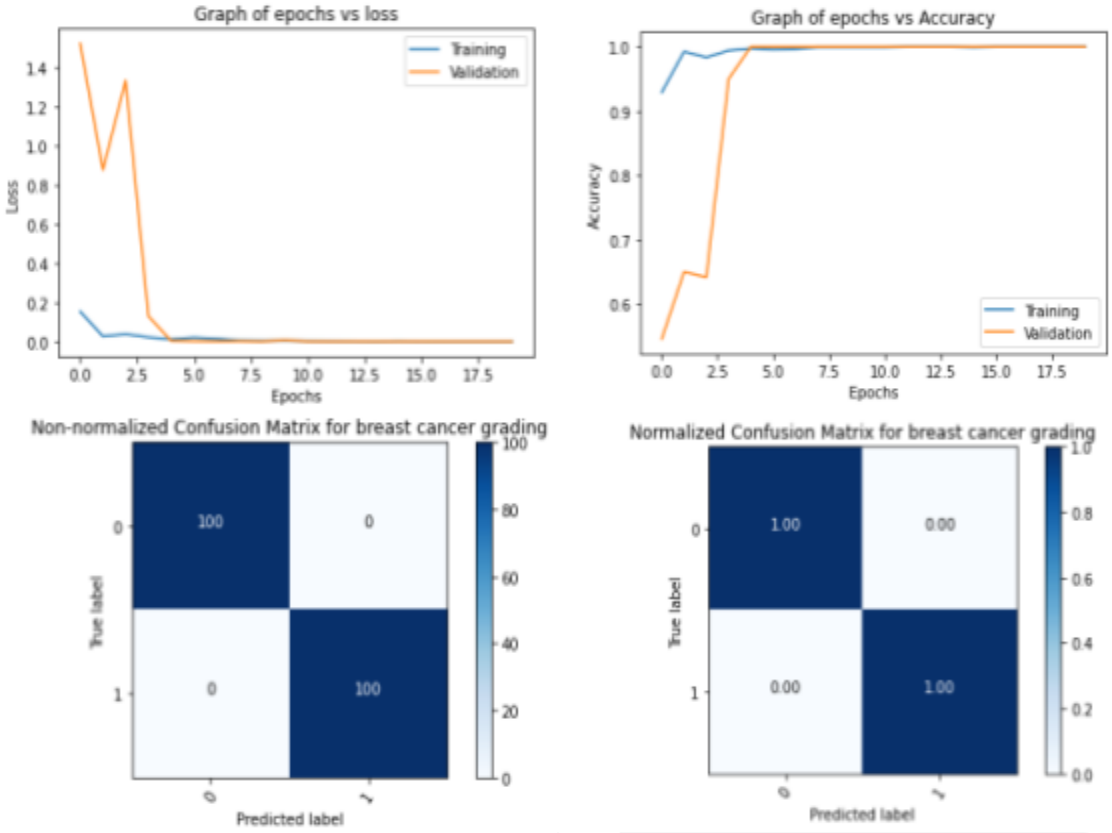
Results

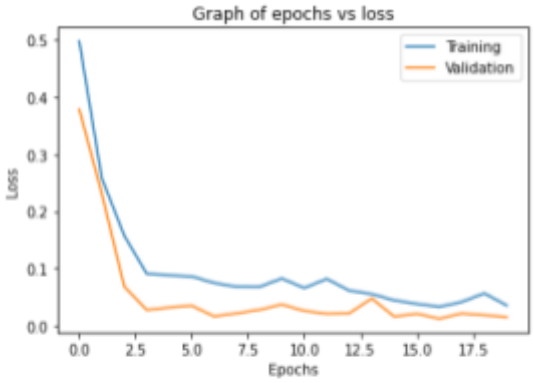
A. 2-Predict Model

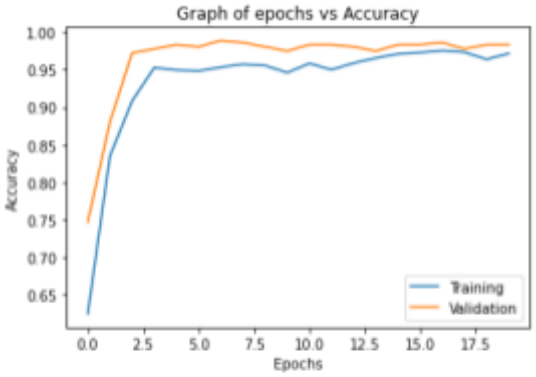


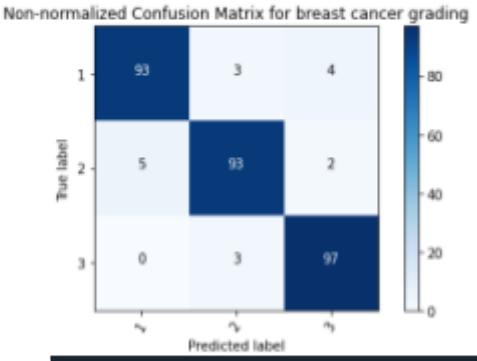

```
In [13]: print(classification_report( true_y.argmax(axis=-1), y_predict))
              precision    recall  f1-score   support

           0       1.00      1.00      1.00       100
           1       1.00      1.00      1.00       100

    accuracy                           1.00       200
   macro avg       1.00      1.00      1.00       200
weighted avg       1.00      1.00      1.00       200
```

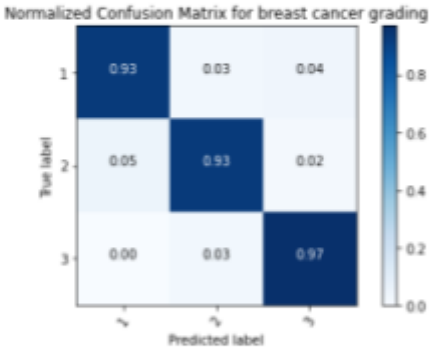
