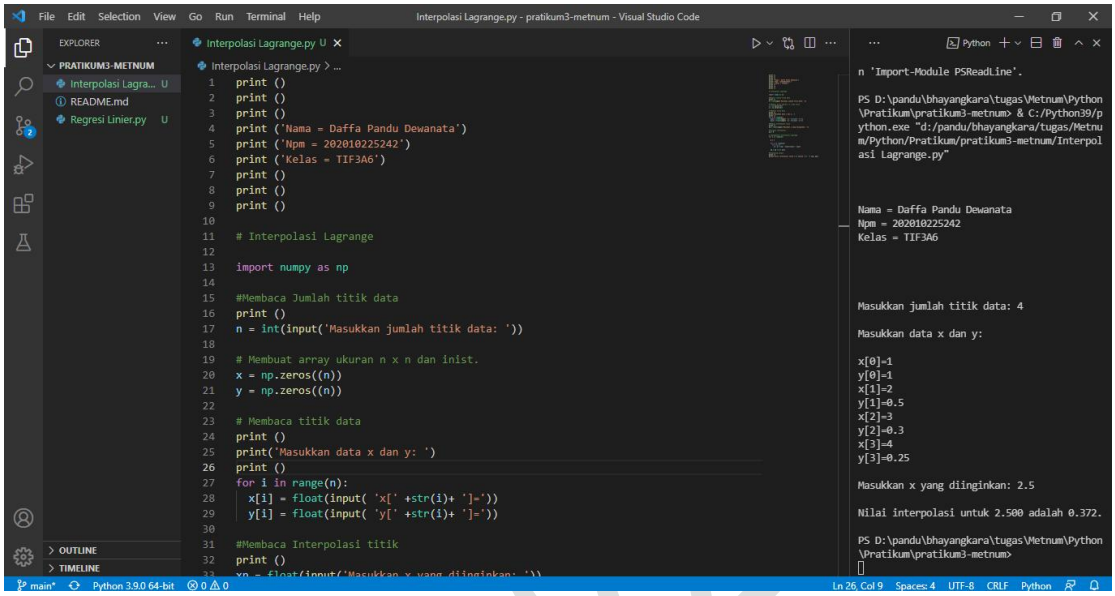
Nama : Daffa Pandu Dewanata 13-11-2021

NPM : 202010225242 **METODE NUMERIK**

Kelas : TIF3A6

# Pratikum 3

## Metode Lagrange




## Scripct Lagrange

```
print ()
print ()
print ()
print ('Nama = Daffa Pandu Dewanata')
print ('Npm = 202010225242')
print ('Kelas = TIF3A6')
print ()
print ()
print ()

# Interpolasi Lagrange

import numpy as np

#Membaca Jumlah titik data
print ()
n = int(input('Masukkan jumlah titik data: '))

# Membuat array ukuran n x n dan inist.
x = np.zeros((n))
y = np.zeros((n))

# Membaca titik data
print ()
print('Masukkan data x dan y: ')
print ()
```

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```
for i in range(n):
  x[i] = float(input( 'x[' +str(i)+ ']='))
  y[i] = float(input( 'y[' +str(i)+ ']='))

#Membaca Interpolasi titik
print ()
xp = float(input('Masukkan x yang diinginkan: '))

#Inisiasi interpolasi
yp = 0

# Implementasi Interpolasi Lagrange
for i in range(n):

  p = 1

  for j in range(n):
    if i != j:
      p = p * (xp - x[j])/(x[i] - x[j])

  yp = yp + p * y[i]

#Displaying output
print ()
print('Nilai interpolasi untuk %.3f adalah %.3f.' % (xp, yp))
```

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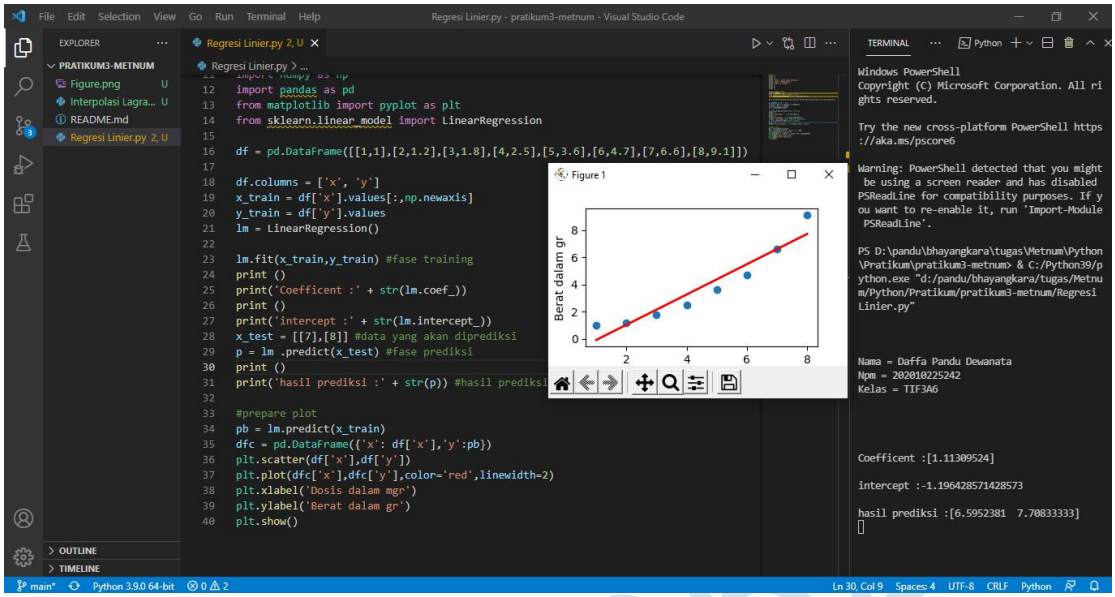
# Metode Regresi Linear




## Scripct Regresi Linear

```
print ()
print ()
print ()
print ('Nama = Daffa Pandu Dewanata')
print ('Npm = 202010225242')
print ('Kelas = TIF3A6')
print ()
print ()
print ()

import numpy as np
import pandas as pd
from matplotlib import pyplot as plt
from sklearn.linear_model import LinearRegression

df = pd.DataFrame([[1,1],[2,1.2],[3,1.8],[4,2.5],[5,3.6],[6,4.7],[7,6.6],[8,9.1]])

df.columns = ['x', 'y']
x_train = df['x'].values[:,np.newaxis]
y_train = df['y'].values
lm = LinearRegression()

lm.fit(x_train,y_train) #fase training
```

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```
print ()
print('Coefficent :' + str(lm.coef_))
print ()
print('intercept :' + str(lm.intercept_))
x_test = [[7],[8]] #data yang akan diprediksi
p = lm .predict(x_test) #fase prediksi
print ()
print('hasil prediksi :' + str(p)) #hasil prediksi

#prepare plot
pb = lm.predict(x_train)
dfc = pd.DataFrame({'x': df['x'],'y':pb})
plt.scatter(df['x'],df['y'])
plt.plot(dfc['x'],dfc['y'],color='red',linewidth=2)
plt.xlabel('Dosis dalam mgr')
plt.ylabel('Berat dalam gr')
plt.show()
```

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