```
Epoch 1/20
136/136 [==============================] - 64s 473ms/step - loss: 1.0636 - accuracy: 0.3993 - val_loss: 1.0522 - val_accuracy: 0.4641

Epoch 00001: val_accuracy improved from -inf to 0.46411, saving model to /content/drive/My Drive/COVID/Vanshika/Models/simpleCNN_2.h5
Epoch 2/20
136/136 [==============================] - 59s 435ms/step - loss: 1.0444 - accuracy: 0.4219 - val_loss: 1.0263 - val_accuracy: 0.4713

Epoch 00002: val_accuracy improved from 0.46411 to 0.47129, saving model to /content/drive/My Drive/COVID/Vanshika/Models/simpleCNN_2.h5
Epoch 3/20
136/136 [==============================] - 59s 434ms/step - loss: 1.0395 - accuracy: 0.4205 - val_loss: 1.0237 - val_accuracy: 0.4952

Epoch 00003: val_accuracy improved from 0.47129 to 0.49522, saving model to /content/drive/My Drive/COVID/Vanshika/Models/simpleCNN_2.h5
Epoch 4/20
136/136 [==============================] - 59s 435ms/step - loss: 1.0240 - accuracy: 0.4334 - val_loss: 0.9285 - val_accuracy: 0.7416

Epoch 00004: val_accuracy improved from 0.49522 to 0.74163, saving model to /content/drive/My Drive/COVID/Vanshika/Models/simpleCNN_2.h5
Epoch 5/20
136/136 [==============================] - 58s 429ms/step - loss: 0.8221 - accuracy: 0.6037 - val_loss: 0.5780 - val_accuracy: 0.7560

Epoch 00005: val_accuracy improved from 0.74163 to 0.75598, saving model to /content/drive/My Drive/COVID/Vanshika/Models/simpleCNN_2.h5
Epoch 6/20
136/136 [==============================] - 59s 435ms/step - loss: 0.6268 - accuracy: 0.7360 - val_loss: 0.4703 - val_accuracy: 0.8278

Epoch 00006: val_accuracy improved from 0.75598 to 0.82775, saving model to /content/drive/My Drive/COVID/Vanshika/Models/simpleCNN_2.h5
Epoch 7/20
136/136 [==============================] - 59s 431ms/step - loss: 0.5036 - accuracy: 0.8006 - val_loss: 0.4342 - val_accuracy: 0.8373

Epoch 00007: val_accuracy improved from 0.82775 to 0.83732, saving model to /content/drive/My Drive/COVID/Vanshika/Models/simpleCNN_2.h5
Epoch 8/20
136/136 [==============================] - 59s 434ms/step - loss: 0.4399 - accuracy: 0.8413 - val_loss: 0.4613 - val_accuracy: 0.8349

Epoch 00008: val_accuracy did not improve from 0.83732
Epoch 9/20
136/136 [==============================] - 59s 433ms/step - loss: 0.3689 - accuracy: 0.8714 - val_loss: 0.3629 - val_accuracy: 0.8828

Epoch 00009: val_accuracy improved from 0.83732 to 0.88278, saving model to /content/drive/My Drive/COVID/Vanshika/Models/simpleCNN_2.h5
Epoch 10/20
136/136 [==============================] - 59s 436ms/step - loss: 0.3246 - accuracy: 0.8852 - val_loss: 0.2702 - val_accuracy: 0.9163

Epoch 00010: val_accuracy improved from 0.88278 to 0.91627, saving model to /content/drive/My Drive/COVID/Vanshika/Models/simpleCNN_2.h5
Epoch 11/20
136/136 [==============================] - 59s 430ms/step - loss: 0.2880 - accuracy: 0.8951 - val_loss: 0.3001 - val_accuracy: 0.9187

