

## Simio API Note: Assorted Custom Steps

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## Overview

This API Note describes a User Extension that illustrates different flavors of using the Custom Calculation Step to do the following:

1. Get data from a Table
2. Get data from SQL Server using EF (Entity Framework)
- 3.

For testing, sample models are provided.



[Some Background Information on Assorted Custom Steps.](#)

(Information about Simio Tables)

(Information about Entity Framework)

## Simio Table Interface Step

Although there are several ways to interface with a Simio Table, this demonstrates the preferred way if you are reading and writing to a State variable (and potentially reading Properties) from a Simio Table.

There trickiest part of this is to realize that a Repeating Group can be mapped to a Simio table, and then – using the GetRow() method of the RG reader, you can successively “map” the Repeating Group to whatever row of the table you desire.

So, the workflow is this:

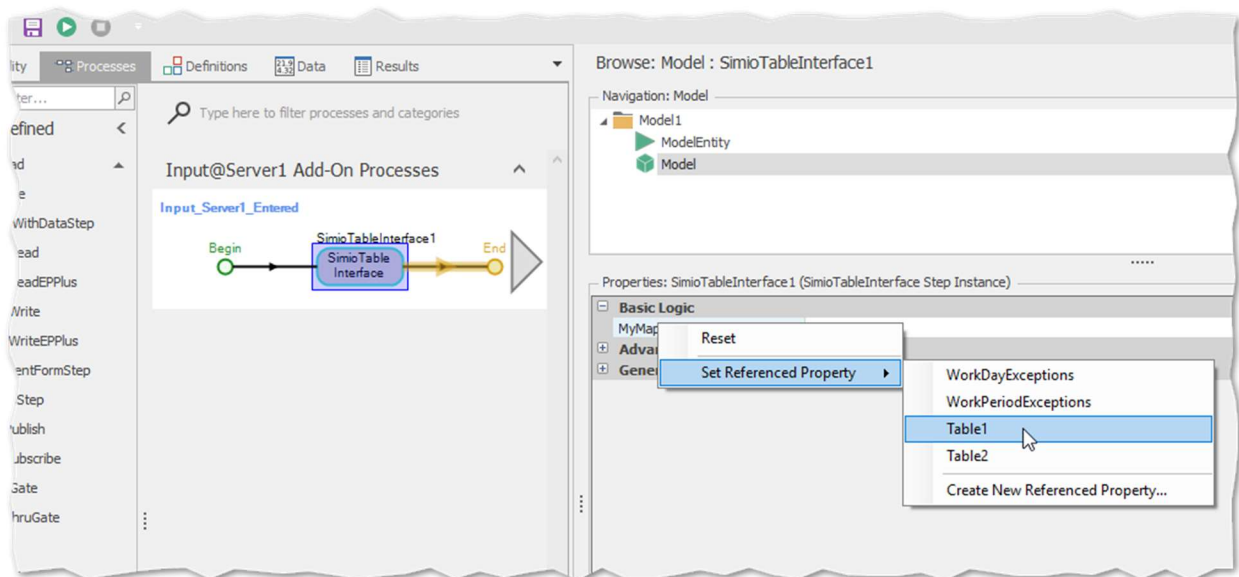
In the Code:

In the DefineSchema method, create properties that you will use to map to the Simio table. Remember that you can only write to the Simio Tables’ state columns.

