

Cognex Designer Advanced – SQL Database



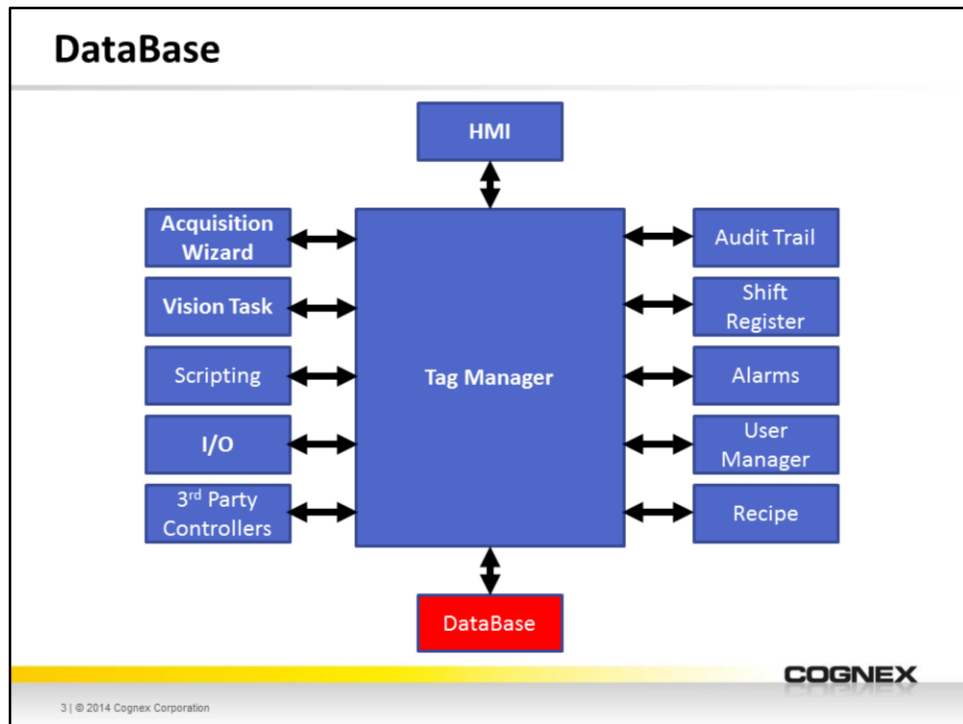
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Objective

Cognex Designer Advanced – SQL Database

- Explore how to save data to a Database
- Understand how to define a database and its queries in Cognex Designer
- Learn about displaying data in a table

❖ Lab: Create and write to a Database; display data in table



Cognex Designer gives you the ability to use or to write out information to the SQL Database.

Using a DataBase

Access to SQL Databases

- Create one
- Attach to existing ones
- Uses standard Microsoft SQL database functions and queries

