Lab Assignment 5:
Solve PDE Using Python

This lab assignment is the same as the first lab assignment, except that the PDE will be solved by writing a Python program for the implicit Backward Euler method.

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

(1) Explain how you implemented the finite different equations in the Python file. Details are needed. For example, how are the initial and boundary conditions implemented? How is the implicit scheme implemented? Be careful that lists are mutable (50 points)

(2) Save your solution in a data file. (25 points)

(3) Plot your solutions at time steps 1, 2 5, and 23 in a figure. Solutions at different time steps should be plotted in different colors or line types. The figure should have labels and legends. (25 points)