# Sprint – III

# Model building

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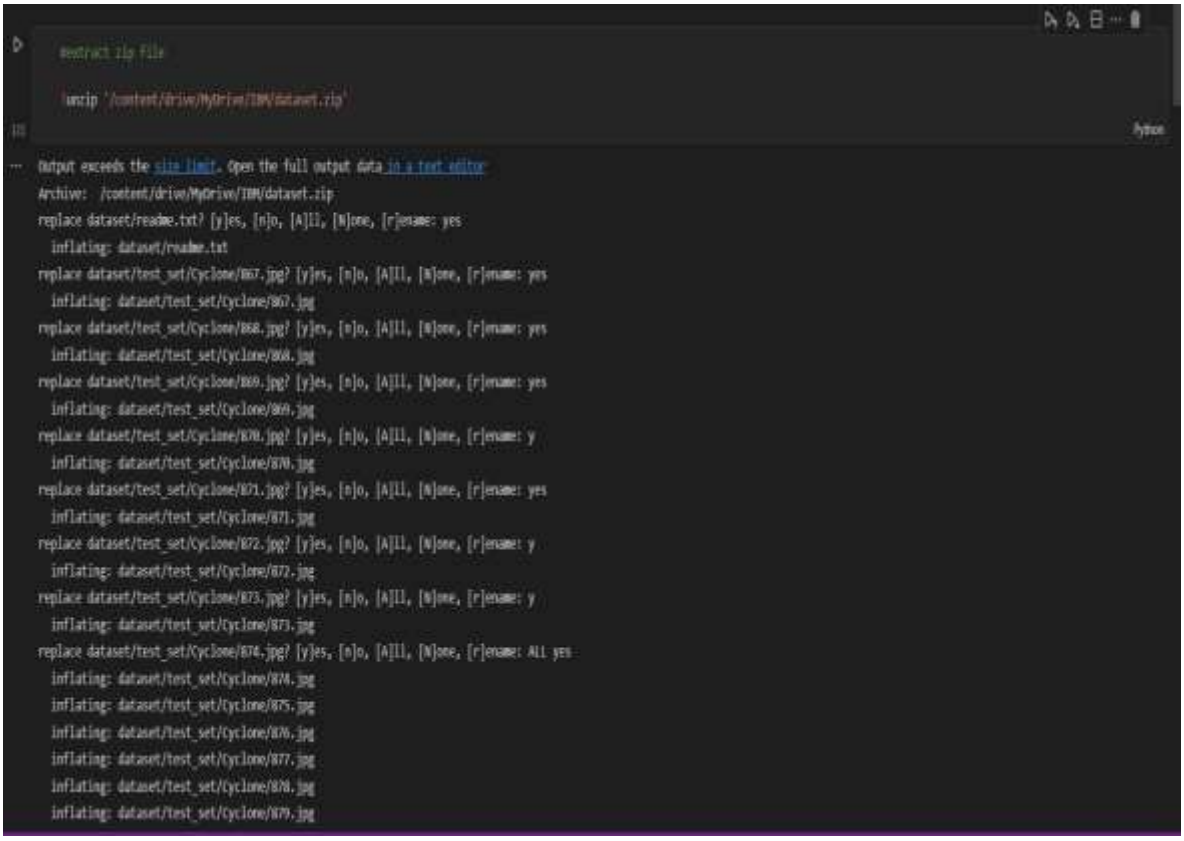
| **Team ID** | **PNT2022TMID47240** |
| **Project Name** | **Natural Disasters Intensity Analysisand Classification using Artificial Intelligence** |

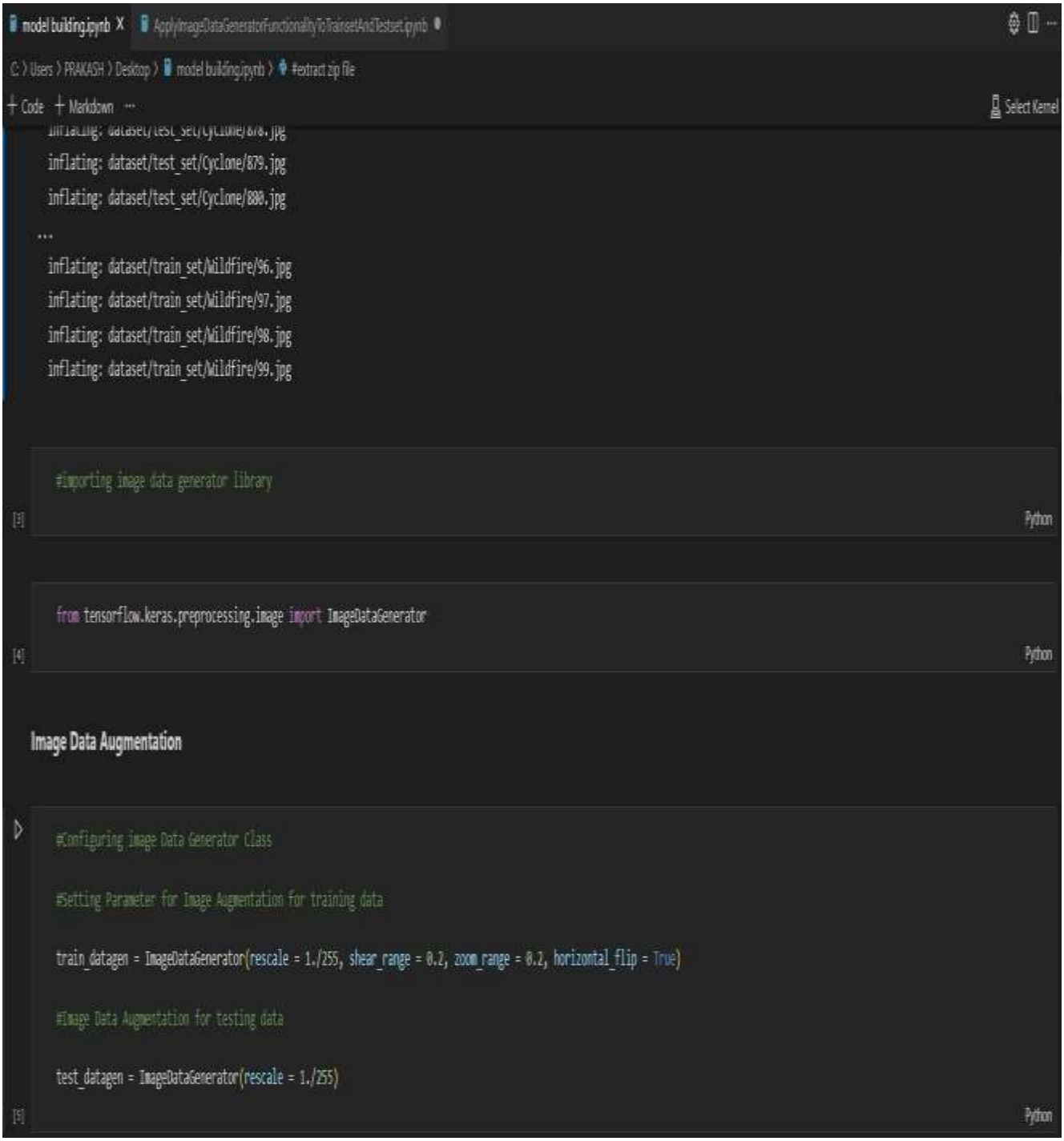
## Extract zip file

ZIP is an archive file format that supports lossless data compression. By lossless compression, we mean that the compression algorithm allows the original data to be perfectly reconstructed from the compressed data.



