

# Easy Data Transform v1.12.1 for Windows

© 2021 Oryx Digital Ltd, all rights reserved

<b>1.</b>	<b>Getting started</b>	<b>6</b>
1.1	Introduction .....	7
1.2	System requirements .....	7
1.3	Quick start guide .....	7
<b>2.</b>	<b>Reference</b>	<b>19</b>
2.1	User Interface .....	20
2.1.1	Main window .....	20
2.1.2	Left pane .....	20
2.1.3	Center pane .....	21
2.1.4	Right pane .....	21
2.1.5	Preferences window .....	21
2.2	Input .....	23
2.2.1	Input data .....	23
2.3	Transforms .....	25
2.3.1	Transform data .....	25
2.3.2	Case .....	26
2.3.3	Chop .....	26
2.3.4	Clone .....	27
2.3.5	Compare Cols .....	27
2.3.6	Concat Cols .....	28
2.3.7	Concat Rows .....	28
2.3.8	Copy Cols .....	30
2.3.9	Count .....	30
2.3.10	Cross .....	31
2.3.11	Date Format .....	32
2.3.12	Dedupe .....	34
2.3.13	Extract .....	34
2.3.14	Fill .....	35
2.3.15	Filter .....	36
2.3.16	Gather .....	37
2.3.17	Header .....	38
2.3.18	If .....	40
2.3.19	Insert .....	41
2.3.20	Interpolate .....	42
2.3.21	Intersect .....	47
2.3.22	Javascript .....	47
2.3.23	Join .....	50
2.3.24	Lookup .....	53

2.3.25	New Col .....	56
2.3.26	Num Format .....	57
2.3.27	Pad .....	58
2.3.28	Pivot .....	58
2.3.29	Remove Cols .....	59
2.3.30	Rename Col .....	60
2.3.31	Rename Cols .....	60
2.3.32	Reorder Cols .....	61
2.3.33	Replace .....	61
2.3.34	Row Num .....	62
2.3.35	Sample .....	63
2.3.36	Slice .....	63
2.3.37	Sort .....	66
2.3.38	Split Col .....	67
2.3.39	Split Rows .....	67
2.3.40	Spread .....	69
2.3.41	Stack .....	71
2.3.42	Stamp .....	72
2.3.43	Stats .....	75
2.3.44	Substitute .....	76
2.3.45	Subtract .....	77
2.3.46	Summary .....	77
2.3.47	Total .....	79
2.3.48	Transpose .....	80
2.3.49	Trim .....	80
2.3.50	Unique .....	81
2.3.51	Whitespace .....	83
<b>2.4</b>	<b>Output .....</b>	<b>84</b>
2.4.1	Output data .....	84
<b>2.5</b>	<b>File formats .....</b>	<b>87</b>
2.5.1	File formats .....	87
2.5.2	CSV format .....	87
2.5.3	Excel format .....	88
2.5.4	Fixed width format .....	89
2.5.5	JSON format .....	91
2.5.6	HTML format .....	93
2.5.7	Markdown format .....	94
2.5.8	TSV format .....	95
2.5.9	vCard format .....	96
2.5.10	XML format .....	96
2.5.11	YAML format .....	99

2.6	Comments .....	99
2.7	Headers .....	101
2.8	Connections .....	102
2.9	Text .....	104
2.10	Dates .....	104
2.11	Numbers .....	106
2.12	Meta Information .....	106
2.13	Column variables .....	108
2.14	Regular expressions .....	108
2.15	Batch processing .....	109
2.16	Command line arguments .....	113
2.17	.transform files .....	114
2.18	Keyboard shortcuts .....	114
<b>3.</b>	<b>How do I?</b>	<b>118</b>
3.1	Add a transform between existing items .....	119
3.2	Add or remove a header .....	119
3.3	Change a connection .....	119
3.4	Change encoding .....	120
3.5	Duplicate a series of transforms .....	120
3.6	Dedupe a dataset .....	121
3.7	Find the difference between dates/datetimes .....	123
3.8	Handle column name/order changes in inputs .....	125
3.9	Handle large datasets .....	127
3.10	Input a fixed width format file .....	127
3.11	Merge datasets .....	127
3.12	Move a .transform file .....	131
3.13	Output nested JSON or XML .....	132
3.14	Output to Excel .....	133
3.15	Perform the same transforms on many files .....	134
3.16	Write to multiple sheets of an Excel file .....	137
<b>4.</b>	<b>Support</b>	<b>139</b>
4.1	Forum .....	140
4.2	Contact support .....	140
4.3	Report a bug .....	140



4.4 Request an enhancement ..... 140

**Index** ..... **141**

# Getting started

## 1 Getting started

### 1.1 Introduction

Easy Data Transform allows you to quickly transform table and list data into new and more useful forms, without programming. The step-by-step visual transformation is quicker, more interactive, more repeatable and less error prone than other approaches.

Please take a couple of minutes to read the [Quick Start Guide](#).

### 1.2 System requirements

The suggested requirements for running this software are:

- Operating system: Windows 7, 8 or 10 (32 and 64 bit variants).
- Screen resolution: 1280x720 pixels or better.

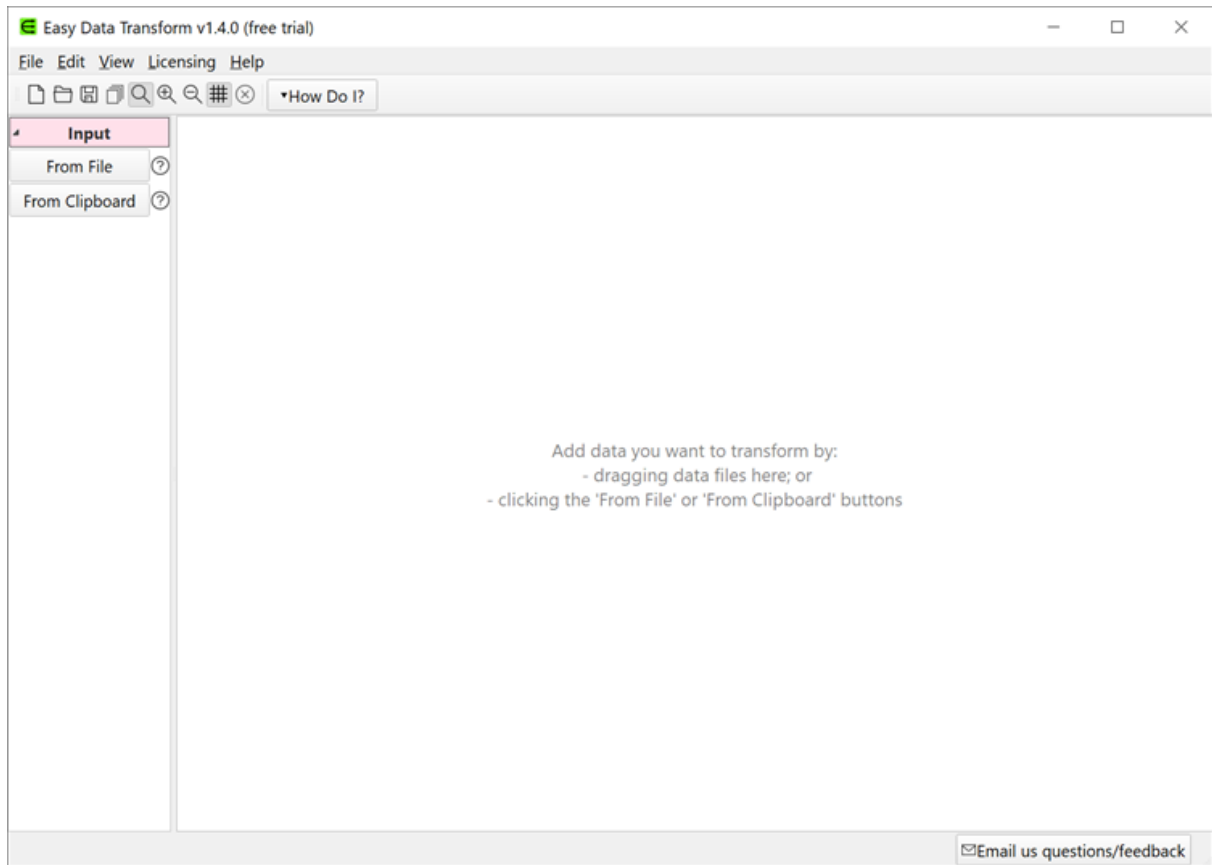
If your operating system is more recent than the above check our website to find a compatible version of Easy Data Transform.

You may be able to run the software satisfactorily on lower specification systems or more operating systems, but we can't guarantee it. If in doubt, try running an unlicensed trial version before you buy a license.

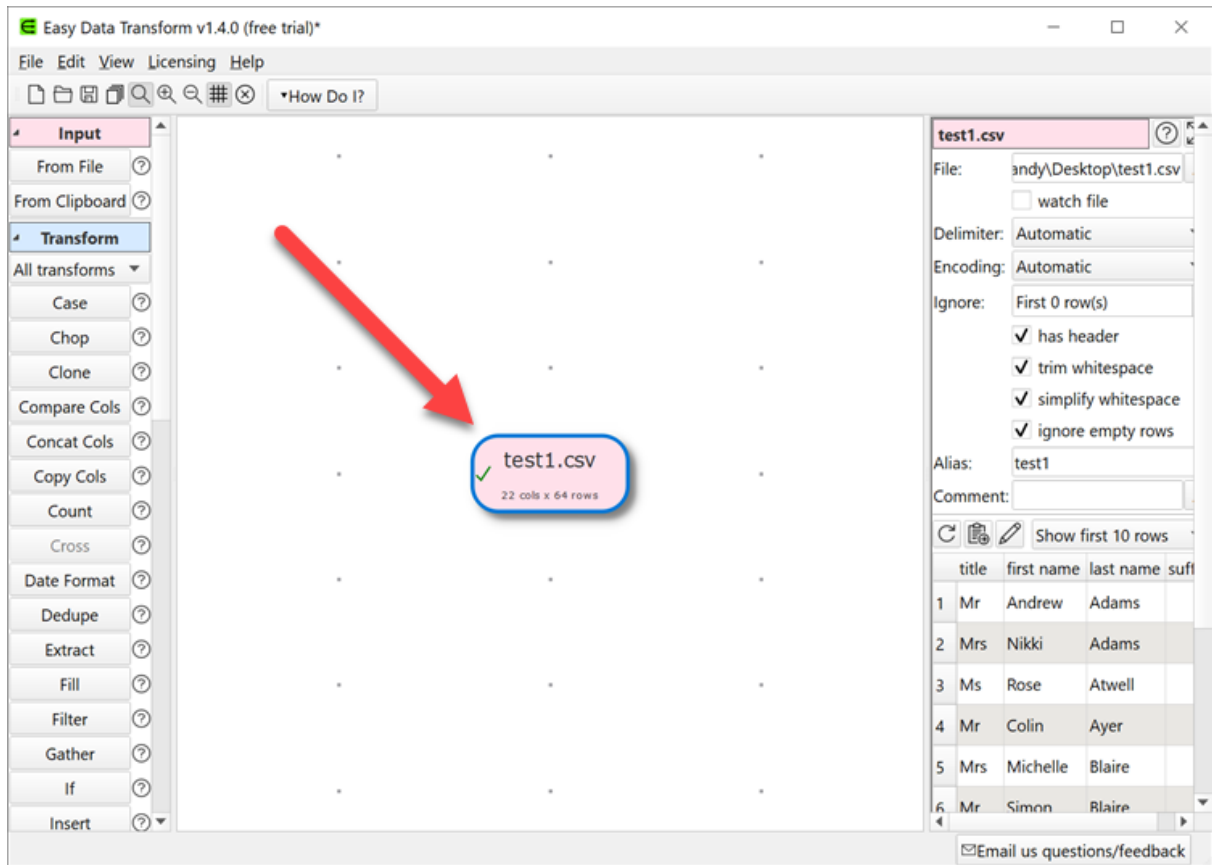
### 1.3 Quick start guide

This is a quick tour of some of Easy Data Transform's features. It should only take a couple of minutes to complete.

Start Easy Data Transform. If the **Free Trial** window appears, click **Continue free trial**. If the Getting Started window appears, click **I have used it before!** (or you will just end up back on this page). You should now see the main window.

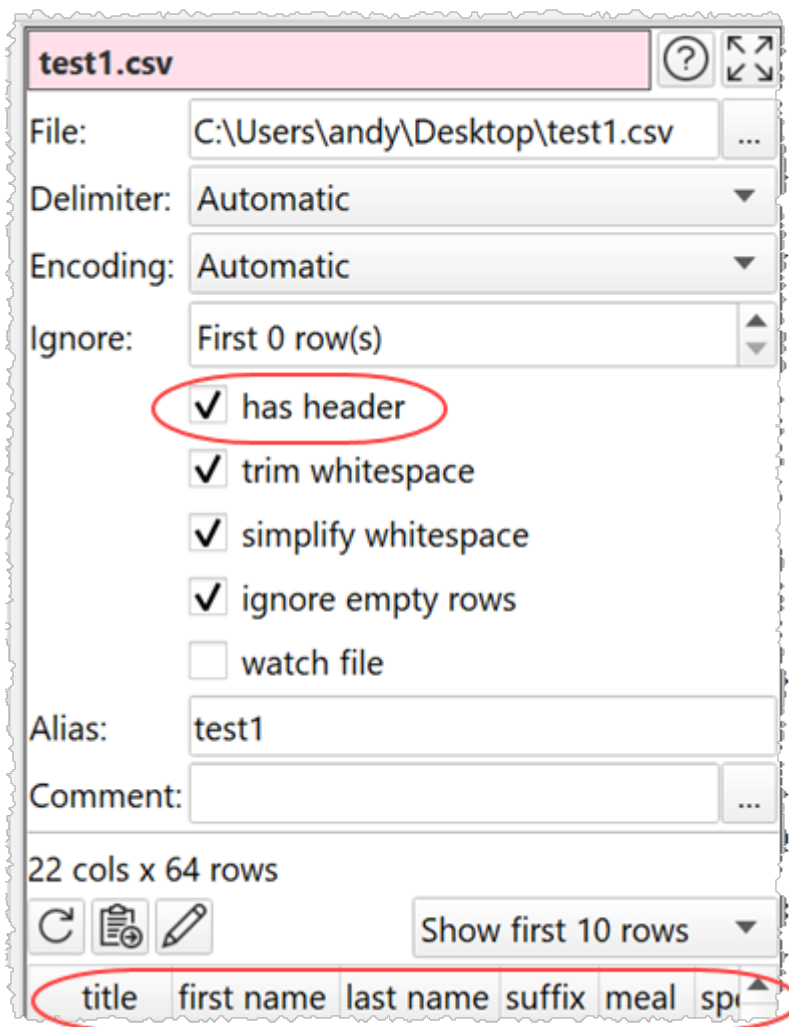


Drag a data file you want to transform onto Easy Data Transform. Any sort of table or list should be fine. For example a .csv file or an Excel .xlsx/.xls file. XML, JSON, fixed width and vCard formats are also supported.



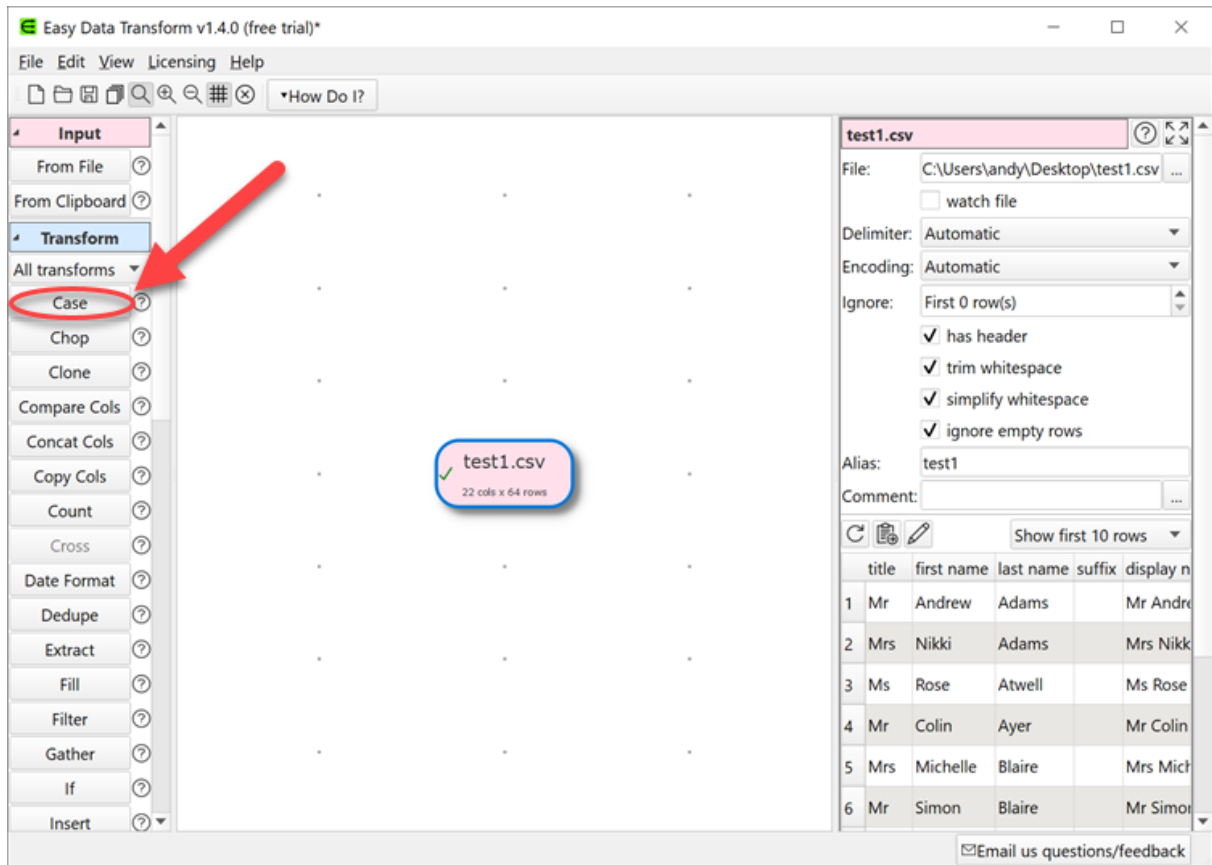
Notice that the available transforms are shown in the **Left** pane and the selected dataset is shown in the **Right** pane.

In the **Right** pane, you can check **has header**, depending on whether you want to treat the first row of the dataset as a header.

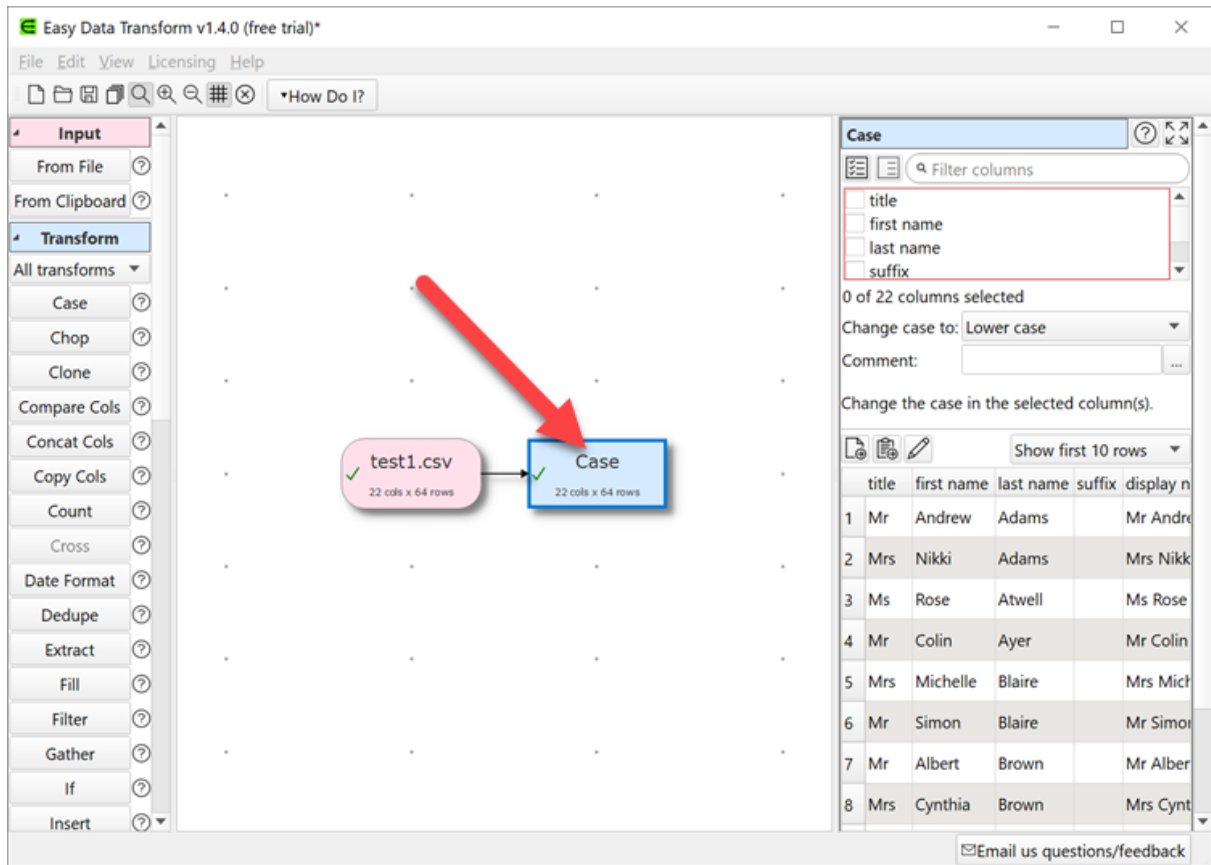


All the transforms available for a single dataset are now enabled in the **Left** pane. Hover over the transforms to see tooltips explaining what they do. Click on the **?** next to a transform button for more details.

Ensure the input item is selected and click on the **Case** transform button to change the case of your data.

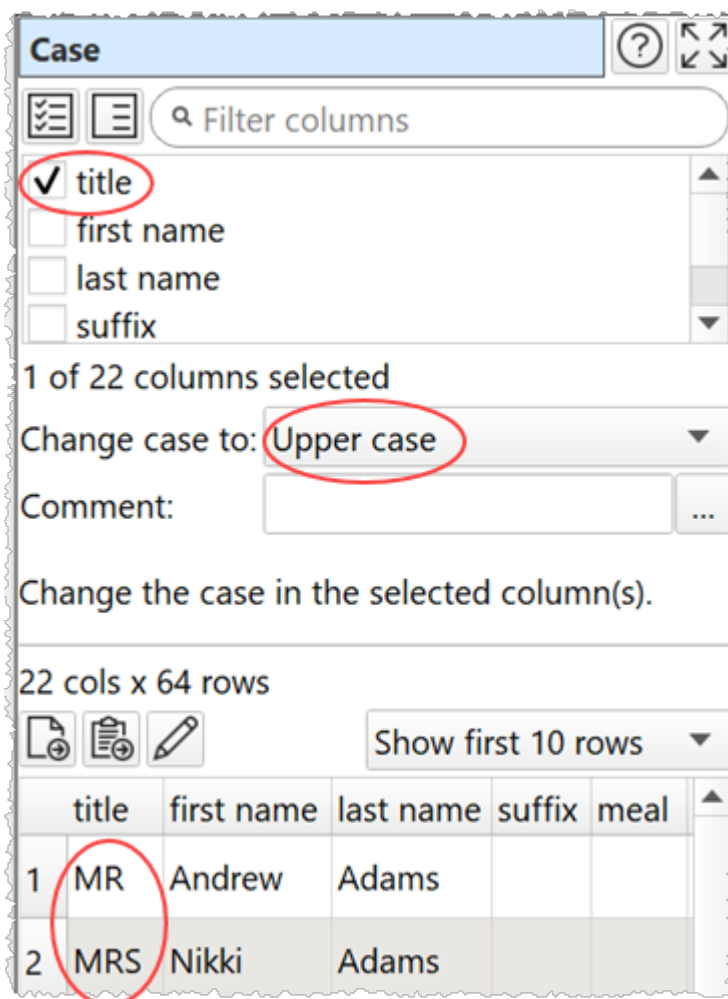


A **Case** transform item will now be added.



In the **Right** pane, check one of the columns and set **Change case to** to **Upper case**. All the text in that column will now be converted to upper case.



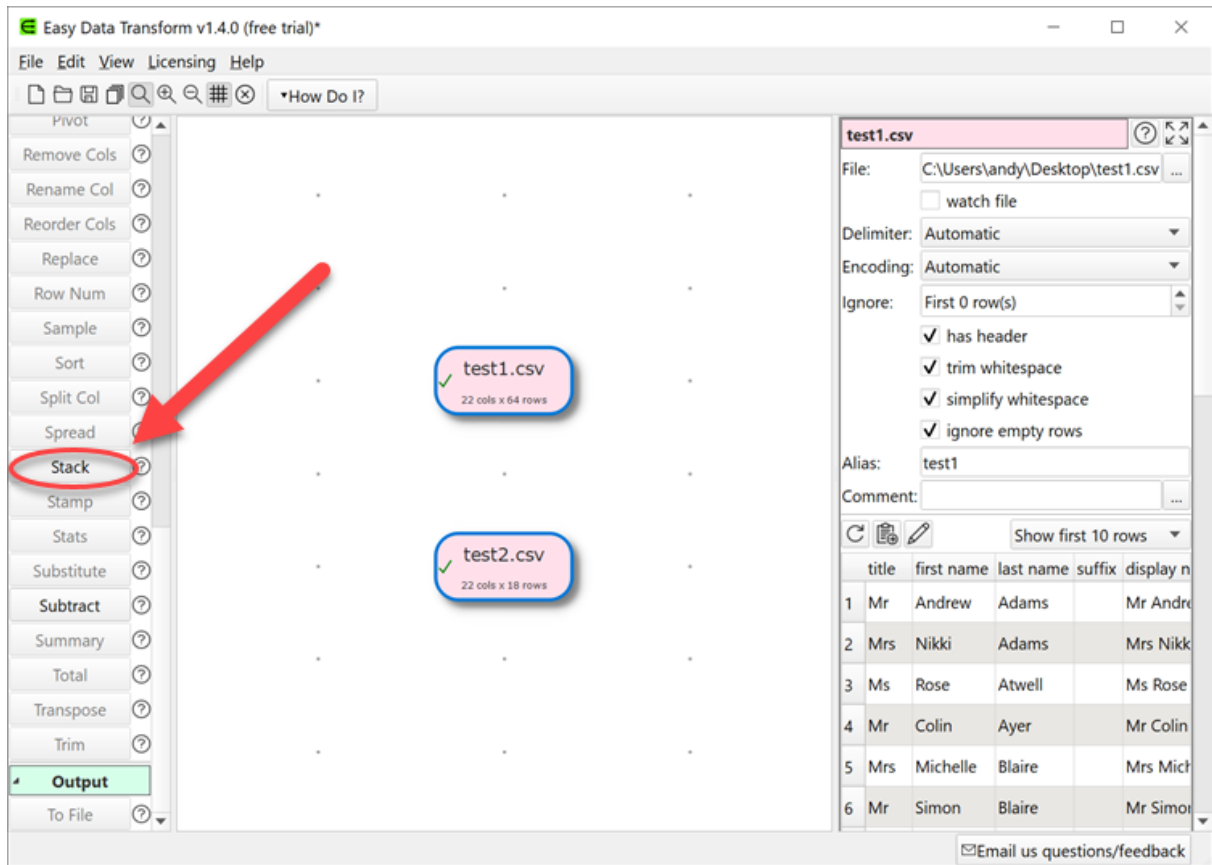


You can create a sequence of transforms to perform complex manipulations.

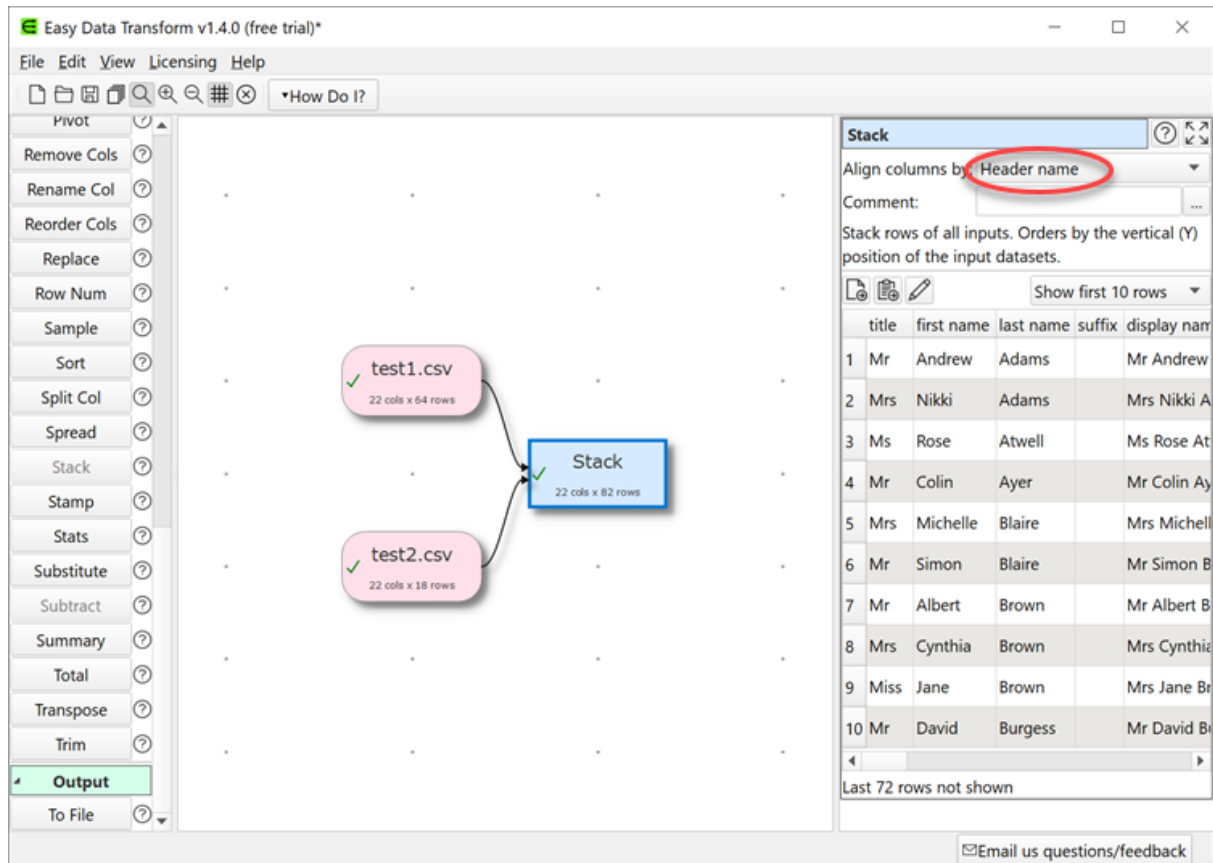


Some transforms require more than one input dataset. For example, to stack two tables, one on top of the other:

- Select **File>New** to start again. Don't save the changes.
- Drag two data files onto the **Center** pane.
- Select both input items (by dragging a box around them or using **Ctrl+click**).
- Click the **Stack** transform button (you may need to scroll the **Left** pane to see the button).



