Lab 6 and 7 Analysis Report

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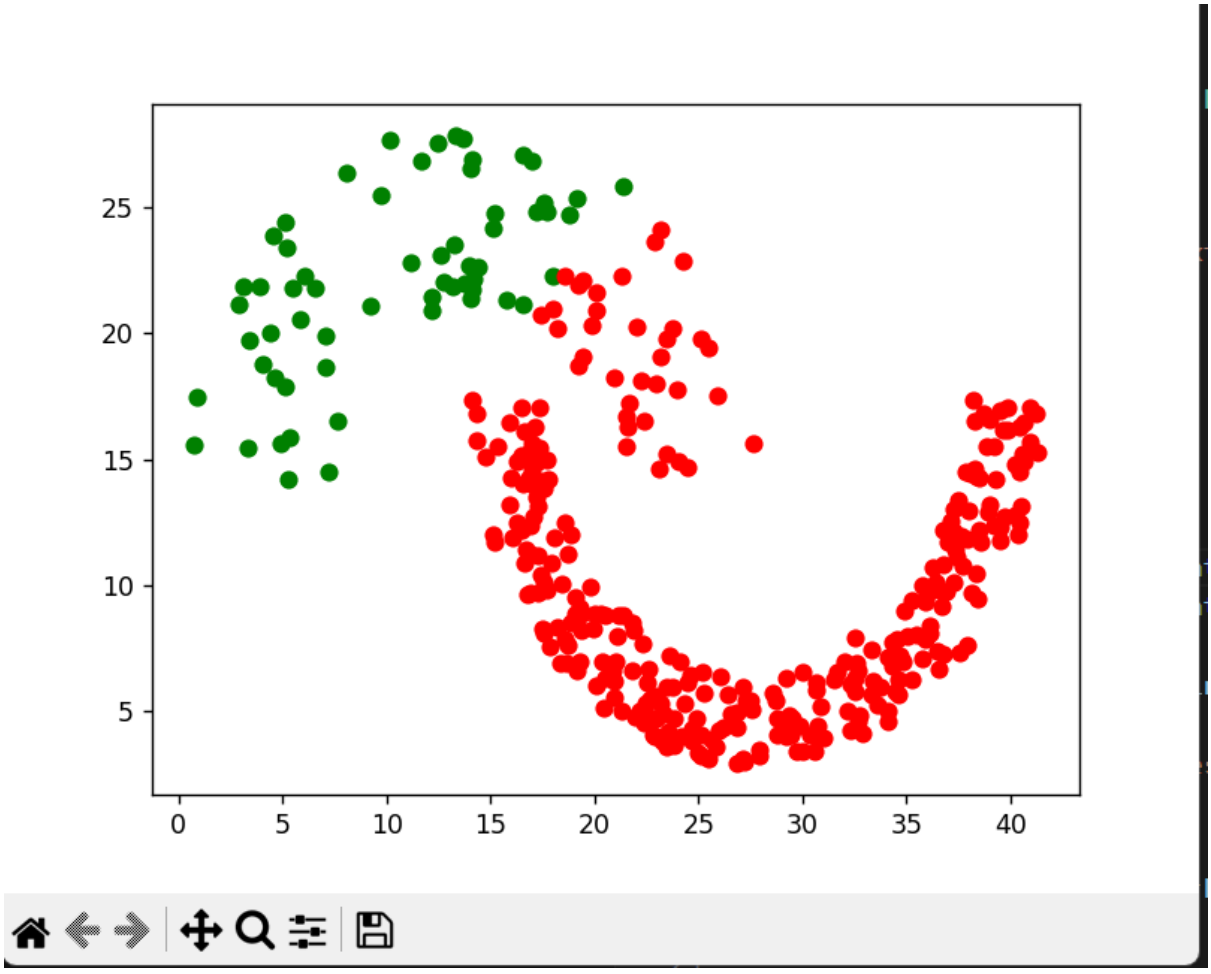
We perform two clustering algorithm implementations, k-Means and Spectral Clustering.