## Importing image data generator library/Image data Augmentation

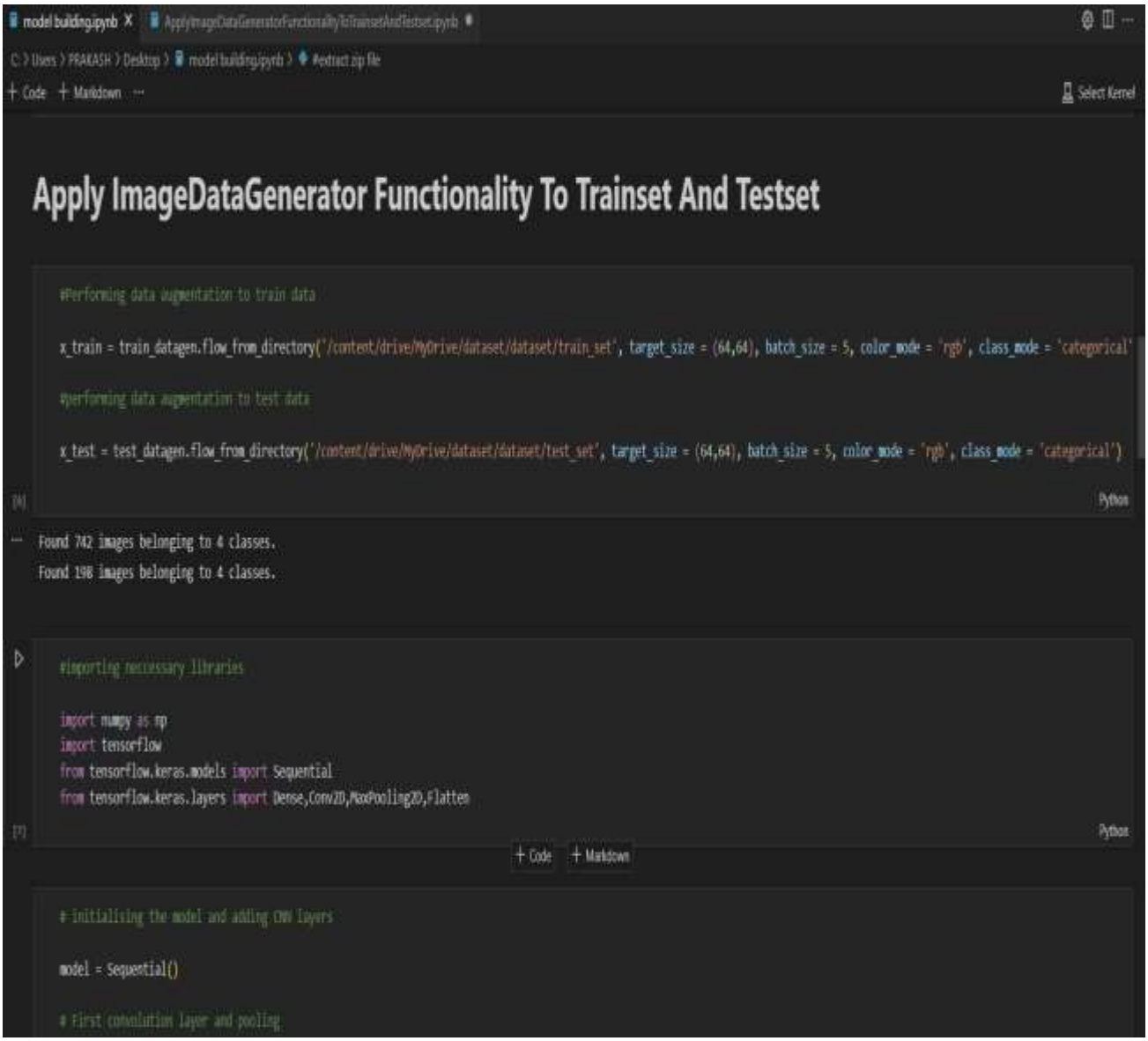
Keras Image Data Generator is used for getting the input of the original data and further, it makes the transformation of this data on a random basis and gives the output resultant containing only the data that is newly transformed.




