Introduction to Python

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Outline :

- What is Python and Why is it Suitable for Beginners?
- Why Should Data Scientists Learn to Code?
- Basic Python Syntax

- What is Python and Why is it Suitable for Beginners ?

Intro to Python

What is Programming?

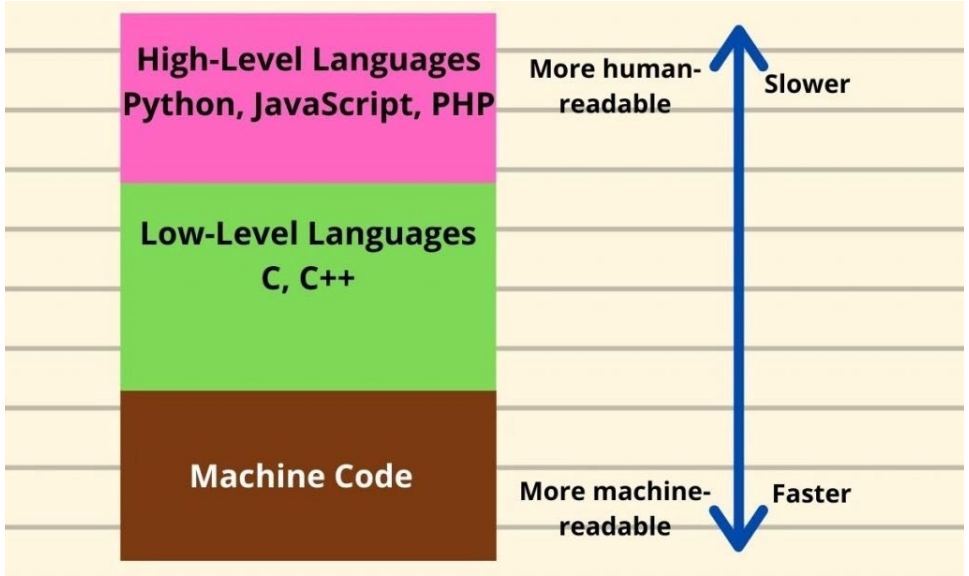
Programming is the process of giving **logical instructions** to a computer so that it can perform specific tasks automatically.

Basic Concept :

📥 **Input** → ⚙️ **Process** → 📤 **Output**

1. What is Python ?

Python -> Object Oriented Programming & High Level Programming



Tidak hanya untuk Data Science saja, melainkan untuk pembuatan game, website, dan python memiliki beragam package / libraries.

Python Tools IDE (Integrated Development Environment)

An **IDE (Integrated Development Environment)** is an application that provides all the tools a programmer needs to write, test, and run code in one place.

