PIAIC AI Batch 3 Q 3
Assignment # 1
Develop a CNN for MNIST Handwritten Digit Classification

As an AI Engineer, your job is to train a CNN model that successfully classifies all the 10 Digits. You can follow these steps:

1. Download dataset using following command

```
from keras.datasets import mnist

(trainX, trainy), (testX, testy) = mnist.load_data()
```

2. Check the size and plot the images
3. Apply one hot encoding, float conversion and normalization
4. Define your CNN architecture
5. Set your parameters
6. Run your model to evaluate the results
7. Repeat step 4 again and again
   a) increase or decrease the number of layers (depth)
   b) Increase of decrease the number of nodes (width)
   c) Observe the results and plot them
8. Repeat step 5 again and again by choosing different values of parameters like activation function, kernel or learning rate and observe the results
9. Show the FINALIZED number of layers, nodes and all parameters values that provided maximum accuracy among all.
10. Provide a VALID REASON of results when you do any modification in your CNN architecture or parameters.

NOTE: Only your number of experiments with CNN will be evaluated as a performance. You can take online help but you should be aware of what is happening in program. You would be asked to do any changes in program or viva would be taken. If any of the students fails to provide valid reason of his written program, zero marks will awarded. All the students have different style of experiments, if any of two caught with same architecture or experiments or answers, strict action will be taken.