ENGG1100 Introduction to Engineering Design I

Engineering Faculty

The Chinese University of Hong Kong

Homework 1: Computer Aided Design Using SolidWorks

In this homework, you are going to draw a part and assemble it to some given parts using SolidWorks. Please draw the part and do the assembly according to the instructions below.

1. Draw the tag in 3D as shown in Fig. 1 using SolidWorks according to the 2D engineering drawing provided in the Appendix. Please remember to follow the dimensions given in the drawing. The unit is mm.

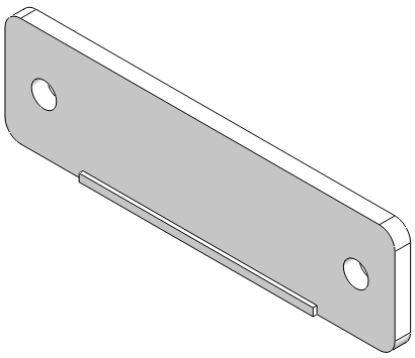


Fig. 1 The tag to be drawn using SolidWorks.

2. On the tag, draw the following features:
   a. The last 4 digits of your student ID. (E.g. if your ID is 1234567890, draw “7890”)
   b. Draw the digits using the 7-segment pattern. Fig. 2 shows you the pattern of the digits from “0” to “9”.

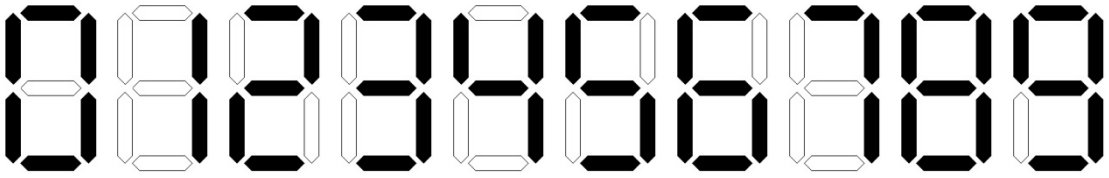


Fig. 2 Digits “0” to “9” in 7-segment.

   c. Make the ends of each segment sharp if it is an odd number. If the digit is “0” or it is an even number, make the ends round (Fig. 3).

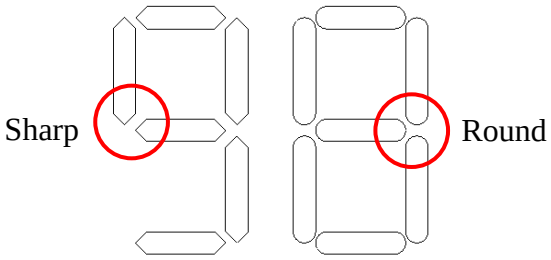


Fig. 3 Sharp ends and round ends.

d. Make the 1st and 3rd digits convex and the 2nd and 4th digits concave (Fig. 4).

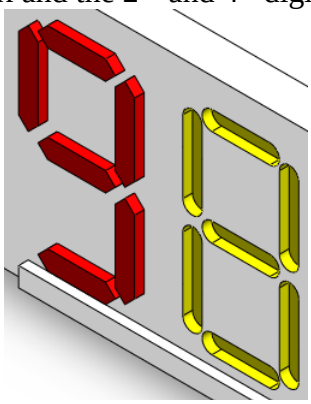


Fig. 4 Convex (left) and concave (right) features.

So, if the last 4 digits of your ID are “9845”, your tag should appear as shown in Fig. 5.

