# JDBC

# 4 types of JDBC drivers

# Type 1 : JDBC-ODBC bridge

It is used for local connection.

ex) 32bit ODBC in windows

## Type 2 : Native API connection driver

It is connected by Native Module of dependent form of H/W like .dll or .so. ex) OCI driver for local connection to Oracle

## Type 3 : Network connection driver

## Type 4 : Database Protocol driver

It is independent from H/W because this driver is %100 java. ex) thin driver for local/global connection to Oracle

\*\*\* Type1, type 2, and type 3 are usually used.Examples of type1 and type 4 are available now.

# Example of JDBC-ODBC Bridge

OS: Window 2000 DBMS: MS Access

1. Open control panel

2. Open ODBC (Window 95 and Window 98 are slightly different)



3. If you double-click on ODBC...

Name	Driver	Add
BASE Files Base Files - Word	Microsoft dBase Driver (*.dbf) Microsoft dBase VFP Driver (*.dbf) Microsoft Eucel Driver (*.de)	Remove
oxPro Files - Word	Microsoft FoxPro VFP Driver (*.dbf)	Configure.
ava_data	Oracle ODBC Driver	-
no Access Dalada: Isaccess	Microsoft Access Driver (*.mdb) Microsoft Access Driver (*.mdb)	
isual FoxPro Datab	ase Microsoft Visual FoxPro Driver	
isual FoxPro Table	s Microsoft Visual FoxPro Driver	
An ODBC	User data source stores information about hov ted data provider. A User data source is only	v to connect to visible to you,

Click on Add button.

#### 4. Then...

	Name	V 🔺
	Driver para o Microsoft Visual FoxPr	o 6.
	Microsoft Access Driver (*.mdb)	4.
	Microsoft dBase Driver (*.dbf)	4.
	Microsoft dBase VFP Driver (*.dbf)	6.
Frank Street	Microsoft dBase-Treiber (*.dbf)	4.
E Sons	Microsoft Excel Driver (*.xls)	4.
	Microsoft Excel-i reiber (".xis) Microsoft ExPro VEP Driver (* dbf)	4.
123	Microsoft ODBC for Oracle	2
		•

Click Microsoft Access Driver(\*.mdb) and click on Finish button.

### 5. Then...

ODBC Microsoft	Access Setup	<u>? ×</u>
Data Source Name:	my_database	ОК
Description: - Database		Cancel
Database: C.₩w	nter2001₩cs701₩test_jdbc.mdb	Help
Select	Create Repair Compact	Advanced
System Database     None		
C Database:		
	System Database	Options>>

Insert your own Data Source Name and click on Select button.

#### 6. Then...

 c:₩winter2001₩cs701	ОК
	Cancel
info	Help F Read Only Exclusive
– Drives:	
	Directones: c:₩winter2001₩cs701 Content c:₩ Content c:₩ cs701 Content class12 Content prives:

Choose your Database Access file like above and click OK button.

\*\*\* note: before these procedures, we must have Database Access file.

We can make this file by using MS Access .

This Access file should have a table named by tb\_address.

7. Now, we can test our JDBC program with MS Access.

Here is a simple java code that executes SELECT statement. Here is our table,tb\_address.

Microsoft Acc	ess - [tb_addr	ess : Table]		
III Eile Edit ⊻ Window Help	iew <u>I</u> nsert F	<u>o</u> rmat <u>R</u> ecord	ts <u>T</u> ools <u>- 181 × 1</u>	
× · 🖬 🖨 🖸	à 🖤 🐰 🖻	B 🖉 🕫 🧕	at at ≫ .	
ID1	ID	NAME	ADDRESS	
•	1111	Smith	Dayton	
2	2 2222	John	New York	
	3 3333		LA	
* (AutoNumber)	)			
Record: H	1.1.1	II⊧∗ of 3		
Datasheet		NUI	M M	