Epochs vs loss graph, epochs vs accuracy graph, non-normalized confusion matrix, normalized confusion matrix, and classification report for the 2-predict model with 20 epochs.

B. 3-Predict Model



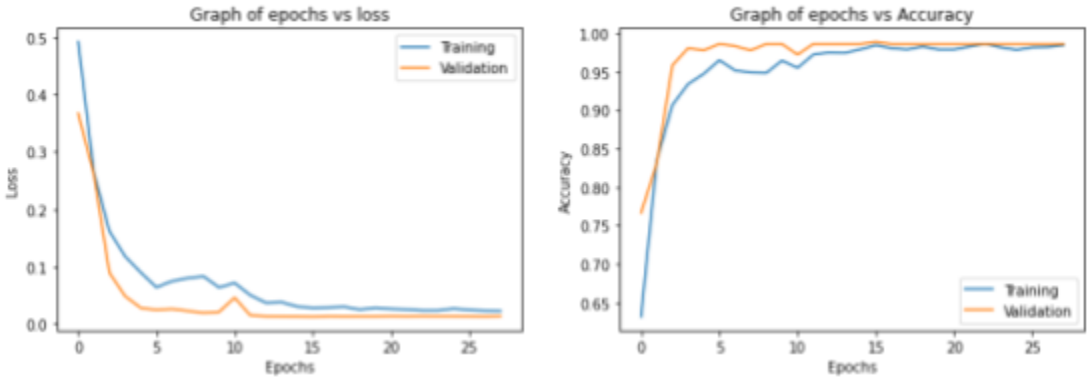


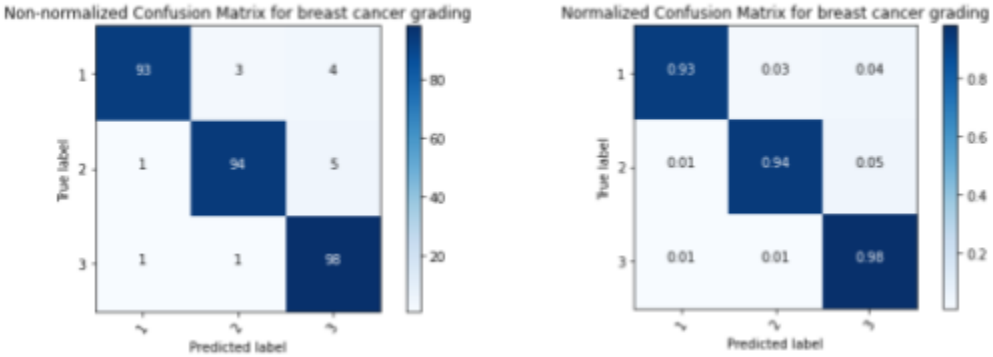





```
In [43]: print(classification_report( true_y.argmax(axis=-1), y_predict))
              precision    recall  f1-score   support

           0       0.95      0.93      0.94       100
           1       0.94      0.93      0.93       100
           2       0.94      0.97      0.96       100

    accuracy                           0.94       300
   macro avg       0.94      0.94      0.94       300
weighted avg       0.94      0.94      0.94       300
```

