

Nama : Muhammad Fakhrol Amin

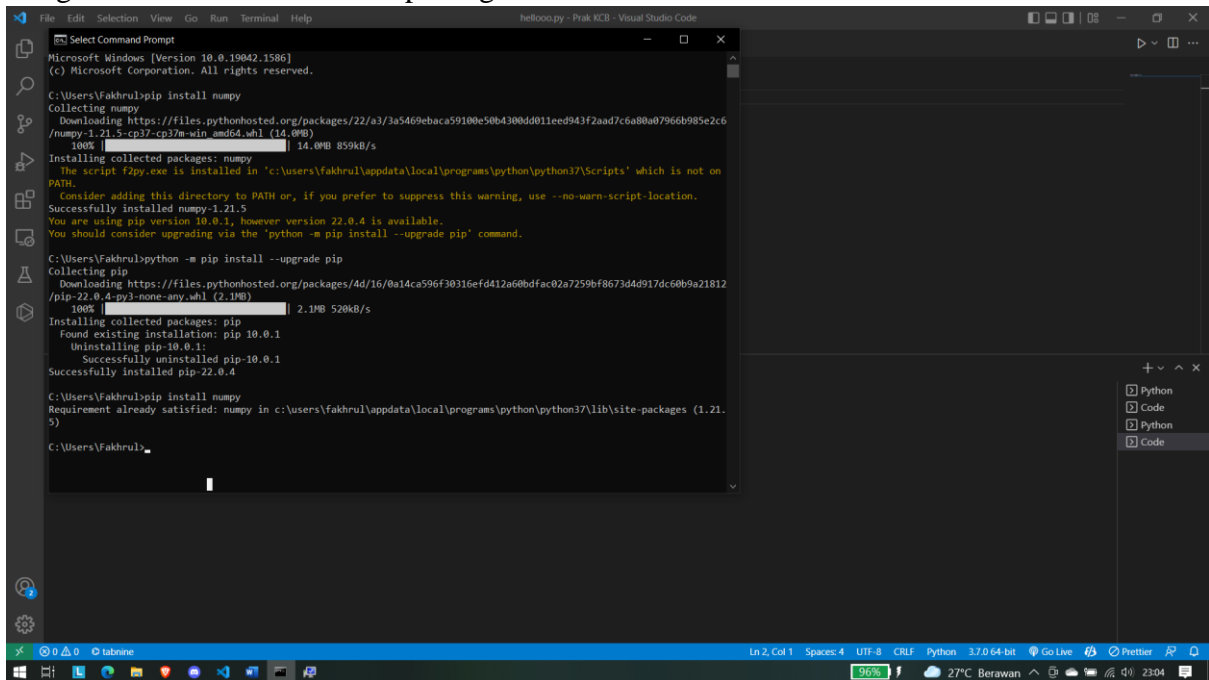
NIM : 2000018277

Slot : Sabtu 07.30

## LANGKAH PRAKTIKUM KECERDASAN BUATAN

### PERTEMUAN 1

#### 1. Langkah Praktikum 1 instalasi package



```
Microsoft Windows [Version 10.0.19042.1586]
(c) Microsoft Corporation. All rights reserved.

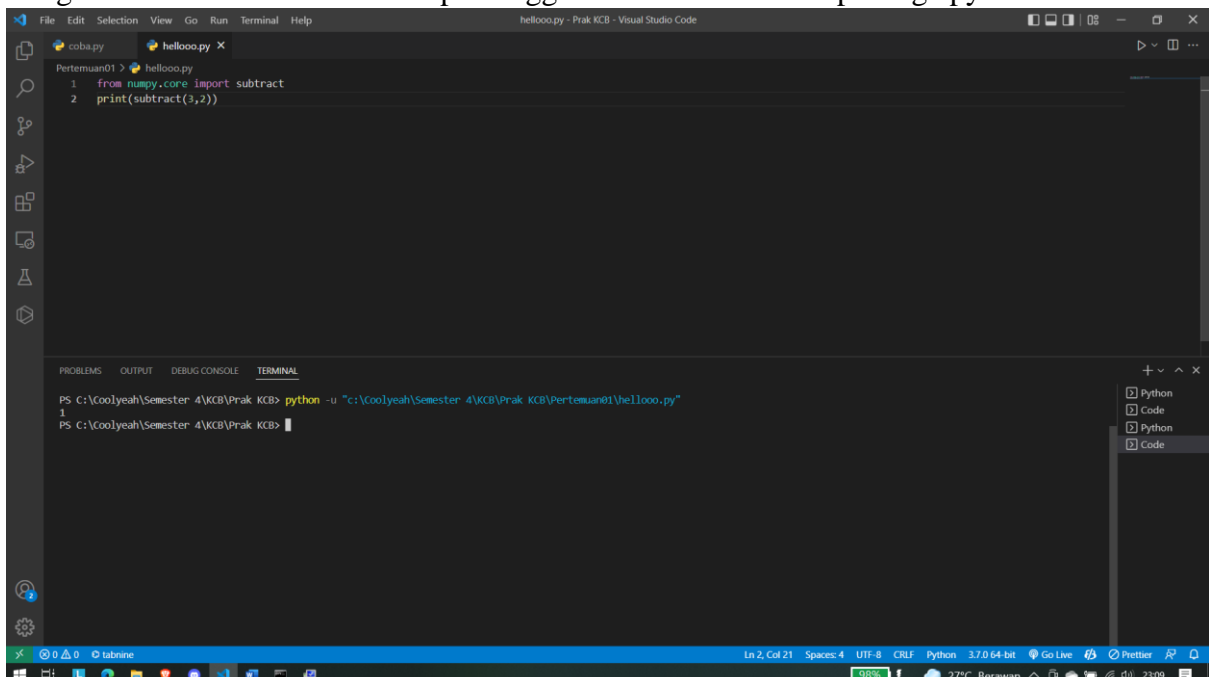
C:\Users\Fakhrol>pip install numpy
Collecting numpy
  Downloading https://files.pythonhosted.org/packages/22/a3/3a5469ebaca59100e50b4300dd011eed943f2aad7c6a80a07966b985e2c6/numpy-1.21.5-cp37-cp37m-win_amd64.whl (14.0MB)
    100% |#####| 14.0MB 859kB/s
Installing collected packages: numpy
  The script f2py.exe is installed in 'c:\users\fakhrol\appdata\local\programs\python\python37\Scripts' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
Successfully installed numpy-1.21.5
You are using pip version 10.0.1, however version 22.0.4 is available.
You should consider upgrading via the 'python -m pip install --upgrade pip' command.

C:\Users\Fakhrol>python -m pip install --upgrade pip
Collecting pip
  Downloading https://files.pythonhosted.org/packages/4d/16/0a14ca596f30316efd412a60bdfac02a7259bf8673d4d917dc60b9a21812/pip-22.0.4-py3-none-any.whl (2.1MB)
    100% |#####| 2.1MB 520kB/s
Installing collected packages: pip
  Found existing installation: pip 10.0.1
  Uninstalling pip-10.0.1:
    Successfully uninstalled pip-10.0.1
  Successfully installed pip-22.0.4

C:\Users\Fakhrol>pip install numpy
Requirement already satisfied: numpy in c:\users\fakhrol\appdata\local\programs\python\python37\lib\site-packages (1.21.5)

C:\Users\Fakhrol>
```