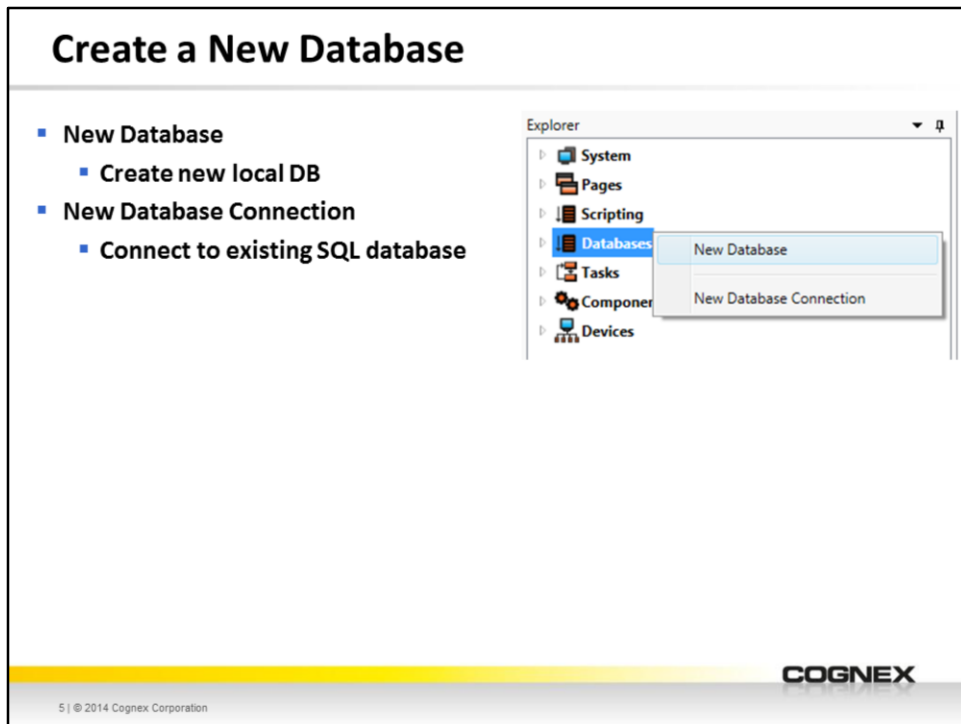
Explorer

- ▷ System
- ▷ Pages
- ▷ Scripting
- Databases**
- ▷ Tasks
- ▷ Components
- ▷ Devices

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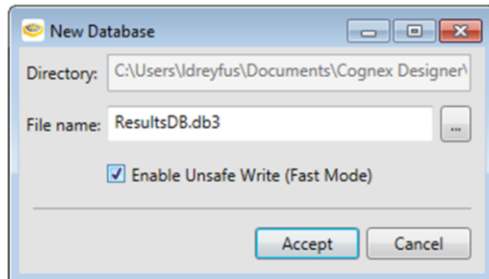
Cognex Designer allows a user to create and use databases. Databases can be used for various purposes, such as data logging and log file generation.



When creating a new database, you are given the option of creating a new database or a new database connection.

Cognex Designer supports the option of connecting to a Microsoft® SQL Server® database, which can be running locally or on another PC on the network. However, Cognex Designer does not support modifying (e.g. add/remove/edit tables) the database structure within the Cognex Designer environment.

Database Settings



Directory: ..\Documents\Cognex Designer\project name\Data



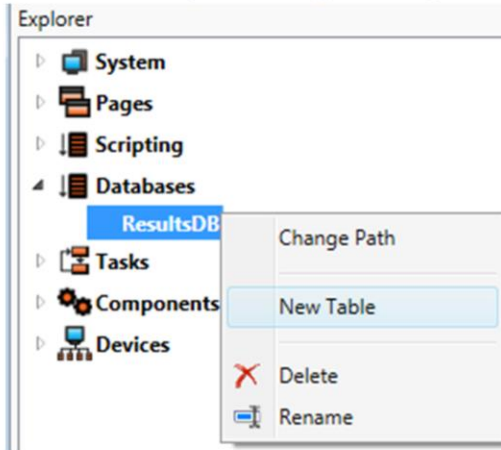
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To define a new database, set a filename. Make sure the path is pointing to the Cognex Designer's default Data folder. If not, right-click on the created database under DataBase in the Explorer and select "Change Path".

Create a Table

Create a New Table (or Change Path)



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Create a new table by right-clicking on the newly created database and selecting the New Table selection.

Note that the image also shows the selection that allows you to change your default path used for the database creation.

Databases are made up of tables.

Tables are a collection of variables.

Example: a table might hold address information, including variables such as house number, street name, town, zip code, etcetera.

