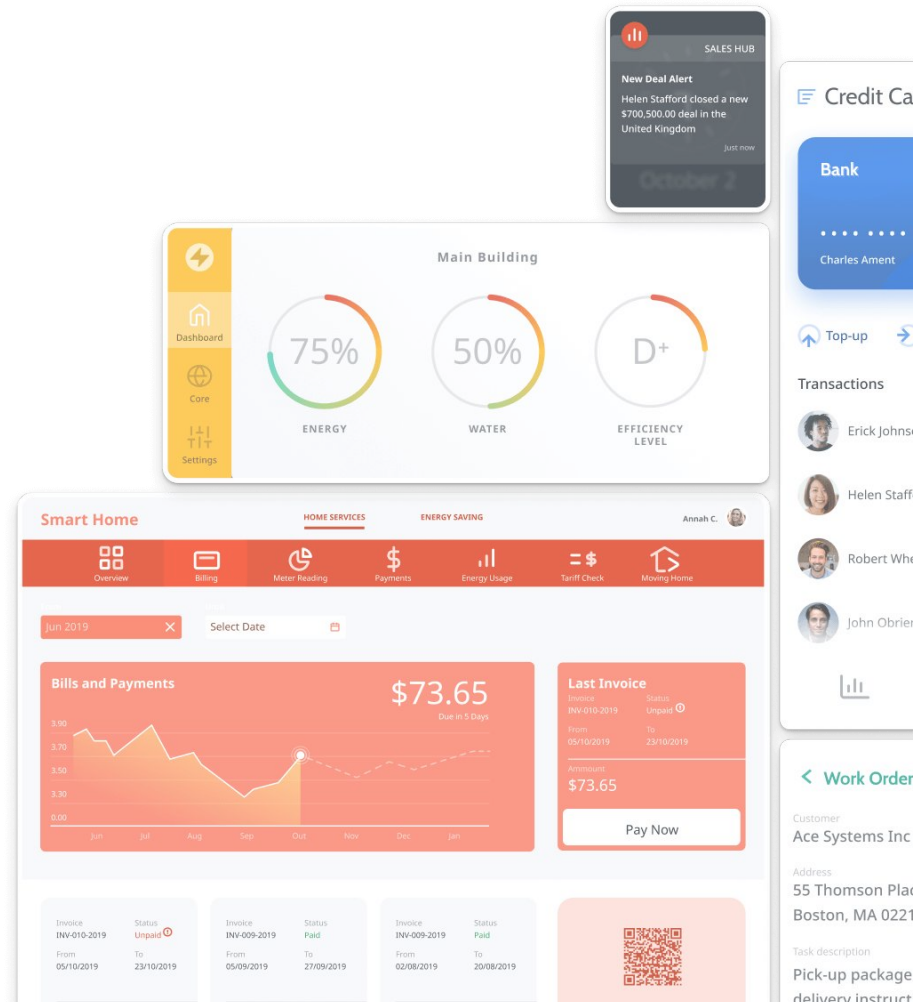


# SQL Queries

Reactive Developer Boot Camp



# What you will learn here

- Advanced Queries
- SQL Element
  - Overview
  - Input / Outputs
  - Testing Queries
  - Non-Select Queries

# Advanced Queries

Retrieving the correct data from the database can often be complex

The screenshot shows a query builder interface for a query named "GetProductionPeople". The interface includes tabs for "Sources", "Filters", "Sorting", and "Test Values".

**SOURCES**

- Person
- PersonMovieRole
- PersonRole
- + Add Source

**JOINS**

- 1 Person Only With PersonMovieRole  
Person.Id = PersonMovieRole.PersonId
- 2 PersonMovieRole Only With PersonRole  
PersonMovieRole.PersonRoleId = PersonRole.Id
- + Add Join

**Resulting Table**

Person Name	Person Surname	Person DateOfBirth	Person DateOfDeath	PersonRole Label	PersonRole Name + " " + Sur...
Ben	Stiller	1965-11-30	1900-01-01	Director	Ben Stiller (Director)

The table has 6 columns. The first four columns are from the "Person" source. The fifth column is from the "PersonRole" source. The sixth column is a calculated field "Name + ' ' + Sur...".