#### 2. Langkah Praktikum 2 melakukan pemanggilan module di dalam package python

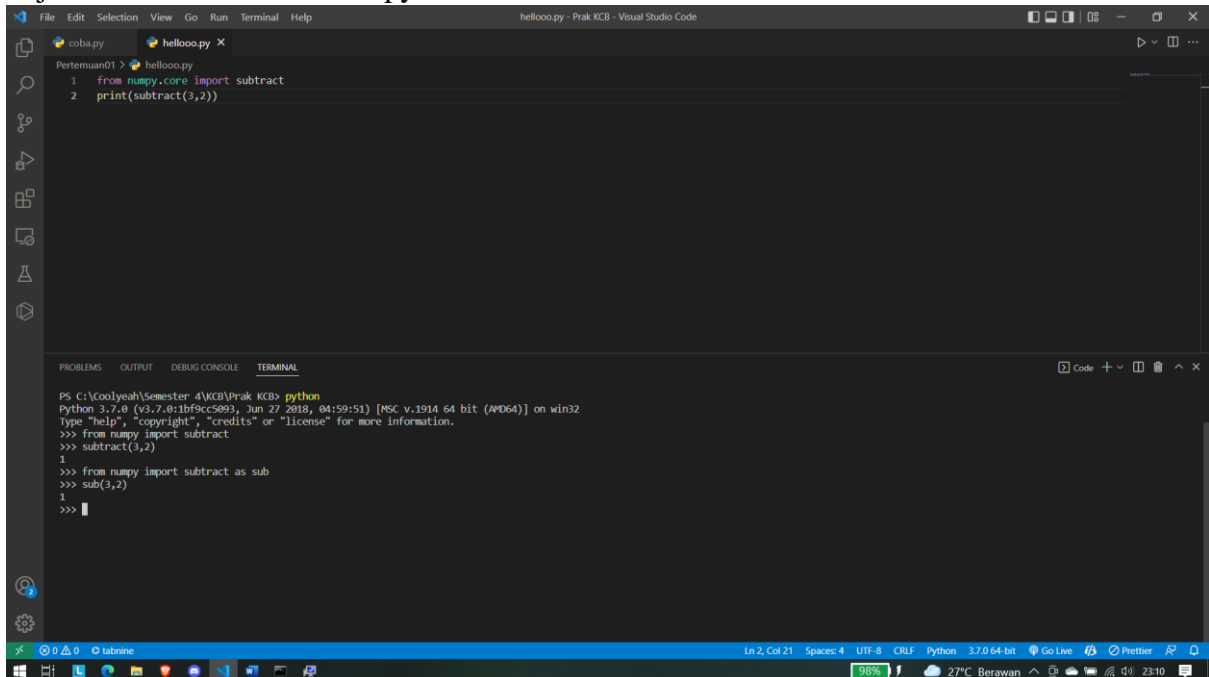


```
File Edit Selection View Go Run Terminal Help
hellooo.py - Prak KCB - Visual Studio Code

cobapy hellooo.py X
Pertemuan01 > hellooo.py
1 from numpy.core import subtract
2 print(subtract(3,2))

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
PS C:\Coo\yeah\Semester 4\KCB\Prak KCB> python -u "c:\Coo\yeah\Semester 4\KCB\Prak KCB\Pertemuan01\hellooo.py"
1
PS C:\Coo\yeah\Semester 4\KCB\Prak KCB>
```

Dijalankan dalam interactive python:



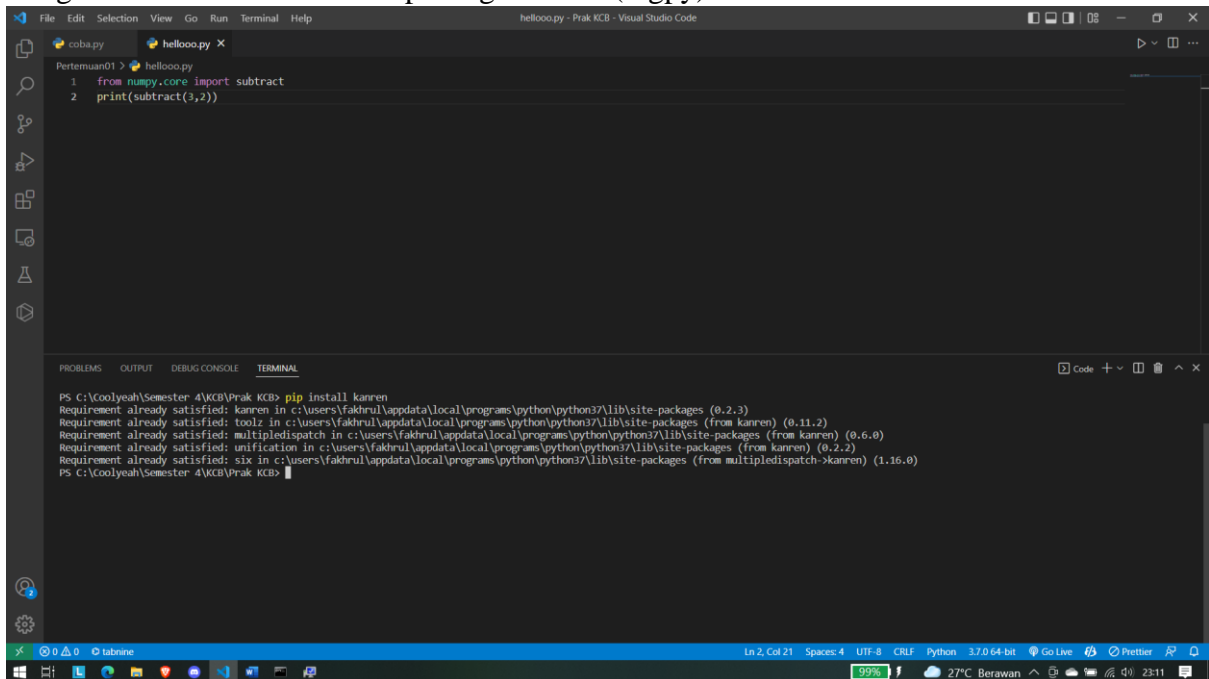
The screenshot shows the Visual Studio Code interface. The editor has a file named 'hellooo.py' open, containing the following code:

```
1 from numpy.core import subtract
2 print(subtract(3,2))
```