Add Data Fields

5 data types available

DateTime: Date and Time
Boolean : 0 or 1 / TRUE or FALSE
Double : decimal numbers (1.2358)
Integer : whole numbers (1, 2, 3)
String : alphanumeric (ABC123)

Click here to add/remove variables

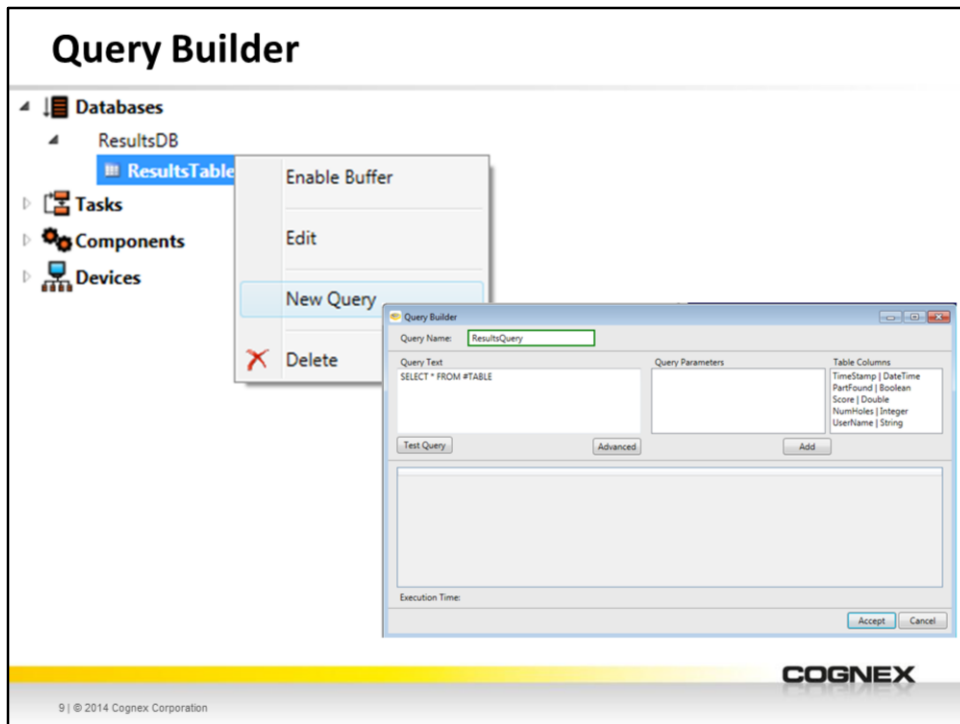


Name	Data Type
TimeStamp	DateTime
PartFound	Boolean
Score	Double
NumHoles	Integer
UserName	String

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Name the database and add variables to the table.
Give each variable a name as well as select the DataType.
Click the plus sign to add a new variable.



Queries are a way of asking for data from a database.

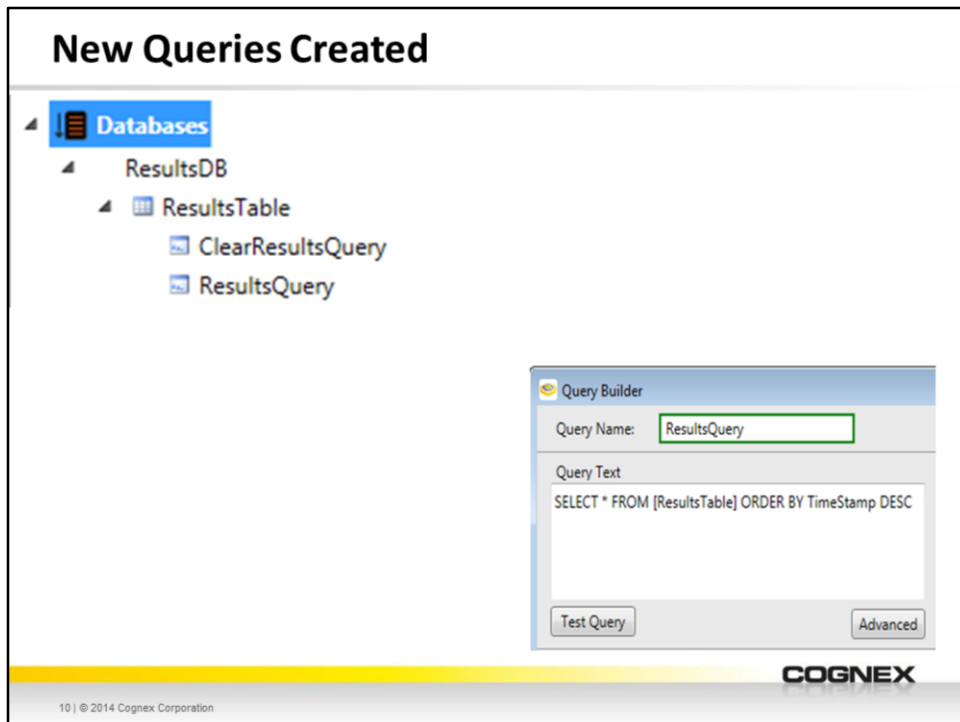
Queries are built using the Simple Query Language (SQL).

