COMP 551 Assignment 2
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Q2)

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DS1_LDA Result
Accuracy: 0.9475
Precision: 0.9558573853989814
Recall: 0.9383333333333334
F1 Measure: 0.9470142977291843
```

Q3)

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DS1_kNN Result
k = 1 to 20
```

	Accuracy	Precision	Recall	F1
1	0.521667	0.522337	0.506667	0.514382
2	0.528333	0.556291	0.280000	0.372506
3	0.519167	0.519931	0.500000	0.509771
4	0.532500	0.552279	0.343333	0.423433
5	0.545000	0.546392	0.530000	0.538071
6	0.530000	0.544118	0.370000	0.440476
7	0.536667	0.539146	0.505000	0.521515
8	0.533333	0.547619	0.383333	0.450980
9	0.530833	0.532062	0.511667	0.521665
10	0.547500	0.566745	0.403333	0.471276
11	0.541667	0.544326	0.511667	0.527491
12	0.533333	0.546083	0.395000	0.458414
13	0.532500	0.533679	0.515000	0.524173
14	0.525000	0.533784	0.395000	0.454023
15	0.526667	0.528369	0.496667	0.512027
16	0.535833	0.546638	0.420000	0.475024
17	0.535000	0.536713	0.511667	0.523891
18	0.532500	0.541935	0.420000	0.473239
19	0.533333	0.534843	0.511667	0.522998
20	0.522500	0.528541	0.416667	0.465983

Q5)

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DS2_LDA Result
Accuracy: 0.53
Precision: 0.528125
Recall: 0.5633333333333334
F1 measure: 0.5451612903225808

DS2_kNN Result
k = 1 to 20
```

	Accuracy	Precision	Recall	F1
1	0.515833	0.515860	0.515000	0.515430
2	0.510833	0.520505	0.275000	0.359869
3	0.516667	0.515625	0.550000	0.532258
4	0.510833	0.515081	0.370000	0.430650
5	0.515000	0.513636	0.565000	0.538095
6	0.488333	0.485830	0.400000	0.438757
7	0.481667	0.483631	0.541667	0.511006
8	0.499167	0.499072	0.448333	0.472344
9	0.498333	0.498542	0.570000	0.531882
10	0.493333	0.492620	0.445000	0.467601
11	0.507500	0.506589	0.576667	0.539361
12	0.507500	0.508257	0.461667	0.483843
13	0.499167	0.499266	0.566667	0.530835
14	0.489167	0.488656	0.466667	0.477408
15	0.484167	0.486448	0.568333	0.524212
16	0.481667	0.481229	0.470000	0.475548
17	0.472500	0.476529	0.558333	0.514198
18	0.480000	0.480066	0.481667	0.480865
19	0.484167	0.486409	0.566667	0.523480
20	0.485833	0.486134	0.496667	0.491344

The performance for LDA dropped drastically, whereas k-NN maintains its performance. However, both methods gave a poor classification with ~50% accuracy.

Q6)

DS1 can be linearly classified whereas DS2 is generated non-linearly with three gaussian distributions in each class. Therefore, LDA, which is a linear classifier, has almost perfect classification in DS1, but failed to perform well in DS2; k-NN, which is a non-linear classifier, is not affected.