode* and execute it.

- Create a printing report showing the result of **lis_po** for a given purchase order number.
.
- Capture an image showing your tables attached in a creation mode, capture an image showing the execution of your request and also the execution of your report.

Annex 1

Diagram of ODBC technologies

Client application PC/Windows environment	**Client Machine**

Microsoft ODBC manager		
Driver odbc Oracle 9i	Driver odbc Ingres	Driver ODBC OraclE 11G

TCP/IP Client Oracle 9i	TCP/IP Client Ingres	TCP/IP Client Oracle 11g

TCP/IP Server Oracle9i	TCP/IP Server Ingres	TCP/IP Server Oracle11g

202.113.72.5 DBMS Oracle9i Windows	dimensxcn2 DBMS Ingres Unix	dimensxcn1 DBMS Oracle11g Unix

local Oracle data base	local Ingres data base	local Oracle database

Server Machines

Annex 2

ODBC API

- **Open Database Connectivity** (**ODBC**) provides a standard software API method for using a DBMS. The designers of ODBC aimed to make it independent of programming languages, database systems, and operating systems by providing an open, vendor-neutral way of accessing data stored in a variety of proprietary personal computer, minicomputer, and mainframe databases.

- With growing industry support, ODBC is quickly emerging as an important industry standard for data access for both Windows, Macintosh and Unix applications. ODBC is Microsoft's strategic interface for accessing data in a heterogeneous environment of relational and non-relational database management systems. Apple has endorsed ODBC as a key enabling technology by announcing support in the future.

- ODBC provides a universal data access interface. With ODBC, application developers can allow an application to concurrently access and modify data from multiple, diverse databases.

- ODBC uses SQL as its language. Thus a statement can be simply thought of as an SQL statement you want ODBC to execute.

- There are four components in ODBC:

  - Application *(your program)*
  - ODBC manager
  - ODBC Drivers
  - Data Sources *(databases)*

    The center of all four components is the **ODBC manager**. This is the foreman. Tell him what work you want done and he conveys your desire to his ODBC drivers and gets the job done.

Your program <----> ODBC manager<----> ODBC Drivers <----> Databases

A **JDBC-ODBC bridge** consists of a JDBC driver which employs the ODBC driver to connect to the database. This driver translates JDBC method calls into ODBC function calls.

*ODBC manager is supplied by Microsoft. Check your Control Panel. If your machine has ODBC installed correctly, you'll find **ODBC Data Sources (32-bit)** applet there. As to ODBC drivers, Microsoft supplies several with their products. And you can always obtain new ODBC drivers from the database providers. Just by installing new ODBC drivers, your machine can utilize new databases it hasn't known about before.*