



# Aggregates 101

What is an Aggregate?

Sources

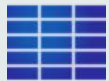
Filter

Sorting

Test Values

# What is an Aggregate?

An Aggregate is a **visual** element that visually defines a **query to fetch data** from entities with sources, filters and sorting



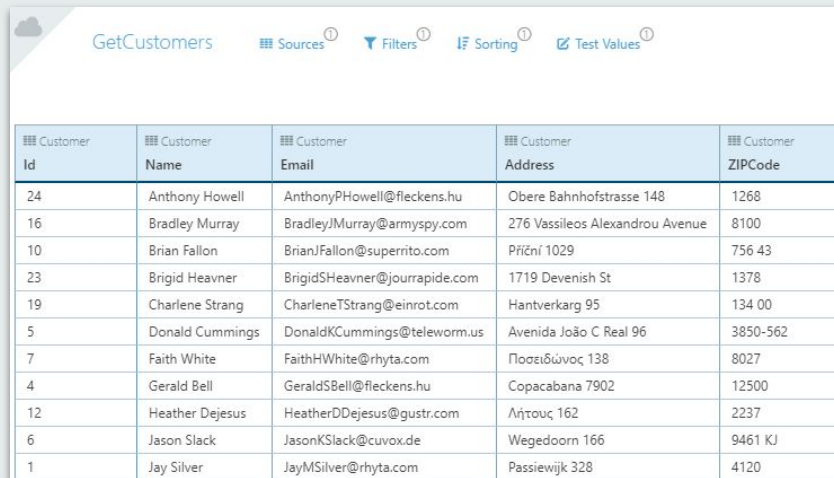
# Aggregates

GetCustomers Sources ① Filters ① Sorting ① Test Values ①

| Customer Id | Customer Name   | Customer Email                | Customer Address                | Customer ZIPCode |
|-------------|-----------------|-------------------------------|---------------------------------|------------------|
| 24          | Anthony Howell  | AnthonyPHowell@fleckens.hu    | Obere Bahnhofstrasse 148        | 1268             |
| 16          | Bradley Murray  | BradleyJMurray@armyspy.com    | 276 Vassileos Alexandrou Avenue | 8100             |
| 10          | Brian Fallon    | BrianJFallon@superrito.com    | Příční 1029                     | 756 43           |
| 23          | Brigid Heavner  | BrigidSHeavner@jourrapide.com | 1719 Devenish St                | 1378             |
| 19          | Charlene Strang | CharleneTStrang@einrot.com    | Hantverkarg 95                  | 134 00           |
| 5           | Donald Cummings | DonaldKCummings@teleworm.us   | Avenida João C Real 96          | 3850-562         |
| 7           | Faith White     | FaithHWhite@rhyta.com         | Ποσειδώνος 138                  | 8027             |
| 4           | Gerald Bell     | GeraldSBell@fleckens.hu       | Copacabana 7902                 | 12500            |
| 12          | Heather Dejesus | HeatherDDejesus@gustr.com     | Λητρούς 162                     | 2237             |
| 6           | Jason Slack     | JasonKSlack@cuvox.de          | Wegedoorn 166                   | 9461 KJ          |
| 1           | Jay Silver      | JayMSilver@rhyta.com          | Passiewijk 328                  | 4120             |

- Most applications need to fetch data from database
- Aggregates allow us to define database queries in a visual way
  - Add Sources
  - Create Filters
  - Define Sorting
- Aggregates are easy to maintain
  - Excel-like display of real data
  - SQL knowledge NOT required

