TOPIC : **AI powered nutrition analyzer for fitness enthusiasts**

Team id : PNT2022TMID15800

Train Model On IBM

Login to ibm cloud and create ibm Watson studio to train the model on ibm. Copy the model building file & paste it in notebook and run the file in notebook.

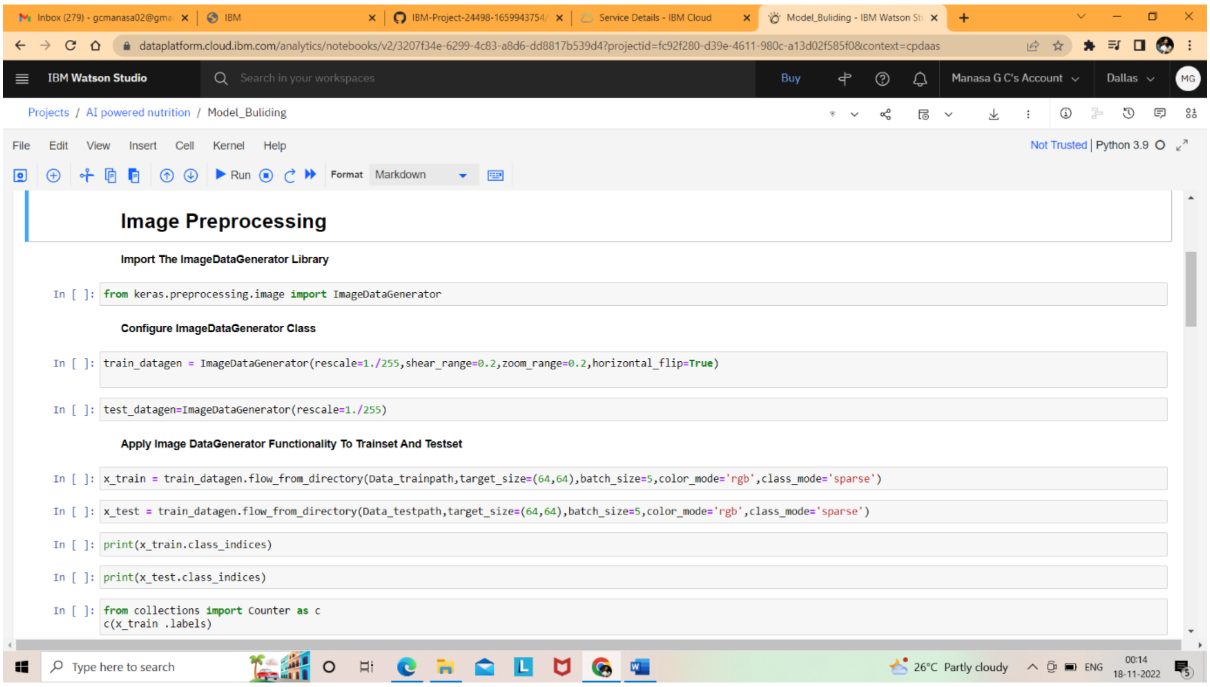
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Image Preprocessing

Import The ImageDataGenerator Library

```
In [ ]: from keras.preprocessing.image import ImageDataGenerator
```

Configure ImageDataGenerator Class

```
In [ ]: train_datagen = ImageDataGenerator(rescale=1./255,shear_range=0.2,zoom_range=0.2,horizontal_flip=True)
```

```
In [ ]: test_datagen=ImageDataGenerator(rescale=1./255)
```

Apply Image DataGenerator Functionality To Trainset And Testset

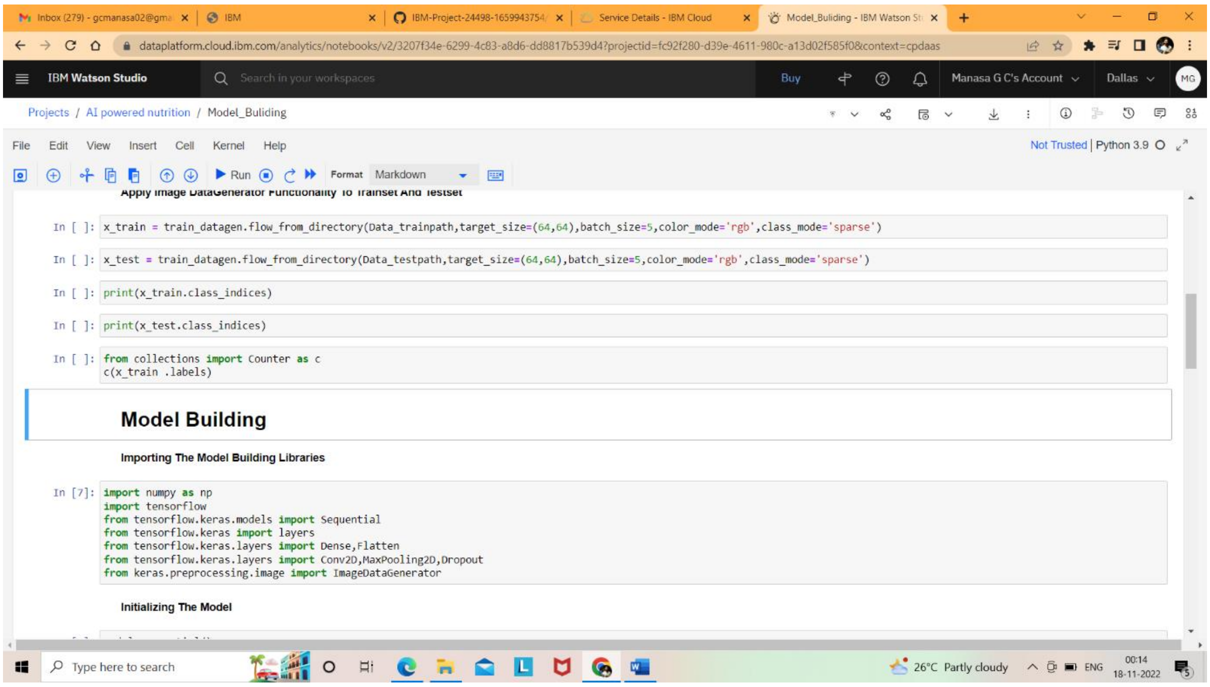
```
In [ ]: x_train = train_datagen.flow_from_directory(Data_trainpath,target_size=(64,64),batch_size=5,color_mode='rgb',class_mode='sparse')
```

```
In [ ]: x_test = train_datagen.flow_from_directory(Data_testpath,target_size=(64,64),batch_size=5,color_mode='rgb',class_mode='sparse')
```

```
In [ ]: print(x_train.class_indices)
```

```
In [ ]: print(x_test.class_indices)
```

```
In [ ]: from collections import Counter as c
        c(x_train .labels)
```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In [ ]: print(x_test.class_indices)
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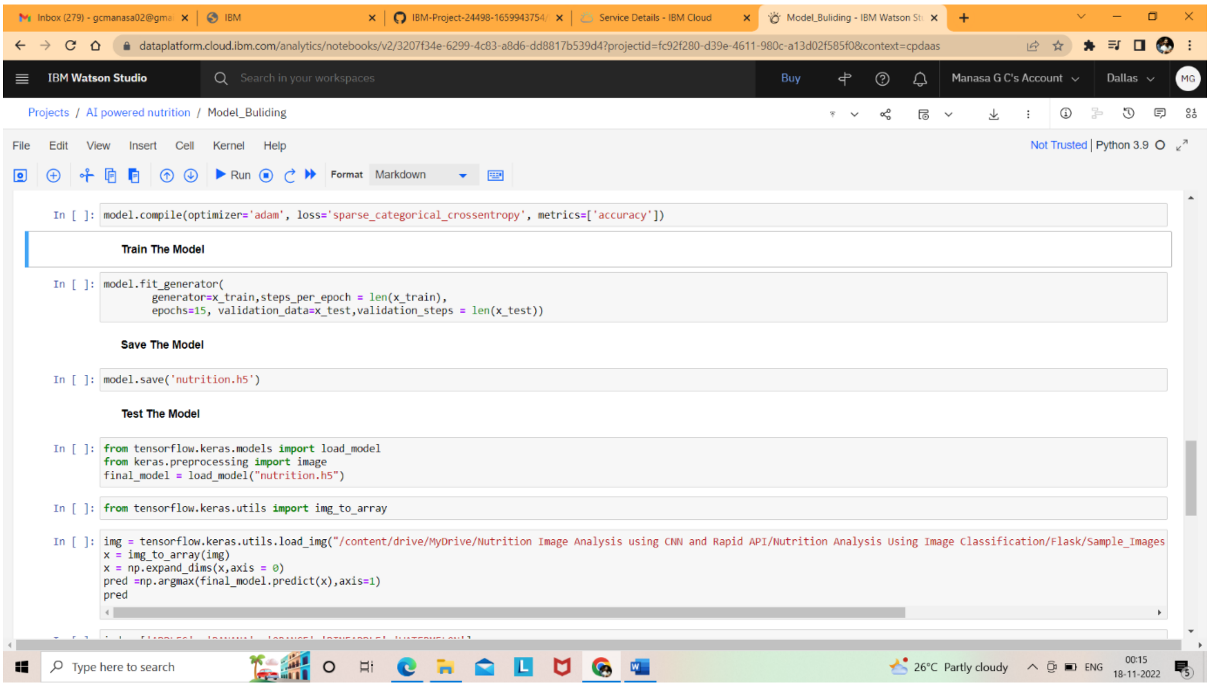
```
In [ ]: from collections import Counter as c
        c(x_train .labels)
```

Model Building

Importing The Model Building Libraries

```
In [7]: import numpy as np
        import tensorflow
        from tensorflow.keras.models import Sequential
        from tensorflow.keras import layers
        from tensorflow.keras.layers import Dense,Flatten
        from tensorflow.keras.layers import Conv2D,MaxPooling2D,Dropout
        from keras.preprocessing.image import ImageDataGenerator
```

Initializing The Model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```
In [ ]: model.compile(optimizer='adam', loss='sparse_categorical_crossentropy', metrics=['accuracy'])
```

Train The Model

```
In [ ]: model.fit_generator(
                generator=x_train,steps_per_epoch = len(x_train),
                epochs=15, validation_data=x_test,validation_steps = len(x_test))
```

Save The Model

```
In [ ]: model.save('nutrition.h5')
```

Test The Model

```
In [ ]: from tensorflow.keras.models import load_model
        from keras.preprocessing import image
        final_model = load_model("nutrition.h5")
```

```
In [ ]: from tensorflow.keras.utils import img_to_array
```

```
In [ ]: img = tensorflow.keras.utils.load_img("/content/drive/MyDrive/Nutrition Image Analysis using CNN and Rapid API/Nutrition Analysis Using Image Classification/Flask/Sample_Images
        x = img_to_array(img)
        x = np.expand_dims(x,axis = 0)
        pred =np.argmax(final_model.predict(x),axis=1)
        pred
```