The terminal window at the bottom shows the execution of the code in an interactive Python environment:

```
PS C:\Coo\yeeah\Semester 4\KCB\Prak KCB> python
Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:59:51) [MSC v.1914 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> from numpy import subtract
>>> subtract(3,2)
1
>>> from numpy import subtract as sub
>>> sub(3,2)
1
>>>
```

### 3. Langkah Praktikum 3 instalasi package kanren (logpy)



The screenshot shows the Visual Studio Code interface with the same 'hellooo.py' file. The terminal window shows the command to install the 'kanren' package:

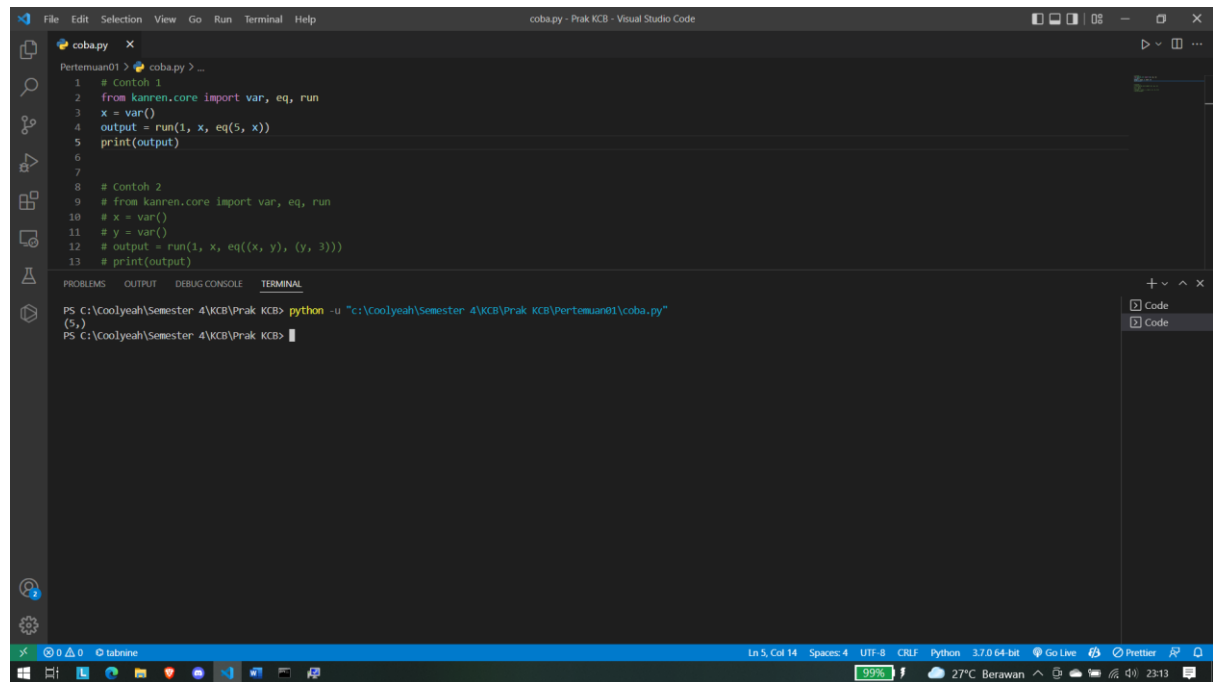
```
PS C:\Coo\yeeah\Semester 4\KCB\Prak KCB> pip install kanren
```

