Excel function formula

2024.4.17

Revision history

Date	Version	Page	Description
2015-01-16	Rev1.0.0	--	Issued the first version.
2018-11-05	V6.2.18110	P4, 10	Added the AND function and OR function.
2019-03-05		P4	Addition of apps that do not support AND and OR functions
2019-05-14	Windows version V4.1.19040	P4	Added the Windows version i-Reporter AND function and OR function.
2019-12-17		P8	Added search coverage for LOOKUP and VLOOKUP functions.
2020-12-25		P29	Added "Other restrictions" and added that the formula abbreviated format is not supported.
2021-03-30		P22-24	In "Specification limits of ConMas i-Reporter in EXCEL formula" Add "TRUE" or "FALSE" as strings" “About non-input judgment" "When a range of cells includes merged cells"
2021-03-30		P25	Changed "differences in processing for merged cells" to "differences in processing of COUNTBLANK function for merged cells" and reviewed the description.
2021-05-13	V8.0.21050	P7	Added SQRT function.
2022-02-21	V8.0.22020	P9、P12	Added EDATE function. Added restrictions on the use of the EDATE function.
2024-04-17	V8.1.24040	P7、P13	Added POWER function. Added restrictions on the use of the POWER function.
		P35	Restrictions on the use of array constants have been added to "Other Restrictions.

Contents

Logic function

Logical functions are used to determine specified conditions.

1	**IF**	Determines whether a value or expression satisfies a condition and returns the specified content depending on the result.
2	**IFERROR**	Returns the specified value if the result of the formula is an error, otherwise returns the result of the formula.
3	**AND**	Find the logical AND. Can only be used in the conditional expression of the IF function. * iOS version app: Ver.6.2.18100 or higher Windows version app: Ver.4.1.19040 or higher
4	**OR**	Find the logical AND. Can only be used in the conditional expression of the IF function. * iOS version app: Ver.6.2.18100 or higher Windows version app: Ver.4.1.19040 or higher

There are restrictions on the use of AND/OR, so please also refer to the "Restrictions on the use of AND/OR functions" section for details.

Statistics functions (1/2)

Statistical functions can find the average, maximum, and minimum values of aggregated data.

5	**AVEDEV**	Returns the mean deviation.
6	**AVERAGE**	Returns the average value of the values specified by the arguments.
7	**AVERAGEA**	Returns the average value of the values specified by the arguments. Logical values are also considered.
8	**AVERAGEIF**	Returns the average value of the cells that meet the condition.
9	**AVERAGEIFS**	Returns the average of numbers that meet multiple conditions.
10	**COUNT**	Returns the sum of numeric-only counts in the specified range of cells.
11	**COUNTA**	Returns the total number of numbers, strings, etc. in the specified range of cells.
12	**COUNTBLANK**	Returns the sum of unfilled data in the specified range of cells.
13	**COUNTIF**	Returns the number of data in the specified cell range that match the search criteria.
14	**MAX**	Returns the maximum value from the values specified by the arguments.
15	**MAXA**	Returns the maximum value from the values specified by the arguments. Logical values are also considered.
16	**MEDIAN**	Returns the median value from the values specified by the arguments.
17	**MIN**	Returns the minimum value from the values specified by the arguments.
18	**MINA**	Returns the minimum value from the values specified by the arguments. Logical values are also considered.

Statistics functions (2/2)

19	**MODE**	Returns the most frequent value from the values specified in the argument.
20	**PERCENTRANK**	Returns a value representing the rank as a percentage in the array or cell range specified by the argument.
21	**STDEV**	Returns an estimate of the population standard deviation based on the sample, taking the argument as a sample of a normal population.
22	**STDEVA**	Returns an estimate of the population standard deviation based on the sample, taking the argument as a sample of a normal population. Logical values are also considered.
23	**STDEVP**	Returns the population standard deviation, taking the argument as the entire population.
24	**STDEVPA**	Returns the population standard deviation, taking the argument as the entire population. Logical values are also considered.

Math function

Mathematics and trigonometric functions can calculate four arithmetic operations such as total values, rounding numbers and factorials.

25	**ABS**	Returns the absolute value of a number.
26	**ROUND**	Rounds a number to a specified number of digits.
27	**ROUNDDOWN**	Truncates a number to a specified number of digits.
28	**ROUNDUP**	Rounds a number up to a specified number of digits.
29	**SUM**	Sums the values of the specified number or range of cells.
30	**SUMIF**	Sums the values of cells that match the specified criteria.
31	**SUMIFS**	Sums up numbers that meet multiple specified criteria.
32	**SQRT**	A function that finds the positive square root of a number. * Designer Ver.8.0.21050 or higher * iOS version app: Ver.8.0.21050 or higher Windows version app: Ver.5.2.21050 or higher * Check clusters cannot be included in calculations.
33	**POWER**	Returns the result of a number raised to a power. * Designer Ver.8.1.24040 or higher * iOS Version app: Ver.8.1.24040 or higher Windows version app: Ver.5.2.24040 or higher

Search/matrix functions

Search and matrix functions are used to search for data in worksheets.

34	**LOOKUP**	Searches the specified range vertically and returns the value of the corresponding range cell at the same position as the search value. * Horizontal search is not supported.
35	**VLOOKUP**	Searches the specified range vertically, and returns the value in the specified column number if it matches the search value. * Horizontal search is not supported.
36	**AREAS**	Returns the number of regions in the range specified by reference.

Date/time functions

Date/time functions are used to perform date/time calculations.

37	**EDATE**	Returns a date that is months after or months before the specified start date. *Designer Ver.8.0.22020 or higher * iOS version app: Ver.8.0.22020 or higher Windows version app: Ver.5.2.22020 or higher

String manipulation functions

It is used when converting a character string to a specified format or extracting part of a character string.

38	**ASC**	Converts a full-width string to a half-width string.
39	**CONCATENATE**	Joins multiple strings or numbers specified by arguments.
40	**LEFT**	Returns the specified number of characters from the left end of a string.
41	**LEN**	Returns the number of characters in the specified string.
42	**MID**	Returns a string starting at a specified starting position and starting at a specified number of characters.
43	**RIGHT**	Returns a specified number of characters from the right end of a string.

In addition to the above, only the four arithmetic operators (+ - * /) can be used.

Restrictions on the use of AND/OR functions

AND/OR functions can only be used in conditional expressions of IF functions. It is also possible to use AND/OR functions within AND/OR functions. It is also possible to use another function within the AND/OR function.

= IF (conditional expression, TRUE processing, FALSE processing)

The AND/OR function can be used in the conditional expression of the IF function.

■ Examples where AND/OR functions can be used

=IF(OR(AND(SUM(S1C0,S1C1)>0,S1C0=S1C1), AND(S1C1=S1C2,S1C1>0)),1,0)

It is also possible to use AND/OR functions within AND/OR functions.
It is also possible to use another function within the AND/OR function.

=IF(S1C0<0,"NG",SUM(IF(AND(S1C0=S1C1,S1C0=S1C2),1,0),1))

There is no problem because the AND function is used in the conditional expression of the second IF function.

■ Examples where AND/OR functions cannot be used

=IF(SUM(AND(S1C0>0,S1C1>0),S1C2,S1C3)>3,"OK","NG")

It will be NG because the AND/OR function is used in the SUM function.

Restrictions on the use of the EDATE function

The EDATE function calculates a date by adding (or subtracting if the value is negative) the specified number of months from the start date by specifying the start date with year, month, and day as the first argument and the month as the second argument.
Since this is a function whose result is a date, please set the “Result data type" to “Date/Time" and specify the date format for the formula cluster for which you wish to display the EDATE function result.

