import numpy as np

import pandas as pd

from sklearn import preprocessing

dataset=pd.read\_excel("Bank\_Personal\_Loan\_Modelling.xlsx",sheetname=0)

Traceback (most recent call last):

File "<ipython-input-4-6bbfa17eaacb>", line 1, in <module>

dataset=pd.read\_excel("Bank\_Personal\_Loan\_Modelling.xlsx",sheetname=0)

File "C:\ProgramData\Anaconda3\lib\site-packages\pandas\io\excel\\_base.py", line 301, in read\_excel

raise TypeError(f"read\_excel() got an unexpected keyword argument `{arg}`")

TypeError: read\_excel() got an unexpected keyword argument `sheetname`

dataset=pd.read\_excel("Bank\_Personal\_Loan\_Modelling.xlsx",sheet\_name=0)

from sklearn.ensemble import RandomForestClassifier

dataset.columns

Out[7]: Index(['Unnamed: 0', 'Unnamed: 1', 'Unnamed: 2'], dtype='object')

dataset=pd.read\_excel("Bank\_Personal\_Loan\_Modelling.xlsx",sheetname=1)

Traceback (most recent call last):

File "<ipython-input-8-379fdc6f163c>", line 1, in <module>

dataset=pd.read\_excel("Bank\_Personal\_Loan\_Modelling.xlsx",sheetname=1)

File "C:\ProgramData\Anaconda3\lib\site-packages\pandas\io\excel\\_base.py", line 301, in read\_excel

raise TypeError(f"read\_excel() got an unexpected keyword argument `{arg}`")

TypeError: read\_excel() got an unexpected keyword argument `sheetname`

dataset=pd.read\_excel("Bank\_Personal\_Loan\_Modelling.xlsx",sheet\_name=1)

dataset.columns

Out[10]:

Index(['ID', 'Age', 'Experience', 'Income', 'ZIP Code', 'Family', 'CCAvg',

'Education', 'Mortgage', 'Personal Loan', 'Securities Account',

'CD Account', 'Online', 'CreditCard'],

dtype='object')

label\_encoder=preprocessing.LabelEncoder()

rf\_model=RandomForestClassifier(n\_estimators=1000,max\_features=3,oob\_score=True)

features=['Age','Experience','Income']

rf\_model.fit(X=dataset[features],y=dataset["Personal Loan"])

Out[14]:

RandomForestClassifier(bootstrap=True, class\_weight=None, criterion='gini',

max\_depth=None, max\_features=3, max\_leaf\_nodes=None,

min\_impurity\_decrease=0.0, min\_impurity\_split=None,

min\_samples\_leaf=1, min\_samples\_split=2,

min\_weight\_fraction\_leaf=0.0, n\_estimators=1000,

n\_jobs=None, oob\_score=True, random\_state=None,

verbose=0, warm\_start=False)

print("OOB Accuracy:")

OOB Accuracy:

print(rf\_model.oob\_score\_);

0.8994

for features,imp in zip(features,rf\_model.feature\_importances\_):

print(feature,imp);

Traceback (most recent call last):

File "<ipython-input-17-86d80bf86bd6>", line 2, in <module>

print(feature,imp);

NameError: name 'feature' is not defined

for features,imp in zip(features,rf\_model.feature\_importances\_):

print(features,imp);

A 0.20555837196359147

g 0.19604269773535982

e 0.5983989303010487

for features,imp in zip(features,rf\_model.features\_importances\_):

print(features,imp);

Traceback (most recent call last):

File "<ipython-input-19-9c493947505a>", line 1, in <module>

for features,imp in zip(features,rf\_model.features\_importances\_):

AttributeError: 'RandomForestClassifier' object has no attribute 'features\_importances\_'

for feature,imp in zip(features,rf\_model.feature\_importances\_):

print(feature,imp);

e 0.20555837196359147

dataset["Age"]=label\_encoder.fit\_transform(dataset["Age"])

dataset["Experience"]=label\_encoder.fit\_transform(dataset["Experience"])

dataset["Income"]=label\_encoder.fit\_transform(dataset["income"])

Traceback (most recent call last):

File "C:\ProgramData\Anaconda3\lib\site-packages\pandas\core\indexes\base.py", line 2646, in get\_loc

return self.\_engine.get\_loc(key)

File "pandas\\_libs\index.pyx", line 111, in pandas.\_libs.index.IndexEngine.get\_loc

File "pandas\\_libs\index.pyx", line 138, in pandas.\_libs.index.IndexEngine.get\_loc