Epochs vs loss graph, epochs vs accuracy graph, non-normalized confusion matrix, normalized confusion matrix, and classification report for the 3-predict model with 20 epochs.

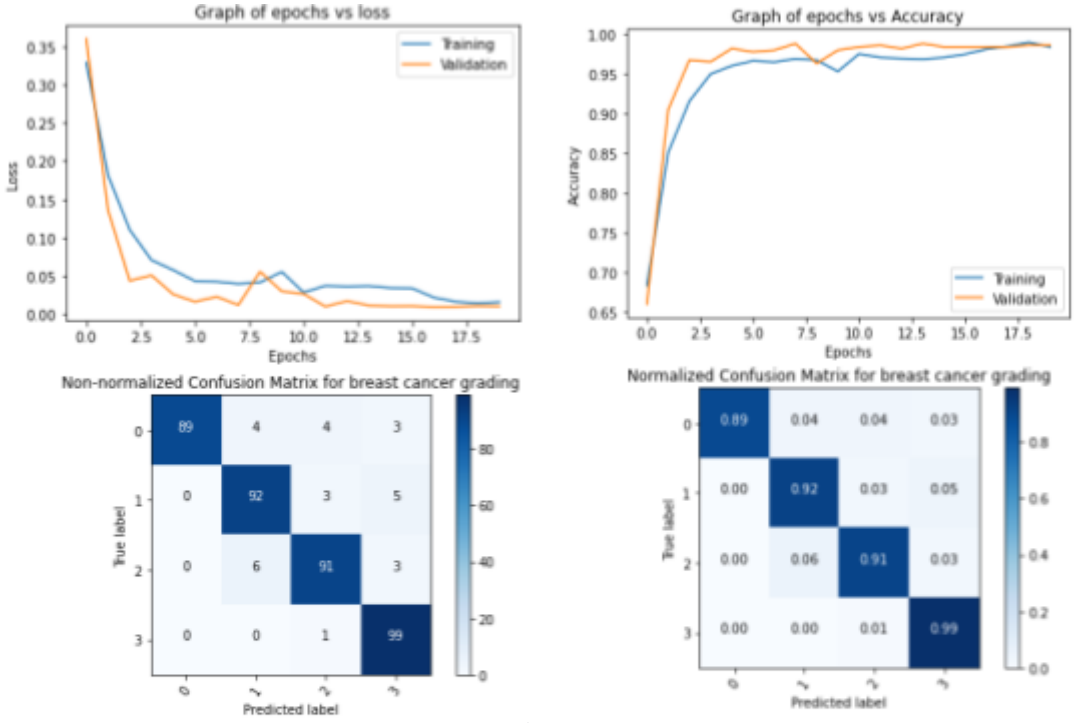





```
In [47]: print(classification_report( true_y.argmax(axis=-1), y_predict))
              precision    recall  f1-score   support

           0       0.98      0.93      0.95       100
           1       0.96      0.94      0.95       100
           2       0.92      0.98      0.95       100

    accuracy                           0.95       300
   macro avg       0.95      0.95      0.95       300
weighted avg       0.95      0.95      0.95       300
```