Search the web for "SQL Cheat Sheet" for some quick help and samples.

A query now needs to be created so that specific data will be reported as opposed to everything.

The query will control the ordering as well as filter the content of the data within the database.

You can use multiple queries for a given database.



Create a query that will result in the data being presented in the desired order.

Test Query allows you to see if there is a valid connect to the database. If there is not, make sure the connection path is correct (found in the Explorer -> Sample_database; right-click and select "Change Path").

Advanced can be used to publish tags as the results are gathered as well as re-run the query when a parameter is changed. These tags are updated whenever the query is updated, and can be bound to properties of HMI controls the same as a standard tag.

W3Schools.com has excellent information on building your SQL queries.

Input to Query

Allows for Parameters to become tags

The screenshot shows the 'Query Builder' window. The 'Query Name' is 'allData'. The 'Query Text' is 'SELECT * FROM [mySavedData] Where Volume > @VolumeLimit'. A red arrow points from the '@VolumeLimit' parameter in the query text to the '@VolumeLimit' parameter in the 'Query Parameters' list. The 'Query Parameters' list shows '@VolumeLimit' with a data type of 'Integer'. The 'Table Columns' list shows 'Height | Double', 'Volume | Double', 'Length | Double', and 'Time | DateTime'. Below the query text, there is a 'Test Query' button and an 'Advanced' button. At the bottom, there is a table with the following data:

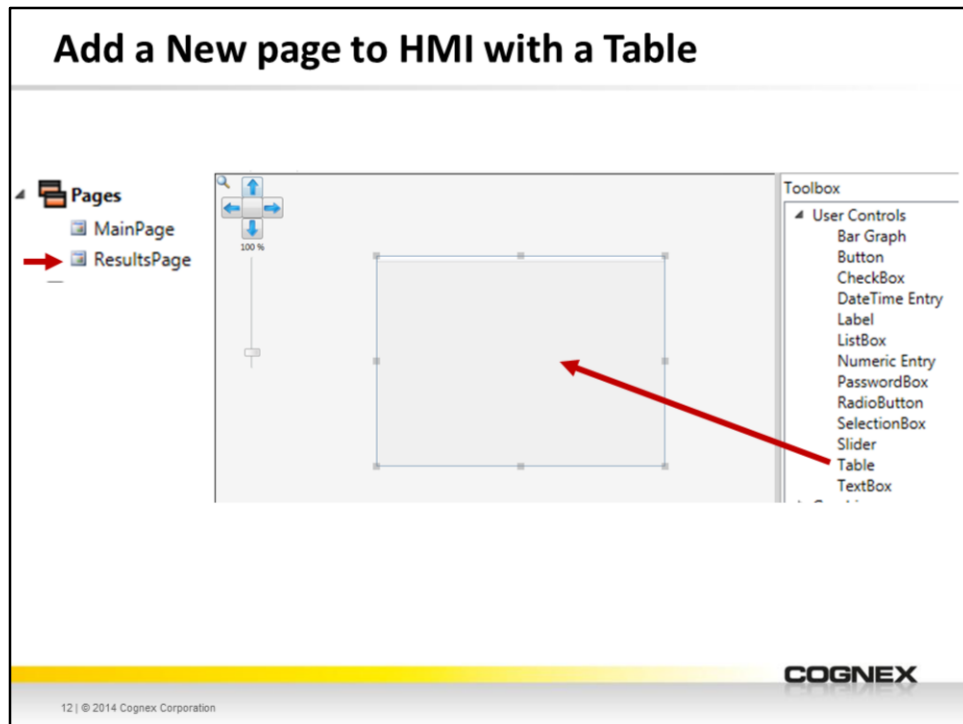
Height	Volume	Length	Time
21.6666340001508	72.2515102848782	46.4676459434681	9/10/2014 11:33:50 AM

