Instructions for Creating an Exploded Drawing of your robot

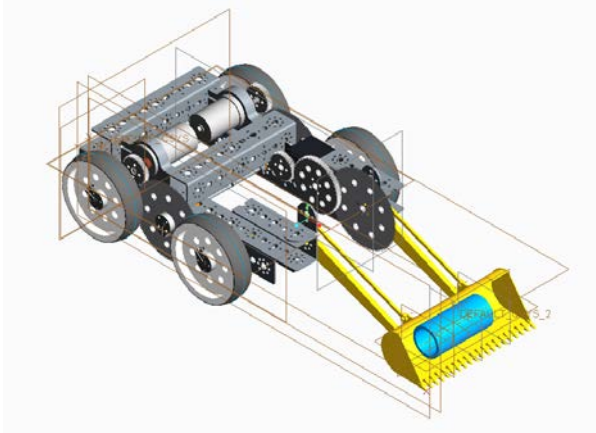
Task 1: Create an exploded model

Objective: To create an exploded drawing with all the parts in the right orientation.

1. Begin your exploded model by opening **Creo Parametric** by clicking the icon 

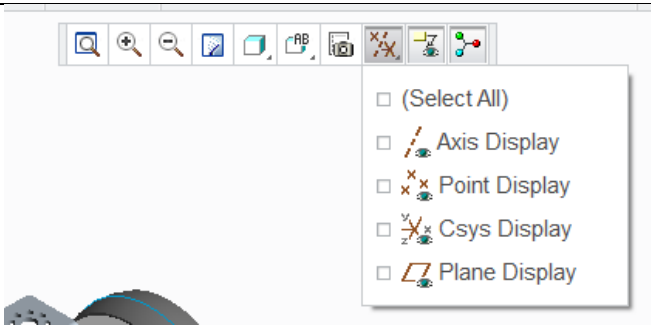
2. Now set your working directory to the **HOWS FOLDER 2012** and the **Detailed design robot** folder.

3. Now open the assembly model called "**ptc_robot.asm**"

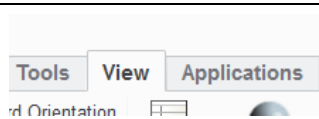


4. Your screen will look as follows and there will be planes displayed in the display area.

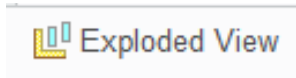
5. Turn off the planes displayed using the **Datum Display** tool.

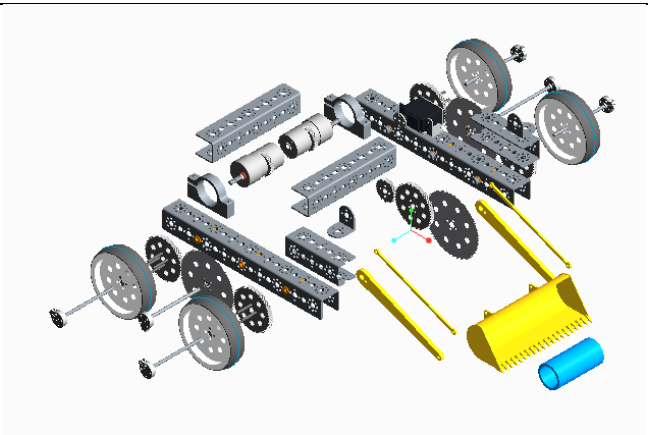


6. Now select the **View** tab in the top menu.



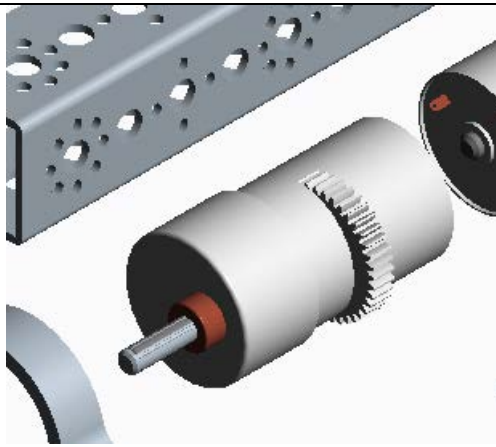
7. Explode the robot assembly model by clicking on the **Exploded View** tool.



