Assignment - 3

Assignment Date	03.10.2022
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Maximum Marks	2 Marks

Question-1
Download the Dataset

```
#Importing Packages

In [50]: from tensorflow.keras.models import Sequential
         from tensorflow.keras.layers import Convolution2D,MaxPooling2D,Flatten,Dense
         from tensorflow.keras.preprocessing.image import ImageDataGenerator as idm
         import numpy as np
         import warnings
         #Supressing warnings
         warnings.filterwarnings('ignore')
```

Question-2
Image Augmentation

Solution:

Creating augmentation on training variable

train_flowers=idm(rescale=1./255,zoom_range=0.2,horizontal_flip=True)

\# Passing training data to train variable

Xtrain = train_flowers.flow_from_directory('/content/drive/MyDrive/IBM/Flowers-Dataset',target_size=(76,76),class_mode='categorical',batch_size=100)

\# Creating augmentation on testing variable

test_flowers=idm(rescale=1./255)

\# Passing testing data to test variable

Xtest = test_flowers.flow_from_directory('/content/drive/MyDrive/IBM/Flower_Training',target_size=(76,76),class_mode='categorical',batch_size=100)

Screenshot:

```
2.Image Augmentation

In [51]: # Creating augmentation on training variable
         train_flowers=idm(rescale=1./255,zoom_range=0.2,horizontal_flip=True)

         # Passing training data to train variable
         Xtrain = train_flowers.flow_from_directory('/content/drive/MyDrive/IBM/Flowers-Dataset',target_size=(76,76),class_modes='categoric

         Found 4141 images belonging to 5 classes.

In [52]: # Creating augmentation on testing variable
         test_flowers=idm(rescale=1./255)

         # Passing testing data to test variable
         Xtest = test_flowers.flow_from_directory('/content/drive/MyDrive/IBM/Flower_Training',target_size=(76,76),class_mode='categorica

         Found 204 images belonging to 5 classes.
```
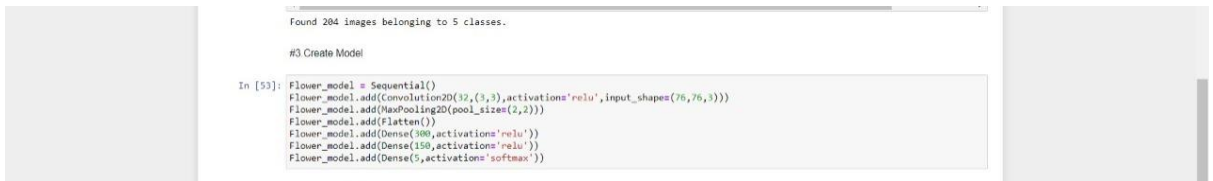
Question-3
Create Model
Solution:

```
# Creating augmentation on training variable
train_flowers=idm(rescale=1./255,zoom_range=0.2,hor
izontal_flip=True)
```

```
# Passing training data to train variable
Xtrain =
train_flowers.flow_from_directory('/content/drive/MyDrive/I
BM/Flowers-
Dataset',target_size=(76,76),class_mode='categorical',batch_
size=100)
```

```
# Creating augmentation on testing variable
test_flowers=idm(rescale=1./255)
```

```
# Passing testing data to test variable
Xtest =
test_flowers.flow_from_directory('/content/drive/MyDrive/I
BM/Flower_Training',target_size=(76,76),class_mode='catego
rical',batch_size=100)
```

Screenshot:

Question-4

Compile The Model

Solution:

```
Flower_model.compile(optimizer='adam',loss='categori
cal_crossentropy',metrics=['accuracy'])
```

Screenshot:

Question-5

Fit The Model

Solution:

```
Flower_model.fit_generator(Xtrain,steps_per_epoch=
len (Xtrain),epochs=
10,validation_data=Xtest,validation_steps= len (Xtest))
```

Screenshot:

Question-6

Save The Model

Solution:

Flower_model.save('Flower.h5')

Screenshot:

Question-7

Test The Model

Solution:

```
test_img=image.load_img('/content/drive/MyDrive/IBM/Flowers-Dataset/sunflower/200557977_bf24d9550b.jpg',target_size=(76,76))
test_img

x=image.img_to_array(test_img)
x=np.expand_dims(x,axis=0)
predicted=np.argmax(Flower_model.predict(x))
Prediction_category=['daisy','dandelion','rose','sunflower','tulip']
Prediction_category[predicted]

test_img1=image.load_img('/content/drive/MyDrive/IBM/Flowers-Dataset/daisy/1140299375_3aa7024466.jpg',target_size=(76,76))
test_img1

x=image.img_to_array(test_img1)
x=np.expand_dims(x,axis=0)
predicted=np.argmax(Flower_model.predict(x))
```

Prediction_category[predicted]

```
test_img2=image.load_img('/content/drive/MyDrive/IBM/Flo
wers-
Dataset/rose/7251352826_69b62cba2c_m.jpg',target_size=(7
6,76))
test_img2

x=image.img_to_array(test_img2)
x=np.expand_dims(x,axis=0)
predicted=np.argmax(Flower_model.predict(x))
```
Prediction_category[predicted]

Screenshot: