Setting up battle modelling

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Math Background

To do battling modelling, we would introduce the 3D system. We begin with the equations of $x_{n+1} = x_n - ay_n + rT_x$, $y_{n+1} = y_n - bx_n + sT_y$, and $\frac{dy}{dx} = 2x$. Here x_n and y_n are the initial number of troops, T_x and T_y are the fixed integers of replenishment's, and (a, r, b, s) all represent parameters to be varied.

Code Setup

To code this we would look to assignment 3, since the iteration process is quite similar to the 'days on the battlefield'. To start we create functions that introduce each equation. The initial values and parameters can be then input by textboxes open to the user. The number of iterations (days on the battle field) can either be one entering in the total number of days to be simulated or by increments. This would be done by creating a button that adds to x_0 each time. In this program it would be useful to have three interfaces; one overall interface that displays the 'battle field', and two other graphs that display the growth/defeat of the soldiers for each side.