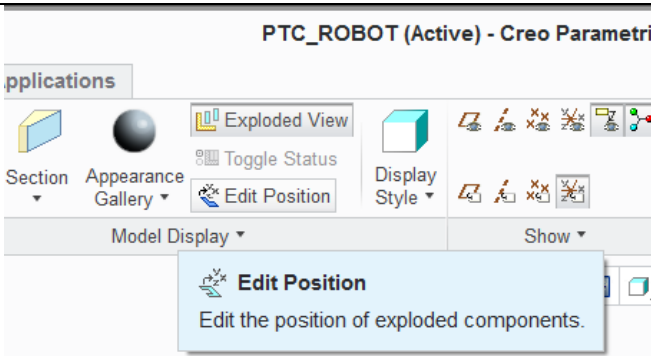


Note: Creo Parametric *separates all of the parts and moves them along expansion lines trying to get everything separate and visible. However, the parts are not always placed in the optimal positions. Some editing of the part positions is almost always necessary to help increase the clarity of the assembly.*

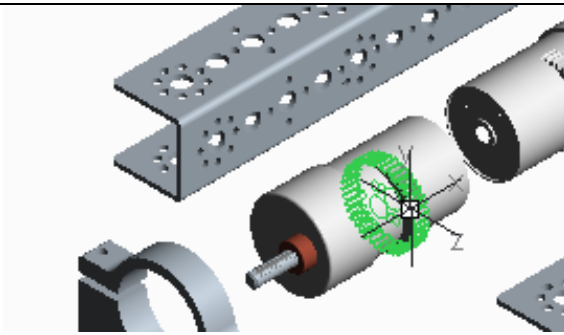
For example, notice that there are gears that are positioned inside the electric motors. These gears will need to be moved to insure clarity in the assembly process.



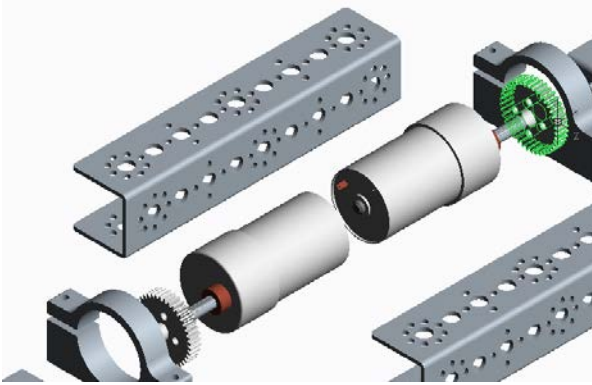
8. To edit the position of individual parts in the exploded assembly, click on the **Edit Position** tool



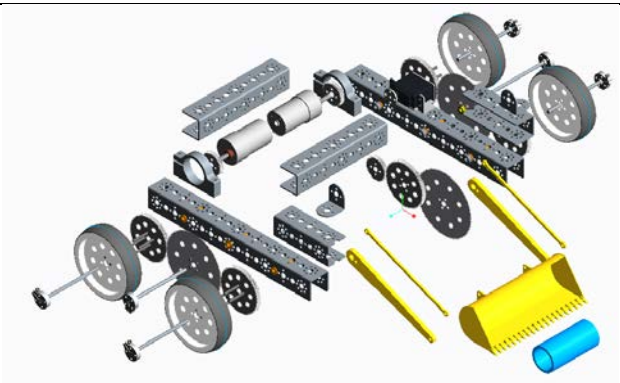
The part will be highlighted in green and a coordinate system will appear. Click on the axes of the coordinate system and drag the part to move it.



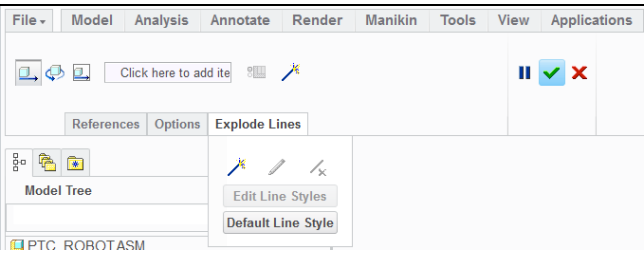
9. Once you position one part, you can **CONTINUE** positioning other parts simply by clicking on the new part. The orientation coordinate system then appears on the new part.