## Apply Image Data Generator Functionality to train set and test set

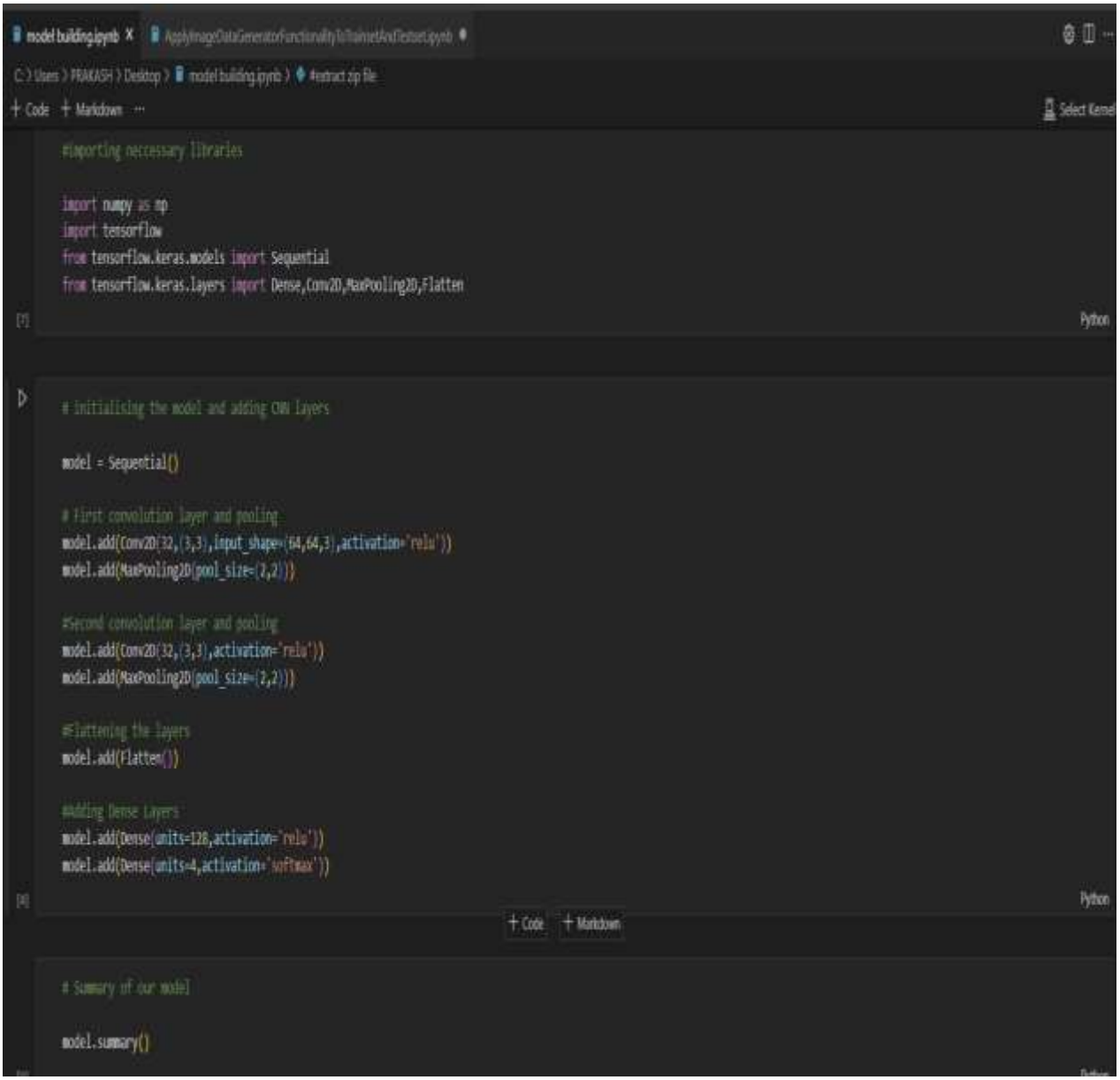
You probably encountered a situation where you try to load a dataset but there is not enough memory in your machine. As the field of machine learning progresses,

this problem becomes more and more common. Today this is already one of the challenges in the field of vision where large datasets of images and video files are processed