The output of the command is as follows:

```
Requirement already satisfied: kanren in c:\users\fakhrul\appdata\local\programs\python\python37\lib\site-packages (0.2.3)
Requirement already satisfied: toolz in c:\users\fakhrul\appdata\local\programs\python\python37\lib\site-packages (from kanren) (0.11.2)
Requirement already satisfied: multipledispatch in c:\users\fakhrul\appdata\local\programs\python\python37\lib\site-packages (from kanren) (0.6.0)
Requirement already satisfied: unification in c:\users\fakhrul\appdata\local\programs\python\python37\lib\site-packages (from kanren) (0.2.2)
Requirement already satisfied: six in c:\users\fakhrul\appdata\local\programs\python\python37\lib\site-packages (from multipledispatch->kanren) (1.16.0)
PS C:\Coo\yeeah\Semester 4\KCB\Prak KCB>
```

#### 4. Langkah Praktikum 4 menggunakan modul logika dalam package kanren

##### Contoh 1



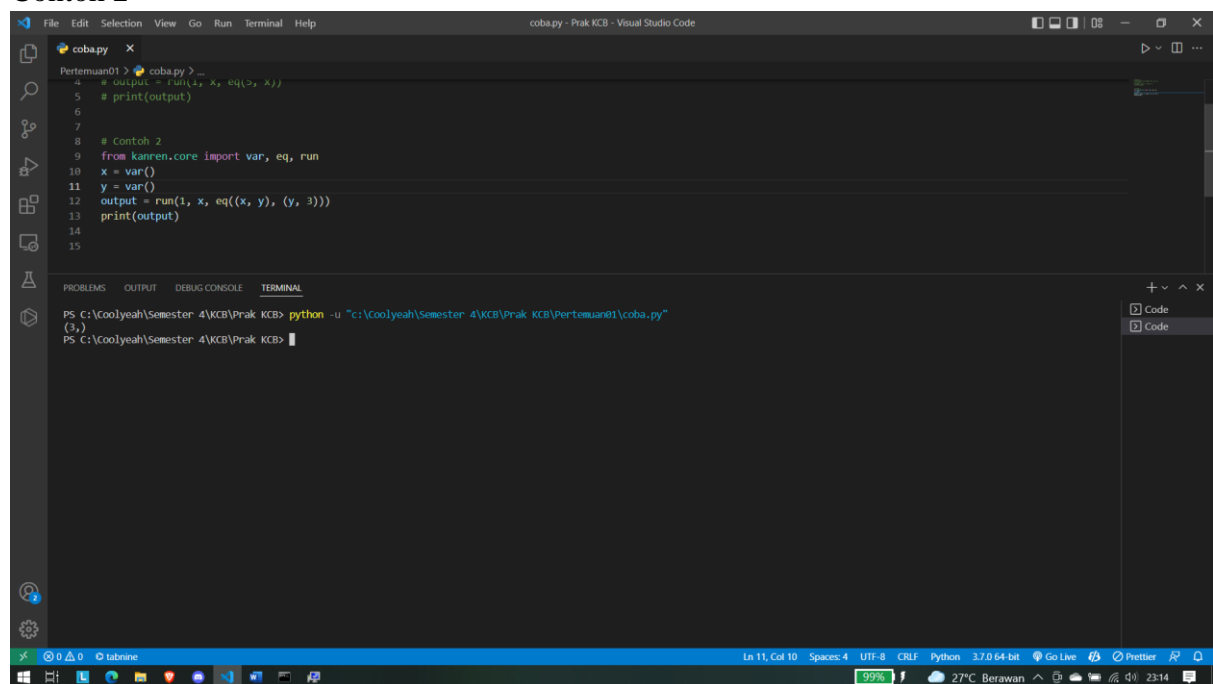
```
File Edit Selection View Go Run Terminal Help
coba.py - Prak KCB - Visual Studio Code

coba.py X
Pertemuan01 > coba.py > ...
1 # Contoh 1
2 from kanren.core import var, eq, run
3 x = var()
4 output = run(1, x, eq(5, x))
5 print(output)
6
7
8 # Contoh 2
9 from kanren.core import var, eq, run
10 x = var()
11 y = var()
12 output = run(1, x, eq((x, y), (y, 3)))
13 print(output)

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
PS C:\Coo\yeah\Semester 4\KCB\Prak KCB\Pertemuan01\coba.py
(5,)
PS C:\Coo\yeah\Semester 4\KCB\Prak KCB>

Ln 5, Col 14 Spaces: 4 UTF-8 CRLF Python 3.7.0 64-bit Go Live Prettier 99% 27°C Berawan 23:13
```

