Dwg #6 — OFFSET

T.E. Lab 347/547 - Computer Assisted Design and Drafting

INTRODUCTION:

The OFFSET command can be used to locate an entity a fixed distance from another point or location as well as create boundaries (if polylines are used) a fixed distance from an existing boundary. In this exercise you will first construct an object, use CHAMFER and FILLET to modify the corners of the object, then use OFFSET to create entities a specific distance from the object. You will also use the PEDIT (Polyline edit) command to change entities (lines) into polylines so that the offset command will work with the multi-line object.

OBJECTIVES:

Following the completion of this activity, the learner will be able to:

1. Create an object using the Line tool.
2. Identify the Fillet tool in the Modify toolbar.
3. Round the intersection of 2 lines using the Fillet tool.
4. Identify the Chamfer tool in the Modify toolbar.
5. Chamfer the intersection of 2 lines using the Chamfer tool.
6. Identify the Offset tool in the Modify toolbar.
7. Offset a line using the Offset tool.
8. Convert end-to-end lines into polylines and change their line widths using the polyline edit join and width command options.
9. Offset an object using the Offset tool.
10. Determine the length of a line using the List tool.

DIRECTIONS:

Read the specific information regarding this drawing. Attached to this sheet is the drawing that you are to reproduce. Open a new drawing and save it to your class disk using your 3 initials followed by Dwg06 (i.e.; fmlDwg06). Set up the CADD program to the correct setting as indicated below.

After the Dwg06 drawing is complete, save it to your class disk, answer the questions about the drawing in the question section of this activity and complete the Drawing #6 section of the Drawings #6-#10 Evaluation sheet.

When due, submit drawings #6-#10 with a title page, hard copy of each required drawing, and the Drawings #6-#10 Evaluation sheet stapled together with a disk containing the finished drawing files (5).

AutoCAD SETUP:

1. Start AutoCAD and use the normal ACAD prototype. This produces an 9" x 12" drawing field on which you will draw. If you are to save this drawing, immediately use the SAVE AS command to give it a name and place it on your disk or directory. Once the drawing is saved in this manner, you need only use the SAVE command or icon to periodically save it thereafter.
2. Locate the left end of the lower line (prior to filleting) at X = 2.5 and Y = 1.5.
3. Place line points at the following: @4,0 <ENTER>: @2,4 <ENTER>: @-1.5,-.5 <ENTER>: @-5,2 <ENTER>: C <ENTER>.
4. Select the FILLET tool Icon (or type FILLET <ENTER>). Type R <ENTER> and set the radius to .65 <ENTER>. Fillet the bottom left and bottom right corners of the drawn object (select one line then the other in each case).

5. Select the CHAMFER tool icon, type D <ENTER> and set the first distance to .25, then press <ENTER> to automatically set the second distance to .25.
6. Select the CHAMFER tool icon again and chamfer the upper left corner of the object.
7. Select OFFSET icon (or type Offset <ENTER>) then type D <ENTER> and set distance to .3 <ENTER>. When asked to Select object to offset, pick the vertical line at the right side of the object. When asked Side to Offset?, click to place the new line offset to the right of the object. Press <ENTER> to exit command.
8. To offset an entire object, the object must be a single entity such as a polyline. To make the drawn object into a polyline, select the Pedit Icon (or type PEDIT <ENTER>). When asked to select the polyline, select the line at the bottom of the object. When asked if you wish to make it a polyline (Y), press <ENTER>. Notice that the polyline editing commands are now listed in the command line.
9. Type J (to join lines into one polyline), then select each line segment (clockwise or counter clockwise) until you have selected all other lines in the object, then press <ENTER>. Now type W (to set the polyline width) and type .02 <ENTER> . The object lines will become thicker.
10. Select the OFFSET icon and set the distance to .4. When asked to select object, select the polyline object constructed in step 9. When asked side to offset?, pick a point toward the inside of the object. The offset will create a second polyline object on the inside of the original polyline. You can do this on either side of the polyline to place the new offset inside or outside of the original object.

