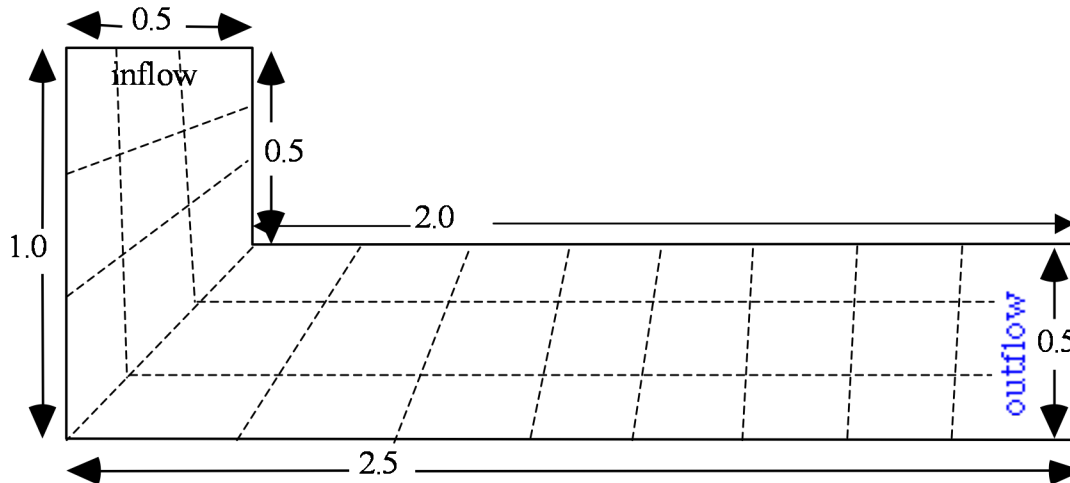


Worcester Polytechnic Institute
Mechanical Engineering Department
ME 612 Computational Fluid Dynamics
Project 2. Due March 1, 2010

Flow in a rectangular elbow

Solve the Navier-Stokes equations numerically using FLUENT to find the flow field in a rectangular elbow. Fluid flows in through the top and out through the right leg. Take the net volume flux to be unity (1). You may assume that the inflow velocity is uniform ($U_{in} = 2$). The L shaped domain is shown below (not to scale). Take viscosity and density such that the inflow Reynolds number is 200.



FLUENT is available on the computers in the Design Studio and you should all have an account on the machines there.

Your write-up should include a plot of the vorticity and streamfunction or velocity on at least two different grids. The report also should explain what you did, state what resolution you used, explain why you believe that your results are accurate, and contain a discussion of what you see and why it is reasonable. Your report should be concise, readable and as short as possible—BUT NO SHORTER THAN THAT!