##### Contoh 2



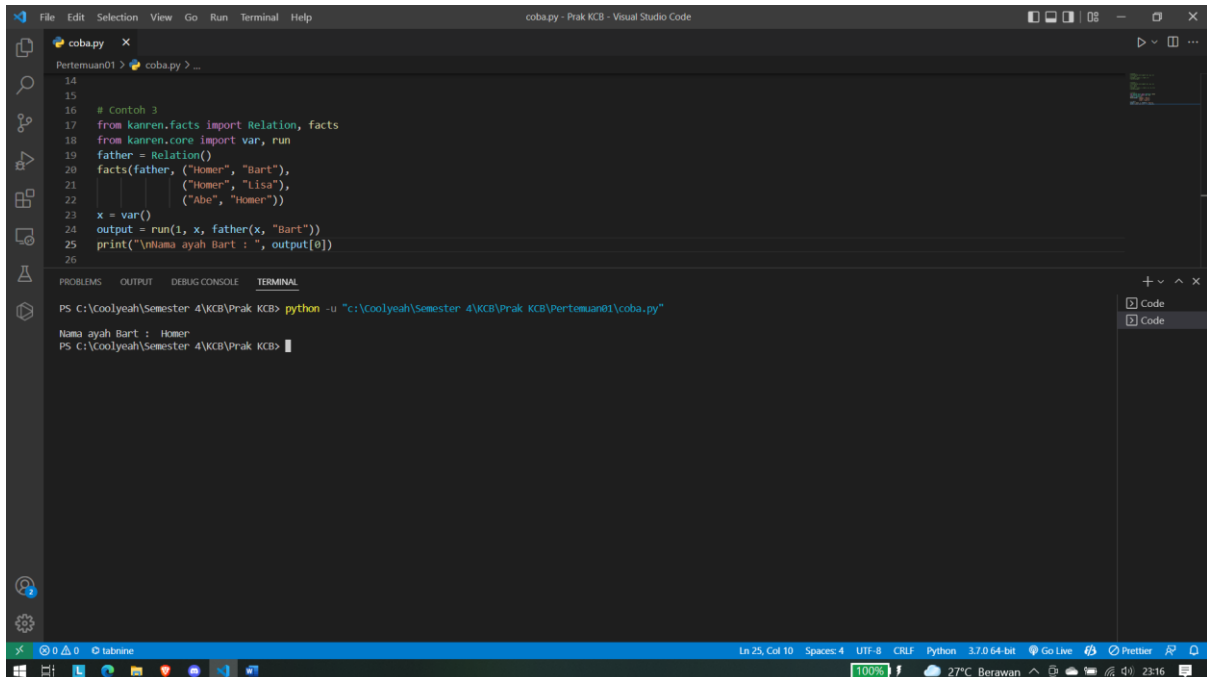
```
File Edit Selection View Go Run Terminal Help
coba.py - Prak KCB - Visual Studio Code

coba.py X
Pertemuan01 > coba.py > ...
4 output = run(1, x, eq(5, x))
5 print(output)
6
7
8 # Contoh 2
9 from kanren.core import var, eq, run
10 x = var()
11 y = var()
12 output = run(1, x, eq((x, y), (y, 3)))
13 print(output)
14
15

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
PS C:\Coo\yeah\Semester 4\KCB\Prak KCB> python -u "c:\Coo\yeah\Semester 4\KCB\Prak KCB\Pertemuan01\coba.py"
(3,)
PS C:\Coo\yeah\Semester 4\KCB\Prak KCB>

Ln 11, Col 10 Spaces: 4 UTF-8 CRLF Python 3.7.0 64-bit Go Live Prettier 99% 27°C Berawan 23:14
```

