HW#3 Temporal Models

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In order to understand the underlying process of modeling a temporally auto-regressive phenomena we will simulate data using the following structure.

$$S_t \sim \mathcal{N}(\beta S_{t-1}, \sigma_s^2)$$
$$Y_t \sim \mathcal{N}(S_t, \sigma_y^2)$$

Three parameterizations of β, $\beta = \{-.5, 0, .5\}$, and σ_y, $\sigma_y = \{.2, .4, .8\}$, will be used resulting in nine unique simulation sets where each set will consist of 100 simulation runs.