=**EDATE**(start date, month)

■ About specifying the first argument

Specify the serial number or cluster as the start date in the first argument.
If a decimal value is specified, it will be calculated by truncating the decimal point.
It is not possible to specify the date as a character string. If you want to specify the start date with a fixed value, please specify the serial number.
(Cluster type that can be specified as the first argument)
“Date", "Calendar Date", "Calculation Formula (Set the calculation result data type to “Date/Time" and specify the date format.)", "Date of issue" (iOS only)", “Last update date (iOS only)"

■ About specifying the second argument

Specify a number or cluster as the month to calculate for the second argument.
If a decimal value is specified, it will be calculated by truncating the decimal point.
A character string cannot be specified.
(Cluster type that can be specified as the second argument)
"Numerical number keyboard", "Choice of Numerical number", "Calculation formula", "Toggle select (calculate using "value")", "Toggle summary", "Single choice (“Take item of choices as number" setting)", "Barcode (only available when “Value is numerical number" setting)"

POWER関数の使用制限

The POWER function calculates powers of a number by specifying a number (the base of the power) as the first argument and an exponent as the second argument.

Both arguments must be numerical values.

=**POWER**(number, exponent)

■Specifying the first argument
Specifies a number (the base of a power).

■Specifying the Second Argument
Specify the exponent.

(Cluster types that can be specified as arguments)
- Choice of Numeric selection
- Numerical value
- Calculation formula
- Toggle select
- Toggle summary
- Single choice (“Take item of choices as number" setting)
- Barcode (only available when “Value is numerical number" setting)"

※If a serial value is used in the POWER function, it may not work as intended due to overflow of digits.

Date/Time calculation

Date and time are calculated using serial numbers.

What is a serial number

"January 1, 1900" is set to "1", and the total number of days and time since that day is expressed as a numerical value.
The number "1" is calculated as one day, and the time is represented by the decimal value of "1" converted to 24 hours.

"January 1, 1900" → Serial number is "1"
"January 5, 1900" → Serial number is "5"
"January 1, 2015" → Serial number is "42005“

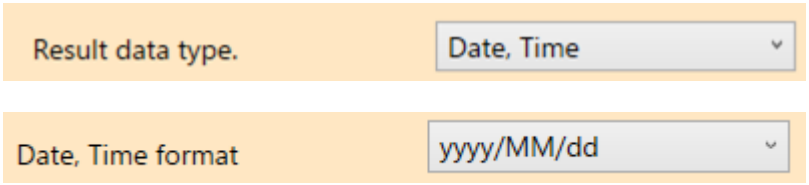
"0:00:00" → Serial number is "0.0"
"12:00:00" → Serial number is "0.5"
"21:00:00" → Serial number is "0.875"

Date/time calculation result display

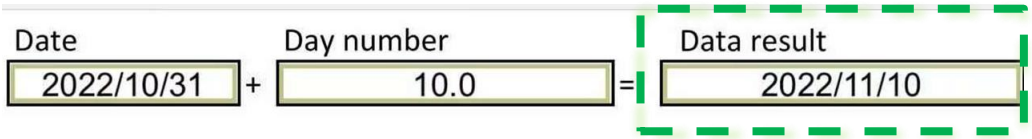
Since the date and time are calculated using serial numbers, the calculation results will also be serial numbers and displayed as numerical values.
Therefore, the “Result data type" setting has been added to the input parameter settings of the formula cluster. By setting “Result data type" to “Date,Time", calculation results can be displayed in the format of the specified date or time.

（Example）

Designer setting



Tablet device



Result date type

There are three types of calculation result data type settings: "Other", “Date,Time", and “character string". Each display has the following specifications.

■Other

The same calculation result display as before is performed. Specify when there is no specific display specification such as “Date,Time" or "character string". Automatically judge the calculation result and display it as a character string or numerical value.
Therefore, strings that can be converted to numbers are displayed as numbers even if they are actually strings. Also, logical values are displayed as numerical values with True=1 and False=0, respectively.

■Date,Time

Calculates the numerical value resulting from the calculation as a serial number and displays it as a date/time in the specified format.
An error will occur if the calculation result is a value that cannot be converted to date/time, such as a character string.

■character string

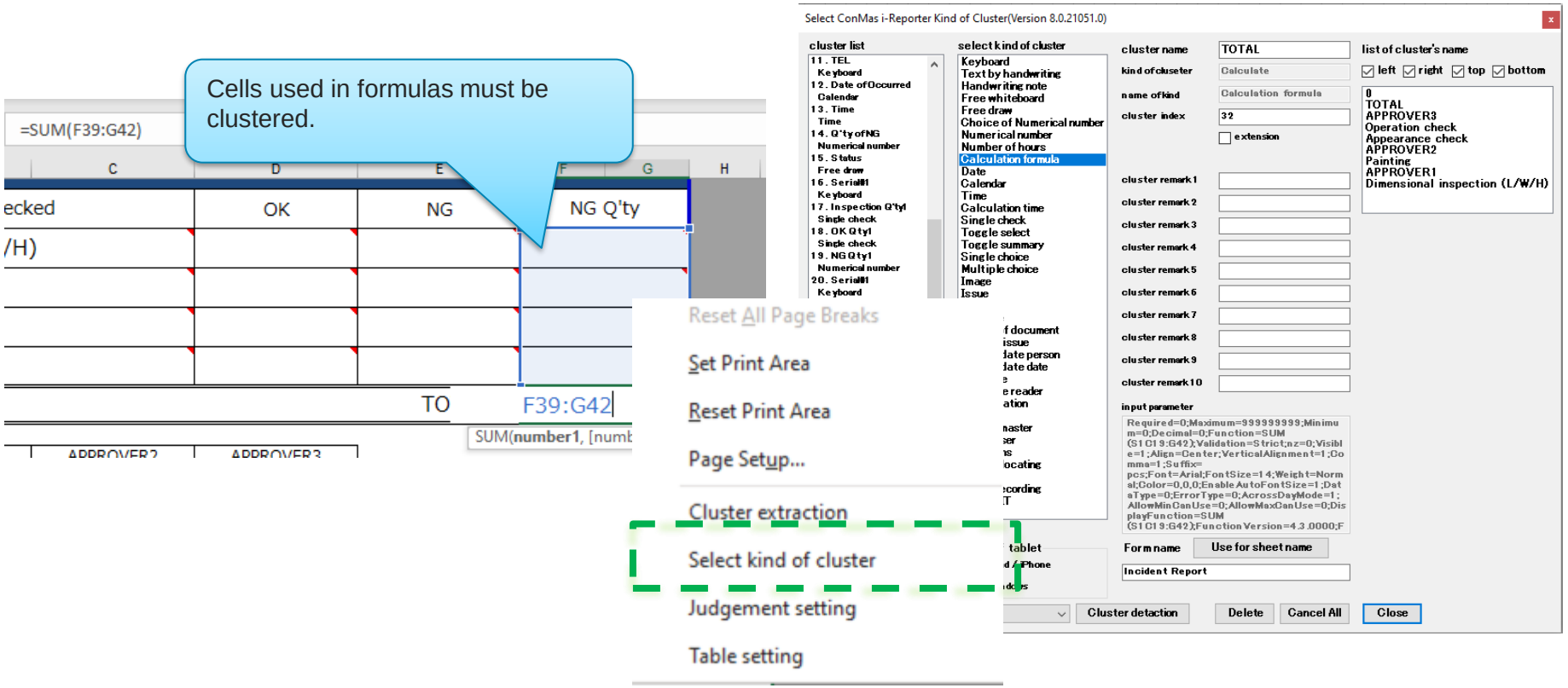
Forces calculation results to be displayed as strings. If the calculation result is a logical value, it will be displayed as a string of "true" or "false".
If the calculation result is a numerical value and it is a decimal value that continues infinitely like 1.666666, it will be rounded according to the number of digits after the decimal point in the formula cluster set in Designer and then converted to a character string for display.

In the EXCEL formula Specification limits of ConMas i-Reporter

There may be some differences in calculation formulas or calculation result display specifications between EXCEL and ConMas i-Reporter.
Below is a summary of ConMas i-Reporter specification limitations.