## Contoh 3

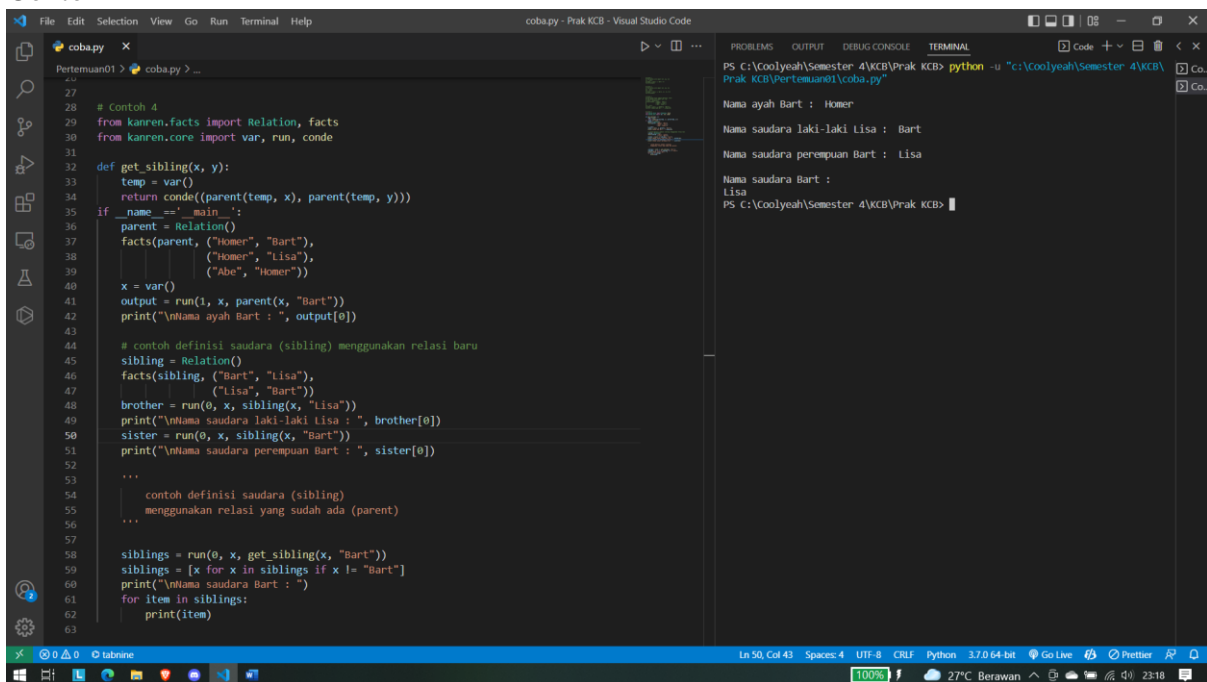


```
14
15
16 # Contoh 3
17 from kanren.facts import Relation, facts
18 from kanren.core import var, run
19 father = Relation()
20 facts(father, ("Homer", "Bart"),
21        ("Homer", "Lisa"),
22        ("Abe", "Homer"))
23 x = var()
24 output = run(1, x, father(x, "Bart"))
25 print("\nNama ayah Bart : ", output[0])
26
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
PS C:\cool\yeah\Semester 4\KCB\Prak KCB\Pertemuan01\coba.py
Nama ayah Bart : Homer
PS C:\cool\yeah\Semester 4\KCB\Prak KCB>
```

## Contoh 4



```
27
28 # Contoh 4
29 from kanren.facts import Relation, facts
30 from kanren.core import var, run, conde
31
32 def get_sibling(x, y):
33     temp = var()
34     return conde((parent(temp, x), parent(temp, y)))
35 if __name__ == '__main__':
36     parent = Relation()
37     facts(parent, ("Homer", "Bart"),
38              ("Homer", "Lisa"),
39              ("Abe", "Homer"))
40     x = var()
41     output = run(1, x, parent(x, "Bart"))
42     print("\nNama ayah Bart : ", output[0])
43
44     # contoh definisi saudara (sibling) menggunakan relasi baru
45     sibling = Relation()
46     facts(sibling, ("Bart", "Lisa"),
47            ("Lisa", "Bart"))
48     brother = run(0, x, sibling(x, "Lisa"))
49     print("\nNama saudara laki-laki Lisa : ", brother[0])
50     sister = run(0, x, sibling(x, "Bart"))
51     print("\nNama saudara perempuan Bart : ", sister[0])
52
53     ...
54     contoh definisi saudara (sibling)
55     menggunakan relasi yang sudah ada (parent)
56     ...
57
58     siblings = run(0, x, get_sibling(x, "Bart"))
59     siblings = [x for x in siblings if x != "Bart"]
60     print("\nNama saudara Bart : ")
61     for item in siblings:
62         print(item)
63
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
PS C:\cool\yeah\Semester 4\KCB\Prak KCB\Pertemuan01\coba.py
Nama ayah Bart : Homer
Nama saudara laki-laki Lisa : Bart
Nama saudara perempuan Bart : Lisa
Nama saudara Bart :
Lisa
PS C:\cool\yeah\Semester 4\KCB\Prak KCB>
```