# Advanced Queries

Retrieving the correct data from the database can often be complex

The screenshot shows a query builder interface for a query named 'GetProductionPeople'. The interface includes tabs for 'Sources', 'Filters', 'Sorting', and 'Test Values'. The 'Sources' tab is active, showing a list of sources: 'Person', 'PersonMovieRole', and 'PersonRole'. The 'JOINS' section shows two joins: 1. 'Person' joined 'Only With' 'PersonMovieRole' with the condition 'Person.Id = PersonMovieRole.PersonId'. 2. 'PersonMovieRole' joined 'Only With' 'PersonRole' with the condition 'PersonMovieRole.PersonRoleId = PersonRole.Id'. Below the joins, there is a table with 6 columns: 'Name', 'Surname', 'DateOfBirth', 'DateOfDeath', 'Label', and 'NameAndRole'. The first row of data shows 'Ben', 'Stiller', '1965-11-30', '1900-01-01', 'Director', and 'Ben Stiller (Director)'. The 'NameAndRole' column is calculated using the formula 'Name + " " + Sur...'. There is also a '+ New attribute' button.

Person Name	Person Surname	Person DateOfBirth	Person DateOfDeath	PersonRole Label	PersonRole Name + " " + Sur...
Ben	Stiller	1965-11-30	1900-01-01	Director	Ben Stiller (Director)

It is also possible to write **SQL statements**

# SQL Element

- Can be used in server-side flows
  - Server Actions
  - Screen Data Actions



The screenshot shows the configuration window for the 'GetCastAndCrew' action. The window has a title bar 'GetCastAndCrew' and a close button. It contains a tree view on the left with the following structure:

- SQL GetCastAndCrew
  - Parameters
    - Movied
    - ActorRole
    - CrewRole
  - Output Entities / Structures
    - GetCastAndCrew

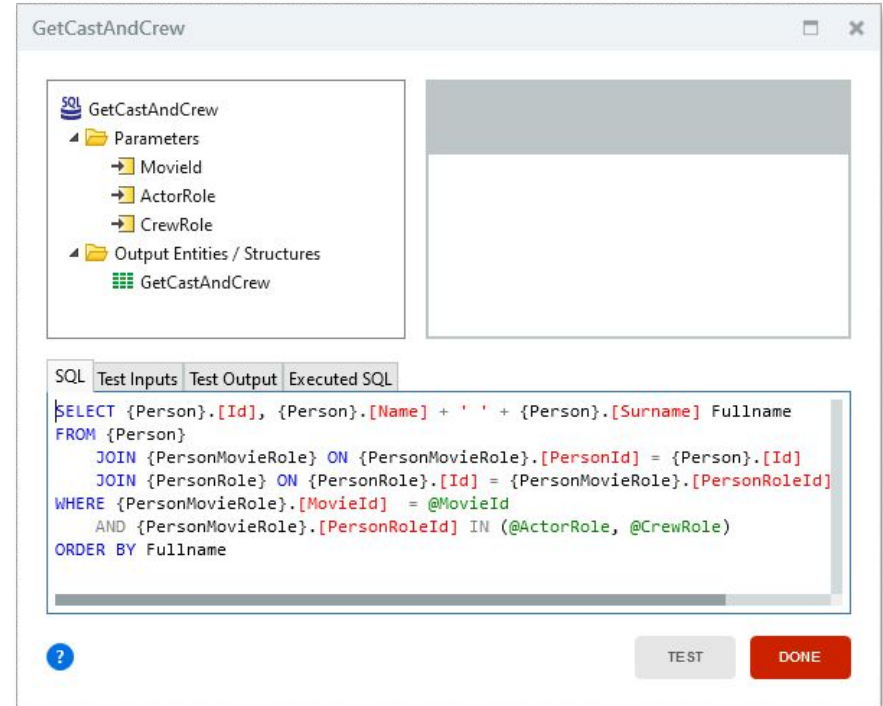
On the right is a large empty text area. Below the tree view is a tabbed interface with three tabs: 'SQL' (selected), 'Test Inputs', and 'Test Output'. The 'SQL' tab displays the following SQL query:

```
SELECT {Person}.[Id], {Person}.[Name] + ' ' + {Person}.[Surname] Fullname
FROM {Person}
JOIN {PersonMovieRole} ON {PersonMovieRole}.[PersonId] = {Person}.[Id]
JOIN {PersonRole} ON {PersonRole}.[Id] = {PersonMovieRole}.[PersonRoleId]
WHERE {PersonMovieRole}.[MovieId] = @MovieId
AND {PersonMovieRole}.[PersonRoleId] IN (@ActorRole, @CrewRole)
ORDER BY Fullname
```