Cells included in formulas must be clustered

In ConMas i-Reporter, formulas that include cells that are not clustered on EXCEL in formula clusters will be displayed as "#REF" when imported into Designer, and an error will occur when saving the Forms. Therefore, the cells included in the formula must be clustered in EXCEL.



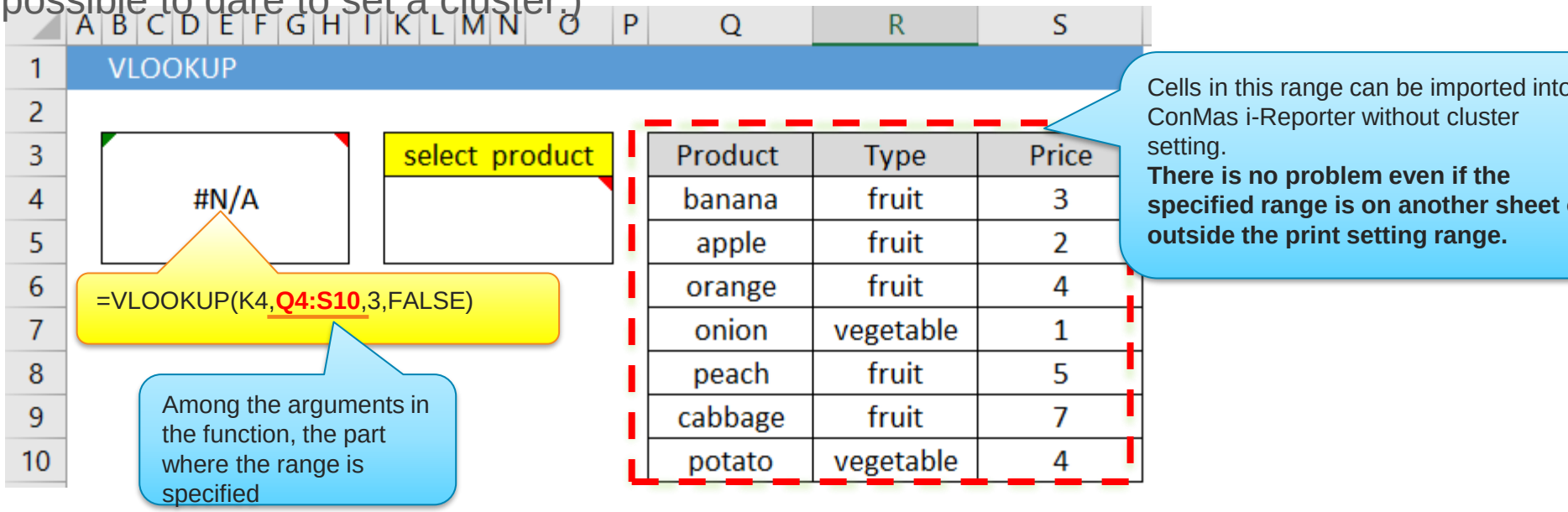
Pattern that can capture cell information that is not clustered

Cells included in a formula must be clustered, but as an exception, cell values can be imported into ConMas i-Reporter without clustering only for some EXCEL function arguments.

（Object EXCEL function）

LOOKUP、VLOOKUP、AVERAGEIF、AVERAGEIFS、COUNTIF、SUMIF、SUMIFS

Among the arguments of the above EXCEL function, it is not necessary to set the cluster for the cells that are the arguments for specifying the range. (It is also possible to dare to set a cluster.)

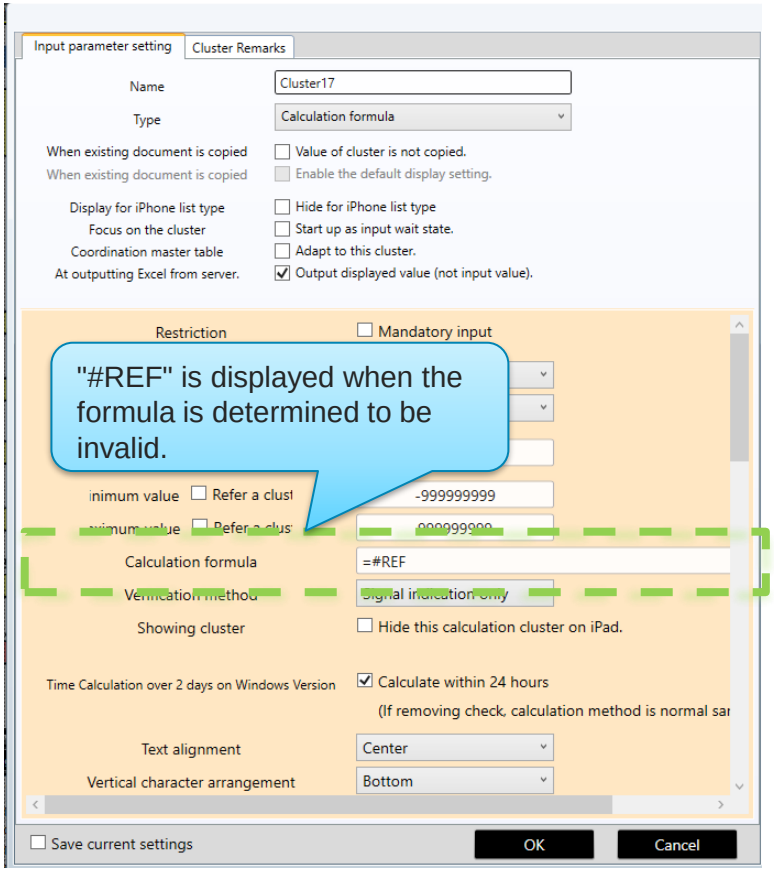


Cluster types that cannot be included in formulas

Some cluster types cannot be included in calculation formulas. If the following cluster types are included in the formula, the formula will be displayed as "#REF" when importing EXCEL to Designer even for cells with cluster settings.

（Cluster types that cannot be used in formulas）

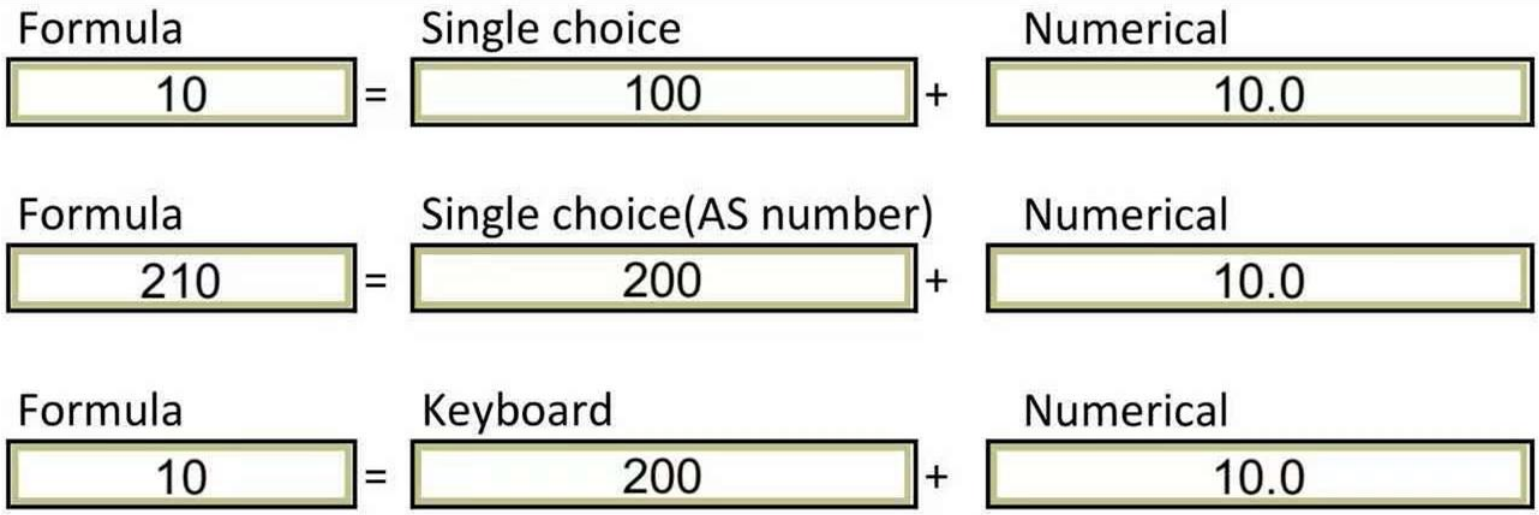
- Handwriting note
- Free whiteboard
- Free draw
- Image
- Issuer
- Inspector
- Approver
- Action



