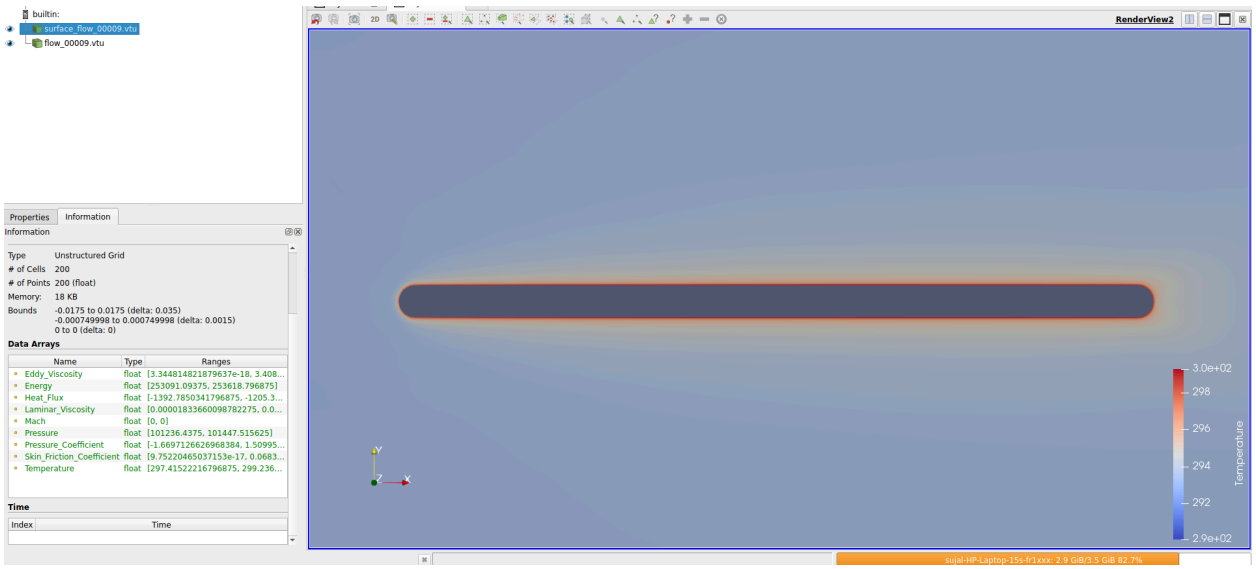
REPORT : ASSIGNMENT 3

In this assignment we are trying to set up a problem of unsteady heat transfer from a flat plate(2D) with rounded corners in the python wrapper and run a similar test case. The ambient is assumed to be air that has a temperature of approx. 293.15K (20℃). The plate is isothermal at around 299 K (25.85℃).



This is a picture of results obtained from Paraview. It shows the surface of the plate.The plate is the dark grey region. The light grey region is the ambient surroundings. Here we see an orange region close to the plate surface. This orange region shows that the surface of the plate is hotter than the surrounding air hence heat transfer occurs from the plate to the surroundings. This happens because it is unsteady state. Had it been a steady state there would have been just two regions in the picture: a light grey region (air) and a dark grey region (plate). There would have been no orange and yellow region in the picture because then temperatures would have been the same everywhere.

In the information box on the left bottom side of the image above, we see the ranges of values of some thermo-physical properties. There we see a slight decrease in the air pressure near the surface of the plate (101236.4 Pa). This is because near the surface we have hot air and hot air being lighter than cold air (or normal air) rises up.

A zoomed in picture of the plate is