Design Tables

What are Design Tables? They are used to create different configurations of a part. A design table is a spreadsheet that lists the different values that are assigned to the various dimensions and features in a part. A design table is an easy way to create many configurations

What is a Configuration? A configuration is a way to create a family of similar parts within one file. Each configuration represents one version of the part Confidential Information Each configuration represents one version of the part.

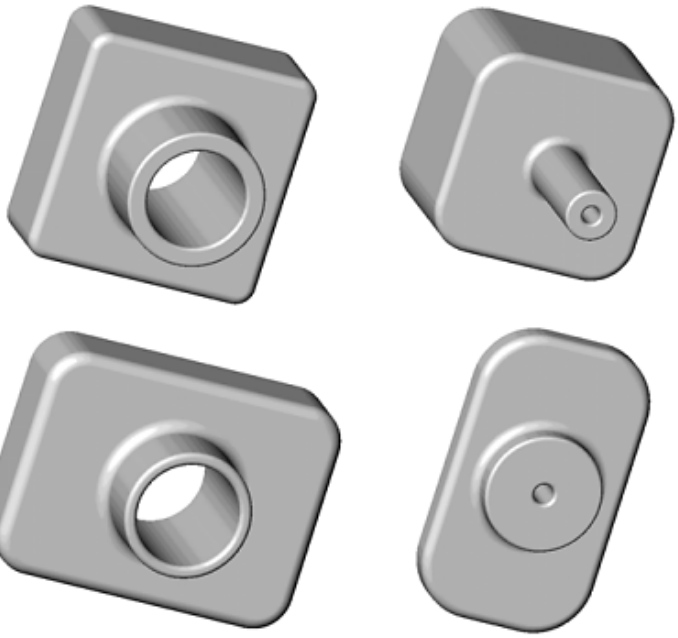
What are three key elements of a design table? A design table requires configuration name, dimension name and dimension values.

What is the advantage of creating a design table? A design table saves design time, a disk space and automatically drives the dimensions and features of an existing part to create multiple configurations.

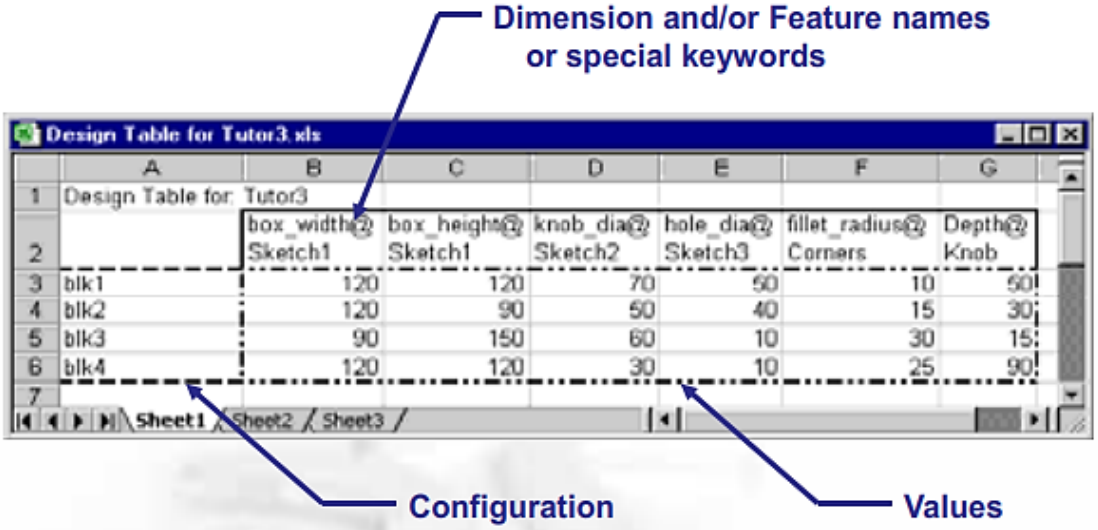
Design Tables automatically change the dimensions and features of an existing part to create multiple configurations. The configurations control the size and shape of a part.

Task:1

Create a design table that generates the following configurations of `Tutor1`.



	A	B	C	D	E	F	G
1	Design Table for: Tutor3						
2		box_width @Sketch1	box_height @Sketch1	knob_dia@ Sketch2	hole_dia@ Sketch3	fillet_radius@Outside_corners	Depth@Knob
3	blk1	120	120	70	50	10	50
4	blk2	120	90	50	40	15	30
5	blk3	90	150	60	10	30	15
6	blk4	120	120	30	10	25	90

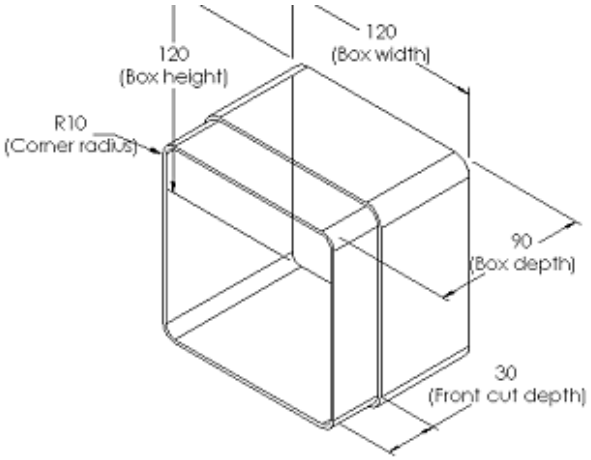


Tip: Rename features and dimensions before creating a design table.

Task: 2

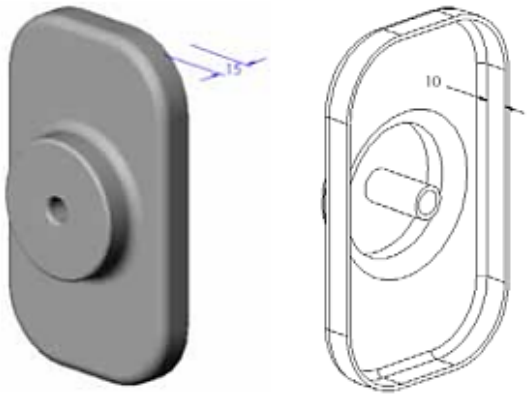
Create for configurations of Tutor 2

Create a design table for `Tutor2` that corresponds to the four configurations of `Tutor3`. Rename the features and the dimensions. Save the part as `Tutor4`.

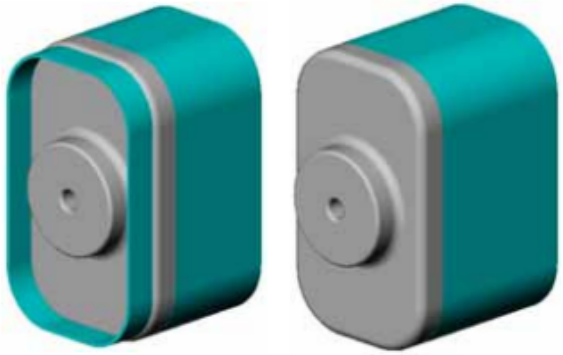


Answer:

- The height and width of `Tutor4` must equal the `box_width` and `box_height` dimension values in the `Tutor3` design table.
- The corner radii of `Tutor4` must match those of `Tutor3`.
- The depth of the front cut on `Tutor4` must be at least **5mm** *less* than the depth of `Tutor3`.
  This is important because some of the configurations of `Tutor3` (`blk3` for example) are not very deep.



If the front cut depth on `Tutor4` is not changed accordingly, the parts will not fit together correctly in the assembly.
If the depth of the front cut is set to a value less than the depth of `Tutor3`, the parts will fit correctly.
To explore this topic more fully with your students, see *More to Explore — Configurations, Assemblies, and Design Tables* on page 183 in this lesson.



- One possible design table for the `Tutor4` is shown in the illustration at the right.

Book1

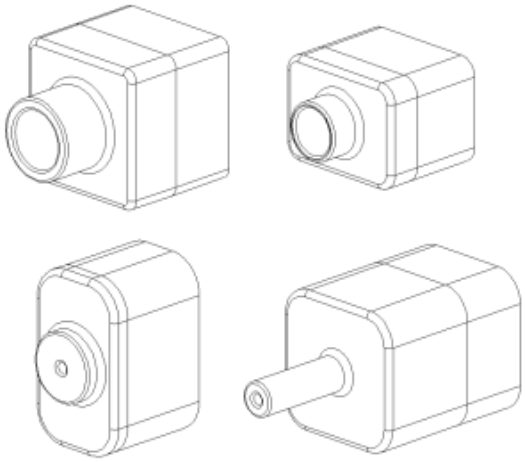
	A	B	C	D	E	F
1	Design Table for: Tutor4					
2		Box_width@ Sketch1	Box_height@ Sketch1	Box_depth@ Base-Extrude	Corner_radius@ Fillet1	Front-cut_depth@Cut-Extrude1
3	Version 1	120	120	90	10	30
4	Version 2	120	90	90	15	25
5	Version 3	90	150	90	30	10
6	Version 4	120	120	90	25	30

Sheet1

Task:3 Creating Design Tables for assemblies

When each component in an assembly has multiple configurations, it make sense that the assembly should have multiple configurations as well. There are two ways to accomplish this:

- Manually change the configuration being used by each component in the assembly.
- Create an *assembly* design table that specifies which configuration of each component is to be used for each version of the assembly.



Note: Save Tutor1 as Tutor3 after creating design tables. Save Tutor2 as Tutor4. To explore assembly design tables, you will need an assembly that is made up of Tutor3 and Tutor4.

