Decision Tree Assignment - 2

March 5, 2024

You are a data scientist working for a healthcare company, and you have been tasked with creating a decision tree to help identify patients with diabetes based on a set of clinical variables. You have been given a dataset (diabetes.csv) with the following variables: 1. Pregnancies: Number of times pregnant (integer) 2. Glucose: Plasma glucose concentration a 2 hours in an oral glucose tolerance test (integer) 3. BloodPressure: Diastolic blood pressure (mm Hg) (integer) 4. SkinThickness: Triceps skin fold thickness (mm) (integer) 5. Insulin: 2-Hour serum insulin (mu U/ml) (integer) 6. BMI: Body mass index (weight in kg/(height in m)^2) (float) 7. DiabetesPedigreeFunction: Diabetes pedigree function (a function which scores likelihood of diabetes based on family history) (float) 8. Age: Age in years (integer) 9. Outcome: Class variable (0 if non-diabetic, 1 if diabetic) (integer)

Here's the dataset link:

Your goal is to create a decision tree to predict whether a patient has diabetes based on the other variables. Here are the steps you can follow:

https://drive.google.com/file/d/1Q4J8KS1wm4-_YTuc389enPh6O-eTNcx2/view?

usp=sharing

By following these steps, you can develop a comprehensive understanding of decision tree modeling and its applications to real-world healthcare problems. Good luck!

[2]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

[83]:
```
"""Q1. Import the dataset and examine the variables. Use descriptive statistics␣
 ↪and visualizations to understand the distribution and relationships between␣
 ↪the variables."""

df = pd.read_csv('diabetes.csv')
df.head()
```

[83]:

	Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	\
0	6	148	72	35	0	33.6	
1	1	85	66	29	0	26.6	
2	8	183	64	0	0	23.3	
3	1	89	66	23	94	28.1	

```
4            0      137             40             35      168  43.1

   DiabetesPedigreeFunction  Age  Outcome
0                     0.627   50        1
1                     0.351   31        0
2                     0.672   32        1
3                     0.167   21        0
4                     2.288   33        1
```

[4]:
```
df.describe()
```

[4]:
```
       Pregnancies     Glucose  BloodPressure  SkinThickness     Insulin  \
count   768.000000  768.000000     768.000000     768.000000  768.000000
mean      3.845052  120.894531      69.105469      20.536458   79.799479
std       3.369578   31.972618      19.355807      15.952218  115.244002
min       0.000000    0.000000       0.000000       0.000000    0.000000
25%       1.000000   99.000000      62.000000       0.000000    0.000000
50%       3.000000  117.000000      72.000000      23.000000   30.500000
75%       6.000000  140.250000      80.000000      32.000000  127.250000
max      17.000000  199.000000     122.000000      99.000000  846.000000

              BMI  DiabetesPedigreeFunction         Age     Outcome
count  768.000000                768.000000  768.000000  768.000000
mean    31.992578                  0.471876   33.240885    0.348958
std      7.884160                  0.331329   11.760232    0.476951
min      0.000000                  0.078000   21.000000    0.000000
25%     27.300000                  0.243750   24.000000    0.000000
50%     32.000000                  0.372500   29.000000    0.000000
75%     36.600000                  0.626250   41.000000    1.000000
max     67.100000                  2.420000   81.000000    1.000000
```

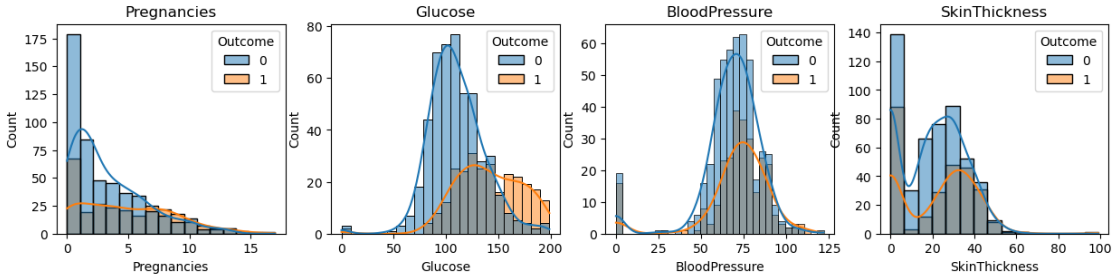
[5]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 768 entries, 0 to 767
Data columns (total 9 columns):
 #   Column                    Non-Null Count  Dtype
---  ------                    --------------  -----
 0   Pregnancies               768 non-null    int64
 1   Glucose                   768 non-null    int64
 2   BloodPressure             768 non-null    int64
 3   SkinThickness             768 non-null    int64
 4   Insulin                   768 non-null    int64
 5   BMI                       768 non-null    float64
 6   DiabetesPedigreeFunction  768 non-null    float64
 7   Age                       768 non-null    int64
 8   Outcome                   768 non-null    int64
```

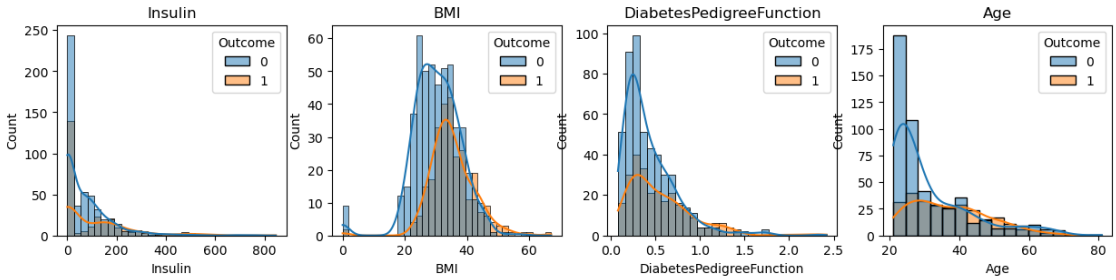
```
dtypes: float64(2), int64(7)
memory usage: 54.1 KB
```

[6]:
```
feature_list = list(df.columns)
```

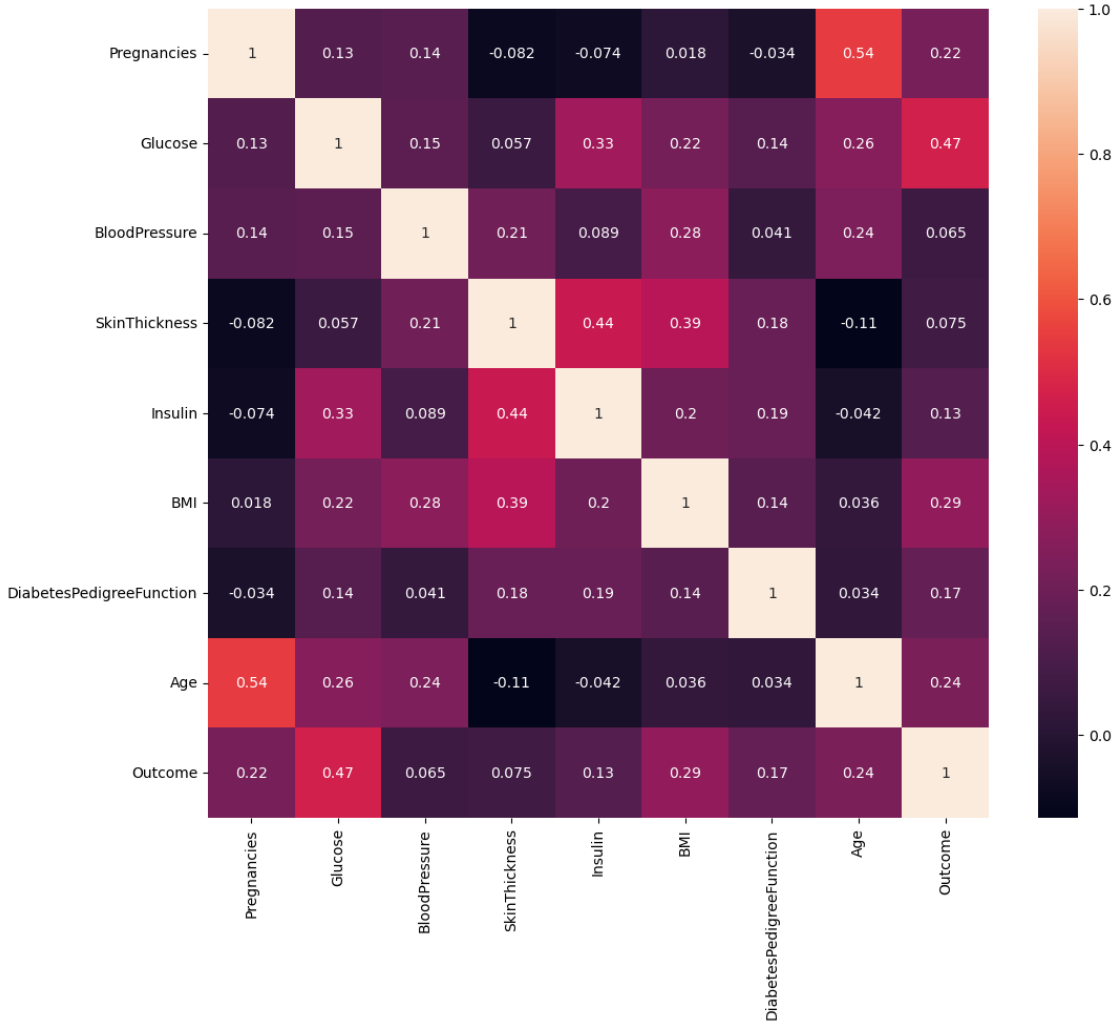
[7]:
```
plt.figure(figsize=(15,3))
for i in range(4):
    plt.subplot(1,4,i+1)
    sns.histplot(x=feature_list[i],data=df,hue='Outcome',kde=True)
    plt.title(f"{feature_list[i]}")
```



[8]:
```
plt.figure(figsize=(15,3))
for i in range(4,8):
    plt.subplot(1,4,i-3)
    sns.histplot(x=feature_list[i],data=df,hue='Outcome',kde=True)
    plt.title(f"{feature_list[i]}")
```



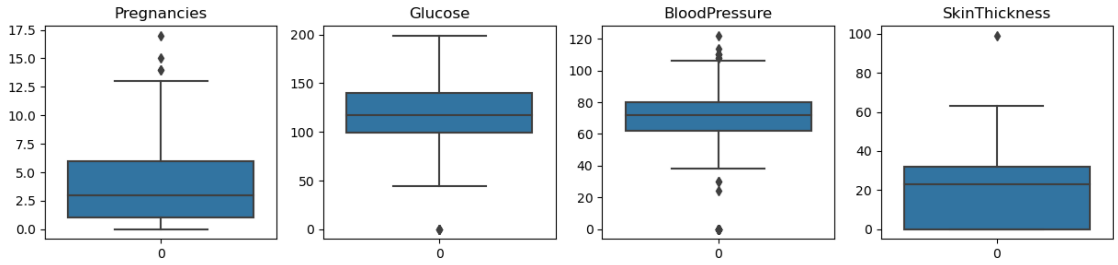
[26]:
```
## Check for multicollinearity
plt.figure(figsize=(12,10))
sns.heatmap(df.corr(), annot=True)
plt.show()
```



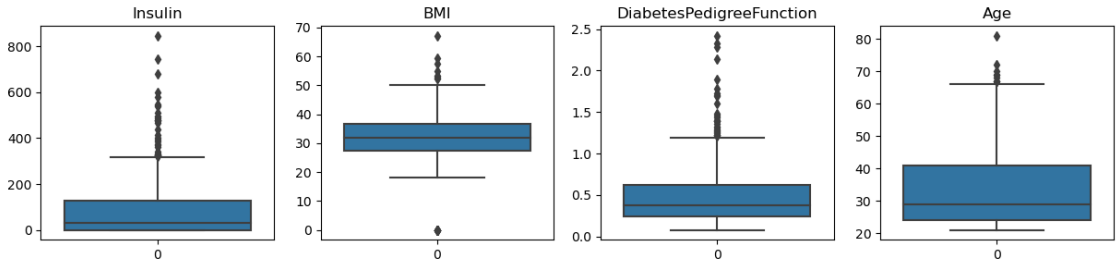
[17]:
```python
def correlation(dataset, threshold):
    col_corr = set()
    corr_matrix = dataset.corr()
    for i in range(len(corr_matrix.columns)):
        for j in range(i):
            if abs(corr_matrix.iloc[i, j]) > threshold:
                colname = corr_matrix.columns[i]
                col_corr.add(colname)
    return col_corr