At the bottom right of the window are two buttons: 'TEST' (grey) and 'DONE' (red).

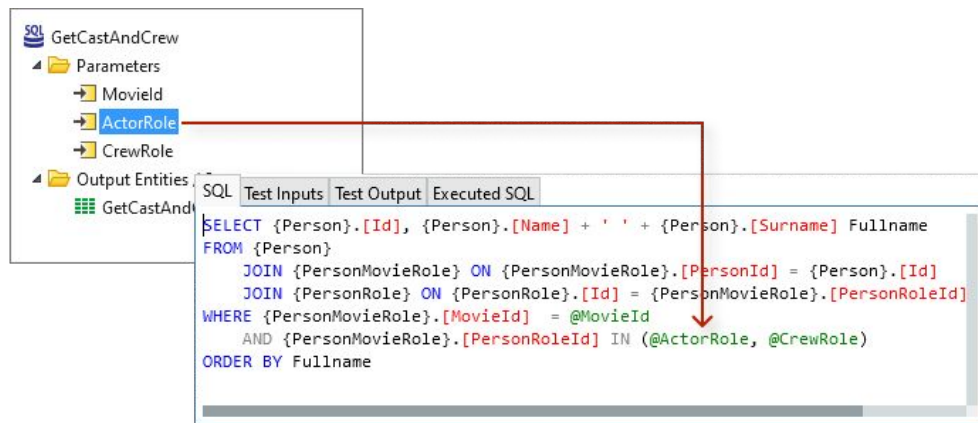
# SQL Element

- Can be used in server-side flows
  - Server Actions
  - Screen Data Actions
- Inputs and outputs are specified visually
- Allows writing SQL statements
  - SQL syntax checking



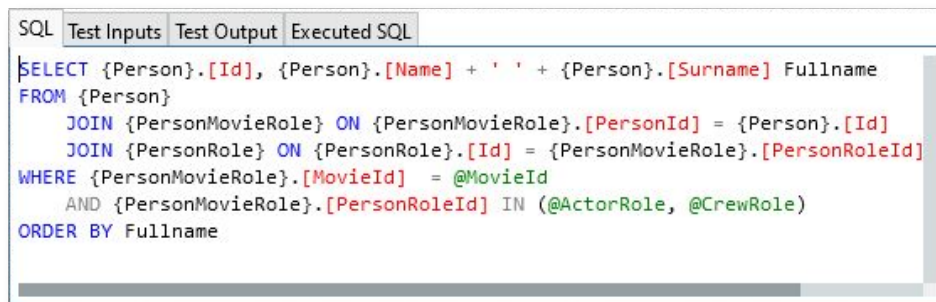
# SQL Inputs

- SQL Elements are “black boxes”
  - Parameters pass information to it
  - No access to outside scope



# SQL Inputs

- SQL is written manually and DBMS-specific
  - TOP vs LIMIT
- Use of abstract names for Entities and Attributes
  - Write Entity names and attribute names as {Entity}.[Attribute]