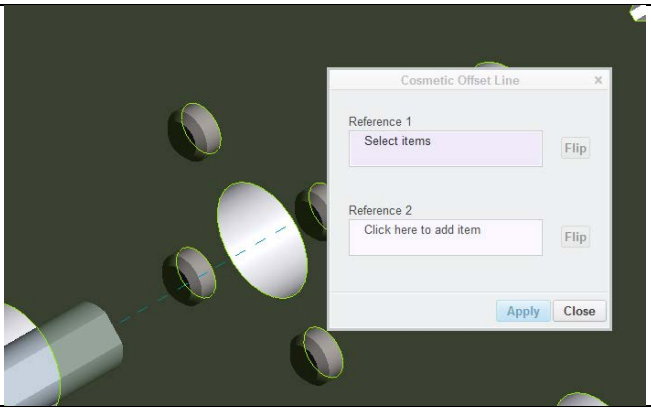
10. Use the **Edit Position** tool to edit any of the parts to make the entire exploded view clear and unambiguous.



11. It is sometimes helpful to create trace lines that show how parts fit together. This is done by using the **Explode Lines** tool in the dashboard. Select the **Pencil Tool.**

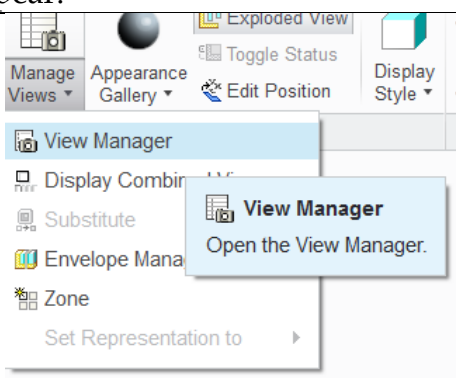


12. Now select the appropriate surfaces of parts to display trace lines. For example, if a trace line is desired to show how a shaft fits into a hole, then select the cylindrical surface of both parts and then click **Apply**.

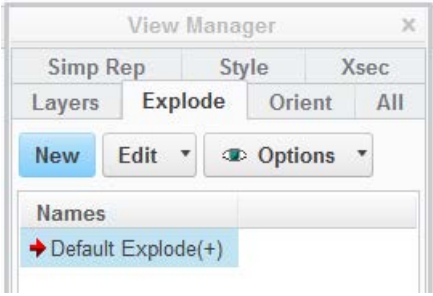


13. Add as many trace lines as are needed to make the assembly view as clear as possible.

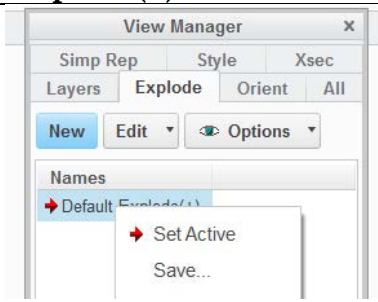
14. Now that you have updated the exploded view you will need to save it. Select the **Mange Views** icon in the menu and choose **View Manager**. A dialog box will appear.



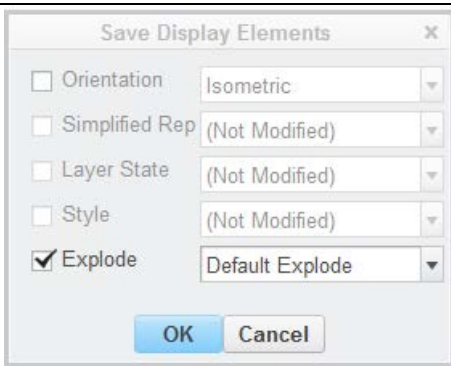
15. Select the **Explode** tab and you will see that the **Default Explode** view has a **(+)** by it which means that you have updated the view and it needs to be saved.



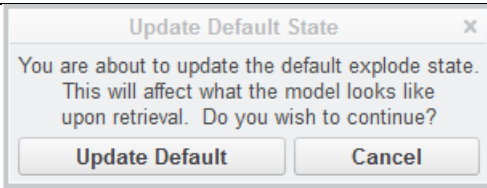
16. Save the view by right clicking on the **Default Explode(+)** and select Save.