strings are not treated as numbers

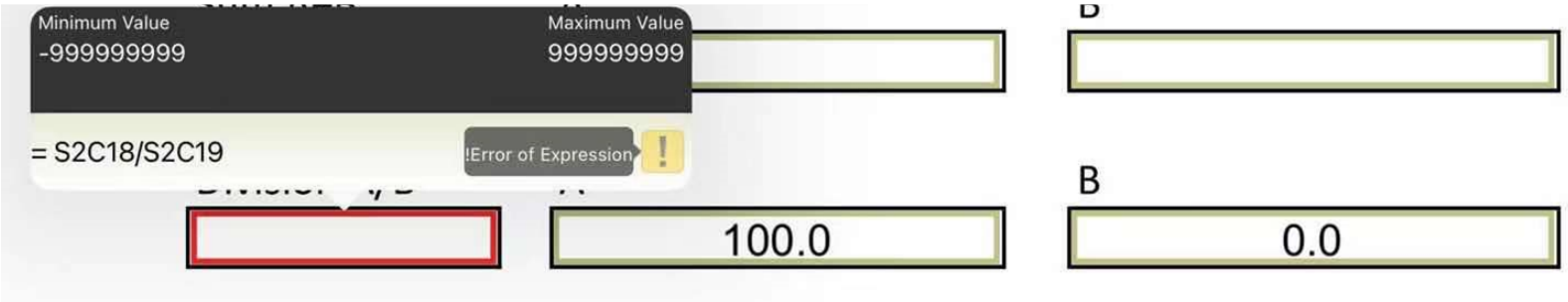
In ConMas i-Reporter, when a cluster type that handles strings, such as keyboard text clusters, is included in a calculation formula, it is not treated as a numerical value. So even if you enter a number with a keyboard text cluster, etc., it will be treated as a string, not a number, and ignored in numerical calculations. This is valid for formulas that handle character strings, such as LEFT and RIGHT.

For Single choice clusters and QR code clusters, the value is treated as a number instead of a character string, so it can be included in numerical calculations only when the “result as a number" setting is selected. However, if the value is a character string that cannot be converted to a numeric value, it will be ignored from numeric calculations.



Handling formula errors

Error details such as "#DIV/0!", "#REF!", "#NAME?", "#N/A", "#NULL!", "#VALUE!" However, in i-Reporter, they are all displayed as " Error of Expression!".



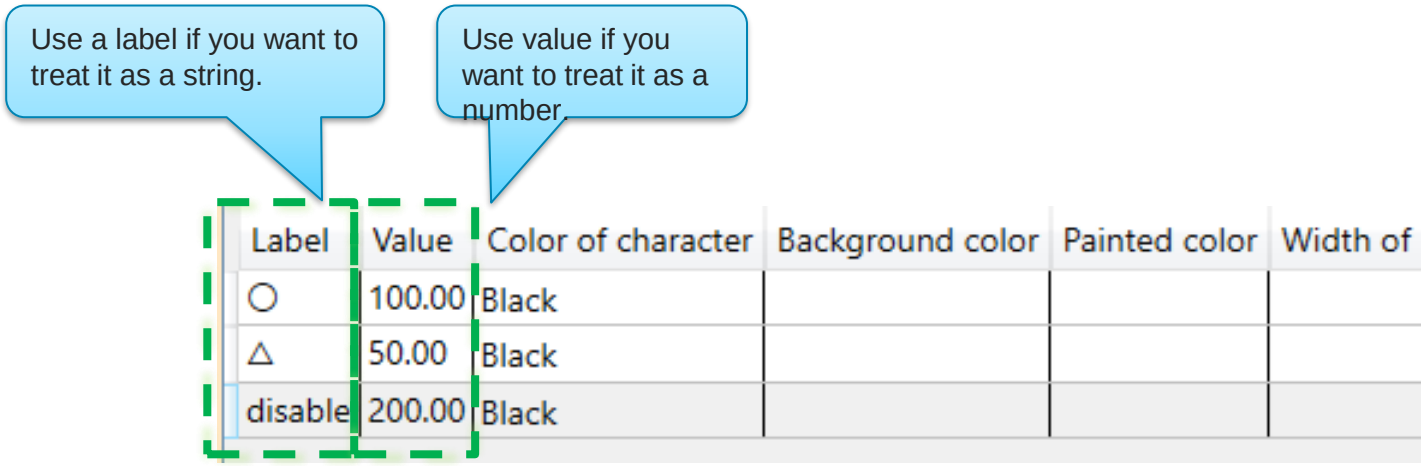
Handling toggle select clusters

A Toggle select cluster is a cluster that can set a numerical value for each label, and is a special cluster that has both a string and a numerical value as internal values. Therefore, when handling a Toggle select cluster in a formula, it may be handled as a numeric value or as a character string depending on the EXCEL function used. Also, when dealing with Toggle select clusters in the no input state with a numerical value, it is judged as "0".

(function that treats the toggle selection cluster as a string)

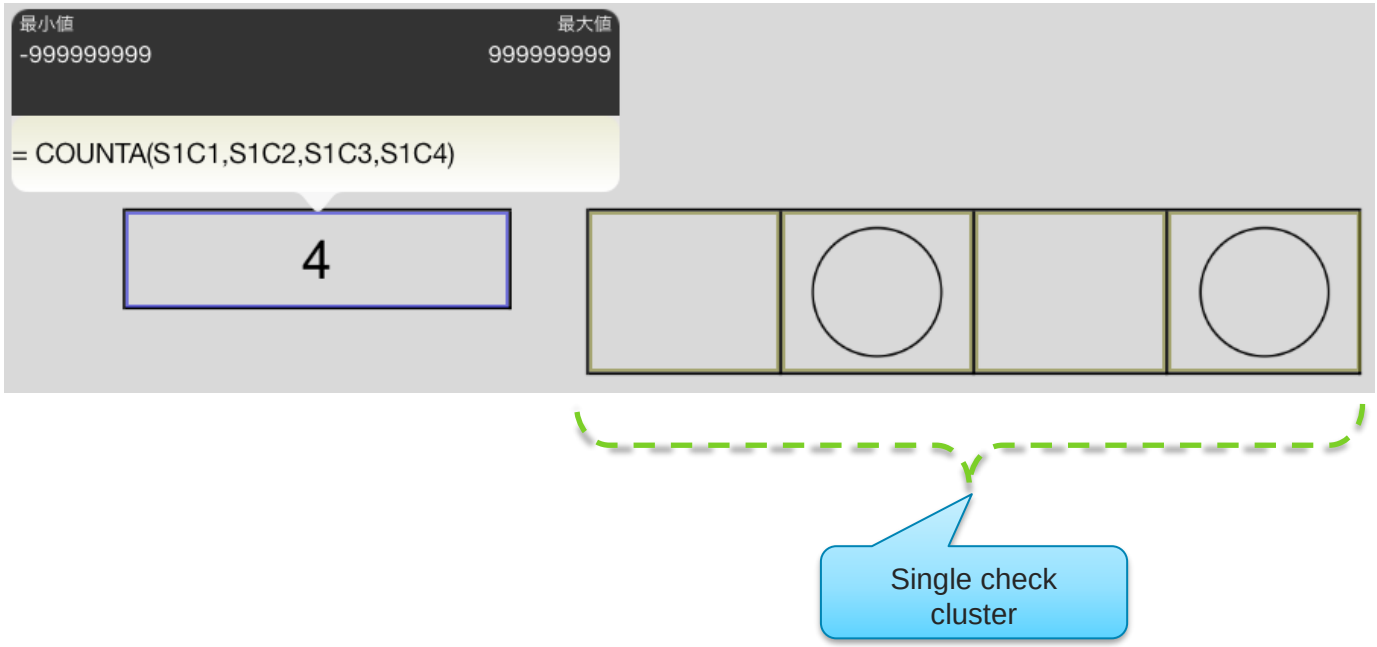
IF、ASC、CONCATENATE、LEFT、LEN、MID、RIGHT

(All functions other than the above EXCEL functions treat the Toggle select cluster as a numerical value.)