Jupyter Notebook

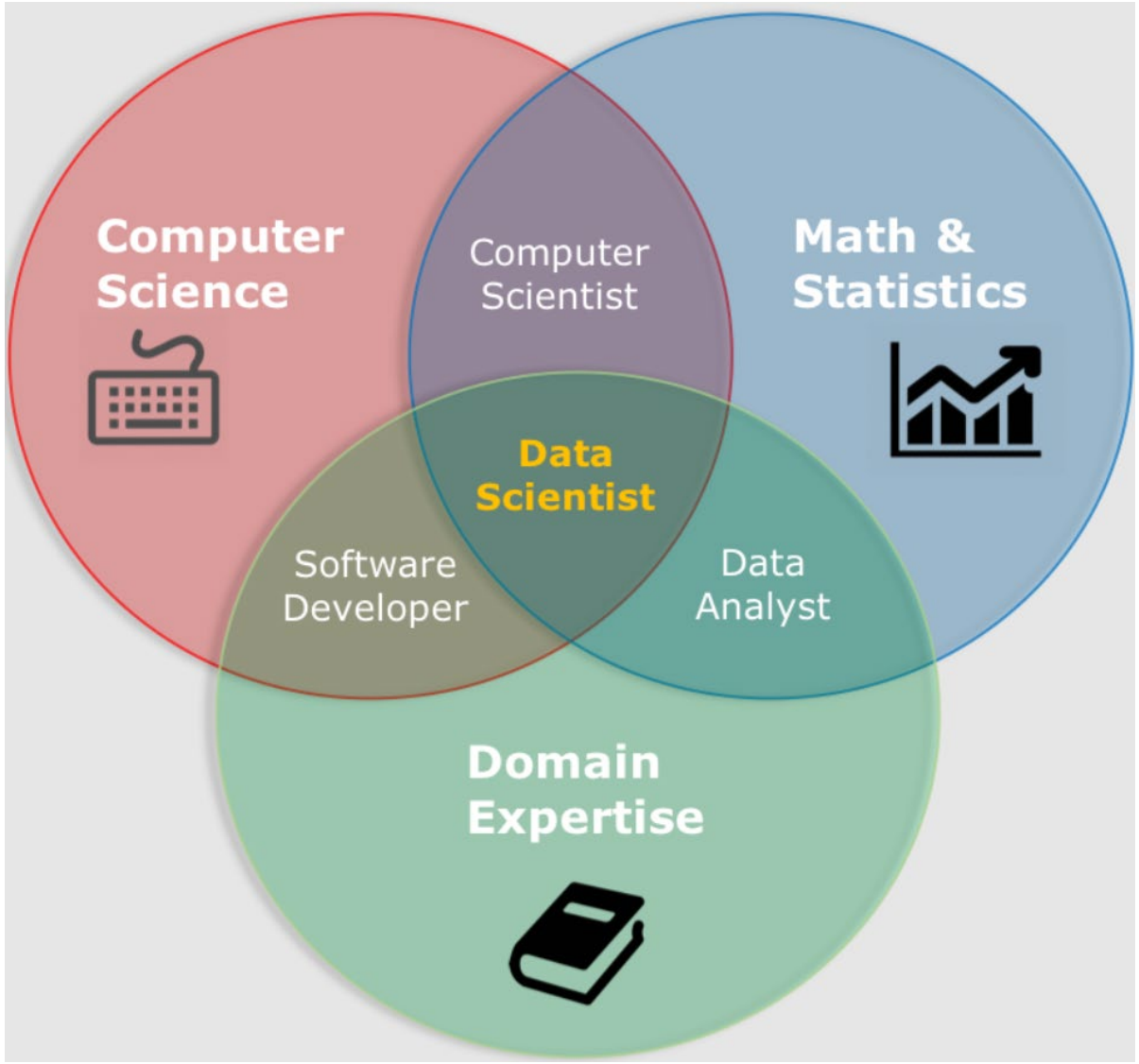
VS Code

Anaconda Navigator

Google Colab

- Why Should Data Scientists Learn to Code?

Who is Data Scientist ?



Source : Google

Who is Data Scientist ?

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Data Science is …

The application of **data centric**, **computational**, and **inferential thinking** to

understand the world — **Science**

&

solve problems — **Engineering**

- *Data science is fundamentally interdisciplinary*

Who is Data Scientist ?

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Now I know what it is

But how to do it?

Who is Data Scientist ?

