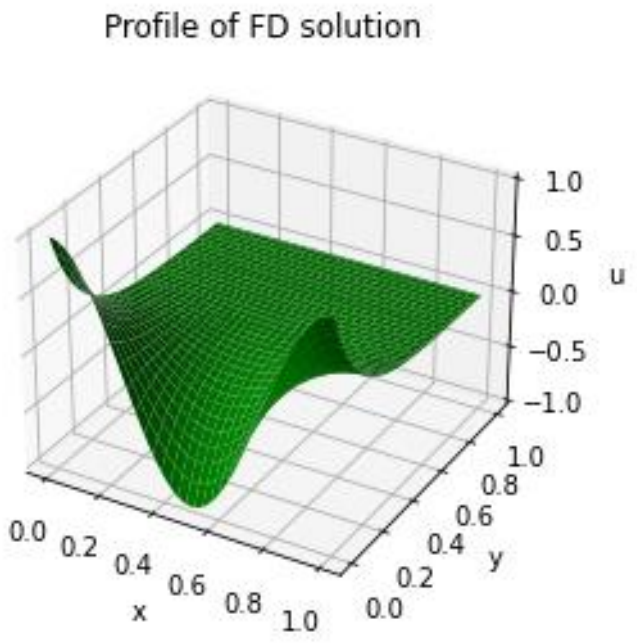


Figure 1. the solution of 2-d poisson equation using Jacobi method under 0.01 spacing.

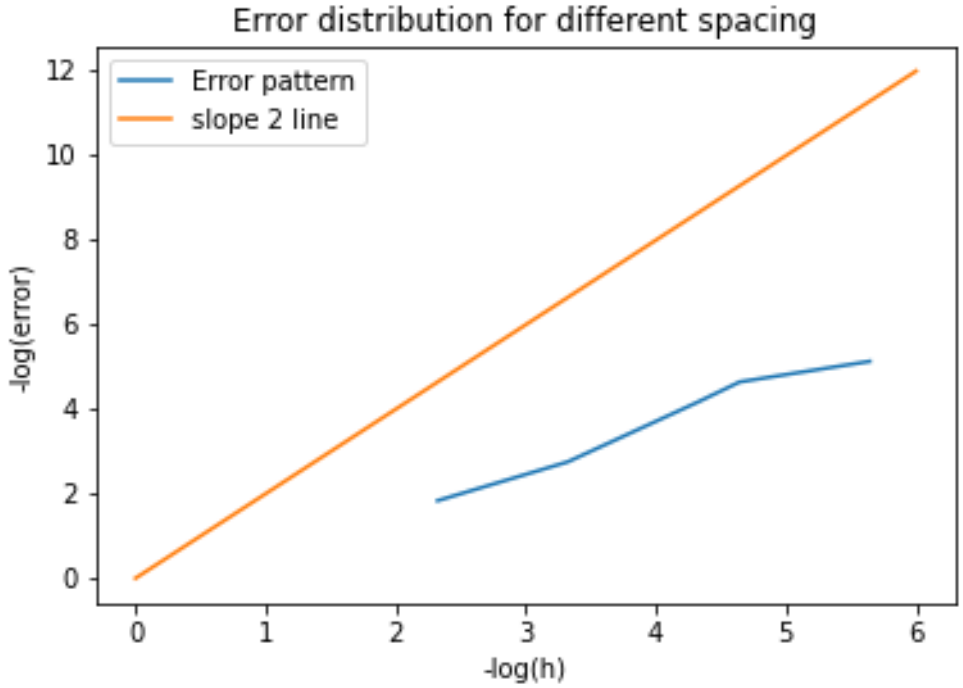


Figure 2. the error plot for question 3(b). The error and spacing are under -log to get avoid of too tiny number. The orange line is the refenced line at slope of two, while the blue line is the error norm under difference spacing condition.

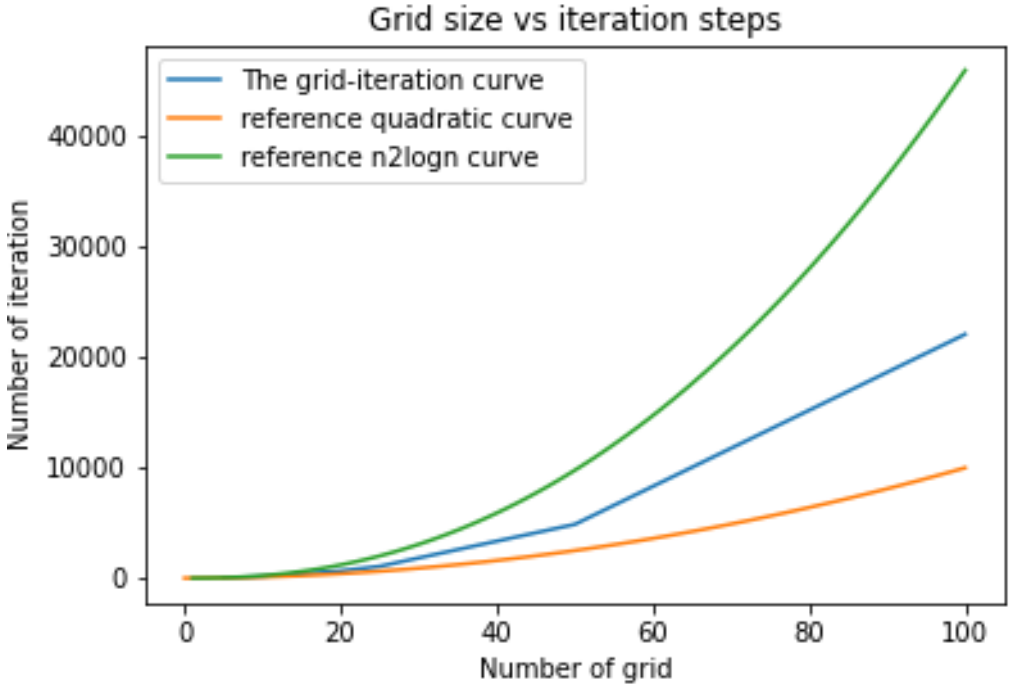


Figure 3. the convergence speed vs number of grids for the question 3(f). The orange and green curves are the referenced curve for $O(m^2), O(m^2 log m)$. The blue curve is the real iteration steps under different grid amount.

