# Release notes for version 3.8.1

**Important!** Create a backup copy of your projects and connector repositories before updating to the new version. Projects saved in version 3.8.x can't be opened in earlier versions.

## What's new

### New actions

The **Keep Min/Max** action allows keeping or removing the N (or N%) largest/smallest values in a column, within groups, or in entire table. Previously, doing this required several actions. Now it's just 1 action.

The **Sanitize text** action removes hidden system characters (e.g. from ASCII 0-31 range), tabs, line breaks and extra spaces from text values. It can be used for entire table as well as for selected columns only.

The **Total/subtotals** action calculates a total for entire table or subtotals inside groups, and adds them as a new column. Previously, doing this required several actions and a derived table. Now it's just 1 action.

The **Cross Merge** action generates a dataset with all possible combinations (i.e. a Cartesian product) of rows in two tables. It can be helpful in a number of cases: generating a custom calendar, or for performing a complex merging/matching, where all possible combinations are later filtered using a complex condition. Note that this action can produce extremely large tables, so make sure that you're not cross-merging large tables. Note that EasyMorph can handle tables with up to 536 million records only.

The **Remove empty columns** action removes columns that have no meaningful data: empty columns, columns with empty text values, or columns with the same (constant) value in all rows.

### New functions

**monthstart(date_as_number)** – returns the first day of the month of the date. Example:

$\qquad$ `monthstart(#2018-06-06)` returns 43252 which is equivalent to June 1st, 2018.

**monthend(date_as_number)** – returns the last day of the month of the date. Example:

$\qquad$ `monthend(#2018-06-06)` returns 43281 which is equivalent to June 30th, 2018.

**weekstart(date_as_number)** – returns the first day of the month of the date. Example:

`weekstart(#2018-06-06)` returns 43254 which is equivalent to Sunday, June 3rd, 2018.

**weekend(date_as_number)** – returns the last day of the month of the date. Example:

`weekend(#2018-06-06)` returns 43260 which is equivalent to Saturday, June 9th, 2018.

**yearday(date_as_number)** – returns the number of days since the start of the year of the date. Example:

`yearday(#2018-06-06)` returns 157.

**isoweeknumber(date_as_number)** – returns the ISO week number . Example:
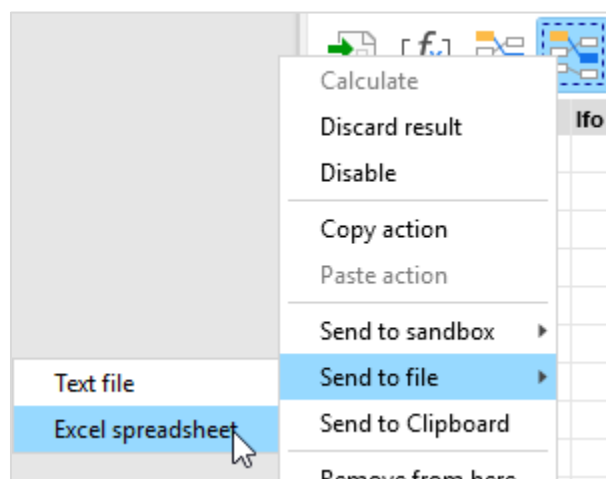
`isoweeknumber(#2018-06-06)` returns 23.

## Changes to existing actions

The **EasyMorph Server Command** action now has a new command: "File list". This command produces a list of files in specified remote folder on the Server. The list can further be used for filtering and iteration.