17. Now select **OK**.



18. Now select **Update Default** to finish saving the exploded view.



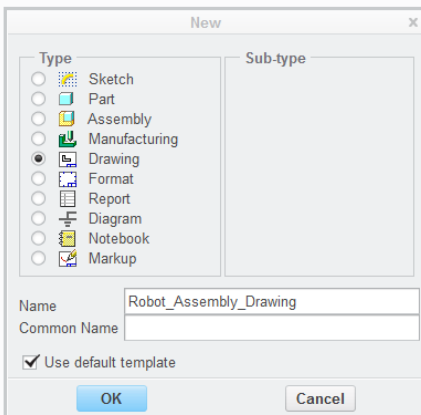
19. Close the View Manager dialog box.

Congratulations! You have completed the exploded model of the robot.

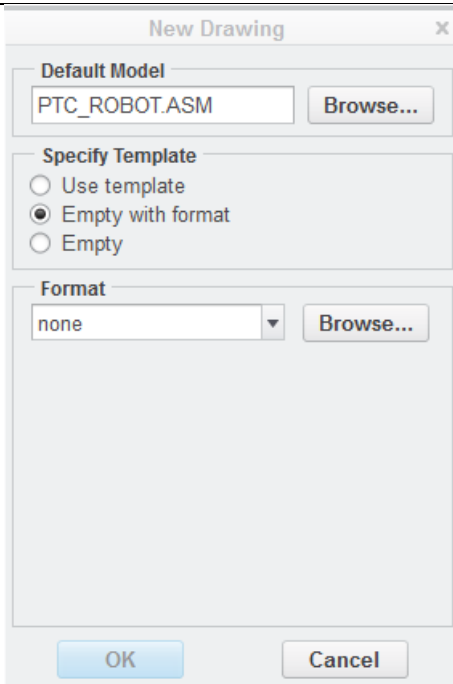
Task 2: Create an exploded drawing

Objective: In this task you will create a 2D exploded drawing of the robot.

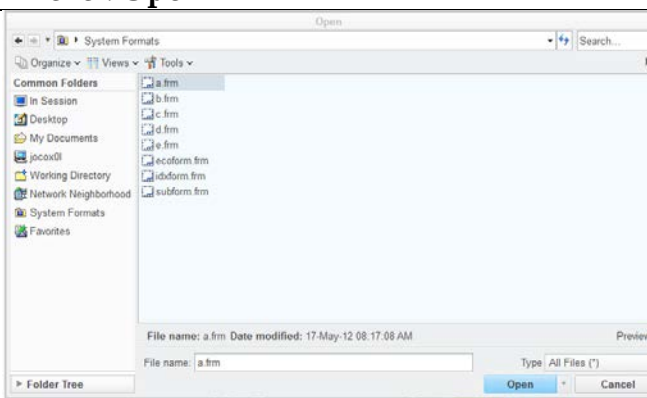
1. Select **New** from the File menu in the top level menu. Then select **Drawing** and name the new drawing "**Robot_Assembly_Drawing**".



