

Homework 4

Use the simplified von Neumann analysis to show that the backward Euler scheme and the Crank-Nicolson scheme are unconditionally stable for the parabolic equation

$$u_t = u_{xx} + u_{yy}.$$

when using $h_x = h_y = h$. The two schemes are on page 34 of the slide. The procedure of simplified von Neumann analysis for 2D problems is on page 33.