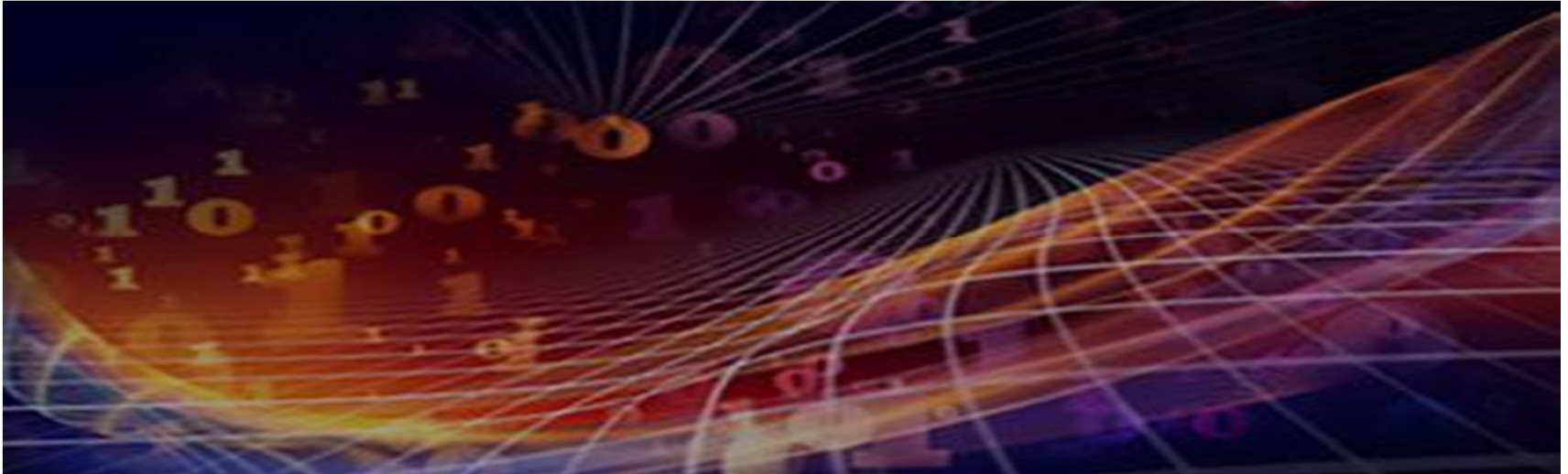


ALGORITMA DAN PEMROGRAMAN

KULIAH 2 : BAHASA PEMROGRAMAN

Dosen Pengampu:

Hasanuddin, S.Si., M.Si., Ph.D.



Apa yang akan kita pelajari Hari Ini?

- Kategori dalam Bahasa Pemrograman
- Mengenal salah satu Bahasa Pemrograman
- Program Pertama Anda
- Memperbaiki kesalahan dalam koding