# Aggregate Sources

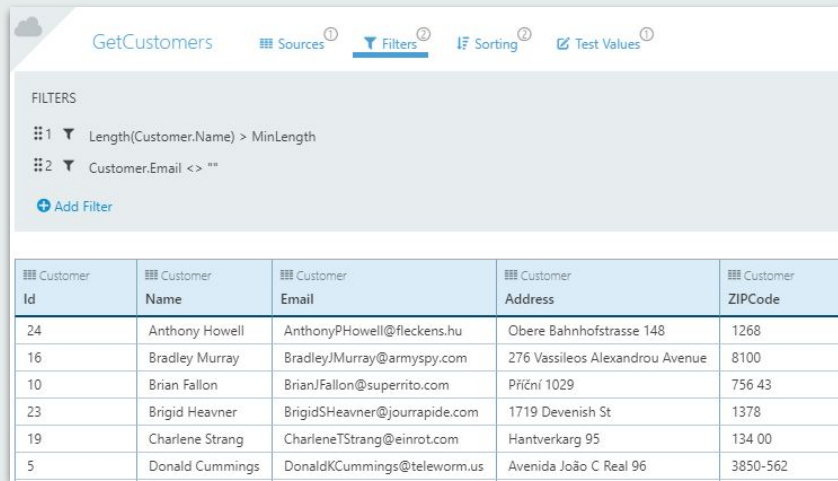


The screenshot shows the 'GetCustomers' application interface. At the top, there are icons for Sources, Filters, Sorting, and Test Values, each with a circled '1'. Below these icons is a table with 5 columns: Customer Id, Customer Name, Customer Email, Customer Address, and Customer ZIPCode. The table contains 12 rows of customer data.

| Customer Id | Customer Name   | Customer Email                | Customer Address                | Customer ZIPCode |
|-------------|-----------------|-------------------------------|---------------------------------|------------------|
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- Aggregates support one or more source Entities
- Entities to retrieve data from

# Aggregate Filters



GetCustomers Sources ① Filters ② Sorting ② Test Values ①

FILTERS

- 1 Length(Customer.Name) > MinLength
- 2 Customer.Email <> ''

+ Add Filter

| Customer Id | Customer Name   | Customer Email                | Customer Address                | Customer ZIPCode |
|-------------|-----------------|-------------------------------|---------------------------------|------------------|
| 24          | Anthony Howell  | AnthonyPHowell@fleckens.hu    | Obere Bahnhofstrasse 148        | 1268             |
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- Adds one or more conditions to the query to filter the output records
  - Support for multiple filters
  - Support logical operators
    - =, <>, and, or, ...
  - Support for some built-in functions
    - CurrDateTime()
    - If(Condition, True, False)

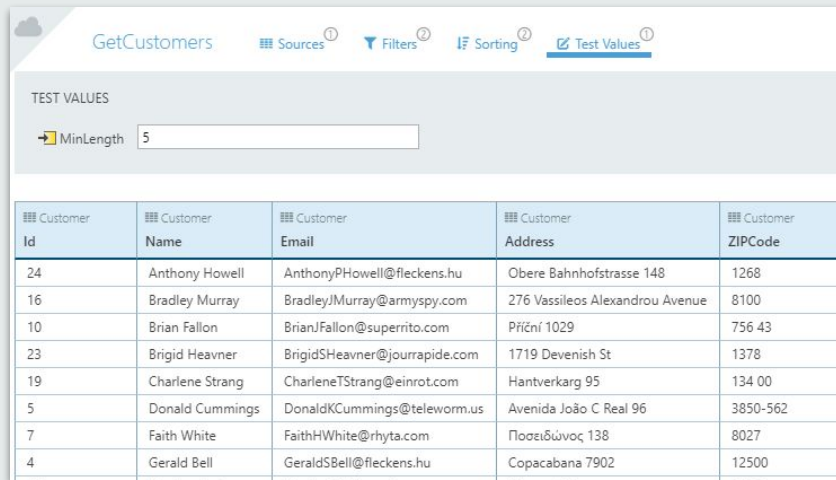
# Aggregate Sorting

The screenshot shows the 'GetCustomers' application interface. At the top, there are tabs for 'Sources', 'Filters', 'Sorting', and 'Test Values'. The 'Sorting' tab is active, displaying a 'SORTING' panel. This panel lists two sorting criteria: '1 Customer.Name' and '2 Customer.Address', both set to 'Ascending' direction. Below the list are buttons for 'Add Sort' and 'Add Dynamic Sort'. At the bottom of the interface is a table with 5 columns: 'Customer Id', 'Customer Name', 'Customer Email', 'Customer Address', and 'Customer ZIPCode'. The table contains 5 rows of customer data, sorted by Name and then Address.

