Assignment#4: (Two-dimensional flow problems)

In this assignment, you are requested to extend the code you developed in the previous assignments to solve incompressible flow problems.

Use the developed general code to solve for the hydrodynamic and thermal fields in the physical domain schematically depicted in the below figure. Use the smart scheme for the convection terms. Assume the fluid is air with a density of 0.8 kg/m^3, viscosity of $5x10^{-5}$ Pa.s, and of specific heat 1.03 KJ/Kg K and of thermal conductivity 0.036 W/mK. Use 40x20, 80x40, and 160x80 elements.