Due: October 17, 2016, program due midnight October 16, 2016.

Your choice of VTK example must be sent to me by email by 10/12/16 (for my approval)

Problems:

1. Consider *x*-*y* plotting.
   a.) Describe in detail a functional model for an *x*-*y* plot.
   b.) Describe in detail an object model for an *x*-*y* plot. Be sure to specify the interface to this object: inputs, outputs, readers/writers, etc.

   Your models should be independent of any given implementation.
2. Define at least two significantly different visualization methods for the object in problem 1. Give a functional description of the methods, as well as a visual description of what output they should achieve.
3. Visualize the following functions (2-3 screen captures each is sufficient, no need to turn in the code).
   a.) $F(x, y, z) = x^2+3xy+5yz+7xz$
   b.) $F(x, y, z) = x + 3y + 7z + 1$
   c.) $F(x, y, z) = x^2 + 3xy + y^2 – (\cos z + 1)$
4. Consider rendering a square polygon onto a 16 by 16 block of pixels. Compare the approximate relative number of computations needed to render using each of the following rendering methods (state any assumptions you make explicitly):
   a.) Flat shading.
   b.) Gouraud shading.
   c.) Phong shading.
5. Choose one VTK example program and prepare to present it to the class. By this I mean:
   a.) Explain which filters, sources, sinks, etc. that are used in the example. Describe in detail each one that is new to the class (what it can be used for, its limitations, parameters, data types it allows, etc.).
   b.) Explain how the original coded example works step by step.
   c.) Prepare **modified** example code that demonstrates and visualizes the effects of modified parameters to each of the component VTK filters/sources/sinks.
   d.) Submit this code as prog2 with a short write-up (in .pdf format)