MEng Project Log

by

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M.Eng, The University of British Columbia, 2024

8th May, 2024

Contents

1 8th May

1. Applied for the access to ICICS 227
2. Applied for the access to compute canada

2 9th May

1. Installed Gmesh, Paraview and get access to compute canada
2. Read Eigenfrequency analysis from COSMOL
3. Learn how to use Gmesh: geometry part and the mesh part with two case: vertical plane and cylinder
4. Install the Simflow

3 10th May

3.1 Important Functions

1. simflow : run simflow to solve
2. mpirun -nx simflowOmpi -npx
3. simGmshCnvt -msh *.msh :mesh
4. simPlt -type vtk : post processing
5. gmsh -3 : convert geo to msh
6. cd (home) .(current) ..(previous)
7. vi :q :w :q! : quit, write, write&quit, and quit without saving
8. cp (source) (destination) :copy
9. mv (source) (destination) :move
10. scp :copy from others computer
11. rm -r(folder)
12. scp -r ineogi@beluga.computecanada.ca: /scratch/CavityTutorial .
13. scp conroyli@beluga.computecanada.ca: /scratch/CavityTutorial/debug1/*.vtk .

3.2 Case 1: Lid Driven Cavity

1. 10 time steps with 0.1s
2. saved in ‘debug1‘’
3. which simflow :give the location of the first version of simflow
4. /simflow-Nihar/bin/simflow
5. vi simflow.config
6. simPlt -type vtk -min 0 -last 10 in CavityTutorial

3.3 Files

1. cavity.geo
2. cavity.msh : save as msh
3. .crd .cnn .nbc(nodal BC) .srf
4. cavity.def
5. eightNodeBrick sixNodeWedge fourNodeTech
6. simGmshCnvt -msh Case1.msh

3.4 Multiprocess

1. InteractiveNode
2. salloc –ntasks=16 –account=def-rjaiman –time=1:0:0 –mem-per-cpu=4G
3. squeue
4. multiple cpu task: simflow.config
5. mpirun -n 16 /simflow-Nihar/bin/simflowOmpi -np 16

4 13th May

1. Fix Case1 files -> the problem should be in the mesh file
2. Check email for the lab access
3. Run Case2: sucessfully run and the vortec shedding is observed
4. Run Case3: VIV case with movable cylinder, follow the code project 1 article and try to reproduce the results.
5. Run Case4: wave-run-up case

4.1 Steps to Simflow

1. Mesh - Geometry - 3D/2D w 1 layer thick - physical groups - nbc srf - Mesh.MshFileVersion = 2.13;
2. Def file - geo -> msh - simflowCnvt
3. Post processing:
4. scp conroyli@beluga.computecanada.ca:/home/conroyli/scratch/Case1-plate/debug1/*.vtk .
5. Paraview :vtk
6. MATLAB: Oisd Othd
7. Restart Simflow: Rst
8.

4.2 Case4: Complie

1. src - solbc.c - change the height.. - save and "make" in src
2. make clean to clear
3. make again
4. def - userdefined
5.

4.3 Multiphase

1. Allen-Calm (Phase field)
2. order parameter = ϕ from -1 to 1 (air to water)
3. src-solpro.c

5 14th May

1. /scratch/st-jelovica-1/ljc2018/
2. ljc2018@sockeye.arc.ubc.ca cwl password
3.

5.1 Sockeye

1. make clean
2. cp ../src-cc/src/y.* .
3. make

5.2 Submit job

1. computecanadajob.sh
2. sbatch
3. make

6 15th May

1. Case 4 wave-run up submitted
2. Case 3 VIV case submitted

7 16th May

1. Case 3 VIV case with corrected parameters submitted

8 21th May

1. N/A

9 22th May

9.1 Output

1. oisd –> Integrated Force
2. othd –> Nodal Time History
3.

9.2 Initialization of multuphase

1. x is the longitutial, z is up and down
2. solProc.c line 377 3i+2 is the z crd, need + or -1
3.

9.3 Killing waves

1. Method 1: ship at 0.25 L of the domain and l as the ship length, domain: 15-20l and 5l for the very coarse
2. fine mesh in front, very coarse at the end
3. Method 2: solTimeInteg
4. damploc –> start location of damping
5.

9.4 multiple jobs

1. simMake –> make: complie c++ –> simflow and simflowOmpi
2. make cleam + copy y files
3. Wavetank: L=15+5m, H = 6m, W = 8m
4.

Task: exaime waves from 0.2-2m Jobs: height 0.8m & 1.6m and wave length 1m & 2m

1. 1: 0.8 & 1
2. 2: 0.8 & 2
3. 3: 1.6 & 1
4. 4: 1.6 & 2