Homework 3
Due May 6, 2020, 11:59 PM (before midnight)

Download the data from https://www.kaggle.com/uciml/red-wine-quality-cortez-et-al-2009. Use PCA to get principal components. Create a dash app that will include the following plots: correlation heatmap; cumulative explained variance of principle components; marginal explained variance of principle components; scatterplot for top 2 and top 3 principle components.

Create a slider, where the values will be minimum of quality to maximum of quality (quality is the variable in the data). All the observations that have quality lower than that specified in the slider will be considered class 0 (bad) and the rest will be considered class 1 (good). Based on that the class colors in your 2d and 3d scatterplot will change.

Create a toggle switch that will change between 2d and 3d scatterplot of principal components.

Create a dropdown menu where the options will be: Spearman r, Pearson rho, Kendall tau (each of them is a correlation coefficient). By selecting the type of correlation the correlation heatmap will change accordingly (for Spearman r with show spearman correlation heatmap etc.).

The dash app should have the following structure:

row 1: appropiate title
row 2: description of the project and description of the data
row 3: dropdown and correlation heatmap
row 4: cumulative and and marginal explained variance of principle components
row 5: slider, toggle switch and 2d/3d scatterplot

Your submission should be one .zip file where you can have one or more .py files for the app.