week3

August 23, 2024

```python
[1]: import numpy as np
     import matplotlib.pyplot as plt

     def Sl_regressor(x,y):
         x=np.array(x)
         y=np.array(y)

         x_mean=x.mean()
         y_mean=y.mean()

         numerator = ((x-x_mean)*(y-y_mean)).sum()
         denominator = ((x-x_mean)**2).sum()
         slope = numerator/denominator
         intercept = y_mean - slope * x_mean

         return slope, intercept

     x=list(map(float, input("Enter the values for x (space-separated): ").split()))
     y=list(map(float, input("Enter the value for y (space-separated): ").split()))

     if len(x) != len(y):
         print("Error: x and y must have the same number of elements.")
     else:
         slope, intercept = Sl_regressor(x,y)

         print(f"Slope: {slope}")
         print(f"Intercept: {intercept}")

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

         reg_line = [slope *xi + intercept for xi in x]
         plt.plot(x, reg_line, color='red', label=f'Line: y = {slope: .2f}x +␣
      ↪{intercept: .2f}')

         plt.xlabel('X')
         plt.ylabel('Y')
         plt.title('Simple Linear Regression')
```

```
    plt.legend()

    plt.show()
```

Slope: 1.28
Intercept: -2520.0

Simple Linear Regression