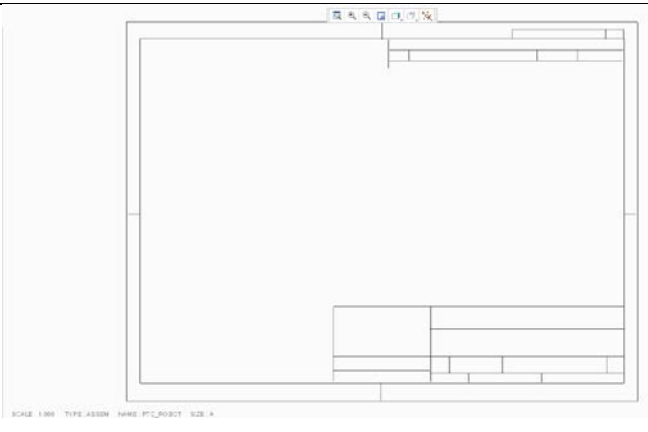
2. Now select **Empty with format**



3. Select **Browse…**and pick the **a.frm** file then click **Open**

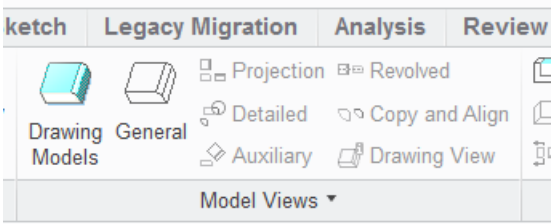


Then click **OK**

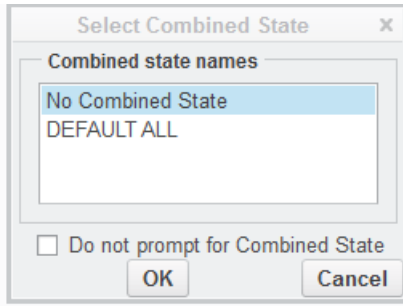


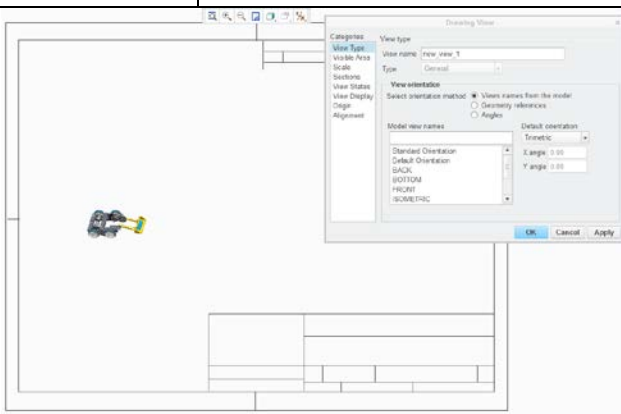
4. You will see an empty format that will provide a border around your drawing and will also be used to provide important information about scale, author, etc.

5. Insert a general view of your robot into the drawing format by selecting **General** in the upper menu.

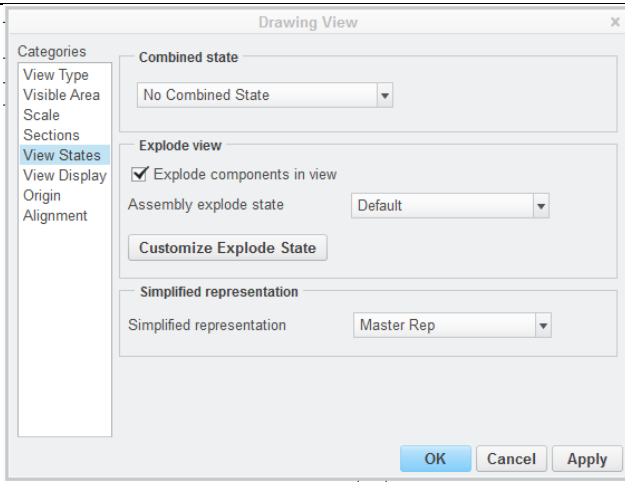


6. Click **OK** for **No Combined State** and then click in the middle of the format to place the view

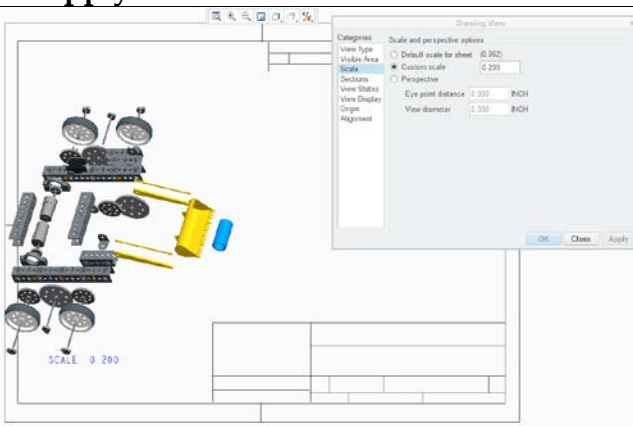




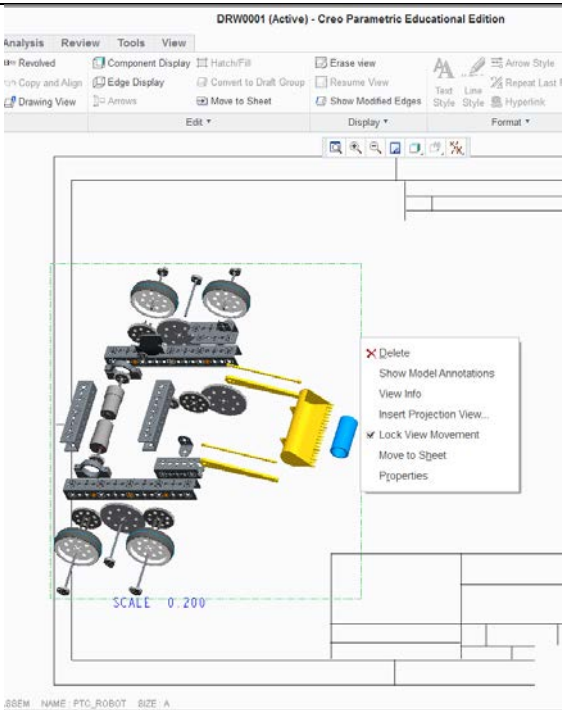
7. A new dialog box will appear that will allow you to change the scale and state of the view. Select **View States** and then check the box in front of **Explode components in view.** Then click **Apply**