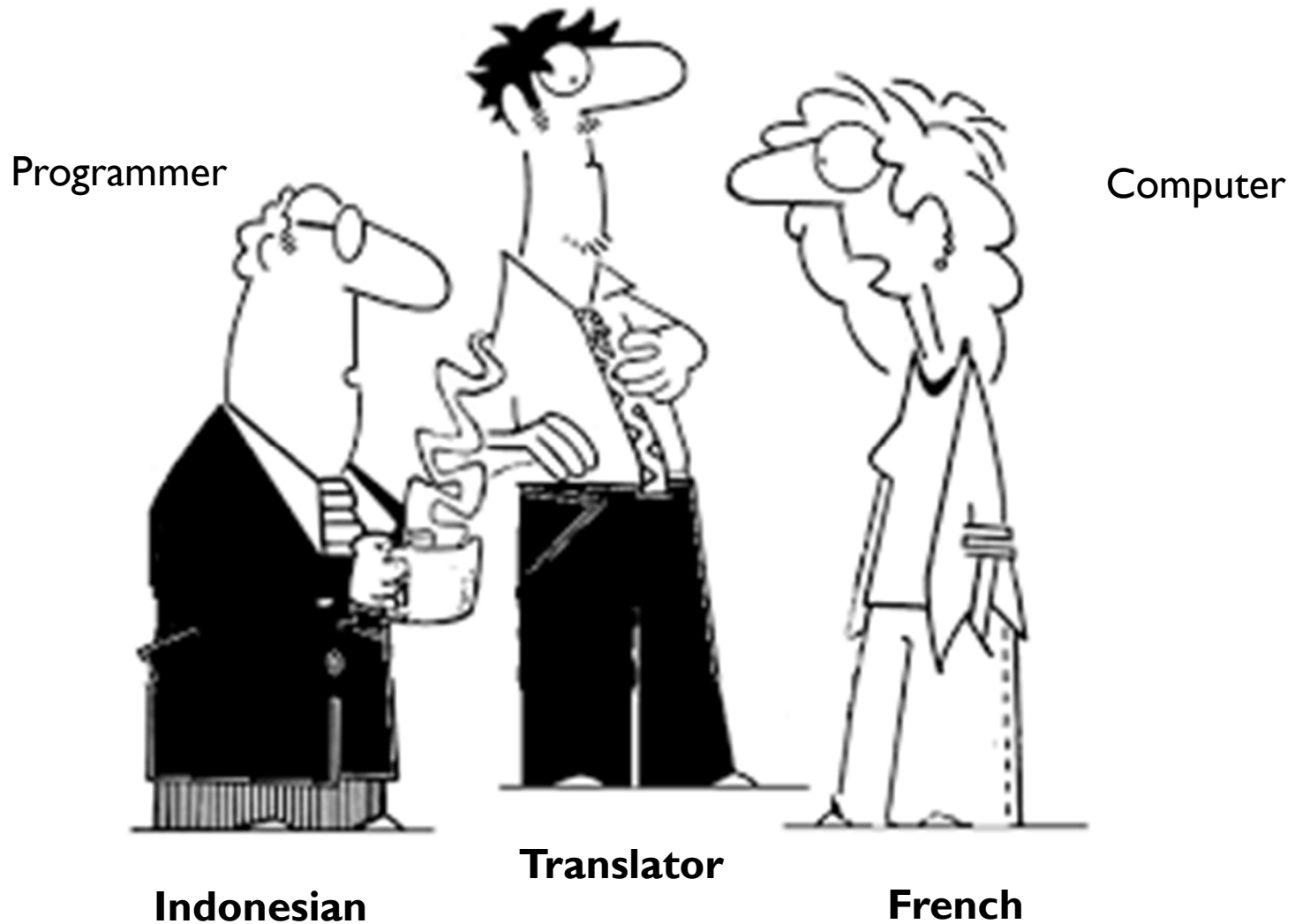
LANGKAH DALAM PEMROGRAMAN

Menulis Algoritma

Menulis Program dengan
Bahasa Pemrograman

Compile dan Testing

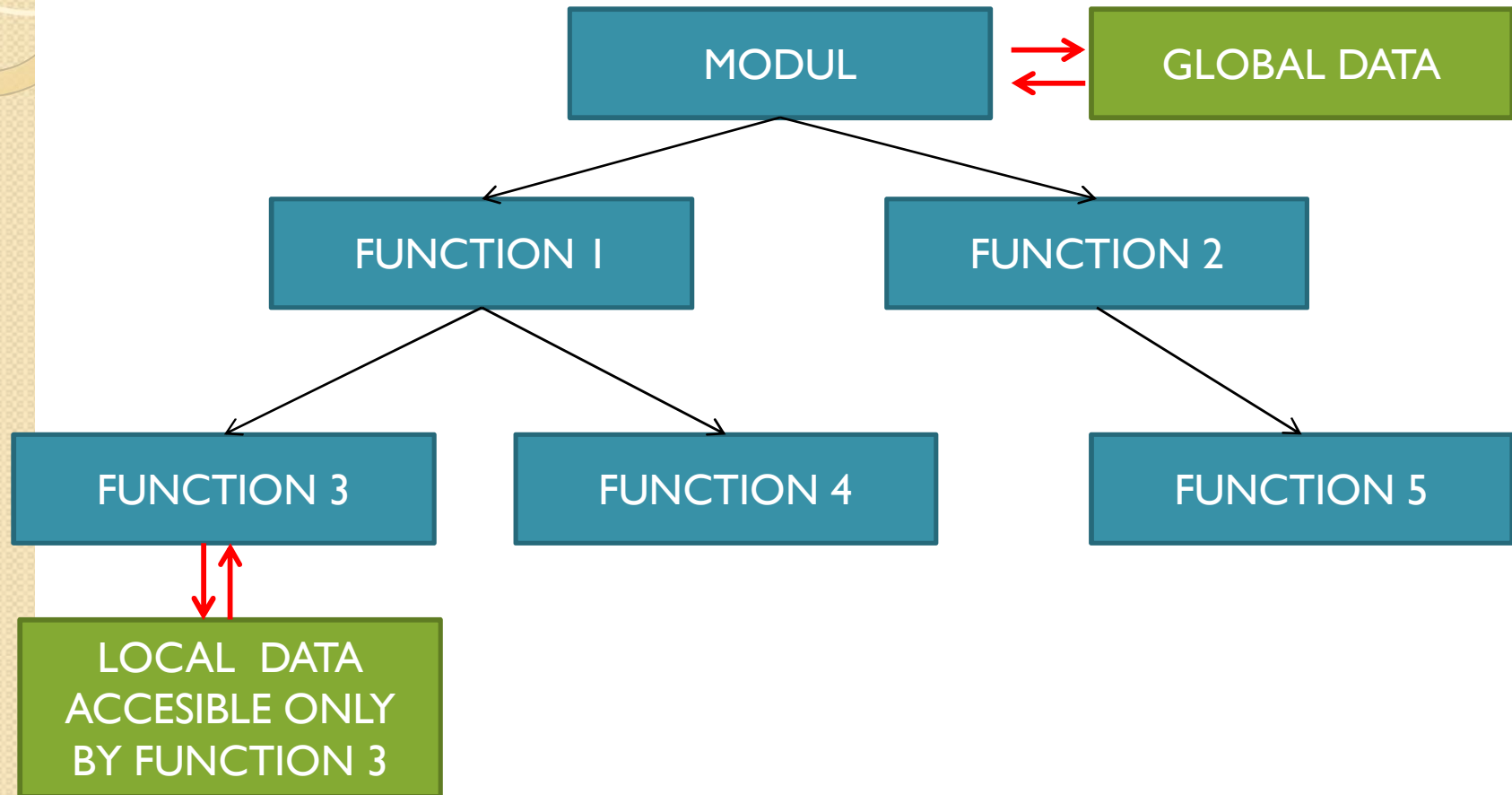
ILUSTRASI PEMROGRAMAN



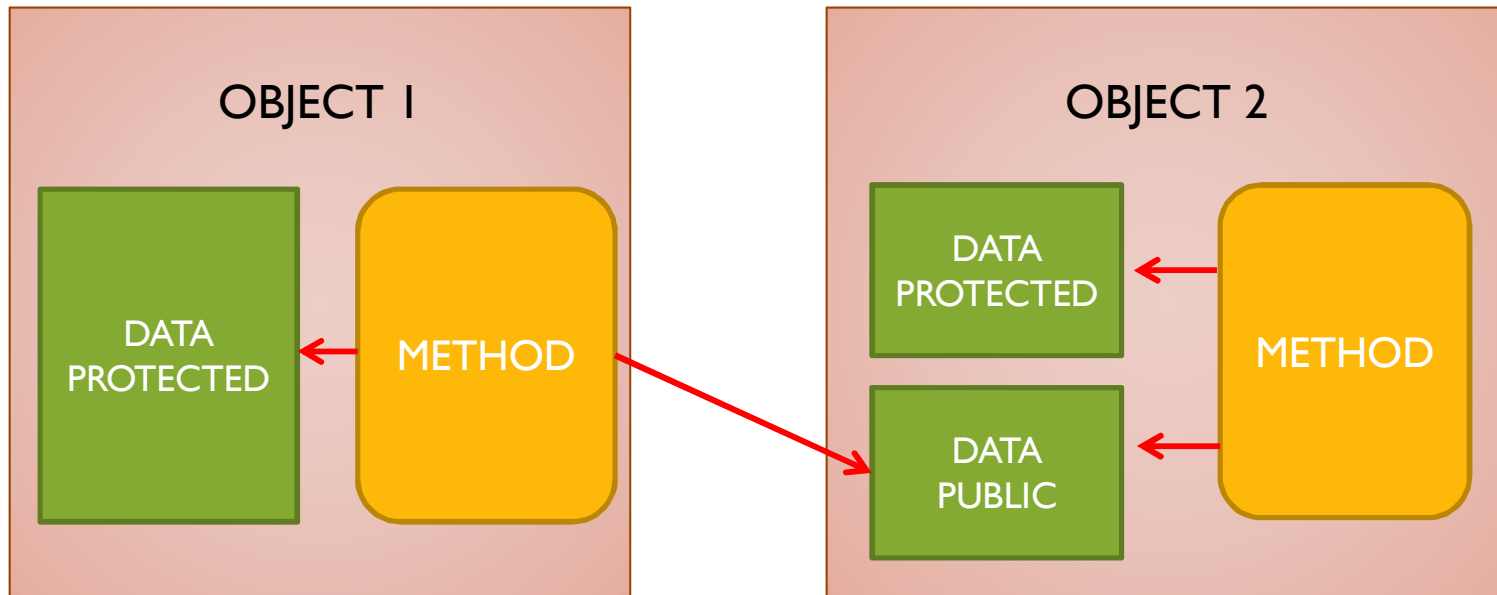
Kategori dalam Bahasa Pemrograman

No	Kategori	Jenis
1	Berdasarkan Kedekatan dengan Mesin	A. Tingkat Rendah (Misal: Bahasa Mesin) B. Tingkat Tinggi (Misal : C++, Python, Matlab, Fortran, Pascal)
2	Berdasarkan Fungsi	A. Bertujuan Khusus (Fortran, Cobol, Prolog) B. Bertujuan Umum (C++, Python, Java, Pascal)
3	Berdasarkan Paradigma	A. Prosedural (Pascal, Cobol, Basic, Fortran, C) B. Objek-Oriented (C++, Python, C#)
4	Berdasarkan cara menterjemahkan kode Program	A. Interpreter (Matlab, Python, Perl) B. Kompiler (C, C++, Pascal)

