**F1 in Schools Tutorial Script - 02 Front Wing**

* ![2017-10-02 10_37_18-Solid Edge ST10 - Assembly - [Asm1].png]()Start your front wing design by using the previously made F1 Body design part. (Car\_Body.par)
* Create a new assembly.
	+ Select “Assembly of Active Model” option
	+ Save the new F1 assembly ex. (My\_F1\_Car\_Assembly.asm)

![2017-10-02 10_39_21-Solid Edge ST10 - Assembly - [My F1 Car Assembly .asm].png]()

* Create new part in place.
	+ Select “Create Part in Place”.
	+ Select OK when dialogue box comes up.
	+ Select Polyurethane for material in dropdown menu.
	+ Click Green checkmark button.
	+ ![2017-10-02 10_44_33-Solid Edge ST10 - Assembly - [My F1 Car Assembly .asm].png]()Save the part file ex. (front\_wing.par)
* Click on the Project to Sketch command.
	+ Using the orientation cube in the lower right corner, click on the Right view.
	+ Press F3 to lock to the Right plane.
	+ ![2017-10-02 10_58_47-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()Select both front edge and bottom edge of model.
* Click on the offset button to create offset line parallel to front edge.
	+ ![2017-10-02 11_06_12-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()![2017-10-02 11_02_34-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()Change the distance to 3 mm.
* ![2017-10-02 11_07_09-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()Create a line perpendicular to
both front edge and offset line.

![2017-10-02 11_12_21-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()

* ![2017-10-02 11_11_39-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()Select the trim button to trim
the remaining line on the sketch.

* Create angle dimension for the sketch.
	+ Set 40° angle between offset line and bottom edge.
	+ Lock the angle using the locking button.
* Set vertical distance for the wing using smart dimension.
	+ Select horizontal side and angled side to create the dimensions.
	+ ![2017-10-02 11_13_47-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()![2017-10-02 11_14_20-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()Set measurement to 20 mm.
* Click on the region inside the sketch and extrude using the arrow which pops up.
	+ Press shift to toggle symmetry.
	+ ![2017-10-02 11_17_30-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()![2017-10-02 11_15_04-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()Set extrude to 80 mm.

* Click on the line command.
	+ Hover the cursor over the end face of the previous extrusion until it highlights.
	+ ![2017-10-02 11_36_48-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()![2017-10-02 11_41_50-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()Press F3 to lock the plane.
	+ ![2017-10-02 11_42_52-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()Press CTRL+H to orient the view to
	the plane

* Sketch 3 lines similar to the ones
shown in picture.

![2017-10-02 11_43_31-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()

* Create fourth line by offsetting the edge with the wing.
	+ Use the Project to Sketch button.
	+ Select “Project with offset” option and click OK.
	+ Select the edge with the wing and offset by 3 mm.

![2017-10-02 11_45_24-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()

![2017-10-02 11_44_07-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()

* Use the Trim Corner command to connect the ends of the sketch lines.
	+ Click and drag around the corners to remove extra lines or to extend the corners.

![2017-10-02 11_46_55-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()![2017-10-02 11_47_18-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()

* ![2017-10-02 11_50_09-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()Using Smart Dimension, add dimension
to the sketch as shown.

* Select both sketch and outer face of wing to extrude.
	+ Select the add options in extrude toolbar.
	+ Deselect the symmetric option.
	+ ![2017-10-02 11_51_15-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()![2017-10-02 11_54_35-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()![2017-10-02 11_52_29-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()Extrude 3 mm into the wing.
* ![2017-10-02 11_58_52-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()Add rounds to wing’s outer body.
	+ Select the edge/corner option from the dropdown menu.
	+ Select the two acute edges and set their radius to 1 mm.
	+ ![2017-10-02 11_57_49-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()Select the two obtuse edges and set their radius to 5 mm.

* Use the Face option from dropdown menu to round entire end face.
	+ ![2017-10-02 12_07_25-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()![2017-10-02 11_59_27-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()Set radius to 1 mm.
* Use mirror option to copy the outer body on one side of the wing to the other side.
	+ Select the entire outer feature by clicking and dragging
	a box around the geometry.
	+ Select the Mirror button.
	+ ![2017-10-02 12_11_04-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()![2017-10-02 12_04_04-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()![2017-10-02 12_10_04-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()![2017-10-02 12_10_20-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()Select the right plane using the coordinate system.