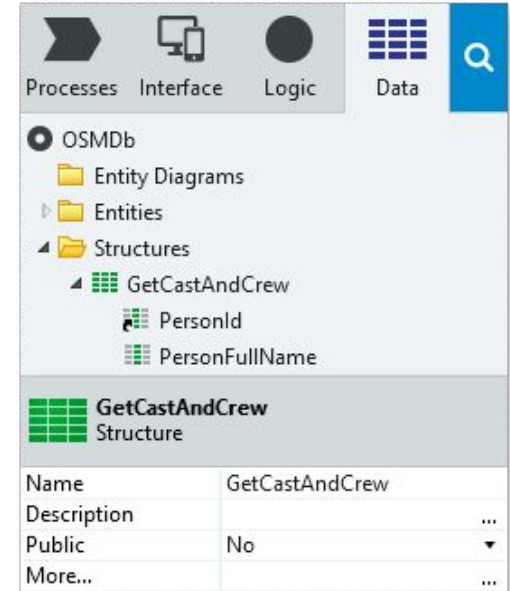
The screenshot shows a SQL query editor with four tabs: 'SQL', 'Test Inputs', 'Test Output', and 'Executed SQL'. The 'SQL' tab is active, displaying a query that uses abstract names for entities and attributes. The query is as follows:

```
SELECT {Person}.[Id], {Person}.[Name] + ' ' + {Person}.[Surname] Fullname
FROM {Person}
    JOIN {PersonMovieRole} ON {PersonMovieRole}.[PersonId] = {Person}.[Id]
    JOIN {PersonRole} ON {PersonRole}.[Id] = {PersonMovieRole}.[PersonRoleId]
WHERE {PersonMovieRole}.[MovieId] = @MovieId
    AND {PersonMovieRole}.[PersonRoleId] IN (@ActorRole, @CrewRole)
ORDER BY Fullname
```



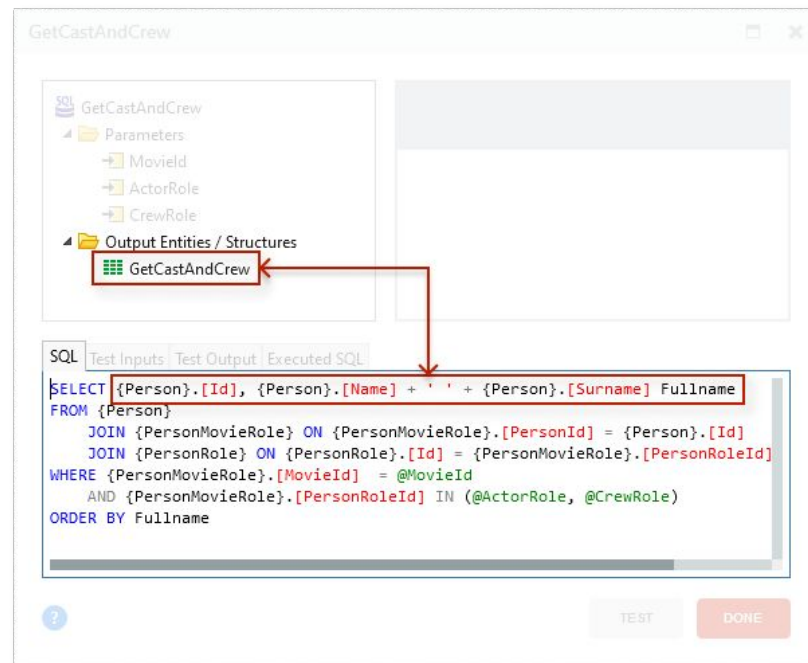
# Structures

- Structures are custom compound data types
- Used to store compound data in memory
  - Definition of a data type
  - The Structure itself does not hold any value
  - Structures are not variables
- Structures are defined by attributes of any data type
  - Including other Structures, Entities and Lists