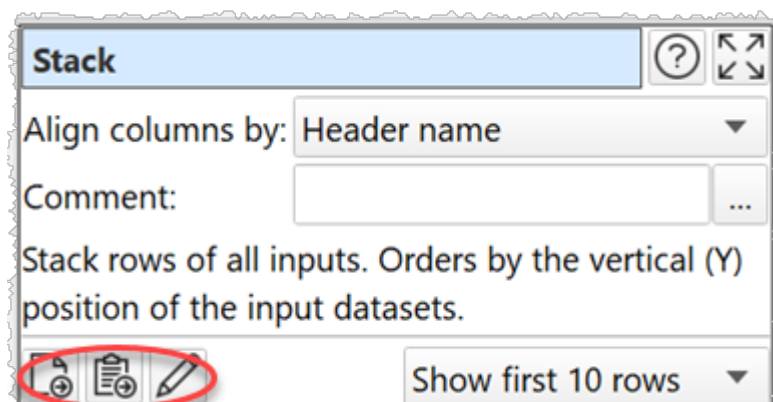
The tables are now stacked one on top of the other in a new dataset item. You can choose to match the columns by **Header name** or **Column number**.



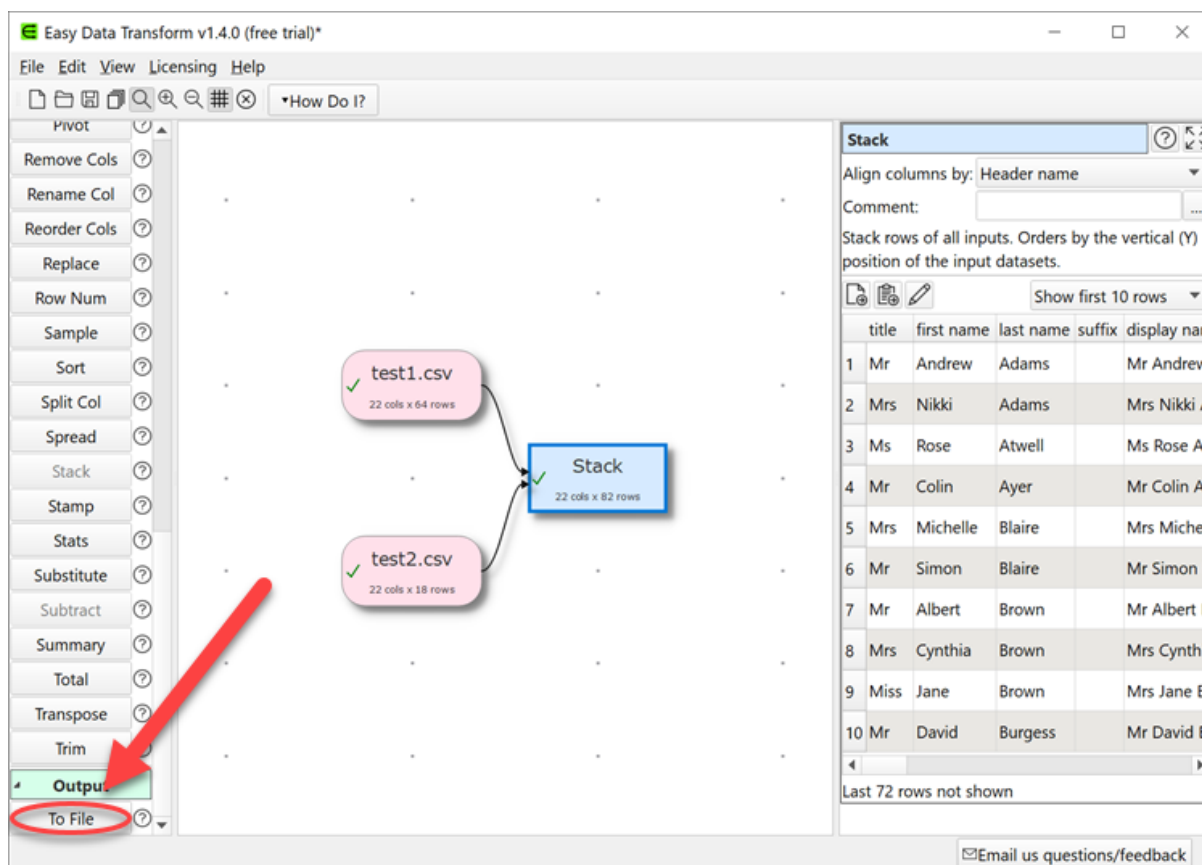
Note that the vertical (Y) position of the inputs affects the order the datasets are stacked. Try swapping the two inputs around and re-select **Stack** to see the affect.

Any changes to input files will be automatically read in. Any changes to input datasets or transform options will be automatically propagated 'downstream'.

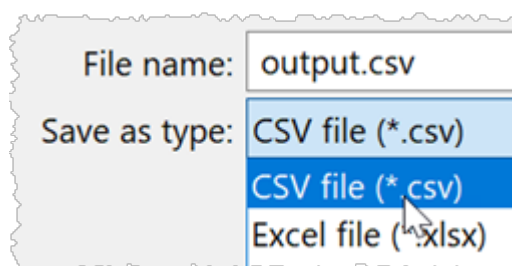
To export your transformed dataset to a file or the clipboard, or to view it in a local editor, select the dataset item and click on the appropriate button in the **Right** pane.



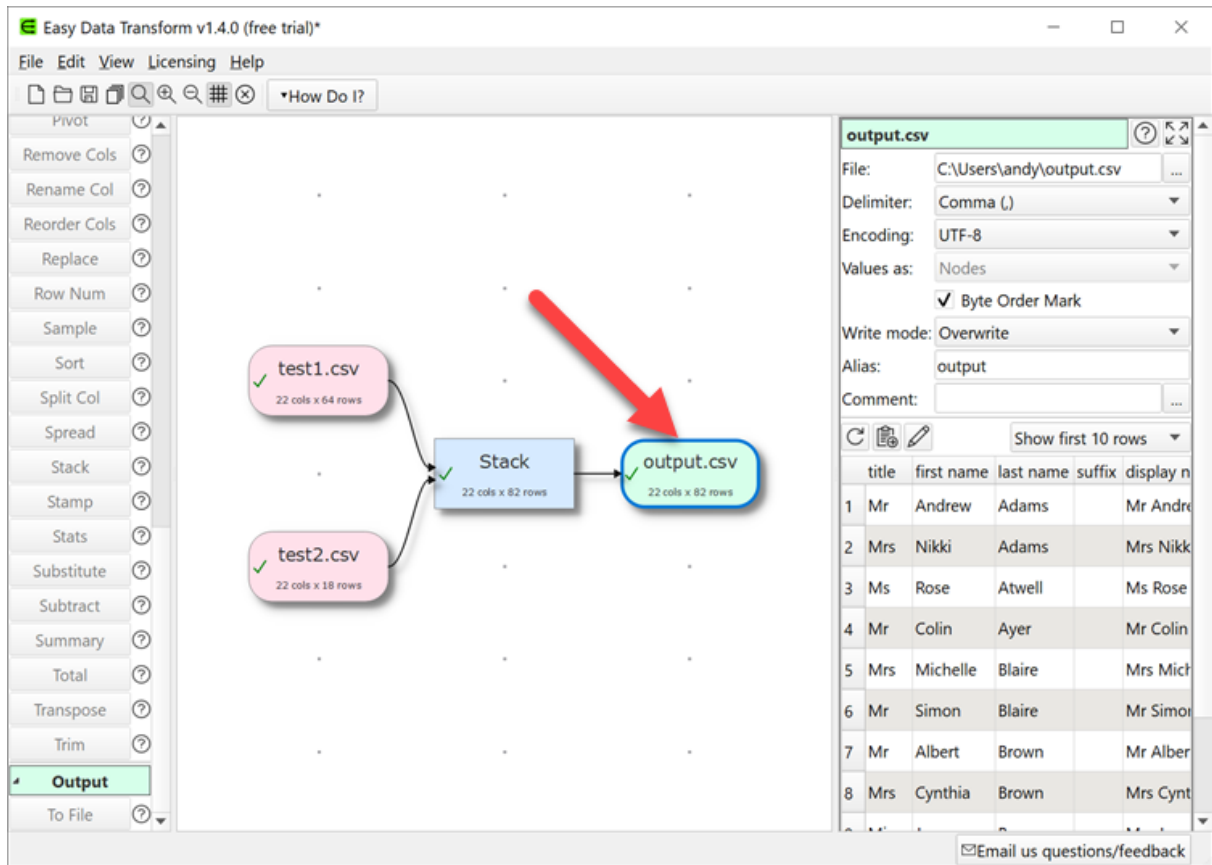
You can also add an output item to automatically write a dataset to file whenever it changes.



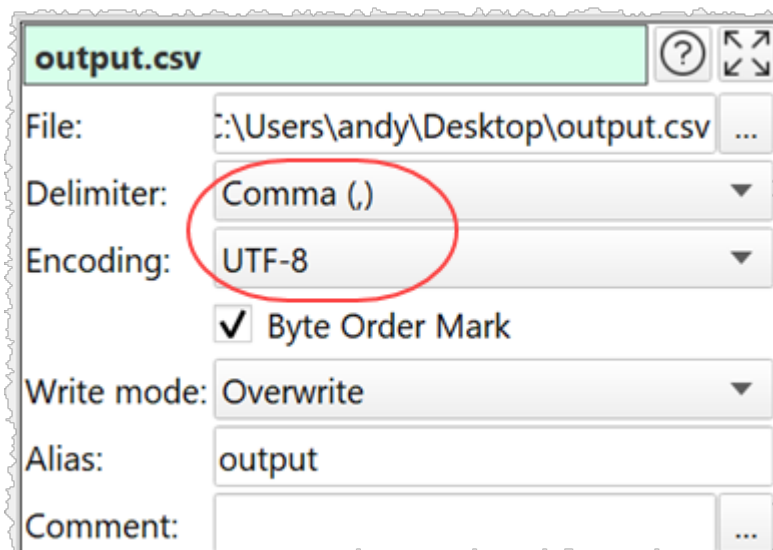
You will be asked for a file to write to. You can choose amongst CSV, Excel, HTML, JSON, Markdown, TSV, vCard, XML and YAML file formats. Select **CSV file**.



Your dataset will then be written to this file every time it changes.



You can also specify the **Delimiter** and **Encoding** for your CSV files in the **Right** pane.



You can save your transforms to a transform template document to use again with **File>Save**.

Have a play!

Tips:

- You can also paste in data from the clipboard (for example, a table from a web page or Word document).
- The **Compare cols**, **Filter**, **If** and **Sort** transforms take account of dates, numbers and text. You can define what date formats to recognize in the [Preferences window](#).
- New columns are always added to the right of a table.
- Comparisons of text are always sensitive to case, unless stated otherwise. E.g. "CASE", "case" and "Case" are treated differently.
- Comparisons of text are always sensitive to whitespace (e.g. spaces and tabs), unless stated otherwise. You can use the **Whitespace** transform to remove leading and trailing whitespace.
- The contents of input and output data files are not saved in Easy Data Transform, only their locations.
- As well as stacking two datasets, you can also [Join](#) them, side-by-side, if they have a common ('key') column.
- You can insert a new transform between existing items by selecting the connection between the items and then adding the transform.
- You can perform the same set of transformation on multiple files using [Batch processing](#) or [command line arguments](#).
- Use [keyboard shortcuts](#) to improve your productivity.

We are interested in your feedback, so please contact us to [ask a question](#), [report a bug](#) or [request an enhancement](#).

## Reference

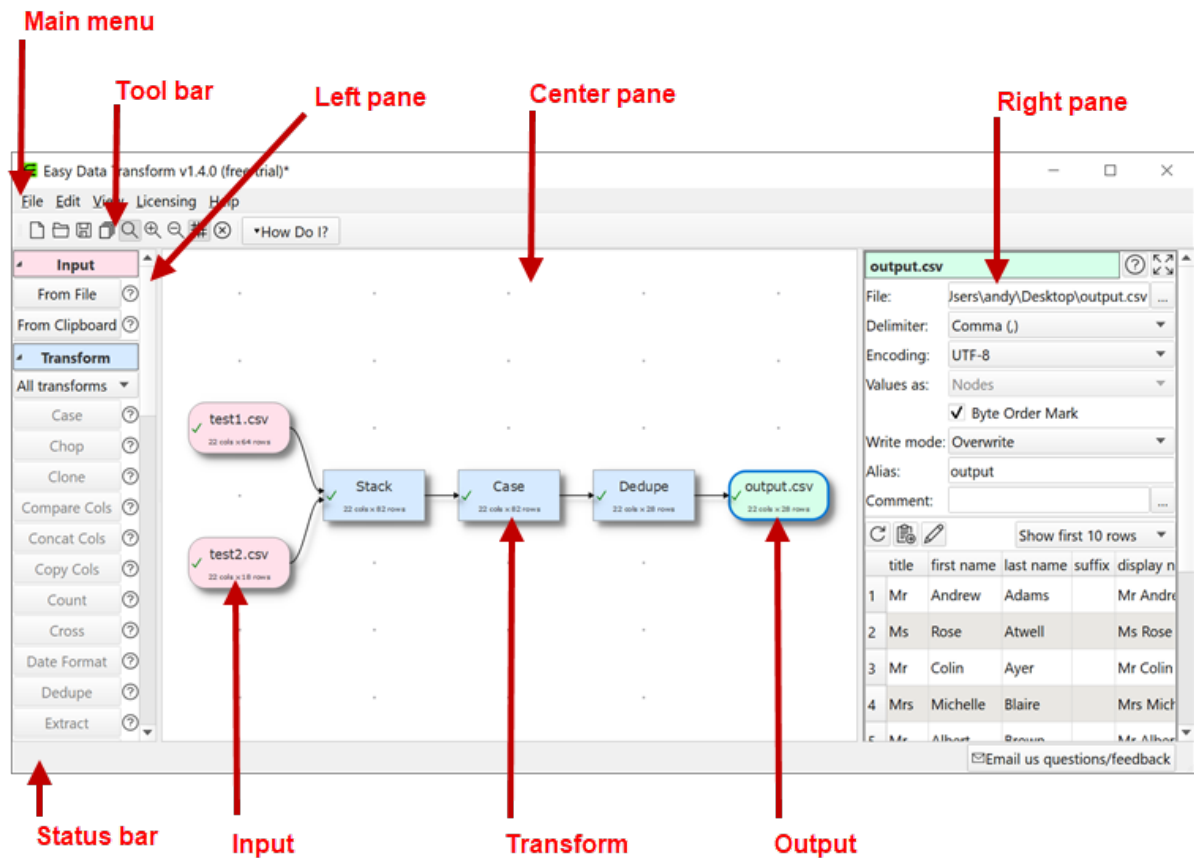
## 2 Reference

### 2.1 User Interface

#### 2.1.1 Main window

The Main window comprises:

- **Main** menu
- **Tool** bar
- [Left](#) pane
- [Center](#) pane
- [Right](#) pane
- **Status** bar



#### 2.1.2 Left pane

The **Left** pane shows all the available actions you can perform. Which actions are visible will depend on what is shown in the [Center](#) pane. Which actions are enabled depends on what is selected in the **Center** pane.



### 2.1.3 Center pane

The **Center** pane show the inputs, transforms and outputs you are using to transform your data.

### 2.1.4 Right pane

The **Right** pane shows details of any input, transform or output items you have selected in the [Center pane](#).

### 2.1.5 Preferences window

#### General tab

Check **give option to disable outputs when opening a file** if you want the option to disable any ouputs with write mode overwrite or append when you open a file, preventing accidentally writing over existing files. Note that this check is never made when using the [\\_ exit command line argument](#).

Check **use native file windows** to use the native Windows file open/save windows.

Check **make a sound when processing completed** if you want to make a system sound every time processing is completed.

Set **At start-up** depending on what you want to happen when Easy Data Transform starts.

Set **Tool bar icon size** to the size of the icons you wish to display in the tool bar.

Set **Right pane processing delay** depending on how long you want to wait after changes in the **Right** pane before starting processing. Setting the value to 0 is generally not recommended, as this means that every single click in the **Right** pane will cause processing.

Set **Zoom wheel behavior** according to how you want the mouse wheel to work in the **Center** pane. Hold down the `Ctrl` key while moving the mouse wheel to switch between zoom and scroll. Hold down the `Alt` key while moving the mouse wheel to switch between up/down and left/right scroll.

**User interface font** shows the font used for the application user interface, apart from data tables (see below). Click **Choose...** to choose a new font. Click **Default** to set it back to the operating system default.

**Data table font** shows the font used in the data tables in the **Right** pane. Click **Choose...** to choose a new font. You might prefer a monospaced (fixed width) font such as Consolas, Lucida Console or Courier New. Click **Default** to set it back to the operating system default.

The **Locale** language and country setting affects how some numbers and dates are displayed. Consequently it may have an effect on some transforms. It does not change the language of the user interface, which is English only.

Set **Supported date formats** to [the date formats you wish to recognize](#). List the date formats in order of preference, with the most likely to be used first.

## Input Extensions tab

Set the default file types corresponding to input file extensions.

Click in the **Extension** column and type to change an input file extension. The text will be trimmed of whitespace, converted to lower case and any '.' characters removed.

Click in the **Default type** column and change the drop-down list to change the file type to associate with an input file extension.

Click **Add** to add a new input file extension.

Click **Remove** to remove the selected input file extension(s).

Click **Default** to set the input file extensions back to the default setting.

The order in which input file extensions are shown is not significant.

## Output Extensions tab

Set the default file types corresponding to output file extensions.

Click in the **Extension** column and type to change an output extension. The text will be trimmed of whitespace, converted to lower case and any '.' characters removed.

Click in the **Default type** column and change the drop-down list to change the file type to associate with an output file extension.

Click **Add** to add a new output file extension.

Click **Remove** to remove the selected output file extension(s).

Click **Default** to set the output file extensions back to the default setting.

The order in which output file extensions are shown is not significant.

## 2.2 Input

### 2.2.1 Input data

You need to input data before you can transform it. Data can be input by:

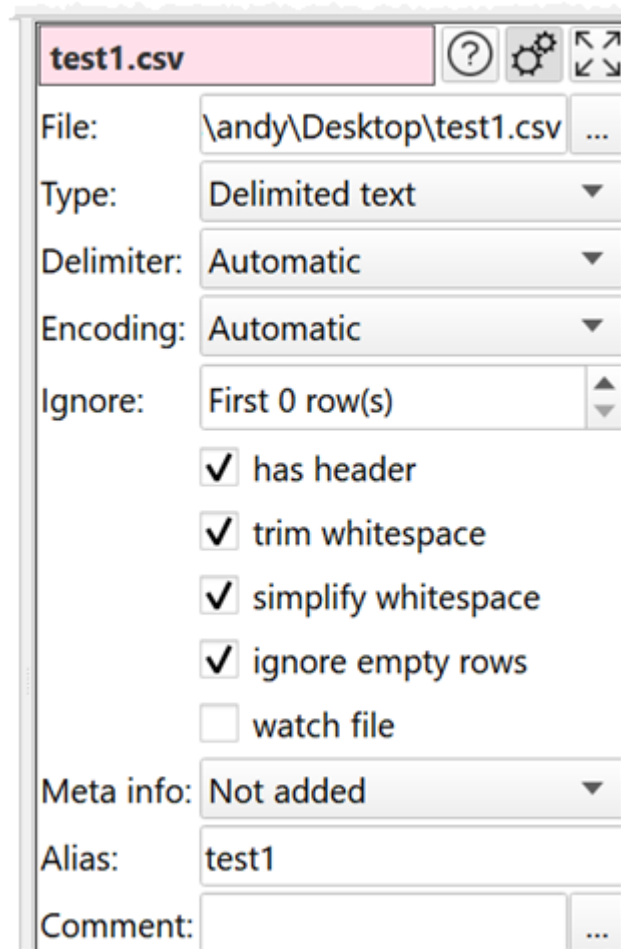
- dragging a file onto the [Center pane](#); or
- clicking the **From File** or **From Clipboard** button in the [Left pane](#)

Enter the file location in **File** or click the browse button. For Excel spreadsheets you also need to add a sheet name, e.g. 'MySpreadsheet.xlsx[Sheet1]'.

Easy Data Transform can input data from files in the following formats:

- delimited text file (e.g. [CSV](#) or [TSV](#)) with various delimiters
- [Excel .xlsx or .xls](#)
- [fixed width](#)
- [JSON](#)
- [vCard](#)
- [XML](#)

You can select the input item in the **Center** pane and change any related options in the [Right pane](#).



Set **Type** to the file type. The default type will be set according to the file extension and the settings in the **Input Extensions** tab of the [Preferences window](#).

Easy Data Transform will make an intelligent guess at the:

- column delimiter (e.g. comma) for delimited text files
- column widths for fixed width text files
- text encoding (e.g. UTF-8) for text files
- presence of a [header](#) row in the data

But you can also do this manually by selecting the input item and changing the **Delimiter**, **Columns**, **Encoding** and **has header** fields in the [Right pane](#).

Data will normally be read from the first non-blank line. Set **Ignore** if you want to ignore a number of rows before you start inputting. Note that empty rows are counted.

Set **Format** to **Long (more rows)** or **Wide (more columns)** depending on how you want to treat arrays/repeat values in [JSON](#) or [XML](#).

Check **trim whitespace** to trim any whitespace (e.g. tabs or spaces) off the start or end of data values.

Check **simplify whitespace** to replace any tabs or line feeds within data values with spaces and remove carriage returns.

Check **ignore empty rows** to remove any rows that have only empty values (whitespace is not considered empty).

Check **watch file** if you want the file to be automatically reloaded every time that Easy Data Transform detects that it has been changed (which will then update everything 'downstream').

Use **Meta info** if you wish to add some [meta information](#) about the input dataset, e.g. the name of an input file or the date it was created.

Use **Alias** to identify the file for [batch processing](#).

Use **Comment** to record any notes that might be useful to a colleague or your future self.

To change the file being used by an input, select the input item and change the file location in the **Right** pane (e.g. by clicking the '...' browse file button), rather than disconnecting the input and connecting a new one. Otherwise column-related parameters downstream will be reset.

## 2.3 Transforms

### 2.3.1 Transform data

Transforms operate on datasets from [input data](#) or other transforms. Some transforms only have a single input (e.g. [Case](#)), some transforms have two inputs (e.g. [Join](#)) and some transforms have two or more inputs (e.g. [Stack](#)).

To create a transform, select one or more input and/or transform items in the [Center pane](#) and then click the appropriate button in the [Left pane](#).

Select from the drop-down list in the **Left** pane to choose which types of transform are displayed, e.g. select **Merge Transforms** to show only transforms related to blending data.

You can select the transform item in the **Center** pane and change any options related to the transform (e.g. which columns it acts on) in the [Right pane](#).

The transform will be updated automatically if any input or transform 'upstream' of it changes.

Use **Comment** to record any notes that might be useful to a colleague or your future self.

### 2.3.2 Case

#### Description

Changes the case of text in one or more columns.

#### Inputs

One.

#### Options

- Check the column(s) you wish to transform.
- Set **Change case to** to **Lower case** (e.g. "text"), **Upper case** (e.g. "TEXT") or **Title case** (e.g. "Text").

#### See also

- [Whitespace](#)

### 2.3.3 Chop

#### Description

Remove characters from the start or end in one or more columns.

#### Inputs

One.

#### Options

- Check the column(s) you wish to transform.
- Set **Length** to the number of characters you want to remove.
- Set **From** to **Start** or **End** depending on whether you want to remove characters from the start or end.

#### Notes

- Whitespace is counted when calculating length. You can use [Whitespace](#) to remove whitespace before chopping.
- If you want to set a column to a fixed length use [Pad](#) and Chop together.

**See also**

- [Extract](#)

**2.3.4 Clone****Description**

Makes an exact copy of the input dataset.

**Inputs**

One.

**Options**

- None.

**Notes**

- Clone can be useful to simplify complicated layouts.

**2.3.5 Compare Cols****Description**

Creates a new column with a comparison of two other columns.

**Inputs**

One.

**Options**

- Select the two columns you wish to compare as **Column 1** and **Column 2**.

**Notes**

- Number, date and text values are treated differently. Any values that can be converted to a number will be treated as a number. Any values that match the supported date formats in [Preferences](#) will be treated as a date. All other values are treated as text.
- Comparisons of text are case and whitespace sensitive. You can use [Case](#) to change the case, [Whitespace](#) to remove whitespace before filtering and [Replace](#) to get rid of other unwanted characters (e.g. whitespace inside the text).
- The new column is added at the right end. You can change the column order with [Reorder Cols](#) and the column name with [Rename Cols](#).

**See also**

- [Split Cols](#)

### 2.3.6 Concat Cols

#### Description

Creates a new column by concatenating text from one or more existing columns.

#### Inputs

One.

#### Options

- Check the columns you wish to concatenate.
- Supply the **Delimiter** you wish to place between concatenated text (optional). For example ",", "
- Check **keep empty** if you wish to keep the delimiter for empty columns.

#### Notes

- If there is a header, the header of the new column is formed from the header of the concatenated columns. You can use [Rename Cols](#) to change the new column name.
- Concatenating a single column makes a copy of the column.
- The values in the column are in the order of the columns. You can change the column order before concatenation with [Reorder Cols](#).
- The new column is added at the right end. You can change the column order with [Reorder Cols](#) and the column name with [Rename Cols](#).
- The opposite of **Concat Cols** is [Split Col](#).

#### See also

- [Concat Rows](#)
- [Substitute](#)

### 2.3.7 Concat Rows

#### Description

Concatenate multiple consecutive rows into a single row.

#### Example

Concatenating this dataset:



	sensor	datetime	value
1	sensor1	1/1/18 0:00	578
2	sensor2	1/1/18 0:00	764
3	sensor1	1/1/18 0:10	541
4	sensor2	1/1/18 0:10	702

Every 2 rows:

**Concat Rows** ? ⚙ ↕

Create 1 row from every:

Gives:

	sensor	datetime	value	sensor	datetime	value
1	sensor1	1/1/18 0:00	578	sensor2	1/1/18 0:00	764
2	sensor1	1/1/18 0:10	541	sensor2	1/1/18 0:10	702

## Inputs

One.

## Options

- Set **Create 1 row from every** to N to concatenate every N rows into 1 row.

## Notes

- Use [New Col](#) if you need to add additional columns before concatenating rows.
- Use [Filter](#) if you need to remove rows before concatenating row.
- Use [Rename Cols](#) if you need to change column names after concatenating rows.
- The opposite of **Concat Rows** is [Split Rows](#).

**See also**

- [Spread](#)
- [Concat Cols](#)

**2.3.8 Copy Cols****Description**

Creates one or more copies of the selected column(s).

**Inputs**

One.

**Options**

- Check the columns you wish to copy.
- Set **Copies** to the number of copies you want to make of each checked column.

**Notes**

- If there is a header, the header of each new column is the original column name. You can rename columns with [Rename Cols](#).
- The new columns are added at the right end. You can change the column order with [Reorder Cols](#).

**See also**

- [New Col](#)

**2.3.9 Count****Description**

Counts the number of occurrence of each item of text in the selected column.

**Inputs**

One.

**Options**

- Select the **Column** whose values you wish to count.
- Set **Sort by** depending on whether you wish to sort alphabetically by the **Text** in the left column or numerically by the **Count** in the right column.
- Set **Order** depending on whether you wish to sort **Ascending** or **Descending**.

