**Homework-5**

**1. SVM**

a. Output

Table

Description automatically generated

b. Performance was slower on the training sets but faster on the test data sets for each case

c. The number of support vectors increases with each iteration when using both the decision trees and the SVM classifier with the different parameters, although the factor by which it increases lowers for each iteration on both the datasets.

**2. Decision tree and pruned decision tree**

a. Output

Graphical user interface, text

Description automatically generated with medium confidence

b. Performance was slower on the training sets but faster on the test data sets for each decision tree, The pruned decision tree was overall faster compared to the normal decision tree

c. The number of support vectors increases with each iteration when using both the decision trees and the SVM classifier with the different parameters, although the factor by which it increases lowers for each iteration on both the datasets.

**Pruning helps because it removes parts of the decision tree that do not provide power to classify classes**

3. SVM has faster performance and provides better results because data is sparse and easy to classify