Assignment 3

Problem Statement

Build a CNN to classify different breeds of snakes, and visualize the effect of CNN layers.

Data:

!wget
https://he-s3.s3.amazonaws.com/media/hackathon/hackerearth-deep-learning-challenge-snake-breed-detection/identify-the-snake-breed-5-66d9a9f5/8a95c26e1bab11eb.zip

Task:

1. Read train.csv and segregate the dataframe by 90:10 training-validation ratio
2. Display 16 random breeds of snakes from training set
3. Load the training image generator with rescale using Image Data Generator of Tensorflow, apply any two following augmentation,
    a. Rotation
    b. Shifting
    c. Horizontal Flip
    d. Shearing
    e. Zooming
4. Load the validation images using Image Data Generator but with only rescale option
5. Build the CNN model
6. Create a custom callback function for the model, set the condition if the model exceeds 70% or 80% accuracy then stop training the model
   (Reference https://www.tensorflow.org/guide/keras/custom_callback)
7. Evaluate the validation set, compute F1 score and build confusion matrix
8. Visualize the effect of CNN layers on any image. Comment on the output layer images.
9. Display 10 random images with actual and predicted breed from validation set