Assignment Report

Machine Learning (CS60050) Assignment 2

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16CS30005

(1.a) Decision Tree with Gini Index:

```
Decision Tree:

maintenance = low : yes
maintenance = med
| price = low : no
| price = med
            | airbag = yes : yes
            | airbag = no : no
| price = high : yes
maintenance = high
| capacity = 2 : no
| capacity = 4 : no
| capacity = 5 : yes
```

(1.b) Decision Tree with Information Gain:

```
Decision Tree:

maintenance = low : yes
maintenance = med
| price = low : no
| price = med
          | airbag = yes : yes
          | airbag = no : no
| price = high : yes
maintenance = high
| capacity = 2 : no
| capacity = 4 : no
| capacity = 5 : yes
```

(2.a.1) Gini Index value at root node of tree (My Model):

Value = 0.38888888888888884

```
**** Gini Index at root node = 0.38888888888888884 ****
```

(2.a.2) Information Gain value at root node of tree (My Model):

Value = 0.1860635600786077

```
**** Information Gain at root node = 0.1860635600786077 ****
```

(2.b.1) Gini Index value at root node of tree (scikit-learn):

Value = 0.4166666666666667

```
**** Gini Index at root node = 0.4166666666666667 ****
```

(2.b.2) Information Gain value at root node of tree (scikit-learn):

Value = -0.39672671745878474

```
**** Information Gain at root node = -0.39672671745878474 ****
```

(3.a) Test labels and accuracy (My Model):

Sample - 1 ---> Predicted Label = Yes

Sample - 2 ---> Predicted Label = Yes

Accuracy = 100%

(3.b) Test labels and accuracy (scikit-learn):

Sample - 1 ---> Predicted Label = Yes

Sample - 2 ---> Predicted Label = Yes

Accuracy = 100%