Changing the Configuration of a Component in an Assembly

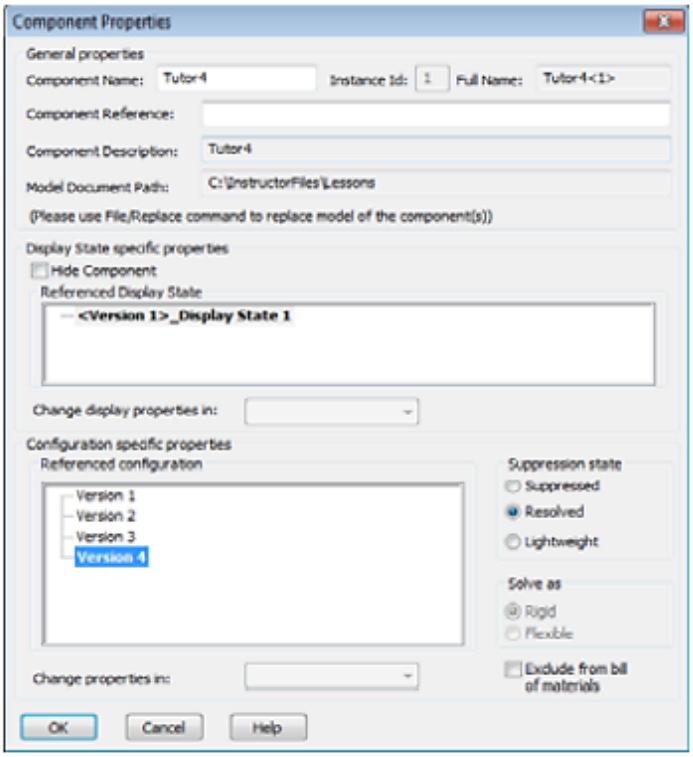
To manually change the displayed configuration of a component in an assembly:

1 Open the assembly Tutor Assembly.

2 Right-click the component, either in the Feature Manager design tree or in the graphics area, and select Properties.

3 In the **Component Properties** dialog, select the desired configuration from the list in the **Referenced configuration** area. Click **OK**.

4 Repeat this procedure for each component in the assembly.



Assembly Design Tables

While manually changing the configuration of each component in an assembly works, it is neither efficient nor very flexible. Switching from one version of an assembly to another would be tedious. A better approach would be to create an assembly design table.

The procedure for creating an assembly design table is very similar to the procedure for creating a design table in an individual part. The most significant difference is the choice of different keywords for the column headers. The keyword we will explore here is `$CONFIGURATION@component<instance>`.

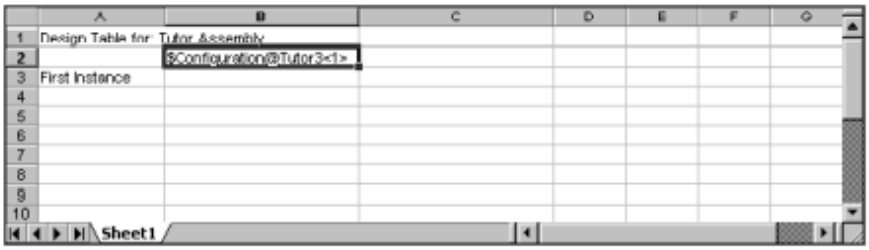
Procedure

1. Click **Insert, Tables, Design Table**.

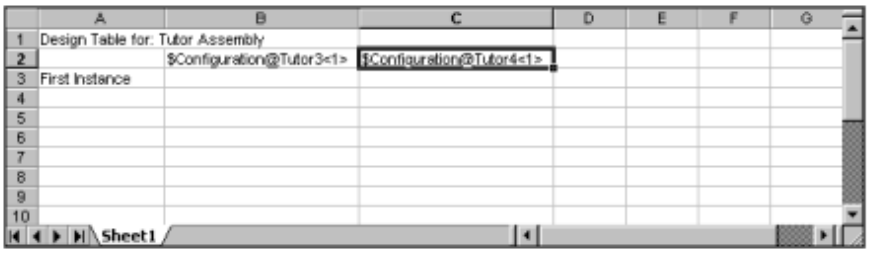
   The **Design Table** PropertyManager appears.
2. For **Source**, click **Blank** and then click **OK** ✔.
3. The **Add Rows and Columns** dialog box appears.

   If the assembly already contained configurations that were created manually they would be listed here. You could select them and they would automatically be added to the design table.
4. Click **Cancel**.

