



Altair

HyperWorks

HS-1010: Simple Study Setup

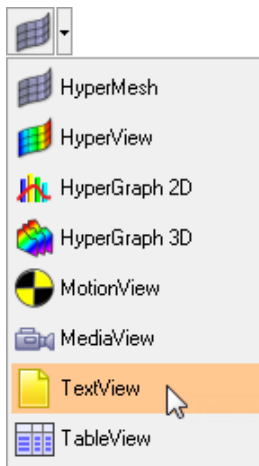
In this tutorial you will learn how to setup a study on simple functions defined using a Templex template. The base input template defines two input variables, DV1 and DV2, labeled X and Y, respectively. The objective of this study is to investigate the two random variables X, Y forming the two functions $X+Y$ and $1/X + 1/Y - 2$.


This tutorial starts HyperStudy from **HyperMesh Desktop** > **TextView**. You can also start HyperStudy from HyperView, MotionView or directly in standalone mode.

The sample base input template you will use in this tutorial can be found in <hst.zip>/HS-1010/. Copy the tutorial file from this directory to your working directory.

Step 1: View the Base Input Template in HyperMesh Desktop

1. Start HyperMesh Desktop.
2. On the **Client Selector** toolbar, select **TextView**.



3. On the **Standard** toolbar, click .
4. In the **Open Document** dialog, open the `Simple.tpl` file. The text editor displays the following Templex statements:

```
{parameter(DVAR1, "Area
1", .5, 0.2, 5) }

{parameter(DVAR2, "Area
2", .5, 0.2, 5) }


{RES = DVAR1 + DVAR2}
{CON = 1/DVAR1 + 1/DVAR2 - 2}
{RES}
{CON}
{DVAR1}
{DVAR2}
```

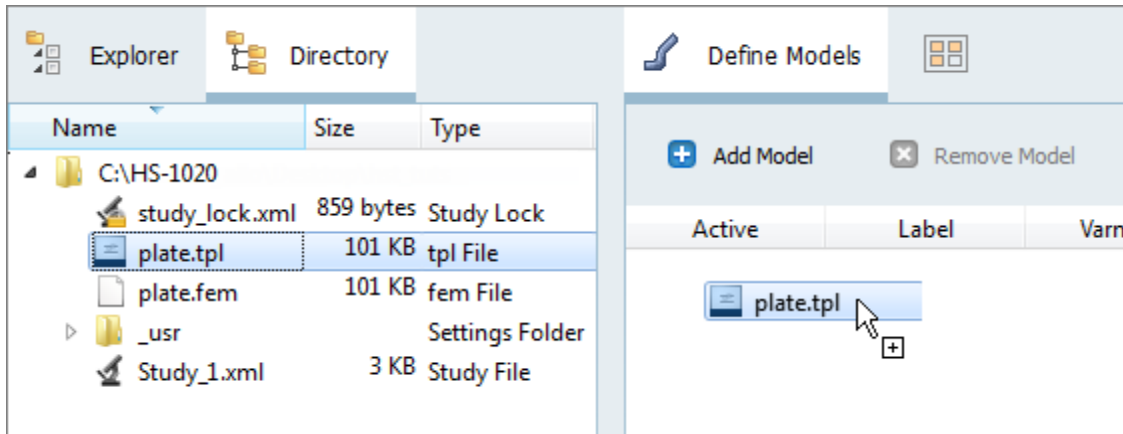
- On the **Text** toolbar, click ^{ABC}(...). The text editor evaluates the Templex statements, replaces the parameters with their initial values, and displays the following results:

```
1
2
0.5
0.5
```

- Start HyperStudy by clicking **Applications** > **HyperStudy** from the menu bar.

Step 2: Perform the Study Setup

- To start a new study, click **File** > **New** from the menu bar, or click  on the toolbar.
- In the **HyperStudy – Add** dialog, enter a study name, select a location for the study, and click **OK**.
- Go to the **Define Models** step.
- Add a Parameterized File model.
 - From the **Directory**, drag-and-drop the `simple.tpl` file into the work area.