print(correlation(df, 0.80))
# There is no correlated features
```

```
set()
```

[22]:
```
plt.figure(figsize=(15,3))
for i in range(4):
    plt.subplot(1,4,i+1)
    sns.boxplot(df[feature_list[i]])
    plt.title(f"{feature_list[i]}")
plt.show()
```



[24]:
```
plt.figure(figsize=(15,3))
for i in range(4,8):
    plt.subplot(1,4,i-3)
    sns.boxplot(df[feature_list[i]])
    plt.title(f"{feature_list[i]}")
plt.show()
```



[43]:
```
df.describe()
```

[43]:

	Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	\
count	768.000000	768.000000	768.000000	768.000000	768.000000	
mean	3.845052	120.894531	69.105469	20.536458	79.799479	
std	3.369578	31.972618	19.355807	15.952218	115.244002	
min	0.000000	0.000000	0.000000	0.000000	0.000000	
25%	1.000000	99.000000	62.000000	0.000000	0.000000	
50%	3.000000	117.000000	72.000000	23.000000	30.500000	
75%	6.000000	140.250000	80.000000	32.000000	127.250000	
max	17.000000	199.000000	122.000000	99.000000	846.000000	

	BMI	DiabetesPedigreeFunction	Age	Outcome
count	768.000000	768.000000	768.000000	768.000000
mean	31.992578	0.471876	33.240885	0.348958
std	7.884160	0.331329	11.760232	0.476951
min	0.000000	0.078000	21.000000	0.000000
25%	27.300000	0.243750	24.000000	0.000000
50%	32.000000	0.372500	29.000000	0.000000
75%	36.600000	0.626250	41.000000	1.000000
max	67.100000	2.420000	81.000000	1.000000

[ ]:

[42]:
```
"""Q2. Preprocess the data by cleaning missing values, removing outliers, and␣
 ↪transforming categorical variables into dummy variables if necessary. """
df.isnull().sum()
```

[42]:
```
Pregnancies                 0
Glucose                     0
BloodPressure               0
SkinThickness               0
Insulin                     0
BMI                         0
DiabetesPedigreeFunction    0
Age                         0
Outcome                     0
dtype: int64
```

[84]:
```
# Handling Outliers
def outliers(df_copy,z):
    min, Q1, Q2, Q3, max = np.quantile(df_copy[z], [0, 0.25, 0.50, 0.75, 1])
    IQR = Q3 - Q1
    lower_fence = Q1 - (1.5 * IQR)
    higher_fence = Q3 + (1.5 * IQR)
    outliers = []
    for i in list(df_copy[z]):
        if i >= lower_fence and i <= higher_fence:
            pass
        else:
            df_copy[z][df_copy[z] == i] = df_copy[z].mean()

feature_list = ['Pregnancies', 'Glucose', 'BloodPressure', 'SkinThickness',␣
 ↪'Insulin','BMI', 'DiabetesPedigreeFunction', 'Age']
for i in feature_list:
    outliers(df,i)
```

```
/tmp/ipykernel_77/4128099864.py:12: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame
```

```
See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  df_copy[z][df_copy[z] == i] = df_copy[z].mean()
```

[74]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 768 entries, 0 to 767
Data columns (total 9 columns):
 #   Column                    Non-Null Count  Dtype
---  ------                    --------------  -----
 0   Pregnancies               768 non-null    float64
 1   Glucose                   768 non-null    float64
 2   BloodPressure             768 non-null    float64
 3   SkinThickness             768 non-null    float64
 4   Insulin                   768 non-null    float64
 5   BMI                       768 non-null    float64
 6   DiabetesPedigreeFunction  768 non-null    float64
 7   Age                       768 non-null    float64
 8   Outcome                   768 non-null    float64
dtypes: float64(9)
memory usage: 54.1 KB
```

[86]:
```
df['Outcome'].value_counts()
```

[86]:
```
0    500
1    268
Name: Outcome, dtype: int64
```

[87]:
```
!pip install imblearn
```

```
Collecting imblearn
  Downloading imblearn-0.0-py2.py3-none-any.whl (1.9 kB)
Collecting imbalanced-learn
  Downloading imbalanced_learn-0.10.1-py3-none-any.whl (226 kB)
                           226.0/226.0
kB 9.0 MB/s eta 0:00:00
Requirement already satisfied: threadpoolctl>=2.0.0 in
/opt/conda/lib/python3.10/site-packages (from imbalanced-learn->imblearn)
(3.1.0)
Requirement already satisfied: joblib>=1.1.1 in /opt/conda/lib/python3.10/site-
packages (from imbalanced-learn->imblearn) (1.2.0)
Requirement already satisfied: numpy>=1.17.3 in /opt/conda/lib/python3.10/site-
packages (from imbalanced-learn->imblearn) (1.23.5)
Requirement already satisfied: scikit-learn>=1.0.2 in
/opt/conda/lib/python3.10/site-packages (from imbalanced-learn->imblearn)
```

```
(1.2.0)
Requirement already satisfied: scipy>=1.3.2 in /opt/conda/lib/python3.10/site-
packages (from imbalanced-learn->imblearn) (1.9.3)
Installing collected packages: imbalanced-learn, imblearn
Successfully installed imbalanced-learn-0.10.1 imblearn-0.0
```

[88]:
```
# Handling Inbalane Data

from imblearn.over_sampling import SMOTE
oversample = SMOTE()
X, y = oversample.fit_resample(df[['Pregnancies', 'Glucose', 'BloodPressure',␣
 ↪'SkinThickness', 'Insulin','BMI', 'DiabetesPedigreeFunction', 'Age']],␣
 ↪df['Outcome'])
```

[89]:
```
X['Outcome'] = y
X['Outcome'].value_counts()
```

[89]:
```
1    500
0    500
Name: Outcome, dtype: int64
```

[90]:
```
df = X
```

[ ]:
```

```

[ ]:
```
"""Q3. Split the dataset into a training set and a test set. Use a random seed␣
 ↪to ensure reproducibility. """
```

[91]:
```
X = df.iloc[:, :-1]
y = df.iloc[:, -1]
```

[92]:
```
from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.3,␣
 ↪random_state=69)
```

[93]:
```
X_train.shape, X_test.shape, y_train.shape, y_test.shape
```

[93]:
```
((700, 8), (300, 8), (700,), (300,))
```

[ ]:
```

```

[94]:
```
"""Q4. Use a decision tree algorithm, such as ID3 or C4.5, to train a decision␣
 ↪tree model on the training set.
      Use cross-validation to optimize the hyperparameters and avoid␣
 ↪overfitting."""

from sklearn.tree import DecisionTreeClassifier
```

```
# Define the decision tree classifier with ID3 algorithm
classifier = DecisionTreeClassifier(criterion='entropy')
classifier.fit(X_train, y_train)
```

[94]:
```
DecisionTreeClassifier(criterion='entropy')
```

[104]:
```
import warnings
warnings.filterwarnings('ignore')

parameter = {
    'criterion' : ['gini','entropy','log_loss'],
    'splitter' : ['best','random'],
    'max_depth' : [1,2,3,4,5,6,7,8,9,10,11,12,13,14],
    'max_features' : ['auto','sqrt','log2']
}

from sklearn.model_selection import GridSearchCV
clf = GridSearchCV(DecisionTreeClassifier(), param_grid=parameter, cv=5,␣
 ↪scoring='accuracy')

# Train the data
clf.fit(X_train,y_train)

print(clf.best_params_)
y_pred = clf.predict(X_test)
```

```
{'criterion': 'entropy', 'max_depth': 12, 'max_features': 'sqrt', 'splitter':
'random'}
```

