계산전자공학 Assignment #9 Wonbin Ju 20182018

I solved the 2-dimensional Laplace equation with different boundary conditions. The size of a model is 9 points by 5 points as shown in figure 1.

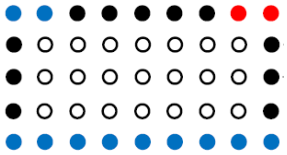

Figure 1. The model to solve the Laplace equation. The empty circles are bulk nodes, the black circles are homogeneous Neumann boundary condition, the blue circles are zero, and the red circles are unity.

The boundary conditions are as follows:

Case 1) The red circles are located in figure1.
Case 2) The red circles are located in the top/left position.
Case 3) The red circles are located in the bottom position.
Case 4) At all three positions above, the function is unity.

The results are shown in figure 2.

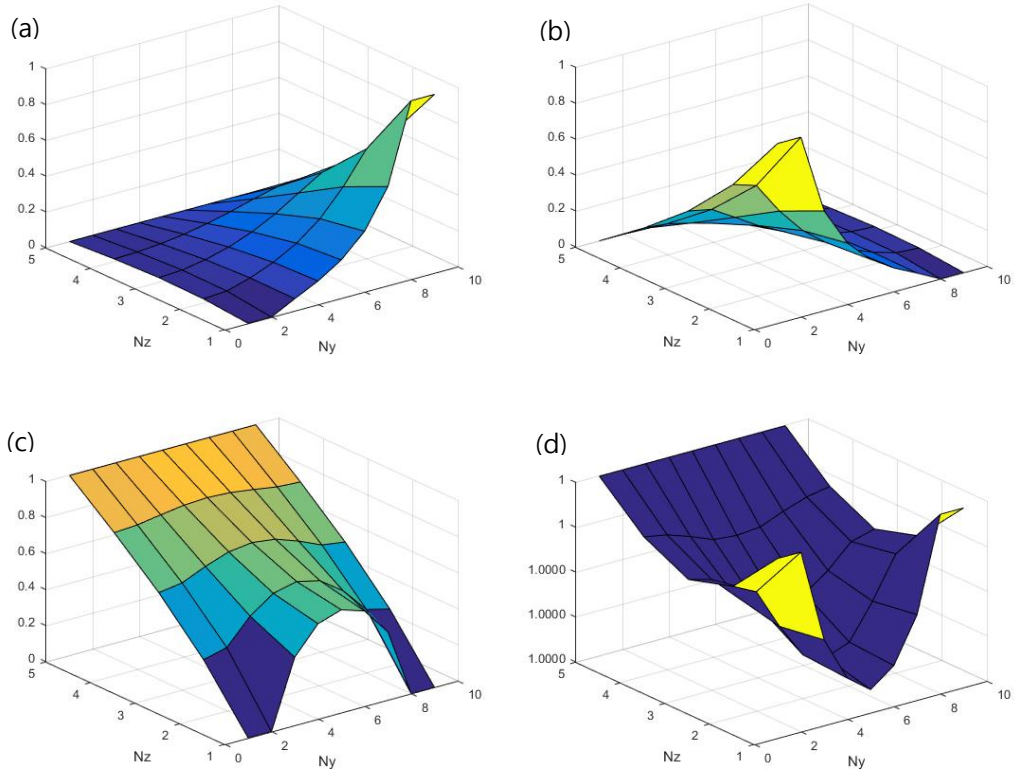

Figure 2 The results of the problems. (a) Case 1. (b) Case 2. (c) Case 3. (d) Case 4.