Single check cluster always True or False

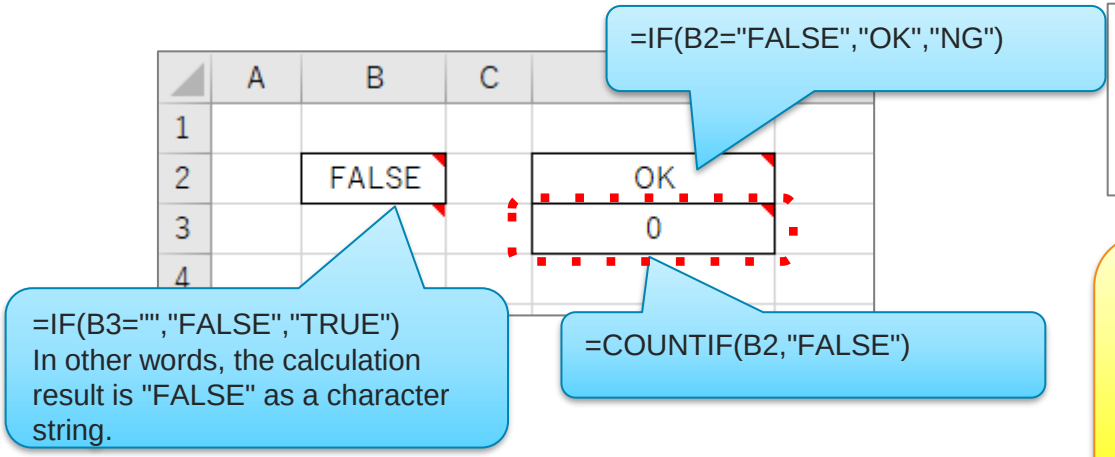
ConMas i-Reporter treats unfilled status as False for Single check clusters.
Therefore, Single check clusters included in formulas always have a value of True or False.
For example, Single check clusters are always counted with the COUNTA function.



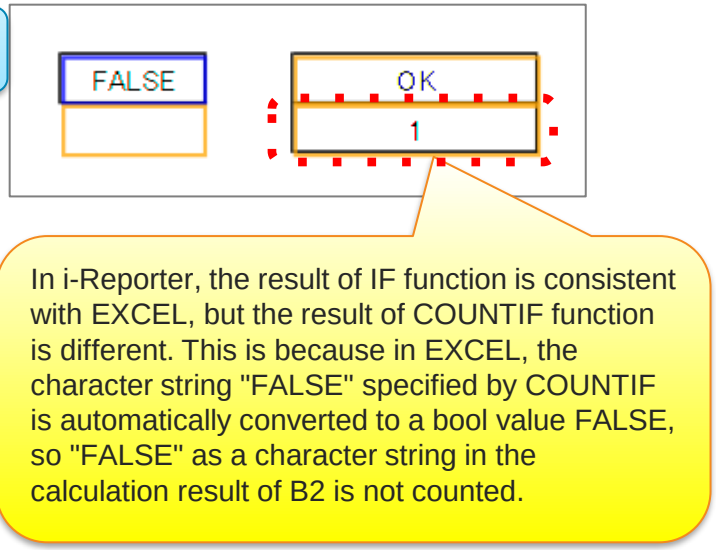
"TRUE" or "FALSE" as strings

Unlike EXCEL, i-Reporter does not convert data types automatically. If "TRUE" or "FALSE" is specified as a character string, it will be determined as different from TRUE or FALSE as a bool type. On the other hand, EXCEL may automatically convert to bool type depending on the contents of the calculation formula even if "TRUE" or "FALSE" is specified as a character string.
Because of this difference, calculation results involving "TRUE" or "FALSE" may differ between i-Reporter and EXCEL.

Calculation result on EXCEL



Calculation result on i-Reporter



*Currently, in the Windows version application, even if the calculation result data type is specified as "character string", TRUE/FALSE is treated as bool type. Therefore, depending on the calculation formula, there may be differences in calculation results between the iOS version app and the Windows version app.

About non-input judgment

In i-Reporter, string comparison can only be performed between string types, but as an exception,As shown below, by using the IF function and comparing with an empty string in a conditional expression, it is possible to determine whether or not the target cluster is not entered, regardless of the string type.

(Example) IF(S1C1=“”,“not entered”,“entered”) *S1C1 is the target cluster

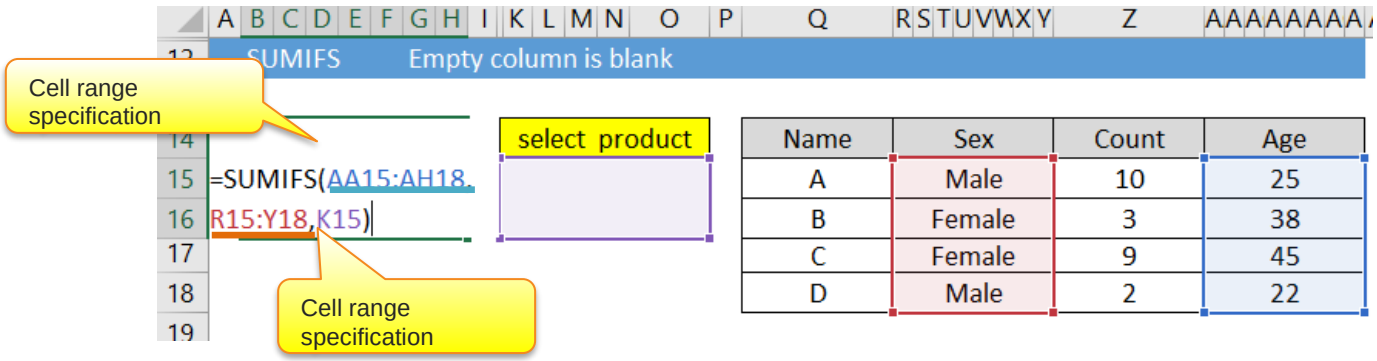
However, since i-Reporter cannot distinguish between "empty characters" and "not entered", both are judged as not entered. In addition, clusters that can be judged as not entered by this method are limited to cluster types that can be used as calculation formula targets other than Single check clusters.
In addition, it is not possible to judge non-input by empty character comparison except for the IF function.

*In EXCEL, it is possible to judge whether a character string or numerical value has not been entered by comparing it with bool type FALSE, but i-Reporter does not automatically convert the data type, so it cannot judge whether it has not been entered by comparing it with FALSE.

When a range of cells includes merged cells

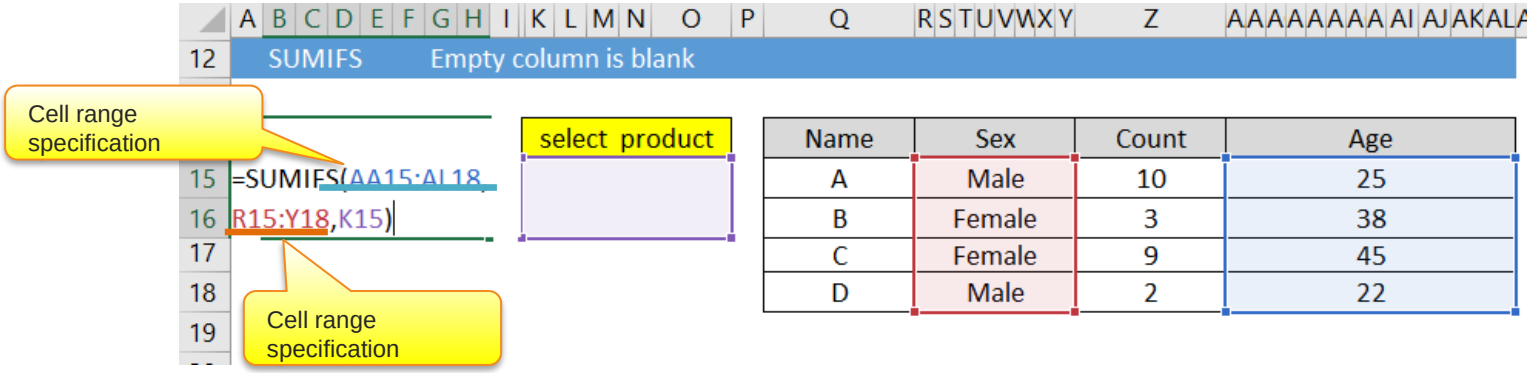
AVERAGEIF、AVERAGEIFS、COUNTIF、SUMIF、SUMIFS、LOOKUP、VLOOKUP
For functions, if the cell range specification includes merged cells, the number of cells in all merged cells must be the same. If this does not match, normal calculation results cannot be obtained.

(OK Ex.) The number of cells in the merged cell for “Sex" and "Age" is 8.



Name	Sex	Count	Age
A	Male	10	25
B	Female	3	38
C	Female	9	45
D	Male	2	22

(NG Ex.) There are 8 cells in the merged cell for “Sex" and 12 cells in the merged cell for "Age", which do not match.

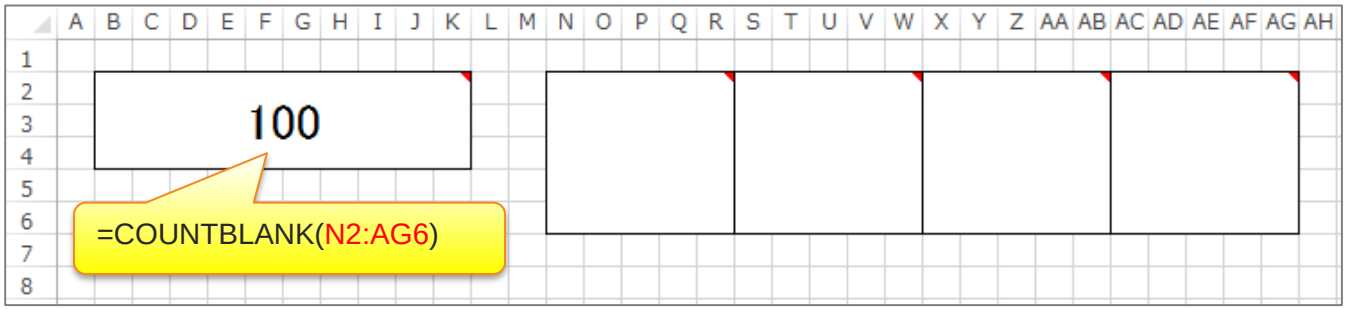


Name	Sex	Count	Age
A	Male	10	25
B	Female	3	38
C	Female	9	45
D	Male	2	22

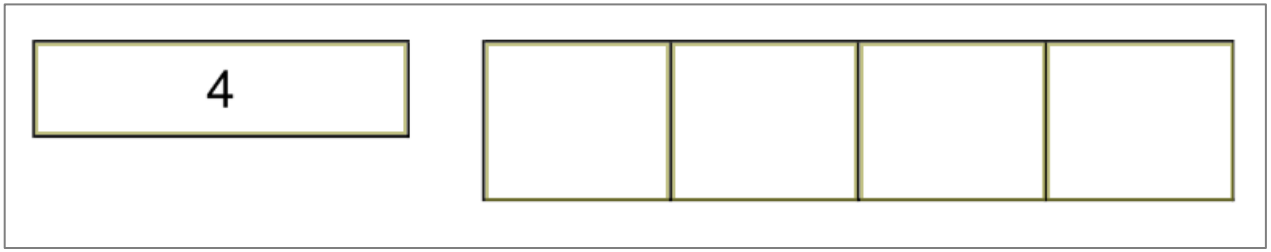
Difference in processing of COUNTBLANK function for merged cells

Regarding the COUNTBLANK function, EXCEL does not treat merged cells as a single cell and performs calculations by treating each cell in the range individually. On the other hand, i-Reporter treats merged cells as one cluster for calculation. As a result, the calculation result of the COUNTBLANK function including merged cells will appear different between EXCEL and i-Reporter.

In EXCEL, the cells in the specified range are individually counted regardless of the merged state.



ConMas i-Reporter counts merged cells as one cluster.



EXCEL function usage example
Setting method of VLOOKUP function

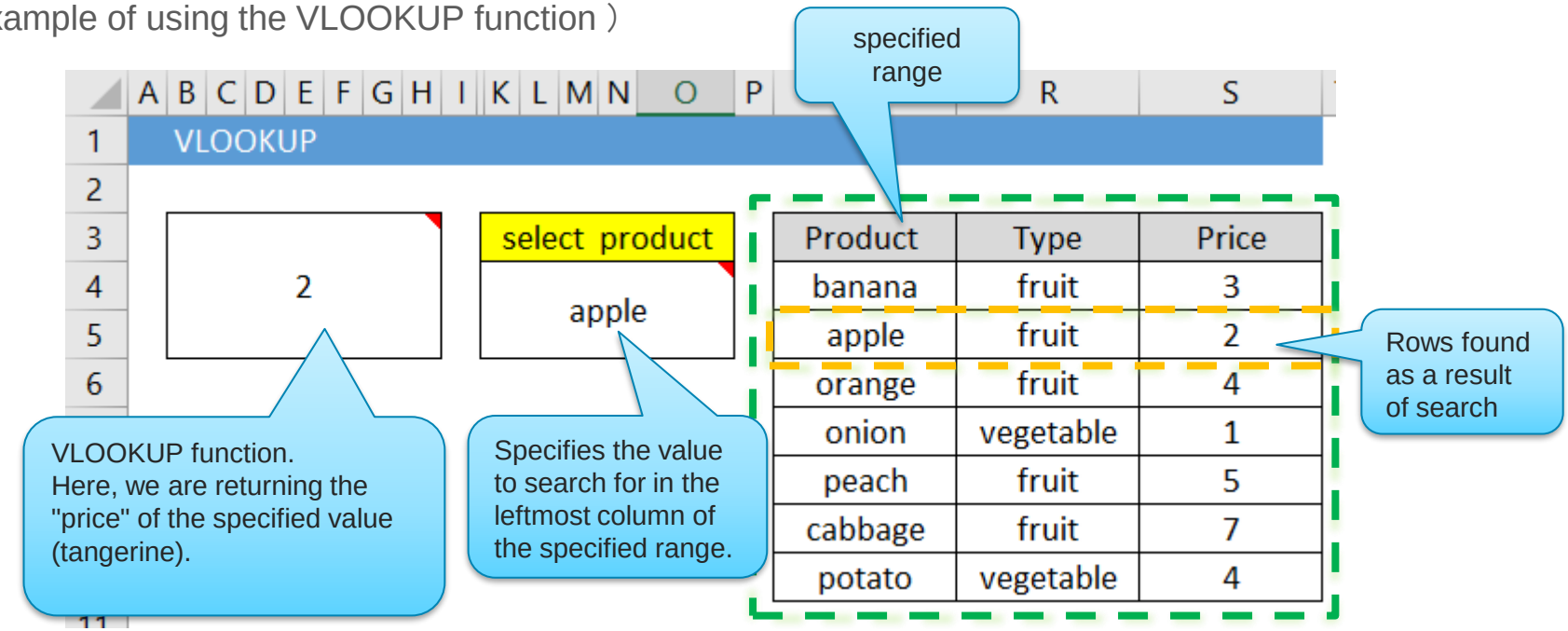
Examples of the use of EXCEL functions will be explained in detail using the VLOOKUP function, which is a typical function.