Execution Time: 6.5ms

Buttons: Accept, Cancel

We can add Query Parameters so that we can use them to add variables into our query to let us filter the information being displayed. By doing this, we can see the data we want though we are not getting rid of the data that we don't want.

We could something similar to this such as a time setting from Now to show only the recent data as opposed to doing a Clear which will remove the data from the database.

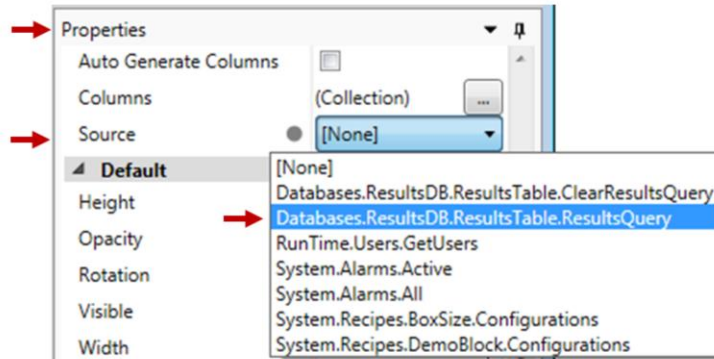


Create a new page that will hold a Table user control.

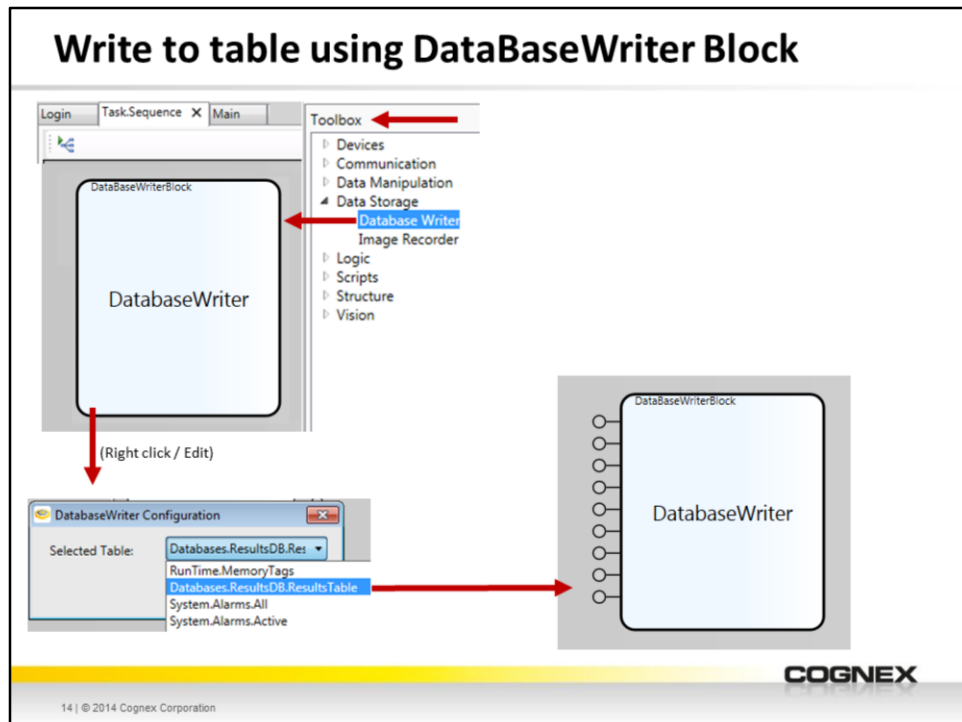
Don't forget to add buttons to this new page as well as the main page to allow you to go back and forth between the HMI displays.

