Simple Linear Regression

Code.py

```python
import numpy as np

import matplotlib.pyplot as plt

import pandas as pd

dataset = pd.read_csv(r'C:\Users\omkar joshi\DATA SCIENCE\Databases\Salary_Data.csv')

# split the data to independent variable

X = dataset.iloc[:, :-1].values

# split the data to dependent variabel

y = dataset.iloc[:,1].values

# as d.v is continus that regression algorithm

# as in the data set we have 2 attribute we slr algo

# split the dataset to 80-20%

from sklearn.model_selection import train_test_split

X_train,X_test,y_train,y_test = train_test_split(X, y, test_size = 0.20, random_state = 0)

#we called simple linear regression algoriytm from sklearm framework

from sklearn.linear_model import LinearRegression

regressor = LinearRegression()

# we build simple linear regression model regressor

regressor.fit(X_train, y_train)

# test the model & create a predicted table

y_pred = regressor.predict(X_test)

# visualize train data point ( 24 data)

plt.scatter(X_train, y_train, color = 'red')

plt.plot(X_train, regressor.predict(X_train), color = 'blue')

plt.title('Salary vs Experience (Training set)')

plt.xlabel('Years of Experience')

plt.ylabel('Salary')

plt.show()
```

```python
# visulaize test data point
plt.scatter(X_test, y_test, color = 'red')
plt.plot(X_train, regressor.predict(X_train), color = 'blue')
plt.title('Salary vs Experience (Training set)')
plt.xlabel('Years of Experience')
plt.ylabel('Salary')
plt.show()
# slope is generrated from linear regress algorith which fit to dataset
m = regressor.coef_
# interceppt also generatre by model.
c = regressor.intercept_
# predict or forcast the future the data which we not trained before
y_12 = 9312 * 12 + 26780
y_20 = 9312 * 20 + 26780
# to check overfitting  ( low bias high variance)
bias = regressor.score(X_train, y_train)
bias
# to check underfitting (high bias low variance)
variance = regressor.score(X_test,y_test)
variance
# deployment in flask & html
# mlops (azur, googlcolab, heroku, kubarnate)
import pickle
# Save the trained model to disk
filename = 'linear_regression_model.pkl'
# Open a file in write-binary mode and dump the model
with open(filename, 'wb') as file:
    pickle.dump(regressor, file)
print("Model has been pickled and saved as linear_regression_model.pkl")
```

App.py

```python
import streamlit as st

import pickle

import numpy as np

# Load the saved model

model=pickle.load(open(r'C:\Users\omkarjoshi\DATASCIENCE\linear_regression_model.pkl', 'rb'))

st.set_page_config(page_title="Salary Prediction App", page_icon="💼", layout="centered")

st.markdown("""
    <style>
        .main {
            background-color: #0E1117;
            color: #FAFAFA;
            font-family: 'Segoe UI', Tahoma, Geneva, Verdana, sans-serif;
        }
        h1 {
            text-align: center;
            color: #00C9A7;
        }
        .stButton button {
            background-color: #00C9A7;
            color: white;
            border-radius: 12px;
            height: 3em;
            width: 100%;
            font-size: 18px;
        }
        .stButton button:hover {
```

```python
        background-color: #00B894;

        color: white;

    }

    .prediction-box {

        padding: 15px;

        border-radius: 12px;

        background-color: #1B4332;

        color: #D8F3DC;

        text-align: center;

        font-size: 20px;

        font-weight: bold;

    }

    </style>
""", unsafe_allow_html=True)

st.title("💼 Salary Prediction App")

st.markdown("### Predict your salary based on years of experience using a **Simple Linear Regression Model**.")

years_experience = st.number_input("📅 Enter Years of Experience:", min_value=0.0, max_value=50.0, value=1.0, step=0.5)

if st.button("🔮 Predict Salary"):

    experience_input = np.array([[years_experience]])

    prediction = model.predict(experience_input)

st.markdown(f"<div class='prediction-box'>💰 The predicted salary for {years_experience:.1f} years of experience is: <br><br> **${prediction[0]:,.2f}**</div>", unsafe_allow_html=True)

st.markdown("---")

st.markdown("📊 *This model was trained using a dataset of salaries and years of experience.*")
```

💼 Salary Prediction App

Predict your salary based on years of experience using a Simple Linear Regression Model.

📅 Enter Years of Experience:

12.00	− +

🤖 Predict Salary

💰 The predicted salary for 12.0 years of experience is:

$138,531.00

📊 *This model was trained using a dataset of salaries and years of experience.*