INFO 4150 Mini Project 2
House Listing Price Prediction

Domain information

Historical data of housing prices are available in the database "Realty_Listings.db". The database has information about the number of rooms in a house, the distance from the city center and a price in 10000's of dollars. People in the county who would like to list their houses for sale would like to have an online application available which would give them an indication of what the listing price could be. Your job is to build this application and make it available to the user online.

Task

1. Build a Flask based WebApp which will predict the listing price based on the model that you will train and make available. All your work will be done in Visual Studio Code and Jupyter Notebook will not be used. Please recollect that Flask basded applications require a certain directory structure to work properly.
2. The Flask based App will have three routes and 3 associated HTML pages for them.
   a. The first route will be called "**home**" and will render the landing page where the user's and administrators will have different options to select from.
      i. If you are a user, then there should be a menu option called "**List Price**" available to click upon.
      ii. If you are an administrator, then there should be a menu option which called "**Train Model**" available to click upon.
      iii. Feel free to add a picture or a logo of your business.
   b. The second route will be called "**model**" and it will train on a dataset, build a **regression** model, and then save it in the same directory as the WebApp. Save the model with the name "**model**". The training can only be initiated by an administrator upon entering a valid password. The password you will use for the administrator shall be "**password**". Training can be done any number of times by the administrator. Please use the **RandomForest** algorithm for building the model.
   c. The third route will be called "**predict**" and shall take an input from the user and then use the saved model to predict the listing prices and then render it to the user as a suggestion. Please note that the user should only be allowed to enter a maximum of 10 rooms and a distance not greater than 15 miles. The HTML interface should control this. **This route shall also save the user inputs and the predicted price as a new row in the database.**
3. While making the site presentable using CSS is encouraged, it is not a must. However, the HTML pages rendered should make it easy for the user to provide the inputs and see the results.

Answer the following questions in a word document:
1. What is the accuracy of your model?
2. Describe the design of the complete WebApp you built?
3. What did you enjoy the most about this project and what were the challenges?

Tip: How to save and build a model (Done in class before):

The python module used to do this is 'pickle'. Install it if it is not on your pc.
The code for saving a model and loading it to use for prediction is:

import pickle

 # Save to file in the current working directory

filename = "model.pkl"
with open(filename, 'wb') as file:
  pickle.dump(nn, file)

 # Load from file

with open(filename, 'rb') as file:
  model = pickle.load(file)

The MP2 is due on 04/20/2022 by midnight.