Attaching the Table

In table properties, set Source to table

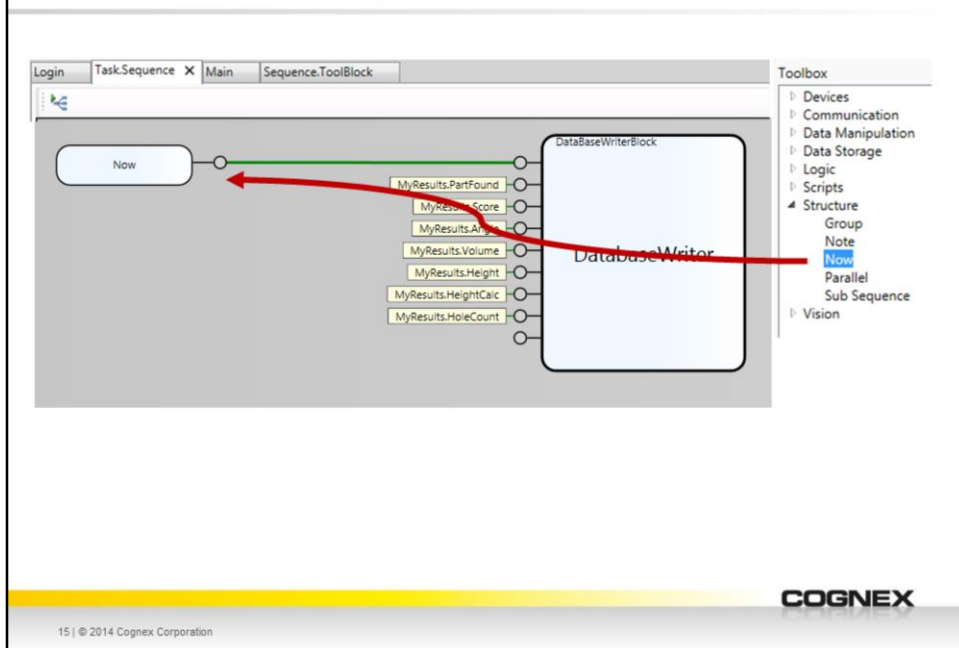


Choose the recently created database query from the list. As only one has been created, that is the one selected.



In the Sequencer, add a Database Writer. Double click on the object and choose the table just created from the auto-populated list. The DataBaseWriterBlock object should now have corresponding input pins to reflect the values within the selected table.