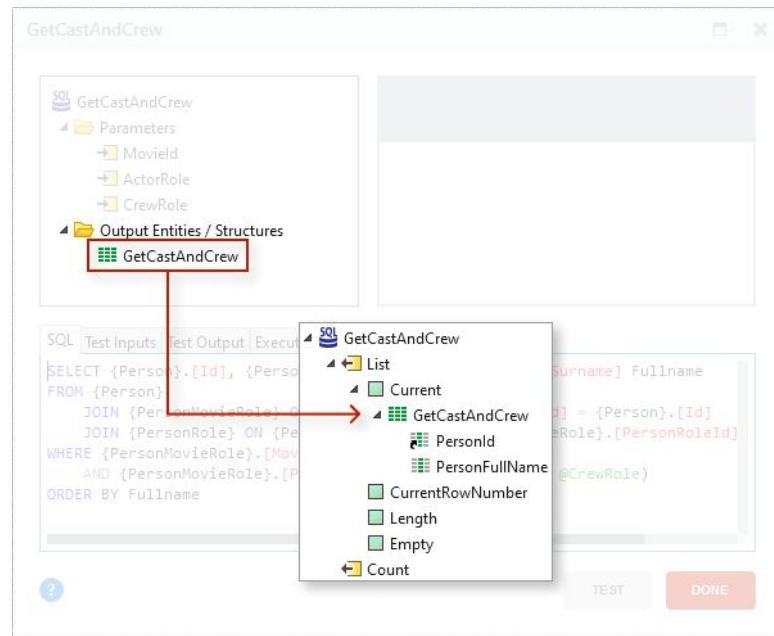
# SQL Outputs

- Outputs Entities / Structures
  - Mandatory to have at least one
  - Can use Entities or Structures
  - Need to map the columns in the SELECT clause



# SQL Outputs

- Outputs Entities / Structures
  - Mandatory to have at least one
  - Can use Entities or Structures
  - Need to map the columns in the SELECT clause
- The output of the SQL element is the same as in Aggregates
  - List
  - Count






# SQL Testing Queries

## Setting Input Parameters

SQL	Test Inputs	Test Output	Executed SQL
	Parameter	Test Value	
	Movielid	8	
	ActorRole	Entities.PersonRole.Actor	
	CrewRole	Entities.PersonRole.Crew	




Test Max. Records:

## Testing the SQL Tool query

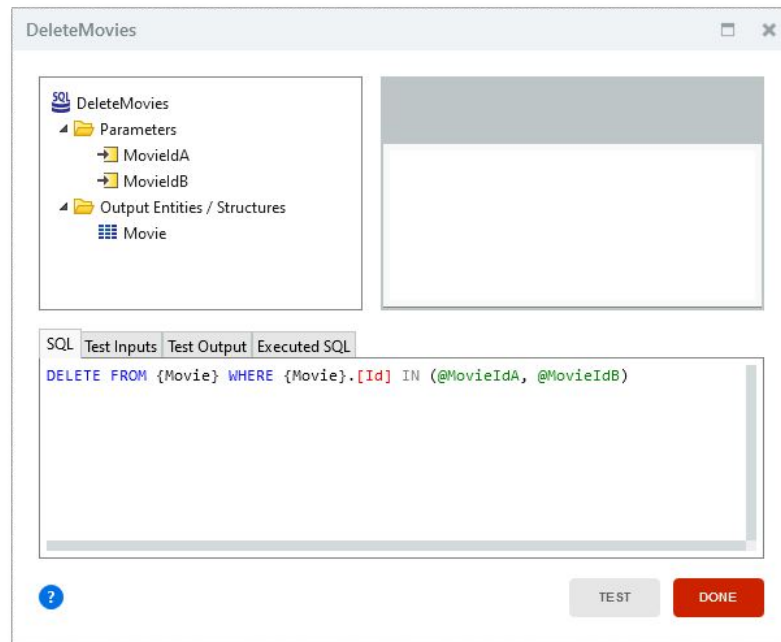
SQL	Test Inputs	Test Output	Executed SQL
	GetCastAndCrew.PersonId	GetCastAndCrew.PersonFullName	
5		Alan Rickman	
10		Robert Downey Jr.	
7		Sean Connery	

3 rows returned.

# Non-SELECT Queries

- SQL Tools can also be used for non-SELECT statements
  - Delete
  - Insert
  - Update
- SQL statement can be written normally
- A “dummy” Output Structure still needs to be provided
  - Structure attributes are irrelevant



# Questions?



Thank You!

