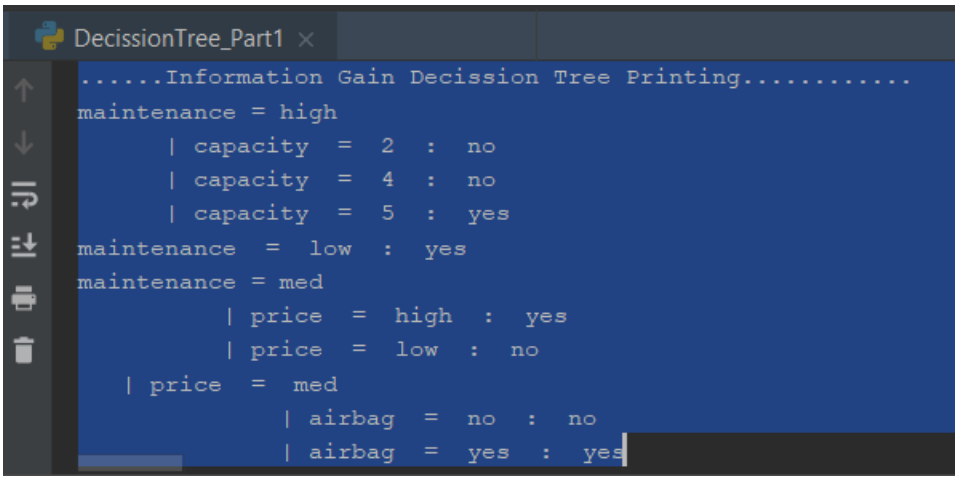
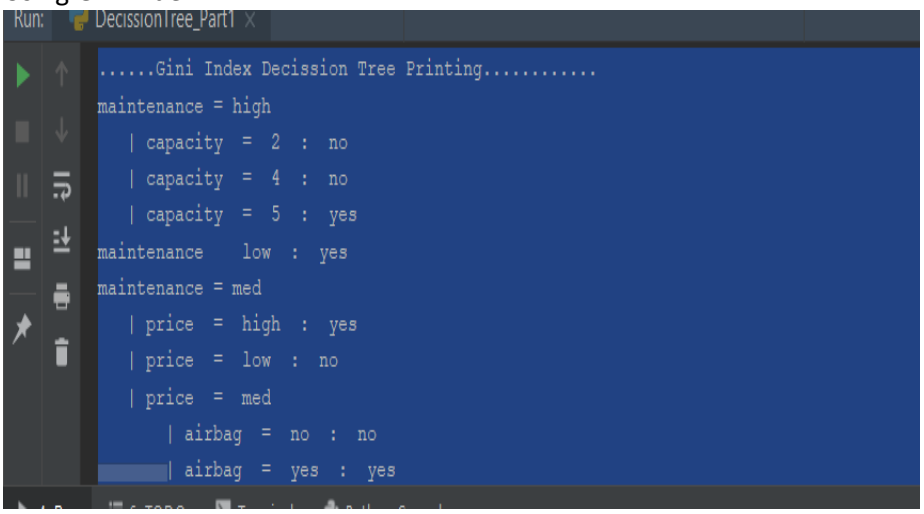
1. Decision Tree in the format provided in (A):
   Using Information Gain:
   ……Information Gain Decission Tree Printing……
   maintenance = high
   | capacity = 2 : no
   | capacity = 4 : no
   | capacity = 5 : yes
   maintenance = low : yes
   maintenance = med
   | price = high : yes
   | price = low : no
   | price = med
   | airbag = no : no
   | airbag = yes : yes



Using Gini Index:

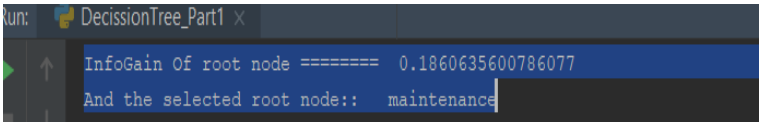


2. The value of Information gain and gini index:

Implemented model:

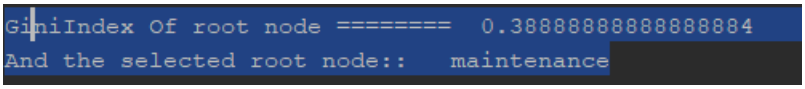
Information gain of root node = 0.1860635600786077

And the selected root node: maintenance



Gini Index Of root node = 0.38888888888888884

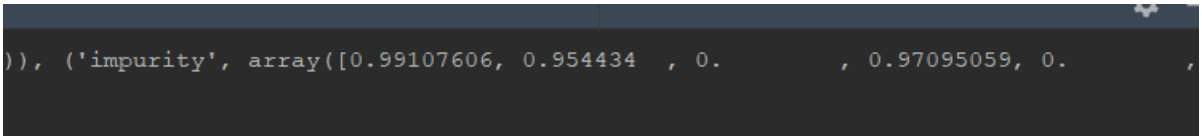
And the selected root node: maintenance



Sckit learn model:

Information gain of root node = 0.99107606-0.8040= 0.187

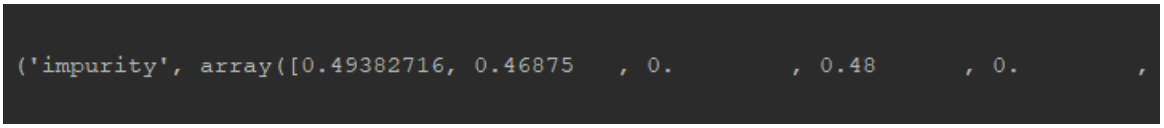
And the selected root node: maintenance



Gini Index Of class = 0.49382716

Gini index of root node= 0.389

And the selected root node: maintenance



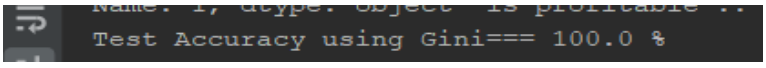
3. The labels generated on the test data and accuracy on the test data using :

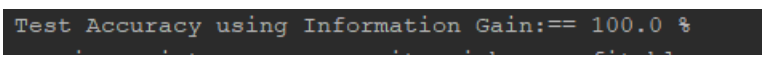
Implemented model:

Label on test data 1 : 2

Label on test data 2 : 1

Test data accuracy: 100%





Scikit learn model:

Label on test data 1 : 2

Label on test data 2 : 1

Test data accuracy: 100%