Containing Files:

1. Scrapper.py -> Scraps images from IKEA Site and puts it in Images Folder.
2. Model.py -> Preprocesses Data and Trains the model.
3. Final.py -> loads the model using saved weights from model.py and displays confusion matrix.

I scrapped 106 bed images ,125 chair images , 115 lighting images and 87 wardrobe images .It would prove difficult to train on my own convnet from scratch , because we have so little data to work with.

I choose to use pretrained VGG16 architecture. Although it's an older architecture , it seemed fine for this task.

First I froze the VGG16 conv base and only trained newly added Dense layers .

I was getting around 88% accuracy at this stage.

After this I unfroze few of the top layers from VGG16 and trained it together with Dense layers.

Earlier layers in conv layers are more generic and reusable features where higher layers are more specialized features like breed of dogs. So it is useful just to fine-tune the specialized layers .

And also we should not train more layers bcz it will overfit bcz of our small dataset.

```
Final test accuracy = 88.75%

Final Train Accuracy = 96.7 %

Final Validation Accuracy = 95.5%
```

```
TEST DATA CONFUSION MATRIX:

[[19  1  0  0]
 [ 1 15  4  0]
 [ 3  0 17  0]
 [ 0  0  0 20]]

TRAINING DATA CONFUSION MATRIX:

[[66  0  0  0]
 [ 3 82  0  0]
 [ 1  0 74  0]
 [ 0  0  0 47]]

VALIDATION DATA CONFUSION MATRIX:

[[20  0  0  0]
 [ 3 17  0  0]
 [ 0  0 20  0]
 [ 0  0  0 20]]
```