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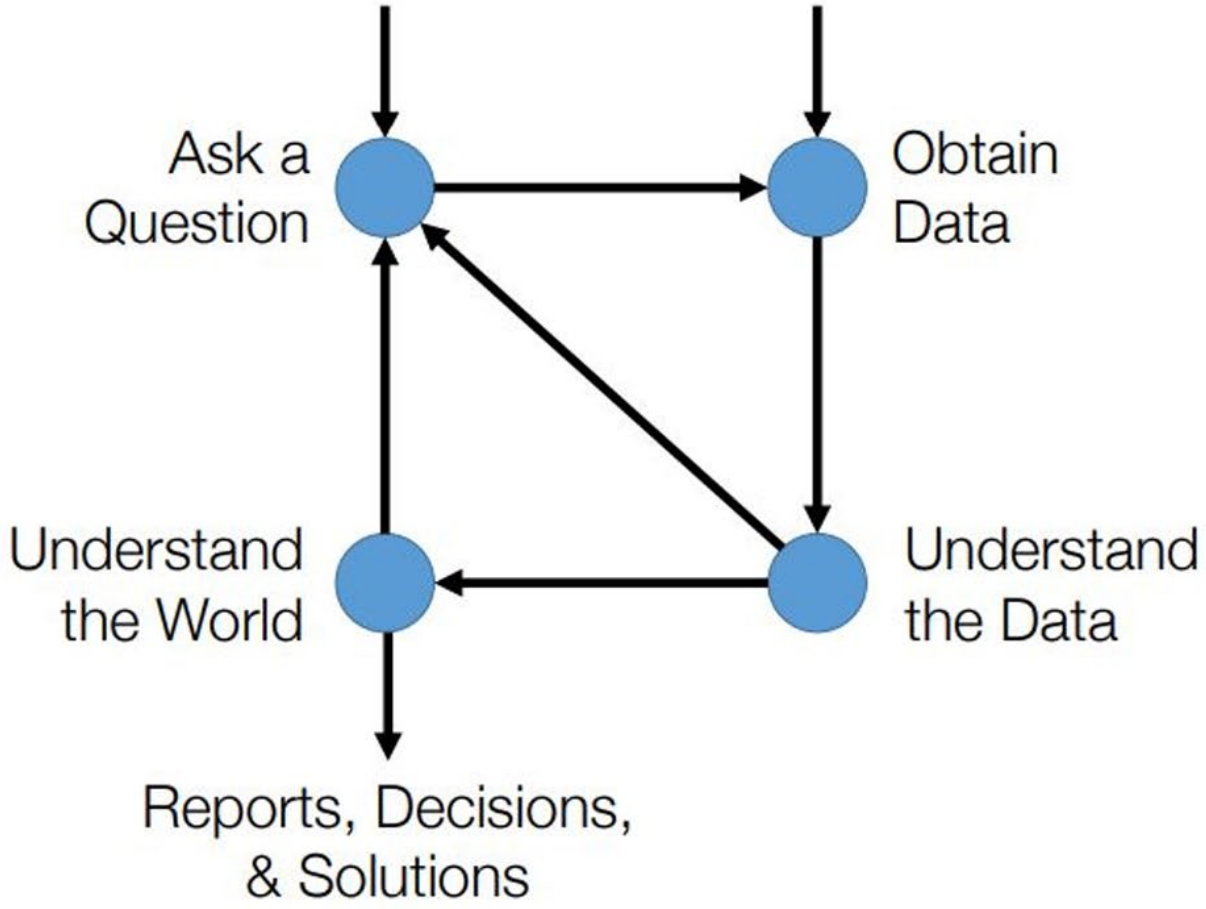
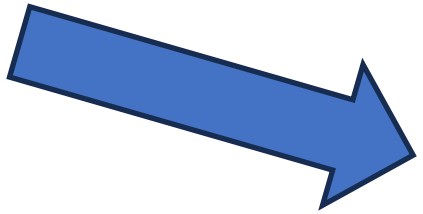
Data Science Process



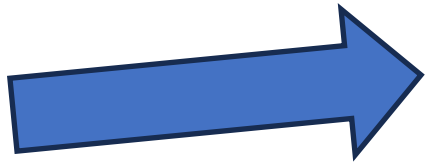
Conclusion why must learn coding ?

Data Acquisition and Cleaning -> Using libraries scikit-learn, pandas, numpy and so on



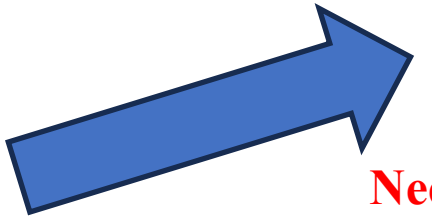
Need

Exploratory Data Analysis and Visualization -> Using libraries Matplotlib, Seaborn, Plotly



Need

Predictions and Inference related to Machine / Deep Learning -> Using libraries Scikit-learn, PyTorch, TensorFlow



Need

- Basic Python Syntax

Basic Syntax Python

Input - Output

Inputs and outputs are close to the discussion of variables

Variables

Variables are containers for storing data values.

Creating Variables

Python has no command for declaring a variable.

A variable is created the moment you first assign a value to it.

```
x = 5
y = "Bootcamp Data Scientist"


# x and y are variable

print(x) # print output value x
print(y) # print output value y
```

```
5
Bootcamp Data Scientist
```

Basic Syntax Python

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Get the Type

You can get the data type of a variable with the type() function.

```
x = 5
y = "John"
z = 3.5
print(type(x))
print(type(y))
print(type(z))
```

```
<class 'int'>
<class 'str'>
<class 'float'>
```

```
type(x)
```

```
int
```

Basic Syntax Python

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Single or Double Quotes?

String variables can be declared either by using single or double quotes:

```
x = "John"
print(x)

#double quotes are the same as single quotes:

x = 'John'
print(x)
```

```
John
John
```

Penamaan Variabel

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Rules	Salah	Benar
Jangan menggunakan nama built-in Python	def = 5	definition = 5
Jangan memulai nama variabel dengan angka	1st = 10	first = 10
Jangan menggunakan spasi	ini variabel = 20	iniVariabel = 20
Jangan menggunakan karakter khusus selain underscore (_)	variabel-saya = 30	variabel_saya = 30
Penulisan variabel yang berulang	nama = "Riqam" nama = “Uci"	nama_1 = "Riqam" nama_2 = “Uci"
Case-sensitive		dibimbing = "Oke" Dibimbing = "Oke banget"

Arithmetic Operators

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Operator	Deskripsi	Contoh
+	Penjumlahan	5 + 3 → 8
-	Pengurangan	5 - 3 → 2
*	Perkalian	5 * 3 → 15
/	Pembagian	5 / 2 → 2.5
//	Pembagian Bulat	5 // 2 → 2
%	Modulus (Sisa Pembagian)	5 % 2 → 1
**	Eksponen (Pangkat)	5 ** 2 → 25

Comparison Operators

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Operator	Deskripsi	Contoh
==	Sama dengan	5 == 5 → *True*
!=	Tidak sama dengan	3 != 3.5 → *False*
<	Lebih kecil dari	5 < 3 → *False*
<=	Lebih kecil atau sama dengan	3 <= 5 → *True*
>	Lebih besar dari	15 > 10 → *True*
>=	Lebih besar atau sama dengan	20 >= 20 → *True*

Logical Operators

Operator	Deskripsi	Contoh
and	*True* jika semua pernyataan benar	(5 > 3) and (3 < 4) → *True*
or	*True* jika salah satu pernyataan benar	(5 > 3) or (3 > 4) → *True*
not	Membalikkan nilai logika	not(5 > 3) → *False*

Basic Syntax Python

The **if statement** checks whether a condition is True. If it is, the indented block of code under it will be executed.

elif (else if) Used to check another condition if the previous if condition was False. You can have multiple elif blocks.

The else block is executed when none of the previous conditions are True.

```
age = 10
if age >= 18:
    print("You are an adult")
elif age >= 13:
    print("You are a teenager")
else:
    print("You are a child")
```

Summary :
- **if**: checks the first condition
- **elif**: checks additional conditions
- **else**: runs if none of the above conditions are true

These are essential for building decision-making logic in your Python programs.

Brief Assignment

Brief Assignment :

1. Jawablah pertanyaan dari code template di link ini : https://drive.google.com/file/d/1EILe4RvamXXJeBjYVg1H5TPhH7r_-Sqb/view?usp=sharing

Q & A

Thank you

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