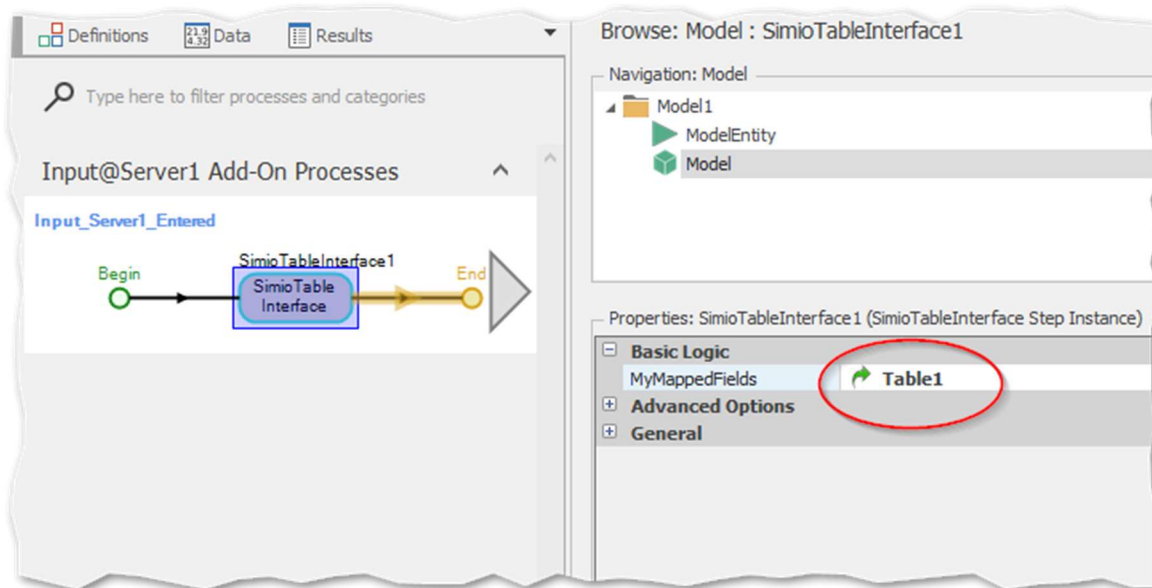
The names don’t have to match the table’s column names since we will “map” these properties to the table columns in the Simio Project.

In the Simio Project:

Insert your Step into a Process. When you select it make sure you right click on the MyMappedFields, RightMouseClicked and set the Referenced Property to Table1:

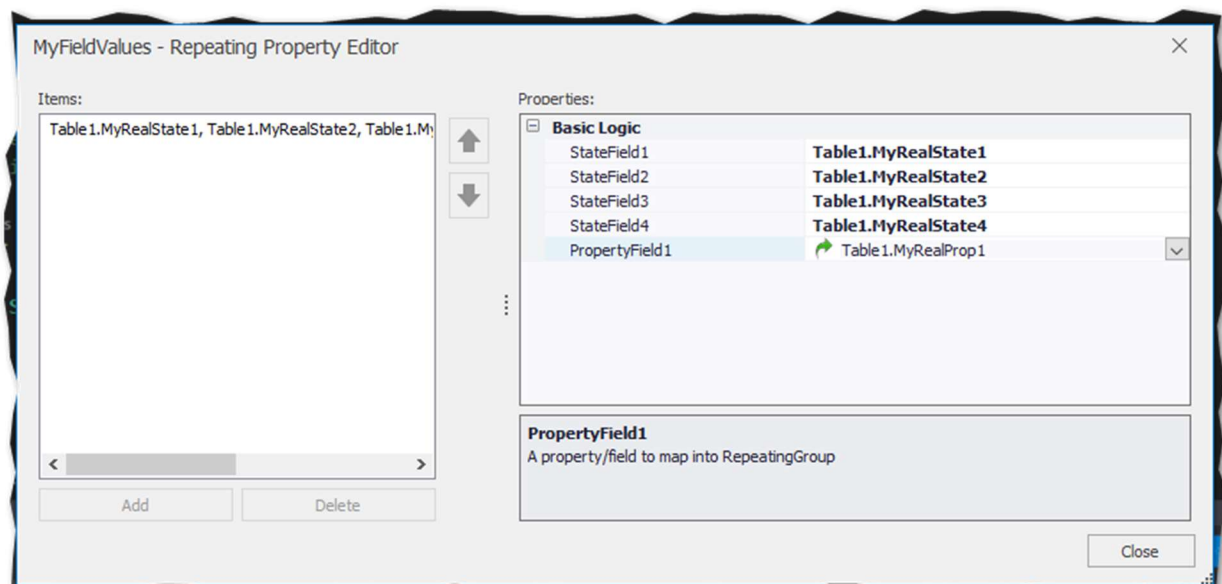


Note: If you don’t see the curved green “reference” arrow, then this project won’t work correctly!