**Notes**

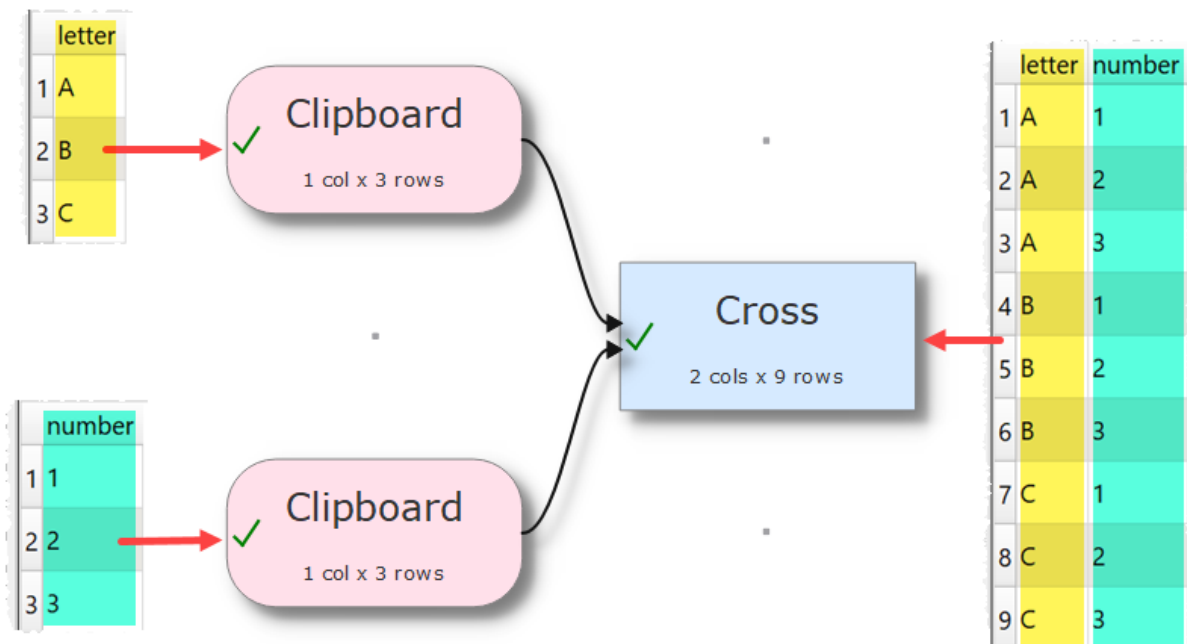
- Date and number values are treated as text.
- You can use [Rename Cols](#) to change the new column name.

**See also**

- [Pivot](#)
- [Stats](#)
- [Summary](#)

**2.3.10 Cross****Description**

Creates an output from combining every possible row combination of each input. E.g. if the first input has N1 rows and the second input has N2 rows, then the result will have N1 X N2 rows. Also known as a 'Cartesian product' or 'cross join'.

**Example****Inputs**

Two or more.

**Options**

- The output depends on the vertical (Y-axis) position of the inputs.

**Notes**

- It can create a very large number of rows!

**See also**

- [Join](#)
- [Stack](#)

**2.3.11 Date Format****Description**

Changes the date format in one or more columns.

**Example**

To change from "31/1/2019" to "01-31-19" set **Format from** to "d/M/yyyy" and **Format to** to "MM-dd-yy".

**Inputs**

One.

**Options**

- Check the columns you wish to transform.
- Supply the existing date format in **Format from** (see below).
- Supply the new date format in **Format to** (see below).
- The following date formats are supported for input and output:

Format	Meaning
d	The day as number without a leading zero (1 to 31)
dd	The day as number with a leading zero (01 to 31)
ddd	The abbreviated localized day name (e.g. 'Mon' to 'Sun'). Uses the locale to localize the name.
dddd	The long localized day name (e.g. 'Monday' to 'Sunday'). Uses the locale to localize the name.
M	The month as number without a leading zero (1 to 12).
MM	The month as number with a leading zero (01 to 12)
MMM	The abbreviated localized month name (e.g. 'Jan' to 'Dec'). Uses the locale to localize the name.
MMMM	The long localized month name (e.g. 'January' to 'December'). Uses the locale to localize the name.
YY	The year as a two digit number (00 to 99).
YYYY	The year as a four digit number. If the year is negative, a minus sign is prepended in addition.

## Notes

- An exact match is expected for the input date. E.g. **Format from** is yyyy-MM-dd then 2020-12-17 will be converted, but 2020-12-17T14:58 won't. You can extract just the date part here using [Split Col](#) with T as the delimiter.
- Use the correct case for the format (e.g. yyyy-MM-dd, not YYYY-mm-DD).
- The **Locale** set in the **Preferences** window is used to decide how the date is represented (e.g. names of months and days).
- You can also use [Split Col](#) to split a date into its component parts. For example to split "31/1/2019" into day, month and year components using the "/" delimiter.

- If the date to be converted has only two year digits, it is treated as a date between 1900 and 1999. E.g. "31/1/19" is interpreted in d-M-yy format as 31st January 1919.
- Warnings are shown in the **Warnings** tab for values that don't match **Format from**.

### See also

- [Num Format](#)

#### 2.3.12 Dedupe

### Description

Remove duplicate rows.

### Example

If you are cleaning up a mailing list, you might want to dedupe on the 'email' column, after converting all the emails to lower case.

### Inputs

One.

### Options

- Check the column(s) you wish to look for duplicate values in.

### Notes

- Rows are considered duplicates if they have exactly the same value in all the checked columns.
- Comparisons are case and whitespace sensitive. You can use [Case](#) to change the case and [Whitespace](#) to remove whitespace before deduping.
- When several rows are duplicates, only the top one is retained.
- The [Unique](#) transform is a more powerful (but more complex and slower) alternative to Dedupe.

### See also

- [Dedupe a dataset](#)

#### 2.3.13 Extract

### Description

Extract a length of text in one or more columns.

### Inputs

One.

## Options

- Check the column(s) you wish to transform.
- Set **Length** to the length you want values in selected columns shortened to.
- Set **From** to **Start** or **End** depending on whether you want to take from the start or end.
- If **From** is **Start** then **Offset** is the offset of the first character from the start (0 to start with the first character). If **From** is **End** then **Offset** is the offset of the last character from the end (0 to start with the last character).

## Notes

- Whitespace is counted when calculating length. You can use [Whitespace](#) to remove whitespace before extracting.
- If you want to set a column to a fixed length use [Pad](#) and Extract together.

## See also

- [Chop](#)


### 2.3.14 Fill

## Description

Fill empty cells in selected columns with the next non-empty cell value above/left (depending on direction of fill).

## Example

This is useful for filling in gaps in hierarchical tables. For example filling down the first two columns:



Country 1	Area 1	City 1
		City 2
		City 3
	Area 2	City 1
		City 2

Country 1	Area 1	City 1
Country 1	Area 1	City 2
Country 1	Area 1	City 3
Country 1	Area 2	City 1
Country 1	Area 2	City 2

## Inputs

One.

## Options

- Check the column(s) you wish to fill.
- Select **Direction** depending on the direction you wish to fill from.

### 2.3.15 Filter

## Description

Removes rows based on number, date and text values in selected columns.

## Inputs

One.

## Options

- Click the '+' button to add a new filter criteria.
- Click the 'x' button to delete the selected filter criteria.
- Select **Keep** if you want to keep matching rows and **Remove** to remove matching rows.
- Select **Matching all** to match on all criteria (e.g. criteria 1 and criteria 2). Select **Matching any** to require a match on one or more criteria (e.g. criteria 1 or criteria 2).
- Set **Column** to the column you wish to match.
- Set **Op.** to the comparison operator.
- Set **Value** to the value you wish to compare.

## Notes

- A filter row is ignored if the **Value** column is empty , except when **Op.** is **Equal to**, **Not equal to**, **Matches regex** or **Doesn't match regex**.
- Number, date and text values are treated differently for **Equal to**, **Greater than**, **Less than**, **Greater than equal**, **Less than equal** and **Not equal to** operations. Any values that can be converted to a number will be treated as a number. Any values that match the supported date formats in [Preferences](#) will be treated as a date.
- All values are treated as text for **Contains**, **Starts with**, **Ends with**, **Matches regex**, **Is not**, **Doesn't start with**, **Doesn't end with** and **Doesn't match regex** operations.
- Comparisons of text are case and whitespace sensitive. You can use [Case](#) to change the case, [Whitespace](#) to remove whitespace before filtering and [Replace](#) to get of other unwanted characters (e.g. whitespace inside the text).
- See here for more details on [Regular expressions](#) (regex).

## See also

- [Slice](#)



### 2.3.16 Gather

#### Description

Gather multiple columns into new key and value columns. Also called unpivot, long pivot or group by.

#### Example

	salesman	area	Q1	Q2	Q3	Q4
1	Alice	North	11.3	89.3	44.3	18
2	Bob	East	4.5	7.9	8	3.3

With columns Q1, Q2, Q3 and Q4 gathered:

**Gather** ?

Filter columns

☐ salesman

☐ area

☒ Q1

☒ Q2

☒ Q3

☒ Q4

4 of 6 columns selected

Key column name: Quarter

Value column name: Amount

Gives:

	salesman	area	Quarter	Amount
1	Alice	North	Q1	11.3
2	Alice	North	Q2	89.3
3	Alice	North	Q3	44.3
4	Alice	North	Q4	18
5	Bob	East	Q1	4.5
6	Bob	East	Q2	7.9
7	Bob	East	Q3	8
8	Bob	East	Q4	3.3

## Inputs

One.

## Options

- Select the **Columns** you wish to gather.
- Set **Key column name** to the name of the new key column, which will have values based on the names of the columns selected.
- Set **Value column name** to the name of the new value column, which will have values based on the values in the columns selected.

## Notes

- New columns are added at the right end. You can change the column order with [Reorder Cols](#).
- You can merge the value and key columns into a single column with [Concat Cols](#).
- The opposite of Gather is [Spread](#).

## See also

- [Split Rows](#)

### 2.3.17 Header




## Description

Move rows from the top of the dataset into the header.

## Example

	Sample	Sample	Sample
1	1	2	3
2	223.33	938.83	9234.82
3	9082.43	946.88	620.09
4	93.97	148.64	455.20

With 1 row appended to the header:

<b>Header</b>	  
Top rows to move:	1
Existing header:	Append
Delimiter:	-

Gives:

	Sample-1	Sample-2	Sample-3
1	223.33	938.83	9234.82
2	9082.43	946.88	620.09
3	93.97	148.64	455.20

## Inputs

One.

## Options

- Set **Top rows to move** to the number of rows you want to move from the top dataset into the header. Setting it to 0 means the transform does nothing.

- Set **Existing header** to **Overwrite** to ignore the existing header values and **Append** to add to the existing header values.
- Set **Delimiter** to any text you want to put between column elements. It can be left empty. Ignored if **Existing header** set to **Overwrite** and **Top rows to move** set to **1**.

## Notes

- Empty cells are ignored.
- You can [Sort](#) and [Filter](#) your dataset to change the top rows.
- You can add the header from one dataset to another dataset using [Stack](#).

## See also

- [Headers](#)

### 2.3.18 If

## Description

Sets the value of a new column based conditionally on values in one or more other columns.

## Inputs

One.

## Options

- Click the **'+IF'** button to add a new IF/ELSE IF..THEN condition.
- Click the **'+AND'** button to add an AND to the selected IF/ELSE IF..THEN.
- Click the **'x'** button to delete the selected IF/ELSE IF..THEN/AND.
- The **Logic** column shows the type of row.
- Set **Column** to the column you wish to match.
- Set **Op.** to the comparison operator.
- Set **Value** to the value you wish to compare.

## Notes

- The **THEN** and **ELSE** values can use [column variables](#). For example:

```
IF x = 0
  THEN $(1)
ELSE
  $(2)
```

- You can simulate OR with multiple IF statements. For example:

```
IF x = 1 OR y = 2
  THEN 3
```

Is equivalent to:

```
IF x = 1
  THEN 3
ELSE IF y = 2
  THEN 3
```

- Number, date and text values are treated differently for **Equal to**, **Greater than**, **Less than**, **Greater than equal**, **Less than equal** and **Not equal to** operations. Any values that can be converted to a number will be treated as a number. Any values that match the supported date formats in [Preferences](#) will be treated as a date.
- All values are treated as text for **Contains**, **Starts with**, **Ends with**, **Matches regex**, **Is not**, **Doesn't start with**, **Doesn't end with** and **Doesn't match regex** operations.
- Comparisons of text are case and whitespace sensitive. You can use [Case](#) to change the case, [Whitespace](#) to remove whitespace before filtering and [Replace](#) to get of other unwanted characters (e.g. whitespace inside the text).
- See here for more details on [Regular expressions](#) (regex).

## See also

- [Lookup](#)

### 2.3.19 Insert

## Description

Append/prepend text to one or more columns.

## Inputs

One.

## Options

- Check the column(s) you wish to transform.
- In **Insert** put the text you want to insert. You can use a [column variable](#).
- In **At** put the position you want the text inserted.

## Notes

- You can use [Whitespace](#) to remove whitespace before inserting.

## See also

- [Pad](#)
- [Extract](#)

### 2.3.20 Interpolate

#### Description

Interpolate values for a dataset based on numerical sample-value pairs in another dataset and puts the result in a new column.

#### Example

If you have time and temperature datasets for sensors A and B with different sampling frequencies, you merge the two datasets by interpolating the temperature values of B for the times A was measured.

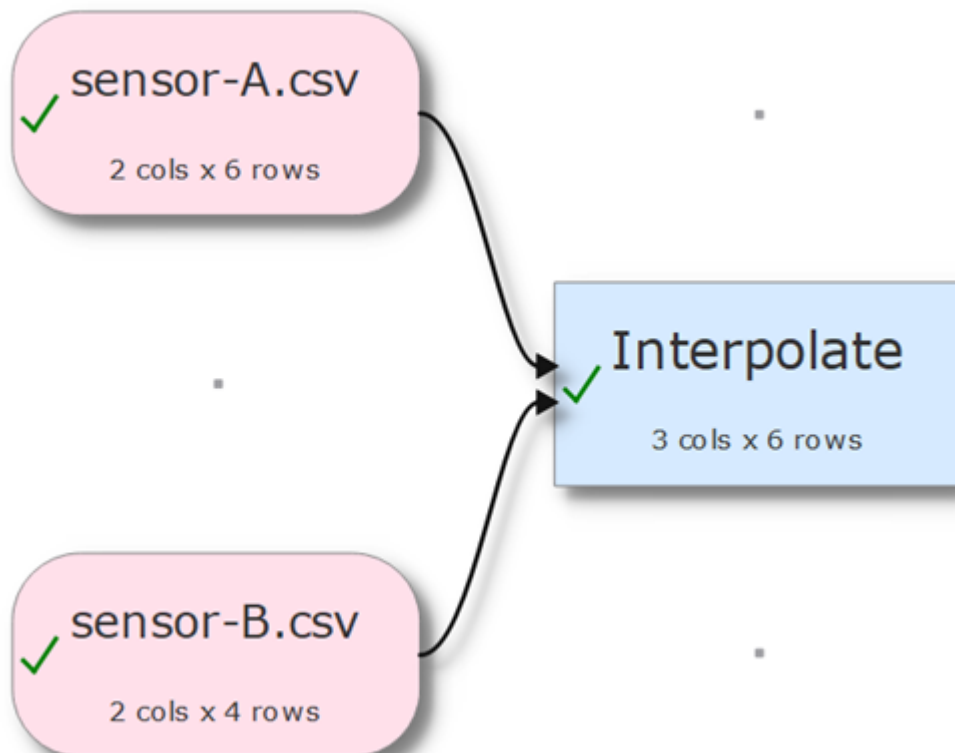
First dataset:

	time A	temperature A
1	0.0	1.134
2	1.0	3.778
3	2.0	2.773
4	3.0	5.039
5	4.0	3.333
6	5.0	2.874

Second dataset:

	time B	temperature B
1	0.0	0.000
2	2.0	1.334
3	4.0	2.697
4	6.0	3.931

Interpolation transform:



Interpolate	
Top Sample column:	time A
Bottom Sample column:	time B
Bottom value column:	temperature B
Interpolation type:	Linear

Result:

	time A	temperature A	Interpolate temperature B
1	0.0	1.134	0
2	1.0	3.778	0.667
3	2.0	2.773	1.334
4	3.0	5.039	2.015
5	4.0	3.333	2.697
6	5.0	2.874	3.314

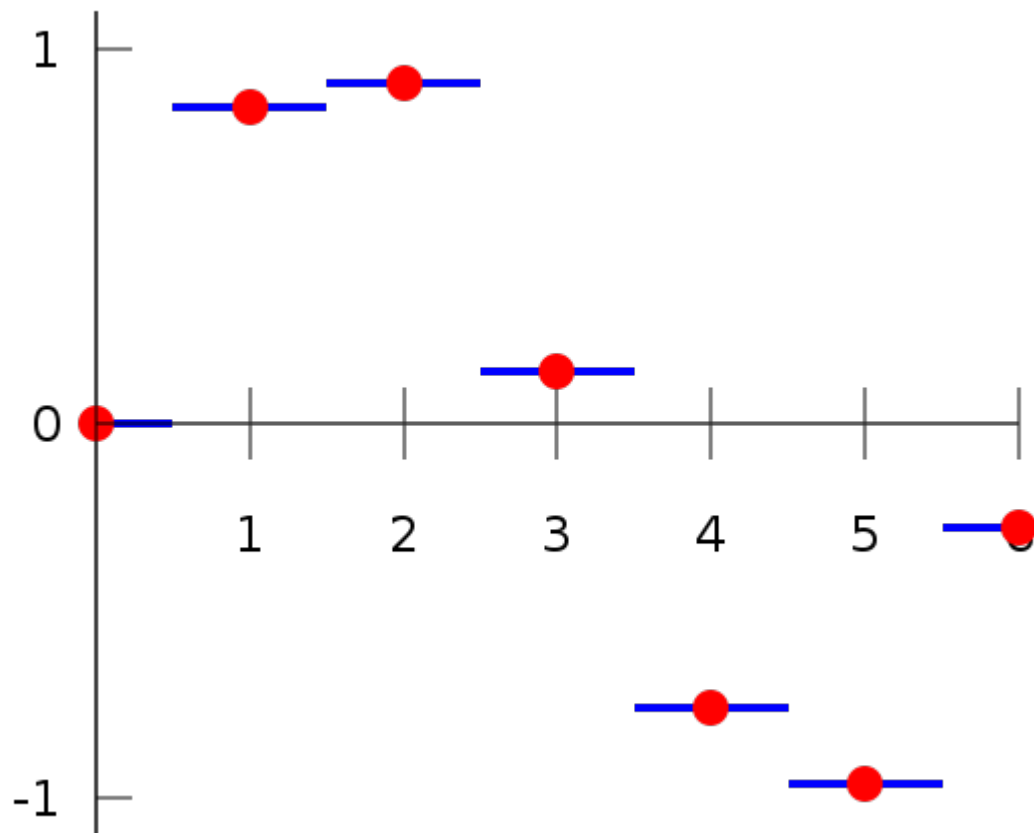
## Inputs

Two.

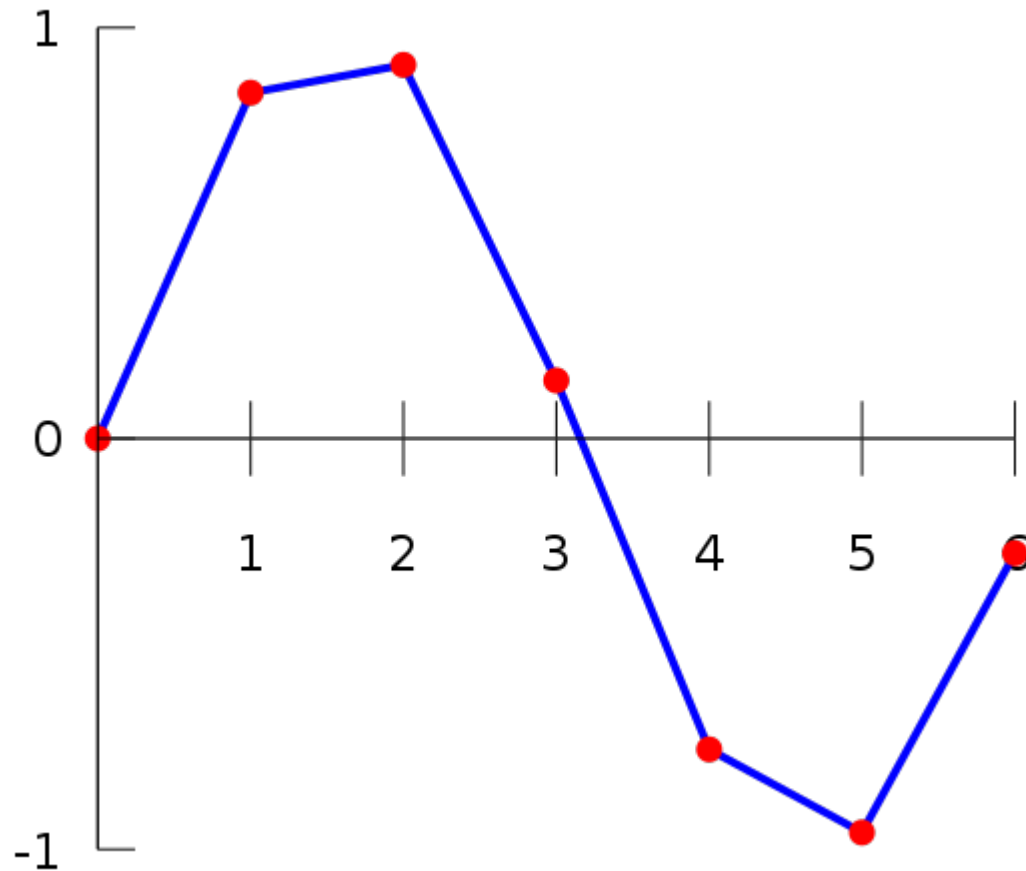
## Options

- Place the dataset you want to modify as the top input and the dataset you want to sample values from as the bottom input.
- Select **Top sample column** for the column whose values you wish to sample.
- Select **Bottom sample column** for the column that matches the top sample column in the bottom dataset.
- Select **Bottom value column** for the column that contains the values.
- Set **Interpolation type** to the type of interpolation you wish to use.





*Piecewise interpolation (image from [Wikipedia](#))*



*Linear interpolation (image from [Wikipedia](#))*

## Notes

- If your sample is below the first sample in the bottom dataset, the first value will be returned.
- If your sample is above the last sample in the bottom dataset, the last value will be returned.
- Easy Data Transform will try to guess sensible default values for **Top sample column**, **Bottom sample column** and **Bottom value column** based on column contents.
- If the first input has a header, this will be used for the output.
- The new column is added at the right end. You can change the column order with [Reorder Cols](#) and the column name with [Rename Cols](#).
- Use [Num Format](#) to change the precision of the results.
- Warnings are shown in the **Warnings** tab for:
  - Non-numeric values in either dataset.
  - Values in **Top sample column** outside the range of values in **Bottom sample column**.

**See also**

- [Lookup](#)
- [Join](#)

**2.3.21 Intersect****Description**

Keep only rows from the top dataset with key values that are present in the lower dataset.

**Inputs**

Two.

**Options**

- The output depends on the vertical (Y-axis) position of the inputs.
- Select **Top key column** for the column you want to match in the top input dataset.
- Select **Bottom key column** for the column you want to match in the bottom input dataset.

**Notes**

- If there are 10k rows or less in both datasets, Easy Data Transform will try to guess sensible default values for **Top key column** and **Bottom key column** based on column header names and contents.
- If the first input has a header, this will be used for the output.
- All values are treated as text and comparisons are case and whitespace sensitive. You can use [Case](#) to change the case and [Whitespace](#) to remove whitespace before the intersect.
- Does not remove duplicates. You can use [Unique](#) to do this.
- You can use [Concat Cols](#) to join several columns together (e.g. 'first name' and 'last name' columns) to form a key column.
- You can use [Row Num](#) to create a unique key column.

**See also**

- [Subtract](#)

**2.3.22 Javascript****Description**

Create a custom transform using Javascript (ECMAScript).

Easy Data Transform allows you to carry out a wide range of data transformations without programming. But sometimes you might need a specialist transformation that can't be done with the built-in transforms. For that you can use the **Javascript** transform. It allows you to

write the body of a Javascript function, to calculate a value for each row in a new column. Existing column values can be used as variables.

Javascript is a fully-fledged programming language and can perform arbitrarily complex transforms. It can handle numbers, dates and text.

## Examples

To multiply the value in column 'items' by the value in column 'item price':

```
return $(items) * $(item price);
```

To concatenate 'last' and 'first' columns with a comma and a space:

```
return $(last) + ', ' + $(first);
```

To calculate the biggest of columns 'v1' and 'v2':

```
return Math.max( $(v1), $(v2) );
```

To determine whether phone numbers in the 'phone\_num' column are valid using a regular expression:

```
const validPhoneNum = /^[+]?[(]?[0-9]{3}[/]?[-\s\.]?[0-9]{3}[-\s\.]?[0-9]{4,6}$/;
if ( validPhoneNum.test( $(phone_num) ) )
    return "valid";
else
    return "invalid";
```

To replace the last comma in the 'Location' column with a ';' using a regular expression:

```
return $(Location).replace(/(.*) , ([^ ]*)$/, '$1;$2');
```

To calculate the number of years difference between [Javascript compatible dates](#) in column 1 and column 2:

```
return new Date( $(1) ).getFullYear() - new Date( $(2) ).getFullYear();
```

To calculate the number of milliseconds between a datetime in the 'datetime' column and 1st Jan 2000:

```
return new Date( $(date) ) - new Date( "2000-01-01T00:00" );
```

To calculate the number of whole days difference between a date in the 'created' column and today (negative for future dates):

```
return Math.floor( ( new Date() - new Date( $(created) ) ) / ( 1000*60*60*24 ) );
```

To use the value of the 'n' column if it is a number and 0 if it isn't:

```
if ( isNaN( $(n) ) )
    return 0;
else
    return $(n);
```

To reverse the text in the 'key' column:

```
var newString = $(key);
for (var i = a.length - 1; i >= 0; i--) {
    newString += a[i];
}
return newString;
```

You can use functions:

```
function metersToFeet( x )
{
    return 3.28084 * x;
}
return metersToFeet( $(meters) );
```

## Inputs

One.

## Options

- Enter your script into the **Javascript** field. The script should be the body of a Javascript function.
- Select a column from **Insert variable** to add that [column variable](#) into the **Javascript** field at the current cursor position.
- Click the **Evaluate** button to evaluate your Javascript expression over every row and show any errors.

## Notes

- The **Javascript** transform is calculated every time:
  - The **Evaluate** button is pressed.
  - The **Javascript** transform item is unselected in the **Center** pane and script changes have been made without the **Evaluate** button being clicked.
  - An item upstream of it changes.
- Numeric values should use dot ('.') as the decimal separator and have no group separator. E.g. 1234.5 is valid, but 1,234.5 and 1.234,5 are not, regardless of the locale set in the **Preferences** window. You can use the [Num Format](#) and [Replace](#) transforms to put numeric data in the correct format before processing a **Javascript** transform.

- The new column is added at the right end. You can change the column order with [Reorder Cols](#) and the column name with [Rename Cols](#).
- The Javascript Date() object evaluates to the number of milliseconds since 1 January 1970 UTC.
- Date values passed to Javascript Date() objects should be in ISO ('yyyy-mm-dd') format, e.g. '2020-01-31' (not '2020-1-31').
- If you want to carry out your transform across more than one dataset, you should merge them first, e.g. using [Join](#).
- The Javascript transform is very versatile and quite fast. But is not as fast as built-in transforms. So we recommend you use built-in transforms where possible.
- Javascript running in Easy Data Transform is not 'sandboxed' and has the same privileges as the Easy Data Transform executable. However the Javascript does not have access to window(), XMLHttpRequest() or ActiveXObject(). So we aren't aware of any way that a bad actor could damage your system from Javascript sent in a .transform file.
- Javascript is far too big a topic to cover here. However there are many detailed resources online. If you are stuck [contact support](#).
- If you only want to combine text from columns, use the simpler [Substitute](#) transform.
- Warnings are shown in the **Warnings** tab for:
  - Javascript syntax errors
  - Ambiguous column references

## See also

- [Find the difference between dates/datetimes](#)

### 2.3.23 Join

#### Description

Join two inputs based on common (key) columns, e.g. on an email address or id column present in both inputs.

#### Example

Joining these two datasets by the **ID** column in each:

	Name	ID	DOB
1	John Black	001	1966-07-01
2	Paul White	002	1973-03-11
3	Barry Green	003	1977-12-30
4	Jane Brown	004	1980-11-03
5	Jill Taupe	005	1981-03-01

+

	ID	Department	Level
1	001	Engineering	1
2	003	Engineering	2
3	004	Marketing	1
4	002	Sales	2
5	005	Sales	3

Gives:

	Name	ID	DOB	Department	Level
1	John Black	001	1966-07-01	Engineering	1
2	Paul White	002	1973-03-11	Sales	2
3	Barry Green	003	1977-12-30	Engineering	2
4	Jane Brown	004	1980-11-03	Marketing	1
5	Jill Taupe	005	1981-03-01	Sales	3

## Inputs

Two.