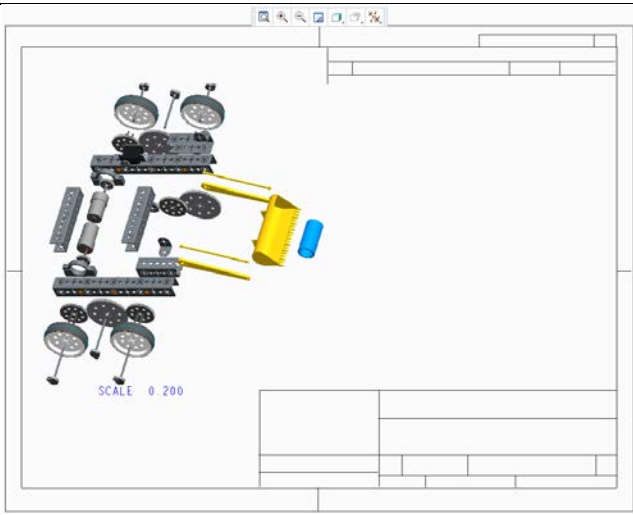
8. The view will change to your exploded state. Now select **Scale**, check the **Custom scale** circle and set it to **.2** and then click **Apply**



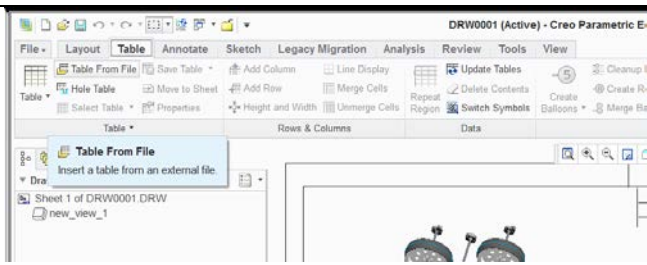
9. You will notice a green border around the exploded view. Select the border and right click. A new dialog box will appear. Uncheck the **Lock View Movement** box.



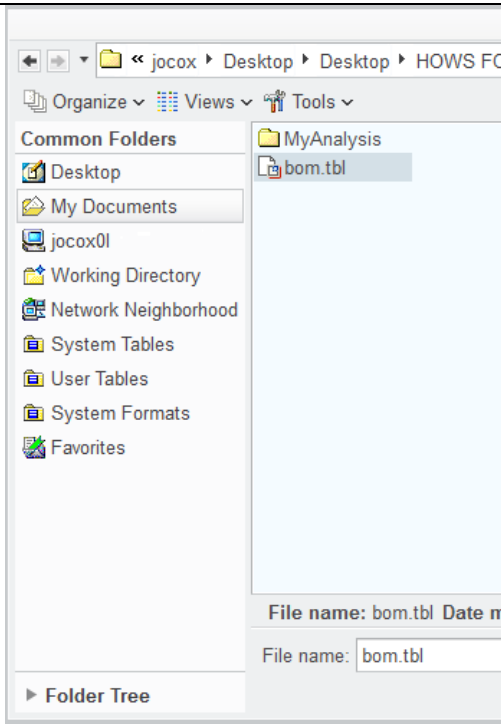
10. Now position your view within the borders of the format.



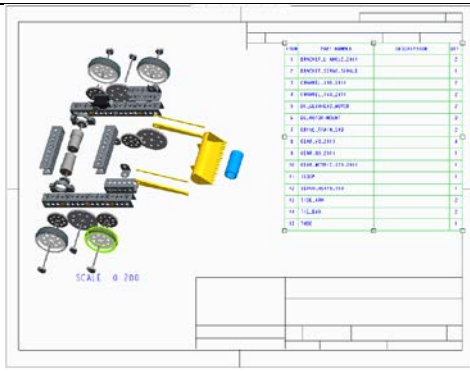
11. Select the **Table** tab in the top level menu and then select **Table from File**.



