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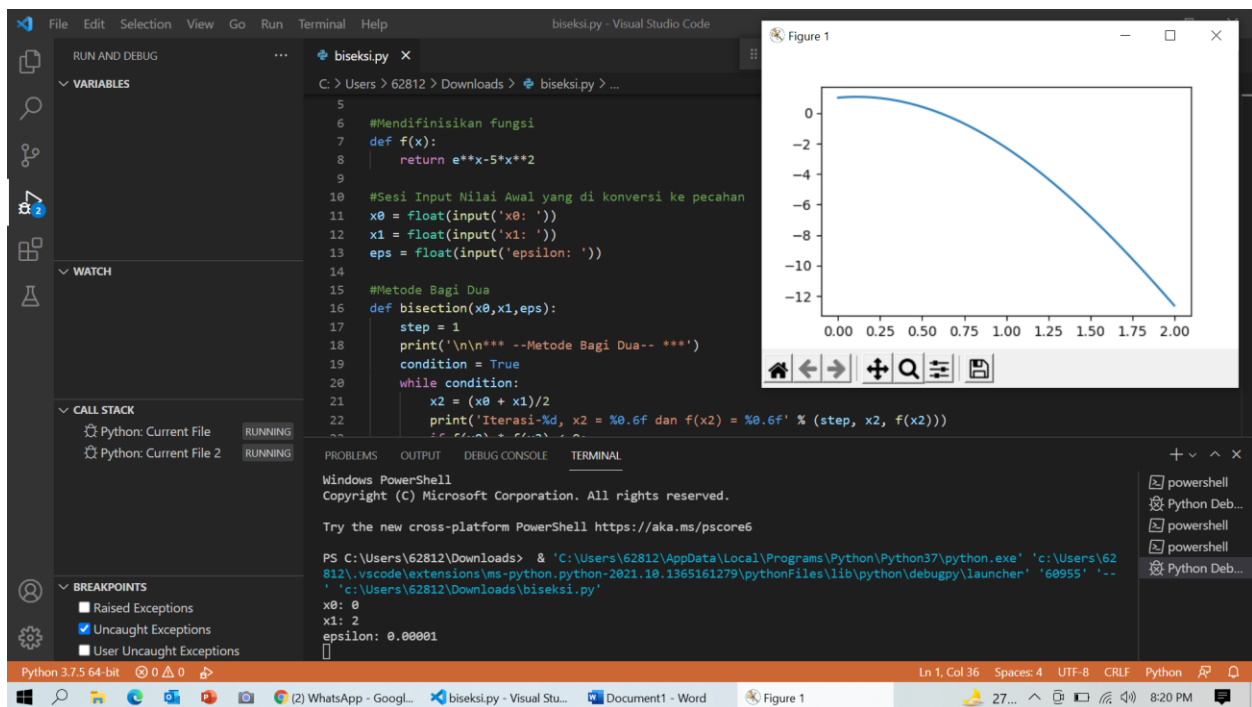
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Kelas : TF3A6

Praktikum 1 metnum Modul 1

A. Metode bagi dua

Biseksi



Visual Studio Code interface showing the execution of a Python script named `biseksi.py`. The script implements the bisection method for finding roots of a function. The terminal output shows the iterative process, including the initial values of x_0 , x_1 , and ϵ , and the results of each iteration.

```

Python\debugpy\launcher '60967' '--' 'c:\Users\62812\Downloads\biseksi.py'
x0: 0
x1: 2
epsilon: 0.00001

*** --Metode Bagi Dua-- ***
Iterasi-1, x2 = 1.000000 dan f(x2) = -2.281718
Akar Persamaan tersebut : 1.00000000
Iterasi-2, x2 = 0.500000 dan f(x2) = 0.398721
Akar Persamaan tersebut : 0.50000000
Iterasi-3, x2 = 0.750000 dan f(x2) = -0.695500
Akar Persamaan tersebut : 0.75000000
Iterasi-4, x2 = 0.625000 dan f(x2) = -0.084879
Akar Persamaan tersebut : 0.62500000
Iterasi-5, x2 = 0.562500 dan f(x2) = 0.173023
Akar Persamaan tersebut : 0.56250000
Iterasi-6, x2 = 0.593750 dan f(x2) = 0.048071
Akar Persamaan tersebut : 0.59375000
Iterasi-7, x2 = 0.609375 dan f(x2) = -0.017408
Akar Persamaan tersebut : 0.60937500
Iterasi-8, x2 = 0.601562 dan f(x2) = 0.015581
Akar Persamaan tersebut : 0.60156250
Iterasi-9, x2 = 0.605469 dan f(x2) = -0.000851
Akar Persamaan tersebut : 0.60546875
Iterasi-10, x2 = 0.603516 dan f(x2) = 0.007380
Akar Persamaan tersebut : 0.60351562
  
```

The interface also shows the 'WATCH' panel with the variable `Python: Current File` and the 'CALL STACK' panel with the function `Python: Current File` running.

B. Regulasi

Visual Studio Code interface showing the execution of a Python script named `regulasi.py`. The script implements a regulation algorithm. The terminal output shows the execution of the script, including the definition of the function `f(x)` and the input values for x_0 , x_1 , and ϵ .

```

C:\Users\62812> Downloads> regulafalsi.py > ...
1 #Fariid Abyasta Suheri 202010225333
2 # -*- coding: utf-8 -*-
3 """
4 Created on Sat Oct 23 19:21:24 2021
5
6 @author: Fariid Abyasta Suheri 202010225333 TF3A6
7 """
8
9 import numpy as np
10 import matplotlib.pyplot as plt
11 from math import e #Untuk memanggil bilangan eksponen
12 # Mendefinisikan fungsi
13 def f(x):
14     return e**x-5*x**2
15 #Mendefinisikan fungsi
16 x0 = float(input('x0: '))
17 x1 = float(input('x1: '))
18 eps = float(input('epsilon: '))
  
```

The interface also shows the 'WATCH' panel with the variable `Python: Current File` and the 'CALL STACK' panel with the function `Python: Current File` running.

A plot titled 'Figure 1' is displayed, showing the function $f(x) = e^x - 5x^2$ over the interval $x \in [0, 2]$. The y-axis ranges from -12.5 to 0.0. The curve starts at approximately (0, 1) and decreases, crossing the x-axis at approximately $x = 0.6$ and $x = 1.6$.

```
File Edit Selection View Go Run Terminal Help regulafalsi.py - Visual Studio Code

*** --Metode RegulaFalsi-- ***
Iterasi-1, x2 = 0.146941 and f(x2) = 1.050327
Akar Persamaan tersebut : 0.14694058
Iterasi-2, x2 = 0.289410 and f(x2) = 0.916848
Akar Persamaan tersebut : 0.28941042
Iterasi-3, x2 = 0.405346 and f(x2) = 0.678295
Akar Persamaan tersebut : 0.40534585
Iterasi-4, x2 = 0.486738 and f(x2) = 0.442429
Akar Persamaan tersebut : 0.48673845
Iterasi-5, x2 = 0.538029 and f(x2) = 0.265253
Akar Persamaan tersebut : 0.53802875
Iterasi-6, x2 = 0.568146 and f(x2) = 0.151043
Akar Persamaan tersebut : 0.56814572
Iterasi-7, x2 = 0.585092 and f(x2) = 0.083492
Akar Persamaan tersebut : 0.58509231
Iterasi-8, x2 = 0.594398 and f(x2) = 0.045394
Akar Persamaan tersebut : 0.59439820
Iterasi-9, x2 = 0.599440 and f(x2) = 0.024459

epsilon : 0.00001

PS C:\Users\62812\Downloads> cd 'c:\Users\62812\Downloads'; & 'C:\Users\62812\AppData\Local\Programs\Python\Python37\python.exe' 'c:\Users\62812\.vscode\extensions\ms-python.python-2021.10.1365161279\pythonFiles\lib\python\debugpy\launcher' '54921' '--' 'c:\Users\62812\Downloads\regulafalsi.py'
```

C. Newtonraphson

```
File Edit Selection View Go Run Terminal Help newtonraphson.py - Visual Studio Code

*** --Metode Newson Raphson-- ***
Iterasi-1, x = -1.00000000 dan f(x) = -4.63212056
Iterasi-2, x = -0.55322392 dan f(x) = -0.95519075
Iterasi-3, x = -0.39682326 dan f(x) = -0.11489062
Iterasi-4, x = -0.37206600 dan f(x) = -0.00285682
Iterasi-5, x = -0.37141820 dan f(x) = -0.00000195
Akar Persamaan tersebut : -0.37141820
PS C:\Users\62812\Downloads>
```

D. Secont

```
File Edit Selection View Go Run Terminal Help
secant.py - Visual Studio Code

VARIABLES
WATCH
CALL STACK
  Python: Current File RUNNING
  Python: Current File 2 RUNNING
  Python: Current File 3 RUNNING
BREAKPOINTS
  Raised Exceptions
  [x] Uncaught Exceptions
  User Uncaught Exceptions

Iterasi-1, x = 0.14694058 dan f(x) = 1.05032747
Iterasi-2, x = 0.28941042 dan f(x) = 0.91684783
Iterasi-3, x = 1.26801036 dan f(x) = -4.48547660
Iterasi-4, x = 0.45549212 dan f(x) = 0.53958387
Iterasi-5, x = 0.54273918 dan f(x) = 0.24788466
Iterasi-6, x = 0.61688134 dan f(x) = -0.04957321
Iterasi-7, x = 0.60452508 dan f(x) = 0.00312984
Iterasi-8, x = 0.60525888 dan f(x) = 0.00003480
Iterasi-9, x = 0.60526713 dan f(x) = -0.00000003

Akar Persamaan tersebut : 0.60526713
PS C:\Users\G2812\Downloads>
```

Python 3.7.5 64-bit 0 0 0 Ln 24, Col 9 Spaces: 4 UTF-8 CRLF Python 8:38 PM