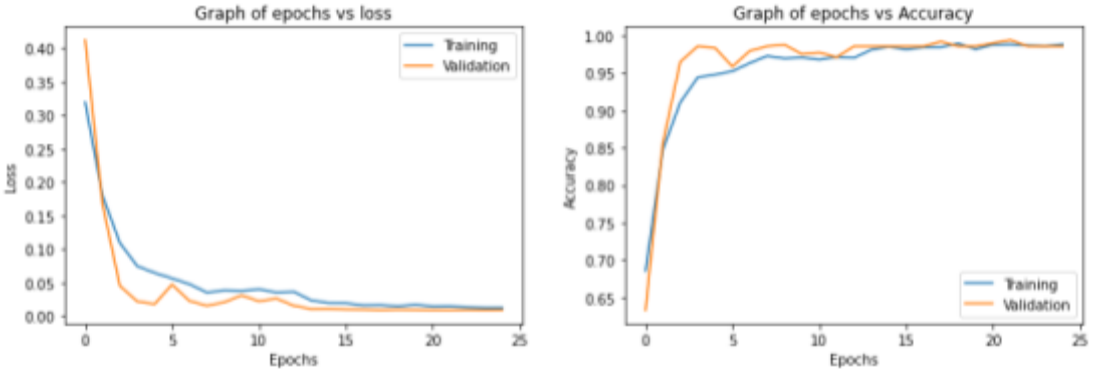
Epochs vs loss graph, epochs vs accuracy graph, non-normalized confusion matrix, normalized confusion matrix, and classification report for the 3-predict model with 30 epochs.

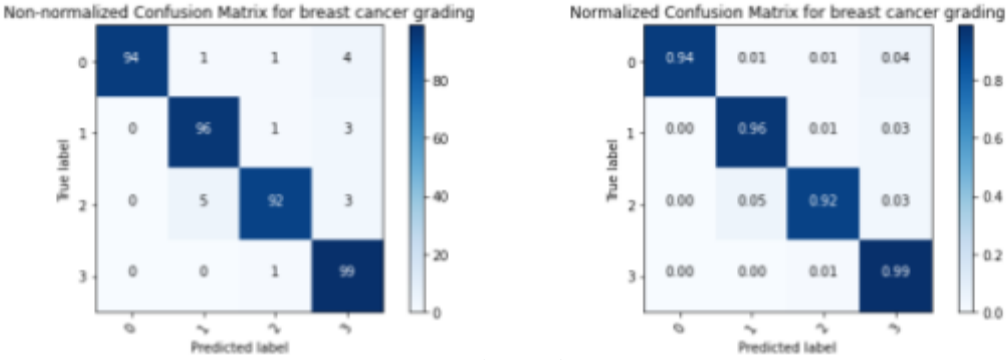
C. 4-Predict Model




```
In [57]: print(classification_report( true_y.argmax(axis=-1), y_predict))
              precision    recall  f1-score   support

           0       1.00      0.89      0.94       100
           1       0.90      0.92      0.91       100
           2       0.92      0.91      0.91       100
           3       0.90      0.99      0.94       100

    accuracy                           0.93       400
   macro avg       0.93      0.93      0.93       400
weighted avg       0.93      0.93      0.93       400
```