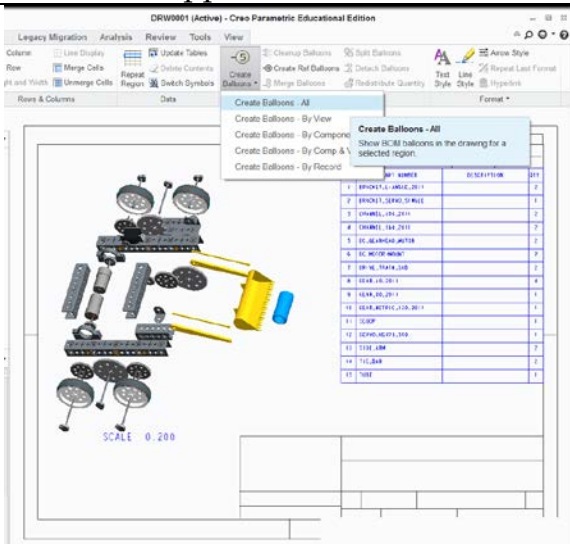
12. Choose the **bom.tbl** file and select **Open**.



13. A box will appear that is attached to your cursor. Place the box representing the bill of materials table in an appropriate place on the drawing by left clicking.

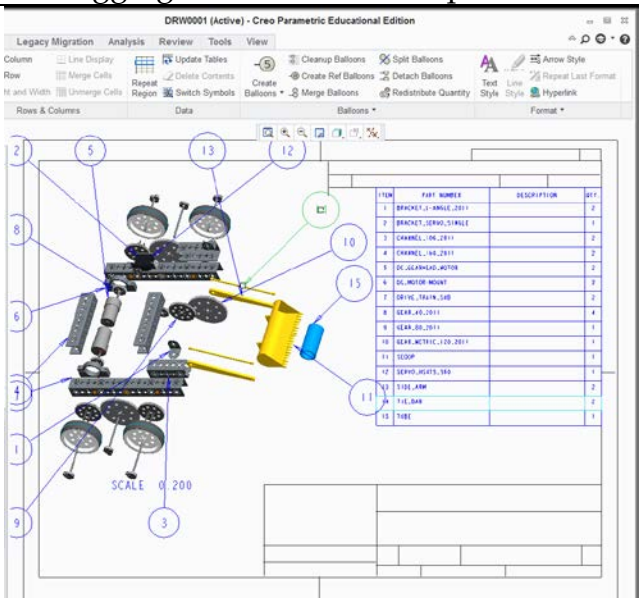


14. Now we need to create balloons on the drawing to link the parts in the bill of material to the parts in the drawing. This is done by clicking on the **Create Balloons** tool in the upper menu.