## Options

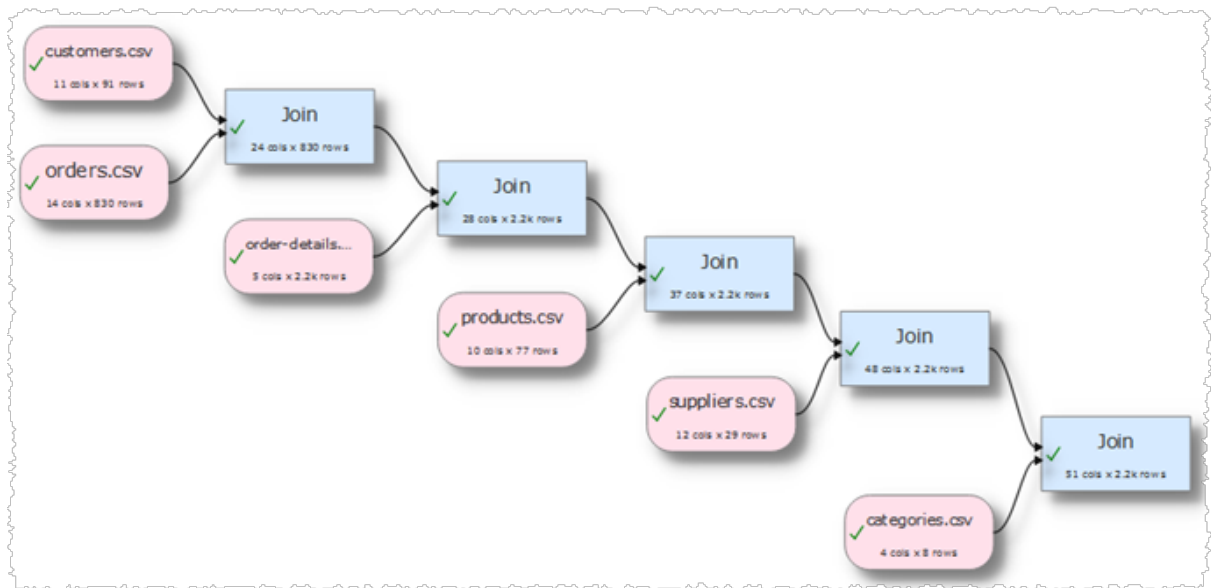
- The output depends on the vertical (Y-axis) position of the inputs.
- Select **Top key column** for the column you want to match in the top input dataset.
- Select **include top non-matching rows** if you want to include in the output any rows in the top input with no matching value in the bottom input.
- Select **Bottom key column** for the column you want to match in the bottom input dataset.
- Select **include bottom non-matching rows** if you want to include in the output any rows in the bottom input with no matching value in the top input.

include top non-matching rows checked	include bottom non-matching rows checked	Also known as:
No	No	Inner join
No	Yes	Right outer join
Yes	No	Left outer join
Yes	Yes	Full outer join

## Notes

- Join merges two datasets side-by-side (horizontally). To merge datasets one on top of the other (vertically) use [Stack](#).
- If there are 10k rows or less in both datasets, Easy Data Transform will try to guess sensible default values for **Top key column** and **Bottom key column** based on column header names and contents.
- All values are treated as text and comparisons are case and whitespace sensitive. You can use [Case](#) to change the case and [Whitespace](#) to remove whitespace before the intersect.
- If a key value occurs M times in the first dataset and N times in the second dataset, you will get M x N rows with this key value. You can use [Unique](#) to remove rows with duplicate key values.
- Use [Concat Cols](#) to join several columns together (e.g. 'first name' and 'last name' columns) to form a key column.
- Use [Row Num](#) to create a unique key column.
- Use the [Cross](#) transform for cross joins.
- Warnings are shown in the **Warnings** tab for:
  - Keys that only occur in 1 of the 2 datasets (misses).
  - Keys that occur more than once in either dataset (duplicates).
- Cascade multiple joins to join more than 2 datasets.





## See also

- Video: [How to join Excel files](#)
- [Cross](#)
- [Lookup](#)
- [Interpolate](#)
- [Merge datasets](#)

### 2.3.24 Lookup

## Description

Looks up the values of a column in the top input dataset in the bottom input dataset and puts the result in a new column.

## Example

If you have one dataset with category IDs and another dataset with category IDs and category names, you can create a new category name column in the first dataset by looking up the category ID in the second dataset.

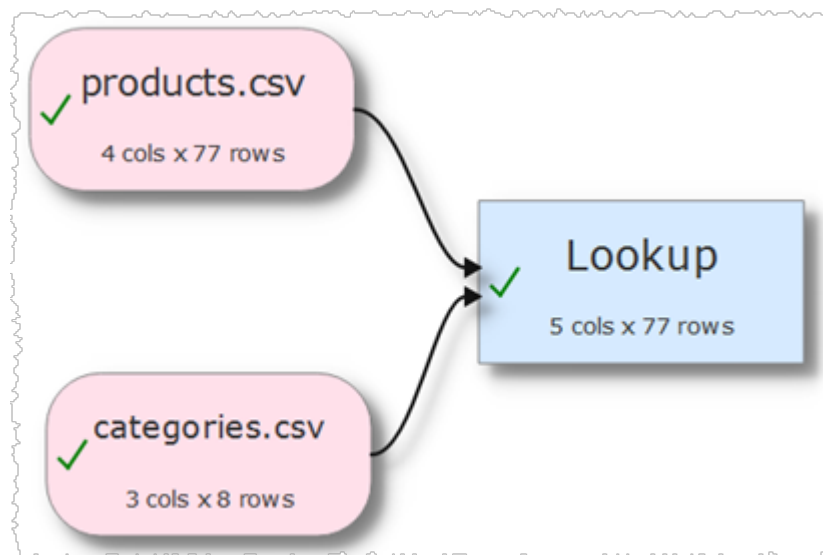
First dataset:

	ProductID	ProductName	SupplierID	CategoryID
1	1	Chai	1	1
2	2	Chang	1	1
3	3	Aniseed Syrup	1	2
4	4	Chef Anton's Cajun Seasoning	2	2
5	5	Chef Anton's Gumbo Mix	2	2

Second dataset:

	CategoryID	CategoryName	Description
1	1	Beverages	Soft drinks coffees teas beers and ales
2	2	Condiments	Sweet and savory sauces relishes spreads and seasonings
3	3	Confections	Desserts candies and sweet breads

Lookup transform:



Lookup

?

⚙️

↕️

Top lookup column: CategoryID

Bottom lookup column: CategoryID

Bottom value column: CategoryName

Bottom values used: First

If no match: Use no match value

No match value:

Comment:

Result:

	ProductID	ProductName	SupplierID	CategoryID	Lookup CategoryName
1	1	Chai	1	1	Beverages
2	2	Chang	1	1	Beverages
3	3	Aniseed Syrup	1	2	Condiments
4	4	Chef Anton's Cajun Seasoning	2	2	Condiments
5	5	Chef Anton's Gumbo Mix	2	2	Condiments

## Inputs

Two.

## Options

- Place the dataset you want to modify as the top input and the dataset you want to lookup values from as the bottom input.
- Select **Top lookup column** for the column whose values you wish to lookup.
- Select **Bottom lookup column** for the column that matches the lookup in the bottom dataset.
- Select **Bottom value column** for the column that contains the values.
- Set **Bottom values used** to **First** if you want use the first match in **Bottom lookup column** and **All** if you want to use all matches.
- Set **If no match** to **Use not match value** or **Leave unchanged** depending on what you want to do for values in **Top lookup column** that do not exist in **Bottom lookup column**.

- Set **No match value** to the value you want to use for values in **Top lookup column** that do not exist in **Bottom lookup column** when **If no match** is set to **Use no match value**.

## Notes

- Easy Data Transform will try to guess sensible default values for **Top lookup column**, **Bottom lookup column** and **Bottom value column**.
- **Bottom values used** is only important if there are duplicate values in the **Bottom lookup column**.
- If the first input has a header, this will be used for the output.
- All values are treated as text and comparisons are case and whitespace sensitive. You can use [Case](#) to change the case and [Whitespace](#) to remove whitespace before the intersect.
- If you want to lookup values in multiple columns, use [Concat Cols](#) to join several columns together to form new columns.
- The new column is added at the right end. You can change the column order with [Reorder Cols](#) and the column name with [Rename Cols](#).
- Warnings are shown in the **Warnings** tab for:
  - Values that cannot be found in the bottom dataset (misses).
  - Values that occur more than once in the bottom dataset (duplicates), if **Bottom values used** is **First**.

## See also

- [If](#)
- [Interpolate](#)
- [Join](#)

### 2.3.25 New Col

## Description

Adds a new column, filled with a given value.

## Inputs

One.

## Options

- Set **New column value** to the value for every cell of the new column. You can leave it blank for an empty column.

## Notes

- New columns are always added at the right end. You can change the column order with [Reorder Cols](#) and the column name with [Rename Cols](#).

**See also**

- [Copy Cols](#)
- [Remove Cols](#)

**2.3.26 Num Format****Description**

Change the number format in one or more columns.

**Inputs**

One.

**Options**

- Check the column(s) you wish to transform.
- Set **Format** to the new number format (see below).
- For the **e**, **E**, and **f** formats, **Precision** represents the number of digits after the decimal point. For the **g** and **G** formats, **Precision** represents the maximum number of significant digits (trailing zeros are omitted). For the **s** format **Precision** is ignored. The following number formats are supported:

Format	Meaning
e	Format as [-]9.9e[+ -]999. E.g. 1234567.89 is shown as 1.235e+06.
E	Format as [-]9.9E[+ -]999. E.g. 1234567.89 is shown as 1.235E+06.
f	Format as [-]9.9. E.g. 1234567.89 is shown as 1234567.89.
g	Use e or f format, whichever is the most concise.
G	Use E or f format, whichever is the most concise.
s	The shortest accurate representation for the given number without exponents. E.g. 1234567.00 is shown as 1234567.

- Check **use group separators** to include the group separators for your locale. E.g. to turn 1234567 to 1,234,567 for a UK or US locale.
- Set **Non-numeric** according to what you want to do with non-numeric values in transformed columns. NaN means Not a Number.

## Notes

- The **Locale** set in the **Preferences** window is used to decide how the number is represented (e.g. group and decimal separators).
- Non-numerical values are ignored.
- You can also use [Extract](#) and [Pad](#) to change the number of characters.
- Warnings are shown in the **Warnings** tab for non-numeric values.

## See also

- [Date Format](#)

### 2.3.27 Pad

## Description

Pad text to a minimum length in one or more columns.

## Inputs

One.

## Options

- Check the column(s) you wish to transform.
- Set **Minimum length** to the length you want values in selected columns padded to. Values this length or longer are unaffected.
- Set **Pad** to **Left** or **Right** depending on where you want any padding characters added.
- Set **Pad with** to the character you want to pad with.

## Notes

- Whitespace is counted when calculating length. You can use [Whitespace](#) to remove whitespace before padding.

### 2.3.28 Pivot

## Description

Creates a pivot table to summarise values for one or two columns.

## Inputs

One.

## Options

- Set **Column** to the column values you want to use as columns in your pivot table.
- Set **Rows** to the column values you want to use as rows in your pivot table.
- Set **Values** to the column you wish to summarize.

- Set **Summarize by** to how you wish to summarize the values:
  - **Sum** show the sum of the values. Non-numeric and empty values are ignored.
  - **Minimum** shows the smallest value. Non-numeric and empty values are ignored.
  - **Maximum** shows the largest value. Non-numeric and empty values are ignored.
  - **Average** shows the arithmetic mean of the values. Non-numeric and empty values are ignored.
  - **Median** shows the median of numeric values in the column. Non-numeric and empty values are ignored.
  - **Mode** shows the mode of numeric values in the column. Non-numeric and empty values are ignored.
  - **Standard deviation** is the sample standard deviation (equivalent to Excel function `stddev.s`). Non-numeric and empty values are ignored.
  - **Count** shows the number of values. Empty values are ignored (a value that contains whitespace is not considered empty).
- Set **Set non-calculated** depending on how you want to set cells not calculated by the pivot.
- Check **add totals** to add row and/or column totals.

## Notes

- **Mode** may not work as expected with non-integer values, due to precision issues. You can fix this by using a [Num Format](#) transform first.
- Use [Num Format](#) to change the precision of the results.

## See also

- [Count](#)
- [Stats](#)
- [Summary](#)

### 2.3.29 Remove Cols

## Description

Removes columns.

## Inputs

One.

## Options

- Uncheck the column(s) you wish to remove.

## Notes

- The column will be removed from any dataset 'downstream'.

**See also**

- [New Col](#)

**2.3.30 Rename Col**

This transform is deprecated. Use [Rename Cols](#) instead.

**Description**

Rename a column header.

**Inputs**

One.

**Options**

- Select the column header you wish to rename in **Column**.
- Set **Rename to** to the new column header name.

**Notes**

- The names of column headers do not have to be unique.

**2.3.31 Rename Cols****Description**

Rename column headers.

**Inputs**

One.

**Options**

- Change the column headers using the **New name** column.
- Click **Lower** to change all the names in the **New name** column to lower case.
- Click **Upper** to change all the names in the **New name** column to upper case.
- Click **Title** to change all the names in the **New name** column to title case.
- Click **Reset** to change all the names in the **New name** column back to their original name.

**Notes**

- The names of column headers do not have to be unique.
- Warnings are shown in the **Warnings** tab for duplicate column names (case sensitive).



### 2.3.32 Reorder Cols

#### Description

Reorder columns.

#### Inputs

One.

#### Options

Drag the columns into the desired order (left-most at the top).

Click the **Move first** button to move the selected columns to be first.

Click the **Move up** button to move the selected columns up one place.

Click the **Move down** button to move the selected columns down one place.

Click the **Move last** button to move the selected columns to be last.

Click the **Reset** button to restore the original column order.

#### Notes

You can also rename columns with [Rename Cols](#) and remove unwanted columns with [Remove Cols](#).

### 2.3.33 Replace

#### Description

Replace text in one or more columns.

#### Examples

To turn 0123456789 into (+44) 1234 56789 using a Regular expression:

Match type:	Regex
Replace:	0(\d\d\d\d)(\d\d\d\d\d)
With:	(+44) \1 \2

To replace values that are empty or contain only whitespace with 0 using a Regular expression:

Match type:	Regex ▼
Replace:	^\s*\$
With:	0

## Inputs

One.

## Options

- Check the column(s) you wish to transform.
- Choose whether to use text or [Regular expression](#) matching.
- In **Replace** put the text you want to replace. You can use a [column variable](#).
- In **With** put the text you want to replace it with. You can use a [column variable](#).

## Notes

- Comparisons are case and whitespace sensitive. You can use [Case](#) to change the case and [Whitespace](#) to remove whitespace before replacing.

## See also

- [Insert](#)
- [Substitute](#)

### 2.3.34 Row Num

## Description

Add a new column that contains the row number.

## Inputs

One.

## Options

- Set **Start at** to the number you want to use for the first row.
- Set **Increment** to the amount you wish to increment by.
- set **Every** to how often to apply the increment (e.g. set to 5 to increment once every 5 rows).

## Notes

- The new column is added at the right end. You can change the column order with [Reorder Cols](#) and the column name with [Rename Cols](#).

### 2.3.35 Sample

#### Description

Selects a subset of rows from the input.

#### Inputs

One.

#### Options

- Set **Rows** to the number of rows you want to output. If it is the same or greater than the number of rows in the input, then the input will be unaffected.
- Set **Select** depending on how you want the rows sampled.
- Check **disable sampling** to turn off sampling. If sampling is disabled, the transform does nothing.

#### Notes

- If you are transforming a large dataset, then you can use **Sample** to test a small subset.
- If you need to do something more complex than **Sample** can handle (e.g. keep only rows 500 to 1000) then use [Row Num](#) followed by a [Filter](#). For the most complex cases use **Row Num**, followed by [Javascript](#), followed by a **Filter**. E.g. this **Javascript** function returns 1 for every 10th row between 1000 and 2000 and 0 otherwise:

```
return $(Row Num) >= 1000 & $(Row Num) <= 2000 & $(Row Num) % 10 == 0;
```

### 2.3.36 Slice

#### Description

Keep or remove a continuous section of rows.

#### Example

To keep only the records between the YEAR rows in this data:

	1	2	3	4	5	6	7
1	YEAR	JAN	FEB	MAR	APR	MAY	JUN
2	1980	267.72	267.81	267.85	267.96	268.18	268.05
3	1981	267.35	267.38	267.66	267.86	267.98	267.55
4	1982	267.39	267.40	267.56	267.68	267.96	267.82
5	1983	268.20	268.06	268.38	268.51	268.44	267.93
6	1984	267.09	267.36	267.62	267.62	267.59	267.41
7	1985	267.09	267.27	267.45	267.58	267.81	267.32
8	YEAR	JAN	FEB	MAR	APR	MAY	JUN
9	1986	267.35	267.38	267.66	267.86	267.98	267.55
10	1987	267.09	267.36	267.62	267.62	267.59	267.41

Keep the slice from the first YEAR row to the next YEAR row and don't include the 'From' and 'To' rows:

Slice

?

⚙️

↕

Mode:

Keep

From:

First row where

Column:

1

Matches:

= Equal to

Value:

YEAR

☐ include 'From' row

To:

Next row where

Column:

1

Matches:

= Equal to

Value:

YEAR

☐ include 'To' row

To give:

	1	2	3	4	5	6	7
1	1980	267.72	267.81	267.85	267.96	268.18	268.05
2	1981	267.35	267.38	267.66	267.86	267.98	267.55
3	1982	267.39	267.40	267.56	267.68	267.96	267.82
4	1983	268.20	268.06	268.38	268.51	268.44	267.93
5	1984	267.09	267.36	267.62	267.62	267.59	267.41
6	1985	267.09	267.27	267.45	267.58	267.81	267.32

## Inputs

One.

## Options

- Set **Mode** depending on whether you want to keep or remove the slice.
- Set **From** according to how you want to choose the first row of the slice.
- Set **Column**, **Matches** and **Value** to match the first row.
- Uncheck **Include 'From' row** if you don't want to include the first row in the slice.
- Set **To** according to how you want to choose the last row of the slice.
- Set **Column**, **Matches** and **Value** to match the last row.
- Uncheck **Include 'To' row** if you don't want to include the last row in the slice.

## Notes

- Number, date and text values are treated differently for **Equal to**, **Greater than**, **Less than**, **Greater than equal**, **Less than equal** and **Not equal to** operations. Any values that can be converted to a number will be treated as a number. Any values that match the supported date formats in [Preferences](#) will be treated as a date.
- All values are treated as text for **Contains**, **Starts with**, **Ends with**, **Matches regex**, **Is not**, **Doesn't start with**, **Doesn't end with** and **Doesn't match regex** operations.
- Comparisons of text are case and whitespace sensitive. You can use [Case](#) to change the case, [Whitespace](#) to remove whitespace before filtering and [Replace](#) to get of other unwanted characters (e.g. whitespace inside the text).
- See here for more details on [Regular expressions](#) (regex).
- If you want to keep or remove a selection of rows by row number, use a [Row Num](#) transform followed by a [Filter](#) transform.

### 2.3.37 Sort

## Description

Sorts rows by one or more columns.

## Inputs

One.

## Options

- Click the '+' button to add a new sort level.
- Click the 'x' button to delete the selected sort level(s).
- Click the up arrow to move the selected sort level(s) up.
- Click the down arrow to move the selected sort level(s) down.
- Set **Column** to the column you want to sort by.
- Set **Order** depending on whether you want to sort this column **Ascending** or **Descending**.

## Notes

- If you add multiple levels, it will sort by level 1 then level 1 values that are the same will be sorted by level 2 etc.
- Number, date and text values are treated differently for comparison purposes.
- Any values that can be converted to numbers will be treated as numbers.
- Any values that match the supported date formats in [Preferences](#) will be treated as dates.
- Comparisons of text are case and whitespace sensitive. You can use [Case](#) to change the case and [Whitespace](#) to remove whitespace before filtering.

### 2.3.38 Split Col

## Description

Creates one or more new columns by splitting text at delimiters in a selected column.

## Inputs

One.

## Options

- Select the **Column** you wish to split.
- Supply the **Delimiter** you wish to use to split the column.
- Set **Ordering** depending on how you want to order values after splitting.
- Check **keep empty** if you wish to honor delimiters with nothing in between.
- set **Min. new cols** to the minimum number of new columns you wish to add.
- set **Max. new cols** to the maximum number of new columns you wish to add (ignored if less than minimum).

## Notes

- If no **Delimiter** is supplied then no new columns are created.
- New columns are added at the right end. You can change the column order with [Reorder Cols](#).
- If there is a header, the header of the new column is based on the original header. You can change the column name with [Rename Cols](#).
- The opposite of **Split Col** is [Concat Cols](#).

## See also

- [Split Rows](#)

### 2.3.39 Split Rows

## Description

Split each row into multiple rows.

## Example

Splitting these rows:

	Guest title	Guest first name	Guest last	Spouse title	Spouse first name	Spouse last name
1	Mr	John	Smith	Dr	Jane	Smith
2	Mr	Bill	Brown	Mrs	Andrea	Brown

Before each column containing 'title':

Split Rows

☒ when column name
 

c

title

Gives:

	Guest title	Guest first name	Guest last
1	Mr	John	Smith
2	Dr	Jane	Smith
3	Mr	Bill	Brown
4	Mrs	Andrea	Brown

## Inputs

One.

## Options

- Split by column name:
  - Each row will be split before each column that matches the criteria. The matching is sensitive to case and whitespace.
- Split a fixed number of times:
  - Define the number of **times** you want to split each row, **starting at** which column and **then every** N columns.



- The split is added before the designated columns.
- Splits after the last column are ignored. So you can set **times** to a large number if you don't know how many columns there will be.
- Split automatically:
  - Find the first column name that appears more than once and split each row before each column with that name.

## Notes

- Use the keyboard `Up` and `Down` arrow keys to move the focus between the 'radio' buttons.
- Splits added before the first column are ignored, as there is already a split there.
- Use [New Col](#) or [Rename Cols](#) if you need to add additional columns or rename columns before splitting rows.
- The opposite of **Split Rows** is [Concat Rows](#).

## See also

- [Gather](#)
- [Split Col](#)

### 2.3.40 Spread

## Description

Spread a column into multiple new columns. Also called wide pivot or crosstab.

## Example

	salesman	area	Quarter	Amount
1	Alice	North	Q1	11.3
2	Alice	North	Q2	89.3
3	Alice	North	Q3	44.3
4	Alice	North	Q4	18
5	Bob	East	Q1	4.5
6	Bob	East	Q2	7.9
7	Bob	East	Q3	8
8	Bob	East	Q4	3.3

With Quarter and Amount columns spread:

**Spread** ? ↕

Key column: Quarter ▼

Value column: Amount ▼

Gives:

	salesman	area	Q1	Q2	Q3	Q4
1	Alice	North	11.3	89.3	44.3	18
2	Bob	East	4.5	7.9	8	3.3

## Inputs

One.

## Options

- Select the **Key column** and **Value column** you wish to spread.
- **Missing values** is used for values missing from the input dataset.
- set **Min. new cols** to the minimum number of new columns you wish to add.
- set **Max. new cols** to the maximum number of new columns you wish to add (ignored if less than minimum).

## Notes

- If there are rows that are duplicates, apart from the value column, this will cause errors.
- New columns are added at the right end. You can change the column order with [Reorder Cols](#).
- You can merge the new columns into a single column with [Concat Cols](#).
- The opposite of Spread is [Gather](#).

### 2.3.41 Stack

## Description

Stack the rows from inputs, one on top of the other.

## Example

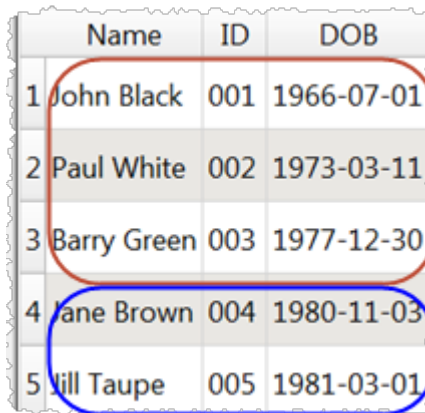
Stacking these two datasets by the **ID** column in each:

	Name	ID	DOB
1	John Black	001	01/07/1966
2	Paul White	002	11/03/1973
3	Barry Green	003	30/12/1977

+

	Name	ID	DOB
1	Jane Brown	004	03/11/1980
2	Jill Taupe	005	01/03/1981

Gives:



	Name	ID	DOB
1	John Black	001	1966-07-01
2	Paul White	002	1973-03-11
3	Barry Green	003	1977-12-30
4	Jane Brown	004	1980-11-03
5	Jill Taupe	005	1981-03-01

## Inputs

One or more.

## Options

- Select **Align columns by** to **Header name** if you want line up column values by header name (e.g. the 'id' column in input 1 with the 'id' column in input 2) and **Column number** to align by the column number (e.g. the first column of input 1 with the first column of input 2). The headers will be matched case insensitive (e.g. 'id' to 'ID'), if no case sensitive match is possible.
- The output depends on the vertical (Y-axis) position of the inputs.

## Notes

- Stack merges two datasets one on top of the other (vertically). To merge datasets side-by-side (horizontally) use [Join](#).
- If you align by **Column number** the header of the first input is used.
- Warnings are shown in the **Warnings** tab for duplicated column names within an input dataset when **Align columns by** is set to **Header name**.

## See also

- [Cross](#)
- [Join](#)
- [Merge datasets](#)

### 2.3.42 Stamp

## Description

Adds a time/date stamp as a new row or a new column.

## Inputs

One.

## Options

- Supply the processing date/time format in **Format** (see below).

Format	Meaning
d	The day as number without a leading zero (1 to 31)
dd	The day as number with a leading zero (01 to 31)
ddd	The abbreviated localized day name (e.g. 'Mon' to 'Sun'). Uses the system locale to localize the name.
dddd	The long localized day name (e.g. 'Monday' to 'Sunday'). Uses the system locale to localize the name.
M	The month as number without a leading zero (1 to 12).
MM	The month as number with a leading zero (01 to 12)
MMM	The abbreviated localized month name (e.g. 'Jan' to 'Dec'). Uses the system locale to localize the name.
MMMM	The long localized month name (e.g. 'January' to 'December'). Uses the system locale to localize the name.
YY	The year as two digit number (00 to 99).
YYYY	The year as four digit number. If the year is negative, a minus sign is prepended in addition.
h	The hour without a leading zero (0 to 23 or 1 to 12 if AM/PM display).
hh	The hour with a leading zero (00 to 23 or 01 to 12 if AM/PM display).

Format	Meaning
H	The hour without a leading zero (0 to 23, even with AM/PM display).
HH	The hour with a leading zero (00 to 23, even with AM/PM display).
m	The minute without a leading zero (0 to 59).
mm	The minute with a leading zero (00 to 59).
s	The whole second without a leading zero (0 to 59).
ss	The whole second with a leading zero where applicable (00 to 59).
z	The fractional part of the second, to go after a decimal point, without trailing zeroes (0 to 999). Thus "s.z" reports the seconds to full available (millisecond) precision without trailing zeroes.
AP or A	The fractional part of the second, to millisecond precision, including trailing.
ap or a	Use am/pm display. a/ap will be replaced by either "am" or "pm".
t	The timezone (for example "CEST").

- Select from **Position** whether you want the stamp row added to the start or end of the dataset or to every row in a new column.

## Notes

- If you add the stamp to **Every Row** you can move the column using [Reorder Cols](#).

## See also

- [Meta information](#)

### 2.3.43 Stats

#### Description

Calculates the sum, minimum, maximum, average, median, standard deviation or mode of numeric values by column or row in one or more selected columns.

#### Inputs

One.

#### Options

- Check the column(s) you wish to calculate stats for.
- Set **Calculation** to the statistic you want to calculate:
  - **Sum** show the sum of the values.
  - **Minimum** shows the smallest value.
  - **Maximum** shows the largest value.
  - **Average** shows the arithmetic mean of the values.
  - **Median** shows the median of numeric values in the column.
  - **Mode** shows the mode of numeric values in the column.
  - **Standard deviation** is the sample standard deviation (equivalent to Excel function `stddev.s`).
- Set **On** depending on whether you wish to calculate the statistics for columns, rows or both.
  - If **On** is set to **Columns** an extra row with the results is added to the bottom.
  - If **On** is set to **Rows** an extra column with the results is added to the right.
  - If **On** is set to **Columns and rows** an extra row with the results is added to the bottom and extra column with the results is added to the right. The bottom right cell contains the calculation across all values.

#### Notes

- Non-numerical and empty values are ignored.
- **Mode** may not work as expected with non-integer values, due to precision issues. You can fix this by using a [Num Format](#) transform first.
- Use [Num Format](#) to change the precision of the results.

#### See also

- [Count](#)
- [Pivot](#)
- [Summary](#)

## 2.3.44 Substitute

**Description**

Substitute column values into text.

**Example**

To create SQL statements to insert 'Country', 'Year', 'Key' and 'Value' column values:

```
INSERT INTO mytable(Country,Year,Key,Value) VALUES ($(Country),$(Year),$(Key),$(Value));
```

Substitute

New column name: SQL

Substitution script:

INSERT INTO mytable(Country,Year,Key,Value) VALUES (\$(Country),\$(Year),\$(Key),\$(Value));

Insert variable: <select>

Comment:

Substitute column values into text.

	Country	Year	Key	Value	SQL
1	Afghanistan	1999	cases	745	INSERT INTO mytable(Country,Year,Key,Value) VALUES (Afghanistan,1999,cases,745);

**Inputs**

One.

**Options**

- Enter your substitution script into the **Substitution script** field.
- Select a column from **Insert variable** to add that [column variable](#) into the **Substitution script** field at the current cursor position.
- Click the **Evaluate** button to evaluate your script over every row.

**Notes**

- The transform is calculated every time:
  - The **Evaluate** button is pressed.
  - The **Substitute** transform item is unselected in the **Center** pane and script changes have been made without the **Evaluate** button being clicked.
  - The item upstream of it changes.



- The new column is added at the right end. You can change the column order with [Reorder Cols](#) and the column name with [Rename Cols](#).
- If you want to carry out your transform across more than one dataset, you should [Join](#) them first.
- If you need to do something more complex than this transform allows, try the [Javascript](#) transform.
- Warnings are shown in the **Warnings** tab for ambiguous column references.

### 2.3.45 Subtract

#### Description

Remove rows from the top dataset with key values that are present in the lower dataset.

#### Inputs

Two.

#### Options

- The output depends on the vertical (Y-axis) position of the inputs.
- Select **Top key column** for the column you want to match in the top input dataset.
- Select **Bottom key column** for the column you want to match in the bottom input dataset.