# Usability improvements

## Quick export to CSV/XLSX

Now a result of action can be saved in a text file (CSV) or Excel spreadsheet in just two clicks using the new command "Send to file" in the action context menu. No more creating a throw-away action for this.
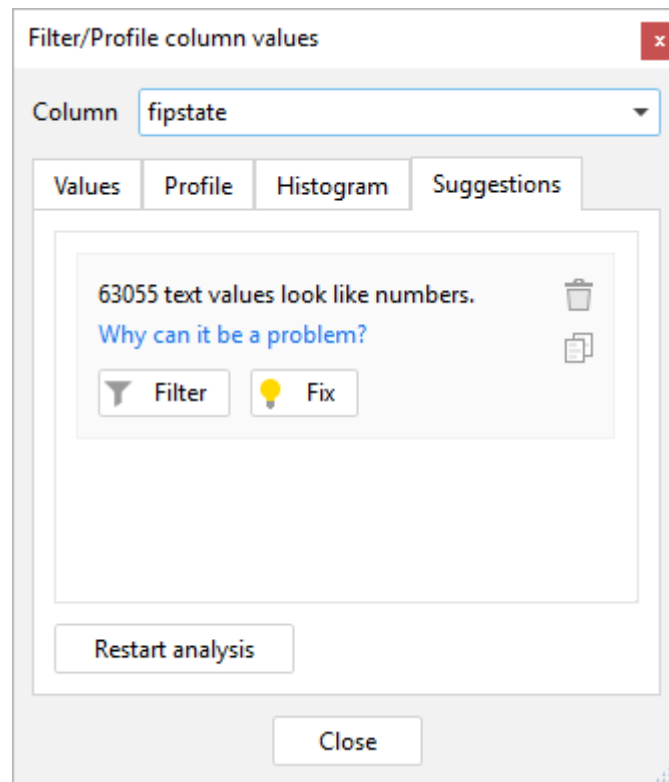


*Screenshot 1: Command "Send to file" in the action menu.*

## Suggestions in Column Profiler

The Column Profiler has got a new tab – Suggestions. The tab contains suggestions (if any) based on automated checks for potential data quality problems with column values. Such problems can include trailing spaces, text values that look like numbers, error values, etc.

Every suggestion has a description that explains what triggered it, and two buttons: "Filter" and "Fix". "Filter" creates an action that keeps only values in question, while "Fix" produces an action that resolves the detected data quality issue.

In this (initial for Suggestions) release, there are relatively few automated checks. With every next release, new possible suggestions will be added.
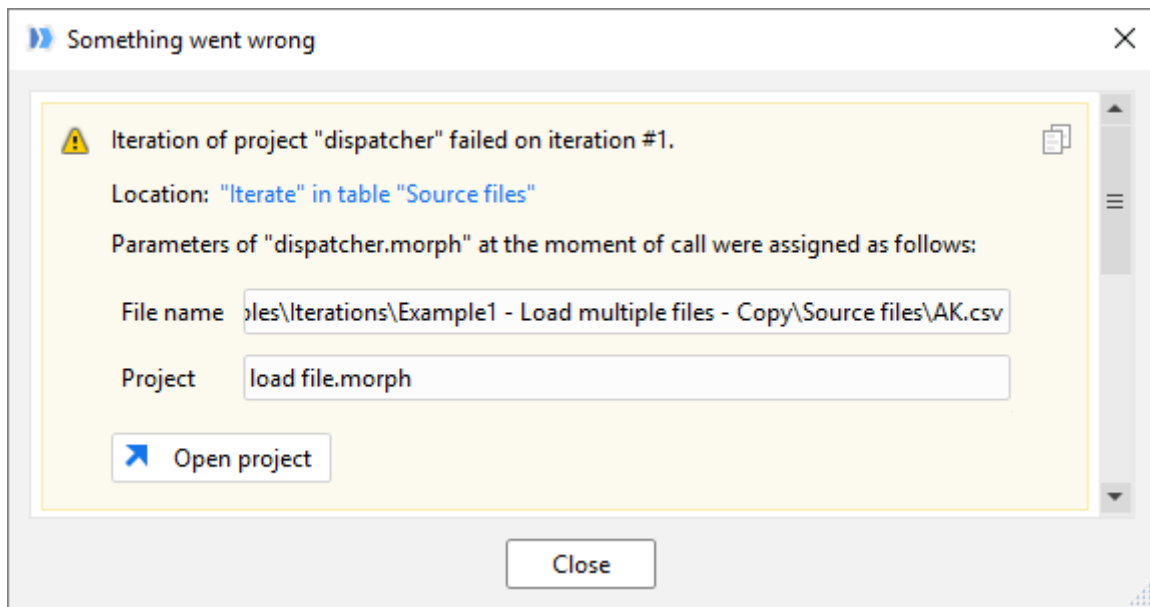


