Homework 13

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Part 1 – Creating an Unstructured Grid with PyVista and visualization using Paraview

In this assignment we learned how to use PyVista and generated a .vtk file. After running the quad_example.py with Python, we generated a quadExample.vtk file that was used to practice visualization using Paraview. This file had two fields: Distance and Locations, each of these fields are different in point data. Distance is a scalar field, and Locations is a vector field. Figure 1 below represents multiple views of the original image shown in the bottom right.

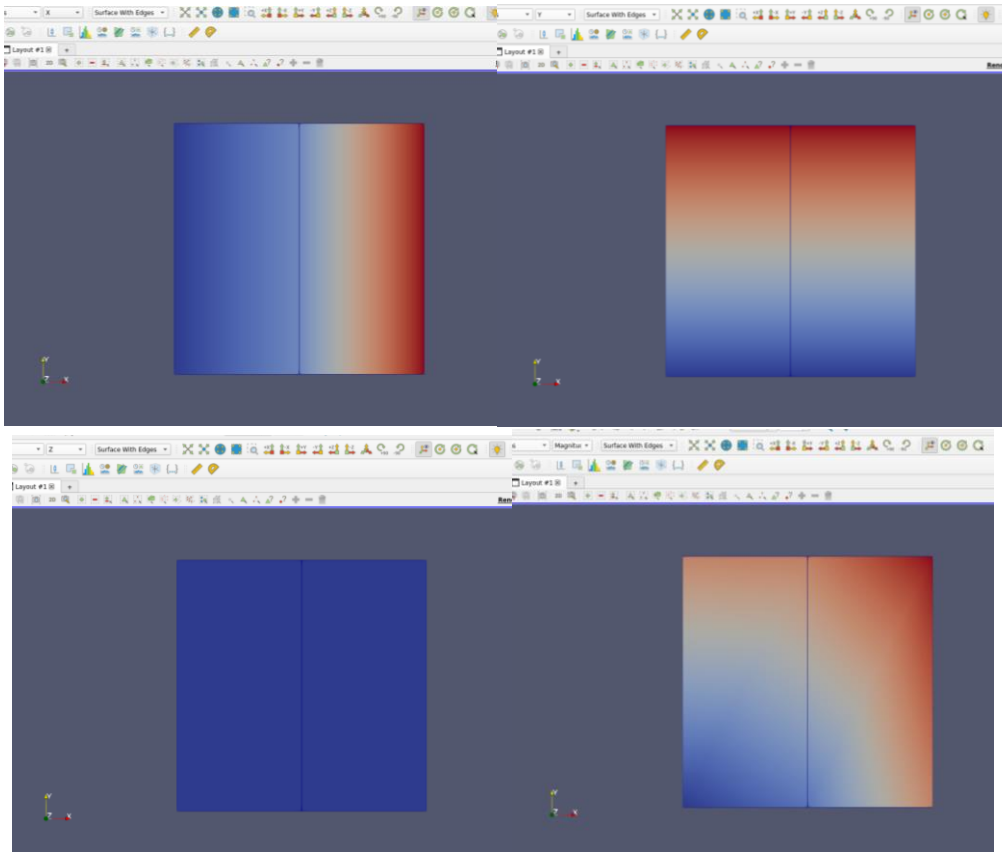

Figure 1. Visualization of quadExample.vtk.

After understanding the generated example, we created a file named *main_program.py* where we had to define 4-quad cell elements as instructed in the assignment. Then, we created an unstructured grid from the cell, cell_type and point arrays, as well as defined a scalar field named *dcenter*, and defined a vector field named *velocity*. Figure 2 represents the view of the *dcenter* scalar field displayed on surface with edges. Figure 3 represents the visualization of the *velocity* vector field after applying WarpByVector and with a scale factor of 0.5.

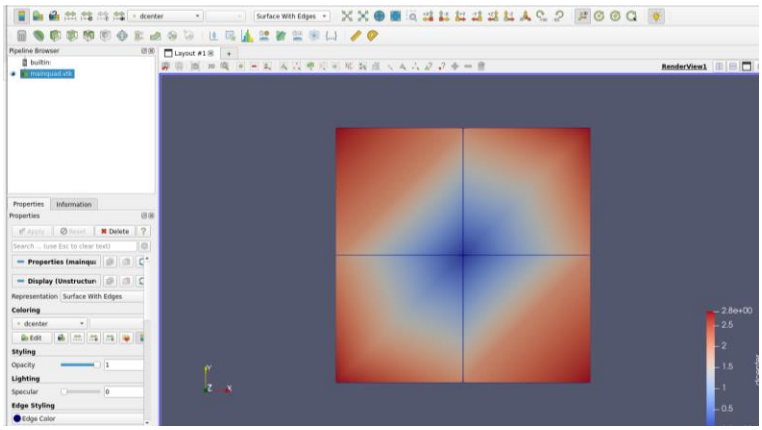

Figure 2. dcenter Scalar field - Surface with Edges

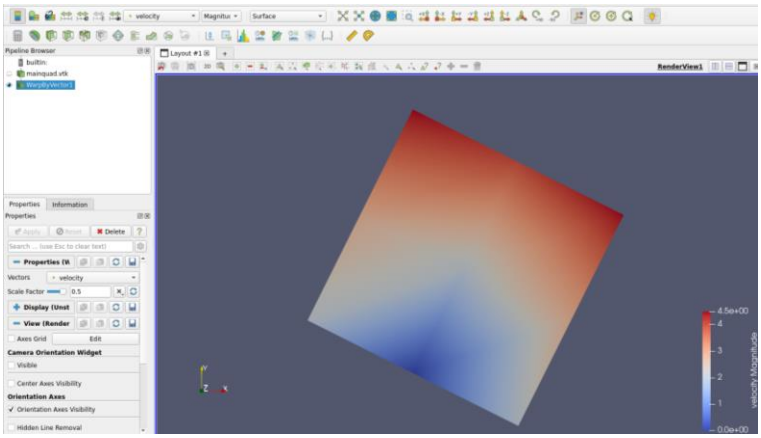

Figure 3. velocity Vector field - WarpByVector

Part 2 – Visualization using Paraview

For this part, we used a file named model.vtk and Paraview to modify the properties. After creating a clip view and selecting the Z-Normal Plane, the image in Figure 4 was shown in Paraview.

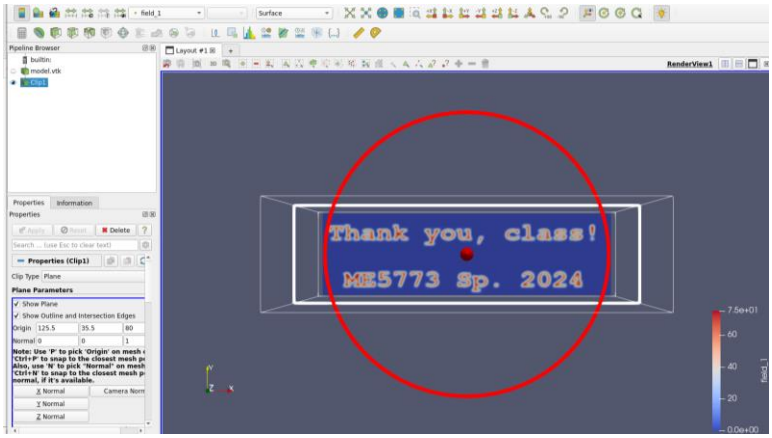

Figure 4. Visualization of model.vtk