QUESTIONS:

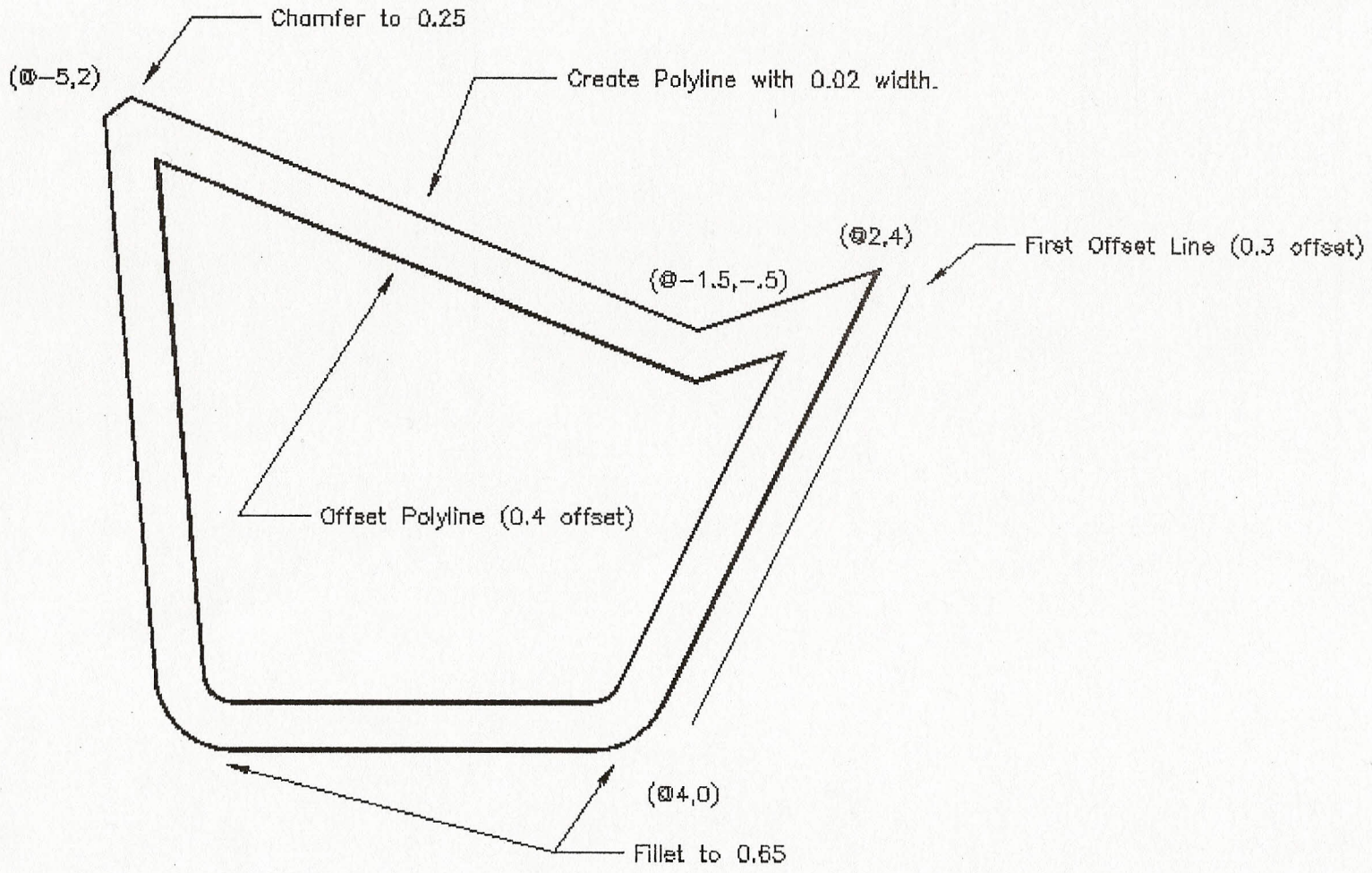
Measure the distances as requested in questions 1-4 to 4 decimal places (i.e.; 0.0000).

Question 1: Measure the length of the right side of the object (straight line) 4.0704

Question 2: Measure the length of the first offset line (straight line outside the object) 4.0704

Question 3: Measure the length of the right side of the offset object (straight line) 3.1047

Question 4: Measure the length of the lower side of the offset object (straight line) 3.0047


Chamfer to 0.25
(@-5,2)
Create Polyline with 0.02 width.
(@2,4)
First Offset Line (0.3 offset)
(@-1.5,-.5)
Offset Polyline (0.4 offset)
(@4,0)
Fillet to 0.65