*Screenshot 2: Data quality suggestions.*

## Error cards for call/iteration errors

In the previous release we've introduced error cards – rich and interactive error representations which contents and choice of actions depend on error type. In this release we're adding dedicated error cards for call/iteration errors in order to simplify debugging calls/iterations. Such error card contains the following information:

- Location of the failed Call/Iterate action (click opens the action)
- Values assigned to the called project's parameters at the moment of error
- Button "Open project" that opens the iterated project and assigns its parameters with actual values at the moment of error
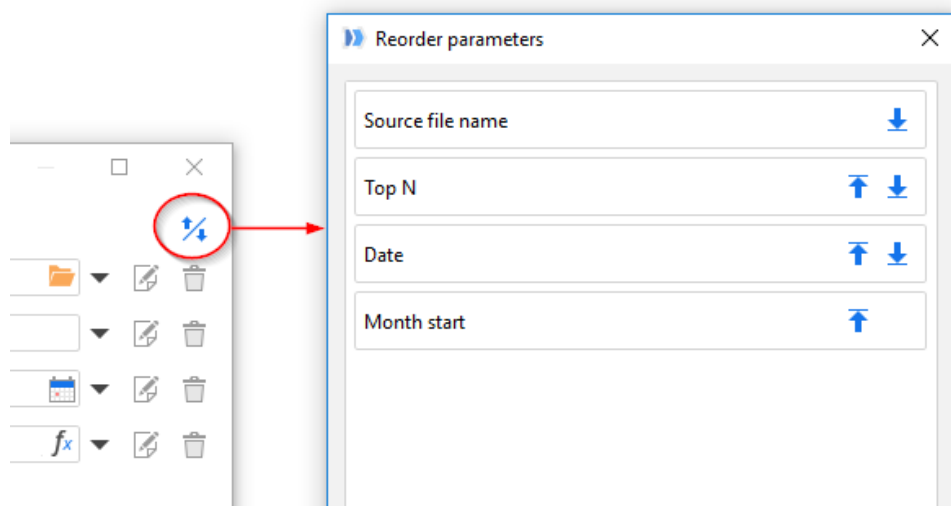
3

- The row number at which iteration fails (for iterations only)



*Screenshot 3: Call/Iteration error card.*

## Reordering in editors

The ability to re-order parameters in the Parameter Editor, or change the order of columns in actions such as "Calculate new columns" or "Aggregate" has long been requested by our users. In this release we've added it. Press the "Reorder" button where applicable to invoke a dialog for re-ordering items. In the dialog, the order of items can be changed either by pressing buttons with arrows up and down, or by dragging the items.
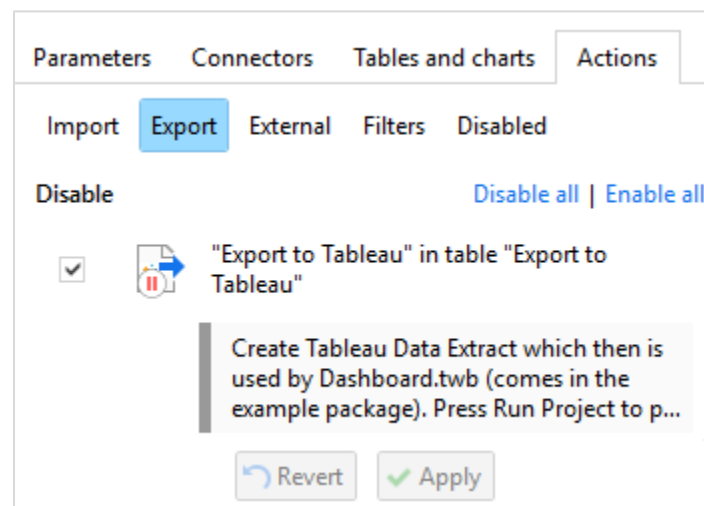


*Screenshot 4: The Reorder button and Reorder Items dialog.*

## Actions in Project Overview

Sidebar "Project Overview" has got a new tab "Actions" that lists particular (not all) actions from the current project, namely:

- Import actions
- Export actions
- External  actions (such as "Run program" or "PowerShell")
- Filters
- All disabled (all currently disabled actions)

Tab "Actions" can be helpful in various cases. It provides an overview of all project's inputs and outputs, as well as interactions with external systems and data. It also represents a convenient way to disable/enable some or all such interactions during development in order to avoid data loss or corruption.