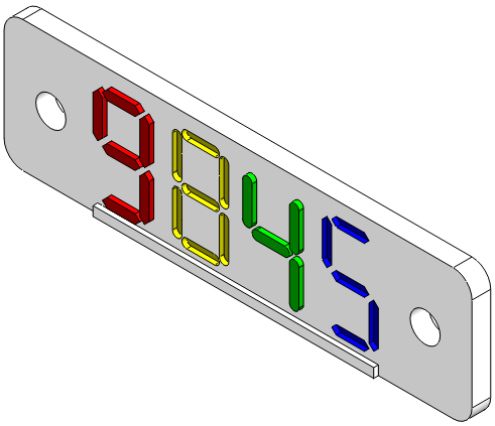
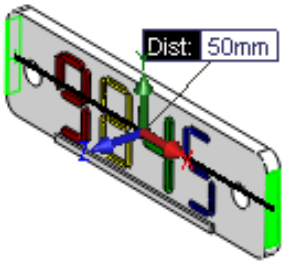
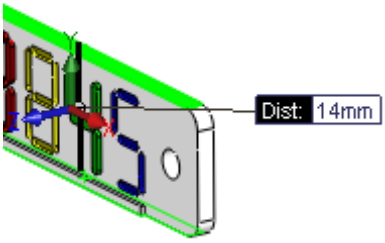
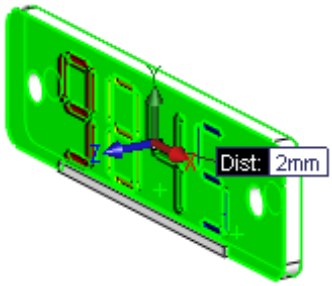
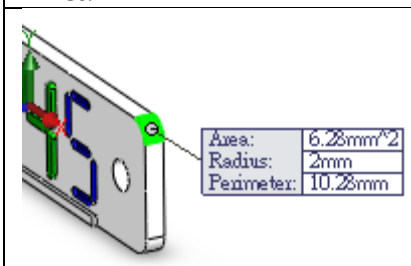
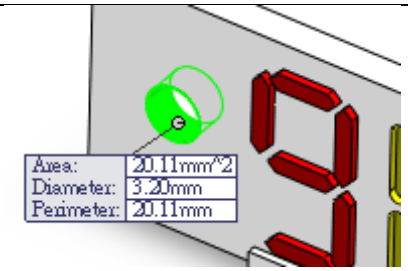
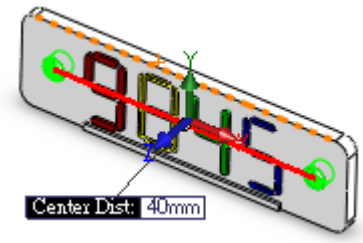
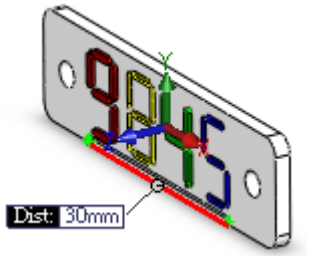
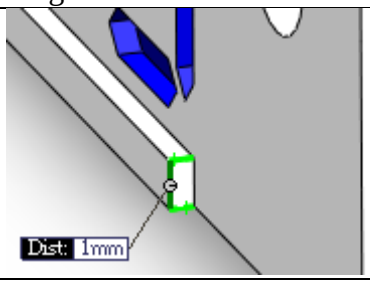
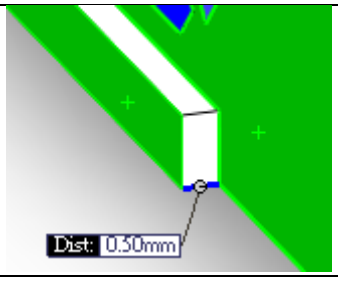


Fig. 5 An example of the tag.

3. Edit the appearance of your tag if you wish (e.g. edit the color).

4. Save the part as “LLLL_SID_tag.sldprt”, where LLLL stands for your lab session (e.g. AL01) and SID stands for your student ID number. For example, if you are from session AL01 and your SID is 1234567890, you should save your file as “AL01_1234567890_tag.sldprt”

5. Measure the required dimensions of the part with the “Measure” tool in SolidWorks and complete section I of “ENGG1100_HW1_Ans.docx” with screenshots captured from your screen. For example:

Width of tag:	Height of tag:	Thickness of tag:
		
Fillet:	**Hole diameter:**	**Distance between the holes:**
		
Width of bar:	**Height of bar:**	**Thickness of bar:**
		

6. Assemble the tag to “Chassis_acrylic.sldprt” as shown in Fig. 6. Here, you are going to use the techniques “concentric” and “coincident”.

