BUILD PYTHON CODE :

```
import pandas as pd
import torch.nn as nn


class CNN(nn.Module):
    def _init_(self, K):
        super(CNN, self)._init_()
        self.conv_layers = nn.Sequential(
            # conv1
            nn.Conv2d(in_channels=3, out_channels=32,
                      kernel_size=3, padding=1),
            nn.ReLU(),
            nn.BatchNorm2d(32),
            nn.Conv2d(in_channels=32, out_channels=32,
                      kernel_size=3, padding=1),
            nn.ReLU(),
            nn.BatchNorm2d(32),
            nn.MaxPool2d(2),
            # conv2
            nn.Conv2d(in_channels=32, out_channels=64,
                      kernel_size=3, padding=1),
            nn.ReLU(),
            nn.BatchNorm2d(64),
            nn.Conv2d(in_channels=64, out_channels=64,
                      kernel_size=3, padding=1),
            nn.ReLU(),
            nn.BatchNorm2d(64),
            nn.MaxPool2d(2),
            # conv3
            nn.Conv2d(in_channels=64, out_channels=128,
                      kernel_size=3, padding=1),
      nn.ReLU(),
      nn.BatchNorm2d(128),
      nn.Conv2d(in_channels=128, out_channels=128,
           kernel_size=3, padding=1),
      nn.ReLU(),
      nn.BatchNorm2d(128),
      nn.MaxPool2d(2),
      # conv4
      nn.Conv2d(in_channels=128, out_channels=256,
           kernel_size=3, padding=1),
      nn.ReLU(),
      nn.BatchNorm2d(256),
      nn.Conv2d(in_channels=256, out_channels=256,
           kernel_size=3, padding=1),
      nn.ReLU(),
      nn.BatchNorm2d(256),
      nn.MaxPool2d(2),
    )

    self.dense_layers = nn.Sequential(
      nn.Dropout(0.4),
      nn.Linear(50176, 1024),
      nn.ReLU(),
      nn.Dropout(0.4),
      nn.Linear(1024, K),
    )

  def forward(self, X):
    out = self.conv_layers(X)

    # Flatten
```

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        out = out.view(-1, 50176)

        # Fully connected
        out = self.dense_layers(out)

        return out


idx_to_classes = {0: 'Apple___Apple_scab',
            1: 'Apple___Black_rot',
            2: 'Apple___Cedar_apple_rust',
            3: 'Apple___healthy',
            4: 'Background_without_leaves',
            5: 'Blueberry___healthy',
            6: 'Cherry___Powdery_mildew',
            7: 'Cherry___healthy',
            8: 'Corn___Cercospora_leaf_spot Gray_leaf_spot',
            9: 'Corn___Common_rust',
            10: 'Corn___Northern_Leaf_Blight',
            11: 'Corn___healthy',
            12: 'Grape___Black_rot',
            13: 'Grape__Esca(Black_Measles)',
            14: 'Grape__Leaf_blight(Isariopsis_Leaf_Spot)',
            15: 'Grape___healthy',
            16: 'Orange__Haunglongbing(Citrus_greening)',
            17: 'Peach___Bacterial_spot',
            18: 'Peach___healthy',
            19: 'Pepper,bell__Bacterial_spot',
            20: 'Pepper,bell__healthy',
            21: 'Potato___Early_blight',
            22: 'Potato___Late_blight',
23: 'Potato___healthy',
24: 'Raspberry___healthy',
25: 'Soybean___healthy',
26: 'Squash___Powdery_mildew',
27: 'Strawberry___Leaf_scorch',
28: 'Strawberry___healthy',
29: 'Tomato___Bacterial_spot',
30: 'Tomato___Early_blight',
31: 'Tomato___Late_blight',
32: 'Tomato___Leaf_Mold',
33: 'Tomato___Septoria_leaf_spot',
34: 'Tomato___Spider_mites Two-spotted_spider_mite',
35: 'Tomato___Target_Spot',
36: 'Tomato___Tomato_Yellow_Leaf_Curl_Virus',
37: 'Tomato___Tomato_mosaic_virus',
38: 'Tomato___healthy'}
```