Name : Devkumar Biswas

Class: BE(AI&DS)

Div: B

Subject : ML(CL-I Lab)

Roll no. : BEAD21267

**Assignment No. - 5**

**Problem Statement** : Ensemble Learning (Any one)

A. Implement Random Forest Classifier model to predict the safety of the car. Dataset link: https://www.kaggle.com/datasets/elikplim/car-evaluation-data-set

Code:

import pandas as pd

df=pd.read\_csv('car\_evaluation.csv')

df.head(2)

df.describe()

col\_names = ['buying', 'maint', 'doors', 'persons', 'lug\_boot', 'safety', 'class']

df.columns=col\_names

col\_names

for col in col\_names:

print(df[col].value\_counts())

df.isnull().sum()

x=df.drop(['class'],axis=1)

y=df['class']

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=42)

x\_train.shape,x\_test.shape

pip install category\_encoders

import category\_encoders as ce

encoder = ce.OrdinalEncoder(cols=['buying', 'maint', 'doors', 'persons', 'lug\_boot', 'safety'])

x\_train = encoder.fit\_transform(x\_train)

x\_test = encoder.transform(x\_test)

x\_train.head()

from sklearn.ensemble import RandomForestClassifier

rfc=RandomForestClassifier(random\_state=0)

rfc.fit(x\_train,y\_train)

y\_pred=rfc.predict(x\_test)

from sklearn.metrics import accuracy\_score

accuracy\_score(y\_test,y\_pred)

rfc\_100 = RandomForestClassifier(n\_estimators=100, random\_state=0)

rfc\_100.fit(x\_train, y\_train)

y\_pred\_100=rfc\_100.predict(x\_test)

accuracy\_score(y\_test,y\_pred\_100)

from sklearn.ensemble import RandomForestClassifier

rfc\_100=RandomForestClassifier(n\_estimators=100,random\_state=0)

rfc\_100.fit(x\_train,y\_train)

y\_pred\_100 = rfc\_100.predict(x\_test)

print("model accuracy n\_estimator=100: {0:0.4f}".format(accuracy\_score(y\_test,y\_pred\_100)))

print(y\_train)

Output :