#### Notes

- If there are 10k rows or less in both datasets, Easy Data Transform will try to guess sensible default values for **Top key column** and **Bottom key column** based on column header names and contents.
- If the first input has a header, this will be used for the output.
- All values are treated as text and comparisons are case and whitespace sensitive. You can use [Case](#) to change the case and [Whitespace](#) to remove whitespace before the subtract.
- All rows in the top dataset with a given key value are removed if that key value occurs 1 or more times in the bottom dataset.
- You can use [Concat Cols](#) to join several columns together (e.g. 'first name' and 'last name' columns) to form a key column.
- You can use [Row Num](#) to create a unique key column.

#### See also

- [Intersect](#)

### 2.3.46 Summary

#### Description

Summarise the values in the selected columns.

## Inputs

One.

## Options

- Select the **Columns** you wish to summarise.
- Check **include dates** if you wish to check for date values using [supported date formats](#). This can be slow for large datasets.
- Check **include statistics** if you wish to add the sum, average, median and standard deviation for numeric values.

## Notes

- **Empty values** is the number of values in the column that are completely empty. Values with whitespace do not count as empty.
- **Numeric values** is the number of numeric of values in the column that can be interpreted as a number.
- **Date values** is the number of values in the column that can be interpreted as a date. Only shown if **check for dates** is checked.
- **Text values** is the number of values in the column that cannot be interpreted as empty, numeric or date.
- **Unique values** is the number of unique values in the column. Empty values are not counted. Date and numeric values are treated as text (e.g. '7' is treated as different to '7.0' and '1/1/2020' is treated as different to '01/01/2020'). Comparison between values is sensitive to case and whitespace.
- **Min length** is the minimum number of characters of a value in the column. Whitespace is counted. Date and numeric values are treated as text.
- **Max length** is the maximum number of characters of a value in the column. Whitespace is counted. Date and numeric values are treated as text.
- **Min numeric** is the minimum numeric value in the column. Non-numeric and empty values are ignored.
- **Max numeric** is the maximum numeric value in the column. Non-numeric and empty values are ignored.
- **Sum numeric** is the sum of numeric values in the column. Non-numeric and empty values are ignored. Only shown if **include statistics** is checked.
- **Average numeric** is the arithmetic mean of numeric values in the column. Non-numeric and empty values are ignored. Only shown if **include statistics** is checked.
- **Median numeric** is the median of numeric values in the column. Non-numeric and empty values are ignored. Only shown if **include statistics** is checked.
- **Mode numeric** is the mode of numeric values in the column. Non-numeric and empty values are ignored. Only shown if **include statistics** is checked.

- **Stddev numeric** is the sample standard deviation (equivalent to Excel function stddev.s) of numeric values in the column. Non-numeric and empty values are ignored. Only shown if **include statistics** is checked.
- **Min date** is the minimum date value in the column. Only shown if **include dates** is checked.
- **Max date** is the maximum date value in the column. Only shown if **include dates** is checked.
- **Most frequent** lists the most common text in the column. Empty values are not counted. Date and numeric values are treated as text. Comparison between values is sensitive to case and whitespace.

## Notes

- **Mode** may not work as expected with non-integer values, due to precision issues. You can fix this by using a [Num Format](#) transform first.
- Use [Num Format](#) to change the precision of numerical results.
- You can use [Whitespace](#) to remove any whitespace at the start or end of values before **Summary**.
- If you wish to have a row displayed per column you can [Transpose](#) the table.

## See also

- [Count](#)
- [Pivot](#)
- [Stats](#)

### 2.3.47 Total

## Description

Add a new column with a running (cumulative) total of the selected column.

## Inputs

One.

## Options

- Set **Column** to the column you want to total.

## Notes

- Non-numerical values are ignored.
- The new column is added at the right end. You can change the column order with [Reorder Cols](#) and the column name with [Rename Cols](#).

**See also**

- [Count](#)
- [Pivot](#)
- [Stats](#)

**2.3.48 Transpose****Description**

Swap (rotate) rows and columns, so that each row becomes a column and each column becomes a row.

**Inputs**

One.

**Options**

- Check **has header** to make the new first row into a [header](#) (requires > 1 row).

**Notes**

- If the input dataset has a header, it will become the new first column. Use [Remove Cols](#) to remove it.
- Datasets with very large numbers of columns can be slow to display.

**2.3.49 Trim**

This transform is deprecated. Use [Whitespace](#) instead.

**Description**

Removes leading and trailing whitespace from one or more columns.

**Inputs**

One.

**Options**

- Check the column(s) you wish to transform.

### 2.3.50 Unique

#### Description

Remove duplicate rows based on keeping only unique values in selected columns

#### Example

If you have a dataset of orders:

	Name	Customer Id	Product Id	Cost	Date
1	Alice Anderson	C018930	13574	29.95	01/10/2020
2	Bob Brown	C018917	89456	10.55	01/10/2020
3	Charlie Jones	C017783	96352	19.95	02/10/2020
4	Robert Brown	C018917	98526	10.00	02/10/2020
5	Charles Jones	C017783	38746	25.00	03/10/2020

And you want to:

- keep one row per unique Customer Id
- keep the first listed Name for each Customer Id
- concatenate Product Ids for each Customer Id, delimited by a comma
- sum the Costs for each Customer Id
- keep the latest Date for each Customer Id
- add a Count column showing how many rows in the input correspond to each row in the output

You can set the following:

Column	Option
1 Name	Keep first
2 Customer Id	Keep unique
3 Product Id	Concat
4 Cost	Sum
5 Date	Maximum

Set All Keep unique

Keep unique for 1 of 5 columns

Concat delimiter: ,

☒ add count column

To get:

	Name	Customer Id	Product Id	Cost	Date	Count
1	Alice Anderson	C018930	13574	29.95	01/10/2020	1
2	Bob Brown	C018917	89456,98526	20.55	02/10/2020	2
3	Charlie Jones	C017783	96352,38746	44.95	03/10/2020	2

## Inputs

One.

## Options

- Set an **Option** for each column:
  - Only 1 row is kept where all the **Keep unique** columns have the same value.
  - Keep first** keeps first value in the current sort order.
  - Keep last** keeps the last value in the current sort order.
  - Sum** sums any numerical values. Blank values are ignored.
  - Maximum** keeps the maximum numerical or date value.
  - Minimum** keeps the minimum numerical or date value.
  - Average** takes the average (mean) of any numerical values. Blank values are ignored.
  - Concat** to concatenate values. Duplicate values are kept. All values are treated as text.

- **Concat unique** to concatenate values. Duplicate values are ignored. All values are treated as text.
- Use the **Set** button to quickly set the option value for multiple columns.
- Set **Concat delimiter** if you want to add a delimiter between **Concat** or **Concat unique** values
- Check **add count column** to add a column showing how many rows in the input dataset created each unique row.

## Notes

- Rows are considered duplicates if they have exactly the same value in all the columns set to **Keep unique**. Comparisons are case and whitespace sensitive. You can use [Case](#) and [Whitespace](#) to change case and whitespace before deduping.
- If no columns are set to **Keep unique** the transform won't do anything.
- If you are using **Keep first** or **Keep last** the sort order is important. You can use [Sort](#) to change the sort order before deduping.
- The [Dedupe](#) transform is a less powerful (but simpler and faster) alternative to Unique.

## See also

- [Dedupe a dataset](#)

### 2.3.51 Whitespace

## Description

Tidy whitespace (spaces, tabs, carriage returns etc) in the selected column(s).

## Inputs

One.

## Options

- Check the column(s) you wish to transform.
- Check **trim leading and trailing whitespace** to remove whitespace characters, such as space and tab.
- Check **replace line feeds with spaces** to replace LF (\n) characters with spaces.
- Check **replace tabs with spaces** to replace tab (\t) characters with spaces.
- Check **remove carriage returns** to remove CR (\r) characters.
- Check **convert consecutive spaces to one space** to replace 2 or more consecutive spaces with a single space.
- Check **remove non-printable characters** to remove characters of Unicode type Other\_\*. This include ASCII codes 0 to 31, such as tab, line feed, carriage return, bell and backspace. It does not remove spaces.

## Notes

- The operations are carried out in top to bottom order, e.g. **Replace line feeds with spaces** is carried out before **Convert consecutive spaces to one space**.

## See also

- [Case](#)

## 2.4 Output

### 2.4.1 Output data

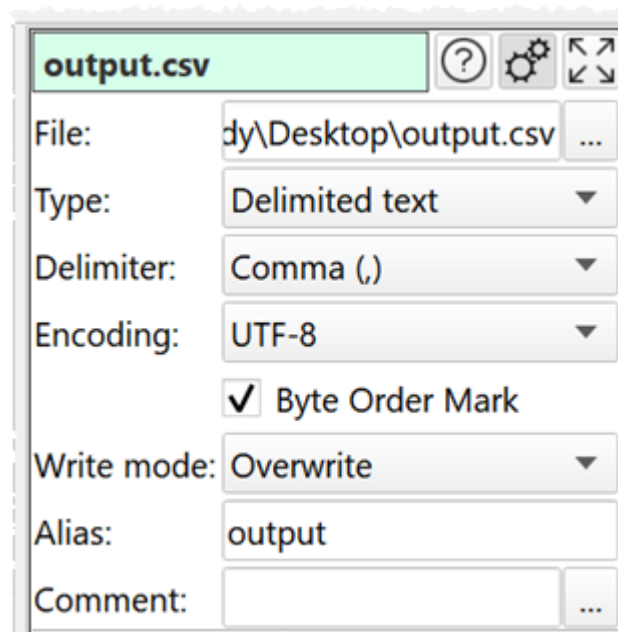
Once you have finished transforming your data you can output it in the following formats:

- [CSV](#)
- [Excel](#)
- [JSON](#)
- [HTML](#)
- [Markdown](#)
- [TSV](#)
- [vCard](#)
- [XML](#)
- [YAML](#)

To create an output, select 1 input and/or transform item in the [Center pane](#) and then click the **To File** button at the bottom of the [Left pane](#). You can choose the file type in the **Save as type** drop-down list of the **Output** window.

You can select the output item in the **Center** pane and change any options related to the output in the [Right pane](#).





Set **File** to the location of the file you want to output. If you are writing to a .xls or .xlsx file the output will be written to a sheet called 'Easy Data Transform' by default. You can change this by adding the sheet name inside [], e.g. `myfile.xlsx[mysheet]`.

Set **Type** to the file type. The default type will be set according to the file extension and the settings in the **Output Extensions** tab of the [Preferences window](#).

Set **Delimiter** to the delimiter you wish to use (only available for delimited text files, such as [CSV](#) and [TSV](#)).

Set **Encoding** to the text encoding you wish to use (only available for text files).

Set **Formatting** depending on how you want to set the Excel cell formatting (only available for Excel files).

- **Automatic** to let Easy Data Transform decide cell formatting depending on the contents of each column.
- **General** to set the cell format for all columns to 'General'.
- **Manual** to choose the cell format of each column as:
  - Automatic (based on column contents).
  - Boolean.
  - Date.
  - General.
  - Number.
  - Text.
  - Formula.

Note that formula values must start with =, or they will be output as text.

Set **Byte Order Mark** checked write a Unicode Byte Order Mark to the file (only available for UTF encodings).

Set **Root name** and **Row name** depending on the name you want to use for the root and row XML records (only available for XML files).

Use **Write mode** to determine how existing files are treated:

Write mode for Excel files	File exists with named sheet	File exists without named sheet	File does not exist
<b>Overwrite / File</b>	Overwrite named sheet, delete all other sheets	Add named sheet, delete all other sheets	Create file with only named sheet
<b>Overwrite / Sheet</b>	Overwrite named sheet*	Add named sheet	Create file with only named sheet
<b>Append</b>	Append to named sheet	Add named sheet	Create file with only named sheet
<b>New</b>	Do nothing	Do nothing	Create file with only named sheet
<b>Disabled</b>	Do nothing	Do nothing	Do nothing

\*Overwriting a named sheet can cause the file size to increase each time. You can delete the file and re-output it if this becomes a problem.

Write mode for non-Excel files	File exists	File does not exist
<b>Overwrite</b>	Overwrite file	Create file
<b>Append</b>	Append to file	Create file
<b>New</b>	Do nothing	Create file
<b>Disabled</b>	Do nothing	Do nothing

Use **Alias** to identify the file for [batch processing](#).

Use **Comment** to record any notes that might be useful to a colleague or your future self.

## 2.5 File formats

### 2.5.1 File formats

Easy Data Transform supports the following data file formats:

Format	Input	Output
Delimited text (including <a href="#">CSV</a> and <a href="#">TSV</a> )	Yes	Yes
<a href="#">Excel XLSX/XLS</a>	Yes	Yes
<a href="#">Fixed width</a>	Yes	No
<a href="#">JSON</a>	Yes	Yes
<a href="#">HTML</a>	No	Yes
<a href="#">Markdown</a>	No	Yes
<a href="#">vCard</a>	Yes	Yes
<a href="#">XML</a>	Yes	Yes
<a href="#">YAML</a>	No	Yes

You can manage the default file type for different file extensions in the **Input Extensions** and **Output Extensions** tabs of the [Preferences window](#).

### 2.5.2 CSV format

Easy Data Transform can input from and output to CSV format files. Default file extension ".csv".

CSV (Comma Separated Value) format is commonly used for exchanging tabular data between programs.

CSV is a type of delimited text file format. Carriage return denotes the end of a row. The column delimiter is usually commas, but not always.

Easy Data Transform supports the following column delimiters:

- comma (,)
- semi-colon (;)
- colon (:)

- pipe (|)
- caret (^)

For all the above delimiters:

- If a value field contains a quote (") character, then the quote will be 'escaped' by an additional quote when output.
- If a value field contains a delimiter, quote or carriage return character, then the value be surrounded by quotes (") when output.

For example:

	CategoryID	CategoryName	Description	In stock
1	1	Beverages	Soft drinks, coffees & teas	true
2	2	Condiments	Sweet and savory sauces	false
3	3	Confections	Candies and sweet breads	true

Is output as:

```
CategoryID,CategoryName,Description,In stock
1,Beverages,"Soft drinks, coffees & teas",true
2,Condiments,Sweet and savory sauces,false
3,Confections,Candies and sweet breads,true
```

If the file has a different delimiter to those listed, then:

1. Input it with a delimiter unlikely to be in the text, e.g. caret (^), to input it as 1 column
2. Use the [Split Col](#) transform to transform it into multiple columns.

Many CSV file are not well formed. For example, they have unescaped quotes. As the CSV format is not well-defined, badly formed CSV files can be interpreted in more than one way. Easy Data Transform will do the best it can in these circumstances.

[Tab delimited \(TSV\) files](#) are treated a bit differently.

### 2.5.3 Excel format

Easy Data Transform can input from and output to Excel ".xlsx" and ".xls" format files, even if you don't have Excel installed.

Excel format is the native format of the Microsoft Excel spreadsheet application. It is commonly used for exchanging tabular data.

You can specify the sheet name when inputting or output Excel files using square brackets, e.g. `MySpreadsheet.xlsx[Sheet1]` means sheet `Sheet1` of file `MySpreadsheet.xlsx`.

You can specify how to format columns when outputting to Excel using the **Formatting** option.

Please note the following limitations of Excel:

- Excel .xlsx files are limited to 1,048,576 rows and 16,384 columns.
- Excel .xls files are limited to 65,536 rows and 256 columns.
- Date values are input using ISO date format YYYY-MM-DD, regardless of your locale.
- Datetime values are input using ISO date format YYYY-MM-DDTHH:MM:SS, regardless of your locale.
- The following characters are not allowed in sheet names: \ / \* [ ] : ?

#### 2.5.4 Fixed width format

Easy Data Transform can input from fixed width format files, also known as fixed column width format. Default file extension ".txt".

Fixed width format is used for exchanging tabular data between programs. It is often associated with legacy systems, but is also used for large files where performance is an issue (e.g. bioinformatics).

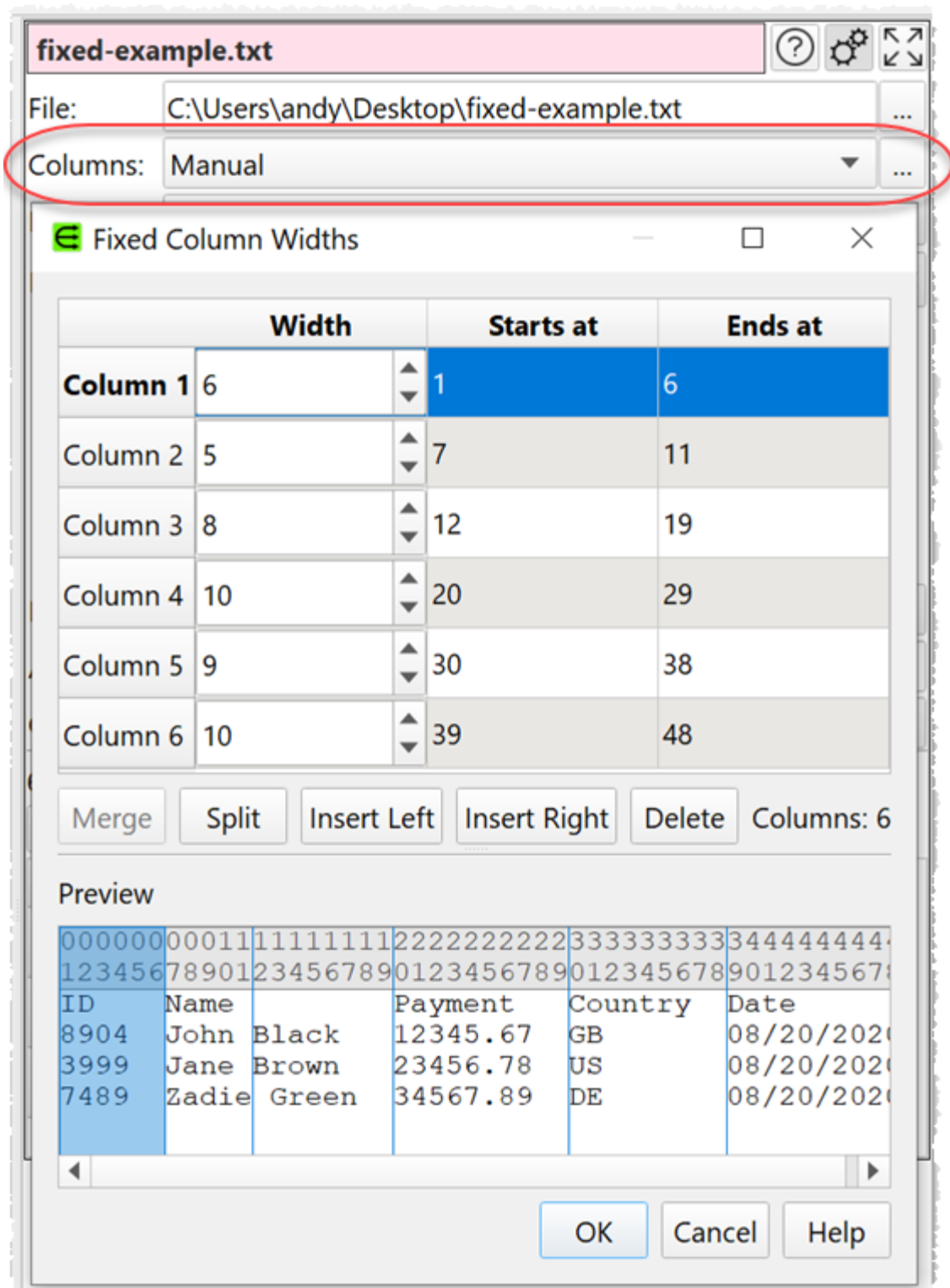
In fixed width format each column has a fixed width in characters. There is no delimiter. Spaces are typically used as padding to make up the column width. For example:

ID	Name	Payment	Country	Date
8904	John Black	12345.67	GB	08/20/2020
3999	Jane Brown	23456.78	US	08/20/2020
7489	Zadie Green	34567.89	DE	08/20/2020

Is input as:

	ID	Name	Payment	Country	Date
1	8904	John Black	12345.67	GB	08/20/2020
2	3999	Jane Brown	23456.78	US	08/20/2020
3	7489	Zadie Green	34567.89	DE	08/20/2020

Easy Data Transform will analyze the data and guess the column layout if you set **Columns** in the right pane to **Automatic**. Or you can choose the column widths by setting **Columns** to **Manual**. Click the '...' button to edit the manual column widths.



The current column boundaries are shown on the first few rows in the **Preview**. The horizontal offset of each character is shown in gray at the top. The currently selected columns are highlighted. Click on a column in the **Preview** to select it in the table, or vice versa.

You can change the column widths using the **Width** column of the table.

Select 2 or more adjacent columns and click **Merge** to merge them into 1 column. Click then Shift+click in either the table or the preview to select multiple adjacent columns.

Select 1 column with a **Width** > 1 and click **Split** to split into into 2 columns.

Select 1 or more adjacent columns and click **Insert Left** or **Insert Right** to add a new column with width 1 to the left or right of the selected columns.

Select 1 or more adjacent columns and click **Delete** delete the selected columns.

Click **OK** to save your changes and **Cancel** to discard them.

Unwanted columns and rows in the dataset can be removed after input using the [Remove Cols](#) and [Filter](#) transforms.

### 2.5.5 JSON format

Easy Data Transform can input from and output to JSON format files. Default file extension ".json".

JSON (JavaScript Object Notation) format is commonly used for exchanging data between programs. JSON data is generally expected to be in UTF8 encoding without a Byte Order Mark (BOM).

For example:

	CategoryID	CategoryName	Description	In stock
1	1	Beverages	Soft drinks, coffees & teas	true
2	2	Condiments	Sweet and savory sauces	false
3	3	Confections	Candies and sweet breads	true

Is equivalent to:

```
[
  {
    "CategoryID": "1",
    "CategoryName": "Beverages",
    "Description": "Soft drinks, coffees & teas",
    "In stock": "true"
  },
  {
    "CategoryID": "2",
    "CategoryName": "Condiments",
    "Description": "Sweet and savory sauces",
    "In stock": "false"
  },
  {
    "CategoryID": "3",
    "CategoryName": "Confections",
    "Description": "Candies and sweet breads",
    "In stock": "true"
  }
]
```

The dot ('.') character is used in the column header to show nesting. For example:

	name	carb	cholesterol	fiber	minerals.ca	minerals.fe	protein	sodium	vitamins.a	vitamins.c
1	Avocado Dip	2	5	0	0	0	1	210	0	0

Is equivalent to:

```
[
  {
    "name": "Avocado Dip",
    "carb": "2",
    "cholesterol": "5",
    "fiber": "0",
    "minerals": {
      "ca": "0",
      "fe": "0"
    },
    "protein": "1",
    "sodium": "210",
    "vitamins": {
      "a": "0",
      "c": "0"
    }
  }
]
```

Any dots in JSON names are converted to hyphens ('-') on input.

JSON arrays can be input in either long or wide **Format**. For example:

```
[
  {
```



```
[{"name": "1",  
  "values": [ "a", "b" ]  
},  
{  
  "name": "2",  
  "values": [ "c", "d" ]  
}]
```

Input as **Long (more rows)**:

name		values
1	1	a
2	1	b
3	2	c
4	2	d

Input as **Wide (more columns)**:

name		values.0	values.1
1	1	a	b
2	2	c	d

### 2.5.6 HTML format

Easy Data Transform can output to tables in HTML format files. Default file extension ".html".

HTML (HyperText Markup Language) format is commonly used for creating web pages. If you don't need the data to take up a whole page, you can just copy the `<table>` to `</table>` part of the output.

For example:

	CategoryID	CategoryName	Description	In stock
1	1	Beverages	Soft drinks, coffees & teas	true
2	2	Condiments	Sweet and savory sauces	false
3	3	Confections	Candies and sweet breads	true

Is output as:

```

<!DOCTYPE html>
<html>
  <head>
    <meta charset="UTF-8"/>
    <title>C:\Users\andyb\Desktop\output.html</title>
    <style>table,td,th{border:1px solid black;text-align:left;vertical-align:top;border
  </head>
  <body>
    <table>
      <tbody>
        <tr>
          <th>CategoryID</th>
          <th>CategoryName</th>
          <th>Description</th>
          <th>In stock</th>
        </tr>
        <tr>
          <td>1</td>
          <td>Beverages</td>
          <td>Soft drinks, coffees & teas</td>
          <td>true</td>
        </tr>
        <tr>
          <td>2</td>
          <td>Condiments</td>
          <td>Sweet and savory sauces</td>
          <td>>false</td>
        </tr>
        <tr>
          <td>3</td>
          <td>Confections</td>
          <td>Candies and sweet breads</td>
          <td>true</td>
        </tr>
      </tbody>
    </table>
  </body>
</html>

```

### 2.5.7 Markdown format

Easy Data Transform can output to tables in Markdown format files. Default file extension ".md".

Markdown format is commonly used as a human-friendly markup language, which can be automatically translated to HTML.

For example:

	CategoryID	CategoryName	Description	In stock
1	1	Beverages	Soft drinks, coffees & teas	true
2	2	Condiments	Sweet and savory sauces	false
3	3	Confections	Candies and sweet breads	true

Is output as:

	CategoryID	CategoryName	Description	In stock
1	1	Beverages	Soft drinks, coffees & teas	true
2	2	Condiments	Sweet and savory sauces	false
3	3	Confections	Candies and sweet breads	true

You can also use Markdown when you need a plain text version of your data, for example in a code comment.

Note that not all Markdown implementations support tables. If your implementation does not support tables, you may need to output to [HTML](#) instead.

### 2.5.8 TSV format

Easy Data Transform can input from and output to TSV format files. Default file extension ".tsv".

TSV (Tab Separated Value) format is commonly used for exchanging tabular data between programs.

TSV is a type of delimited text file format. Values are separated by tab characters. Tabs are not allowed within data values, so there is no need for quoting or escaping delimiters, as with [CSV files](#). This means that TSV files are generally a bit more compact and faster to read and write than [CSV](#) files.

If you have a tab character in a value, Easy Data Transform will convert it to a space on output.

### 2.5.9 vCard format

Easy Data Transform can input from and output to vCard format files. Default file extension ".vcf".

VCard format is commonly used as way of exchanging contact details between programs.

Note that you need to change the column header names to the values expected by vCard (using the [Rename Cols](#) transform).

For example:

N	FN	ORG	TEL;TYPE=WORK,VOICE	ADR;TYPE=WORK,PREF
1 Gump;Forrest;;Mr.;	Forrest Gump	Bubba Gump Shrimp Co.	(111) 555-1212	100 Waters Edge;Baytown;

Is equivalent to:

```
BEGIN:VCARD
VERSION:3.0
N:Gump;Forrest;;Mr.;
FN:Forrest Gump
ORG:Bubba Gump Shrimp Co.
TEL;TYPE=WORK,VOICE:(111) 555-1212
ADR;TYPE=WORK,PREF:100 Waters Edge;Baytown;LA;30314;United States of America
END:VCARD
```

### 2.5.10 XML format

Easy Data Transform can input from and output to XML format files. Default file extension ".xml".

XML (Extensible Markup Language) format is commonly used for exchanging data between programs.

For example:

CategoryID	CategoryName	Description	In stock
1 1	Beverages	Soft drinks, coffees & teas	true
2 2	Condiments	Sweet and savory sauces	false
3 3	Confections	Candies and sweet breads	true

Is equivalent to:

```
<?xml version="1.0" encoding="UTF-8"?>
<root>
  <record>
    <CategoryID>1</CategoryID>
    <CategoryName>Beverages</CategoryName>
    <Description>Soft drinks, coffees & teas</Description>
    <In-stock>true</In-stock>
  </record>
  <record>
    <CategoryID>2</CategoryID>
    <CategoryName>Condiments</CategoryName>
    <Description>Sweet and savory sauces</Description>
    <In-stock>false</In-stock>
  </record>
  <record>
    <CategoryID>3</CategoryID>
    <CategoryName>Confections</CategoryName>
    <Description>Candies and sweet breads</Description>
    <In-stock>true</In-stock>
  </record>
</root>
```

The dot ('.') character is used in the column header to show nesting. For example:

	name	carb	cholesterol	fiber	minerals.ca	minerals.fe	protein	sodium	vitamins.a	vitamins.c
1	Avocado Dip	2	5	0	0	0	1	210	0	0

Is equivalent to:

```
<?xml version="1.0" encoding="UTF-8"?>
<root>
  <record>
    <name>Avocado Dip</name>
    <carb>2</carb>
    <cholesterol>5</cholesterol>
    <fiber>0</fiber>
    <protein>1</protein>
    <sodium>210</sodium>
    <minerals>
      <ca>0</ca>
      <fe>0</fe>
    </minerals>
    <vitamins>
      <a>0</a>
      <c>0</c>
    </vitamins>
  </record>
</root>
```

Any dots in XML element names are converted to hyphens ('-') on input.

The underscore ('\_') character is used at the start of a column header name to identify it as an XML attribute. For example:

	_name	_carb	_cholesterol	_fiber	minerals.ca	minerals.fe	_protein	_sodium	vitamins.a	vitamins.c
1	Avocado Dip	2	5	0	0	0	1	210	0	0

Is equivalent to:

```
<?xml version="1.0" encoding="UTF-8"?>
<root>
  <record carb="2" cholesterol="5" fiber="0" name="Avocado Dip" protein="1" sodium="210">
    <minerals>
      <ca>0</ca>
      <fe>0</fe>
    </minerals>
    <vitamins>
      <a>0</a>
      <c>0</c>
    </vitamins>
  </record>
</root>
```

Repeated XML values can be input in either long or wide **Format**. For example:

```
<?xml version="1.0" encoding="UTF-8"?>
<ITEMS>
  <ITEM>
    <PARAM name="a" value="1"/>
    <PARAM name="b" value="2"/>
  </ITEM>
</ITEMS>
```

Input as **Long (more rows)**:

	PARAM._name	PARAM._value
1	b	2
2	a	1

Input as **Wide (more columns)**:

	PARAM._value	PARAM._name	PARAM._value.1	PARAM._name.1
1	1	a	2	b

You are responsible for ensuring that the names of XML nodes and attributes are valid (e.g. start with a letter or underscore and do not contain spaces).