File "pandas\\_libs\hashtable\_class\_helper.pxi", line 1618, in pandas.\_libs.hashtable.PyObjectHashTable.get\_item

File "pandas\\_libs\hashtable\_class\_helper.pxi", line 1626, in pandas.\_libs.hashtable.PyObjectHashTable.get\_item

KeyError: 'income'

During handling of the above exception, another exception occurred:

Traceback (most recent call last):

File "<ipython-input-23-61312e761b6d>", line 1, in <module>

dataset["Income"]=label\_encoder.fit\_transform(dataset["income"])

File "C:\ProgramData\Anaconda3\lib\site-packages\pandas\core\frame.py", line 2800, in \_\_getitem\_\_

indexer = self.columns.get\_loc(key)

File "C:\ProgramData\Anaconda3\lib\site-packages\pandas\core\indexes\base.py", line 2648, in get\_loc

return self.\_engine.get\_loc(self.\_maybe\_cast\_indexer(key))

File "pandas\\_libs\index.pyx", line 111, in pandas.\_libs.index.IndexEngine.get\_loc

File "pandas\\_libs\index.pyx", line 138, in pandas.\_libs.index.IndexEngine.get\_loc

File "pandas\\_libs\hashtable\_class\_helper.pxi", line 1618, in pandas.\_libs.hashtable.PyObjectHashTable.get\_item

File "pandas\\_libs\hashtable\_class\_helper.pxi", line 1626, in pandas.\_libs.hashtable.PyObjectHashTable.get\_item

KeyError: 'income'

dataset["Income"]=label\_encoder.fit\_transform(dataset["Income"])

rf\_model.fit(X=dataset[features],y=dataset["Personal Loan"])

Traceback (most recent call last):

File "C:\ProgramData\Anaconda3\lib\site-packages\pandas\core\indexes\base.py", line 2646, in get\_loc

return self.\_engine.get\_loc(key)

File "pandas\\_libs\index.pyx", line 111, in pandas.\_libs.index.IndexEngine.get\_loc

File "pandas\\_libs\index.pyx", line 138, in pandas.\_libs.index.IndexEngine.get\_loc

File "pandas\\_libs\hashtable\_class\_helper.pxi", line 1618, in pandas.\_libs.hashtable.PyObjectHashTable.get\_item

File "pandas\\_libs\hashtable\_class\_helper.pxi", line 1626, in pandas.\_libs.hashtable.PyObjectHashTable.get\_item

KeyError: 'e'

During handling of the above exception, another exception occurred:

Traceback (most recent call last):

File "<ipython-input-25-0ac3e9719c3f>", line 1, in <module>

rf\_model.fit(X=dataset[features],y=dataset["Personal Loan"])

File "C:\ProgramData\Anaconda3\lib\site-packages\pandas\core\frame.py", line 2800, in \_\_getitem\_\_

indexer = self.columns.get\_loc(key)

File "C:\ProgramData\Anaconda3\lib\site-packages\pandas\core\indexes\base.py", line 2648, in get\_loc

return self.\_engine.get\_loc(self.\_maybe\_cast\_indexer(key))

File "pandas\\_libs\index.pyx", line 111, in pandas.\_libs.index.IndexEngine.get\_loc

File "pandas\\_libs\index.pyx", line 138, in pandas.\_libs.index.IndexEngine.get\_loc

File "pandas\\_libs\hashtable\_class\_helper.pxi", line 1618, in pandas.\_libs.hashtable.PyObjectHashTable.get\_item

File "pandas\\_libs\hashtable\_class\_helper.pxi", line 1626, in pandas.\_libs.hashtable.PyObjectHashTable.get\_item

KeyError: 'e'

for features,imp in zip(features,rf\_model.feature\_importances\_):

print(features,imp);

e 0.20555837196359147

dataset = pd.read\_excel("Bank\_Personal\_Loan\_Modelling.xlsx")

new\_age\_var = np.where(dataset["Age"].isnull(),28,dataset["Age"])

Traceback (most recent call last):

File "C:\ProgramData\Anaconda3\lib\site-packages\pandas\core\indexes\base.py", line 2646, in get\_loc

return self.\_engine.get\_loc(key)

File "pandas\\_libs\index.pyx", line 111, in pandas.\_libs.index.IndexEngine.get\_loc

File "pandas\\_libs\index.pyx", line 138, in pandas.\_libs.index.IndexEngine.get\_loc

File "pandas\\_libs\hashtable\_class\_helper.pxi", line 1618, in pandas.\_libs.hashtable.PyObjectHashTable.get\_item

