LOGIC PROGRAMMING

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Tool:

Python Logic Programming

What is Logic Programming?

Programming paradigm that sees computation as automatic reasoning over a database of knowledge made of facts and rules (Based on formal logic).

a. Structure of Python Logic Programming

These are logical clauses that express facts. We use the following syntax to write a rule (as a clause):

H :- B1, …, Bn

We can read this as:

H if B1 and … and Bn.
Here, H is the head of the rule and B1, …, Bn is the body.
A fact is a rule with no body:
H.
An example would be:

fallible(X) :- human(X)

Every logic program needs facts based on which to achieve the given goal.
Rules are constraints that get us to conclusions.

b. Logic Control

Think of an algorithm as a combination of logic and control.

Algorithm = Logic + Control

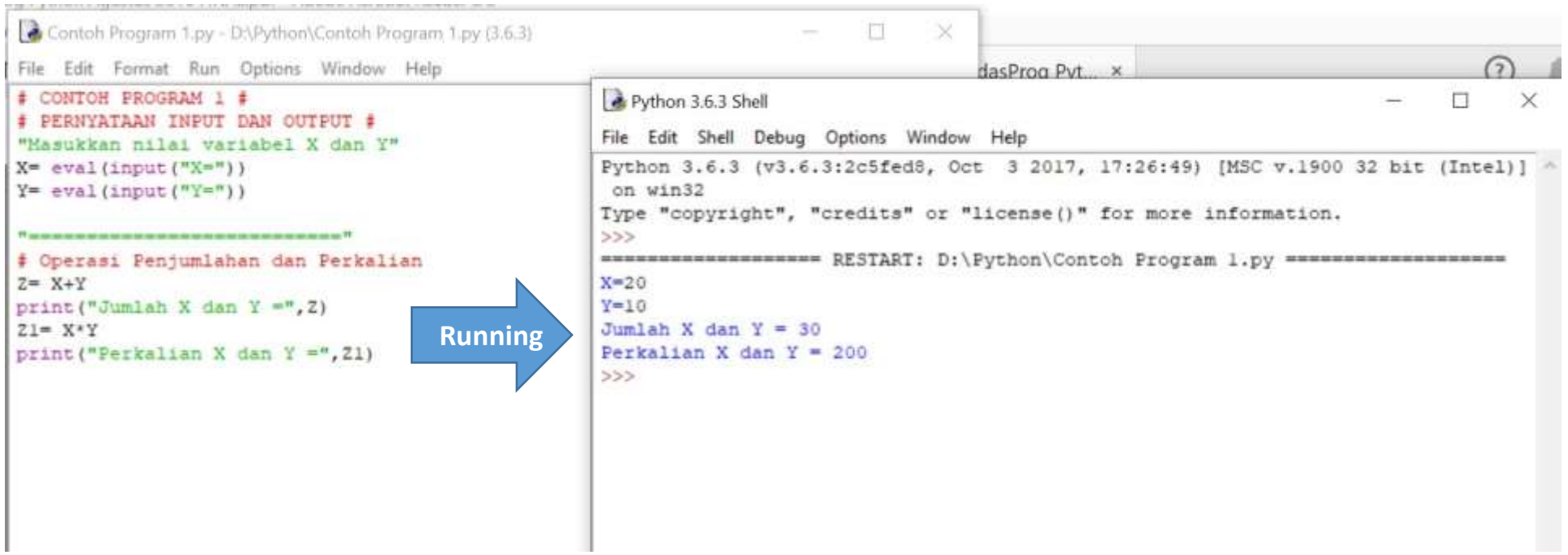
In a pure logic programming language, the logic component gets to the solution alone. However, vary the control component for other ways to execute a logic program.

c. Python Logic Programming

Python syntax :

Input/Output, Structure of Selection, Structure of Repeat-Until, Function (Sub Program), etc.

Sample Input and Output using Python



Exercise 1 (10 Minute)

Try to make a program for counting an average of 5 input number.

Variable

Variable is a symbol that can be load by compilation of any number.

Variable is a name used to store certain value of address and capacity in computer memory.

Example: Name, Age, Address, Grade, etc….

Given value to variable

Sum of Total price of things by consumer buying

1st Step:
Variable input
kode_barang, nama_barang, harga_satuan_barang, jumlah_beli_per_barang, total_harga_per_transaksi

Process:
harga_beli_per_barang = harga_satuan_barang * jumlah_per_barang_beli
total_harga_per_transaksi = harga_beli_per_barang + total_harga_per_transaksi

Output: total_harga_per_transaksi

Given value to variable (cont.)

Sum of Total price of things by consumer buying

2nd Step:
Define type of data
kd_brg, nama_brg : *string*
jum_brg : *integer*
harga_satuan, harga_beli, total_hrg_brg : *float*

Given value to variable (cont.)

Sum of Total price of things by consumer buying

3rd Step:
Coding Program:

Contoh Program 2.py - D:/Python/Contoh Program 2.py (3.6.3)

File Edit Format Run Options Window Help

```
total_hrg_brg = 0.0
kode_brg= input("Kode Barang = ")
nama_brg= input("Nama Barang =")
harga_satuan=eval(input("Harga satuan barang = Rp."))
jum_brg=eval(input("Jumlah barang yang dibeli = "))
harga_beli = harga_satuan * jum_brg
total_hrg_brg = harga_beli + total_hrg_brg
print("Total Harga yang dibayar Rp",total_hrg_brg)
```

Running

Python 3.6.3 Shell

File Edit Shell Debug Options Window Help

```
Python 3.6.3 (v3.6.3:2c5fed8, Oct  3 2017, 17:26:49) [
 on win32
Type "copyright", "credits" or "license()" for more in
>>>
========== RESTART: D:/Python/Contoh Program
Kode Barang = BK456
Nama Barang = Buku Tulis
Harga satuan barang = Rp.10000
Jumlah barang yang dibeli = 5
Total Harga yang dibayar Rp 50000.0
>>>
```

Given value to variable (cont.)

Another sample of program: Count area of the tube (using math function)

Coding Program:

Exercise 2

Case: Exchange the number of A, B,C,D become B,D,A,C if A,B,C,D is any desimal number.

Question:

- Define input/output process of the case
- Build source code to solve the problem.