Lab 3 (Markov Chain Analysis)

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Problem

To apply Markov chain analysis to find the long term behavior of weather patterns.

Solution

A hypothetical city with the following weather pattern was picked for this purpose:

- The weather for a given day depends only on the weather on the preceding day.
- The weather can be either sunny, rainy or cloudy and it changes from one condition to another (on the next day) with probabilities given by the following transition chart:

	Sunny (current state)	Rainy (current state)	Cloudy (current state)
Sunny (next state)	50%	30%	20%
Rainy (next state)	40%	40%	30%
Cloudy (next state)	10%	30%	50%

Based on this table, a transition matrix was constructed and the dominant eigenvector for this matrix was found. This vector represents the steady state of the weather and was found to be:

Sunny = 0.34
Rainy = 0.37
Cloudy = 0.29

Based on this, we can say that the chance for any given day being sunny is 34%.