**Assignment3**

*#importing the libraries*

**import** matplotlib.pyplot **as** plt

**import** tensorflow **as** tf

**from** tensorflow.keras **import** datasets, layers, models

*#grabbing CIFAR10 dataset*

(train\_images, train\_labels), (test\_images, test\_labels) **=** datasets**.**cifar10**.**load\_data()

train\_images, test\_images **=** train\_images **/** 255.0, test\_images **/** 255.0

*#showing images of mentioned categories*

class\_names **=** ['airplane', 'automobile', 'bird', 'cat', 'deer','dog', 'frog', 'horse', 'ship', 'truck']

plt**.**figure(figsize**=**(10,10))

**for** i **in** range(10):

plt**.**subplot(5,5,i**+**1)

plt**.**xticks([])

plt**.**yticks([])

plt**.**grid(**False**)

plt**.**imshow(train\_images[i])

plt**.**xlabel(class\_names[train\_labels[i][0]])

plt**.**show()

*#building CNN model*

model **=** models**.**Sequential()

model**.**add(layers**.**Conv2D(32, (3, 3), activation**=**'relu', input\_shape**=**(32, 32, 3)))

model**.**add(layers**.**MaxPooling2D((2, 2)))

model**.**add(layers**.**Conv2D(64, (3, 3), activation**=**'relu'))

model**.**add(layers**.**MaxPooling2D((2, 2)))

model**.**add(layers**.**Conv2D(64, (3, 3), activation**=**'relu'))

model**.**add(layers**.**Flatten())

model**.**add(layers**.**Dense(64, activation**=**'relu'))

model**.**add(layers**.**Dense(10))

model**.**summary()

*#model compilation*

model**.**compile(optimizer**=**'adam',loss**=**tf**.**keras**.**losses**.**SparseCategoricalCrossentropy(from\_logits**=True**),metrics**=**['accuracy'])

epochs **=** 1

h **=** model**.**fit(train\_images, train\_labels, epochs**=**epochs, validation\_data**=**(test\_images, test\_labels))