MTH225 Spring2017 Final Problem 19

In this exercise we estimate the parameter of a Bernoulli distribution mean and compare it to a threshold value.

The goal for an airline is to have 90% of flights on time. Suppose the data in `MTH225_Spring2017_Final_Problem19.csv` represents a series of binary values representing individual flights, with a value 1 indicating that the flight was on time.

The variable names are:

- `ontime` one if the flight was ontime

The model in this exercise can use the following STAN file listed on the `example_models.html` web page:

- `Bernoulli.stan` Model to estimate the parameter of a Bernoulli distribution

- 2 points: Write R code to read the data and convert it to an R data frame.
- 1 point: Write the data block of a STAN model file that extracts the data from the R workspace.
- 1 point: Write the parameters block of a STAN model file that declares the paramter(s) of your model.
- 2 points: Write the model block of a STAN model file that specifies the priors and likelihood for your model.
- 1 point: Write R code to apply the `extract` function to the data structure output from the `stan` function.
- 1 point: Use the `extract()` function of the RSTAN package to obtain the values for the parameters from the posterior draw.
- 1 point: Use the vector of 4,000 values of `theta` values to simulate 4,000 flights with the command `rbinom(4000,1,theta)`.
- 1 point: Use the vector of simulated flights to estimate the proportion of flights that are ontime.

(10 points possible)