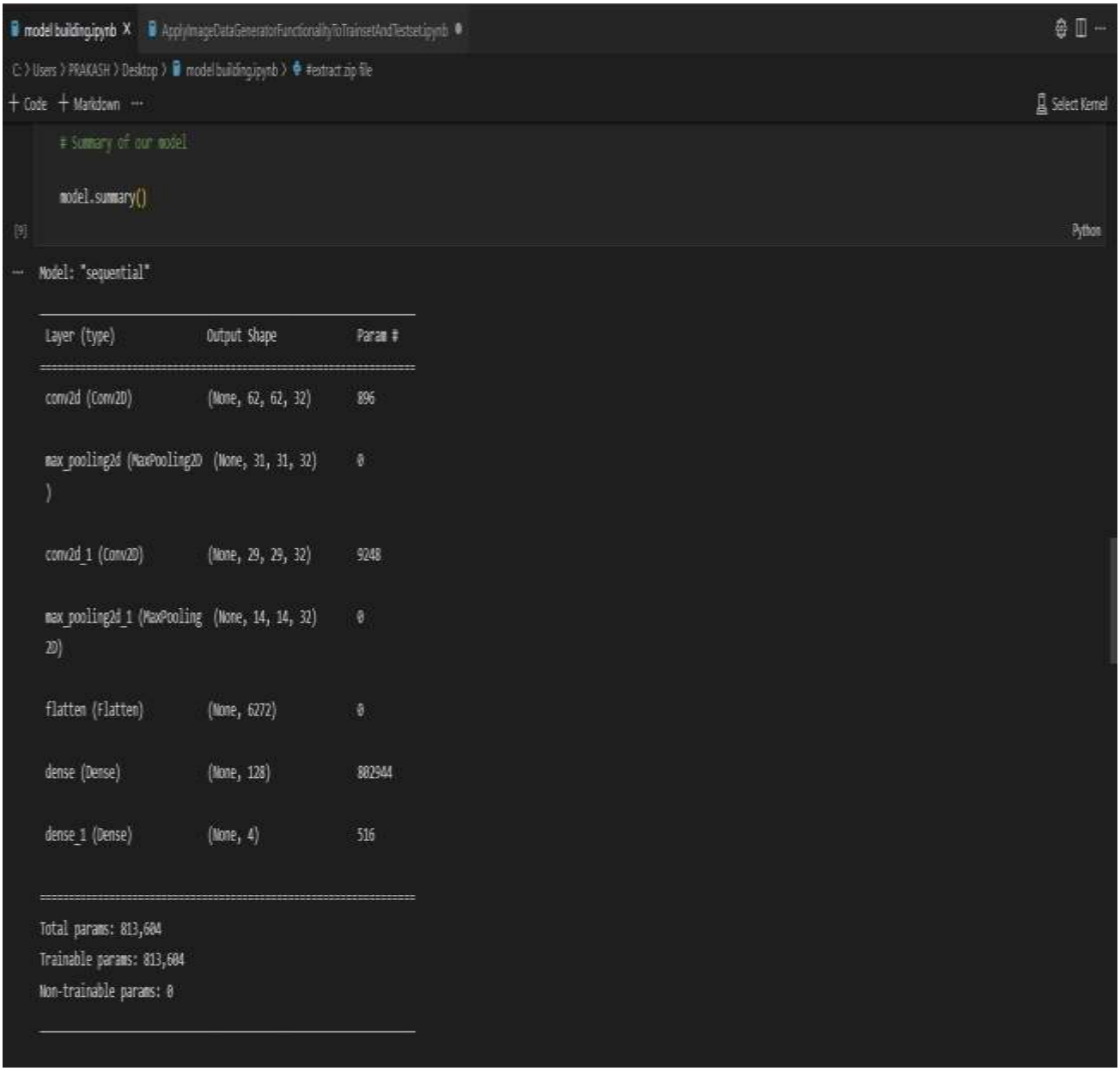

## Importing necessary libraries/Initializing the model and adding CNN layers

TensorFlow is a popular deep learning framework. In this tutorial, you will learnthe basics of this Python library and understand how to implement these deep, feed-forward artificial neural networks with it.