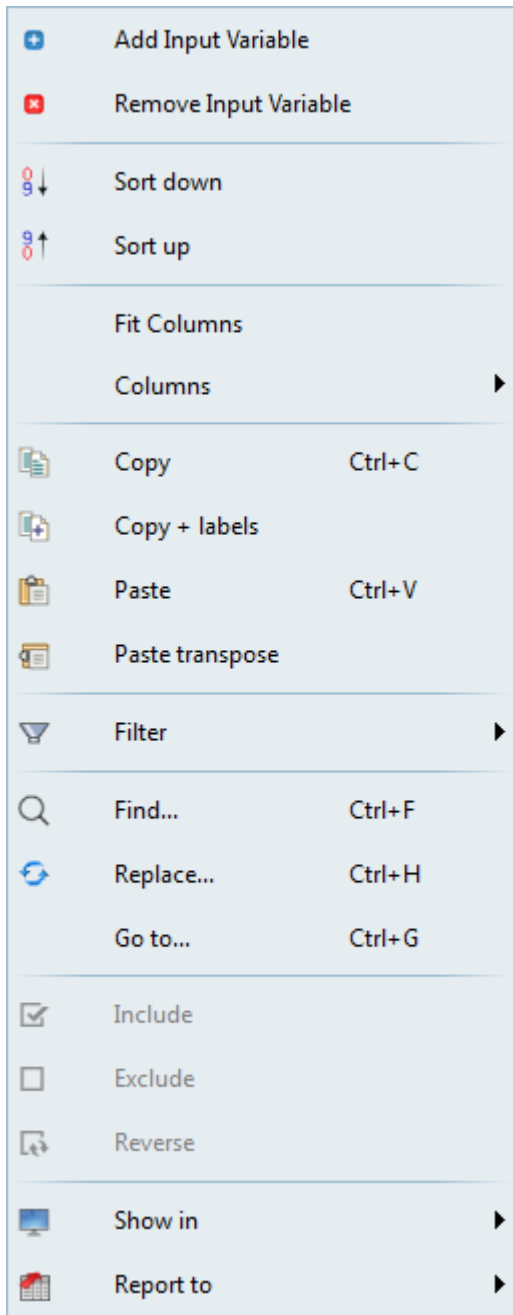


- In the **Solver input file** column, enter `res`. This is the name of the solver input file HyperStudy writes during the evaluation.
- In the **Solver execution script** column, select **Templex (templex)**.

Active	Label	Varname	Model Type	Resource	Solver input file	Solver execution script	Solver input arguments
1	<input checked="" type="checkbox"/>	Model 1	m_1	{ } Parameterized File	C:/.../HS-1010/Simple.tpl ^{ABC} (...)	res	Templex (templex) \${file}

- Click **Import Variables**. Two input variables are imported from the `Simple.tpl` resource file.
- Go to the **Define Input Variables** step.
- Review the input variable's lower and upper bound ranges.

- 8. Optional. Access additional editing and visualization features from the context menu by right-clicking anywhere in the work area.



- 9. Go to the **Specifications** step.