Connect data to Input Pins

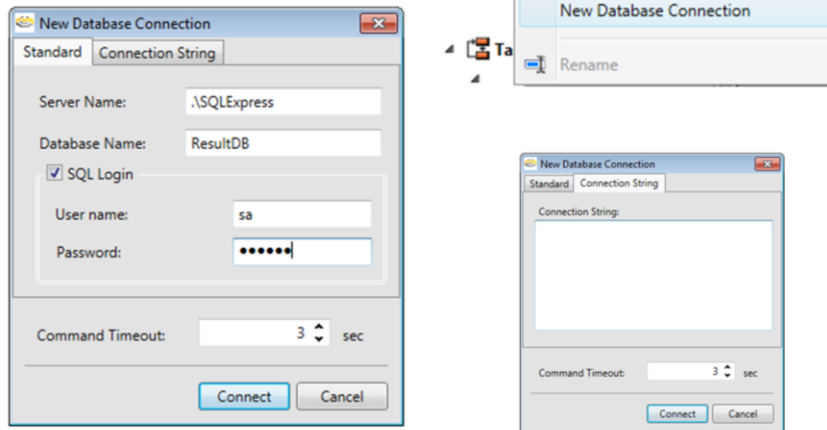


The input pins of the DataBaseWriterBlock must now be connected to the values that will be added to the database.

- Connect the top pin (first entry in the table – Score) to the output results of the DemoBlockInspection
- Add a Now object to the Sequence to provide current Time to be added to the database.

Connecting to an Existing Database

Select the Database



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Standard mode allows the user to be configured.

- Server Name - The name of the server and the instance name (ServerName\Instance).
- Database Name – name of desired database
- SQL Login – username and password to grant access to the database (if checked)
- Command Timeout – default timeout allotted for queries

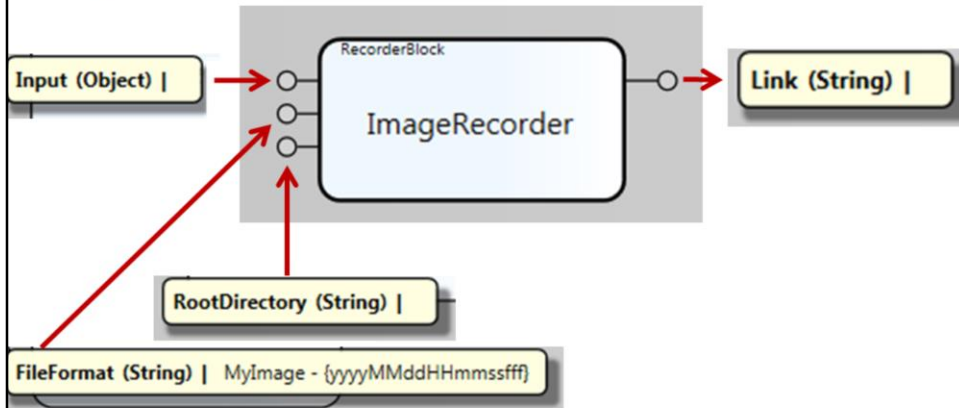
Connection String mode is provided for more advanced configuration options. Once connected, Cognex Designer will automatically discover the database tables available.

Note: More information on connection strings can be found by visiting the Microsoft Developer Network [Website](#) (requires Internet connectivity).

Image Recorder (dynamic)

Used to Save Images and Timestamp

- Returns a link to be used in database

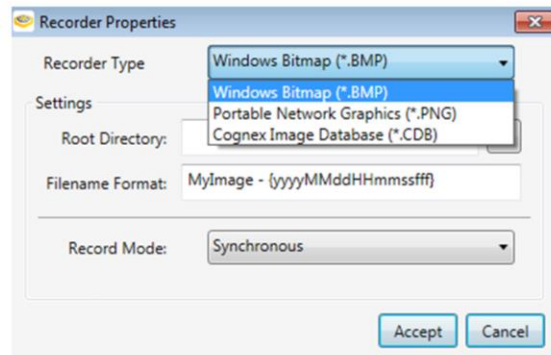


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The Data Recorder allows you to save an image (.bmp, .png, or .cdb) to a specific file name and directory. The output is a link that can then be used by a Database Writer or other communication device that may want to know the link where the data is saved.

Image Recorder (static)



You can either use the Input pins to dynamically set the values or set them statically within the tool itself.

The Record mode can either to Synchronous (with every acquisition) or Asynchronous (when commanded).

Summary

SQL Database

- Learned how to save data to a Database
- Explored how to define a database and its queries in Cognex Designer
- Understood how to display data in a table on the HMI

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