Assignment-6

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**Code:**

from google.colab import drive

drive.mount("/content/drive/MyDrive/datasets/salary\_data.csv")

import numpy as np

import pandas as pd

df=pd.read\_csv("/content/drive/MyDrive/datasets/salary\_data.csv")

df

df.head()

from matplotlib import pyplot as plt

import seaborn as sns

sns.scatterplot(x="YearsExperience",y="Salary", data=df)

plt.title("years of experience vs salary")

plt.xlabel("yeats of experience")

plt.ylabel("salary")

plt.show()

from sklearn.model\_selection import train\_test\_split

x= df[['YearsExperience']]

y=df["Salary"]

x\_train,x\_test,y\_train,y\_test=train\_test\_split(x,y,test\_size=0.2,random\_state=42)

print("x\_train: ",x\_train)

print("x\_test: ",x\_test)

print("y\_train: ",y\_train)

print("y\_test: ",y\_test)

from sklearn.metrics import mean\_squared\_error, r2\_score

mse = mean\_squared\_error(y\_test, y\_pred)

r2 = r2\_score(y\_test, y\_pred)

print(f"Mean Squared Error: {mse:.2f}")

print(f"R² Score: {r2:.2f}")

# Plot training data and regression line

plt.scatter(x, y, color='blue')

plt.plot(x, model.predict(x), color='red')

plt.title("Regression Line - Salary vs Experience")

plt.xlabel("Years of Experience")

plt.ylabel("Salary")

plt.show()

import numpy as np

errors = y - model.predict(x)

plt.errorbar(x['YearsExperience'], y, yerr=abs(errors), fmt='o', label='Error bars')

plt.plot(x, model.predict(x), color='red', label='Regression Line')

plt.legend()

plt.xlabel("Years of Experience")

plt.ylabel("Salary")

plt.title("Prediction with Error Bars")

plt.show()

compare\_df = pd.DataFrame({'Actual': y\_test, 'Predicted': y\_pred})

compare\_df = compare\_df.reset\_index(drop=True)

compare\_df.plot(kind='bar', figsize=(10, 6))

plt.title("Actual vs Predicted Salaries")

plt.xlabel("Index")

plt.ylabel("Salary")

plt.grid(True)

plt.show()

years = float(input("Enter years of experience: "))

predicted\_salary = model.predict([[years]])

print(f"Predicted Salary: ₹{predicted\_salary[0]:.2f}")

outputs:

