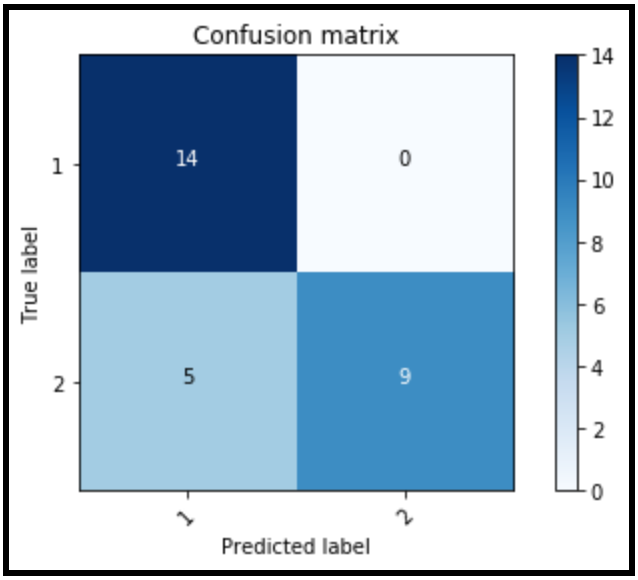
Naive Bayes Classifier

Binary Classifier

For the binary classifier, the data of class 3 was ignored, and a 2 class classifier was built.

Results:

An accuracy of **0.821** was achieved. The confusion matrix and other metrics are shown below.



	precision	recall	f1-score	support
1	1.00	0.74	0.85	19
2	0.64	1.00	0.78	9
accuracy			0.82	28
macro avg	0.82	0.87	0.82	28
weighted avg	0.89	0.82	0.83	28

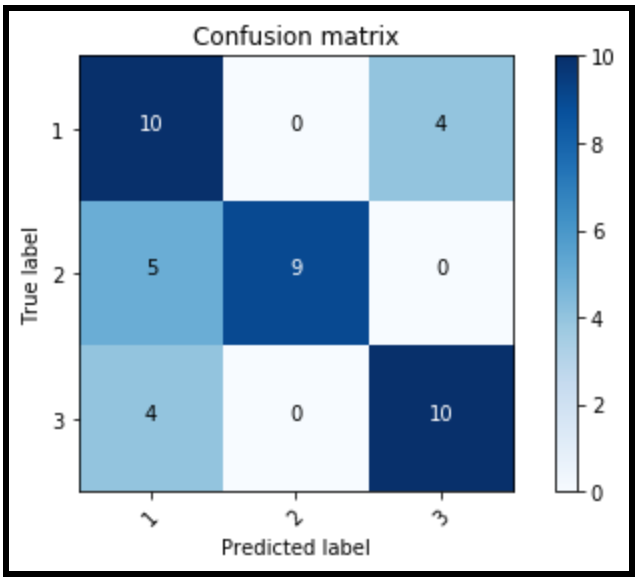
This shows that the classifier is able to generate well fitted Gaussians for the two classes and classify well between them.

Tri-class Classifier

For the tri-class classifier, all the data was used.

Results:

An accuracy of **0.69** was obtained. The confusion matrix and other metrics are shown below.



	precision	recall	f1-score	support
1	0.71	0.53	0.61	19
2	0.64	1.00	0.78	9
3	0.71	0.71	0.71	14
accuracy			0.69	42
macro avg	0.69	0.75	0.70	42
weighted avg	0.70	0.69	0.68	42

These results show that that classifier works well but there could be other methods which are able to beat the Naive Bayes performance for 3 class classification. This could be because Naive Bayes may have oversimplified the problem by assuming independence among the features which may not be true.