INSTRUCTIONS:

1. Please carefully read all assignment problems and complete the functions.

2. Write only a single main function. You can call the required functions from the main

function. 3. Name the file as follows: S2023xxxxx_A10.py

4. Submit only a single .py file. Make sure that no part of the code is commented.

*If you do not follow the above-mentioned instructions, a strict penalty would be imposed.

Question 1: Generate the dataset as follows,
a. 25 2-D random integer samples in the range of 1-30
b. 25 2-D random integer samples in the range of 45-75
c. 25 2-D random integer samples in the range of 150-200
Concatenate a, b, c to create the dataset.

1. Implement k-means clustering algorithm with finding optimal k value using the Silhouette method.
2. Plot the clustered results for the optimal k value with different color code for each cluster samples.

Question 2: Use MNIST Dataset for classification using Multi-Layer Perceptron Neural Network.

1) Identify the proper-hyper-parameters of the network through train and validation and mention them in the text cell.
Note use Train-Test split of 85% and 15%. Validation split 15%.
You may use TensorFlow Keras library or Py torch library for building MLP.
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