

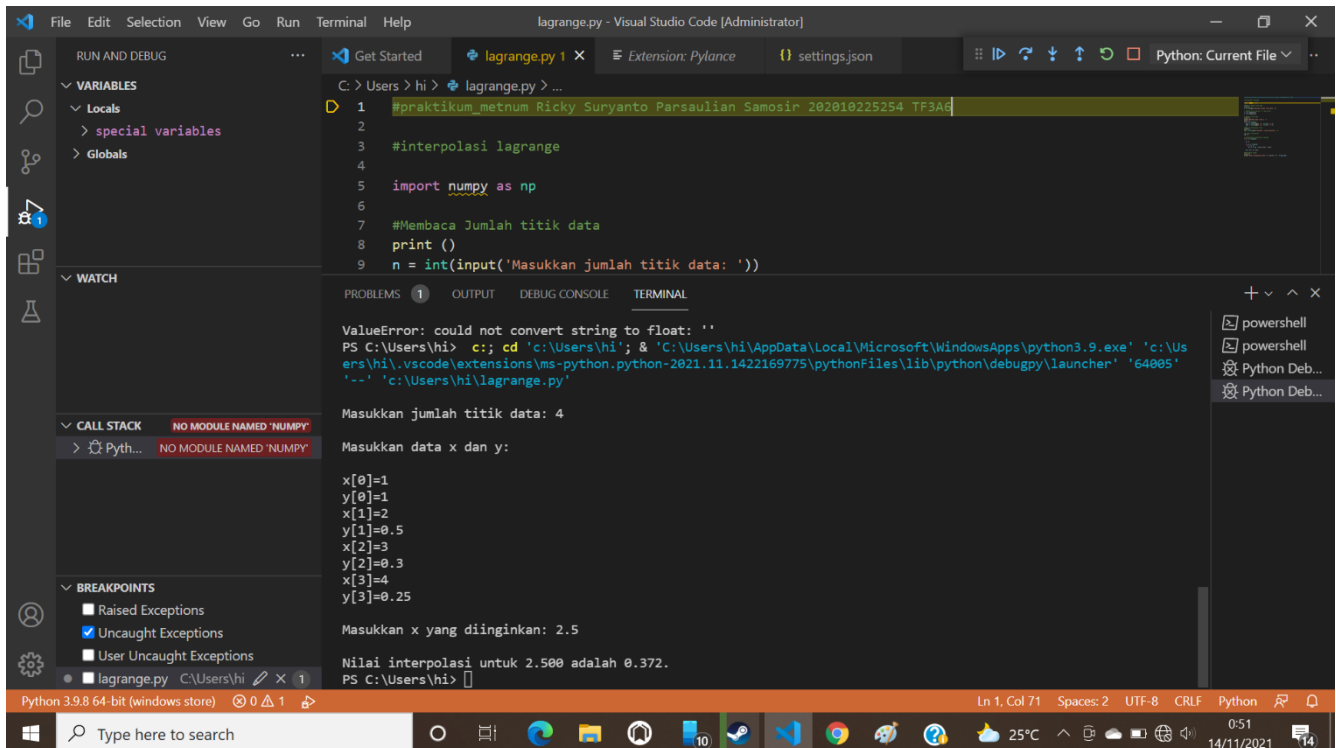
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Npm : 202010225254

Kelas : TF3A6

## PRAKTIKUM 3 METODE NUMERIK

### Metode lagrange



```
File Edit Selection View Go Run Terminal Help
lagrange.py - Visual Studio Code [Administrator]

RUN AND DEBUG
VARIABLES
  Locals
    special variables
  Globals
WATCH
CALL STACK
  NO MODULE NAMED 'NUMPY'
  Python... NO MODULE NAMED 'NUMPY'
BREAKPOINTS
  Raised Exceptions
  Uncaught Exceptions
  User Uncaught Exceptions
  lagrange.py C:\Users\hi\ 1

C: > Users > hi > lagrange.py > ...
1 #praktikum_metnum Ricky Suryanto Parsaulian Samosir 202010225254 TF3A6
2
3 #interpolasi lagrange
4
5 import numpy as np
6
7 #Membaca Jumlah titik data
8 print ()
9 n = int(input('Masukkan jumlah titik data: '))

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL
ValueError: could not convert string to float: ''
PS C:\Users\hi> c::; cd 'C:\Users\hi'; & 'C:\Users\hi\AppData\Local\Microsoft\WindowsApps\python3.9.exe' 'c:\Users\hi\.vscode\extensions\ms-python.python-2021.11.1422169775\pythonFiles\lib\python\debugpy\launcher' '64005'
'--' 'c:\Users\hi\lagrange.py'

Masukkan jumlah titik data: 4

Masukkan data x dan y:

x[0]=1
y[0]=1
x[1]=2
y[1]=0.5
x[2]=3
y[2]=0.3
x[3]=4
y[3]=0.25

Masukkan x yang diinginkan: 2.5

Nilai interpolasi untuk 2.500 adalah 0.372.
PS C:\Users\hi>
```

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### Script python:

```
#praktikum_metnum Ricky Suryanto Parsaulian Samosir 202010225254 TF3A6

#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 ()
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]

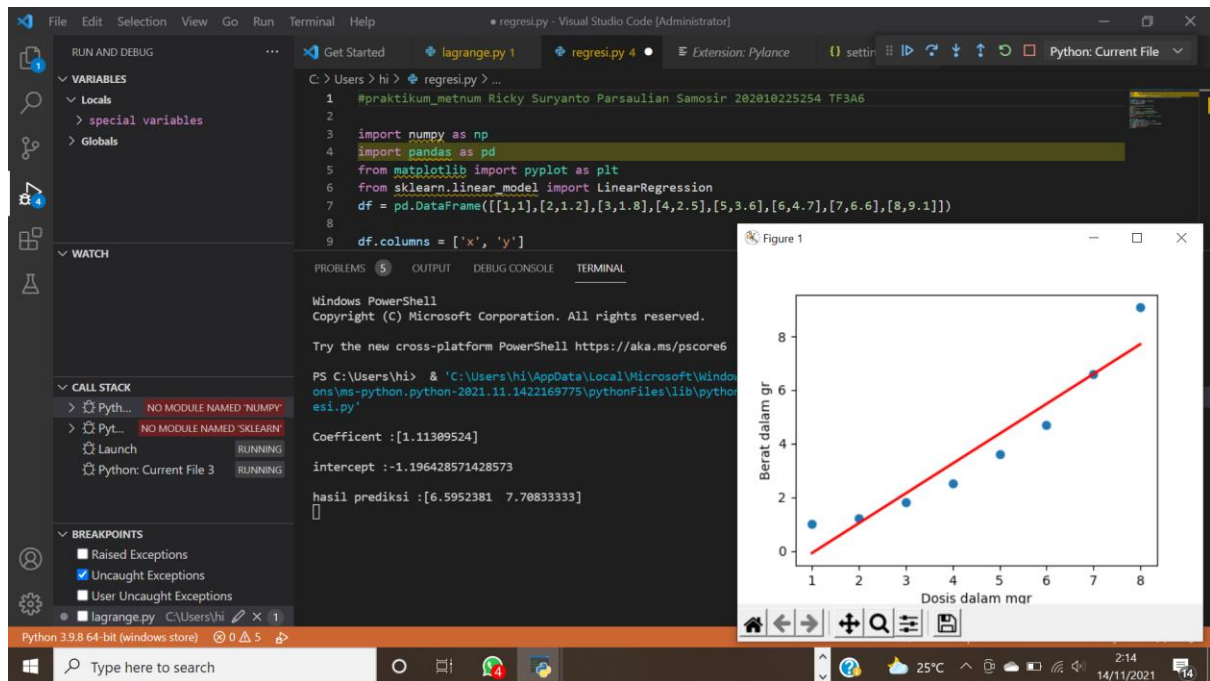
#Displaying output
print ()
print('Nilai interpolasi untuk %.3f adalah %.3f.' % (xp, yp))
```

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## Metode regresi linear



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### Script python:

```
#praktikum_metnum Ricky Suryanto Parsaulian Samosir 202010225254 TF3A6

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
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()
```