Epoch 00011: val_accuracy improved from 0.91627 to 0.91866, saving model to /content/drive/My Drive/COVID/Vanshika/Models/simpleCNN_2.h5
Epoch 12/20
136/136 [==============================] - 59s 433ms/step - loss: 0.2859 - accuracy: 0.9061 - val_loss: 0.2331 - val_accuracy: 0.9330

Epoch 00012: val_accuracy improved from 0.91866 to 0.93301, saving model to /content/drive/My Drive/COVID/Vanshika/Models/simpleCNN_2.h5
Epoch 13/20
136/136 [==============================] - 60s 440ms/step - loss: 0.2671 - accuracy: 0.9128 - val_loss: 0.2348 - val_accuracy: 0.9306

Epoch 00013: val_accuracy did not improve from 0.93301
Epoch 14/20
136/136 [==============================] - 59s 432ms/step - loss: 0.2662 - accuracy: 0.9087 - val_loss: 0.2340 - val_accuracy: 0.9211

Epoch 00014: val_accuracy did not improve from 0.93301
Epoch 15/20
136/136 [==============================] - 60s 438ms/step - loss: 0.2440 - accuracy: 0.9188 - val_loss: 0.2365 - val_accuracy: 0.9234

Epoch 00015: val_accuracy did not improve from 0.93301
Epoch 16/20
136/136 [==============================] - 59s 431ms/step - loss: 0.2320 - accuracy: 0.9216 - val_loss: 0.2907 - val_accuracy: 0.9139

Epoch 00016: val_accuracy did not improve from 0.93301
Epoch 17/20
136/136 [==============================] - 60s 438ms/step - loss: 0.2244 - accuracy: 0.9230 - val_loss: 0.1840 - val_accuracy: 0.9330

Epoch 00017: val_accuracy did not improve from 0.93301
Epoch 18/20
136/136 [==============================] - 59s 433ms/step - loss: 0.2205 - accuracy: 0.9208 - val_loss: 0.2593 - val_accuracy: 0.9187

Epoch 00018: val_accuracy did not improve from 0.93301
Epoch 19/20
136/136 [==============================] - 59s 432ms/step - loss: 0.2096 - accuracy: 0.9334 - val_loss: 0.1973 - val_accuracy: 0.9354

Epoch 00019: val_accuracy improved from 0.93301 to 0.93541, saving model to /content/drive/My Drive/COVID/Vanshika/Models/simpleCNN_2.h5
Epoch 20/20
136/136 [==============================] - 59s 437ms/step - loss: 0.2392 - accuracy: 0.9176 - val_loss: 0.2376 - val_accuracy: 0.9258

Epoch 00020: val_accuracy did not improve from 0.93541
```
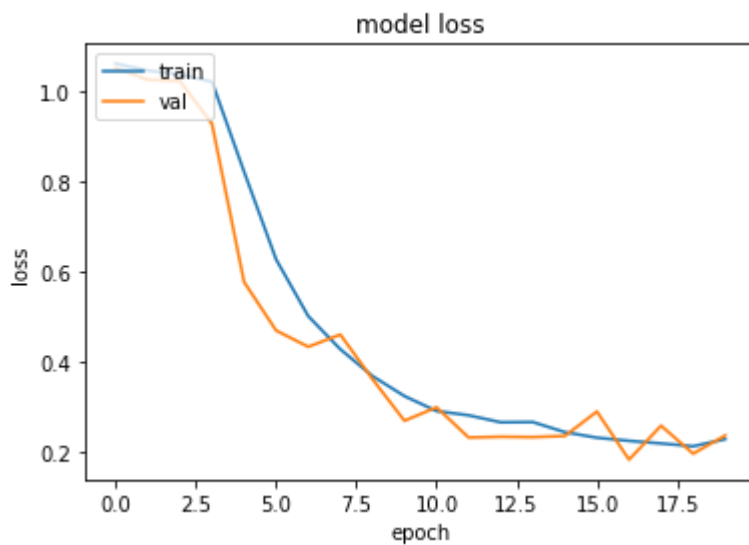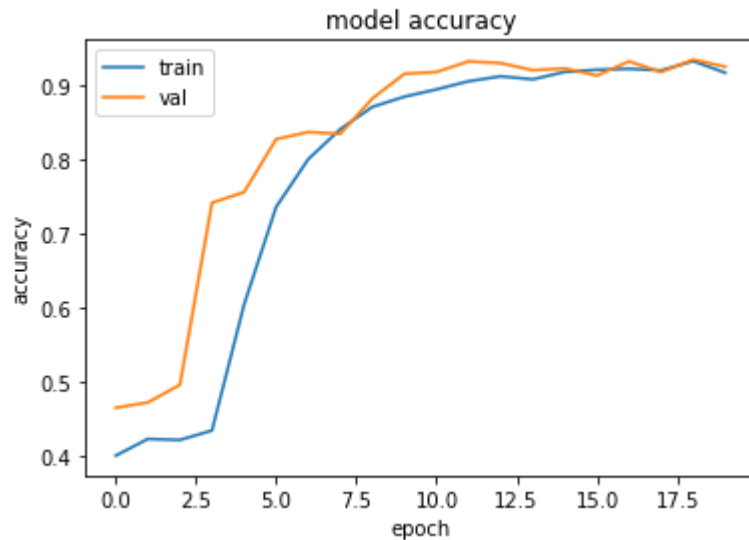
```
dict_keys(['val_loss', 'val_accuracy', 'loss', 'accuracy'])
```

model accuracy

model loss


```
                  precision    recall  f1-score   support

       COVID-19       0.91      0.97      0.94        31
         Normal       0.88      0.98      0.93       193
Viral Pneumonia       0.98      0.87      0.92       194

       accuracy                           0.93       418
      macro avg       0.92      0.94      0.93       418
   weighted avg       0.93      0.93      0.93       418

Confusion Matrix
[[ 30   1   0]
 [  1 189   3]
 [  2  24 168]]
```