| Customer Id | Customer Name   | Customer Email                | Customer Address                | Customer ZIPCode |
|-------------|-----------------|-------------------------------|---------------------------------|------------------|
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- Defines the Entities attribute to sort by and which direction
  - Ascending
  - Descending
- When defining multiple sorts the order is relevant to the result

# Aggregate Test Values



GetCustomers Sources ① Filters ② Sorting ② Test Values ①

TEST VALUES

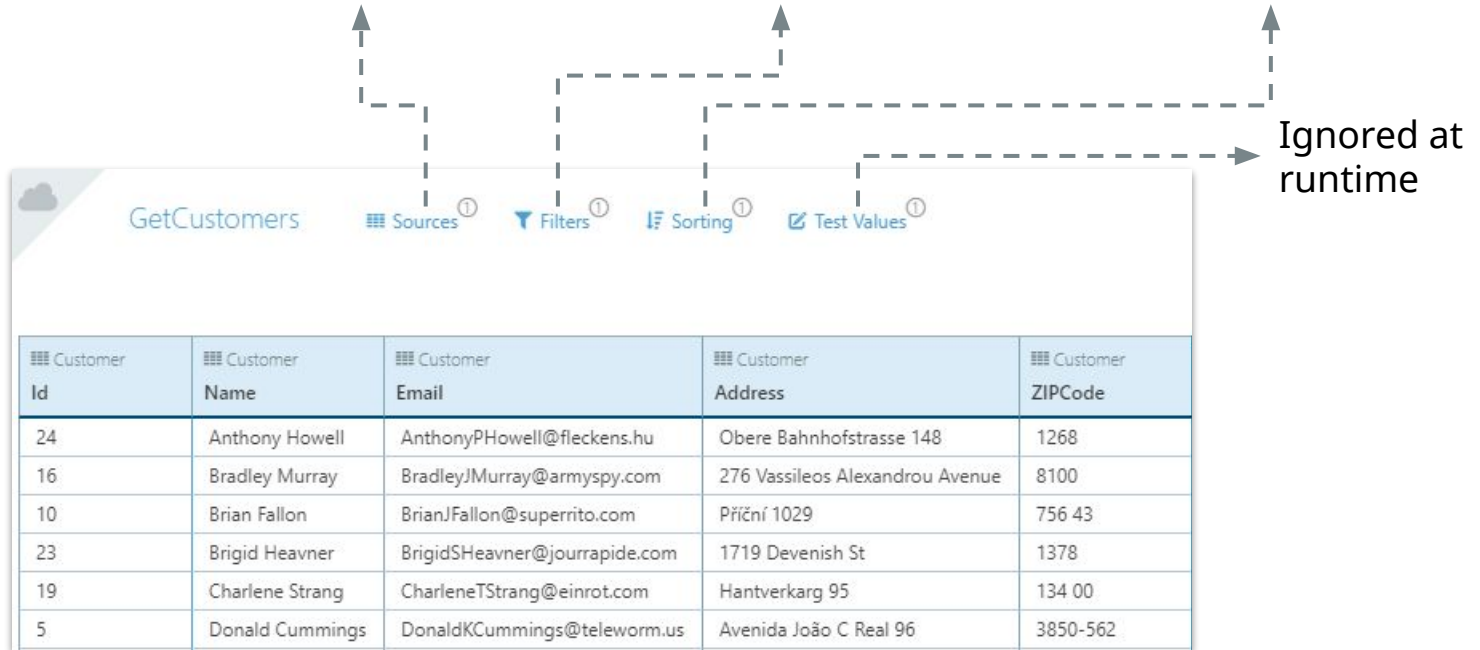
MinLength 5

| Customer Id | Customer Name   | Customer Email                | Customer Address                | Customer ZIPCode |
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- Allows specifying values for external variables used in the filter or sort conditions
  - Has as many inputs as external variables
- Used to test the Aggregate and preview the output records
  - Does not have any influence at runtime