1. k-Means Clustering Analysis

We peform the k-Means algorithm to partition the data into two clusters.

Analysis & Results: we get the following results

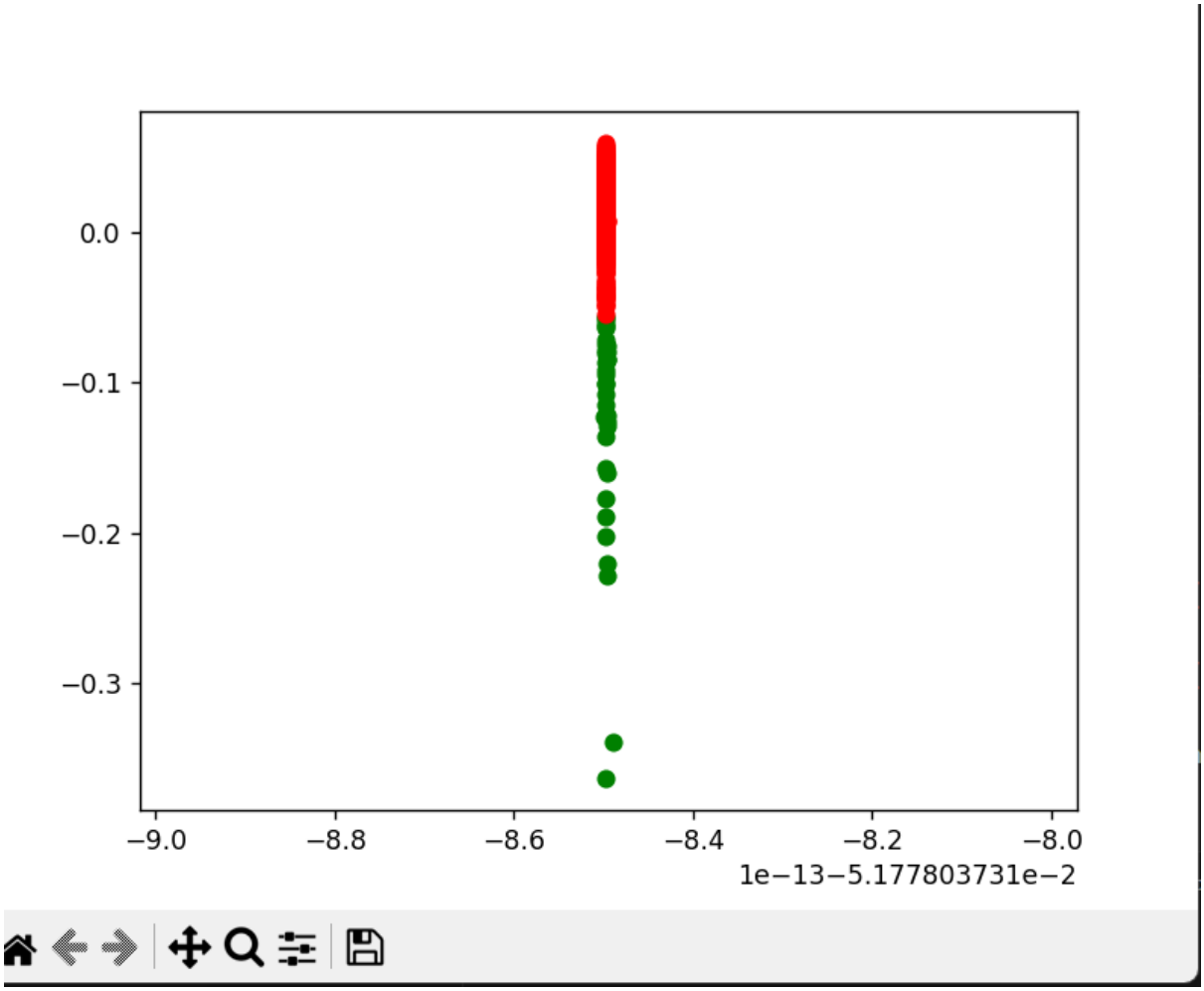


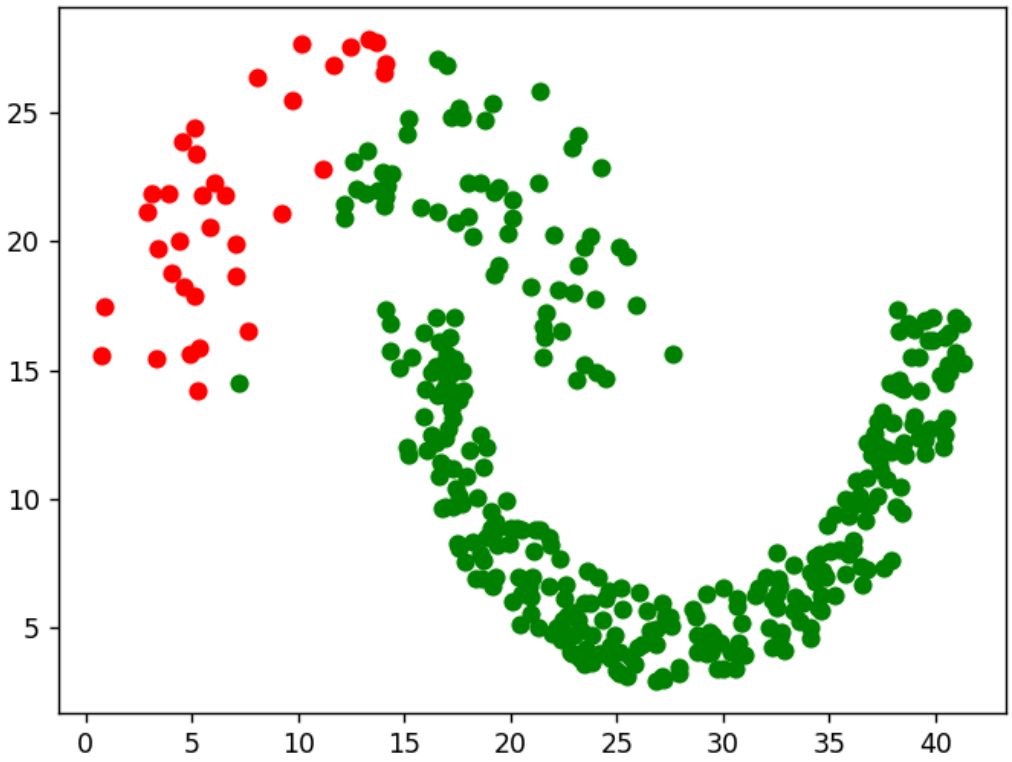

```
initial random centres: [(np.float64(12.15), np.float64(21.45)), (np.float64(16.65), np.float64(16.1))]
centre 1: (np.float64(1.6997319034852538), np.float64(3.6253351206434306))
centre 2: (np.float64(22.630965147453068), np.float64(8.52064343163539))
```

2. Spectral Clustering Analysis (q2.py)

We implements the Spectral Clustering algorithm, a more better technique

Analysis & Results: the results are given below


0.0
−0.1
−0.2
−0.3
−9.0
−8.8
−8.6
−8.4
−8.2
−8.0
1e−13−5.177803731e−2




```
final centre 1: (np.float64(-0.051778037307849765), np.float64(0.013105232898346355))
final centre 2: (np.float64(-0.05177803730784968), np.float64(-0.12655910627545922))
accuracy: 83.37801608579089 %
```

Conclusion

The Spectral and k-means Clustering implementation is successfuly executed. It effectively identifies the clusters in the dataset.