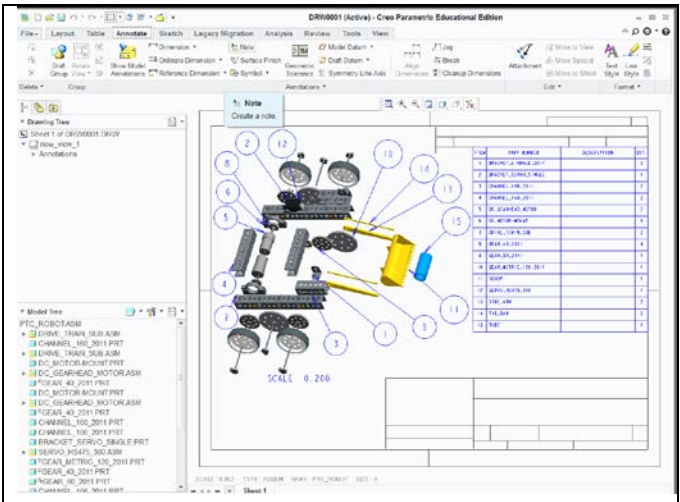


15. The balloons will be created automatically and will need to be repositioned. This is

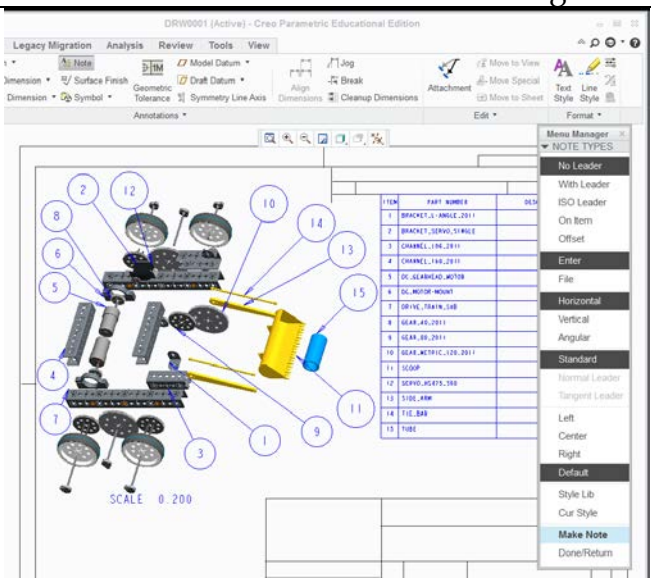
done by left clicking on them and then dragging them into the new position.



16. Once all the balloons are positioned, you can fill in the boxes on the format to provide information about who created the drawing, what date it was created, and any other information you might need. Select the **Annotate** tab in the top level menu and then select **Note**.

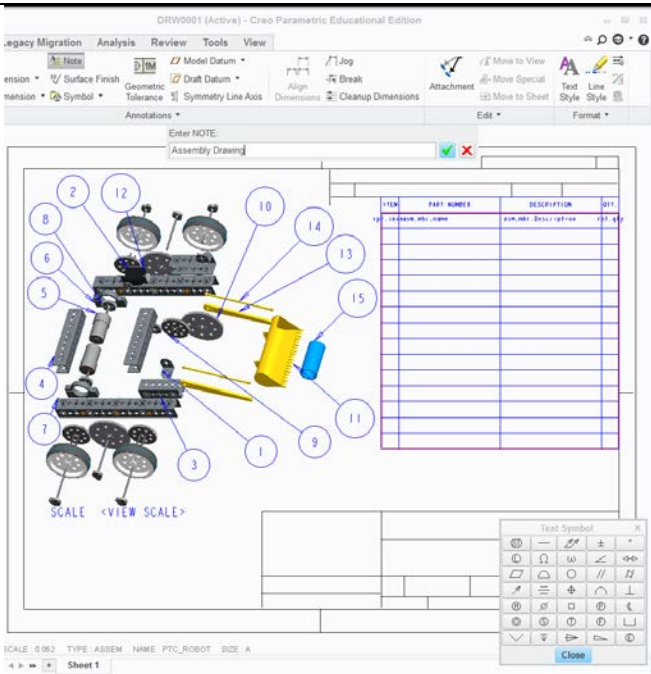


17. Then select **Make Note** in the dialog box.

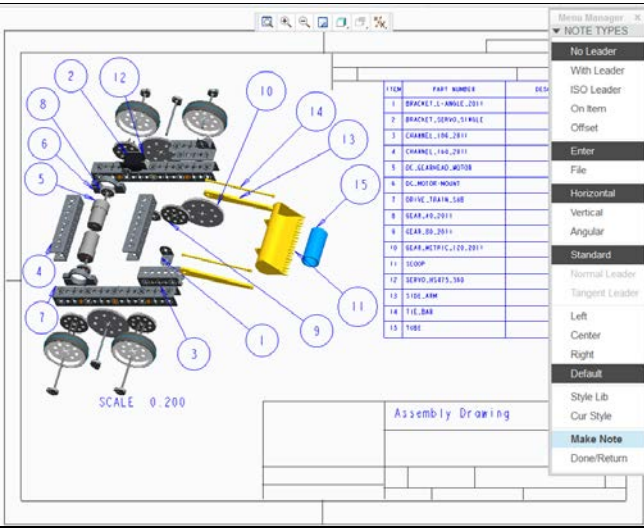


18. Click within a box in the format. A text entry box will appear at the top of the

screen.



19. Enter your text and then click the green checkmark twice. Your text will appear and the dialog box will appear again to let you add more notes.



20. You may add notes to your format or generally on the drawing. When you are done save your drawing file.

Congratulations! You have completed the exploded drawing of the model of the robot.

Note: *It is good practice to print out the assembly drawing and keep it with you in your pit while competing since it shows how all the parts fit together and provides a concise list of all the parts.*