What is ODBC

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Overview of this webinar

- Definition and background
- Why would we want to use ODBC
- What ODBC drivers are available
- Installing an ODBC driver
- Examples of Using ODBC
  - In Python
  - In R
  - In Excel
What is ODBC - Definition

• ODBC – Open Database Connectivity (or Connector)
• Microsoft development in early 1990s
• It is an API (Application Programming Interface) for accessing database systems.
• The APIs are often referred to as drivers
• Each Database system will have its own API and hence ODBC driver
• For Java based applications (typically non-Windows), there is also JDBC which serves a similar purpose to ODBC
Why would we want to use ODBC?

• MS Access – A single database system package which actually contains two distinct parts
  • A database engine (to store data and process queries) and
  • A GUI (Graphical User Interface) which allows the user to interact with the database engine by providing query editors and report editors etc.
What is ODBC - ODBC not needed

MS Access

The GUI and the Database Engine come as Single package
Why would we want to use ODBC?

- Other large database systems such as Oracle, MS SQL and MySQL all have database engines and GUIs.
- But they are essentially separate products.
- You can install the database engine, without installing the GUI.
- A single GUI installation can give you access to many database engines.
- If you do install both, then you end up with a development and management environment similar in functionality to the MS Access environment.
What is ODBC - ODBC not needed

**MS Access**

<table>
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<th>GUI</th>
<th>Database Engine</th>
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The GUI and the Database Engine come as Single package

**SQL Server / Oracle / MySQL**

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The GUI and the Database Engine come as Separate applications
What is ODBC - bring you own GUI!

You can install the database engine, without installing the GUI

This is where ODBC comes in
What is ODBC - In pictures

ODBC can connect a variety of applications to a given database.
What is ODBC - Definition

• ODBC connections can be used with many 3rd party applications, such as
  
  • Excel
  • Stata
  • SPSS
  • MS Access

  …and many more
What is ODBC - Definition

• ODBC connections can be used from programming languages such as R and Python
• In addition to the ODBC driver you will need to install specific packages or libraries in the language environment
  • In python the pyodbc package is available
  • In R the RODBC library is available
Installing ODBC Drivers
Installing ODBC Drivers

• May be done automatically with the software
  • Microsoft products
• Need to download code from the database vendor or 3rd party site
  • MySQL
  • Hive
• Install will typically require Admin permissions
• Only have to install once and available to all users
Installing the MySQL ODBC driver

• Go to the site: -
  • https://dev.mysql.com/downloads/connector/odbc/
• Download the correct version for your applications and architecture
  • E.g. Windows, 64bit
• Remember that although Windows may be 64 bit, your applications may be only 32 bit.
  • MS Office often installed as 32 bit
  • R and Python are usually 64 bit
Installing the MySQL ODBC driver

You can install both the 32 bit and the 64 bit versions if you want
Configuring ODBC Drivers

• Once installed you will need to perform some configuration.
• The actual information needed will vary from one driver/database and another.
• Typically you will need to provide information such as
  • Username
  • Password
  • Location of the database system
  • Name of the database being accessed
Configuring the Hive ODBC driver
Configuring the MySQL driver

![MySQL Connector/ODBC Data Source Configuration](image)
Examples
Examples

- Hive data to Python
- Hive data to R
- Hive data to Excel
More Information

- Hortonworks Hive ODBC can be downloaded from
  - [http://hortonworks.com/downloads/#sandbox](http://hortonworks.com/downloads/#sandbox)
- The MySQL ODBC drivers can be downloaded from
  - [https://dev.mysql.com/downloads/connector/odbc](https://dev.mysql.com/downloads/connector/odbc)
Questions

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