*Screenshot 5: Tab Actions in Project Overview*

# Miscellaneous

- A dedicated button "Ask Community" on toolbars Main and About for quick accessing the Community forum.
- The cell context menu has got 2 new commands for filtering values that are greater/less than or equal to the selected one.
- Project links in the Start screen now have option "Open in new window".
- Section "Start workflow" in the Start screen now has a new category:  "Generate".
- The command for copying table data is moved from the table context menu (invoked by right-click) to the action context menu as command "Send to Clipboard" (can be seen in Screenshot 1 above).

# Release notes for version 3.8

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## What's new

### *Transformations are now called actions*

From the beginning, EasyMorph has had a number of transformations such as "Run Program" or "Export to Excel" that actually didn't transform anything. As its automation capabilities keep expanding, new transformations "that don't transform anything" keep adding, making the term "transformation" increasingly confusing. Therefore, starting from this release all transformations now called *actions*.

For some time, both terms *action* and *transformation* will be used interchangeably, as we make relevant edits in the documentation, tutorial and other places. Eventually, the term "transformation" will only be used occasionally for actions that actually transform data.

### *Arbitrary order of actions*

Up until the previous release, all actions in EasyMorph were divided into two categories: start action, and regular actions. Start actions must always come first in a table, while regular actions could only come after a start action, or another regular action. With the growth of automation use cases for EasyMorph, such separation introduced unnecessary limitations. For instance, importing a file is frequently done after copying it from another location. In such cases, importing had to be done in a separate project called via the "Call" action. This was inconvenient and cumbersome.
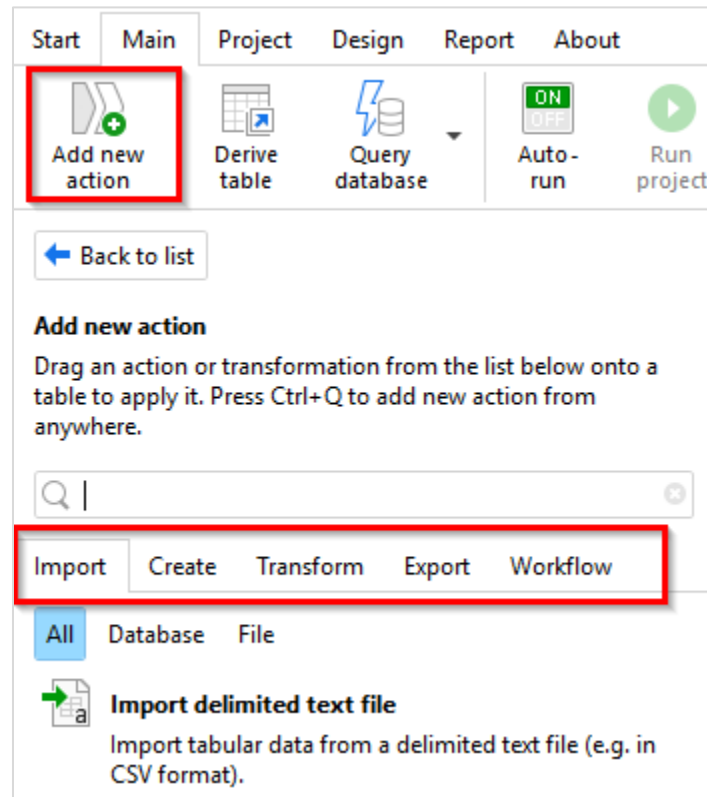
Starting from this release, this division is removed. From now on, any action can be first in a table, and any action can be inserted after any action. As the number of available actions in EasyMorph has become rather big (90+ actions as of this release), they have been separated into 5 categories, to simplify navigation:

- Import – actions that import data (e.g. "Import from Excel").
- Create – actions that generate a table (e.g. "List of files").
- Transform – actions that modify input dataset (e.g. "Filter by expression").
- Export – actions that export data
- Workflow – actions that affect internal workflows (e.g. "Iterate"), or interact with external systems and data (e.g. "Download file" or "Run program").

