To Do List and Open Issues

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1 Active Tasks

1.1 Data architecture and variables

The current task is to create all the variables necessary to hold the simulation data. So far, the only existing variables are those used to read in text file data. The rest of the data is organized like so in the C++ implementation:

There could be room for improvement in the structure – not necessarily for performance, but for readability of the code.

2 Future Improvements

2.1 Build Options

Improvement could be made to the makefile (or a different build software) for having different builds in separate directories for debugg and release versions. There are also some softwares that automatically figure out dependencies, so they don't have to be explicitly stated in the makefile.

2.2 Pre-processing/Data structure

The way the data is stored in the input text files and in variables within the code is suboptimal. Changes could be made both within pre-processing (i.e. the Matlab codes that generate those files) and how the variables are declared in Fortran.

3 Completed Tasks

3.1 Build Options

The code is built with a basic Makefile. Compilation flags are hardcoded, so a `make clean` is needed anytime flags are changed.

3.2 Read in simulation data

The data files necessary to make the code run are different depending on whether the code is running a 2- or 3-dimensional problem. For 2D, geometries, the metadata files are:

- SimulationValues.txt (Mach, AOA, Re)
- Sizes.txt (# of domain, body, farfield, cloud, ghost, extrapolation, total nodes)

and the geometry data files are:

- x,y.txt (node coordinates)
- DX,DY.txt (DQ coefficients)
- EC.txt (extrapolation coefficients)
- Jd,Jb,Jf.txt (domain, body, farfield node indices)
- nxb,nyb.txt (body node unit normal vectors)
- nxf,nyf.txt (farfield node unit normal vectors)
- s11,s12,s21,s22.txt (Flow tangency matrices)