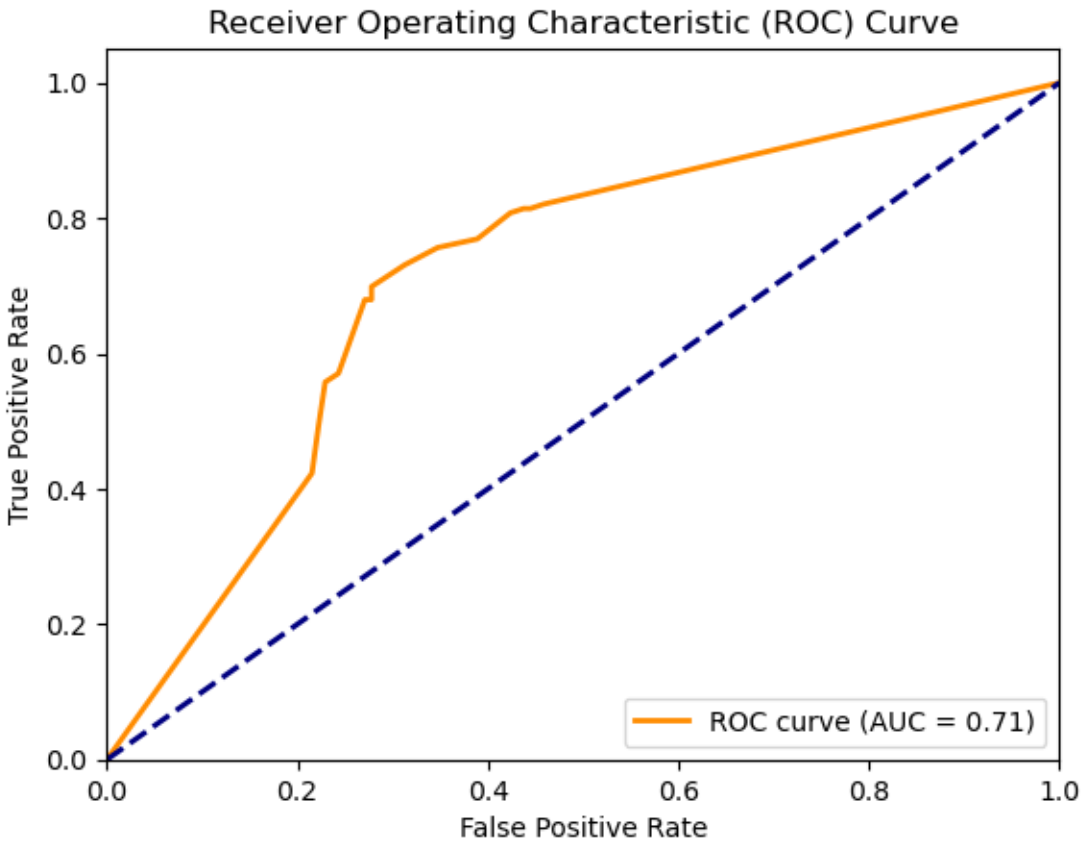
[108]:
```
c =␣
 ↪DecisionTreeClassifier(criterion='entropy',max_depth=12,max_features='sqrt',splitter='rando
c.fit(X_train,y_train)
```

[108]:
```
DecisionTreeClassifier(criterion='entropy', max_depth=12, max_features='sqrt',
                       splitter='random')
```

[109]:
```
"""Q5. Evaluate the performance of the decision tree model on the test set␣
 ↪using metrics such as accuracy, precision, recall, and F1 score.
      Use confusion matrices and ROC curves to visualize the results. """

from sklearn.metrics import␣
 ↪confusion_matrix,accuracy_score,classification_report
print(confusion_matrix(y_pred,y_test))
print(accuracy_score(y_pred,y_test))
print(classification_report(y_pred,y_test))
```

```
[[ 94  38]
 [ 50 118]]
0.7066666666666667
              precision    recall  f1-score   support

           0       0.65      0.71      0.68       132
           1       0.76      0.70      0.73       168

    accuracy                           0.71       300
   macro avg       0.70      0.71      0.70       300
weighted avg       0.71      0.71      0.71       300
```

[110]:
```
from sklearn.metrics import roc_curve, roc_auc_score
import matplotlib.pyplot as plt

y_prob = clf.predict_proba(X_test)[:, 1]

fpr, tpr, thresholds = roc_curve(y_test, y_prob)

auc_score = roc_auc_score(y_test, y_prob)

# plot ROC curve
plt.plot(fpr, tpr, color='darkorange', lw=2, label='ROC curve (AUC = %0.2f)' %␣
 ↪auc_score)
plt.plot([0, 1], [0, 1], color='navy', lw=2, linestyle='--')
plt.xlim([0.0, 1.0])
plt.ylim([0.0, 1.05])
plt.xlabel('False Positive Rate')
plt.ylabel('True Positive Rate')
plt.title('Receiver Operating Characteristic (ROC) Curve')
plt.legend(loc="lower right")
plt.show()
```



[111]:
```
"""Q6. Interpret the decision tree by examining the splits, branches, and␣
 ↪leaves. Identify the most important variables and their thresholds.
      Use domain knowledge and common sense to explain the patterns and trends.
 ↪"""
from sklearn import tree
plt.figure(figsize=(15,10))
tree.plot_tree(c, filled=True)

# Since its a huge dataset their is no way to determine the splits, branches␣
 ↪and leavees,
```

[111]:
```
[Text(0.3451813587512794, 0.9615384615384616, 'x[5] <= 26.476\nentropy =
1.0\nsamples = 700\nvalue = [356, 344]'),
 Text(0.04861821903787104, 0.8846153846153846, 'x[0] <= 3.902\nentropy =
0.565\nsamples = 113\nvalue = [98, 15]'),
 Text(0.028659160696008188, 0.8076923076923077, 'x[1] <= 76.885\nentropy =
0.371\nsamples = 70\nvalue = [65, 5]'),
 Text(0.02456499488229273, 0.7307692307692307, 'entropy = 0.0\nsamples =
4\nvalue = [4, 0]'),
 Text(0.032753326509723645, 0.7307692307692307, 'x[5] <= 25.965\nentropy =
```

```
0.387\nsamples = 66\nvalue = [61, 5]'),
 Text(0.028659160696008188, 0.6538461538461539, 'x[4] <= 211.189\nentropy =
0.4\nsamples = 63\nvalue = [58, 5]'),
 Text(0.02456499488229273, 0.5769230769230769, 'x[0] <= 0.483\nentropy =
0.409\nsamples = 61\nvalue = [56, 5]'),
 Text(0.02047082906857728, 0.5, 'entropy = 0.0\nsamples = 8\nvalue = [8, 0]'),
 Text(0.028659160696008188, 0.5, 'x[2] <= 87.783\nentropy = 0.451\nsamples =
53\nvalue = [48, 5]'),
 Text(0.02456499488229273, 0.4230769230769231, 'x[4] <= 122.806\nentropy =
0.463\nsamples = 51\nvalue = [46, 5]'),
 Text(0.016376663254861822, 0.34615384615384615, 'x[7] <= 27.603\nentropy =
0.353\nsamples = 45\nvalue = [42, 3]'),
 Text(0.012282497441146366, 0.2692307692307692, 'x[2] <= 69.868\nentropy =
0.414\nsamples = 36\nvalue = [33, 3]'),
 Text(0.008188331627430911, 0.19230769230769232, 'x[0] <= 1.302\nentropy =
0.491\nsamples = 28\nvalue = [25, 3]'),
 Text(0.0040941658137154556, 0.11538461538461539, 'entropy = 0.0\nsamples =
13\nvalue = [13, 0]'),
 Text(0.012282497441146366, 0.11538461538461539, 'x[6] <= 0.11\nentropy =
0.722\nsamples = 15\nvalue = [12, 3]'),
 Text(0.008188331627430911, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.016376663254861822, 0.038461538461538464, 'entropy = 0.75\nsamples =
14\nvalue = [11, 3]'),
 Text(0.016376663254861822, 0.19230769230769232, 'entropy = 0.0\nsamples =
8\nvalue = [8, 0]'),
 Text(0.02047082906857728, 0.2692307692307692, 'entropy = 0.0\nsamples =
9\nvalue = [9, 0]'),
 Text(0.032753326509723645, 0.34615384615384615, 'x[6] <= 0.64\nentropy =
0.918\nsamples = 6\nvalue = [4, 2]'),
 Text(0.028659160696008188, 0.2692307692307692, 'x[1] <= 143.726\nentropy =
0.918\nsamples = 3\nvalue = [1, 2]'),
 Text(0.02456499488229273, 0.19230769230769232, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.032753326509723645, 0.19230769230769232, 'entropy = 0.0\nsamples =
2\nvalue = [0, 2]'),
 Text(0.0368474923234391, 0.2692307692307692, 'entropy = 0.0\nsamples = 3\nvalue
= [3, 0]'),
 Text(0.032753326509723645, 0.4230769230769231, 'entropy = 0.0\nsamples =
2\nvalue = [2, 0]'),
 Text(0.032753326509723645, 0.5769230769230769, 'entropy = 0.0\nsamples =
2\nvalue = [2, 0]'),
 Text(0.0368474923234391, 0.6538461538461539, 'entropy = 0.0\nsamples = 3\nvalue
= [3, 0]'),
 Text(0.06857727737973388, 0.8076923076923077, 'x[1] <= 92.482\nentropy =
0.782\nsamples = 43\nvalue = [33, 10]'),
 Text(0.06448311156601842, 0.7307692307692307, 'entropy = 0.0\nsamples =
```

```
6\nvalue = [6, 0]'),
 Text(0.07267144319344933, 0.7307692307692307, 'x[7] <= 37.63\nentropy =
0.842\nsamples = 37\nvalue = [27, 10]'),
 Text(0.04503582395087001, 0.6538461538461539, 'x[0] <= 5.78\nentropy =
0.286\nsamples = 20\nvalue = [19, 1]'),
 Text(0.04094165813715456, 0.5769230769230769, 'entropy = 0.0\nsamples =
8\nvalue = [8, 0]'),
 Text(0.04912998976458546, 0.5769230769230769, 'x[0] <= 6.91\nentropy =
0.414\nsamples = 12\nvalue = [11, 1]'),
 Text(0.04503582395087001, 0.5, 'entropy = 0.0\nsamples = 4\nvalue = [4, 0]'),
 Text(0.05322415557830092, 0.5, 'x[0] <= 7.99\nentropy = 0.544\nsamples =
8\nvalue = [7, 1]'),
 Text(0.04912998976458546, 0.4230769230769231, 'entropy = 0.0\nsamples =
3\nvalue = [3, 0]'),
 Text(0.057318321392016376, 0.4230769230769231, 'x[4] <= 2.175\nentropy =
0.722\nsamples = 5\nvalue = [4, 1]'),
 Text(0.05322415557830092, 0.34615384615384615, 'x[6] <= 0.779\nentropy =
0.811\nsamples = 4\nvalue = [3, 1]'),
 Text(0.04912998976458546, 0.2692307692307692, 'x[1] <= 189.034\nentropy =
1.0\nsamples = 2\nvalue = [1, 1]'),
 Text(0.04503582395087001, 0.19230769230769232, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.05322415557830092, 0.19230769230769232, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.057318321392016376, 0.2692307692307692, 'entropy = 0.0\nsamples =
2\nvalue = [2, 0]'),
 Text(0.06141248720573183, 0.34615384615384615, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.10030706243602866, 0.6538461538461539, 'x[2] <= 73.787\nentropy =
0.998\nsamples = 17\nvalue = [8, 9]'),
 Text(0.08597748208802457, 0.5769230769230769, 'x[3] <= 20.28\nentropy =
0.954\nsamples = 8\nvalue = [3, 5]'),
 Text(0.07778915046059365, 0.5, 'x[5] <= 24.928\nentropy = 0.918\nsamples =
6\nvalue = [2, 4]'),
 Text(0.0736949846468782, 0.4230769230769231, 'x[3] <= 18.719\nentropy =
0.918\nsamples = 3\nvalue = [2, 1]'),
 Text(0.06960081883316274, 0.34615384615384615, 'x[6] <= 0.453\nentropy =
1.0\nsamples = 2\nvalue = [1, 1]'),
 Text(0.06550665301944729, 0.2692307692307692, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.0736949846468782, 0.2692307692307692, 'entropy = 0.0\nsamples = 1\nvalue
= [1, 0]'),
 Text(0.07778915046059365, 0.34615384615384615, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.08188331627430911, 0.4230769230769231, 'entropy = 0.0\nsamples =
3\nvalue = [0, 3]'),
 Text(0.09416581371545547, 0.5, 'x[6] <= 0.648\nentropy = 1.0\nsamples =
```