If an action doesn't expect any input data (typically actions from categories "Import" and "Create"), then the result of previous action is silently ignored without a warning or indication.

The equalization of actions has caused a few changes in the user interface of EasyMorph of which the most significant are two:

1) The button "Insert/create table" used for selecting a start action and creating a table, has been removed. The "Add new action" button has moved to 1st position in the "Main" toolbar.
2) The catalog of available actions is now two-tiered (it was one-tiered). Actions are grouped by categories and, optionally, by subcategories.



*Screenshot 6: New "Add Action" sidebar.*

## New Plus licensing

The Plus license has become more expensive, and it now always includes following features:

- Unlimited transformations
- "Input" action
- "Split delimited file" action

See the new pricing at http://easymorph.com/buy.html.

## Changes to existing actions

While this release doesn't introduce new actions, there are many improvements to existing ones:

| Action | New feature(s). |
|---|---|
| Call | Capturing errors of the called project. This makes it possible to arrange an error handling workflow in case of failure of the called project. For instance, send an email if the called project failed. The ability to handle project errors was frequently requested by EasyMorph users. |
| Status | Using a cell value for the status message. |
| PowerShell | Option for passing entire table to a PowerShell script. The table is passed as a jagged array (array of arrays). |
| Export to Qlik | Specifying the QVD table name (up to 32 characters). If no table name is specified, the EasyMorph table name is used as the QVD table name. |
| Regular expression | Capturing groups. |
| Iterate and Iterate table | Assigning parameters besides column values. |
| Import from database | Specifying an external file as custom SQL query. |
| Export to database | Custom SQL script section. The script is executed in the same database connection session which allows, for instance, suppressing field constraints temporarily. |
| Export to delimited text file | Options for quoting now include: No quoting, Auto, Quote everything. |

## New functions

**system('tempdir')** – returns the path to temp directory of the current user. Example:

    system('tempdir') returns C:\Users\User1\AppData\Local\Temp\.

## Connector for Apache Hive SQL (experimental)

The Apache Hive SQL dialect is now supported for ODBC connections. This support is limited at this point and only allows importing data from Apache Hive, but not exporting to it. Table operations (creation, deletion, etc.) are not supported either.

## Email connector for MS Exchange

In addition to the generic SMTP email service connector, a dedicated MS Exchange connector has been added. The connector employs the native Exchange Web Service API and is seamlessly supported in the "Send email" action.

In most organizations, auto-detection of server URL would work. If you need to specify the server URL explicitly, it usually has the following format:

```
https://<exchange-host>/EWS/Exchange.asmx
```
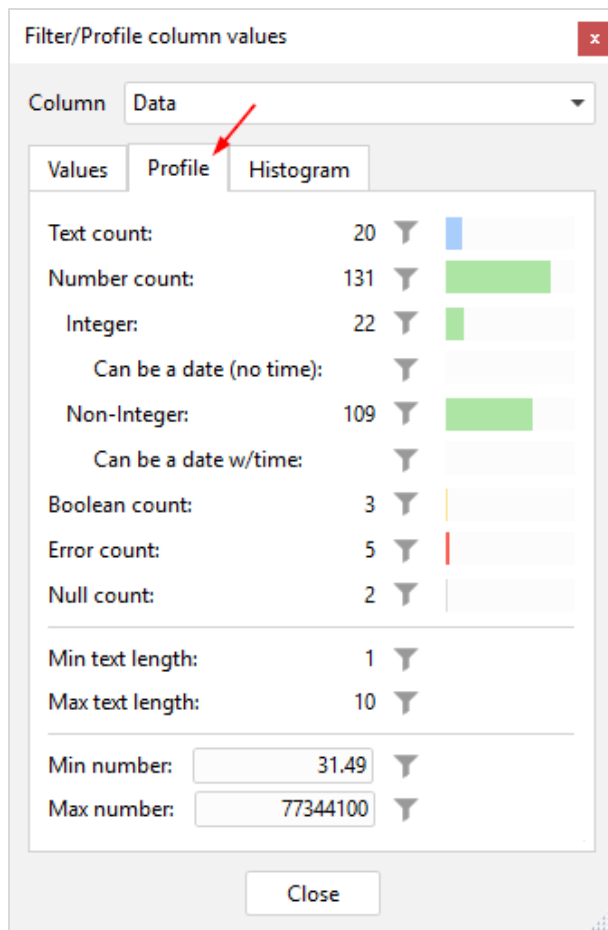
## Column profiler

