```
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression
from sklearn.metrics import accuracy_score, confusion_matrix,
classification_report
import matplotlib.pyplot as plt

data = {
    'Room Size (sq ft)': [100, 200, 150, 300, 250, 120, 180, 220, 350,
270],
    'Number of Windows': [1, 2, 1, 3, 2, 1, 1, 2, 3, 2],
    'Temperature Range': ['Cool', 'Moderate', 'Cool', 'Warm', 'Warm',
'Cool', 'Moderate', 'Moderate', 'Warm', 'Warm']
}

df = pd.DataFrame(data)

print(df.head())
```

```
   Room Size (sq ft)  Number of Windows Temperature Range
0                100                  1             Cool
1                200                  2          Moderate
2                150                  1             Cool
3                300                  3             Warm
4                250                  2             Warm
```

```
X = df[['Room Size (sq ft)', 'Number of Windows']]
y = df['Temperature Range']

X_train, X_test, y_train, y_test = train_test_split(X, y,
test_size=0.2, random_state=42)

log_reg = LogisticRegression(random_state=42)

log_reg.fit(X_train, y_train)
```

```
LogisticRegression(random_state=42)
```

```
y_pred = log_reg.predict(X_test)

accuracy = accuracy_score(y_test, y_pred)
conf_matrix = confusion_matrix(y_test, y_pred)
class_report = classification_report(y_test, y_pred)

print(f'Accuracy: {accuracy}')
print(f'Confusion Matrix:\n{conf_matrix}')
print(f'Classification Report:\n{class_report}')
```

```
Accuracy: 1.0
Confusion Matrix:
[[1 0]
 [0 1]]
```

```
Classification Report:
              precision    recall  f1-score   support

    Moderate       1.00      1.00      1.00         1
        Warm       1.00      1.00      1.00         1

    accuracy                           1.00         2
   macro avg       1.00      1.00      1.00         2
weighted avg       1.00      1.00      1.00         2


new_room = [[250, 2]]
predicted_temperature_range = log_reg.predict(new_room)

print(f'Predicted Temperature Range:
{predicted_temperature_range[0]}')

Predicted Temperature Range: Warm

/usr/local/lib/python3.10/dist-packages/sklearn/base.py:439:
UserWarning: X does not have valid feature names, but
LogisticRegression was fitted with feature names
  warnings.warn(
```