Homework 5 Task-0 (60 points only because it is too easy)

Task-0: Classification of Fashion-MNIST images.

In this task, you will build four models to classify the images in the Fashion-MNIST dataset.

(1) logistic regression
(2) Random Forest
(3) MLP (do NOT use sklearn MLPClassifier)
(4) 2D CNN

Compare the performance and find the best one from the above models.

do hyperparameter optimization (at least one parameter for each model, except (1)). For model (1), you do not need to do hyperparameter optimization.

some suggestions:
Random Forest hyperparameter: max_depth
MLP hyperparameter: the number of layers
2D CNN: the number of training epochs

Do NOT copy the existing models from Github. (zero score if doing so).
Do NOT use test set for hyperparameter optimization. (zero score if doing so).
Do NOT fit/train model on the test dataset (zero score if doing so).
Do NOT use weighted accuracy because there is no class-imbalance.

use the code below to load data**:**

```
import tensorflow as tf
fashion_mnist = tf.keras.datasets.fashion_mnist
(train_images, train_labels), (test_images, test_labels) = fashion_mnist.load_data()
```

Then, you need to create a **validation** set.