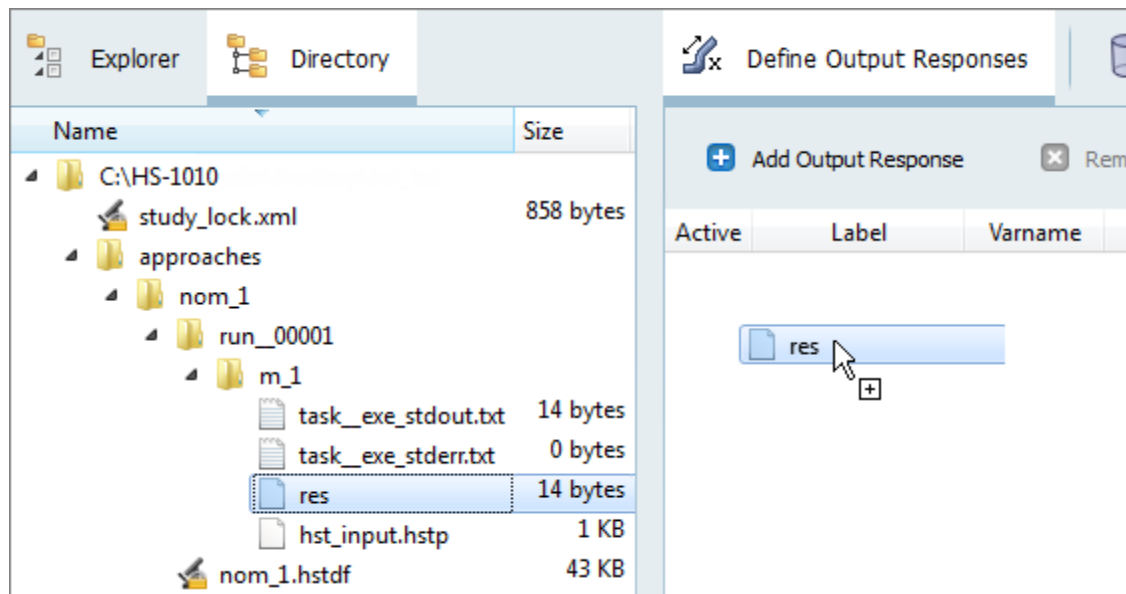
Step 3: Perform the Nominal Run

1. In the work area, set the **Mode** to **Nominal Run**.
2. Click **Apply**.
3. Go to the **Evaluate** step.
4. Click **Evaluate Tasks**. An `approach/nom_1/` directory is created inside the study directory. The `approaches/nom_1/run__00001/m_1` directory contains the `.res` file, which is the result of the nominal run.
5. Go to the **Define Output Responses** step.

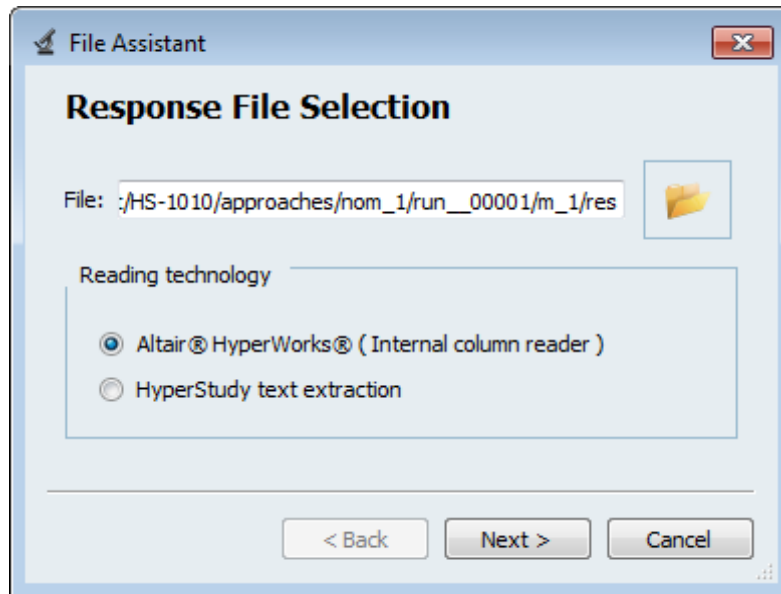
Step 4: Create and Define Output Responses

In this step you will create two output responses.

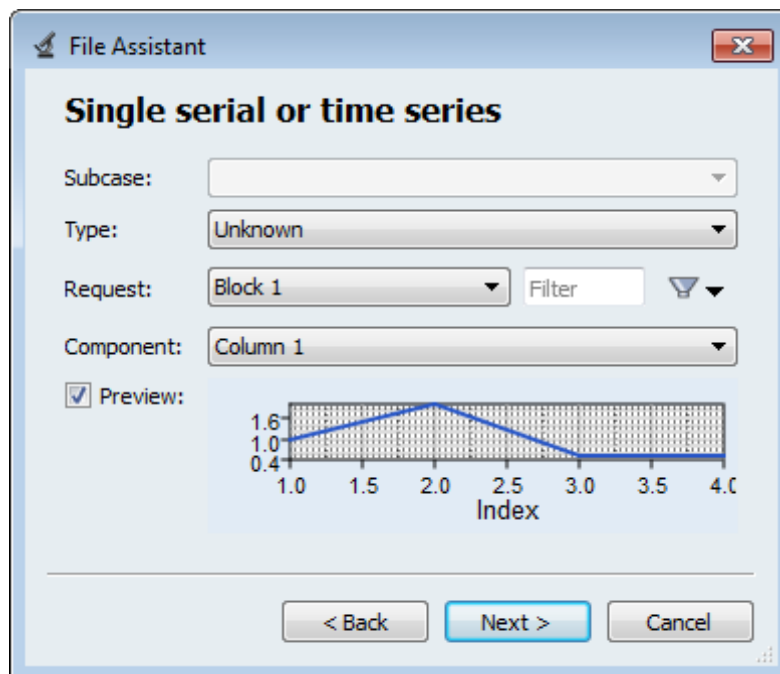
1. Create output response 1.
 - a. From the **Directory**, drag-and-drop the `.res` file, located in `approaches/nom_1/run_00001/m_1`, into the work area.