Paradigma Pemrograman: Prosedural



Paradigma Pemrograman: Object Oriented



Paradigma Pemrograman

Prosedural Oriented

Top down design

Complex code

Limited code reuse

Global data Focused

Object-Oriented

Object focused design

Complex design

Code reuse

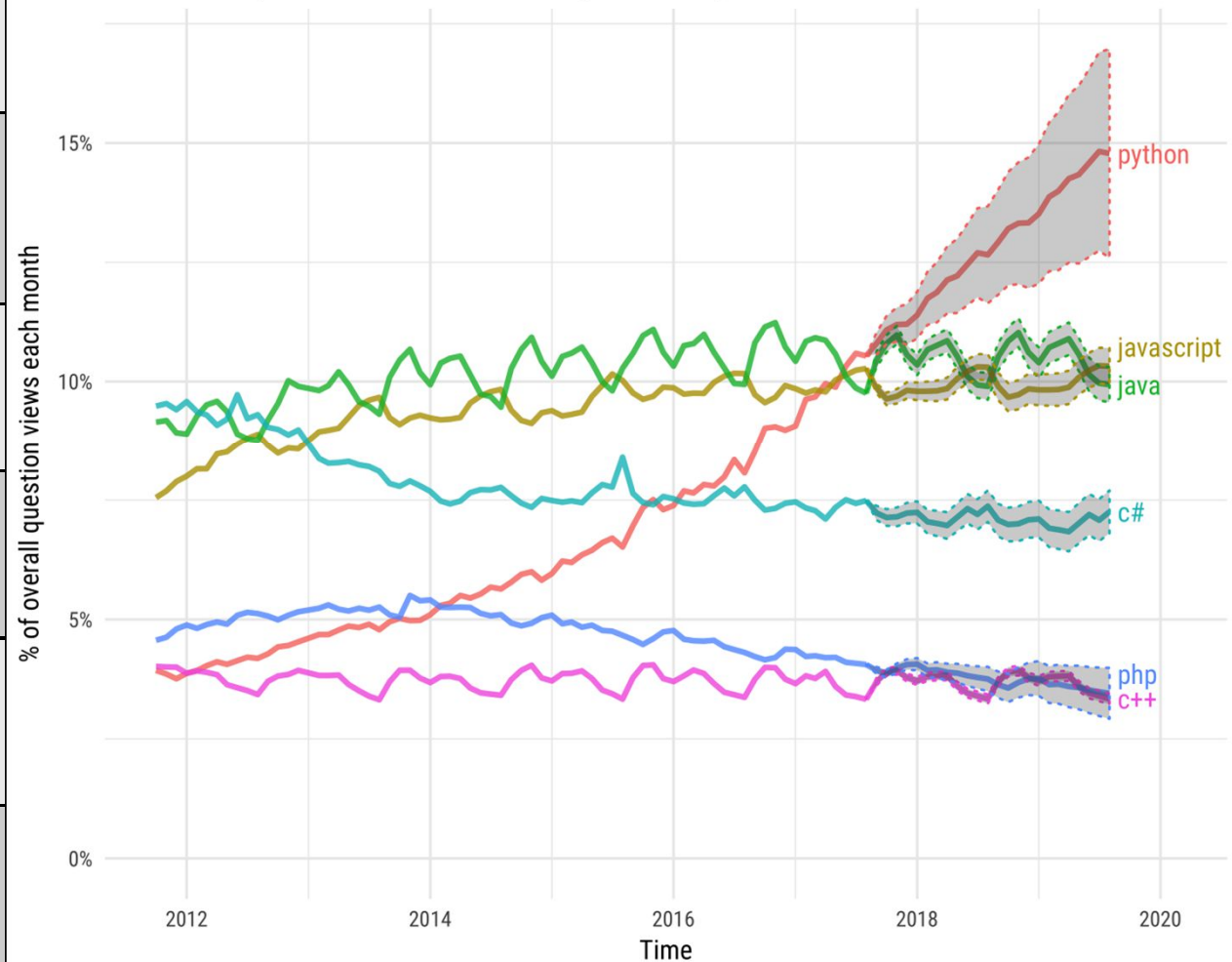
Protected Data

BAHASA PEMROGRAMAN

C	C#
C++	Fortran
Pascal	Python
Java	Perl
Basic	Matlab
Ruby	PHP

Projections of future traffic for major programming languages

Future traffic is predicted with an STL model, along with an 80% prediction interval.



Source: <https://stackoverflow.blog/2017/09/06/incredible-growth-python/>

Tentang python™

1. Interpreted
2. High-Level
3. Object Oriented

Kelebihan Python:

1. Mudah digunakan dan dipelajari
2. Dokumentasi baik
3. Gratis dan dapat dijalankan di platform windows atau linux
4. Memiliki banyak standard library
5. Memiliki alat/module ilmiah yang lengkap.



Why I use python?

- I need at least one programming language to teach ALGO-PRO (I do know Python)
- Python is easy to learn (clear syntax)
- Easy intro for programming language concept

But, you can choose any programming language. Nevertheless, this course is not how to learn programming language but how to make a program.



Kekurangan Python

- Slower than compiler language such as C++. Python code executed by VM or interpreter assigned by CPU in run-time.
- Not for highly parallel computer.
- Not for low level control.

Installing Python

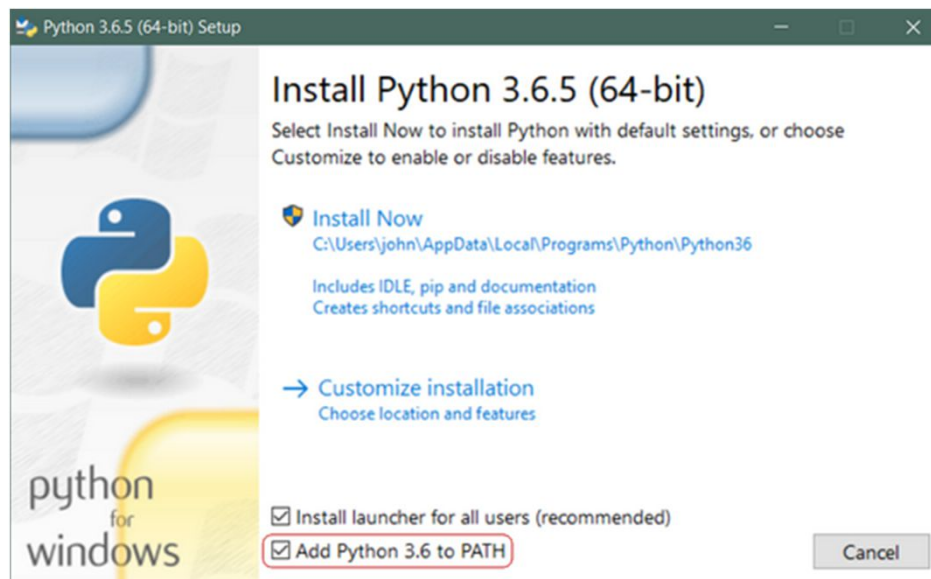
On Windows:

STEP 1:

1. Open a browser window and navigate to the [Download page for Windows](#) at python.org.
2. Underneath the heading at the top that says **Python Releases for Windows**, click on the link for the **Latest Python 3 Release - Python 3.x.x**. (As of this writing, the latest is Python 3.6.5.)
3. Scroll to the bottom and select either **Windows x86-64 executable installer** for 64-bit or **Windows x86 executable installer** for 32-bit.

STEP 2:

Once you have chosen and downloaded an installer, simply run it by double-clicking on the downloaded file. A dialog should appear that looks something like this:



Then just click **Install Now**.

Source: <https://realpython.com/installing-python/>



Installing Python (Recommended)

- Using Anaconda Distribution

<https://www.anaconda.com/distribution/>

How to Install:

<https://docs.anaconda.com/anaconda/install/windows/>

How to update:

Windows -> Open the Start Menu and choose Anaconda Prompt. Type:

conda update conda

conda update anaconda

Alternative Acces to Python

- Using android/tablet or iPhone/iPad:
Install **pydroid** on Google Play
Install **pythonista 3? Python3IDE** on Apple store
- Online Python Interpreter:
 - a. Python.org Online Console: www.python.org/shell
 - b. Python Fiddle: pythonfiddle.com
 - c. Repl.it: repl.it
 - d. Trinket: trinket.io
 - e. Python Anywhere: www.pythonanywhere.com



Starting Python

- On cmd type:

python

- Interactive Python -> type:

ipython

- IDE -> type:

spyder

BASIC

Ketik berikut di python atau ipython dan lihat hasilnya

```
2+2
```

```
2+2.0
```

```
P = 2
```

```
L = 4
```

```
P*L
```

```
A = P*L
```

```
A
```

```
X = Y = Z
```

```
Y
```

```
# comment
```

```
25-3*4/2 # comment satu baris dengan kode
```

Script

- Tulis kode dalam text editor (misal Notepad++)
- Simpan dalam file berekstensi .py (misal test.py), lalu jalankan

di terminal :

```
D:>python test.py
```

di ipython :

```
in [1]: %run test.py
```

- Simpan dan Bisa digunakan disesi berikutnya di python terminal

```
>>> import test
```

- Buat executable file

```
D:> ./test.py
```



Program Pertama Anda

```
>>> print ("Hello World")
```

Program Kedua Anda

- Menghitung keliling persegi panjang

```
>>> panjang = 2
```

```
>>> lebar = 3
```

```
>>> keliling = 2*(panjang+lebar)
```

```
>>> print ("keliling persegi panjang dengan  
panjang "+str(panjang)+" dan lebar  
"+str(lebar)+" adalah "+str(keliling))
```

Kesalahan dalam Pemrograman

- Kesalahan Sintaks

contoh:

```
>>> panjang = 2
```

```
>>> lebar = 3
```

```
>>> keliling = 2*(panjang+lebar)
```

Mudah di
temukan

- Kesalahan Algoritma

contoh:

```
>>> panjang = 2
```

```
>>> lebar = 3
```

```
>>> keliling = 2+(panjang+lebar)
```

Bug -> Debug



Latihan

- Buat program untuk menghitung Luas persegi panjang, Luas segitiga, dan luas lingkaran!

Post-Test: 5 menit

Berikan tanda centang (✓) pada kolom yang sesuai!

No	Bahasa	Tujuan		kompilasi		paradigma	
		Khusus	Umum	interpreter	compiler	Prosedural	OOP
1	Pascal						
2	C						
3	C++						
4	Python						
5	Matlab						
6	Fortran						
7	Java						
8	Basic						



Akhir Kuliah

- Anda dapat mengkategorikan bahasa pemrograman
- Anda dapat menjelaskan alur kerja dalam pemrograman
- Anda dapat mengerti kesalahan dalam pemrograman
- Anda dapat membedakan antara objek oriented programming dan prosedural oriented programming.