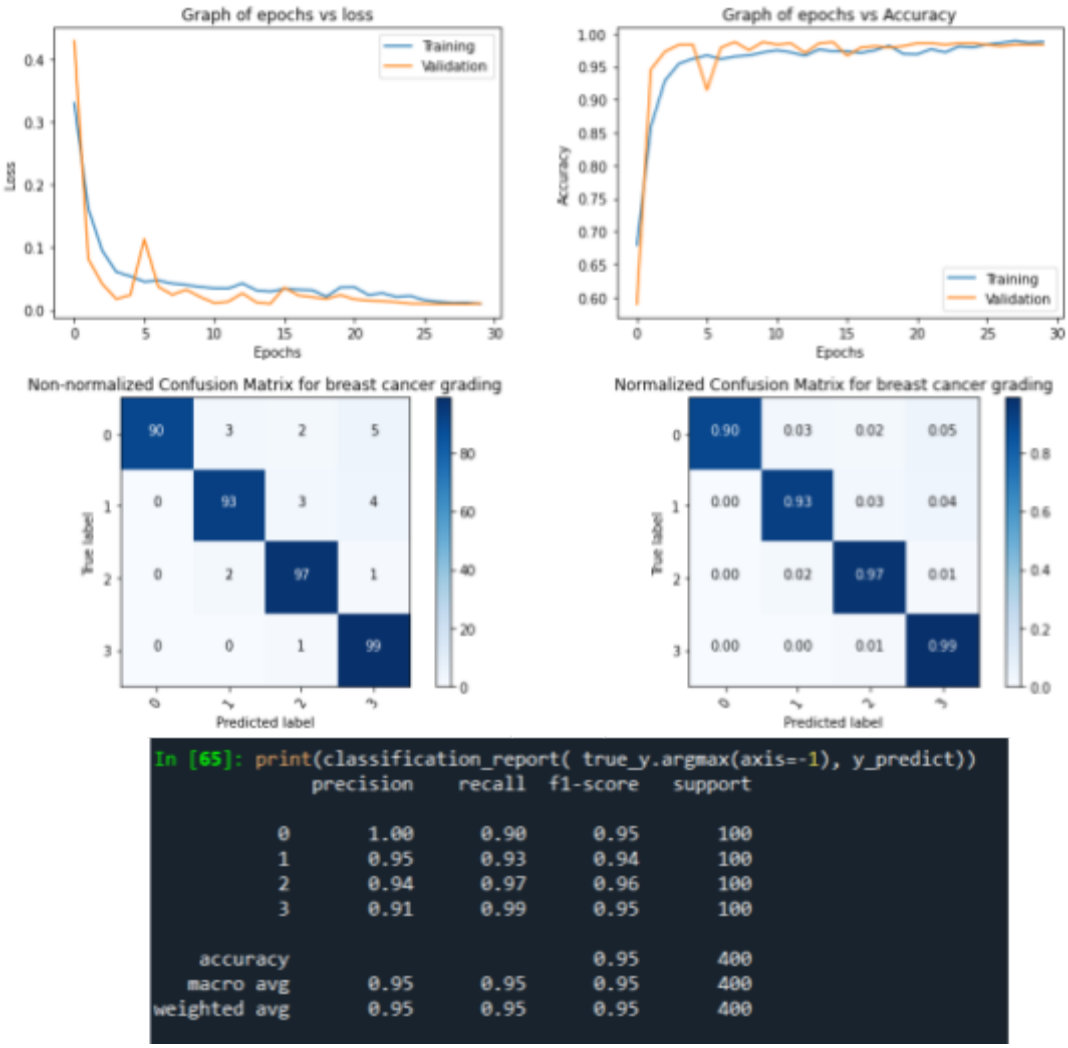
Epochs vs loss graph, epochs vs accuracy graph, non-normalized confusion matrix, normalized confusion matrix, and classification report for the 4-predict model with 20 epochs.






```
In [61]: print(classification_report( true_y.argmax(axis=-1), y_predict))
              precision    recall  f1-score   support

           0       1.00      0.94      0.97       100
           1       0.94      0.96      0.95       100
           2       0.97      0.92      0.94       100
           3       0.91      0.99      0.95       100

    accuracy                           0.95       400
   macro avg       0.95      0.95      0.95       400
weighted avg       0.95      0.95      0.95       400
```

Epochs vs loss graph, epochs vs accuracy graph, non-normalized confusion matrix, normalized confusion matrix, and classification report for the 4-predict model with 25 epochs.




```
In [65]: print(classification_report( true_y.argmax(axis=-1), y_predict))
              precision    recall  f1-score   support

           0       1.00      0.90      0.95       100
           1       0.95      0.93      0.94       100
           2       0.94      0.97      0.96       100
           3       0.91      0.99      0.95       100

    accuracy                           0.95       400
   macro avg       0.95      0.95      0.95       400
weighted avg       0.95      0.95      0.95       400
```

Epochs vs loss graph, epochs vs accuracy graph, non-normalized confusion matrix, normalized confusion matrix, and classification report for the 4-predict model with 30 epochs.

D. Model Comparison (Case 1 & 2)

```
Size of the output testng data set:  (400, 4)
Size of the input testing data set:  (400, 128, 128, 3)
13/13 - 63s - loss: 0.0602 - accuracy: 0.9525
True count:  372
False count:  28


Testing accuracy score for case 1:  95.24999856948853 %
Testing accuracy score for case 2:  93.0 %
```

Test accuracy rates of case 1 & 2.