# Aggregates as SQL

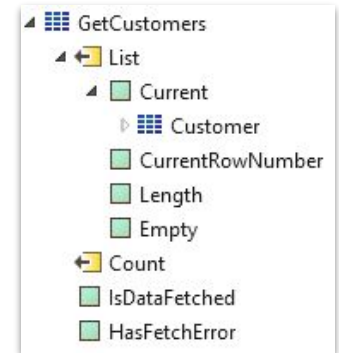
```
SELECT ... FROM {Entities} WHERE {Filters} ORDER BY {Sorting}
```





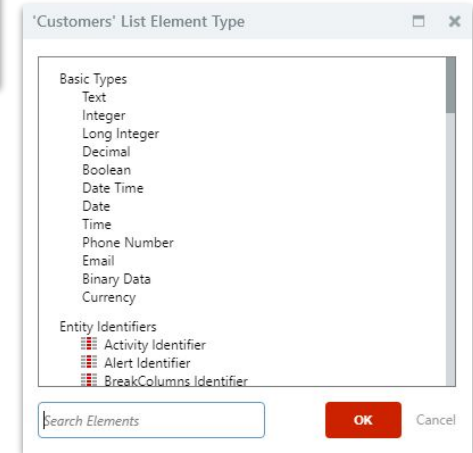
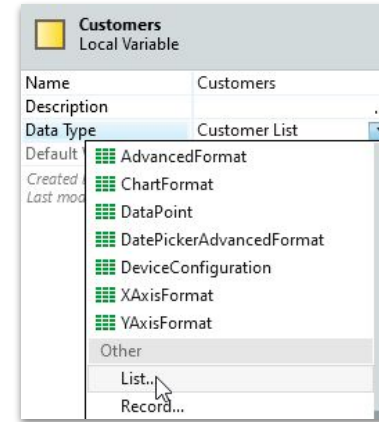
# Aggregates Output

- List of Records returned:
  - Iterator: Current, EOF, BOF, CurrentRowNumber
    - Current cursor moves through the List when iterating
    - Type matches the definition in the query
    - Current points at first row by default
  - Length: number of elements returned
  - Empty: True if no records were returned
- Count has the total number of records that match the criterias defined in the Aggregate



# Lists

- List is an OutSystems Data Type
  - Basic Data Types
  - Compound Types
- Lists can be used in
  - Input / Output Parameters
  - Local Variables
  - (and more...)
- Current can be used in an iteration to get the next element of the List



# Aggregate Properties

- It is possible to limit the Aggregate's output to a maximum number of records
  - Max. Record property
  - Does not impact the Count output
- Aggregate Editor is a SQL-dialect agnostic
  - Executed SQL property shows the SQL statement generated from the Aggregate
  - SQL is generated according to the DBMS used

| GetCustomers<br>Aggregate |                                       |
|---------------------------|---------------------------------------|
| Name                      | GetCustomers ...                      |
| Description               | ...                                   |
| Timeout                   | (Module Default Timeout)              |
| Cache in Minutes          |                                       |
| Max. Records              | 10 ▼                                  |
| Executed SQL              | SELECT TOP (10) [ENCUSTOMER].[IE] ... |
| Sources                   |                                       |
| Customer                  | ...                                   |
| Sorting                   |                                       |
| Customer.Name (ASC)       | ...                                   |

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# Questions?

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# Thank you

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