Max Time: 2 hours   Date: 22-03-2023

Instructions:

- Please provide your own solutions and <u>DO NOT COPY</u> the code from your colleagues or the web.
- You can discuss your problems only with the teachers.
- Submit .ipynb files and follow the following naming convention.

   RollNumber_Name_Lab#X i.e. MSAIF23M001_JohnDoe_Lab#11

Task # 01   5*6 =30 Marks

Image classification on the CIFAR-10 dataset

Objective:

Build a deep learning model that can classify images from the CIFAR-10 dataset with high accuracy.

Dataset:

The CIFAR-10 dataset consists of 60,000 32x32 color images in 10 classes, with 6,000 images per

class. There are 50,000 training images and 10,000 test images.

Use PyTorch to implement the following steps:

1. Download the CIFAR-10 dataset from the official website or using PyTorch's built-in data loader.

2. Preprocess the data by normalizing the pixel values and transforming the images to tensors.

3. Define a convolutional neural network (CNN) architecture using PyTorch's nn.Module class.

4. Define a loss function and an optimizer to train the model.

5. Train the model using the training data and validate it using the validation data.

6. Evaluate the model on the test data and report the accuracy.