To simplify detection of data quality issues, the "Filter/Profile" dialog (invoked by double-clicking a column header) now implements a column profiler.
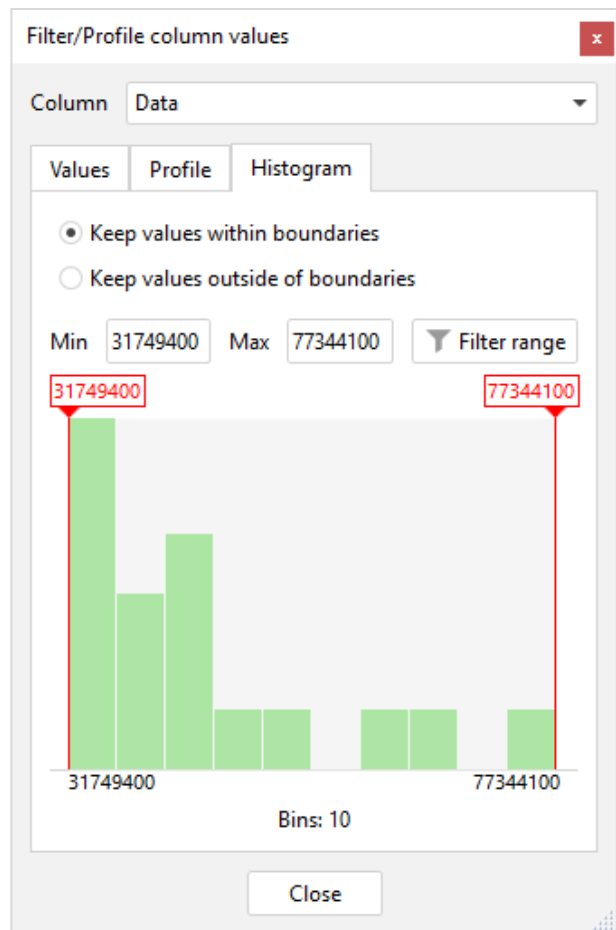
The profiler automatically calculates various counts. Each count has according "Filter" button to keep only rows with counted values.

The profiler also builds a histogram with distribution of numeric values in the column. The histogram allows filtering a range of values visually.

The profiler dialog window is floating meaning that you can click different columns in different tables without closing the profiler window.
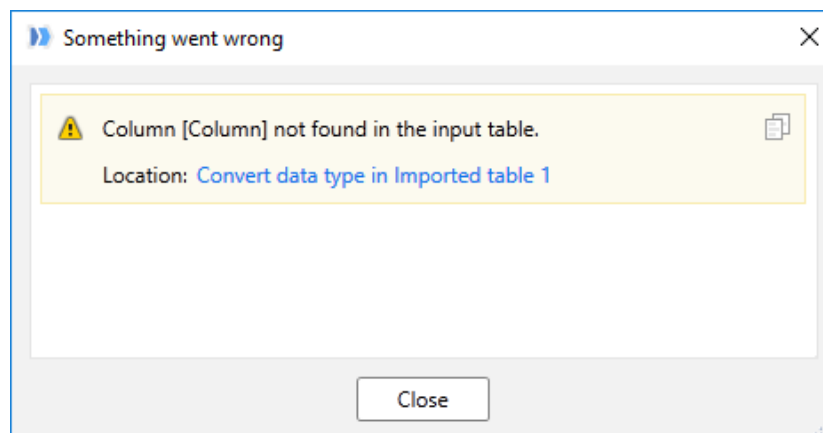
*Screenshot 8: Column profiler.*



