1. Steady-State flow-patterns: For a Reynolds number of 100 and a grid size of 42X42, present and discuss a figure for the velocity-vector, U-velocity contour, and pressure-contour in the flow domain (3 figures).

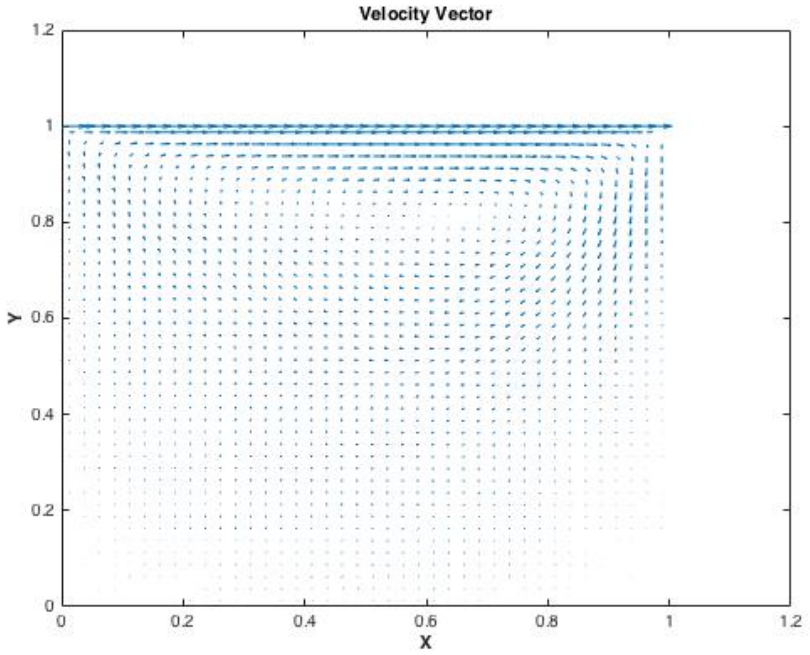

Figure 1: Velocity Vector

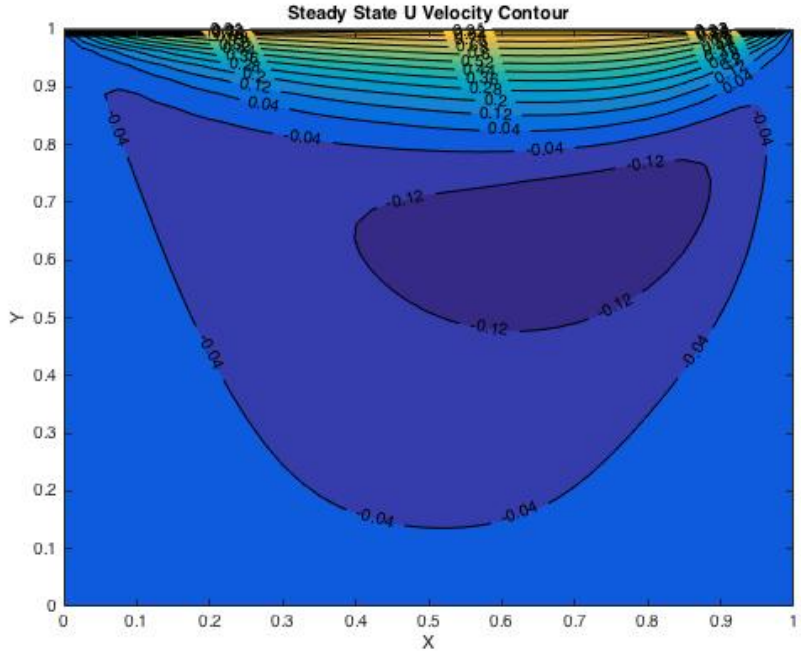

Figure 2: U Velocity Vector Contour

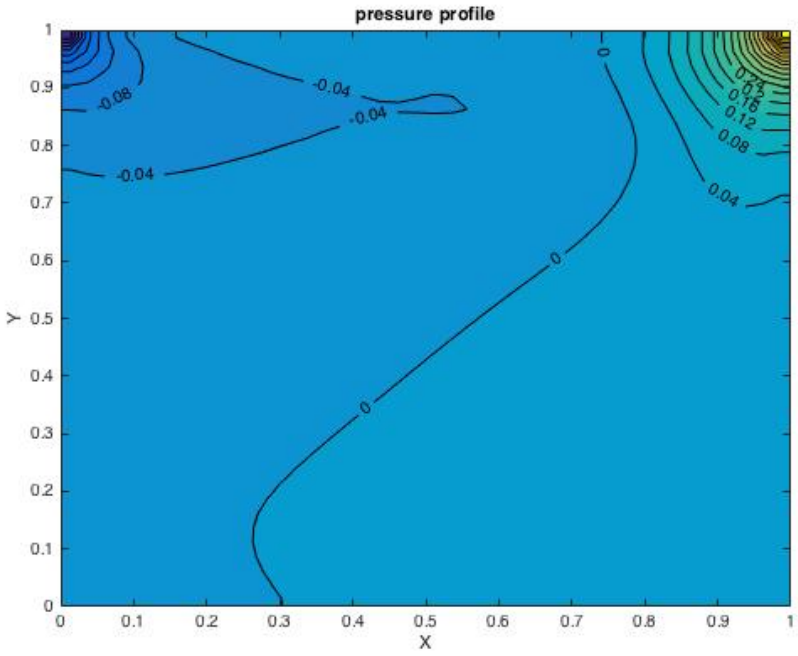

Figure 3: Pressure Contour

2. Plot and discuss the variation of U-velocity along the vertical and V-velocity along the horizontal centerline of the cavity and its comparison with the benchmark results, on a grid size of 32X32, at Re=100 and 400 (2+2 figures). Overlap the results obtained by Ghia et al. (1982), with symbols for published and line for present results.

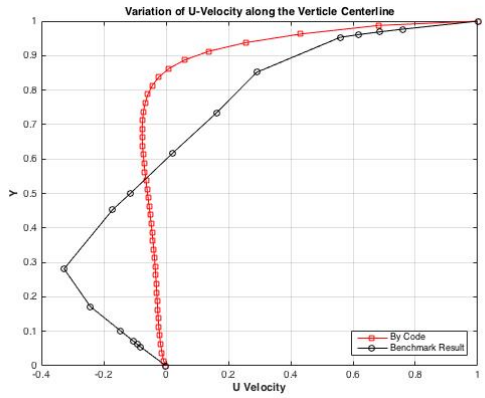

Figure 4: U velocity along the vertical centerline at Re=400

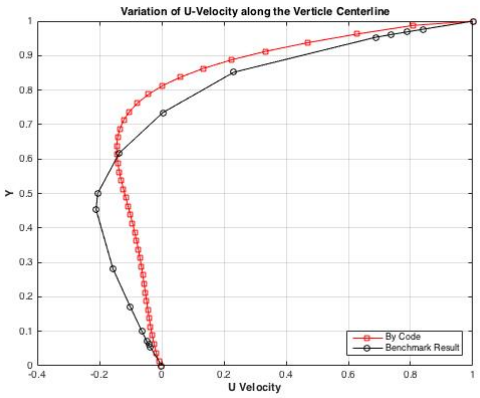

Figure 6: U velocity along the vertical centerline at Re=100

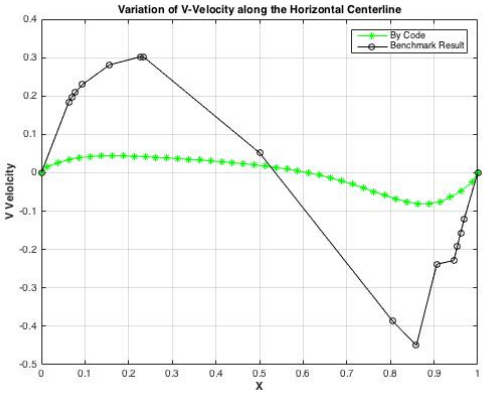