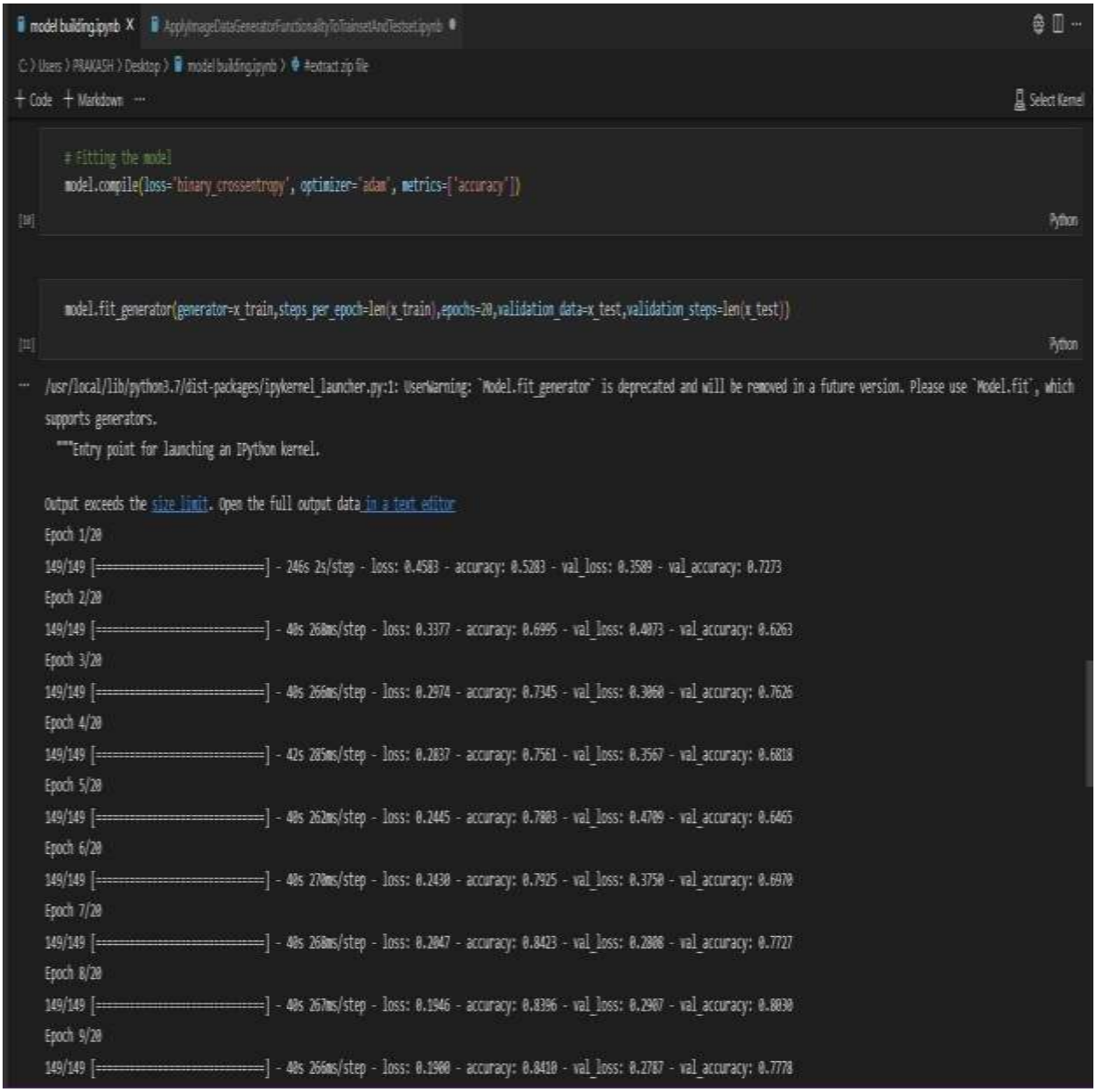

## Summary of our model

The model summary gives us a fine visualization of our model and the aim is toprovide complete information that is not provided by the print statement.