①About the VLOOKUP function

■What is VLOOKUP function

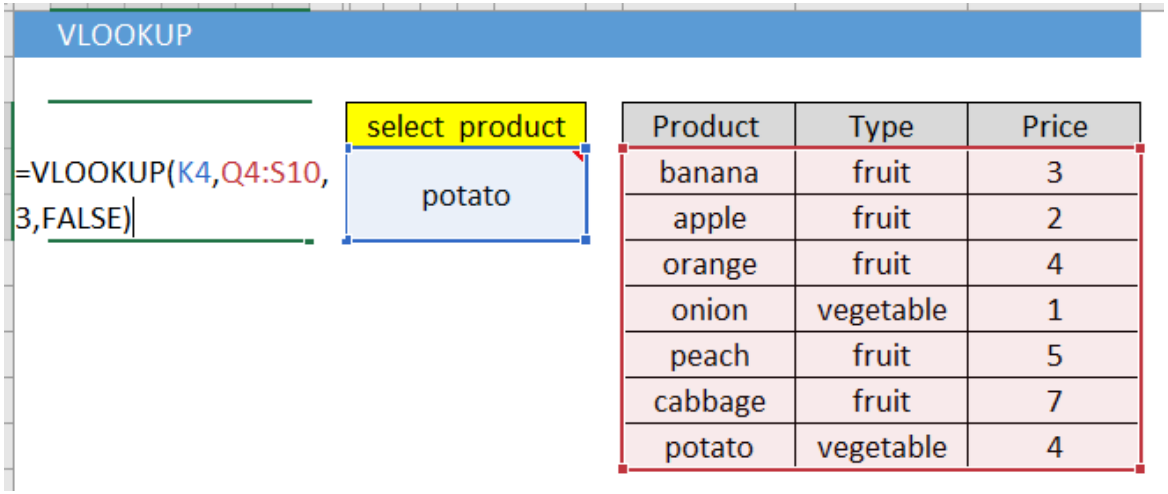
This function searches for a specific value in the first column (the leftmost column) of the specified range and returns another value in the same row. You can use it to search a table created using cells in EXCEL with a specific value and return the value in the table according to the result.

（Example of using the VLOOKUP function）



②Write VLOOKUP function on EXCEL

To import the VLOOKUP function into ConMas i-Reporter, first describe the VLOOKUP function in an EXCEL file.



■Format of the VLOOKUP function

=VLOOKUP(search value, range, column number, search method)

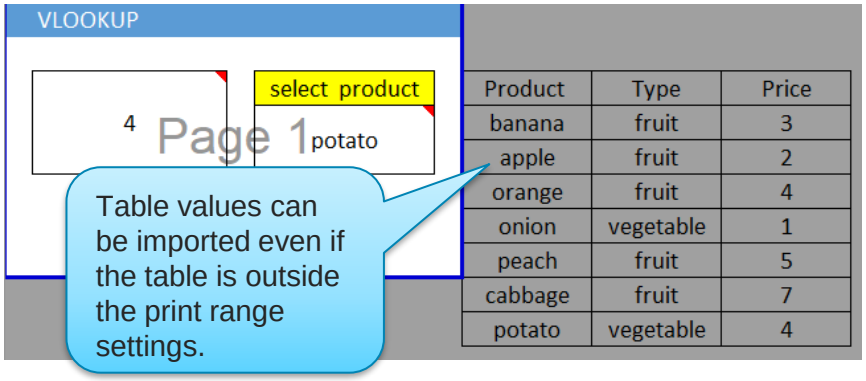
Search value = Specifies the value to search for in the leftmost column of the specified range.
Range = Specifies the range to search. (Specify the range to be a table)
Column number = Specify the column number (the column in the range) of the value you want to display as search results.
Search method = TRUE for approximate search, FALSE for exact match search. (This can be omitted. If omitted, it will be treated as TRUE.)

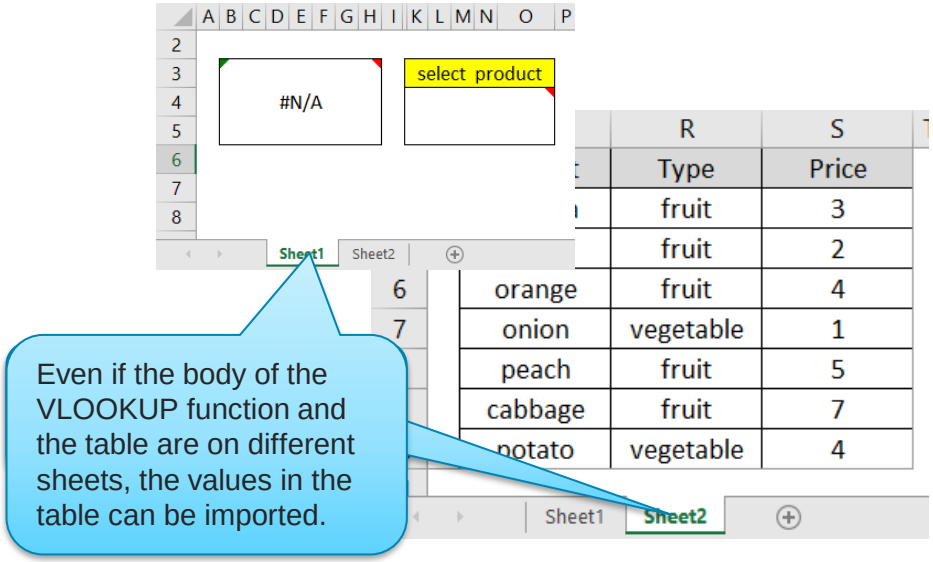
③ About specifying the range

ConMas i-Reporter has the following specification restrictions regarding the EXCEL import function.

- Cell data that are not clustered are not included.
- Cell data outside the print range setting is not included.

However, the exception is limited to the arguments of some functions such as the VLOOKUP function. For the cells that correspond to the range specified in the second argument of the VLOOKUP function (the range of the table), these values can be imported even if they are not clustered, outside the print range setting, or on a different sheet.

