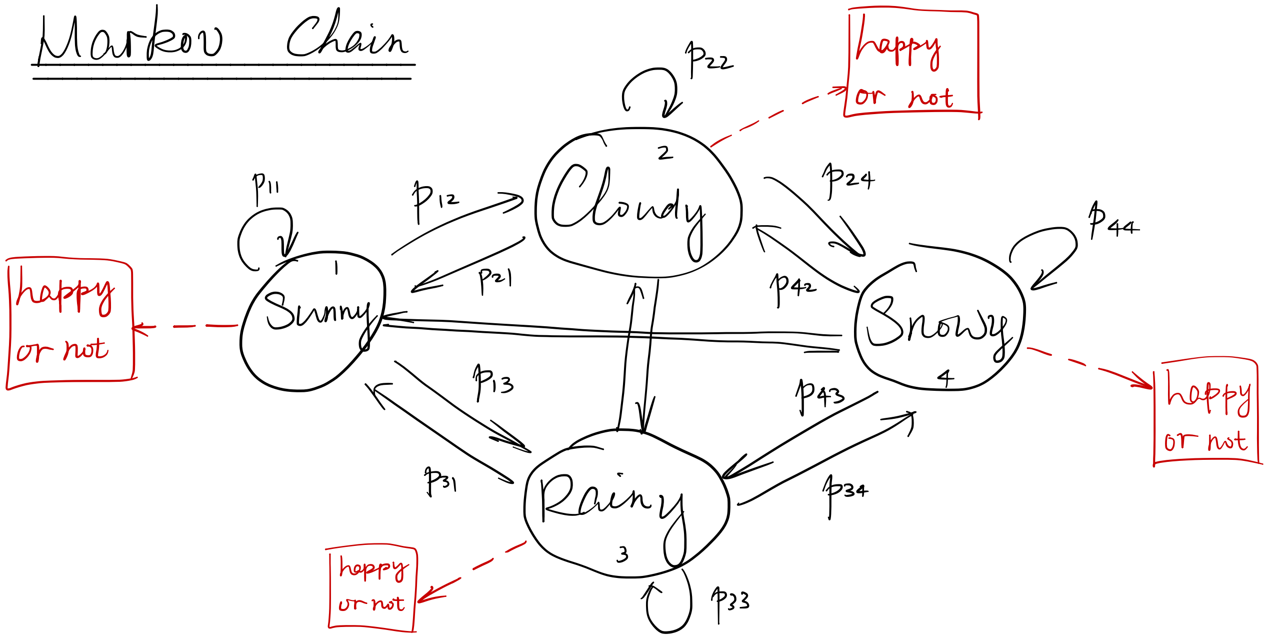
# Markov Chain




- Use a Markov chain w/ known $p_{ij}$, one may generate a time series.

- Given a time series, one may estimate params $p_{ij}$. States are observable.

# Hidden Markov Model (HMM)

States are NOT observable but "outputs" are. Use a sequence of outputs, parameters and states can be estimated. May also calculate the chance of the sequence.

Recurrent neural network (RNN) such as LSTM may be a better choice if sample size is large and Markovian assumption is too strong.