Program 6. Write a python program to decide whether the budget of a company is exceeding or not with decision trees, with a sample dataset

```
### import libraries
#### pandas - functions for analyzing, cleaning, exploring, and
manipulating data

import pandas as pd

### import the data

data = pd.read_csv('company budget.csv')

### visualize the data

data
```

	income	expenses	budgetclass
0	125000	100000	notexceeding
1	150000	149000	notexceeding
2	175000	165000	notexceeding
3	200000	200000	notexceeding
4	225000	375000	exceeding
5	250000	450000	exceeding
6	275000	375000	exceeding
7	300000	400000	exceeding
8	325000	355000	exceeding

```
### import libraries
#### decision tree - to solve classification problems and categorize
objects depending on their learning features.

from sklearn.tree import DecisionTreeClassifier
from sklearn.metrics import accuracy_score

features = ['income', 'expenses']

target_attribute = 'budgetclass'

### creating and training a decision tree classifier

from sklearn.model_selection import train_test_split

train_data, test_data, train_labels, test_labels =
```

```
train_test_split(data[features], data[target_attribute],

test_size=0.2, random_state=42)

# Create and train the decision tree model
model = DecisionTreeClassifier()

model.fit(train_data, train_labels)

DecisionTreeClassifier()

# Predict on the testing set
test_predictions = model.predict(test_data)

# Evaluate the model
accuracy = accuracy_score(test_labels, test_predictions)
print(f"Accuracy: {accuracy * 100:.2f}%")

Accuracy: 100.00%

### check fit of the model

new_data = {
    'income': [1000980],
     'expenses': [100000],
}

# Convert new data to DataFrame
new_df = pd.DataFrame(new_data)

# Predict the budget class for the new data
predicted_budgetclass = model.predict(new_df)

# Display the predicted budget class
print(f"predicted_budgetclass: {predicted_budgetclass[0]}")

predicted_budgetclass: notexceeding
```

Result

a python program to decide whether the budget of a company is exceeding or not with decision trees,

with a sample dataset was developed and executed successfully