

In this lab, the 1D Poisson equation was solved using the weighted Jacobi method. Multiple grid levels have been used to damping different frequency residuals. The v-cycle algorithm has been implemented. The residual of ordinary weighted Jacobi method and the weighted Jacobi with multigrid v-cycle have been calculated separately and the result have been compared.

This folder contains the following documents:

Makefile: which helps the compilation of the lab.

poissonmul.cpp: the implementation of this lab

Martix.h: file for linear system calculation

README: the documentation

Report: the report of this lab

Output: the folder store the output of the program and the matlab file for plotting

To compile and run the code, linux system with g++ compiler is required. The compiler should support the c++ 11 feature.

To compile the code, type make in the terminal.

To run the code, type ./poissonmul.x

Code test and output:

The output should be shown in terminal when running the program:

See output folder.