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2\nvalue = [1, 1]'),
 Text(0.09007164790174002, 0.4230769230769231, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.09825997952917093, 0.4230769230769231, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.11463664278403275, 0.5769230769230769, 'x[4] <= 42.555\nentropy =
0.991\nsamples = 9\nvalue = [5, 4]'),
 Text(0.1105424769703173, 0.5, 'x[0] <= 9.381\nentropy = 0.985\nsamples =
7\nvalue = [3, 4]'),
 Text(0.10644831115660185, 0.4230769230769231, 'x[7] <= 39.669\nentropy =
0.918\nsamples = 6\nvalue = [2, 4]'),
 Text(0.1023541453428864, 0.34615384615384615, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.1105424769703173, 0.34615384615384615, 'x[7] <= 55.291\nentropy =
0.971\nsamples = 5\nvalue = [2, 3]'),
 Text(0.10644831115660185, 0.2692307692307692, 'entropy = 0.0\nsamples =
2\nvalue = [0, 2]'),
 Text(0.11463664278403275, 0.2692307692307692, 'x[5] <= 23.786\nentropy =
0.918\nsamples = 3\nvalue = [2, 1]'),
 Text(0.1105424769703173, 0.19230769230769232, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.1187308085977482, 0.19230769230769232, 'entropy = 0.0\nsamples =
2\nvalue = [2, 0]'),
 Text(0.11463664278403275, 0.4230769230769231, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.1187308085977482, 0.5, 'entropy = 0.0\nsamples = 2\nvalue = [2, 0]'),
 Text(0.6417444984646878, 0.8846153846153846, 'x[0] <= 7.164\nentropy =
0.989\nsamples = 587\nvalue = [258, 329]'),
 Text(0.3185452917093142, 0.8076923076923077, 'x[6] <= 0.131\nentropy =
0.999\nsamples = 480\nvalue = [230, 250]'),
 Text(0.1473899692937564, 0.7307692307692307, 'x[3] <= 33.153\nentropy =
0.764\nsamples = 18\nvalue = [14, 4]'),
 Text(0.14329580348004095, 0.6538461538461539, 'x[5] <= 33.98\nentropy =
0.787\nsamples = 17\nvalue = [13, 4]'),
 Text(0.13101330603889458, 0.5769230769230769, 'x[7] <= 39.611\nentropy =
0.619\nsamples = 13\nvalue = [11, 2]'),
 Text(0.1269191402251791, 0.5, 'entropy = 0.0\nsamples = 10\nvalue = [10, 0]'),
 Text(0.13510747185261002, 0.5, 'x[3] <= 31.03\nentropy = 0.918\nsamples =
3\nvalue = [1, 2]'),
 Text(0.13101330603889458, 0.4230769230769231, 'entropy = 0.0\nsamples =
2\nvalue = [0, 2]'),
 Text(0.13920163766632548, 0.4230769230769231, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.1555783009211873, 0.5769230769230769, 'x[1] <= 146.902\nentropy =
1.0\nsamples = 4\nvalue = [2, 2]'),
 Text(0.15148413510747186, 0.5, 'x[2] <= 76.376\nentropy = 0.918\nsamples =
3\nvalue = [2, 1]'),
```

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 Text(0.1473899692937564, 0.4230769230769231, 'entropy = 0.0\nsamples = 1\nvalue
= [0, 1]'),
 Text(0.1555783009211873, 0.4230769230769231, 'entropy = 0.0\nsamples = 2\nvalue
= [2, 0]'),
 Text(0.15967246673490276, 0.5, 'entropy = 0.0\nsamples = 1\nvalue = [0, 1]'),
 Text(0.15148413510747186, 0.6538461538461539, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.48970061412487204, 0.7307692307692307, 'x[7] <= 28.625\nentropy =
0.997\nsamples = 462\nvalue = [216, 246]'),
 Text(0.2995138178096213, 0.6538461538461539, 'x[7] <= 23.804\nentropy =
0.951\nsamples = 213\nvalue = [134, 79]'),
 Text(0.1970317297850563, 0.5769230769230769, 'x[1] <= 164.383\nentropy =
0.861\nsamples = 88\nvalue = [63, 25]'),
 Text(0.19293756397134085, 0.5, 'x[4] <= 73.255\nentropy = 0.746\nsamples =
80\nvalue = [63, 17]'),
 Text(0.16376663254861823, 0.4230769230769231, 'x[6] <= 0.286\nentropy =
0.889\nsamples = 49\nvalue = [34, 15]'),
 Text(0.14841351074718526, 0.34615384615384615, 'x[7] <= 21.059\nentropy =
0.619\nsamples = 13\nvalue = [11, 2]'),
 Text(0.14431934493346982, 0.2692307692307692, 'entropy = 0.0\nsamples =
4\nvalue = [4, 0]'),
 Text(0.15250767656090072, 0.2692307692307692, 'x[0] <= 2.817\nentropy =
0.764\nsamples = 9\nvalue = [7, 2]'),
 Text(0.14841351074718526, 0.19230769230769232, 'x[0] <= 0.864\nentropy =
0.863\nsamples = 7\nvalue = [5, 2]'),
 Text(0.14431934493346982, 0.11538461538461539, 'x[1] <= 87.631\nentropy =
0.971\nsamples = 5\nvalue = [3, 2]'),
 Text(0.14022517911975435, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.14841351074718526, 0.038461538461538464, 'entropy = 1.0\nsamples =
4\nvalue = [2, 2]'),
 Text(0.15250767656090072, 0.11538461538461539, 'entropy = 0.0\nsamples =
2\nvalue = [2, 0]'),
 Text(0.15660184237461616, 0.19230769230769232, 'entropy = 0.0\nsamples =
2\nvalue = [2, 0]'),
 Text(0.17911975435005117, 0.34615384615384615, 'x[3] <= 4.87\nentropy =
0.944\nsamples = 36\nvalue = [23, 13]'),
 Text(0.16888433981576254, 0.2692307692307692, 'x[5] <= 33.047\nentropy =
0.684\nsamples = 11\nvalue = [2, 9]'),
 Text(0.1647901740020471, 0.19230769230769232, 'x[6] <= 0.623\nentropy =
0.863\nsamples = 7\nvalue = [2, 5]'),
 Text(0.16069600818833163, 0.11538461538461539, 'x[7] <= 21.824\nentropy =
0.971\nsamples = 5\nvalue = [2, 3]'),
 Text(0.15660184237461616, 0.038461538461538464, 'entropy = 0.0\nsamples =
2\nvalue = [2, 0]'),
 Text(0.1647901740020471, 0.038461538461538464, 'entropy = 0.0\nsamples =
3\nvalue = [0, 3]'),
```

