CL455-CFD-Assignment-3

Date: 17/10/2022

Total Marks:7

Duration: 2:15 pm to 5:00 pm

3-D fluid flow inside a Pipe.

1. Consider a pipe with the diameter (D1) 1.0 cm (if your roll number is odd) and 2.0 cm (if your roll number is even) and length 50 cm.

To generate blockmech you consider inner circle diameter (D2)=D1/6.0.

You have to solve fluid flow problems for two Reynolds nunbers **Re= 1000.**

Use number of meshes as: radial:10, Theta: 40 and axial: 500.

Do not change the fluid properties; use the default values already there in the script.

Download the case setup from moodle and modify accordingly.

Run simpleFoam using endtime as 1000 to obtain the following results and upload the files.

(a) Upload blockMeshDict file.

(b) Plot average velocity profiles at three different axial locations in a single figure (inlet, 2.0 cm, 48 cm)

(c) Have you obtained fully developed profile? Justify.

(d) Can you comment if the Re is 200 whether you can get fully developed profile?

[2.5+2.5+1+1=7]