# Note:

**The assignment should be submitted in the following format:**

* **Python code**
* **Code Modularization should be maintained**
* **Documentation of the model building (elaborating on steps mentioned above)**

**Problem Statement: -**

1. Build a CNN model on CIFAR-10 dataset by applying few regularization techniques like drop out and data augmentation
2. Find out the differences between Convnet filter and the Maxpool layers

**ANSWER:**

**\* Convnet filter is used to perform different operations on the input field for performing optimization (reducing errors).**

**\* Maxpool layer is used to reduce the size of the image, number of weights, and the amount of complexity of computation.**

3. If the input of an image is 64x64x3 which has been convolved by 10 5x5 filters with stride 1 and padding 2.

a.How many activation maps are obtained?

**ANSWER:**

**Since there are ten 5x5 filters we will obtain 10 activation maps.**

b.What is the size of the activation maps?

**ANSWER:**

**Size of activation maps = ( (size of input image – filter size +2(padding))/number of strides)+1**

**=( ( 64 – 5 + 2( 2))/1) + 1**

**= 56**

**Therefore the size of activation maps will be 56x56x3**

c.How many parameters are calculated?

**ANSWER:**

**Number of parameters = (size of the filter + 1) number of filters**

**= ( 5x5x3 +1) 10**

**= (76) 10**

**= 760**

4. During training, I get into overfitting issues. What are the different techniques will you apply to overcome this issue and why?

**ANSWER:**

The following are the different techniques to apply to overcome overfitting:

* Regression techniques are used to overcome overfitting.
* **Dropouts:** It randomly drops neurons from the network during training in each iteration. This finally reduces the overfitting effect.
* **Data augmentation:** Some of the popular image augmentation techniques like flipping, translation, rotation, scaling, changing brightness, adding noise are used to avoid overfitting.
* **Early stopping:** This is a method which helps us to perform only required number of iterations which helps to avoid overfitting in the early stages.
* **Simplifying the model:** Removing the layers or the number of neurons may reduce the over fitting issues.