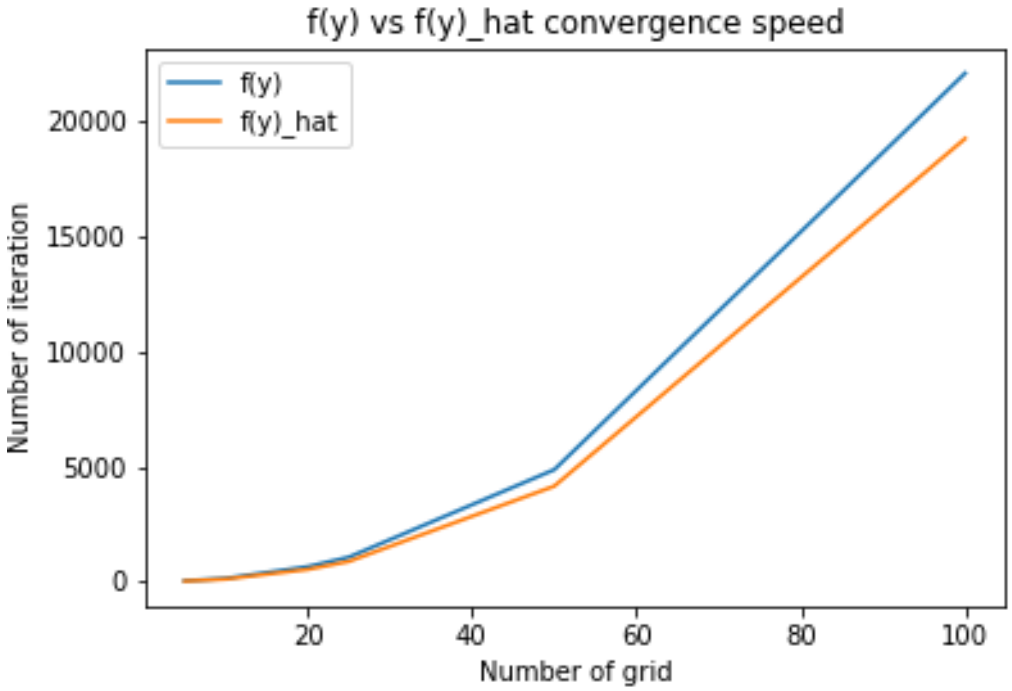


Figure 4. the convergence speed for a step function boundary condition (orange curve) vs a sin function boundary condition (blue curve)

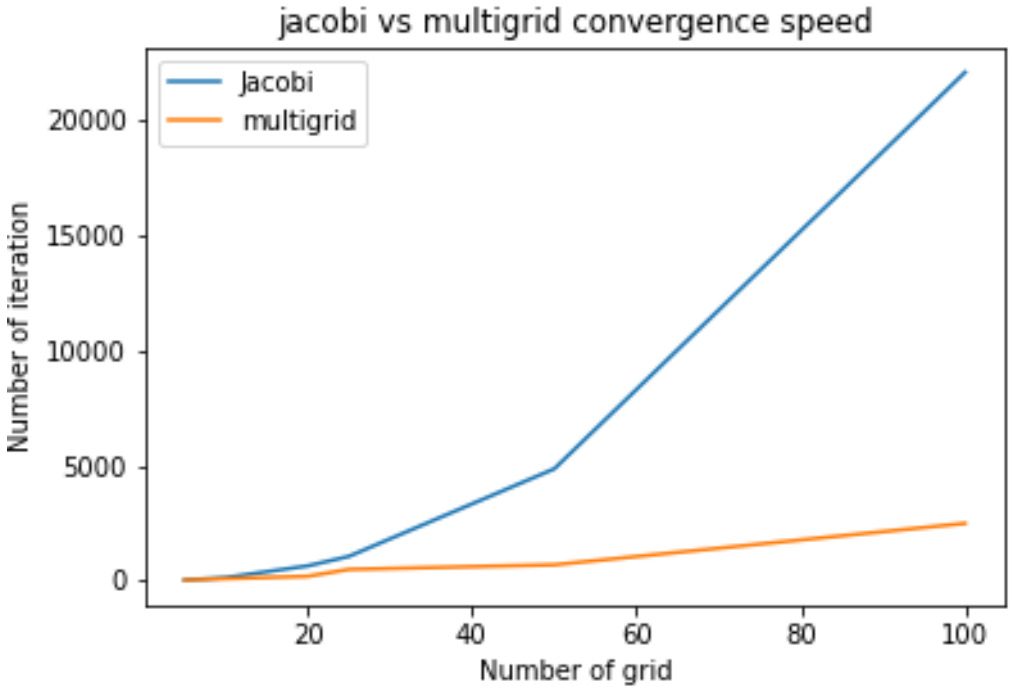


Figure 5, the convergence speed of Jacobi iteration method (blue line) and multigrid method (orange line).

# Code

**https://github.com/lubyant/CS714.git**