![2017-10-02 12_13_49-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()

* Use the Part Painter on the View tab to color
the wing support structure Black (dull).
	+ Click and drag around the structure.
* Create a projection of the slot in the bottom of the car body.
	+ Select project to sketch button.
	+ Lock to the XZ plane from the coordinate system.
	+ ![2017-10-02 12_16_19-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()**![2017-10-02 12_17_09-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()**Select the 3 edges of the slot in the front of the car body.
* **![2017-10-02 12_17_28-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()**Add slot in the wing by removing material.
	+ Click on the Extrude command.
	+ Select chain option from dropdown menu.
	+ Select the 3 projected edges on the XZ plane with one click.
	+ Select the cut option from dropdown menu.
	+ Point the arrow to the inside of the slot shape and click.
	+ ![2017-10-02 12_19_13-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()![2017-10-02 12_20_02-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()![2017-10-02 12_20_44-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()Drag the cut through the front wing.
* Isolate the wing by hiding the rest of the body by pressing CTL+Q.

![2017-10-02 12_29_03-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()

* Add a “Rectangle by center” to the top thickness face of wing.
	+ ![2017-10-02 12_30_54-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()Define the center of the rectangle to be on the
	midpoint of the edge of the face.
	+ ![2017-10-02 12_32_23-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()![2017-10-02 12_31_06-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()Add dimensions to the drawing as shown.
* Click on the region defined by the sketch and select arrow to extrude 10 mm towards the slot.

![2017-10-02 12_32_50-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]() ![2017-10-02 12_33_04-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()

* Show the Car Body (CTRL+Q) and notice how the wing interferes with the body.
	+ ![2017-10-02 12_34_45-Solid Edge ST10 - Assembly - [My F1 Car Assembly .asm].png]()Click on the Subtract command on the Features tab.
		- Select the Body as the target for the subtraction.
		- Select the Front Wing as the tool body. ![2017-10-02 12_39_11-Solid Edge ST10 - Assembly - [My F1 Car Assembly .asm].png]()![2017-10-02 12_38_47-Solid Edge ST10 - Assembly - [My F1 Car Assembly .asm].png]()
* In place activate into the car body by clicking the Edit in place button
after selecting the body, and notice the new pockets in the car body
for the Front Wing.
* Select the bottom face of the Front wing key slot.
	+ ![2017-10-02 12_40_09-Solid Edge ST10 - Assembly - [My F1 Car Assembly .asm].png]()Remove the material by dragging the face downward through the bottom slot.

* ![2017-10-02 12_43_30-Solid Edge ST10 - Ordered Part - [My F1 Car.par in My F1 Car Assembly .asm].png]()Add Rounds to the edge of the extrusion.
	+ Use the edge/corner option from dropdown menu.
	+ Add 0.5 mm rounds to the edges.
* Add round to the front of the car body.
	+ Use the chain option from dropdown menu.
	+ Type in radius of 1 mm.
	+ ![2017-10-02 12_45_36-Solid Edge ST10 - Ordered Part - [My F1 Car.par in My F1 Car Assembly .asm].png]()Select the edge of the front face of the car body.
* Close and return to the assembly.
* Isolate the Front Wing by selecting it and clicking on the Edit in place icon.
* ![2017-10-02 12_48_22-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()Click the Round command and select the top edges of the feature.
	+ Add 1 mm rounds.

* Click arrow underneath round button for more options.
	+ Select Chamfer Equal Setbacks option.
	+ Select the edge of the extrusion.
	+ Set the setback distance to 0.5mm.

![2017-10-02 14_10_50-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()![2017-10-02 14_12_42-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()

* Finally round the bottom front edge of the wing using the round button.
	+ Set round to 1mm.

![2017-10-02 12_48_45-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].png]()

* Select Close and Return to go back to the top level assembly.
* Save the assembly.
* You have now completed the Front Wing of the F1 Car.

