driver.m is the main program that calls optimizers and plots the graphs of the objective function and the norm of its gradient versus iteration number. ***You do not need to change it.***

GD.m is a template for programming the gradient descend algorithm. You need to choose a step length and insert code into the while-cycle. ***Look for TODOs.***

SG.m ***does not exist. You need to program it. You can use the template for the GD.m.***

You do not need to change the rest of the files.

Res_and_Jac.m. Input: par is the vector of parameters for the neural network, a column vector ; xy is the 2-by-Ntrain array of training points. Output is the vector of residuals Ntrain-by-1 and the matrix J of derivatives of the residuals with respect to parameters of size Ntrain-by-Npar.

ActivationFunction.m defines the activation function and its derivatives. There are two options: sigmoid or tanh.

res.m computes the individual residuals.

param.m extracts v, W, and u from the parameter vector.

setup.m defines the boundary conditions, the right-hand size, the function h that is zero on the boundary, and the exact solution.

NN.m computes the derivatives of the neural network N and Nx, Nxx, Ny, Nyy with respect to the parameters.