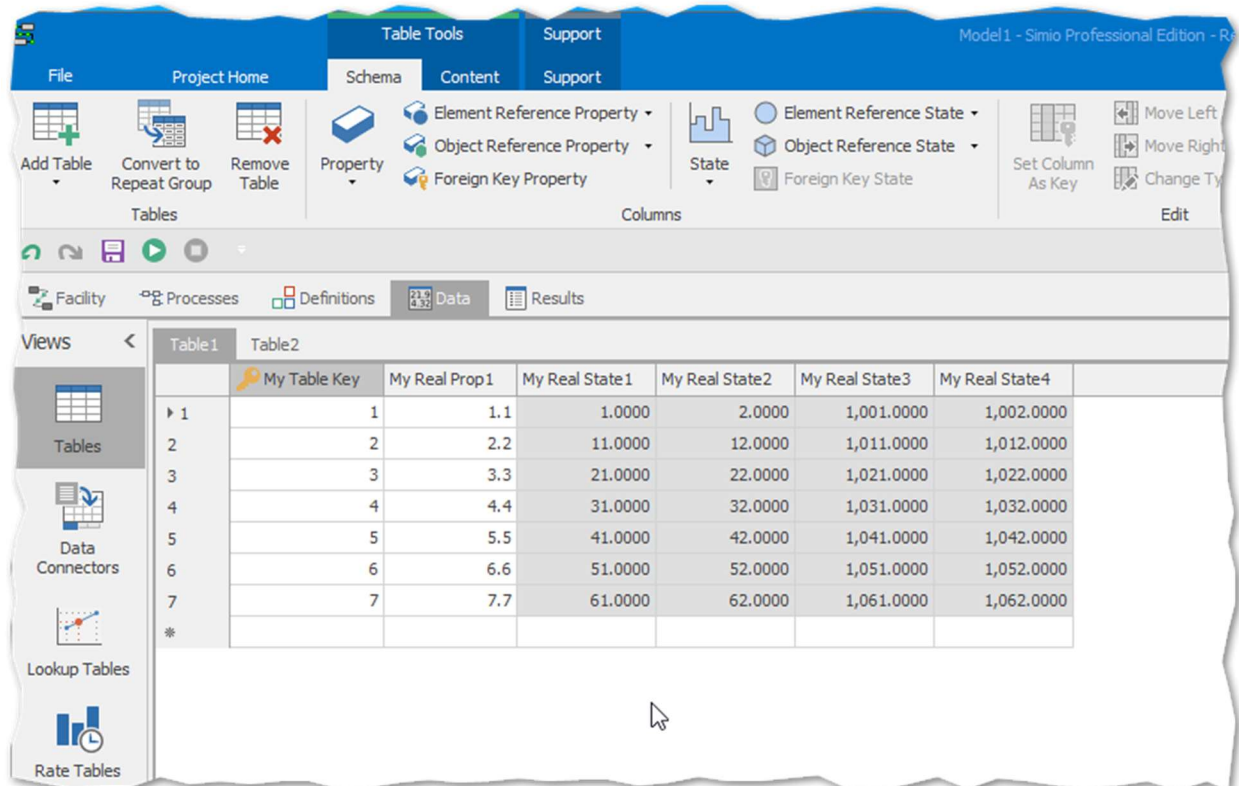


Then select the ellipses on the right to bring up the Repeating Property Editor and then enter the field mappings.

Note that here we are using the Simio generated field names (e.g. "StateField1"). In the code we will be using these names to access our data.



When you run the model, this is what you should see:



The screenshot shows the Simio Professional Edition interface. The top menu bar includes File, Project Home, Table Tools, and Support. The Table Tools menu is open, showing options like Add Table, Convert to Repeat Group, Remove Table, Property, Element Reference Property, Object Reference Property, Foreign Key Property, State, Element Reference State, Object Reference State, Foreign Key State, Set Column As Key, Move Left, Move Right, and Change Type. The main workspace displays the Data view, showing a table with 8 columns: My Table Key, My Real Prop1, My Real State 1, My Real State2, My Real State3, My Real State4, and two unnamed columns. The table contains 7 rows of data, indexed 1 through 7. A mouse cursor is visible over the table.