Figure 5: V velocity along the horizontal centerline at Re=400

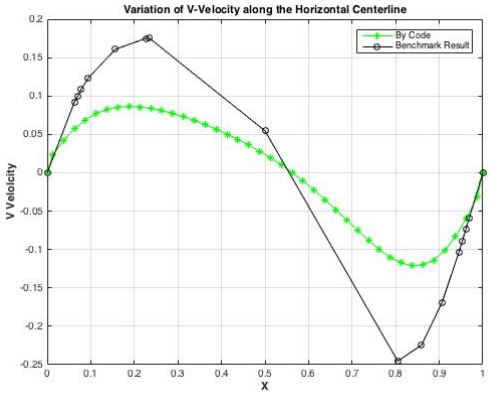

Figure 7: V velocity along the horizontal centerline at Re=100

Results and Discussion

1. In U velocity contour for both Re values(figure 4,6) we see that that U is 1 at the topmost boundary and then decreases as we go below, finally it goes to some finite negative value at some point in the contour and then sinks to zero at the bottom. This shows that a rotational field flow is also generated in the fluid system

2. Similarly for the V velocity contour we have V going to zero at both its boundaries(figure 5,7) and shows an almost sinusoidal function where it varies between negative to positive values. Thus, here two a rotational or a closed flow is created

3. Shapes of contours for both Reynold number values are the same the only exception being that due to different Reynolds number flow they have different values

4. We see that the results are close to the benchmark for Re = 100 but varies significantly for Re=400