

Row and Column Names for Table based on Arrays

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Generate Table with Row and Column Names based on Multiple Numeric Array

Two numeric arrays describe the column names, combine numeric arrays together to form string array which becomes table variable/column names.

```
close all;

% Generate Table 1
ar_fl_abc1 = [0.4 0.1 0.25 0.3 0.4];
ar_fl_abc2 = [0.4 0.1 0.2 0.3 0.4];
number1 = '123';
number2 = '456';
mt_data_a = [ar_fl_abc1' ar_fl_abc2'];

tb_test_a = array2table(mt_data_a);
cl_col_names_a = {[ 'col' num2str(number1)], [ 'col' num2str(number2)]};
cl_row_names_a = strcat('rowA=', string((1:size(mt_data_a,1))));

tb_test_a.Properties.VariableNames = cl_col_names_a;
tb_test_a.Properties.RowNames = cl_row_names_a;
disp(tb_test_a);
```

	col123	col456
rowA=1	0.4	0.4
rowA=2	0.1	0.1
rowA=3	0.25	0.2
rowA=4	0.3	0.3
rowA=5	0.4	0.4

Include Row Names as a String Cell Variable

```
% a and b must have the same row names
cl_st_varrownames = tb_test_a.Properties.RowNames;
tb_test_a = addvars(tb_test_a, cl_st_varrownames, 'Before', 1);

disp(tb_test_a);
```

	cl_st_varrownames	col123	col456
rowA=1	{ 'rowA=1' }	0.4	0.4
rowA=2	{ 'rowA=2' }	0.1	0.1
rowA=3	{ 'rowA=3' }	0.25	0.2
rowA=4	{ 'rowA=4' }	0.3	0.3
rowA=5	{ 'rowA=5' }	0.4	0.4

Include Row Names as a String Variable

```
% a and b must have the same row names
st_varrownames = string(cl_st_varrownames);
tb_test_a = addvars(tb_test_a, st_varrownames, 'Before', 1);
disp(tb_test_a);
```

	st_varrownames	cl_st_varrownames	col123	col456
rowA=1	"rowA=1"	{'rowA=1'}	0.4	0.4
rowA=2	"rowA=2"	{'rowA=2'}	0.1	0.1
rowA=3	"rowA=3"	{'rowA=3'}	0.25	0.2
rowA=4	"rowA=4"	{'rowA=4'}	0.3	0.3
rowA=5	"rowA=5"	{'rowA=5'}	0.4	0.4

Remove Row Names

Remove row names

```
tb_test_a.Properties.RowNames = {};
disp(tb_test_a);
```

st_varrownames	cl_st_varrownames	col123	col456
"rowA=1"	{'rowA=1'}	0.4	0.4
"rowA=2"	{'rowA=2'}	0.1	0.1
"rowA=3"	{'rowA=3'}	0.25	0.2
"rowA=4"	{'rowA=4'}	0.3	0.3
"rowA=5"	{'rowA=5'}	0.4	0.4

Generate String Based on Row Values and Column Names

Suppose we are looping over meshed grid of parameter values, want to generate a KEY that is based on three of the parameters, but not the remaining parameter. One strategy is to use the current values of the three parameters, combine them with the string column names, and concatenate together. This generate a string key.

```
cl_ar_identifier = cell([size(tb_test_a,1), 1]);
for esti_row_idx=1:size(tb_test_a,1)

    % Get the current row, 3rd and 4th columns
    ar_fl_colvals = tb_test_a{esti_row_idx,[3,4]};
    ar_st_colnames = tb_test_a.Properties.VariableNames([3,4]);
    ar_st_colvals = cellfun(@(x) strtrim(x), cellstr(num2str(ar_fl_colvals')), 'UniformOutput', false);
    ar_st_identifier = strcat(ar_st_colnames, '=', ar_st_colvals);
    esti_identifier = strjoin(ar_st_identifier, "#");

    % add to cell
    cl_ar_identifier{esti_row_idx} = esti_identifier;
end
% this is a group identifier
ar_st_identifier = string(cl_ar_identifier);
tb_test_a = addvars(tb_test_a, cl_ar_identifier, 'Before', 1);
tb_test_a = addvars(tb_test_a, ar_st_identifier, 'Before', 1);
disp(tb_test_a);
```

ar_st_identifier	cl_ar_identifier	st_varrownames	cl_st_varrownames	col123	col145
"col123=0.4#col456=0.4"	{ 'col123=0.4#col456=0.4' }	"rowA=1"	{ 'rowA=1' }	0.4	0.4
"col123=0.1#col456=0.1"	{ 'col123=0.1#col456=0.1' }	"rowA=2"	{ 'rowA=2' }	0.1	0.1
"col123=0.25#col456=0.2"	{ 'col123=0.25#col456=0.2' }	"rowA=3"	{ 'rowA=3' }	0.25	0.2
"col123=0.3#col456=0.3"	{ 'col123=0.3#col456=0.3' }	"rowA=4"	{ 'rowA=4' }	0.3	0.3
"col123=0.4#col456=0.4"	{ 'col123=0.4#col456=0.4' }	"rowA=5"	{ 'rowA=5' }	0.4	0.4