File "pandas\\_libs\hashtable\_class\_helper.pxi", line 1626, in pandas.\_libs.hashtable.PyObjectHashTable.get\_item

KeyError: 'Age'

During handling of the above exception, another exception occurred:

Traceback (most recent call last):

File "<ipython-input-28-850ae6c9b9bf>", line 1, in <module>

new\_age\_var = np.where(dataset["Age"].isnull(),28,dataset["Age"])

File "C:\ProgramData\Anaconda3\lib\site-packages\pandas\core\frame.py", line 2800, in \_\_getitem\_\_

indexer = self.columns.get\_loc(key)

File "C:\ProgramData\Anaconda3\lib\site-packages\pandas\core\indexes\base.py", line 2648, in get\_loc

return self.\_engine.get\_loc(self.\_maybe\_cast\_indexer(key))

File "pandas\\_libs\index.pyx", line 111, in pandas.\_libs.index.IndexEngine.get\_loc

File "pandas\\_libs\index.pyx", line 138, in pandas.\_libs.index.IndexEngine.get\_loc

File "pandas\\_libs\hashtable\_class\_helper.pxi", line 1618, in pandas.\_libs.hashtable.PyObjectHashTable.get\_item

File "pandas\\_libs\hashtable\_class\_helper.pxi", line 1626, in pandas.\_libs.hashtable.PyObjectHashTable.get\_item

KeyError: 'Age'

titanic\_train = pd.read\_excel("Bank\_Personal\_Loan\_Modelling.xlsx")

new\_age\_var = np.where(titanic\_train["Age"].isnull(),28,titanic\_train["Age"])

Traceback (most recent call last):

File "C:\ProgramData\Anaconda3\lib\site-packages\pandas\core\indexes\base.py", line 2646, in get\_loc

return self.\_engine.get\_loc(key)

File "pandas\\_libs\index.pyx", line 111, in pandas.\_libs.index.IndexEngine.get\_loc

File "pandas\\_libs\index.pyx", line 138, in pandas.\_libs.index.IndexEngine.get\_loc

File "pandas\\_libs\hashtable\_class\_helper.pxi", line 1618, in pandas.\_libs.hashtable.PyObjectHashTable.get\_item

File "pandas\\_libs\hashtable\_class\_helper.pxi", line 1626, in pandas.\_libs.hashtable.PyObjectHashTable.get\_item

KeyError: 'Age'

During handling of the above exception, another exception occurred:

Traceback (most recent call last):

File "<ipython-input-30-3ab01ee0d500>", line 1, in <module>

new\_age\_var = np.where(titanic\_train["Age"].isnull(),28,titanic\_train["Age"])

File "C:\ProgramData\Anaconda3\lib\site-packages\pandas\core\frame.py", line 2800, in \_\_getitem\_\_

indexer = self.columns.get\_loc(key)

File "C:\ProgramData\Anaconda3\lib\site-packages\pandas\core\indexes\base.py", line 2648, in get\_loc

return self.\_engine.get\_loc(self.\_maybe\_cast\_indexer(key))

File "pandas\\_libs\index.pyx", line 111, in pandas.\_libs.index.IndexEngine.get\_loc

File "pandas\\_libs\index.pyx", line 138, in pandas.\_libs.index.IndexEngine.get\_loc

File "pandas\\_libs\hashtable\_class\_helper.pxi", line 1618, in pandas.\_libs.hashtable.PyObjectHashTable.get\_item

File "pandas\\_libs\hashtable\_class\_helper.pxi", line 1626, in pandas.\_libs.hashtable.PyObjectHashTable.get\_item

KeyError: 'Age'

titanic\_train = pd.read\_excel("Bank\_Personal\_Loan\_Modelling.xlsx",sheet\_name=1)

new\_age\_var = np.where(titanic\_train["Age"].isnull(),28,titanic\_train["Age"])

titanic\_train["Age"]=new\_age\_var

label\_encoder=preprocessing.LabelEncoder()

encoded\_age=label\_encoder.fit\_transform(titanic\_train['Age'])

tree\_model =tree.DecisionTreeClassifier()

Traceback (most recent call last):

File "<ipython-input-36-0f80af7c0b2c>", line 1, in <module>

tree\_model =tree.DecisionTreeClassifier()

NameError: name 'tree' is not defined

from sklearn import tree

tree\_model =tree.DecisionTreeClassifier()

tree\_model.fit(X=pd.DataFrame(encoded\_age),y=titanic\_train["Personal Loan"])

Out[39]:

DecisionTreeClassifier(class\_weight=None, criterion='gini', max\_depth=None,

max\_features=None, max\_leaf\_nodes=None,

min\_impurity\_decrease=0.0, min\_impurity\_split=None,

min\_samples\_leaf=1, min\_samples\_split=2,

min\_weight\_fraction\_leaf=0.0, presort=False,

random\_state=None, splitter='best')

tree\_model.fit(X=pd.DataFrame(encoded\_age),y=titanic\_train["Personal Loan"])

Out[40]:

DecisionTreeClassifier(class\_weight=None, criterion='gini', max\_depth=None,

max\_features=None, max\_leaf\_nodes=None,

min\_impurity\_decrease=0.0, min\_impurity\_split=None,

min\_samples\_leaf=1, min\_samples\_split=2,

min\_weight\_fraction\_leaf=0.0, presort=False,

random\_state=None, splitter='best')

with open("Dtree1.dot",'w') as f:

f=tree.export\_graphviz

with open("Dtree1.dot",'w') as f:

f=tree.export\_graphviz(tree\_model,feature\_name=["Sex"],out\_file=f);

Traceback (most recent call last):

File "<ipython-input-42-662be6cabbc0>", line 2, in <module>

f=tree.export\_graphviz(tree\_model,feature\_name=["Sex"],out\_file=f);

TypeError: export\_graphviz() got an unexpected keyword argument 'feature\_name'

with open("Dtree1.dot",'w') as f:

f=tree.export\_graphviz(tree\_model,feature\_name=["Age"],out\_file=f);

Traceback (most recent call last):

File "<ipython-input-43-58fa9f2b6c9c>", line 2, in <module>

f=tree.export\_graphviz(tree\_model,feature\_name=["Age"],out\_file=f);

TypeError: export\_graphviz() got an unexpected keyword argument 'feature\_name'

with open("Dtree1.dot",'w') as f:

f=tree.export\_graphviz(tree\_model,feature\_names=["Age"],out\_file=f);

predictors=pd.Dataframe([enclosed\_age,titanic\_train['Age']]).T

Traceback (most recent call last):

File "<ipython-input-45-64e2a5f9e242>", line 1, in <module>

predictors=pd.Dataframe([enclosed\_age,titanic\_train['Age']]).T

File "C:\ProgramData\Anaconda3\lib\site-packages\pandas\\_\_init\_\_.py", line 262, in \_\_getattr\_\_

raise AttributeError(f"module 'pandas' has no attribute '{name}'")

AttributeError: module 'pandas' has no attribute 'Dataframe'

predictors=pd.DataFrame([enclosed\_sex,titanic\_train['Age']]).T

Traceback (most recent call last):

File "<ipython-input-46-abff9dcf10c3>", line 1, in <module>

predictors=pd.DataFrame([enclosed\_sex,titanic\_train['Age']]).T

NameError: name 'enclosed\_sex' is not defined

predictors=pd.Dataframe([enclosed\_age,titanic\_train['Age']]).T

Traceback (most recent call last):

File "<ipython-input-47-64e2a5f9e242>", line 1, in <module>

predictors=pd.Dataframe([enclosed\_age,titanic\_train['Age']]).T

File "C:\ProgramData\Anaconda3\lib\site-packages\pandas\\_\_init\_\_.py", line 262, in \_\_getattr\_\_

raise AttributeError(f"module 'pandas' has no attribute '{name}'")

AttributeError: module 'pandas' has no attribute 'Dataframe'

predictors=pd.DataFrame([enclosed\_age,titanic\_train['Age']]).T

Traceback (most recent call last):

File "<ipython-input-48-7e03e9aa21cc>", line 1, in <module>

predictors=pd.DataFrame([enclosed\_age,titanic\_train['Age']]).T

NameError: name 'enclosed\_age' is not defined

predictors=pd.DataFrame([encoded\_age,titanic\_train['Age']]).T

tree\_model.fit(X=predictors,y=titanic\_train["Personal Loan"])

Out[50]:

DecisionTreeClassifier(class\_weight=None, criterion='gini', max\_depth=None,

max\_features=None, max\_leaf\_nodes=None,

min\_impurity\_decrease=0.0, min\_impurity\_split=None,

min\_samples\_leaf=1, min\_samples\_split=2,

min\_weight\_fraction\_leaf=0.0, presort=False,

random\_state=None, splitter='best')

tree\_model.score(X=predictors,y=titanic\_train["Personal Loan"])

Out[51]: 0.904