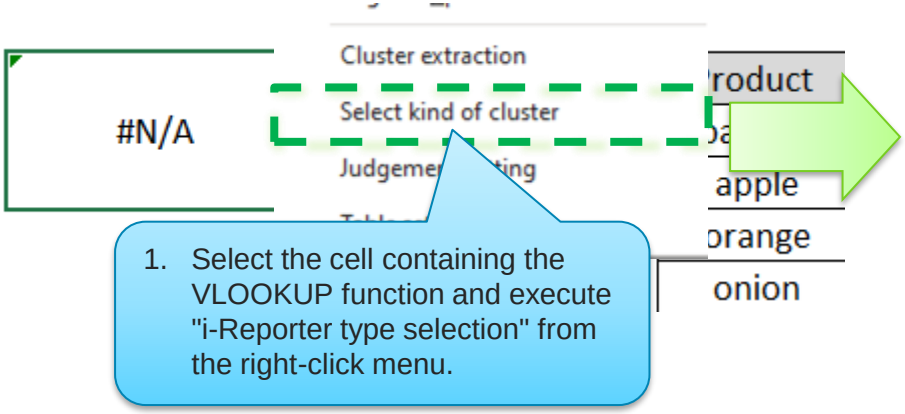


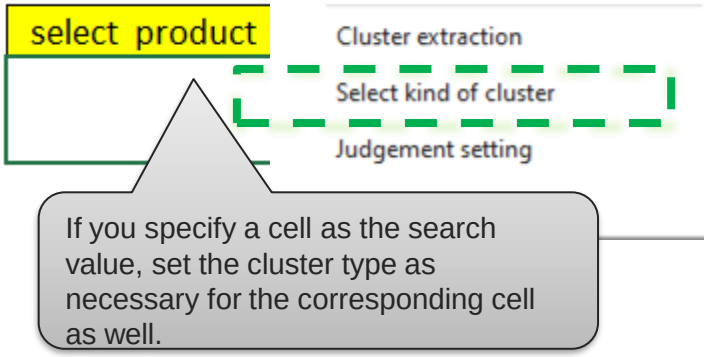


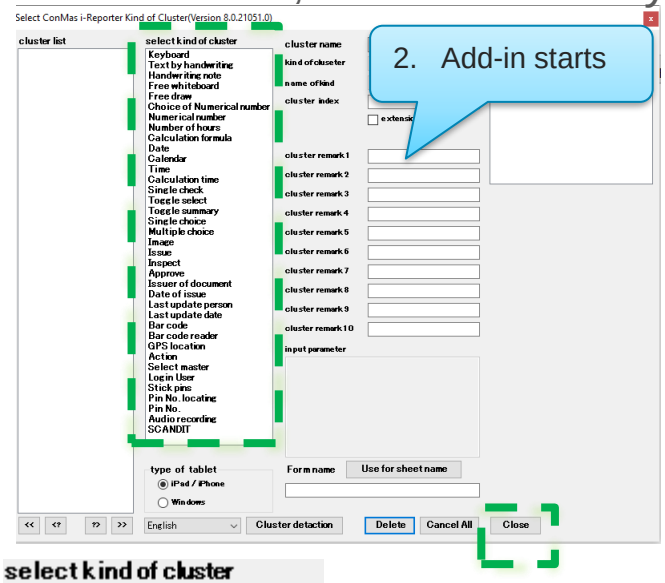
(Caution) If the cells in the table range are set to be hidden, or if the sheet with the table is set to be hidden, cell data will not be imported.

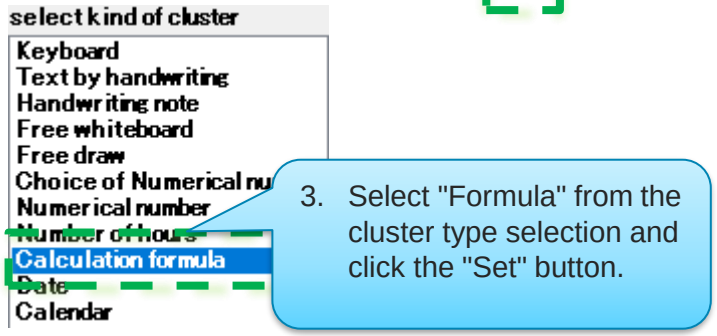
④ Set the cell containing the VLOOKUP function to the formula cluster

Select the cell in which the VLOOKUP function is written, execute "Select kind of cluster" from the right-click menu, and set the “Calculation formula" in “select kind of cluster".
If you specify a cell instead of a fixed value for the search value, set the cluster type as necessary for the corresponding cell as well.



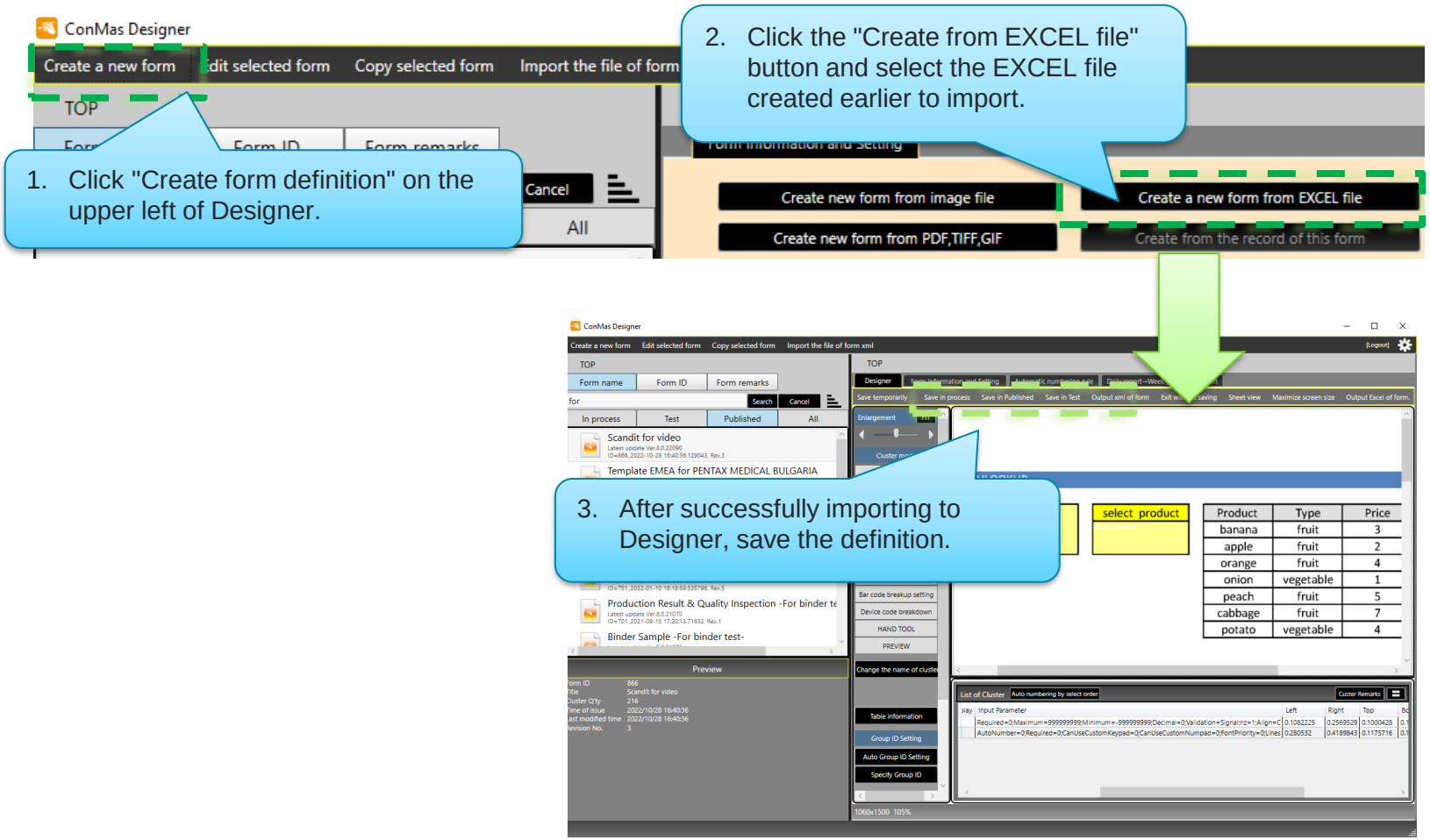






⑤Import EXCEL file into Designer

Save the EXCEL file with the settings and import it to Designer.



With the above procedure, you can handle the Forms using the VLOOKUP function on the tablet.

Other restrictions

■ **Descriptions that omit the conditional part of the calculation formula are not supported.**

（Ex.）
=IF(A1,”OK“,”NG“)　　Abbreviated form is not supported.
=IF(A1<>"",”OK","NG")　Please fix like this.

■ **Formulas using array constants are not supported.**

（Ex.）
=VLOOKUP(B2,{“B01”,”Part01”;”B02”,”Part02”;”L01”,”Label01”},2,FALSE)