**Part 2: MCMC applications**

Look up MCMC applications and write a paragraph or two on a data science project using MCMC. What was it used for?

MCMC applications are in many different fields [1]: physics, chemistry, testing, speech recognition, computer science, queueing theory, internet application, statistics, economics, social science, biology, genetics, games, music, baseball, text generator, bioinformatics.

A specific example of MCMC application used in cryptographer to break coded message used by prisoners [2]. Assume each coded symbol corresponds to a letter. First calculate transition state diagram matrix for coded symbols.

Then find the high values probability function f in the transition state diagram, those are good candidates for decryption. Runs the MCMC algorithm by randomly assigns symbols and tries to maximize probability function f. After many iterations, the algorithm coverages (decoded message no longer change) and the message is decoded [3].

[1] <https://en.wikipedia.org/wiki/Markov_chain>

[2] <https://www.quora.com/What-are-some-real-world-applications-of-MCMC>

[3] <http://statweb.stanford.edu/~cgates/PERSI/papers/MCMCRev.pdf>