- b. In the **File Assistant** dialog, set the **Reading technology** to **Altair® HyperWorks®** and click **Next**.

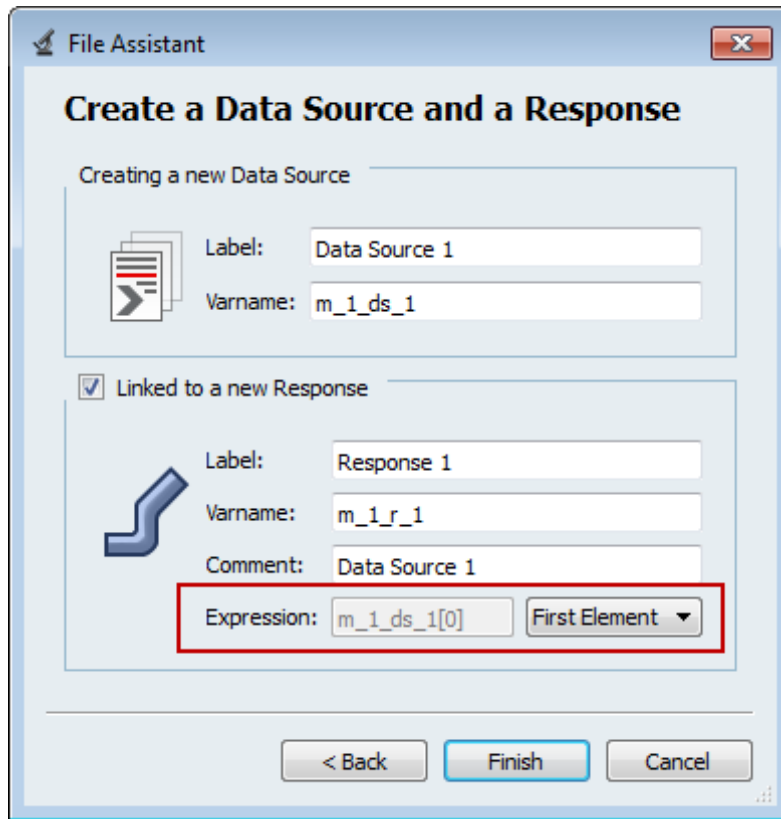


- c. Select **Single item in a time series**, then click **Next**.
- d. Define the following options, then click **Next**.
 - Set **Type** to **unknown**.
 - Set **Request** to **Block 1**.
 - Set **Component** to **Column 1**.



- e. Optional. Enter labels for the data source/m and output response.
- f. Set **Expression** to **First Element**. The expression changes to `m_1_ds_1[0]`.

Note: Because there is only a single value in this data source, [0] is inserted after `m_1_ds_1`, thereby choosing the first (and only) entry in the data source.



- g. Click **Finish**. Output response 1 is added to the work area.
- 2. Create output response 2 by repeating step 1.
- 3. In the **Expression** field for **Response 2**, select the second value by changing the [0] to [1] after `m_1_ds_2`.

	Active	Label	Varname	Expression	Value	Comment
1	<input checked="" type="checkbox"/>	Response 1	m_1_r_1	m_1_ds_1[0] ...	Not Extracted	Data Source 1 ...
2	<input checked="" type="checkbox"/>	Response 2	m_1_r_2	m_1_ds_2[1] ...	Not Extracted	Data Source 2 ...

- 4. Click **Evaluate** to extract the output response values.
- 5. Proceed to the desired study type: DOE, Optimization, or Stochastic study.

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