	My Table Key	My Real Prop1	My Real State 1	My Real State2	My Real State3	My Real State4
1	1	1.1	1.0000	2.0000	1,001.0000	1,002.0000
2	2	2.2	11.0000	12.0000	1,011.0000	1,012.0000
3	3	3.3	21.0000	22.0000	1,021.0000	1,022.0000
4	4	4.4	31.0000	32.0000	1,031.0000	1,032.0000
5	5	5.5	41.0000	42.0000	1,041.0000	1,042.0000
6	6	6.6	51.0000	52.0000	1,051.0000	1,052.0000
7	7	7.7	61.0000	62.0000	1,061.0000	1,062.0000

## [Simio Table Interface Step Code Overview](#)

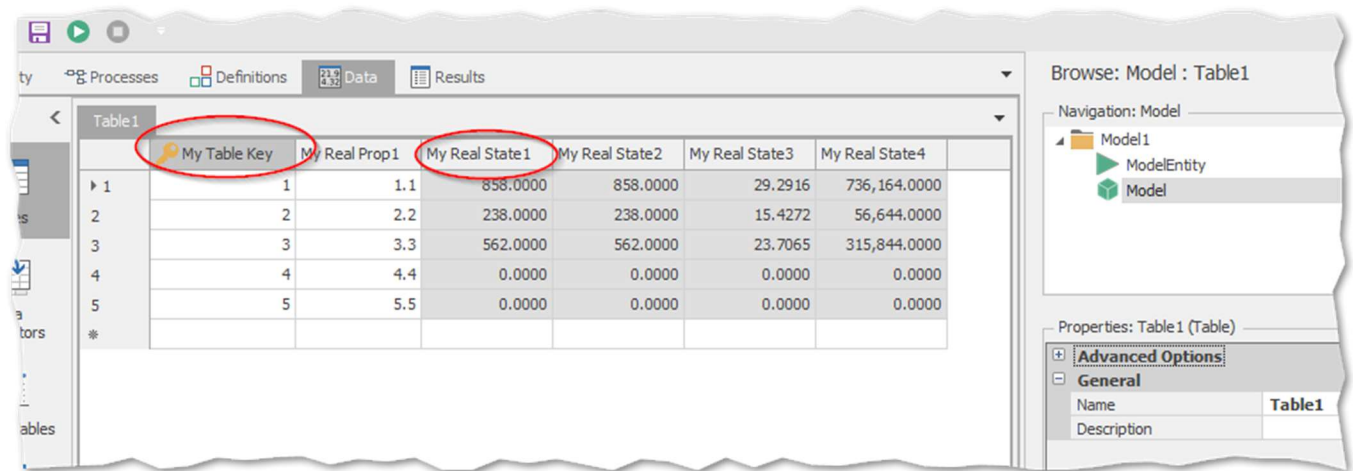
The code for the Process Step is in the

## Running the Model

Open the Simio project.

Now do the following:

The Table is named Table1 and has the following characteristics



	My Table Key	My Real Prop1	My Real State1	My Real State2	My Real State3	My Real State4
1	1	1.1	858.0000	858.0000	29.2916	736,164.0000
2	2	2.2	238.0000	238.0000	15.4272	56,644.0000
3	3	3.3	562.0000	562.0000	23.7065	315,844.0000
4	4	4.4	0.0000	0.0000	0.0000	0.0000
5	5	5.5	0.0000	0.0000	0.0000	0.0000
*						

Note that it has 5 rows.

The Step has a RG named MyFieldValues, which have properties MyRealState1 through MyRealState4



The screenshot shows the Simio software interface. In the center, the 'MyFieldValues - Repeating Property Editor' dialog is open. The 'Items' list on the left contains several entries, with 'MyRealState1' circled in red. The 'Properties' section on the right shows a table for 'Basic Logic'.

Basic Logic	
CalculationElement	ElementX1
SimioTableElement	SimioTableElement1
MyStateTableIndex	Table1Index
RowsInTable1	Table1.AvailableRowCount
MyFieldValues	4 Rows
MyTable	Table1

A red arrow points from the 'MyFieldValues' property in the table to the 'MyFieldValues' property in the 'Basic Logic' section of the dialog.

The screenshot shows the Simio software interface. In the center, the 'Input@Server1 Add-On Processes' section is visible, showing a process flow diagram with 'Begin', 'Calculation1', and 'End' steps. The 'Calculation1' step is highlighted. The 'Basic Logic' section is expanded, showing a table with properties.

Basic Logic	
CalculationElement	ElementX1
SimioTableElement	SimioTableElement1
MyStateTableIndex	Table1Index
RowsInTable1	Table1.AvailableRowCount
MyFieldValues	Table1
MyTable	Table1

A context menu is open over the 'MyFieldValues' property, showing options: 'Reset' and 'Set Referenced Property'.

[Notes on Use](#)

[Adding Logic](#)

## TroubleShooting