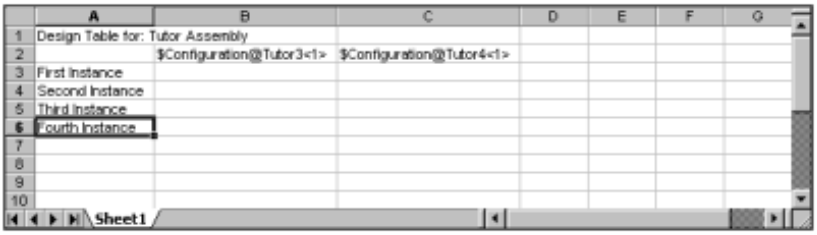
5 In cell B2, enter the keyword `$Configuration@` followed by the name of the component and its instance number. In this example, the component is `Tutor3` and the instance is `<1>`.



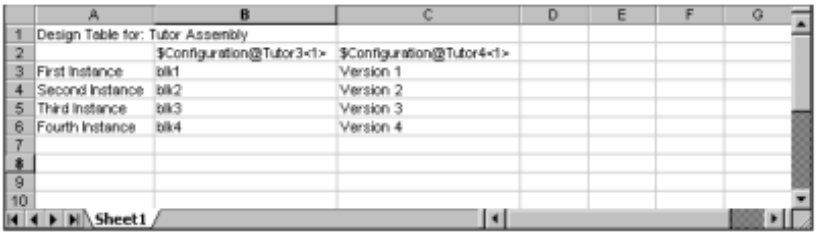
6 In cell C2, enter the keyword `$Configuration@Tutor4<1>`.



7 Add the configuration names in column A.



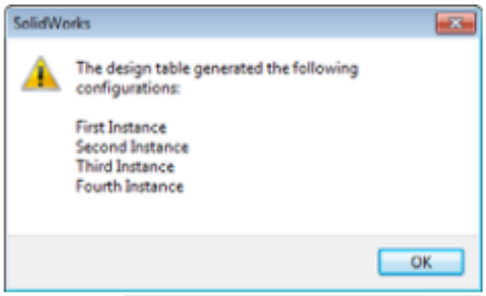
8 Fill in the cells of columns B and C with the appropriate configurations for the two components.



9 Finish inserting the design table.

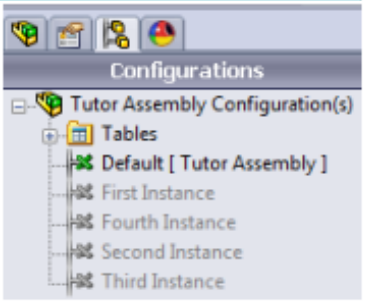
Click in the graphics area. The system reads the design table and generates the configurations.

Click **OK** to close the message dialog.



10 Switch to the ConfigurationManager.

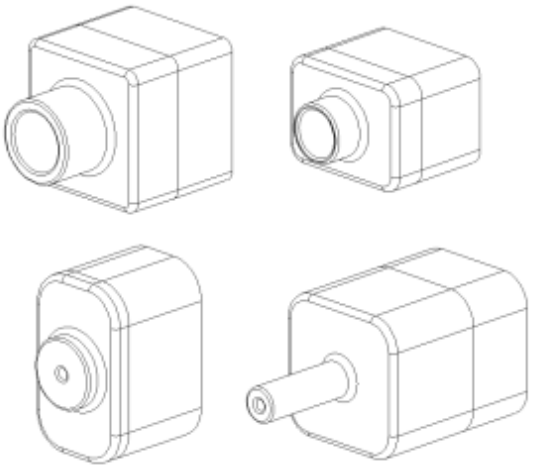
Each of the configurations specified in the design table should be listed.



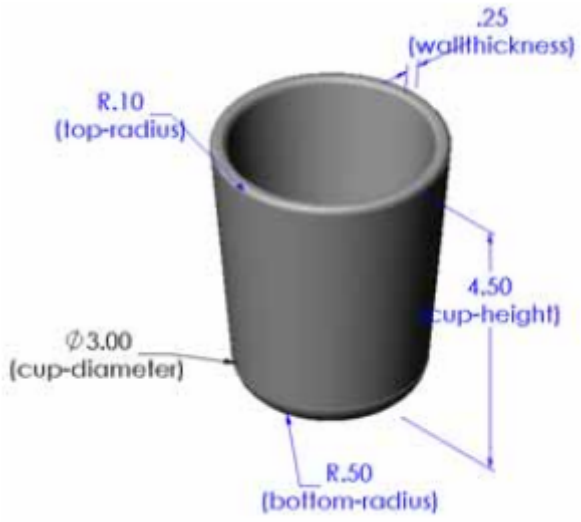
Note: The configuration names are listed in the ConfigurationManager alphabetically, *not* in the order in which they appeared in the design table.

11 Test the configurations.

Double-click on each configuration to verify that they display correctly.



Assigned Task:



1) Describe the features that make up the drinking cup.

2) What are the some of the dimensions that you would want to control if you were to make a series of different sized cups? Generate a Design a table.