**Code 4 (Random Forest)**

from google.colab import drive

drive.mount('/content/drive')

import warnings

import pandas as pd

import numpy as np

import matplotlib.pyplot as plt

path="/content/drive/MyDrive/Machine Learning (ML)/banking.csv"

df=pd.read\_csv(path)

df.head()

df.isnull().sum()

df.describe()

df.shape

df.info()

X=df.iloc[:,:-1]

print(X)

y=df.iloc[:,-1]

print(y)

X = df.drop(columns=['y'])

y = df['y']

X.head()

df.shape

# One

#X = pd.get\_dummies(X)

#X

df.shape

X = pd.get\_dummies(X, dtype = int)

X

X.head()

X.shape

X.columns

from sklearn.model\_selection import train\_test\_split

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, y, train\_size = 0.7, test\_size = 0.25, random\_state = 42)

X\_train.shape,X\_test.shape

from sklearn.ensemble import RandomForestClassifier

rf = RandomForestClassifier(n\_estimators = 100, max\_depth=5, random\_state = 42)

rf.fit(X\_train, y\_train)

from sklearn.metrics import accuracy\_score, classification\_report,confusion\_matrix

y\_pred = rf.predict(X\_test)

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

print(score)

print(classification\_report(y\_pred, y\_test))

cm = confusion\_matrix(y\_pred, y\_test)

print("Confusion Matrix:",confusion\_matrix(y\_pred, y\_test))

import seaborn as sns

import matplotlib.pyplot as plt

plt.figure(figsize=(6, 4))

sns.heatmap(cm, annot=True, cmap='Blues', fmt='g',

            xticklabels=['Yes', 'No'], yticklabels=['Yes', 'No'])

plt.xlabel('Predicted Values')

plt.ylabel('Actual Values')

plt.title('Confusion Matrix')

plt.show()