### 2.5.11 YAML format

Easy Data Transform can output to YAML format files. Default file extension ".yaml".

YAML (YAML Ain't Markup Language) format is commonly used for exchanging data between programs and for configuration files.

For example:

	CategoryID	CategoryName	Description	In stock
1	1	Beverages	Soft drinks, coffees & teas	true
2	2	Condiments	Sweet and savory sauces	false
3	3	Confections	Candies and sweet breads	true

Is output as:

```
---
-
  CategoryID: 1
  CategoryName: Beverages
  Description: Soft drinks, coffees & teas
  In stock: true
-
  CategoryID: 2
  CategoryName: Condiments
  Description: Sweet and savory sauces
  In stock: false
-
  CategoryID: 3
  CategoryName: Confections
  Description: Candies and sweet breads
  In stock: true
```

## 2.6 Comments

You can manage the complexity of large .transform files adding comment text to:

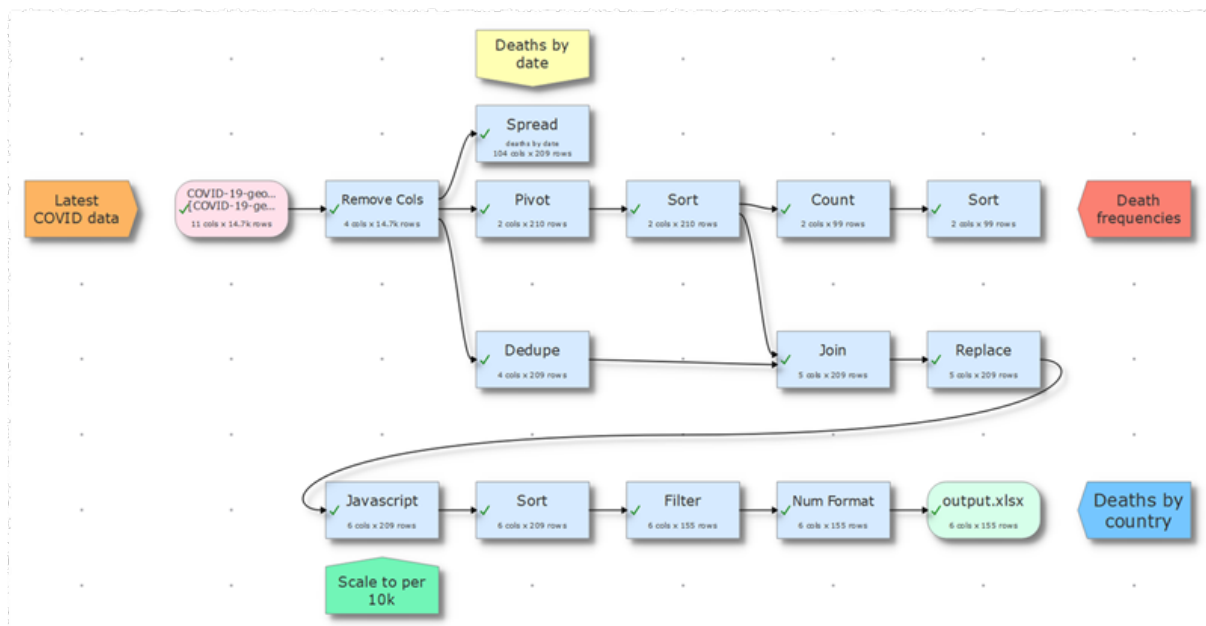
- The **Comment** tab of Input, Transform or Output items. Check **View>Show Comments** to show these comments in the center pane. The comment will be shown as a tooltip when you hover over the item.

**Stats**  
Sum total cases.  
11 cols x 14.7k rows

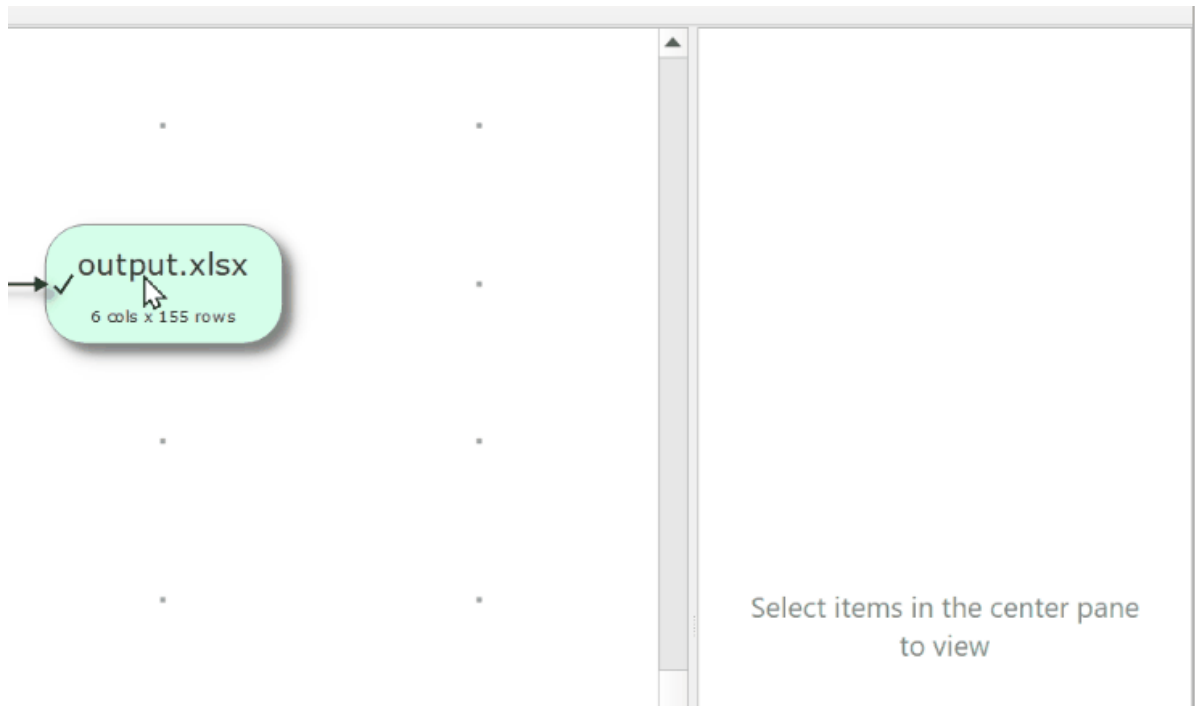
Type: Transform  
Name: Stats  
Status: Up to date  
Dataset columns: 11  
Dataset rows: 14,659  
Dataset values: 161,249  
Connections in: 1  
Connections out: 0  
Transform type: Analysis  
Description: Calculate sum, min, max, average, median or standard deviation of the selected column(s) by row and/or column. Results are shown in a new row at the bottom and/or column at the right.  
Columns: 1 column(s) (cases)  
Calculation: Sum  
On: Columns  
Last processed: Tuesday, January 26, 2021 2:23:23 PM GMT Standard Time  
Processing time: 0.169 second(s)  
Comment: Sum total cases.

**Stats**  
Filter columns  
dateRep  
day  
month  
year  
✓ cases  
deaths  
countriesAndTerritories  
1 of 11 columns selected  
Calculation: Sum  
On: Columns  
Calculate sum, min, max, average, median or standard deviation of the selected column(s) by row and/or column. Results are shown in a new row at the bottom and/or column at the right.  
Data Warnings Comment\* Re  
Sum total cases.

- The **Comment** field of Note items. These are added to the center pane by right clicking and selecting **Note** from the menu. You can also set an **Arrow** direction and a **Color**. If you right click on an existing item, the Note item will be placed pointing to that item, if there is space. The comment will be shown as a tooltip when you hover over the Note item.





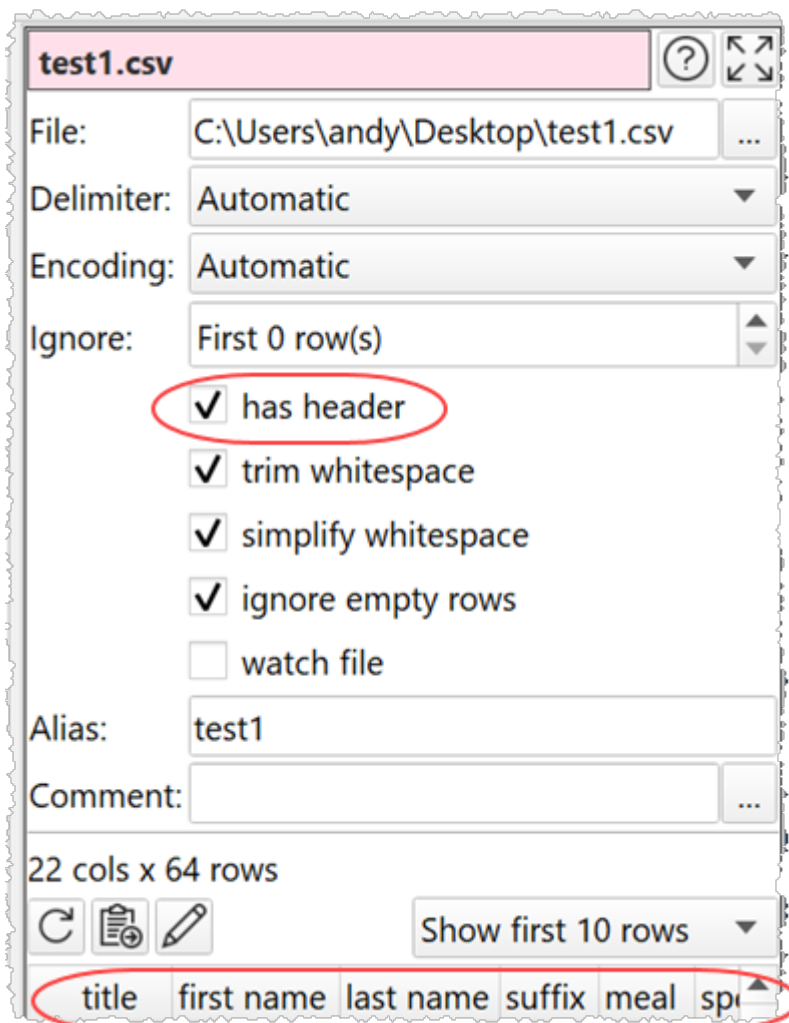


- In the **Notes** window that is displayed when you select **File>Notes...** from the main menu.

You can also group related items in the center pane to show that they are related.

## 2.7 Headers

If the first row of an input is a header (i.e. one that describes the columns below) check **has header** for that input in the **Right** pane.



When you first read in a dataset Easy Data Transform will make a guess about whether the first row is a header (it will assume it is a header if it contains no [dates](#) or [numbers](#)).

You can move 1 or more dataset rows to the header using the [Header](#) transform.

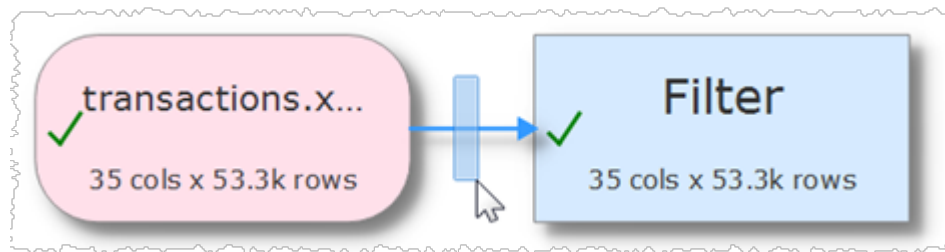
## 2.8 Connections

When you select an input or transform item and add a transform or output item, connections are added automatically.

### To select a connection

To select a connection either:

- Click on the connection; or
- Click and drag a box over any part of the connection. This may be easier than clicking the connection when you are zoomed back.



## To delete a connection

To delete a connection:

- Select the connection.
- Select **Edit>Delete** (or click the **Delete** tool bar button).

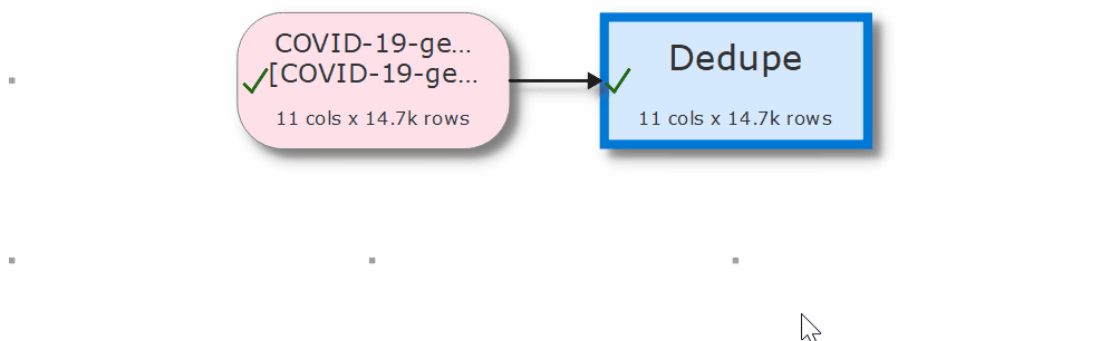
Note that deleting a connection may unset column related parameters downstream, so should generally be avoided where possible.

- If you want to change an input file, do it by selecting the input and clicking on '...' in the **Right** pane, rather than disconnecting the input and connecting a new one.
- If you want to add a new transform between 2 already connected items, you can do it without disconnecting (see below).

## To add a transform to a connection

To add a transform between two already connected items:

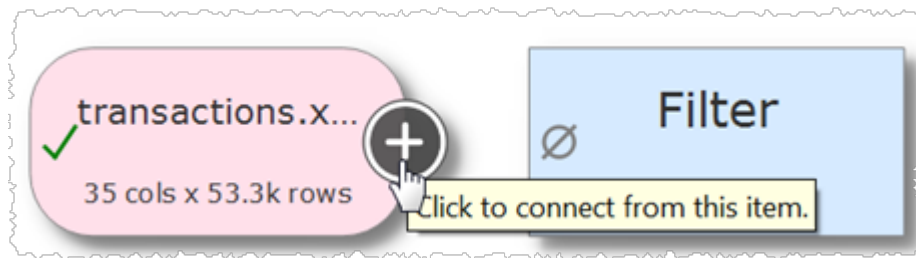
- Select the connection.
- Choose the new transform from the **Left** pane or using the right click menu.



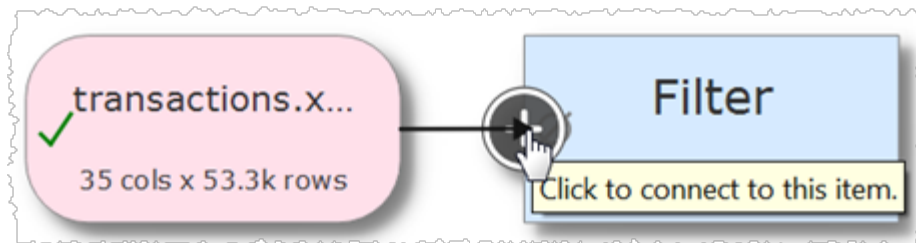
## To add a connection

To add a new connection between two existing items:

- Hover over the start item.
- Click the '+' that appears.



- Hover over the end item
- Click the '+' that appears.



Press the 'Esc' key or click away from an item to cancel adding the connection.

Note that the '+' will only appear if an additional connection is allowed. For example you can't:

- Create a loop.
- Connect more than once from a transform.
- Connect more than once to an output.

## 2.9 Text

Whitespace (such as Space and Tab characters) and capitalization are always significant, unless stated otherwise.

You can remove leading and trailing whitespace by checking **trim whitespace** in the [Input](#) or using the [Whitespace](#) transform.

You can change the case using the [Case](#) transform.

## 2.10 Dates

Set the date formats you want to recognize in the [Preferences window](#) using the following options:

Format	Meaning
d	The day as number without a leading zero (1 to 31)
dd	The day as number with a leading zero (01 to 31)
ddd	The abbreviated localized day name (e.g. 'Mon' to 'Sun'). Uses the system locale to localize the name.
dddd	The long localized day name (e.g. 'Monday' to 'Sunday'). Uses the system locale to localize the name.
M	The month as number without a leading zero (1 to 12).
MM	The month as number with a leading zero (01 to 12)
MMM	The abbreviated localized month name (e.g. 'Jan' to 'Dec'). Uses the system locale to localize the name.
MMMM	The long localized month name (e.g. 'January' to 'December'). Uses the system locale to localize the name.
YY	The year as two digit number (00 to 99).
YYYY	The year as four digit number. If the year is negative, a minus sign is prepended in addition.

For example:

- To support a date such as 31/1/2019 add a supported date format: d/M/yyyy
- To support a date such as 1-31-19 add a supported date format: M-d-yy

List the date formats in order of preference, with the most likely to be used first.

Dates with only two year digits, are treated as a date between 1900 and 1999. E.g. "31/1/19" is interpreted in d-M-yy format as 31st January 1919.

Values that are in a recognized date format will be treated as dates in the [Filter](#), [If](#) and [Sort](#) transforms. Supporting large numbers of date formats will slow down these transforms.

You can change the format of dates using the [Date Format](#) transform and calculate the difference between 2 dates using the [Javascript](#) transform.

You can convert an ISO standard datetime (e.g. 2020-10-16T01:51) into separate date and time columns by using the [Split Cols](#) transform on the "T" delimiter.

## 2.11 Numbers

Easy Data Transform uses the locale set on your computer to decide what is a number. For example, if your system locale is set to US or UK then "123.45" is a number and "123,45" isn't, and vice versa if your system locale is Germany or France.

## 2.12 Meta Information

You can add meta information to input data using the **Meta info** field in the **Right** pane when you select an input item. Set it to **At start**, **At end** or **Every row**, depending on where you want the meta information to appear. Then click on the ... button to edit which information you wish to show. The following placeholders are substituted by their actual values at the time of input.

Meta Information	Description	Example
<code>\$(ComputerName)</code>	The name of the computer.	MyComputer
<code>\$(CurrentDate)</code>	The current date, in ISO format.	2020-08-18
<code>\$(CurrentDateTime)</code>	The current datetime, in ISO format.	2020-08-18T18:00:00
<code>\$(DataColumns)</code>	The number of columns in the dataset (not including meta data).	10
<code>\$(DataRows)</code>	The number of row in the dataset (not including meta data).	10,000

Meta Information	Description	Example
<code>\$(DataValues)</code>	The number of columns x rows in the dataset (not including meta data).	100,000
<code>\$(FileCreatedDate)</code>	The date the file was created, in ISO format. Only available for file input.	2020-08-18
<code>\$(FileCreatedDateTime)</code>	The datetime the file was created, in ISO format. Only available for file input.	2020-08-18T18:00:00
<code>\$(FileName)</code>	The name of the file, including it's extension. Only available for file input.	myfile.csv
<code>\$(FilePath)</code>	The full path (location) of the file. Only available for file input.	C:\users\andy\Documents\myfile.csv
<code>\$(FileSizeBytes)</code>	The size of the file in bytes. Only available for file input.	1,234,567
<code>\$(FileUpdatedDate)</code>	The date the file was last updated, in ISO format. Only available for file input.	2020-08-18
<code>\$(FileUpdatedDateTime)</code>	The datetime the file was last	2020-08-18T18:00:00

Meta Information	Description	Example
	updated, in ISO format. Only available for file input.	
<code>\$ (UserName)</code>	The name of the user (from the USER or USERNAME environment variable).	Andy

## 2.13 Column variables

Some transforms allow you to use the values of columns on the same row using column variables. Column values can be referenced either:

- By column header name, e.g. `$ (item cost)` for the 'item cost' column; or
- By column index, e.g. `$ (1)` for the first column.

Notes:

- The column name is case sensitive.
- Whitespace at the start or end of the column name is ignored.
- If multiple columns have the same name, the first from the left will be used.
- Reference by name takes priority over reference by index. For example, if there is a column named "1" then `$ (1)` will refer to that rather than the first column.

## 2.14 Regular expressions

Easy Data Transform allows the use of regular expressions in the [Filter](#), [If](#), [Replace](#), [Slice](#) and [Split Rows](#) transforms. It is also available as part of the Javascript language in the [Javascript](#) transform.

Regular expressions are a powerful way to match patterns in text (including text representation of dates and numbers). For example, you can use a regular expression in the Replace transform to swap first and last names:



Match type:	Regex
Replace:	(\w+)\s*(\w+)
With:	\2, \1

Turns:

Full name	
1	John Smith
2	Mary Brown
3	Jill Jones

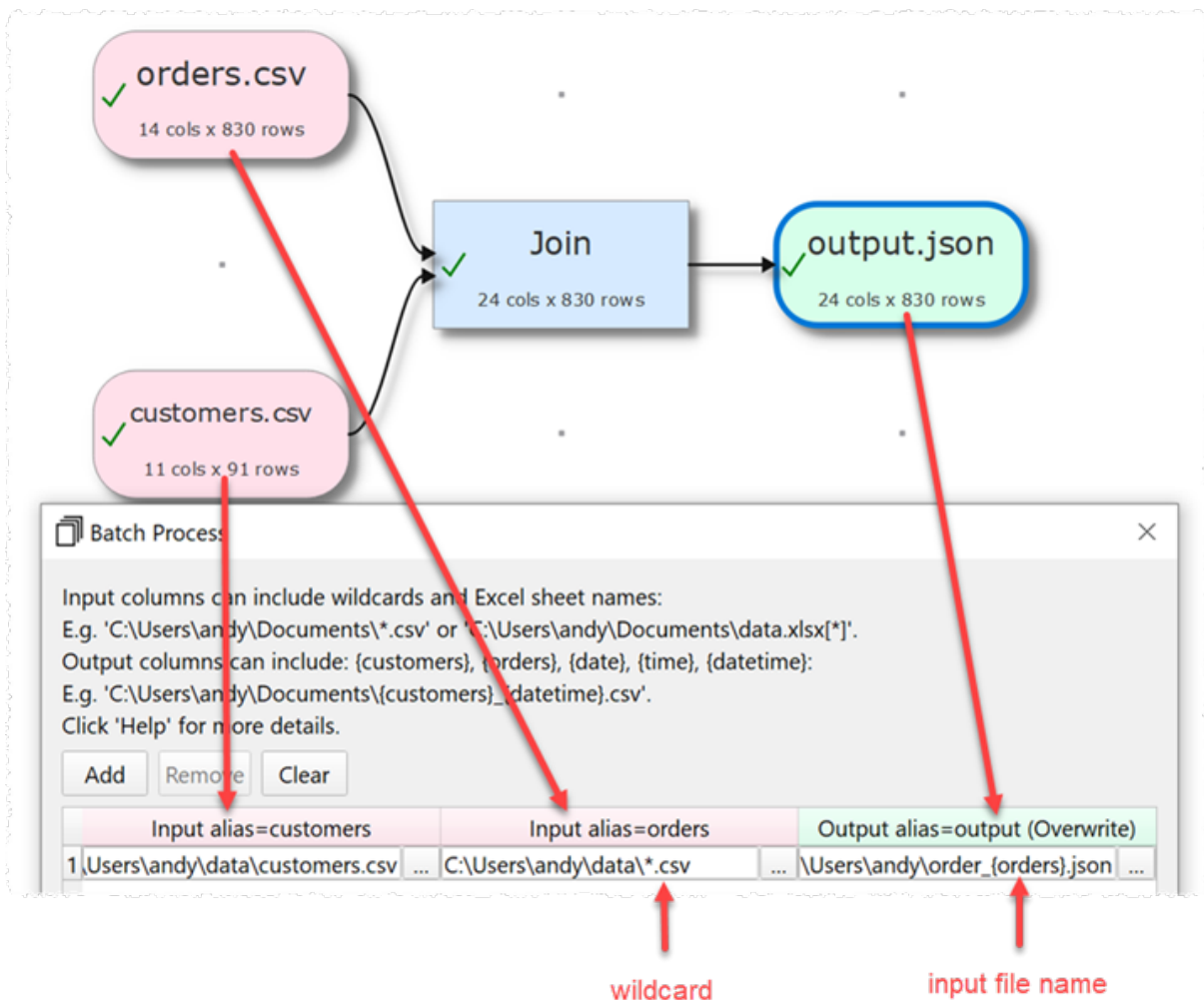
Into:

Full name	
1	Smith, John
2	Brown, Mary
3	Jones, Jill

Regular expressions are far too big a topic to cover here. However there are many detailed resources online, such as [www.regular-expressions.info](http://www.regular-expressions.info) and [regexr.com](http://regexr.com).

## 2.15 Batch processing

To apply the current transform template file to multiple input files select **File>Batch Process...** . The **Batch Process** window will appear with a column for each input item and a column for each output item. The **Alias** for each item is displayed in the column header.



Note:

- All input and output items must have an alias.
- An output item can't have the same alias as another output or input item.
- Output items with **Write mode**=Disabled are not shown.

Click **Add** to add a new processing row.

Click **Remove** to remove the selected processing row(s).

Click **Clear** to remove all processing rows.

In the (pink) input column you can use \* and ? wildcards for file name stems, file extensions and Excel sheet names. E.g.:

Input	Description
<code>C:\Users\andy\Documents\*.csv</code>	All files with extension .csv in the Documents folder
<code>C:\Users\andy\Documents\d?.csv</code>	All the files with name 'd' plus a single character in the Documents folder
<code>C:\Users\andy\Documents\data.xlsx[*]</code>	All the sheets in data.xlsx in the Documents folder
<code>C:\Users\andy\Documents\*.xlsx[data*]</code>	All the sheets beginning with 'data' in all the .xlsx files in the the Documents folder

Note:

- If there is more than 1 input column that specifies multiple files or sheets, then an output will be created for each possible permutation of input files/sheets in the row. E.g. 3 input files from column 1 x 4 sheets from column 2 = 12 outputs to process.
- Excel sheet names are not case sensitive.
- You cannot use wildcards for folder names.
- Batch processing will ignore files in sub-folders.
- All the files input to an input item or output from an output item should be the same file type as the original.

In the (green) output column you can use the following variables to create your output file name:

Output variable	Meaning	Example
<code>{&lt;input alias&gt;}</code>	The name of the input file being processed in the column with the corresponding alias.	If input alias 'orders' is using file 'C:\Users\andy\Documents\orders_2020.csv' then '{orders}' is

		replaced with value 'orders_2020'. If input alias 'orders' is using file 'C:\Users\andy\Documents\orders_2020.xlsx' with sheet 'Sheet1' then '{orders}' is replaced with value 'orders_2020_Sheet1'.
{date}	Date processing was carried out in year_month_day format	2020_04_18
{time}	Time processing was carried out in hours_minutes_seconds_milliseconds format	15_21_56_599
{datetime}	Date/Time processing was carried out in year_month_day_hours_minutes_seconds_milliseconds format	2020_04_18_15_21_56_599

Whether an output file is created, overwritten or appended to depends on the **Write mode** of the output item.

Click **Process** to start processing the rows.

Click **Stop** to stop processing the rows.

Click **Close** to close the window.

See also:

- [Batch processing examples](#)
- [Command line arguments](#)

## 2.16 Command line arguments

Easy Data Transform accepts the following command line arguments:

Argument	Description
<file name>	The .transform file to open at start-up.
-cli	Close the application once any processing on the opened file is complete.
-file <alias>=<location>	Sets the input or output file with the given alias to the location (path) specified. Input Excel files should include the sheet name, e.g. <code>file.xlsx[sheet]</code> . Output Excel files may optionally include a sheet name. The file type should be the same as the original.
-new_window	Don't load the last opened .template file, even if <b>open previous file at start-up</b> is checked in <b>Preferences</b> .
-verbose	Output additional information to the terminal.

This allows you to process .transform files in batch mode, e.g.:

```
"C:\Program Files (x86)\EasyDataTransform_v1\EasyDataTransform.exe" "C:\Users\andy\Doc  
"C:\Program Files (x86)\EasyDataTransform_v1\EasyDataTransform.exe" C:\Users\andy\Doc
```

Put quotes (") around any arguments with spaces (as shown in the examples above).

To do this on a schedule, call a .bat file from a scheduling program, such as Windows Task Scheduler.

See also:

- [Batch processing](#)

## 2.17 .transform files

.transforms file are stored in a simple XML format. So you can edit them with a standard text editor. However we recommend you make a copy first.

The results of transformations are not stored in the .transform file, and are recalculated whenever you **File>Open...** the file.

The contents of Input and Output files are not stored in the .transform file, only their locations. These locations are stored as 'absolute' locations, so you can move the .transform file without changing the locations of the Input and Output files.

If you open a .transform file in a different location from that in which it was saved and it can't find Input and Output files at the expected location it will look for them in the same location relative to the old .transform file. This allows you to easily move .transform files to different locations and computers if you keep the Input and Output files in the same relative location (e.g. in the same folder as the .transform file). This even works between Windows and Mac (and vice versa),

Example:

- mytransform.transform is in C:\Users\andy\Documents\ on Windows and uses Input file MyData.csv in sub-folder MyData (C:\Users\andy\Documents\Data\MyData.csv).
- mytransform.transform is moved to /Users/Bob/Documents/EDT on a Mac.
- When mytransform.transform is opened it will look for MyData.csv in /Users/andy/Documents/Data.
- If it can't find that it will look for MyData.csv in sub-folder MyData (/Users/Bob/Documents/EDT/Data/MyData.csv).

If you paste in data **From Clipboard** this is stored in the .transform file. We don't recommend you do this for large datasets as XML is not very efficient for storing large amounts of data.

## 2.18 Keyboard shortcuts

Using keyboard shortcuts can improve your productivity. If you are using Easy Data Transform a lot we suggest you find the time to learn at least some of them. The following keyboard shortcuts are available for the Windows version of Easy Data Transform:

Key	Shortcut	Action
A	Ctrl+A	Select all in <b>Center</b>

Key	Shortcut	Action
		pane.
B	Ctrl+B	Show the <b>Batch Process</b> window.
D	Ctrl+D	Duplicate the selected branch in the <b>Center</b> pane.
I	Alt+I	Input From File.
	Alt+Shift+I	Input From Clipboard.
N	Ctrl+N	New .transform file.
O	Ctrl+O	Open .transform file.
	Ctrl+Shift+O	Show the <b>Open Recent</b> window.
	Alt+O	Output To File.
S	Ctrl+S	Save .transform file.
T	Ctrl+T	Toggle two screen mode on/off
Y	Ctrl+Y	Redo
Z	Ctrl+Z	Undo
Del	Del	Delete selected item(s) in <b>Center</b> pane.
,	Ctrl+,	Show <b>Preferences</b> window.
=	Ctrl+=	Zoom <b>Center</b> pane so all items fit.
+	Ctrl++	Zoom <b>Center</b> pane in.
-	Ctrl+-	Zoom <b>Center</b> pane out.

Key	Shortcut	Action
Left arrow	Ctrl+Left arrow	Move <b>Center</b> pane selection from item to highest[1] item that inputs to it.
	Alt+Left arrow	Move keyboard focus to <b>Center</b> pane.
Right arrow	Ctrl+Right arrow	Move <b>Center</b> pane selection from item to highest[1] item that it outputs to.
	Alt+Right arrow	Move keyboard focus to <b>Right</b> pane.
Up arrow	Ctrl+Up arrow	Move <b>Center</b> pane selection from item to highest[1] sibling[3].
Down arrow	Ctrl+Down arrow	Move <b>Center</b> pane selection from item to lowest[2] sibling[3].
1...9	Ctrl+1...Ctrl+9	Select input item 1 to 9 (based on height in <b>Center</b> pane).
	Alt+1...Alt+9	Select output item 1 to 9 (based on height in <b>Center</b> pane).
F1	F1	Show help.
F11	F11	Toggle setting <b>Right</b> pane item to fullscreen. Only works if 1 item in <b>Right</b> pane.

[1] Highest=nearest the top of the **Center** pane.

[2] Lowest=nearest the bottom of the **Center** pane.

[3] Two items are considered siblings if they have inputs from the same item(s) or they both have no inputs.



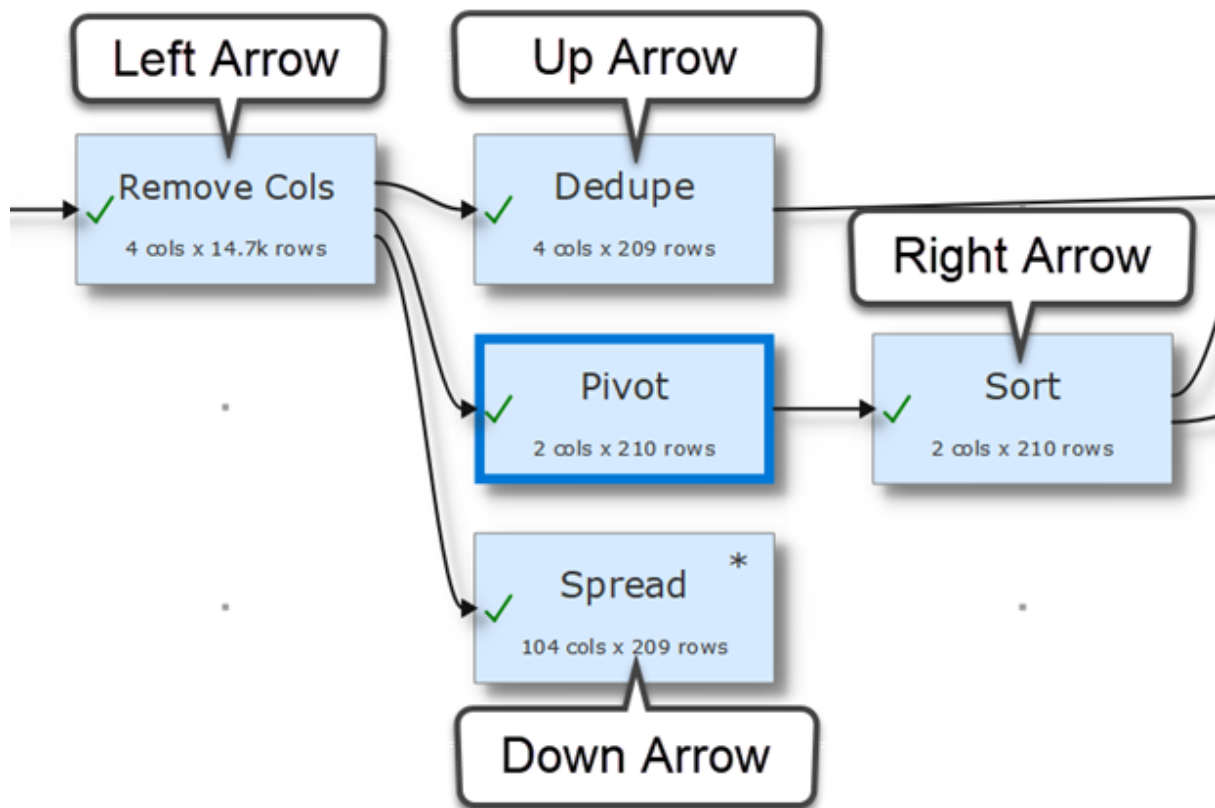
You can also use the keyboard to add transforms in the **Center** pane. Just select the item(s) you want to add the transform to and start typing the name. Only eligible transform that contain the typed letters will be displayed (spaces are ignored).

For example, to add the **Rename Cols** transform an existing Input item:

- select the input items
- type `ren`
- press the `Return` key

If you want to see a list of all the transform names, press the `Space` key before you start typing. You can use the `Del` or `Backspace` key to undo letters typed.

You can quickly change selection in the **Center** pane using arrow keys with the `Ctrl` key.



If you are zoomed in you can scroll the Center pane by pressing the `Shift` key and dragging the canvas.

**How do I?**

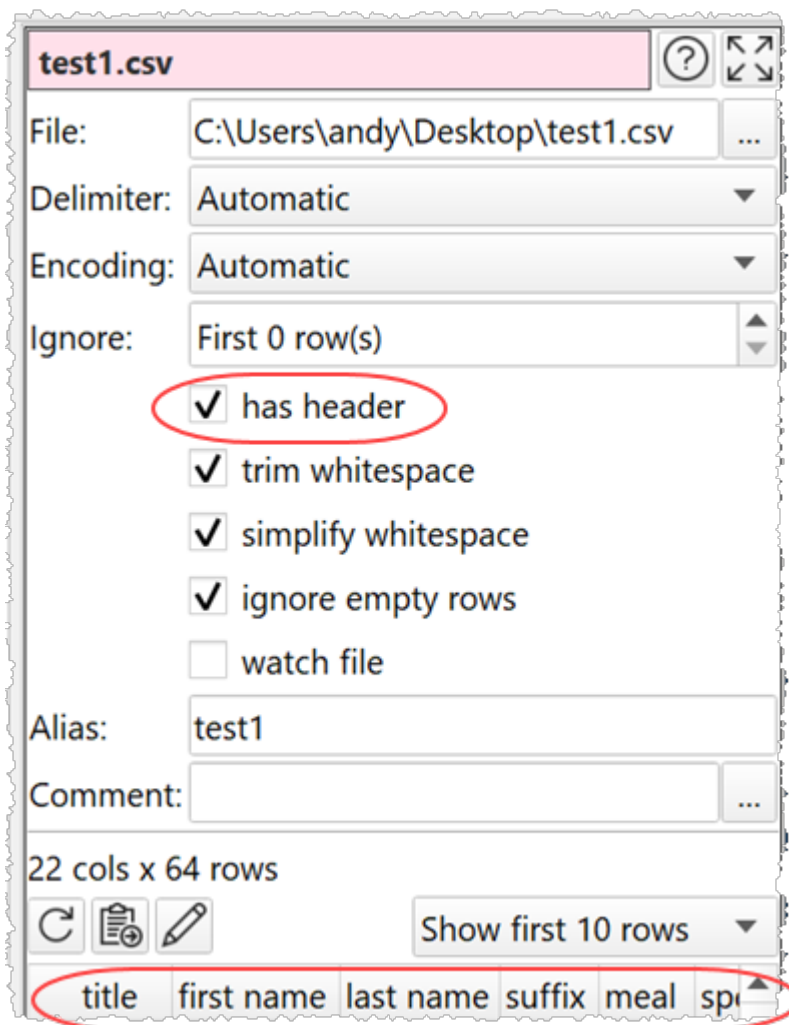
### 3 How do I?

#### 3.1 Add a transform between existing items

To add a new transform between existing items (e.g. between 2 already connected transforms) see [connections](#).

#### 3.2 Add or remove a header

To add or remove a header just check or uncheck the **has header** checkbox for the appropriate input item.

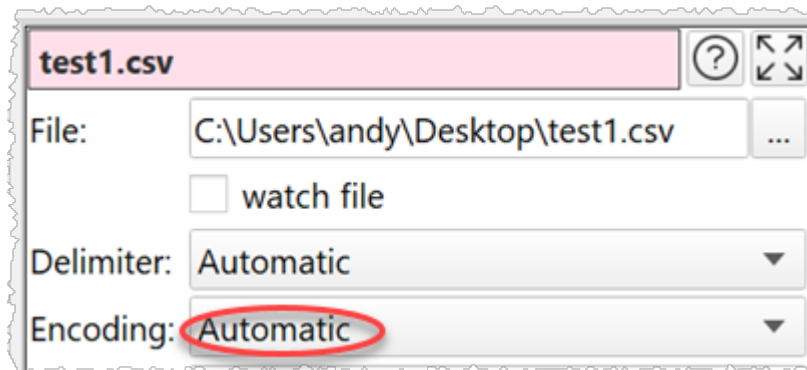


#### 3.3 Change a connection

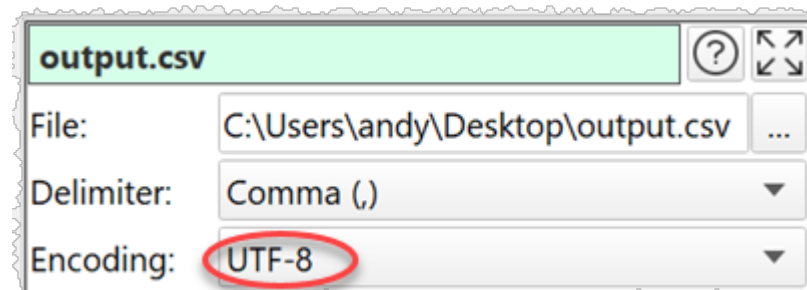
To change a connection see [connections](#).

### 3.4 Change encoding

When Easy Data Transform inputs a text file (e.g. a CSV file) it will make a guess at the encoding. You can explicitly set the encoding by selecting an [input](#) item and changing **Encoding** from **Automatic** to one of the other encodings in the **Right** pane.

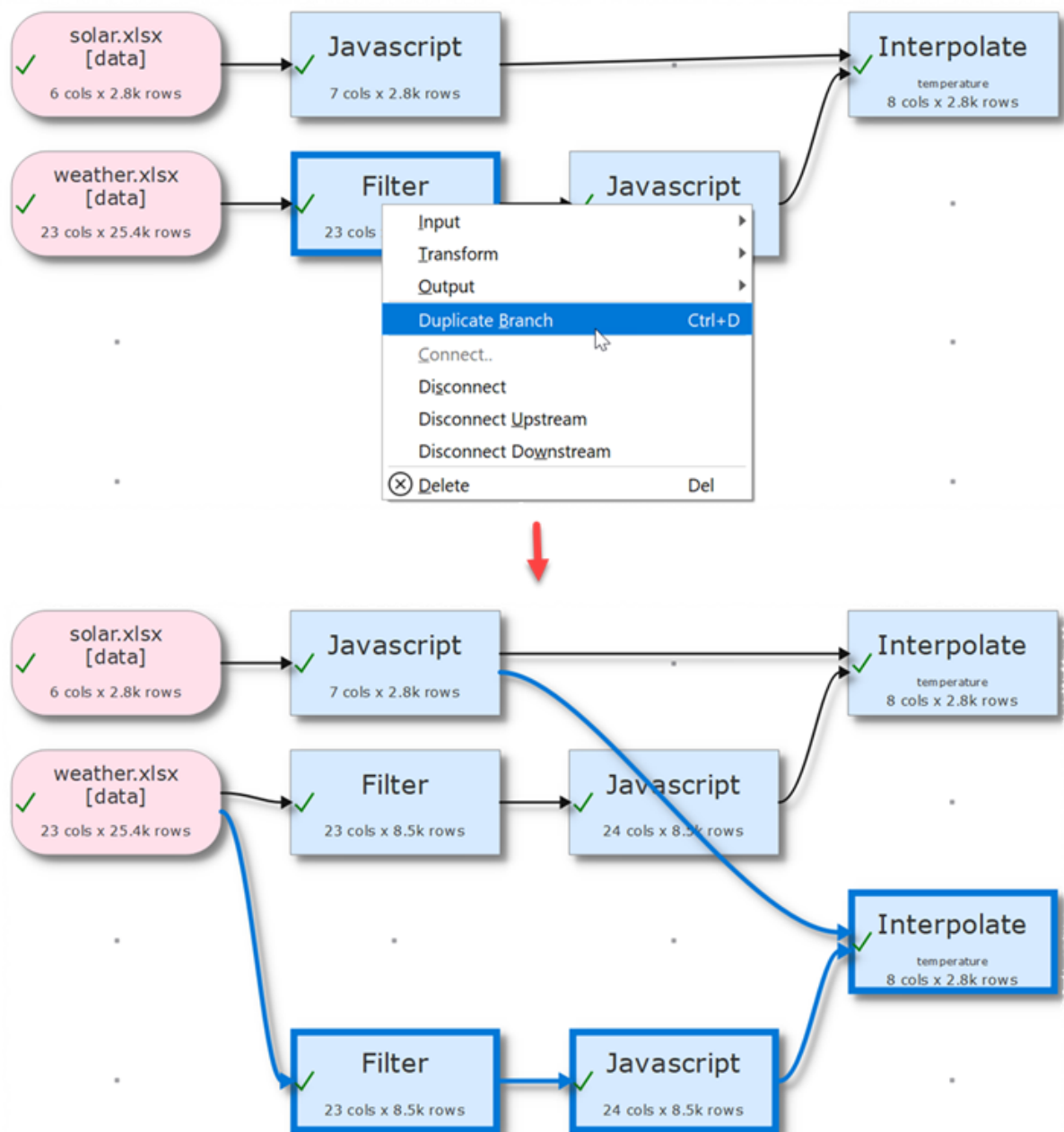


Similarly you can also set the encoding of a text file output by selecting the [output](#) item and changing **Encoding** in the **Right** pane.



### 3.5 Duplicate a series of transforms

To duplicate multiple items in the center pane (e.g. a sequence of transforms) right click on the first item and select **Duplicate Branch**.



### 3.6 Dedupe a dataset

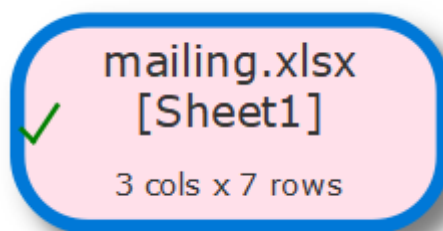
If you want to remove duplicate entries from a dataset, use the [Unique](#) transform. For example, to remove the 2 rows that have the same email from this dataset:

	First	Last	Email
1	J.A.	Black	jablack@gmail.com
2	Paul	White	p.white@hotmail.com
3	Barry	Green	bgreen@aol.com
4	Jane	Brown	Jb3423@gmail.com
5	J.	Taupe	taupe89759@gmail.com
6	John	Black	jablack@gmail.com
7	B.	Green	bgreen@aol.com

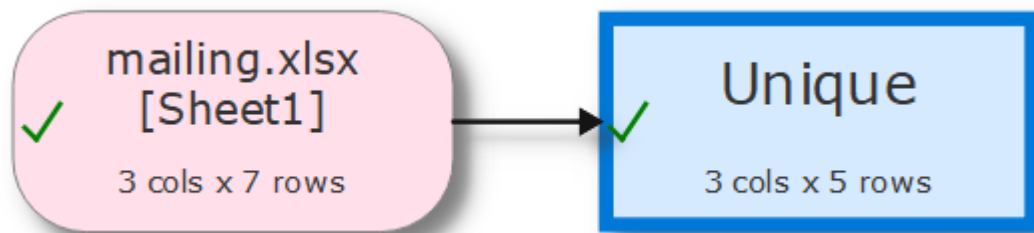
To get this dataset:

	First	Last	Email
1	J.A.	Black	jablack@gmail.com
2	Paul	White	p.white@hotmail.com
3	Barry	Green	bgreen@aol.com
4	Jane	Brown	Jb3423@gmail.com
5	J.	Taupe	taupe89759@gmail.com

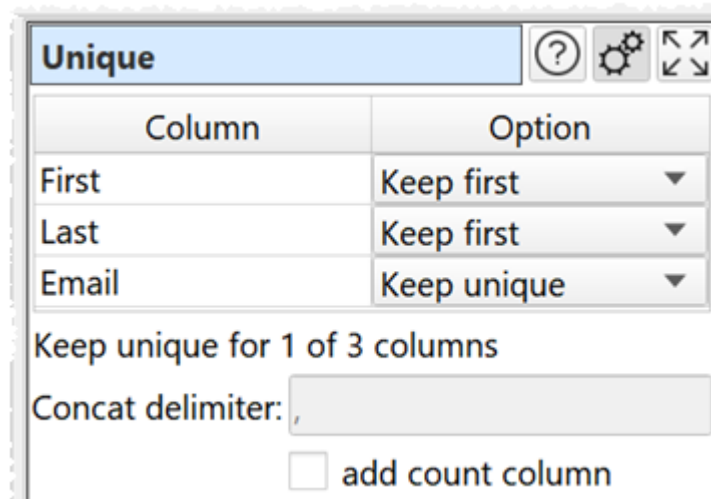
Drag the dataset file onto the **Center** pane of Easy Data Transform.



Select the dataset then click the **Unique** transform in the **Left** pane.



Set the **Email** column to **Keep unique** in the **Right** pane. Set the **First** and **Last** columns to **Keep first**.



Only one row with each email is kept. The first and last names are set to the first occurrence in the sort order. Use [Sort](#) if you want to change the order before removing duplicates.

If you only want to remove rows with the same first name, same last name and same email, set **First**, **Last** and **Email** columns to **Keep unique**.

Note that de-duplicating columns takes account of whitespace and case. So you might need to do [Whitespace](#) and [Case](#) transforms before the dedupe.

See the [Unique](#) documentation for a more detailed example.

### 3.7 Find the difference between dates/datetimes

You can calculate the difference between two dates or datetimes using Date objects in the [Javascript](#) transform.

There are 4 ways to create a Javascript Date object:

Date format	Description
<code>new Date(year, month, day, hours, minutes, seconds, milliseconds)</code>	Specified date and time specified as numeric parameters (January is month 0!).
<code>new Date(text date)</code>	Date and time specified as text.
<code>new Date(milliseconds)</code>	Milliseconds after 1st January 1970.
<code>new Date()</code>	Current date and time.

Notes:

- A text date should be in `yyyy-mm-dd` format.
- A Date object always includes a time. If no time is set, then the time is assumed to be midnight GMT.
- One and two digit years will be interpreted from 1900.

## Examples

To calculate the number of milliseconds between a date in the 'date' column and 31st Dec 2000:

```
return new Date( $(date) ) - new Date( "2000-12-31" );
```

Or:

```
return new Date( $(date) ) - new Date( 2000, 11, 31 );
```

To calculate the difference between datetimes in the 'start' and 'end' columns in hours:

```
return ( new Date( $(end) ) - new Date( $(start) ) ) / ( 60 * 60 * 1000 );
```

To calculate how many days ago 'date' occurred (rounded down):

```
return Math.floor( ( new Date() - new Date( $(date) ) ) / ( 24 * 60 * 60 * 1000 ) );
```

For more information see the [Javascript documentation](#).



### 3.8 Handle column name/order changes in inputs

If you have a .transform file that you want to run multiple input files through (perhaps with a different input file each month, or as a [batch process](#)) you need to be aware of differences in column name and column order in the input files.

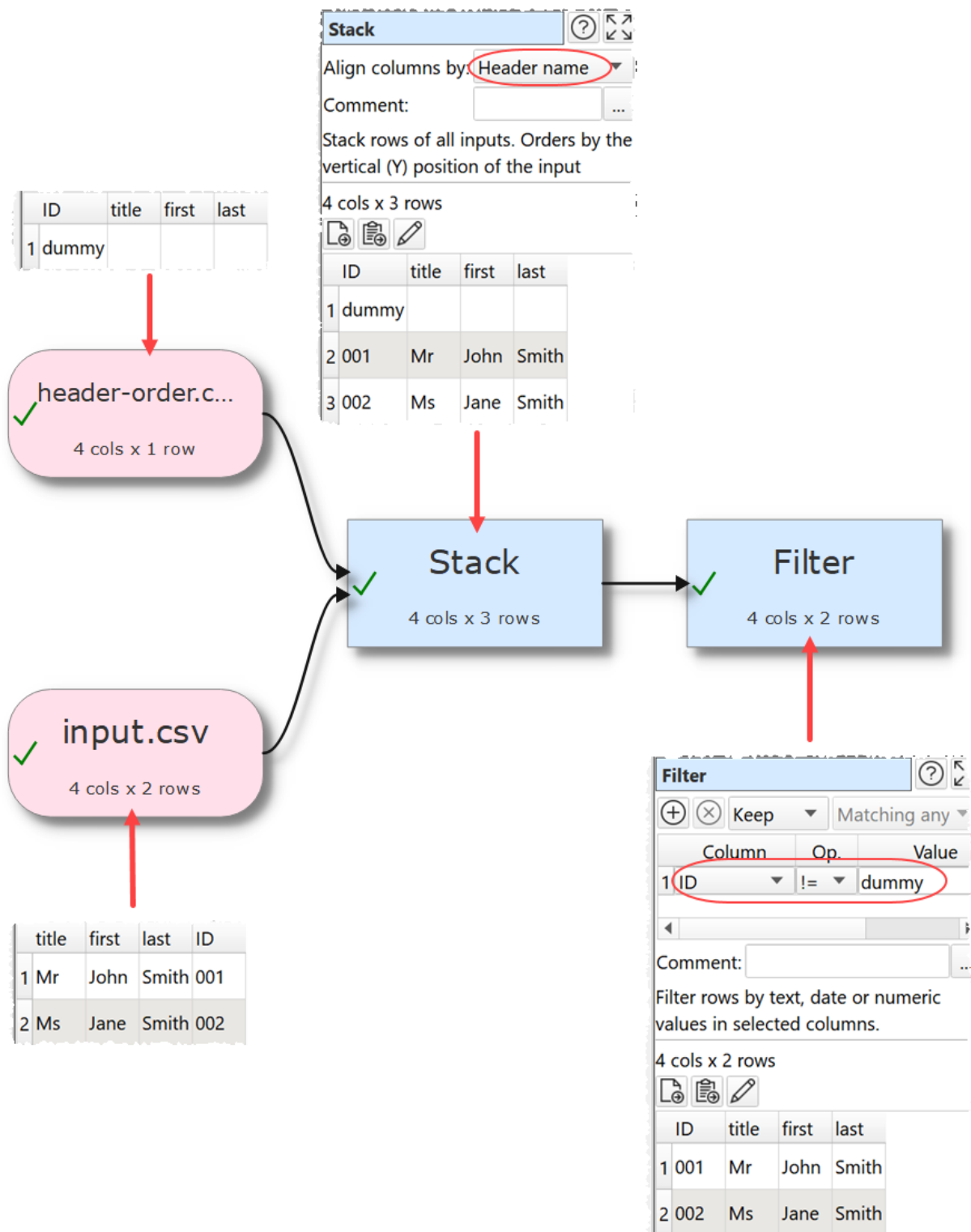
To change the file being used by an input, select the input item and change the file location in the **Right** pane (e.g, by clicking the '...' browse file button), rather than disconnecting the input and connecting a new one. Otherwise column-related parameters downstream will be reset.

#### Same columns in the same order, but with different names

Easy Data Transform references columns by their position (e.g. 3rd column from the left) not their column name. So differences in column names (e.g. first column is called "id" in input 1 and "UniqueID" in input 2) are not generally an issue. But you need to be careful if you are using the [Stack](#) transform with **Align columns by** set to **Header name**, as this will reorder columns by name. If you want to always output the same column names, regardless of the input column names, you should use a [Rename Cols](#) transform to set the names.

#### Same columns with the same names, but in a different order

If columns are in different orders in different input files (e.g. the "id" column in the first column in input 1 and the second column in input 2) you need to sort the input columns into a standard order before applying other transforms. You can do this using the [Stack](#) transform with **Align columns by** set to **Header name**. Stack your input under a dataset with columns in the correct order. You can use a [Filter](#) to remove any unneeded rows after the stacking. Note stacking by header name is sensitive to case and whitespace.



**Same columns with different names, in a different order**

Easy Data Transform can't handle this automatically. But you can create a new .transform and use [Reorder Cols](#) and/or [Rename Cols](#) transforms to output to a new file with the correct column names/ordering. You can then input this to the original .transform.

### 3.9 Handle large datasets

Large datasets (e.g. a million data points or more) can slow down processing. If slow processing is a problem you can:

- Add a [sample](#) transform straight after the input and set **Rows** to pass through only the first 100 or so rows. Once you have completed all your transforms you can then **Disable sampling** to pass through all rows.
- Set **Right pane processing delay** in the [Preferences window](#) to a longer time (say 5 seconds) to ensure that that changes aren't processed until you have finished making the changes.
- Set **Write mode** to **Disabled** in output files, until you are ready to write them.

Easy Data Transform exists in 32 bit and 64 bit versions for Windows. You can see which you have installed in the **About** window. The 32 bit version cannot address more than 4GB of memory. Which version of Easy Data Transform is installed depends on whether you have a 32 bit or 64 bit version of the Windows operating system. So, if you want to tackle really large datasets, you should use Easy Data Transform on a 64 bit versions of Windows.

### 3.10 Input a fixed width format file

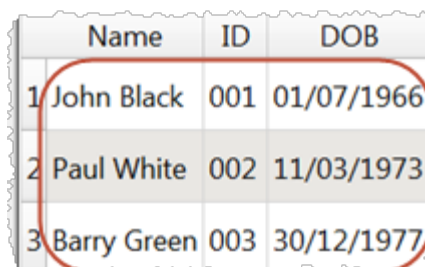
To input data from a fixed width file see [fixed width format](#).

### 3.11 Merge datasets

Easy Data Transform has two main options for merging two datasets. Stack and Join.

#### Stack datasets

If you want to merge the two datasets so they are one on top of another, use the [Stack](#) transform. For example, to Stack these two datasets:



	Name	ID	DOB
1	John Black	001	01/07/1966
2	Paul White	002	11/03/1973
3	Barry Green	003	30/12/1977

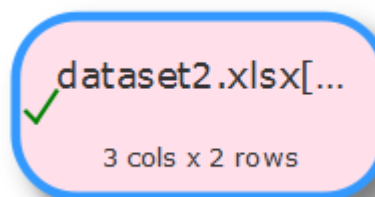
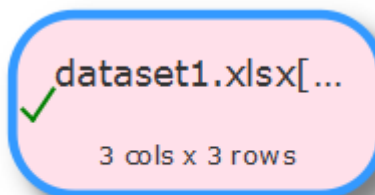
+

	Name	ID	DOB
1	Jane Brown	004	03/11/1980
2	Jill Taupe	005	01/03/1981

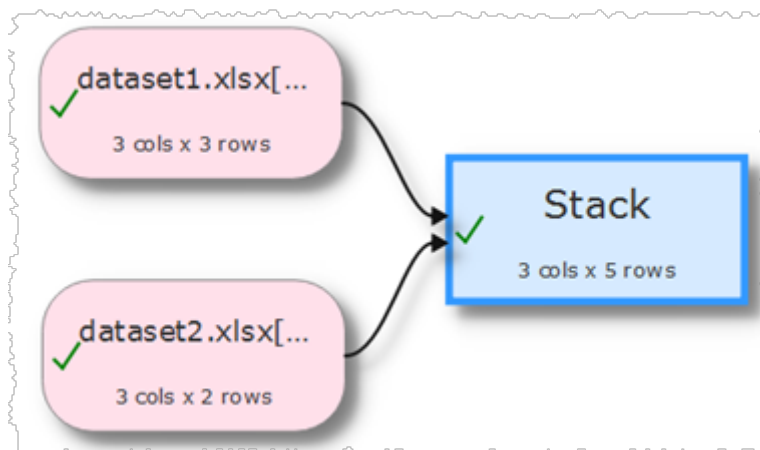
To get this dataset:

	Name	ID	DOB
1	John Black	001	1966-07-01
2	Paul White	002	1973-03-11
3	Barry Green	003	1977-12-30
4	Jane Brown	004	1980-11-03
5	Jill Taupe	005	1981-03-01

Drag the two dataset files onto the **Center** pane of Easy Data Transform.



Select the two datasets using `Ctrl+click` then click the **Stack** transform in the **Left** pane.



The datasets are now stacked in the vertical order that the datasets are shown on the screen. The top dataset is shown first. You can swap the the vertical positions of the datasets to change the order in which they are stacked.

If you want to stack column n of the first dataset above column n of the second dataset, set **Align columns by** to **Column number**.

If you want to stack columns by common [header names](#) (even if they aren't in the same order), set **Align columns by** to **Header name**.

If you want to stack a large number of files you can do it by using [batch processing](#) to write to an output item with **Write Mode**=Append.

## Join datasets

If you want to merge the two datasets side-by-side using a common ('key') column, use the [Join](#) transform. For example, to Join these two datasets:

	Name	ID	DOB
1	John Black	001	1966-07-01
2	Paul White	002	1973-03-11
3	Barry Green	003	1977-12-30
4	Jane Brown	004	1980-11-03
5	Jill Taupe	005	1981-03-01

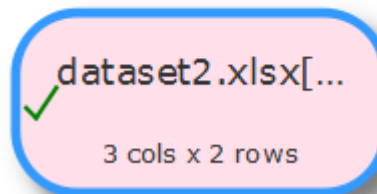
+

	ID	Department	Level
1	001	Engineering	1
2	003	Engineering	2
3	004	Marketing	1
4	002	Sales	2
5	005	Sales	3

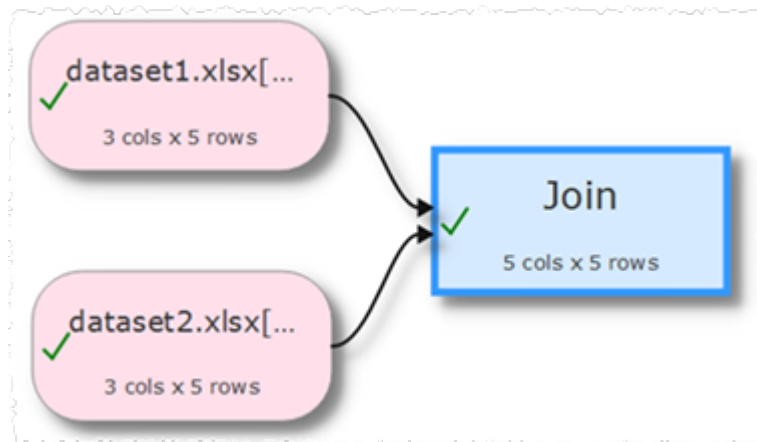
By common ID value to get this dataset:

	Name	ID	DOB	Department	Level
1	John Black	001	1966-07-01	Engineering	1
2	Paul White	002	1973-03-11	Sales	2
3	Barry Green	003	1977-12-30	Engineering	2
4	Jane Brown	004	1980-11-03	Marketing	1
5	Vill Taupe	005	1981-03-01	Sales	3

Drag the two dataset files onto the **Center** pane of Easy Data Transform.



Select the two datasets using **Ctrl+click** then click the **Join** transform in the **Left** pane.



Set both **Top key column** and **Bottom key column** to the common ('key') column.

The datasets are now joined side-by-side using the common column. The top dataset is shown on the left. You can swap the vertical positions of the datasets to change the order in which they are joined.

If you just want to join row N of one dataset to row N of another dataset, you can use the [Row Num](#) transform to create a common column in each dataset.

Set **include top non-matching rows** and **include bottom non-matching rows** depending on what you want to do with top and bottom dataset rows for which there are no matches.

Note that matching columns takes account of whitespace and case. So you might need to do [Whitespace](#) and [Case](#) transforms before the join.

If you are merging numerical datasets you can also use an [Interpolate](#) transform.

Video: [How to join Excel files](#)

### 3.12 Move a .transform file

To move a .transform file to a different location on the same computer use **File>Save As...** or **Windows Explorer**. You either leave the Input files at the original location or move them to the same location relative to the .transform file (e.g. if they were in the same folder as the .transform file before, move them to the same folder as new .transform file).

To move a .transform file to a different computer, move the Input files to the same location relative to the .transform file (e.g. if they were in the same folder as the .transform file before, move them to the same folder as new .transform file).

See also [.transform files](#).

### 3.13 Output nested JSON or XML

You can use the dot ('.') character in the column header to show nesting. For example:

	name	carb	cholesterol	fiber	minerals.ca	minerals.fe	protein	sodium	vitamins.a	vitamins.c
1	Avocado Dip	2	5	0	0	0	1	210	0	0

Is output to JSON as:

```
[
  {
    "name": "Avocado Dip",
    "carb": "2",
    "cholesterol": "5",
    "fiber": "0",
    "minerals": {
      "ca": "0",
      "fe": "0"
    },
    "protein": "1",
    "sodium": "210",
    "vitamins": {
      "a": "0",
      "c": "0"
    }
  }
]
```

And to XML as:

```
<?xml version="1.0" encoding="UTF-8"?>
<root>
  <record>
    <name>Avocado Dip</name>
    <carb>2</carb>
    <cholesterol>5</cholesterol>
    <fiber>0</fiber>
    <protein>1</protein>
    <sodium>210</sodium>
    <minerals>
      <ca>0</ca>
      <fe>0</fe>
    </minerals>
    <vitamins>
      <a>0</a>
      <c>0</c>
    </vitamins>
  </record>
</root>
```

For more details see:

- [JSON format](#)

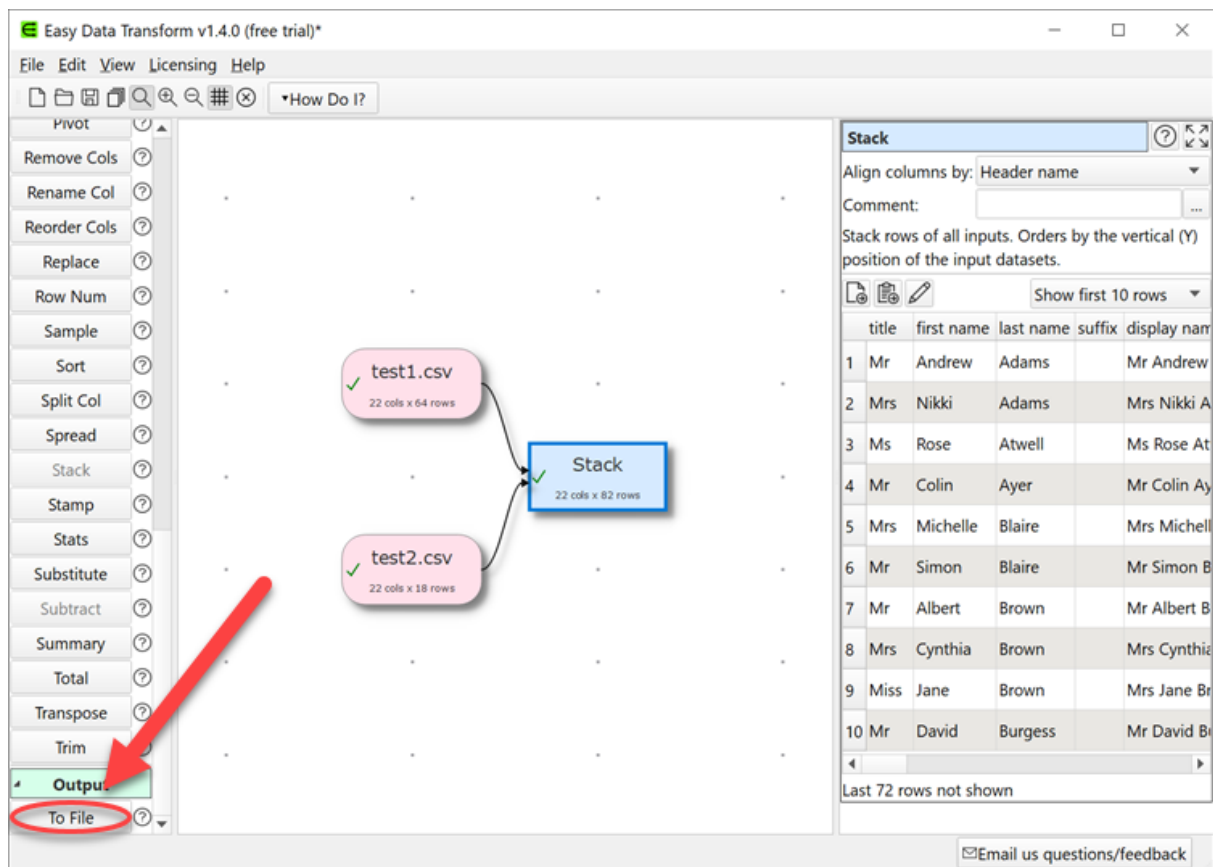


- [XML format](#)

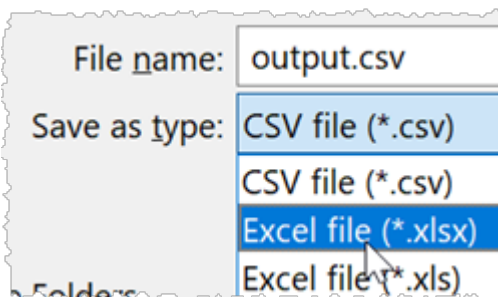
### 3.14 Output to Excel

To output results from a transform to an Excel .xlsx/.xls file:

- Select the transform item in the **Center** pane.
- Click **To File** at the bottom of the **Left** pane.



- Select \*.xlsx or \*.xls from the file type drop-down list that appears.



Note that Excel .xlsx files are typically limited to 1,048,576 rows and 16,384 columns.

See also:

- [Write to multiple sheets of an Excel file](#)

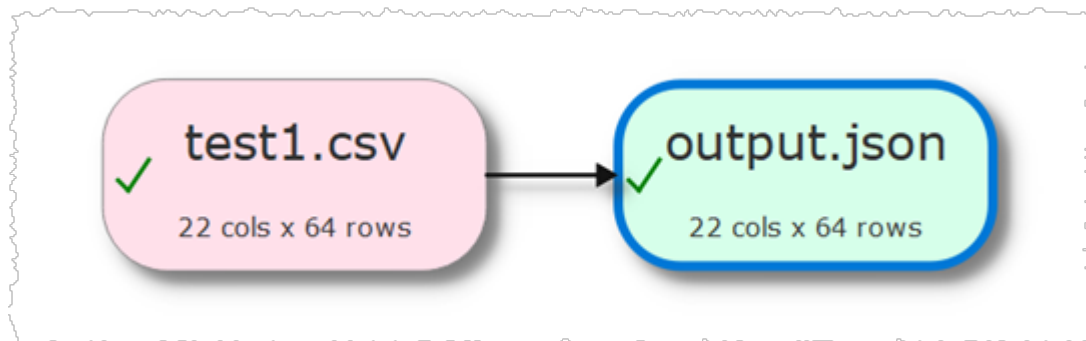
### 3.15 Perform the same transforms on many files

You can perform the same set of transforms on multiple inputs in one operation using [batch processing](#) or [command line arguments](#).

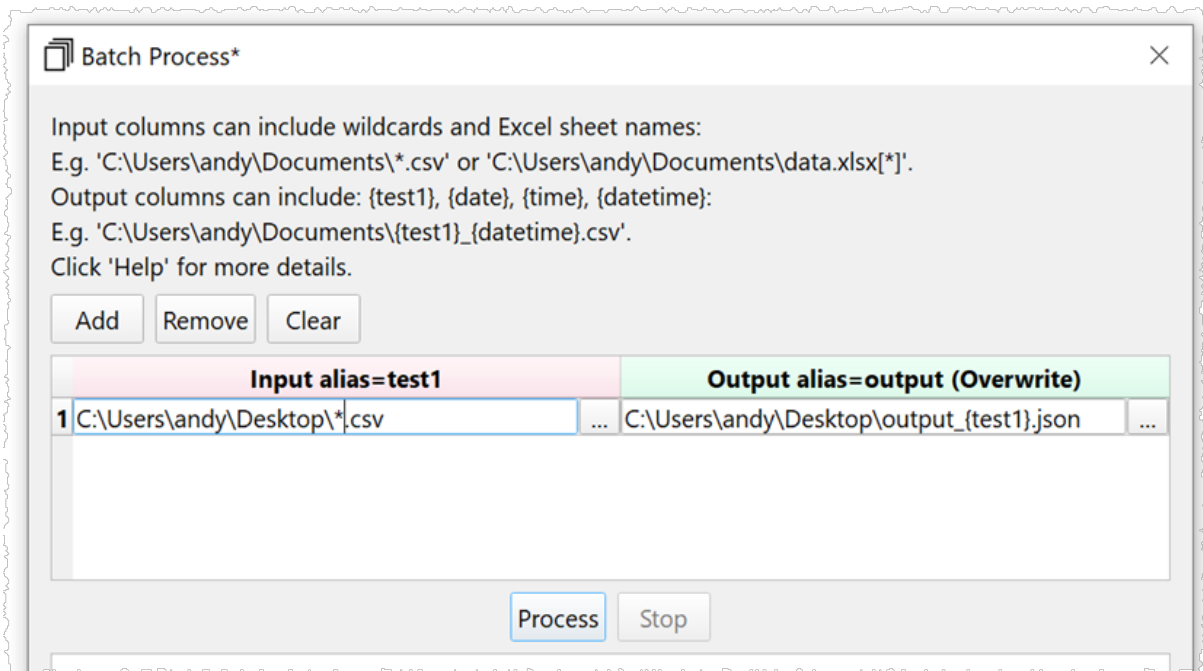
#### Example 1

To convert a folder full of .csv files to .json files:

1. Select **File>New** to create a new transform template file
2. Drag one of the .csv files onto the **Center pane**. Ensure the options (encoding etc) are correct in the **Right pane**.
3. Click on the **To File** button at the bottom of the **Left pane** and set the location of a .json file to create. Ensure the options (encoding etc) are correct in the **Right pane**.



4. Select **File>Batch Process**.
5. In the **Batch Process** window change the .csv file name to \*.csv and output.json to output\_{test1}.json.



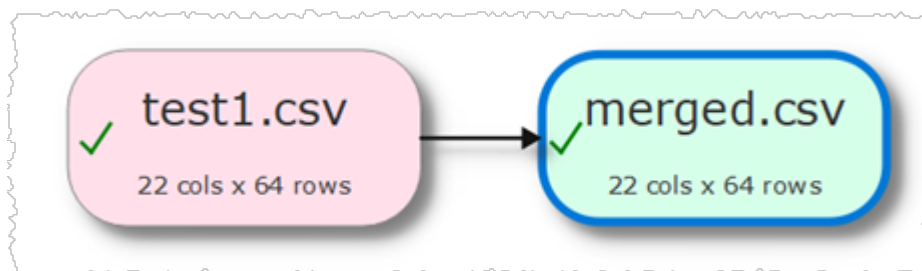
6. Press the **Process** button. A .json file will now be created for each .csv file in the folder.

If you want to process input files from another folder then click **Add** to add a new row and change the **test1** input folder.

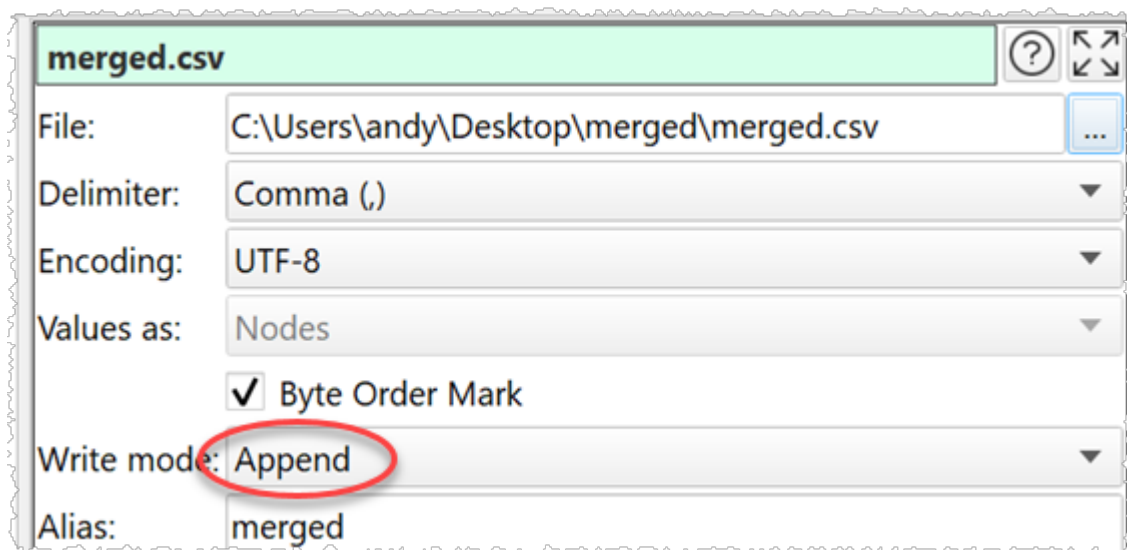
## Example 2

Merge multiple .csv files into a single .csv file:

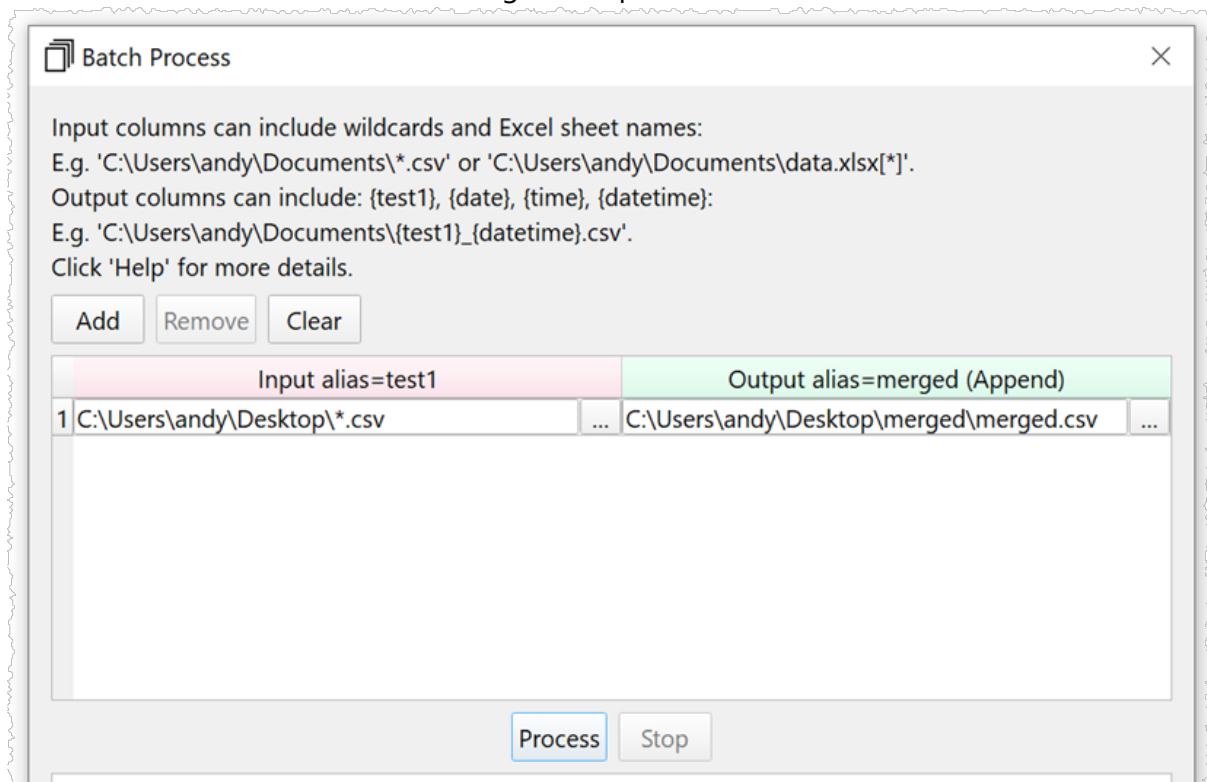
7. Select **File>New** to create a new transform template file
8. Drag one of the .csv files onto the **Center pane**. Ensure the options (encoding etc) are correct in the **Right** pane.
9. Click on the **To File** button at the bottom of the **Left** pane and set the location of a merged.csv file to create, in a different folder to the input .csv files. Ensure the options (encoding etc) are correct.



4. Set **Write Mode** to **Append** in the **Right** pane.

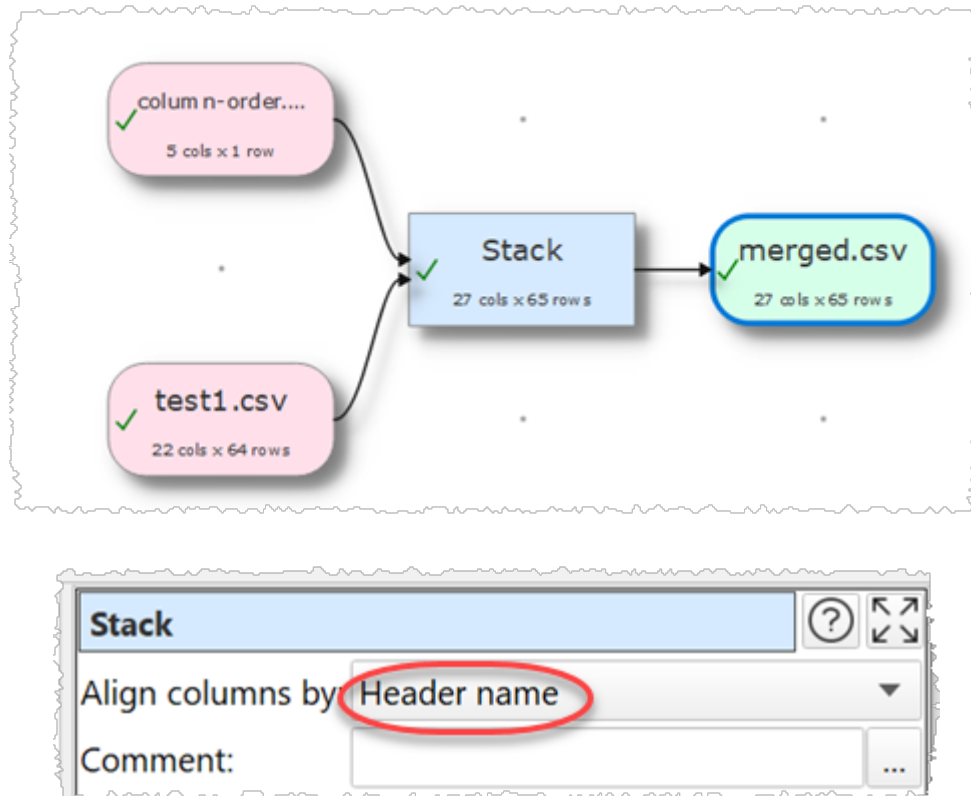


5. Select **File>Batch Process**.
6. In the **Batch Process** window change the input .csv file name to \*.csv.



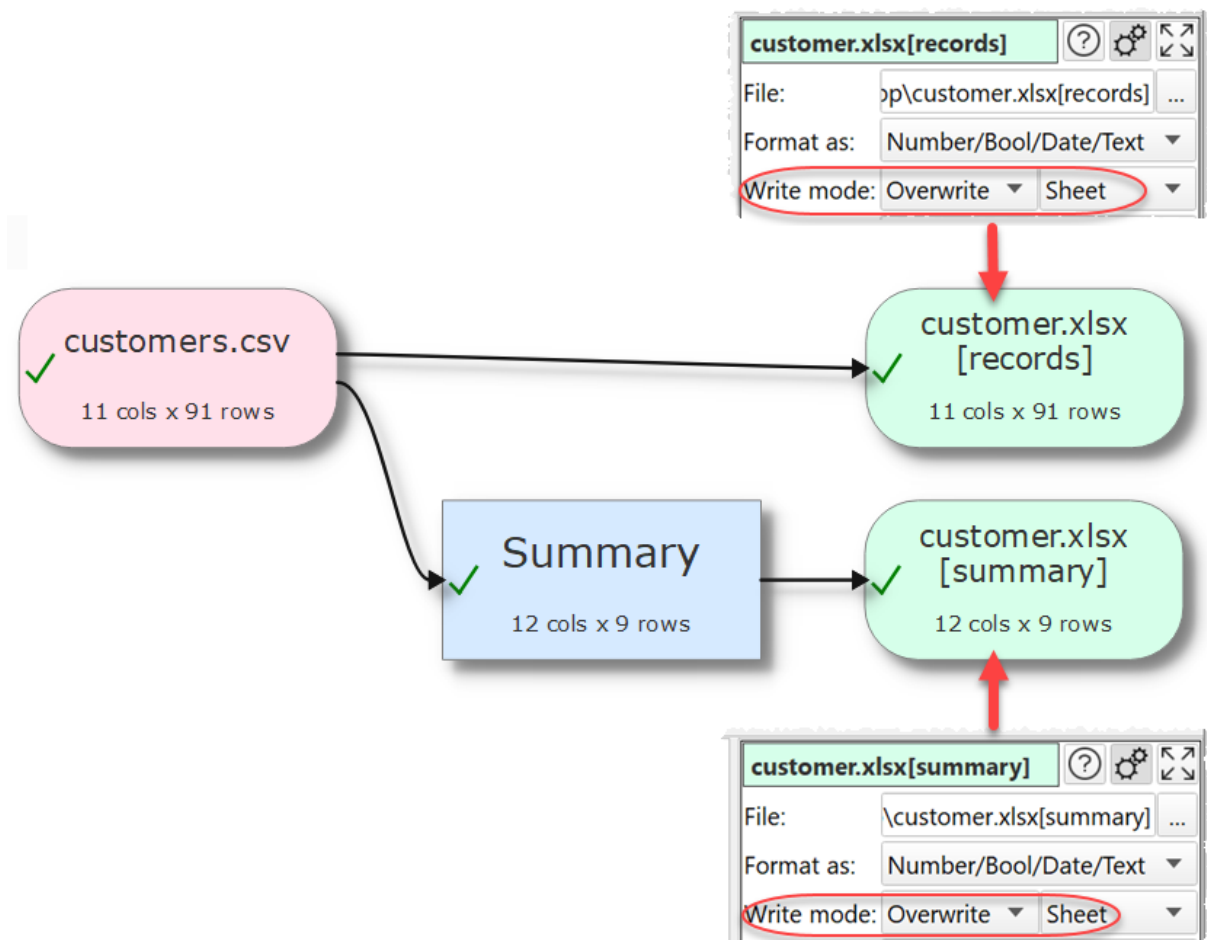
7. Press the **Process** button. A single merged.csv file will now be created that contains a concatenation of all the other .csv files. If merged.csv already exists, you may need to delete it first.

If the headers are different orders in different .csv files, then you can [Stack](#) by header name to get a consistent column order before outputting.



### 3.16 Write to multiple sheets of an Excel file

To write to multiple sheets (tabs) of the same Excel file you need to set the **Write mode** of each output item to **Overwrite/Sheet** (to clear the sheet first) or **Append** (to add to existing sheet data).



If you set the **Write mode** to **Overwrite/File** for an item then the write will remove existing sheets.

**Support**

## 4 Support

### 4.1 Forum

There is a discussion forum online at [forum.easydatatransform.com](https://forum.easydatatransform.com). You can use this to ask questions, share what you are doing and keep up to date with news.

### 4.2 Contact support

If you have any questions or suggestions, please contact us at [support@easydatatransform.com](mailto:support@easydatatransform.com).

### 4.3 Report a bug

Please report any bugs you find to [support@easydatatransform.com](mailto:support@easydatatransform.com). Please include:

- your operating system (e.g. Windows 10)
- the version of Easy Data Transform (from **Help>About**)
- a step-by-step description of how we can reproduce the problem
- your .transform file and input data files (where appropriate)
- a screen capture or video can often be helpful

The step-by-step description is particularly important - if we can't reproduce your problem, then we probably won't be able to fix it.

We treat all data sent to us as confidential, unless you tell us otherwise. If your data is particularly sensitive, it might be enough to send us just the first few rows with sensitive values changed. Keep the same column structure though.

### 4.4 Request an enhancement

We are always very interested to hear your suggestions on how the software can be improved. Please email us at [support@easydatatransform.com](mailto:support@easydatatransform.com).



**- . -**

.transform file 114

**- B -**

batch processing 109

**- C -**

case 26  
Center pane 21  
chop 26  
clone 27  
column variables 108  
command line arguments 113  
comments 99  
compare cols 27  
concat cols 28  
concat rows 28  
connections 102  
copy 120  
copy cols 30  
count 30  
cross 31  
crosstab 69  
CSV format 87

**- D -**

date format 32  
dates 104  
dedupe 34  
duplicate 120

**- E -**

Excel format 88  
extensions 22  
extract 34

**- F -**

file extensions 22  
file formats 87

fill 35  
filter 36  
Fixed width format 89  
forum 140

**- G -**

gather 37  
group by 37

**- H -**

header 38, 101  
HTML 93

**- I -**

if 40  
input 23  
insert 41  
interpolate 42  
intersect 47  
Introduction 7

**- J -**

Javascript 47  
join 50  
JSON format 91

**- L -**

Left pane 20  
long pivot 37  
lookup 53

**- M -**

Main window 20  
Markdown format 94  
meta information 106

**- N -**

new col 56

num format 57  
numbers 106

## - O -

output 84

## - P -

pad 58  
paste 120  
pivot 58  
pivot longer 37  
pivot wider 69  
preferences 21  
Preferences window 21

## - Q -

Quick start guide 7

## - R -

regular expressions 108  
remove cols 59  
rename cols 60  
reorder cols 61  
replace 61  
Right pane 21  
row num 62

## - S -

sample 63  
scripting 47  
slice 63  
sort 66  
split col 67  
split rows 67  
spread 69  
stack 71  
stamp 72  
standard deviation 75  
stats 75  
substitute 76  
subtract 77

summary 77  
system requirements 7

## - T -

text 104  
total 79  
transpose 80  
trim 80  
TSV format 95

## - U -

unique 81  
unpivot 37

## - V -

vCard format 96  
vcf format 96

## - W -

whitespace 83  
wide pivot 69

## - X -

XML format 96

## - Y -

YAML format 99