Lab Assignment 1:
EXCEL Modeling for Solving PDE

Assigned on 1/12/2016, Due on 1/19/2016

You have learned the implicit finite different method to solve a one-dimensional, transient state heat equation. A template EXCEL file was given to you as the starting point. You need to use the EXCEL file to implement the finite different method for solving the heat equation.

You need to submit a report to document your solution and discuss your solution. The report should include the following contents:

(1) The finite difference equations derived by discretizing the partial differential equation in space and time. You can refer to the lecture note to formulate the equations.

(2) Explain how you implement the finite different equations in the EXCEL file. Details are needed. For example, how are the boundary conditions implemented? How is the initial condition used in the finite difference equations? How is the scheme implemented?

(3) Present your results and discuss the results from the physical point of view. The ideal discuss is that you can explain your results using plain words without any equations.

The report can be either hand written or typed in a Word processor.