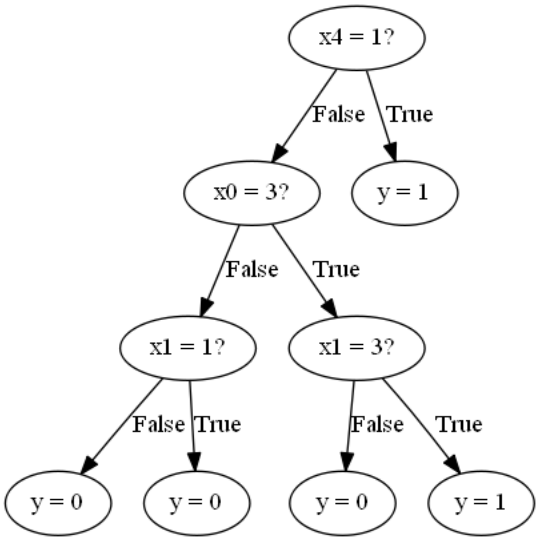
ASSIGNMENT 2 – REPORT

Part A

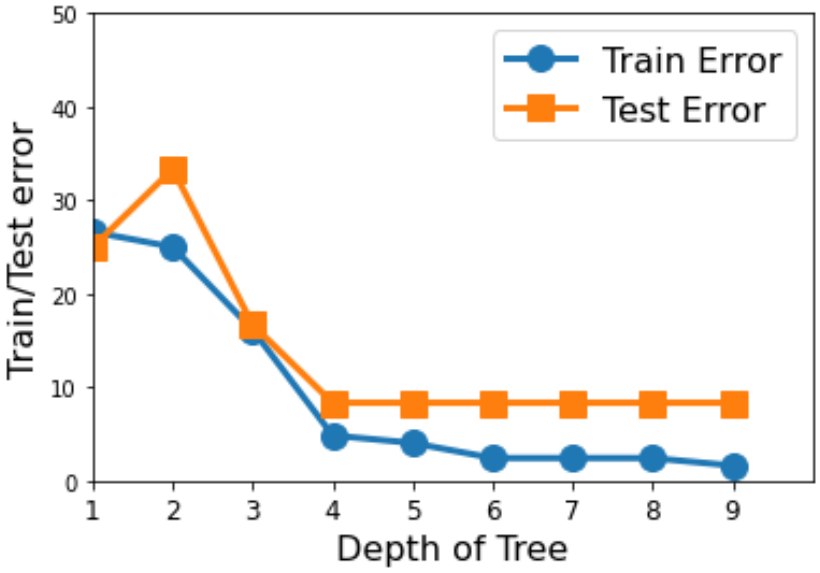
Decision tree of depth 3 for monks-1 test set:



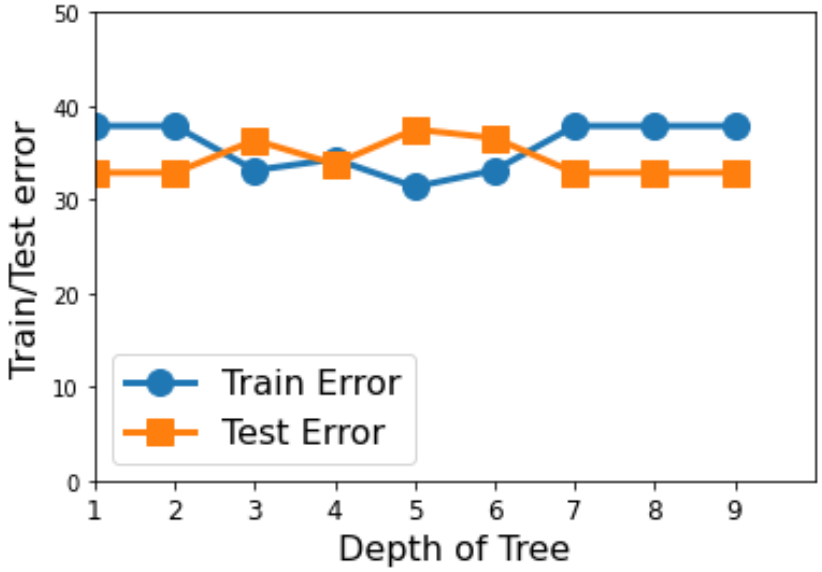
Test Error of my tree = 16.67%

PART B

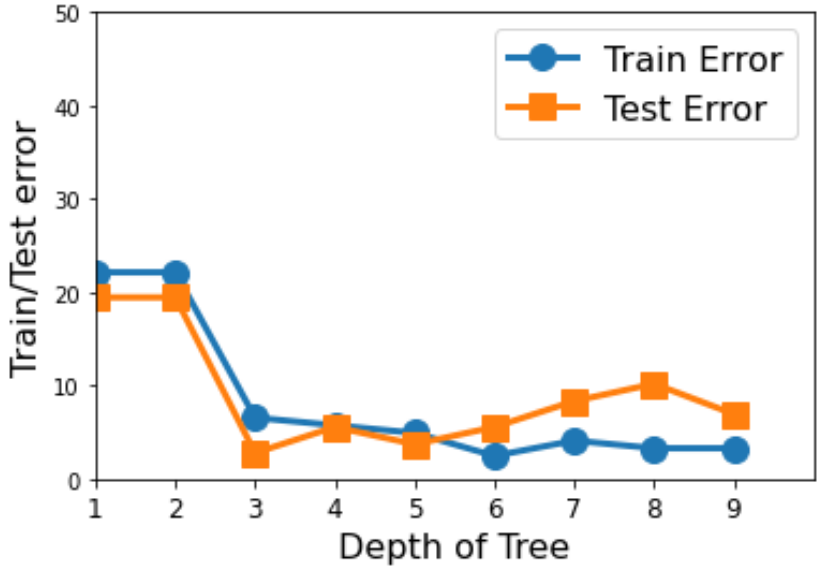
MONKS 1 DATASET:



MONKS 2 DATASET:



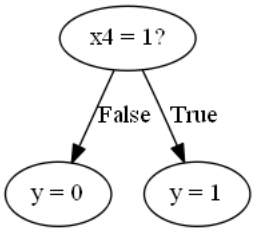
MONKS 3 DATASET:



PART C

Depth 1:

Decision Tree:



Test Error:

Test Error of my tree = 25.00%.

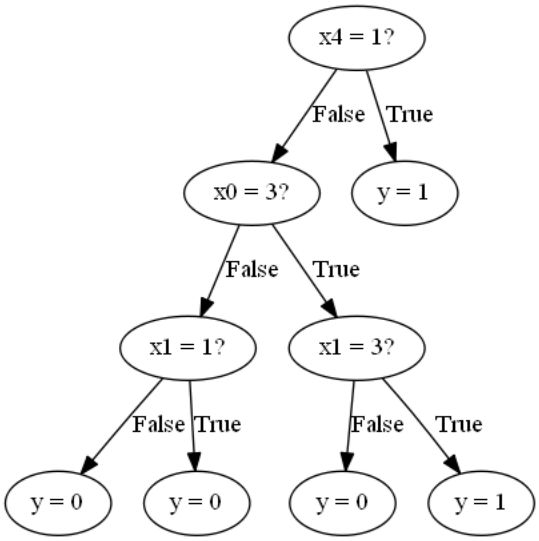
Confusion Matrix:

[[216 0]

[108 108]]

Depth 3:

Decision Tree:



Test Error:

Test Error of my tree = 16.67%

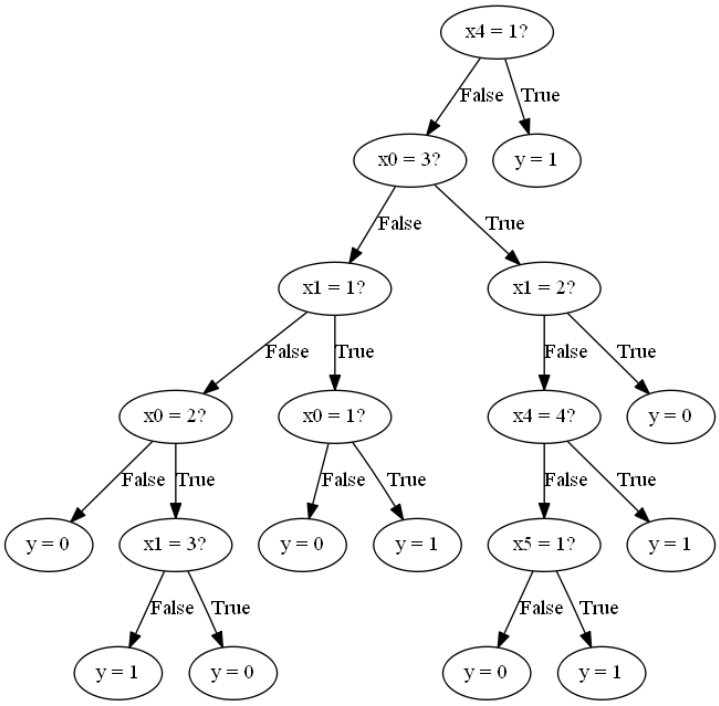
Confusion Matrix:

[[216 0]

[72 144]]

Depth 5:

Decision Tree:



Test Error:

Test Error of my tree = 8.33%.

Confusion Matrix:

[[192 24]

[12 204]]

PART D

Confusion Matrix for Depth 1 tree using Decision tree classifier:

[[216 0]

[108 108]]

Confusion Matrix for Depth 3 tree using Decision tree classifier:

[[216 0]

[108 108]]

Confusion Matrix for Depth 5 tree using Decision tree classifier:

[[216 0]

[81 135]]

It can be noted that the confusion matrices generated both from our decision tree and the decision tree classifier are almost similar for the corresponding tree depth.

PART E

Depth 1:

Confusion Matrix using our decision tree implementation:

[[29 0 0]

[0 32 0]

[0 14 0]]

Confusion Matrix using decision tree classifier:

[[29 0 0]

[0 32 0]

[0 14 0]]

Depth 3:

Confusion Matrix using our decision tree implementation:

[[3 26 0]

[0 32 0]

[0 14 0]]

Confusion Matrix using decision tree classifier:

[[29 0 0]

[1 30 1]

[1 4 9]]

Depth 5:

Confusion Matrix using our decision tree implementation:

[[28 1 0]

[0 32 0]

[0 14 0]]

Confusion Matrix using decision tree classifier:

[[29 0 0]

[1 30 1]

[1 4 9]]

From the outputs we can conclude that the confusion matrices obtained from our implementation of the decision tree and the scikit learn implementation are slightly different for the iris dataset.