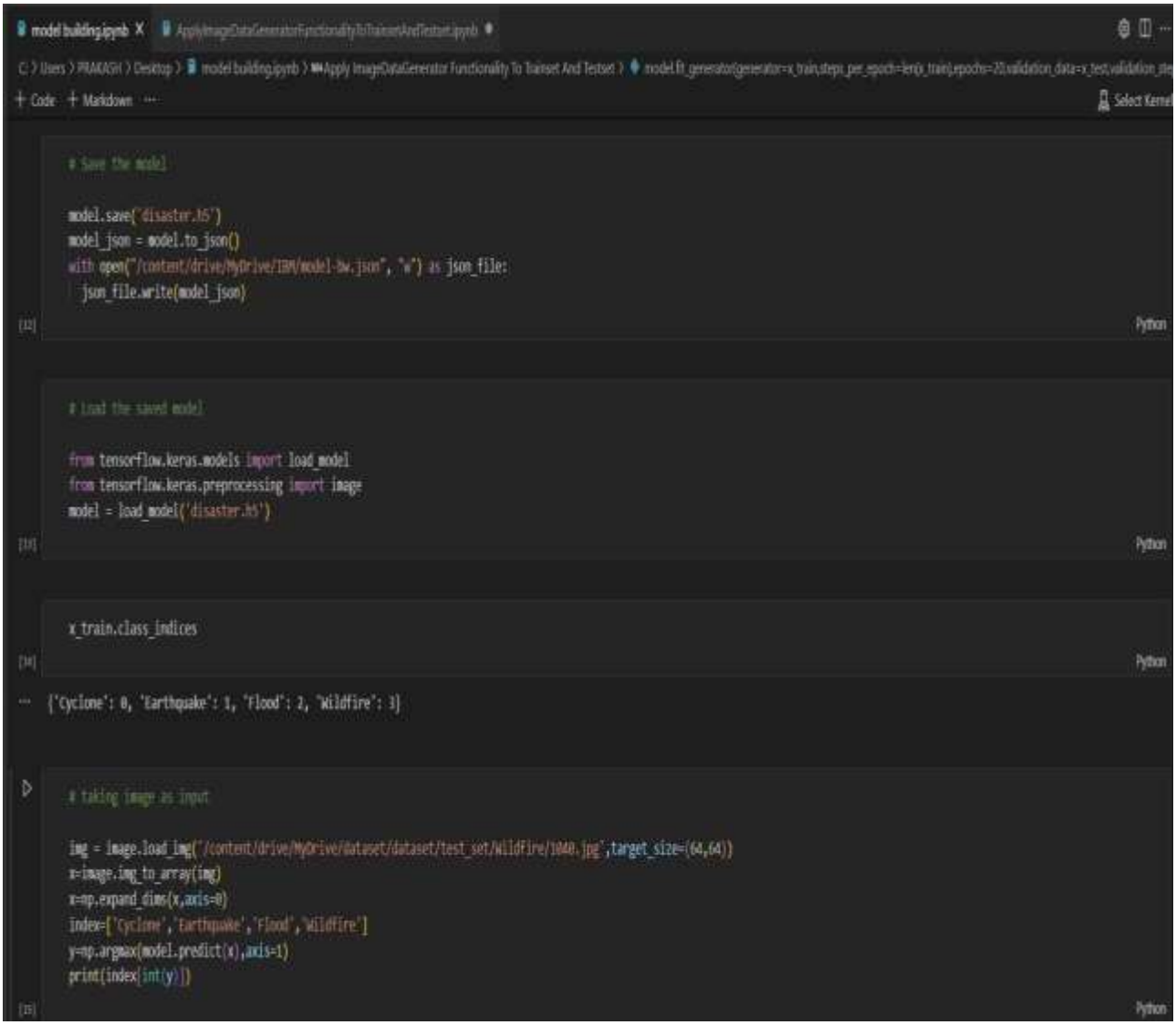

## Fitting the model

We'll define the Keras sequential model and add a one-dimensional convolutional layer. Input shape becomes as it is confirmed above We'll add Dense, MaxPooling1D, and Flatten layers into the model. The output layer contains the number of output classes and 'SoftMax' activation.




## Save the model/Load the saved model/Taking image as input

The Saved Model format is another way to serialize models. Models saved in this format can be restored using and are compatible with TensorFlow Serving. The Saved Model goes into detail about how to serve/inspect the Saved Model. The section below illustrates the steps to save and restore the model.


model building.ipynb
ApplyImageDataGeneratorFunctionalityToTrainsetAndTestset.ipynb
+ Code
+ Markdown
# Save the model
model.save('disaster.h5')
model_json = model.to_json()
with open("/content/drive/MyDrive/IBM/model-bw.json", "w") as json_file:
json_file.write(model_json)
Python
# Load the saved model
from tensorflow.keras.models import load_model
from tensorflow.keras.preprocessing import image
model = load_model('disaster.h5')
Python
x_train.class_indices
Python
{'Cyclone': 0, 'Earthquake': 1, 'Flood': 2, 'Wildfire': 3}
# taking image as input
img = image.load_img('/content/drive/MyDrive/dataset/dataset/test_set/Wildfire/1040.jpg',target_size=(64,64))
x=image.img_to_array(img)
x=np.expand_dims(x,axis=0)
index=['Cyclone','Earthquake','Flood','Wildfire']
y=np.argmax(model.predict(x),axis=1)
print(index[int(y)])
Python