

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_absolute_error, mean_squared_error, r2_score
```

```
df=pd.read_csv('/content/sample_data/canada_per_capita_income.csv')
print(df)
```

 Show hidden output

```
plt.scatter(df['year'],df['per capita income (US$)'])
plt.xlabel('year')
plt.ylabel('per capita income in US$')
plt.title('canada per capita income')
plt.grid()
plt.show()
```

 Show hidden output

```
X=df[['year']]
y=df['per capita income (US$)']

X_train,X_test,y_train,y_test=train_test_split(X,y,test_size=0.1,random_state=10)

reg=LinearRegression()
reg.fit(X_train,y_train)

print(f"intercept:{reg.intercept_}")
print(f"coefficient:{reg.coef_[0]}")
print(reg.score(X_test,y_test))
```

 Show hidden output

```
y_pred=reg.predict(X_test)
results=pd.DataFrame({'Year':X_test['year'],'Actual':y_test,'Predicted':y_pred})
print(results)
```

 Show hidden output

```
plt.scatter(x=X_test['year'],y=y_test,color='blue',label="Actual")
plt.scatter(x=X_test['year'],y=y_pred,color='red',label="Predicted")
plt.title('Canada per capita income')
plt.xlabel("Year")
plt.ylabel("Per capita income in US$")
plt.legend()
plt.grid()
plt.show()
```

 Show hidden output

```
mae = mean_absolute_error(y_test, y_pred)
mse = mean_squared_error(y_test, y_pred)
r2 = r2_score(y_test, y_pred)

print(f"Mean Absolute Error (MAE): {mae}")
print(f"Mean Squared Error (MSE): {mse}")
print(f"R2 Score: {r2}")
```

 Show hidden output