#### 8. Here is the result.

```
Command Prompt
C: Wwinter2001Wcs701Winfo>javac connect_msaccess.java
C: Wwinter2001Wcs701Winfo>java connect_msaccess
connection is successful!!!
ID: 1111 NAME: Smith ADDRESS:Dayton
ID: 2222 NAME: John ADDRESS:New York
ID: 3333 NAME: David ADDRESS:LA
C: Wwinter2001Wcs701Winfo>________
```

```
*** Here is a simple code
```

```
import java.sql.*;
```

```
public class connect_msaccess
{
  public static void main(String[] args)
  {
       int i;
        Connection conn = null;
       // register jdbc driver
       try{
          Class.forName("sun.jdbc.odbc.JdbcOdbcDriver");
       } catch(ClassNotFoundException e) {
          System.out.println(e);
        }
       // connect to DB
       try{
          conn = DriverManager.getConnection("jdbc:odbc:my_database");
       } catch(SQLException se) {
          System.out.println(se);
        }
        System.out.println("connection is successful!!!");
        try{
          String selectSQL = "select ID, NAME, ADDRESS from tb_address";
          Statement stmt = conn.createStatement();
          ResultSet rset = stmt.executeQuery(selectSQL);
          while(rset.next()){
                System.out.println("ID: " + rset.getString(1) + " NAME: " +
```

```
rset.getString(2) + " ADDRESS:" +
rset.getString(3));
}
stmt.close();
} catch(SQLException se) {
System.out.println(se);
}
}
```

# Example of thin driver

- OS: Window 2000

- DBMS: Personal Oracle 8.1.6. (download freeware from Oracle website) After the installation, check your Port and SID of Personal Oracle.
- Download a suitable thin driver from Oracle website
   If you installed Personal Oracle 8.1.6, it had already thin driver in .../oracle81/jdbc/lib directory.
   Usually, classes111.zip for JDK 1.1.x and classes12.zip for JDK 1.2.x or more
- 2. Set your classpath (environment variable)

If your OS is window 2000, open control panel and open system and go to Advanced tag. Then, choose Environment variable and add classpath. Restart your computer. If your OS is window 98/95, add classpath into autoexec.bat. Restart your computer. ex) classpath= .;c:\jdk1.3\lib;c:\winter2001\cs701\classes12.zip

- 3. Set your path (environment variable)
  Java path precedes oracle path.
  ex) path= c:\jdk1.3\bin;c:\oracle\.....;
- 4. Test with a simple java code.

Before implement of this code, you should create a table, tb\_address, by using SQL plus in Oracle and insert some values.

Then test this code.

5. Result of a simple java code.

Comm	and Prom	ipt				_	
D:₩java connect	i>java ( ∶ion is	connec succe	t_thin ssful!!!				
ID: 1	NAME:	Tom	ADDRESS : LA				
ID: 2 ID: 3	NAME:	John David	ADDRESS:Dayton, OH ADDRESS:Columbus,	он			
D:₩java	i)						-

\*\*\* Here is a simple code

```
import java.sql.*;
```

{

```
public class connect_thin
  public static void main(String[] args)
  {
        int i;
        Connection conn = null;
       // register jdbc driver
        try{
          Class.forName("oracle.jdbc.driver.OracleDriver");
          // in order to use Oracle thin/oci driver
       } catch(ClassNotFoundException e) {
          System.out.println(e);
        }
       // connect to DB
        try{
          conn = DriverManager.getConnection("jdbc:oracle:thin:@127.0.0.1:1521:datacafe",
                                             "scott","tiger");
          // thin: driver
          // @127.0.0.1 for local connection. @xxx.xxx.xxx for global
          // 1521: port number. This should be match to Oracle network port.
          // datacafe: SID of Oracle database
          // scott: username of Oracle database
          // tiger: password of Oracle database
        } catch(SQLException se) {
          System.out.println(se);
```

}
System.out.println("connection is successful!!!");

#### try{

}

}