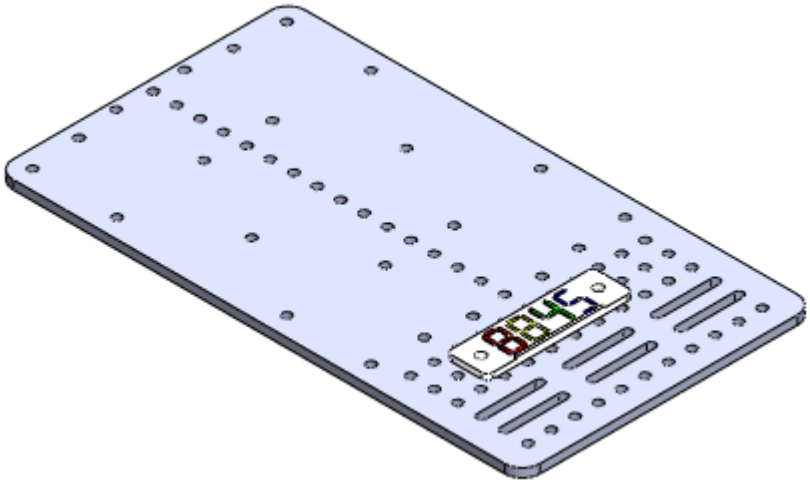
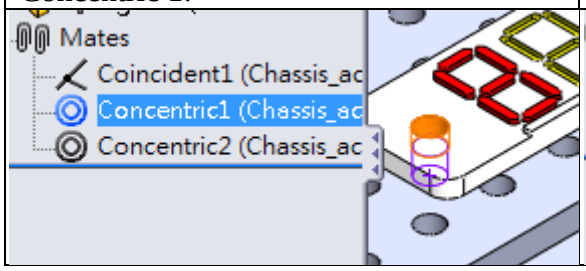
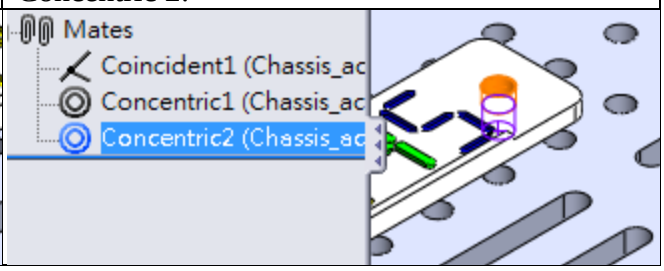


Fig. 6 Assemble the tag to the chassis.

7. Save the assembly as “LLLL_SID_assem.sldasm” (e.g. AL01_1234567890_assem.sldasm).

8. Complete section II of “ENGG1100_HW1_Ans.docx” with screenshots captured from your screen. For example:

Concentric 1:	Concentric 2:
	

9. Zip the following files into “LLLL_SID_HW1.rar” (e.g. AL01_1234567890_HW1.rar):
   a. The tag: LLLL_SID_tag.sldprt (e.g. AL01_1234567890_tag.sldprt)
   b. Chassis_acrylic.sldprt
   c. The assembly file: LLLL_SID_assem.sldasm (e.g. AL01_1234567890_assem.sldasm)
   d. ENGG1100_HW1_Ans.docx

10. Submit “LLLL_SID_HW1.rar”.

Reminders:

- Define the dimensions with your own judgment if they are not specified.
- Please save all CAD files in the same folder when doing assembly. Also, do not change the file name of the provided part.
- Be aware of the file names and formats required, save the files correctly.

Appendix: The 2D engineering drawing of the tag