*Screenshot 9: Column profile histogram.*
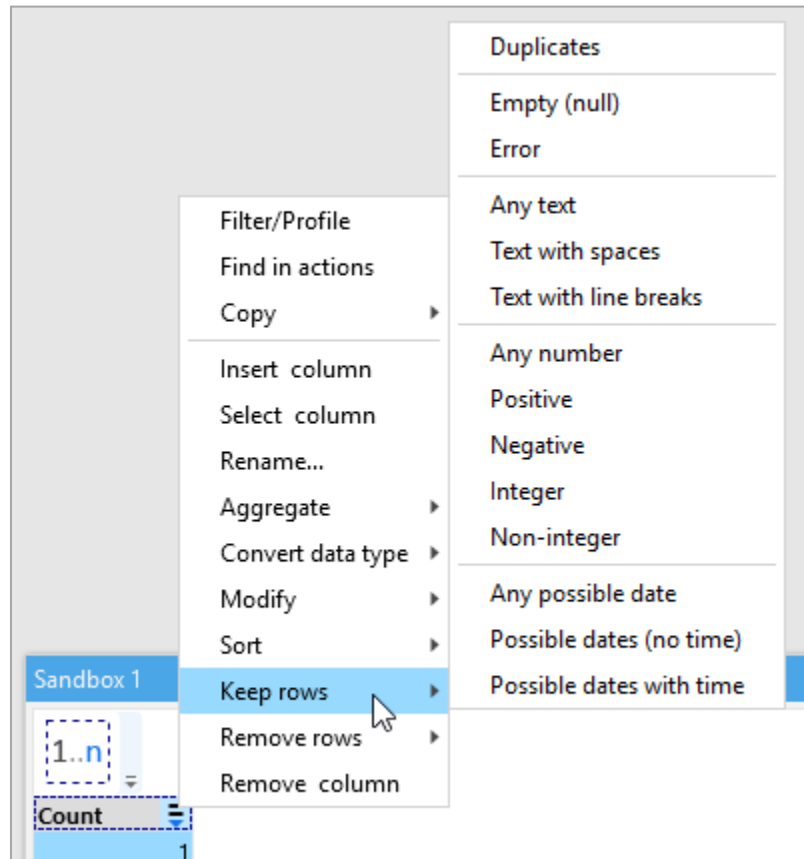
## New Run Errors dialog

The window with project execution errors has a new look. Now multi-line and long messages are displayed entirely. Also the new look enables adding in the future error-dependent actions for easier debugging or problem fixing.



*Screenshot 10: The new Run Errors dialog.*

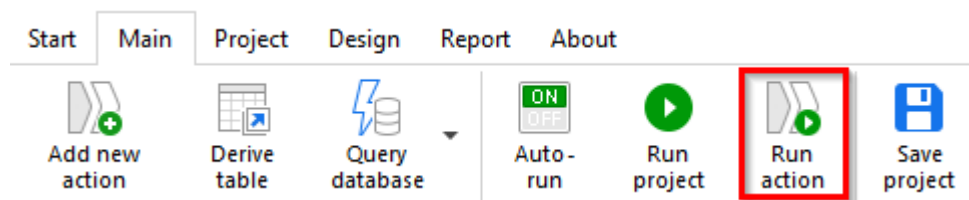## New Keep/Remove commands in the column context menu

Column Keep/Remove commands have expanded and include a number of new options for filtering rows, such as negative/positive numbers, values with spaces or line breaks, etc.:



*Screenshot 11: New Keep/Remove commands.*

## Run Action button

The Main toolbar now has a dedicated button "Run action" for calculating currently selected action, and all preceding actions that are required for the calculation. Its action is equivalent to Ctrl + clicking an action. It re-runs the action if it's already calculated.



*Screenshot 12: Run Action button.*

## Miscellaneous

- The Email Server connector now has presets for Gmail, Hotmail and Outlook.com.
- The Connector Manager now has a list of previously selected repositories for easier switching between repositories.
- The table right-click menu now includes "Derive from…" command to make a table derived, or re-link a derived table to another table.