ACTU PS5841 Data Science in Finance & Insurance - Spring 2022 (Y. Wang)
Assignment - 8
Assigned 3/24/22, Due 4/3/22 (Sun)

Problem 1. NaiveBayes
The date file, *data.csv*, contains observations on the impact of a number of treatment protocols on patients, where
Age is the age of the patient
Treatment is the treatment protocol (A, B or C)
Outcome describes the treatment as Ineffective(I), Good(G) or Excellent(E).

For this Q, let's assume/pretend that Age is normally distributed (so that no transformation is necessary.)

Design and code up a naive Bayes classifier to
[*a*] predict the probabilities that
treatment A on an 50-year old patient will turn out to be Good,
treatment A on an 50-year old patient will turn out to be Excellent
treatment B on an 50-year old patient will turn out to be Good,
treatment B on an 50-year old patient will turn out to be Excellent
treatment C on an 50-year old patient will turn out to be Good,
treatment C on an 50-year old patient will turn out to be Excellent

[*b*] identify the treatment you'd recommend for an 50-year old patient. Briefly justify your recommendation.

You may find the following resources useful.
`https://scikit-learn.org/stable/modules/generated/sklearn.naive_bayes.GaussianNB.html`
`https://scikit-learn.org/stable/modules/generated/sklearn.naive_bayes.MultinomialNB.html`