Project One ---XSCI 480 (2023 Spring, 100 points)

Write the code of using GPU (online resource) to run binary logistic regression with requirement shown below:

0. Imports are shown below:
    - Numpy
    - Torch
    - Torch.nn.functional

1. Load data is from the TXT file, “toydata.txt”.

2. Preprocess the data:
    - Training_sets : test_sets = 75 : 25
    - X data should be normalized

3. Define the class, called “LogisticRegression2”, containing methods show below:
    - __init__(num_features)
    - forward(x)

4. Create a function, “comp_accuracy (y, activation)”, to get accuracy and retune it.

5. Create a loop controlled by epoch. Inside the loop, the functions are required listed below:
    - Compute outputs
    - Compute gradients
    - Update weights
    - Logging

6. Login to gmail's driver to start google colab. (For how to use online GPU, please review the materials of CPA #5.)

7. Once you use your laptop to create and debug the code mentioned above, copy codes into the online jupyter notebook under the folder, "Colab Notebooks". Then, add the code for running GPU.

8. After running GPU for binary logistic regression please record the time sheet shown in Tab.1

Tab.1 GPU Running for Binary Logistic Regression

Modules	Running Time (s)
The creation of module, "LogisticRegression2"	0.413
Main module containing: • Compute outputs • Compute gradients • Update weights • Logging	0.313