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 Text(0.16888433981576254, 0.11538461538461539, 'entropy = 0.0\nsamples =
2\nvalue = [0, 2]'),
 Text(0.172978505629478, 0.19230769230769232, 'entropy = 0.0\nsamples = 4\nvalue
= [0, 4]'),
 Text(0.18935516888433981, 0.2692307692307692, 'x[4] <= 11.669\nentropy =
0.634\nsamples = 25\nvalue = [21, 4]'),
 Text(0.1811668372569089, 0.19230769230769232, 'x[3] <= 40.851\nentropy =
0.764\nsamples = 9\nvalue = [7, 2]'),
 Text(0.17707267144319344, 0.11538461538461539, 'x[5] <= 34.316\nentropy =
0.544\nsamples = 8\nvalue = [7, 1]'),
 Text(0.172978505629478, 0.038461538461538464, 'entropy = 0.592\nsamples =
7\nvalue = [6, 1]'),
 Text(0.1811668372569089, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.18526100307062435, 0.11538461538461539, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.19754350051177072, 0.19230769230769232, 'x[2] <= 62.404\nentropy =
0.544\nsamples = 16\nvalue = [14, 2]'),
 Text(0.19344933469805528, 0.11538461538461539, 'entropy = 0.0\nsamples =
6\nvalue = [6, 0]'),
 Text(0.2016376663254862, 0.11538461538461539, 'x[5] <= 30.119\nentropy =
0.722\nsamples = 10\nvalue = [8, 2]'),
 Text(0.19754350051177072, 0.038461538461538464, 'entropy = 0.0\nsamples =
4\nvalue = [4, 0]'),
 Text(0.20573183213920163, 0.038461538461538464, 'entropy = 0.918\nsamples =
6\nvalue = [4, 2]'),
 Text(0.22210849539406347, 0.4230769230769231, 'x[1] <= 101.358\nentropy =
0.345\nsamples = 31\nvalue = [29, 2]'),
 Text(0.218014329580348, 0.34615384615384615, 'entropy = 0.0\nsamples = 8\nvalue
= [8, 0]'),
 Text(0.2262026612077789, 0.34615384615384615, 'x[2] <= 71.486\nentropy =
0.426\nsamples = 23\nvalue = [21, 2]'),
 Text(0.218014329580348, 0.2692307692307692, 'x[7] <= 21.996\nentropy =
0.337\nsamples = 16\nvalue = [15, 1]'),
 Text(0.21392016376663256, 0.19230769230769232, 'x[1] <= 133.371\nentropy =
0.65\nsamples = 6\nvalue = [5, 1]'),
 Text(0.2098259979529171, 0.11538461538461539, 'entropy = 0.0\nsamples =
5\nvalue = [5, 0]'),
 Text(0.218014329580348, 0.11538461538461539, 'entropy = 0.0\nsamples = 1\nvalue
= [0, 1]'),
 Text(0.22210849539406347, 0.19230769230769232, 'entropy = 0.0\nsamples =
10\nvalue = [10, 0]'),
 Text(0.23439099283520984, 0.2692307692307692, 'x[7] <= 22.473\nentropy =
0.592\nsamples = 7\nvalue = [6, 1]'),
 Text(0.23029682702149437, 0.19230769230769232, 'entropy = 0.0\nsamples =
2\nvalue = [2, 0]'),
 Text(0.23848515864892528, 0.19230769230769232, 'x[7] <= 23.218\nentropy =
```

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0.722\nsamples = 5\nvalue = [4, 1]'),
 Text(0.23439099283520984, 0.11538461538461539, 'entropy = 0.0\nsamples =
4\nvalue = [4, 0]'),
 Text(0.24257932446264074, 0.11538461538461539, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.20112589559877175, 0.5, 'entropy = 0.0\nsamples = 8\nvalue = [0, 8]'),
 Text(0.40199590583418626, 0.5769230769230769, 'x[0] <= 2.959\nentropy =
0.987\nsamples = 125\nvalue = [71, 54]'),
 Text(0.3474923234390993, 0.5, 'x[3] <= 33.78\nentropy = 0.997\nsamples =
83\nvalue = [44, 39]'),
 Text(0.3091095189355169, 0.4230769230769231, 'x[0] <= 0.37\nentropy =
0.954\nsamples = 48\nvalue = [30, 18]'),
 Text(0.27942681678607983, 0.34615384615384615, 'x[5] <= 39.671\nentropy =
1.0\nsamples = 12\nvalue = [6, 6]'),
 Text(0.27533265097236437, 0.2692307692307692, 'x[4] <= 24.123\nentropy =
0.994\nsamples = 11\nvalue = [6, 5]'),
 Text(0.25895598771750256, 0.19230769230769232, 'x[6] <= 0.307\nentropy =
0.918\nsamples = 6\nvalue = [4, 2]'),
 Text(0.2507676560900716, 0.11538461538461539, 'x[7] <= 24.153\nentropy =
0.811\nsamples = 4\nvalue = [3, 1]'),
 Text(0.24667349027635618, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.2548618219037871, 0.038461538461538464, 'entropy = 0.0\nsamples =
3\nvalue = [3, 0]'),
 Text(0.2671443193449335, 0.11538461538461539, 'x[1] <= 92.653\nentropy =
1.0\nsamples = 2\nvalue = [1, 1]'),
 Text(0.263050153531218, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.2712384851586489, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.2917093142272262, 0.19230769230769232, 'x[6] <= 0.541\nentropy =
0.971\nsamples = 5\nvalue = [2, 3]'),
 Text(0.2835209825997953, 0.11538461538461539, 'x[3] <= 24.072\nentropy =
0.918\nsamples = 3\nvalue = [1, 2]'),
 Text(0.27942681678607983, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.28761514841351077, 0.038461538461538464, 'entropy = 1.0\nsamples =
2\nvalue = [1, 1]'),
 Text(0.2998976458546571, 0.11538461538461539, 'x[7] <= 26.914\nentropy =
1.0\nsamples = 2\nvalue = [1, 1]'),
 Text(0.29580348004094165, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.3039918116683726, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.2835209825997953, 0.2692307692307692, 'entropy = 0.0\nsamples = 1\nvalue
= [0, 1]'),
 Text(0.33879222108495394, 0.34615384615384615, 'x[0] <= 2.25\nentropy =
```

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0.918\nsamples = 36\nvalue = [24, 12]'),
 Text(0.33469805527123847, 0.2692307692307692, 'x[4] <= 143.577\nentropy =
0.845\nsamples = 33\nvalue = [24, 9]'),
 Text(0.32446264073694986, 0.19230769230769232, 'x[6] <= 0.384\nentropy =
0.89\nsamples = 26\nvalue = [18, 8]'),
 Text(0.3162743091095189, 0.11538461538461539, 'x[4] <= 32.901\nentropy =
0.845\nsamples = 11\nvalue = [8, 3]'),
 Text(0.31218014329580346, 0.038461538461538464, 'entropy = 0.722\nsamples =
5\nvalue = [4, 1]'),
 Text(0.3203684749232344, 0.038461538461538464, 'entropy = 0.918\nsamples =
6\nvalue = [4, 2]'),
 Text(0.33265097236438074, 0.11538461538461539, 'x[1] <= 94.583\nentropy =
0.918\nsamples = 15\nvalue = [10, 5]'),
 Text(0.3285568065506653, 0.038461538461538464, 'entropy = 0.0\nsamples =
6\nvalue = [6, 0]'),
 Text(0.3367451381780962, 0.038461538461538464, 'entropy = 0.991\nsamples =
9\nvalue = [4, 5]'),
 Text(0.34493346980552714, 0.19230769230769232, 'x[1] <= 123.796\nentropy =
0.592\nsamples = 7\nvalue = [6, 1]'),
 Text(0.34083930399181167, 0.11538461538461539, 'entropy = 0.0\nsamples =
4\nvalue = [4, 0]'),
 Text(0.3490276356192426, 0.11538461538461539, 'x[2] <= 65.96\nentropy =
0.918\nsamples = 3\nvalue = [2, 1]'),
 Text(0.34493346980552714, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.353121801432958, 0.038461538461538464, 'entropy = 1.0\nsamples =
2\nvalue = [1, 1]'),
 Text(0.3428863868986694, 0.2692307692307692, 'entropy = 0.0\nsamples = 3\nvalue
= [0, 3]'),
 Text(0.3858751279426817, 0.4230769230769231, 'x[3] <= 50.153\nentropy =
0.971\nsamples = 35\nvalue = [14, 21]'),
 Text(0.37768679631525076, 0.34615384615384615, 'x[1] <= 175.563\nentropy =
0.987\nsamples = 30\nvalue = [13, 17]'),
 Text(0.3735926305015353, 0.2692307692307692, 'x[2] <= 90.26\nentropy =
1.0\nsamples = 26\nvalue = [13, 13]'),
 Text(0.3694984646878199, 0.19230769230769232, 'x[1] <= 144.824\nentropy =
0.999\nsamples = 25\nvalue = [13, 12]'),
 Text(0.3654042988741044, 0.11538461538461539, 'x[3] <= 45.796\nentropy =
0.787\nsamples = 17\nvalue = [13, 4]'),
 Text(0.36131013306038895, 0.038461538461538464, 'entropy = 0.722\nsamples =
15\nvalue = [12, 3]'),
 Text(0.3694984646878199, 0.038461538461538464, 'entropy = 1.0\nsamples =
2\nvalue = [1, 1]'),
 Text(0.3735926305015353, 0.11538461538461539, 'entropy = 0.0\nsamples =
8\nvalue = [0, 8]'),
 Text(0.37768679631525076, 0.19230769230769232, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
```

```
 Text(0.38178096212896623, 0.2692307692307692, 'entropy = 0.0\nsamples =
4\nvalue = [0, 4]'),
 Text(0.3940634595701126, 0.34615384615384615, 'x[1] <= 146.547\nentropy =
0.722\nsamples = 5\nvalue = [1, 4]'),
 Text(0.38996929375639716, 0.2692307692307692, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.39815762538382804, 0.2692307692307692, 'entropy = 0.0\nsamples =
4\nvalue = [0, 4]'),
 Text(0.4564994882292733, 0.5, 'x[2] <= 71.6\nentropy = 0.94\nsamples =
42\nvalue = [27, 15]'),
 Text(0.4247697031729785, 0.4230769230769231, 'x[3] <= 30.096\nentropy =
0.738\nsamples = 24\nvalue = [19, 5]'),
 Text(0.4104401228249744, 0.34615384615384615, 'x[7] <= 26.482\nentropy =
0.567\nsamples = 15\nvalue = [13, 2]'),
 Text(0.406345957011259, 0.2692307692307692, 'entropy = 0.0\nsamples = 12\nvalue
= [12, 0]'),
 Text(0.41453428863868985, 0.2692307692307692, 'x[6] <= 0.374\nentropy =
0.918\nsamples = 3\nvalue = [1, 2]'),
 Text(0.4104401228249744, 0.19230769230769232, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.4186284544524053, 0.19230769230769232, 'entropy = 0.0\nsamples =
2\nvalue = [0, 2]'),
 Text(0.4390992835209826, 0.34615384615384615, 'x[0] <= 3.899\nentropy =
0.918\nsamples = 9\nvalue = [6, 3]'),
 Text(0.43091095189355166, 0.2692307692307692, 'x[2] <= 53.987\nentropy =
1.0\nsamples = 4\nvalue = [2, 2]'),
 Text(0.42681678607983625, 0.19230769230769232, 'entropy = 0.0\nsamples =
2\nvalue = [0, 2]'),
 Text(0.43500511770726713, 0.19230769230769232, 'entropy = 0.0\nsamples =
2\nvalue = [2, 0]'),
 Text(0.44728761514841353, 0.2692307692307692, 'x[3] <= 40.897\nentropy =
0.722\nsamples = 5\nvalue = [4, 1]'),
 Text(0.44319344933469806, 0.19230769230769232, 'entropy = 0.0\nsamples =
4\nvalue = [4, 0]'),
 Text(0.45138178096212894, 0.19230769230769232, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.4882292732855681, 0.4230769230769231, 'x[5] <= 42.474\nentropy =
0.991\nsamples = 18\nvalue = [8, 10]'),
 Text(0.4841351074718526, 0.34615384615384615, 'x[3] <= 27.451\nentropy =
0.998\nsamples = 17\nvalue = [8, 9]'),
 Text(0.4677584442169908, 0.2692307692307692, 'x[7] <= 27.075\nentropy =
0.985\nsamples = 7\nvalue = [3, 4]'),
 Text(0.4595701125895599, 0.19230769230769232, 'x[1] <= 145.297\nentropy =
0.811\nsamples = 4\nvalue = [1, 3]'),
 Text(0.4554759467758444, 0.11538461538461539, 'entropy = 0.0\nsamples =
3\nvalue = [0, 3]'),
 Text(0.46366427840327534, 0.11538461538461539, 'entropy = 0.0\nsamples =
```

```
1\nvalue = [1, 0]'),
 Text(0.4759467758444217, 0.19230769230769232, 'x[4] <= 94.948\nentropy =
0.918\nsamples = 3\nvalue = [2, 1]'),
 Text(0.4718526100307062, 0.11538461538461539, 'x[6] <= 0.397\nentropy =
1.0\nsamples = 2\nvalue = [1, 1]'),
 Text(0.4677584442169908, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.4759467758444217, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.48004094165813715, 0.11538461538461539, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.5005117707267144, 0.2692307692307692, 'x[4] <= 48.691\nentropy =
1.0\nsamples = 10\nvalue = [5, 5]'),
 Text(0.4923234390992835, 0.19230769230769232, 'x[0] <= 4.644\nentropy =
0.811\nsamples = 4\nvalue = [3, 1]'),
 Text(0.4882292732855681, 0.11538461538461539, 'x[7] <= 26.253\nentropy =
1.0\nsamples = 2\nvalue = [1, 1]'),
 Text(0.4841351074718526, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.4923234390992835, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.49641760491299897, 0.11538461538461539, 'entropy = 0.0\nsamples =
2\nvalue = [2, 0]'),
 Text(0.5087001023541453, 0.19230769230769232, 'x[3] <= 47.214\nentropy =
0.918\nsamples = 6\nvalue = [2, 4]'),
 Text(0.5046059365404298, 0.11538461538461539, 'x[2] <= 80.472\nentropy =
0.971\nsamples = 5\nvalue = [2, 3]'),
 Text(0.5005117707267144, 0.038461538461538464, 'entropy = 1.0\nsamples =
4\nvalue = [2, 2]'),
 Text(0.5087001023541453, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.5127942681678608, 0.11538461538461539, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.4923234390992835, 0.34615384615384615, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.6798874104401228, 0.6538461538461539, 'x[2] <= 72.928\nentropy =
0.914\nsamples = 249\nvalue = [82, 167]'),
 Text(0.5926305015353122, 0.5769230769230769, 'x[0] <= 2.043\nentropy =
0.854\nsamples = 111\nvalue = [31, 80]'),
 Text(0.5629477993858751, 0.5, 'x[1] <= 136.742\nentropy = 0.946\nsamples =
33\nvalue = [12, 21]'),
 Text(0.5475946775844421, 0.4230769230769231, 'x[0] <= 1.098\nentropy =
0.998\nsamples = 21\nvalue = [11, 10]'),
 Text(0.5373592630501536, 0.34615384615384615, 'x[4] <= 103.11\nentropy =
1.0\nsamples = 16\nvalue = [8, 8]'),
 Text(0.5291709314227226, 0.2692307692307692, 'x[6] <= 0.888\nentropy =
0.764\nsamples = 9\nvalue = [7, 2]'),
```

```
 Text(0.5250767656090072, 0.19230769230769232, 'x[4] <= 73.593\nentropy =
0.863\nsamples = 7\nvalue = [5, 2]'),
 Text(0.5209825997952917, 0.11538461538461539, 'x[3] <= 29.611\nentropy =
0.65\nsamples = 6\nvalue = [5, 1]'),
 Text(0.5168884339815762, 0.038461538461538464, 'entropy = 0.722\nsamples =
5\nvalue = [4, 1]'),
 Text(0.5250767656090072, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.5291709314227226, 0.11538461538461539, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.5332650972364381, 0.19230769230769232, 'entropy = 0.0\nsamples =
2\nvalue = [2, 0]'),
 Text(0.5455475946775844, 0.2692307692307692, 'x[0] <= 0.208\nentropy =
0.592\nsamples = 7\nvalue = [1, 6]'),
 Text(0.5414534288638689, 0.19230769230769232, 'entropy = 0.0\nsamples =
3\nvalue = [0, 3]'),
 Text(0.5496417604912999, 0.19230769230769232, 'x[0] <= 0.797\nentropy =
0.811\nsamples = 4\nvalue = [1, 3]'),
 Text(0.5455475946775844, 0.11538461538461539, 'entropy = 0.0\nsamples =
2\nvalue = [0, 2]'),
 Text(0.5537359263050153, 0.11538461538461539, 'x[3] <= 29.485\nentropy =
1.0\nsamples = 2\nvalue = [1, 1]'),
 Text(0.5496417604912999, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.5578300921187308, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.5578300921187308, 0.34615384615384615, 'x[2] <= 64.624\nentropy =
0.971\nsamples = 5\nvalue = [3, 2]'),
 Text(0.5537359263050153, 0.2692307692307692, 'entropy = 0.0\nsamples = 2\nvalue
= [2, 0]'),
 Text(0.5619242579324463, 0.2692307692307692, 'x[7] <= 32.179\nentropy =
0.918\nsamples = 3\nvalue = [1, 2]'),
 Text(0.5578300921187308, 0.19230769230769232, 'entropy = 0.0\nsamples =
2\nvalue = [0, 2]'),
 Text(0.5660184237461617, 0.19230769230769232, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.5783009211873081, 0.4230769230769231, 'x[6] <= 0.375\nentropy =
0.414\nsamples = 12\nvalue = [1, 11]'),
 Text(0.5742067553735927, 0.34615384615384615, 'entropy = 0.0\nsamples =
5\nvalue = [0, 5]'),
 Text(0.5823950870010235, 0.34615384615384615, 'x[2] <= 64.192\nentropy =
0.592\nsamples = 7\nvalue = [1, 6]'),
 Text(0.5783009211873081, 0.2692307692307692, 'x[3] <= 8.406\nentropy =
1.0\nsamples = 2\nvalue = [1, 1]'),
 Text(0.5742067553735927, 0.19230769230769232, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.5823950870010235, 0.19230769230769232, 'entropy = 0.0\nsamples =
```

```
1\nvalue = [0, 1]'),
 Text(0.586489252814739, 0.2692307692307692, 'entropy = 0.0\nsamples = 5\nvalue
= [0, 5]'),
 Text(0.6223132036847492, 0.5, 'x[3] <= 34.864\nentropy = 0.801\nsamples =
78\nvalue = [19, 59]'),
 Text(0.609007164790174, 0.4230769230769231, 'x[4] <= 302.13\nentropy =
0.741\nsamples = 62\nvalue = [13, 49]'),
 Text(0.6049129989764586, 0.34615384615384615, 'x[1] <= 115.508\nentropy =
0.747\nsamples = 61\nvalue = [13, 48]'),
 Text(0.5946775844421699, 0.2692307692307692, 'x[6] <= 0.74\nentropy =
0.896\nsamples = 16\nvalue = [5, 11]'),
 Text(0.5905834186284544, 0.19230769230769232, 'x[2] <= 71.078\nentropy =
0.918\nsamples = 15\nvalue = [5, 10]'),
 Text(0.586489252814739, 0.11538461538461539, 'x[5] <= 33.537\nentropy =
0.863\nsamples = 14\nvalue = [4, 10]'),
 Text(0.5823950870010235, 0.038461538461538464, 'entropy = 0.811\nsamples =
8\nvalue = [2, 6]'),
 Text(0.5905834186284544, 0.038461538461538464, 'entropy = 0.918\nsamples =
6\nvalue = [2, 4]'),
 Text(0.5946775844421699, 0.11538461538461539, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.5987717502558854, 0.19230769230769232, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.6151484135107472, 0.2692307692307692, 'x[5] <= 46.435\nentropy =
0.675\nsamples = 45\nvalue = [8, 37]'),
 Text(0.6110542476970318, 0.19230769230769232, 'x[1] <= 139.5\nentropy =
0.693\nsamples = 43\nvalue = [8, 35]'),
 Text(0.6028659160696008, 0.11538461538461539, 'x[6] <= 0.968\nentropy =
0.94\nsamples = 14\nvalue = [5, 9]'),
 Text(0.5987717502558854, 0.038461538461538464, 'entropy = 0.961\nsamples =
13\nvalue = [5, 8]'),
 Text(0.6069600818833163, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.6192425793244627, 0.11538461538461539, 'x[5] <= 28.377\nentropy =
0.48\nsamples = 29\nvalue = [3, 26]'),
 Text(0.6151484135107472, 0.038461538461538464, 'entropy = 0.918\nsamples =
3\nvalue = [1, 2]'),
 Text(0.623336745138178, 0.038461538461538464, 'entropy = 0.391\nsamples =
26\nvalue = [2, 24]'),
 Text(0.6192425793244627, 0.19230769230769232, 'entropy = 0.0\nsamples =
2\nvalue = [0, 2]'),
 Text(0.6131013306038895, 0.34615384615384615, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.6356192425793245, 0.4230769230769231, 'x[1] <= 99.331\nentropy =
0.954\nsamples = 16\nvalue = [6, 10]'),
 Text(0.631525076765609, 0.34615384615384615, 'entropy = 0.0\nsamples = 1\nvalue
= [1, 0]'),
```

```
 Text(0.6397134083930399, 0.34615384615384615, 'x[3] <= 36.08\nentropy =
0.918\nsamples = 15\nvalue = [5, 10]'),
 Text(0.6356192425793245, 0.2692307692307692, 'entropy = 0.0\nsamples = 1\nvalue
= [0, 1]'),
 Text(0.6438075742067554, 0.2692307692307692, 'x[4] <= 292.372\nentropy =
0.94\nsamples = 14\nvalue = [5, 9]'),
 Text(0.6397134083930399, 0.19230769230769232, 'x[4] <= 147.949\nentropy =
0.961\nsamples = 13\nvalue = [5, 8]'),
 Text(0.6356192425793245, 0.11538461538461539, 'x[0] <= 6.479\nentropy =
1.0\nsamples = 10\nvalue = [5, 5]'),
 Text(0.631525076765609, 0.038461538461538464, 'entropy = 0.991\nsamples =
9\nvalue = [4, 5]'),
 Text(0.6397134083930399, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.6438075742067554, 0.11538461538461539, 'entropy = 0.0\nsamples =
3\nvalue = [0, 3]'),
 Text(0.6479017400204709, 0.19230769230769232, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.7671443193449334, 0.5769230769230769, 'x[5] <= 34.151\nentropy =
0.95\nsamples = 138\nvalue = [51, 87]'),
 Text(0.710849539406346, 0.5, 'x[4] <= 283.562\nentropy = 0.971\nsamples =
60\nvalue = [24, 36]'),
 Text(0.7067553735926305, 0.4230769230769231, 'x[5] <= 30.051\nentropy =
0.978\nsamples = 58\nvalue = [24, 34]'),
 Text(0.6786079836233367, 0.34615384615384615, 'x[2] <= 95.887\nentropy =
0.99\nsamples = 25\nvalue = [14, 11]'),
 Text(0.6745138178096213, 0.2692307692307692, 'x[7] <= 58.14\nentropy =
0.995\nsamples = 24\nvalue = [13, 11]'),
 Text(0.6601842374616171, 0.19230769230769232, 'x[7] <= 49.194\nentropy =
1.0\nsamples = 20\nvalue = [10, 10]'),
 Text(0.6519959058341863, 0.11538461538461539, 'x[7] <= 46.015\nentropy =
0.94\nsamples = 14\nvalue = [9, 5]'),
 Text(0.6479017400204709, 0.038461538461538464, 'entropy = 0.89\nsamples =
13\nvalue = [9, 4]'),
 Text(0.6560900716479018, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.6683725690890481, 0.11538461538461539, 'x[6] <= 0.21\nentropy =
0.65\nsamples = 6\nvalue = [1, 5]'),
 Text(0.6642784032753326, 0.038461538461538464, 'entropy = 1.0\nsamples =
2\nvalue = [1, 1]'),
 Text(0.6724667349027635, 0.038461538461538464, 'entropy = 0.0\nsamples =
4\nvalue = [0, 4]'),
 Text(0.6888433981576254, 0.19230769230769232, 'x[3] <= 10.54\nentropy =
0.811\nsamples = 4\nvalue = [3, 1]'),
 Text(0.6847492323439099, 0.11538461538461539, 'x[1] <= 121.616\nentropy =
0.918\nsamples = 3\nvalue = [2, 1]'),
 Text(0.6806550665301945, 0.038461538461538464, 'entropy = 1.0\nsamples =
```

```
2\nvalue = [1, 1]'),
 Text(0.6888433981576254, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.6929375639713409, 0.11538461538461539, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.6827021494370522, 0.2692307692307692, 'entropy = 0.0\nsamples = 1\nvalue
= [1, 0]'),
 Text(0.7349027635619243, 0.34615384615384615, 'x[7] <= 42.888\nentropy =
0.885\nsamples = 33\nvalue = [10, 23]'),
 Text(0.7195496417604913, 0.2692307692307692, 'x[4] <= 29.995\nentropy =
0.946\nsamples = 22\nvalue = [8, 14]'),
 Text(0.7093142272262026, 0.19230769230769232, 'x[3] <= 16.723\nentropy =
0.971\nsamples = 15\nvalue = [6, 9]'),
 Text(0.7011258955987717, 0.11538461538461539, 'x[7] <= 34.85\nentropy =
0.918\nsamples = 12\nvalue = [4, 8]'),
 Text(0.6970317297850563, 0.038461538461538464, 'entropy = 0.863\nsamples =
7\nvalue = [2, 5]'),
 Text(0.7052200614124872, 0.038461538461538464, 'entropy = 0.971\nsamples =
5\nvalue = [2, 3]'),
 Text(0.7175025588536336, 0.11538461538461539, 'x[7] <= 41.21\nentropy =
0.918\nsamples = 3\nvalue = [2, 1]'),
 Text(0.7134083930399181, 0.038461538461538464, 'entropy = 1.0\nsamples =
2\nvalue = [1, 1]'),
 Text(0.721596724667349, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.72978505629478, 0.19230769230769232, 'x[3] <= 32.739\nentropy =
0.863\nsamples = 7\nvalue = [2, 5]'),
 Text(0.7256908904810645, 0.11538461538461539, 'entropy = 0.0\nsamples =
2\nvalue = [2, 0]'),
 Text(0.7338792221084954, 0.11538461538461539, 'entropy = 0.0\nsamples =
5\nvalue = [0, 5]'),
 Text(0.7502558853633572, 0.2692307692307692, 'x[4] <= 89.533\nentropy =
0.684\nsamples = 11\nvalue = [2, 9]'),
 Text(0.7461617195496417, 0.19230769230769232, 'x[2] <= 83.188\nentropy =
0.863\nsamples = 7\nvalue = [2, 5]'),
 Text(0.7420675537359263, 0.11538461538461539, 'x[4] <= 15.872\nentropy =
0.971\nsamples = 5\nvalue = [2, 3]'),
 Text(0.7379733879222109, 0.038461538461538464, 'entropy = 0.811\nsamples =
4\nvalue = [1, 3]'),
 Text(0.7461617195496417, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.7502558853633572, 0.11538461538461539, 'entropy = 0.0\nsamples =
2\nvalue = [0, 2]'),
 Text(0.7543500511770727, 0.19230769230769232, 'entropy = 0.0\nsamples =
4\nvalue = [0, 4]'),
 Text(0.7149437052200615, 0.4230769230769231, 'entropy = 0.0\nsamples = 2\nvalue
= [0, 2]'),
```

```
 Text(0.823439099283521, 0.5, 'x[6] <= 0.345\nentropy = 0.931\nsamples =
78\nvalue = [27, 51]'),
 Text(0.7860798362333674, 0.4230769230769231, 'x[3] <= 30.192\nentropy =
0.999\nsamples = 31\nvalue = [16, 15]'),
 Text(0.7707267144319345, 0.34615384615384615, 'x[3] <= 29.382\nentropy =
0.998\nsamples = 17\nvalue = [8, 9]'),
 Text(0.7666325486182191, 0.2692307692307692, 'x[1] <= 156.787\nentropy =
0.989\nsamples = 16\nvalue = [7, 9]'),
 Text(0.7625383828045036, 0.19230769230769232, 'x[2] <= 75.252\nentropy =
0.946\nsamples = 11\nvalue = [7, 4]'),
 Text(0.7584442169907881, 0.11538461538461539, 'entropy = 0.0\nsamples =
2\nvalue = [0, 2]'),
 Text(0.7666325486182191, 0.11538461538461539, 'x[4] <= 113.125\nentropy =
0.764\nsamples = 9\nvalue = [7, 2]'),
 Text(0.7625383828045036, 0.038461538461538464, 'entropy = 0.544\nsamples =
8\nvalue = [7, 1]'),
 Text(0.7707267144319345, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.7707267144319345, 0.19230769230769232, 'entropy = 0.0\nsamples =
5\nvalue = [0, 5]'),
 Text(0.77482088024565, 0.2692307692307692, 'entropy = 0.0\nsamples = 1\nvalue =
[1, 0]'),
 Text(0.8014329580348004, 0.34615384615384615, 'x[2] <= 82.771\nentropy =
0.985\nsamples = 14\nvalue = [8, 6]'),
 Text(0.7871033776867963, 0.2692307692307692, 'x[1] <= 111.372\nentropy =
0.971\nsamples = 10\nvalue = [6, 4]'),
 Text(0.7830092118730808, 0.19230769230769232, 'entropy = 0.0\nsamples =
4\nvalue = [4, 0]'),
 Text(0.7911975435005117, 0.19230769230769232, 'x[0] <= 3.095\nentropy =
0.918\nsamples = 6\nvalue = [2, 4]'),
 Text(0.7830092118730808, 0.11538461538461539, 'x[4] <= 186.689\nentropy =
0.918\nsamples = 3\nvalue = [1, 2]'),
 Text(0.7789150460593655, 0.038461538461538464, 'entropy = 0.0\nsamples =
2\nvalue = [0, 2]'),
 Text(0.7871033776867963, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.7993858751279427, 0.11538461538461539, 'x[5] <= 38.766\nentropy =
0.918\nsamples = 3\nvalue = [1, 2]'),
 Text(0.7952917093142272, 0.038461538461538464, 'entropy = 0.0\nsamples =
2\nvalue = [0, 2]'),
 Text(0.8034800409416581, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.8157625383828045, 0.2692307692307692, 'x[6] <= 0.188\nentropy =
1.0\nsamples = 4\nvalue = [2, 2]'),
 Text(0.8116683725690891, 0.19230769230769232, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.81985670419652, 0.19230769230769232, 'x[5] <= 42.296\nentropy =
```

```
0.918\nsamples = 3\nvalue = [1, 2]'),
 Text(0.8157625383828045, 0.11538461538461539, 'x[2] <= 84.285\nentropy =
1.0\nsamples = 2\nvalue = [1, 1]'),
 Text(0.8116683725690891, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.81985670419652, 0.038461538461538464, 'entropy = 0.0\nsamples = 1\nvalue
= [1, 0]'),
 Text(0.8239508700102354, 0.11538461538461539, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.8607983623336745, 0.4230769230769231, 'x[3] <= 5.04\nentropy =
0.785\nsamples = 47\nvalue = [11, 36]'),
 Text(0.8403275332650972, 0.34615384615384615, 'x[5] <= 37.867\nentropy =
0.971\nsamples = 10\nvalue = [4, 6]'),
 Text(0.8321392016376663, 0.2692307692307692, 'x[0] <= 5.604\nentropy =
1.0\nsamples = 2\nvalue = [1, 1]'),
 Text(0.8280450358239508, 0.19230769230769232, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.8362333674513818, 0.19230769230769232, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.8485158648925282, 0.2692307692307692, 'x[5] <= 40.159\nentropy =
0.954\nsamples = 8\nvalue = [3, 5]'),
 Text(0.8444216990788127, 0.19230769230769232, 'entropy = 0.0\nsamples =
4\nvalue = [0, 4]'),
 Text(0.8526100307062436, 0.19230769230769232, 'x[5] <= 40.488\nentropy =
0.811\nsamples = 4\nvalue = [3, 1]'),
 Text(0.8485158648925282, 0.11538461538461539, 'x[7] <= 34.423\nentropy =
1.0\nsamples = 2\nvalue = [1, 1]'),
 Text(0.8444216990788127, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.8526100307062436, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.8567041965199591, 0.11538461538461539, 'entropy = 0.0\nsamples =
2\nvalue = [2, 0]'),
 Text(0.8812691914022518, 0.34615384615384615, 'x[3] <= 52.641\nentropy =
0.7\nsamples = 37\nvalue = [7, 30]'),
 Text(0.8771750255885363, 0.2692307692307692, 'x[5] <= 44.327\nentropy =
0.65\nsamples = 36\nvalue = [6, 30]'),
 Text(0.8689866939611054, 0.19230769230769232, 'x[5] <= 39.207\nentropy =
0.555\nsamples = 31\nvalue = [4, 27]'),
 Text(0.8648925281473899, 0.11538461538461539, 'x[6] <= 0.91\nentropy =
0.722\nsamples = 20\nvalue = [4, 16]'),
 Text(0.8607983623336745, 0.038461538461538464, 'entropy = 0.75\nsamples =
14\nvalue = [3, 11]'),
 Text(0.8689866939611054, 0.038461538461538464, 'entropy = 0.65\nsamples =
6\nvalue = [1, 5]'),
 Text(0.8730808597748209, 0.11538461538461539, 'entropy = 0.0\nsamples =
11\nvalue = [0, 11]'),
```

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 Text(0.8853633572159673, 0.19230769230769232, 'x[5] <= 46.144\nentropy =
0.971\nsamples = 5\nvalue = [2, 3]'),
 Text(0.8812691914022518, 0.11538461538461539, 'entropy = 0.0\nsamples =
3\nvalue = [0, 3]'),
 Text(0.8894575230296827, 0.11538461538461539, 'entropy = 0.0\nsamples =
2\nvalue = [2, 0]'),
 Text(0.8853633572159673, 0.2692307692307692, 'entropy = 0.0\nsamples = 1\nvalue
= [1, 0]'),
 Text(0.9649437052200615, 0.8076923076923077, 'x[2] <= 57.179\nentropy =
0.829\nsamples = 107\nvalue = [28, 79]'),
 Text(0.960849539406346, 0.7307692307692307, 'entropy = 0.0\nsamples = 1\nvalue
= [1, 0]'),
 Text(0.9690378710337769, 0.7307692307692307, 'x[1] <= 71.466\nentropy =
0.819\nsamples = 106\nvalue = [27, 79]'),
 Text(0.9649437052200615, 0.6538461538461539, 'entropy = 0.0\nsamples = 1\nvalue
= [1, 0]'),
 Text(0.9731320368474923, 0.6538461538461539, 'x[0] <= 11.168\nentropy =
0.807\nsamples = 105\nvalue = [26, 79]'),
 Text(0.9544524053224156, 0.5769230769230769, 'x[2] <= 94.111\nentropy =
0.766\nsamples = 94\nvalue = [21, 73]'),
 Text(0.9503582395087001, 0.5, 'x[1] <= 154.242\nentropy = 0.775\nsamples =
92\nvalue = [21, 71]'),
 Text(0.9334698055271239, 0.4230769230769231, 'x[7] <= 53.462\nentropy =
0.855\nsamples = 68\nvalue = [19, 49]'),
 Text(0.9201637666325486, 0.34615384615384615, 'x[4] <= 211.439\nentropy =
0.792\nsamples = 63\nvalue = [15, 48]'),
 Text(0.9160696008188332, 0.2692307692307692, 'x[1] <= 133.482\nentropy =
0.805\nsamples = 61\nvalue = [15, 46]'),
 Text(0.901740020470829, 0.19230769230769232, 'x[5] <= 27.093\nentropy =
0.91\nsamples = 40\nvalue = [13, 27]'),
 Text(0.8976458546571137, 0.11538461538461539, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.9058341862845445, 0.11538461538461539, 'x[0] <= 10.397\nentropy =
0.89\nsamples = 39\nvalue = [12, 27]'),
 Text(0.901740020470829, 0.038461538461538464, 'entropy = 0.874\nsamples =
34\nvalue = [10, 24]'),
 Text(0.90992835209826, 0.038461538461538464, 'entropy = 0.971\nsamples =
5\nvalue = [2, 3]'),
 Text(0.9303991811668373, 0.19230769230769232, 'x[1] <= 151.402\nentropy =
0.454\nsamples = 21\nvalue = [2, 19]'),
 Text(0.9222108495394064, 0.11538461538461539, 'x[4] <= 108.626\nentropy =
0.323\nsamples = 17\nvalue = [1, 16]'),
 Text(0.9181166837256909, 0.038461538461538464, 'entropy = 0.811\nsamples =
4\nvalue = [1, 3]'),
 Text(0.9263050153531218, 0.038461538461538464, 'entropy = 0.0\nsamples =
13\nvalue = [0, 13]'),
 Text(0.9385875127942682, 0.11538461538461539, 'x[1] <= 152.526\nentropy =
```
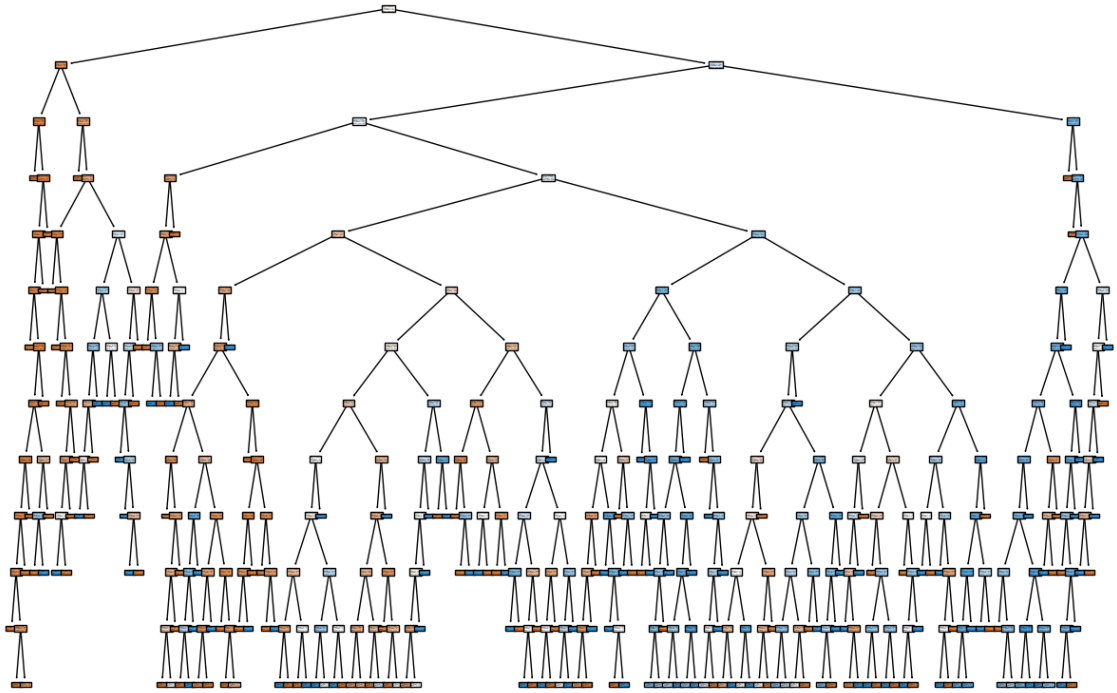

```
0.811\nsamples = 4\nvalue = [1, 3]'),
 Text(0.9344933469805528, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.9426816786079836, 0.038461538461538464, 'entropy = 0.918\nsamples =
3\nvalue = [1, 2]'),
 Text(0.9242579324462641, 0.2692307692307692, 'entropy = 0.0\nsamples = 2\nvalue
= [0, 2]'),
 Text(0.946775844421699, 0.34615384615384615, 'x[7] <= 57.206\nentropy =
0.722\nsamples = 5\nvalue = [4, 1]'),
 Text(0.9426816786079836, 0.2692307692307692, 'x[7] <= 56.021\nentropy =
0.918\nsamples = 3\nvalue = [2, 1]'),
 Text(0.9385875127942682, 0.19230769230769232, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.946775844421699, 0.19230769230769232, 'entropy = 0.0\nsamples = 2\nvalue
= [2, 0]'),
 Text(0.9508700102354145, 0.2692307692307692, 'entropy = 0.0\nsamples = 2\nvalue
= [2, 0]'),
 Text(0.9672466734902764, 0.4230769230769231, 'x[6] <= 0.445\nentropy =
0.414\nsamples = 24\nvalue = [2, 22]'),
 Text(0.9631525076765609, 0.34615384615384615, 'x[6] <= 0.346\nentropy =
0.764\nsamples = 9\nvalue = [2, 7]'),
 Text(0.9590583418628454, 0.2692307692307692, 'x[7] <= 38.864\nentropy =
0.918\nsamples = 6\nvalue = [2, 4]'),
 Text(0.95496417604913, 0.19230769230769232, 'entropy = 0.0\nsamples = 1\nvalue
= [1, 0]'),
 Text(0.9631525076765609, 0.19230769230769232, 'x[5] <= 44.932\nentropy =
0.722\nsamples = 5\nvalue = [1, 4]'),
 Text(0.9590583418628454, 0.11538461538461539, 'x[0] <= 9.183\nentropy =
0.811\nsamples = 4\nvalue = [1, 3]'),
 Text(0.95496417604913, 0.038461538461538464, 'entropy = 0.0\nsamples = 3\nvalue
= [0, 3]'),
 Text(0.9631525076765609, 0.038461538461538464, 'entropy = 0.0\nsamples =
1\nvalue = [1, 0]'),
 Text(0.9672466734902764, 0.11538461538461539, 'entropy = 0.0\nsamples =
1\nvalue = [0, 1]'),
 Text(0.9672466734902764, 0.2692307692307692, 'entropy = 0.0\nsamples = 3\nvalue
= [0, 3]'),
 Text(0.9713408393039918, 0.34615384615384615, 'entropy = 0.0\nsamples =
15\nvalue = [0, 15]'),
 Text(0.9585465711361311, 0.5, 'entropy = 0.0\nsamples = 2\nvalue = [0, 2]'),
 Text(0.9918116683725691, 0.5769230769230769, 'x[7] <= 52.904\nentropy =
0.994\nsamples = 11\nvalue = [5, 6]'),
 Text(0.9877175025588536, 0.5, 'x[2] <= 74.958\nentropy = 1.0\nsamples =
10\nvalue = [5, 5]'),
 Text(0.9836233367451381, 0.4230769230769231, 'x[5] <= 38.937\nentropy =
0.991\nsamples = 9\nvalue = [4, 5]'),
 Text(0.9795291709314228, 0.34615384615384615, 'x[6] <= 0.809\nentropy =
```

```
0.985\nsamples = 7\nvalue = [4, 3]'),
 Text(0.9754350051177073, 0.2692307692307692, 'x[5] <= 31.35\nentropy =
0.918\nsamples = 6\nvalue = [4, 2]'),
 Text(0.9713408393039918, 0.19230769230769232, 'entropy = 0.0\nsamples =
2\nvalue = [0, 2]'),
 Text(0.9795291709314228, 0.19230769230769232, 'entropy = 0.0\nsamples =
4\nvalue = [4, 0]'),
 Text(0.9836233367451381, 0.2692307692307692, 'entropy = 0.0\nsamples = 1\nvalue
= [0, 1]'),
 Text(0.9877175025588536, 0.34615384615384615, 'entropy = 0.0\nsamples =
2\nvalue = [0, 2]'),
 Text(0.9918116683725691, 0.4230769230769231, 'entropy = 0.0\nsamples = 1\nvalue
= [1, 0]'),
 Text(0.9959058341862845, 0.5, 'entropy = 0.0\nsamples = 1\nvalue = [0, 1]')]
```



[ ]: