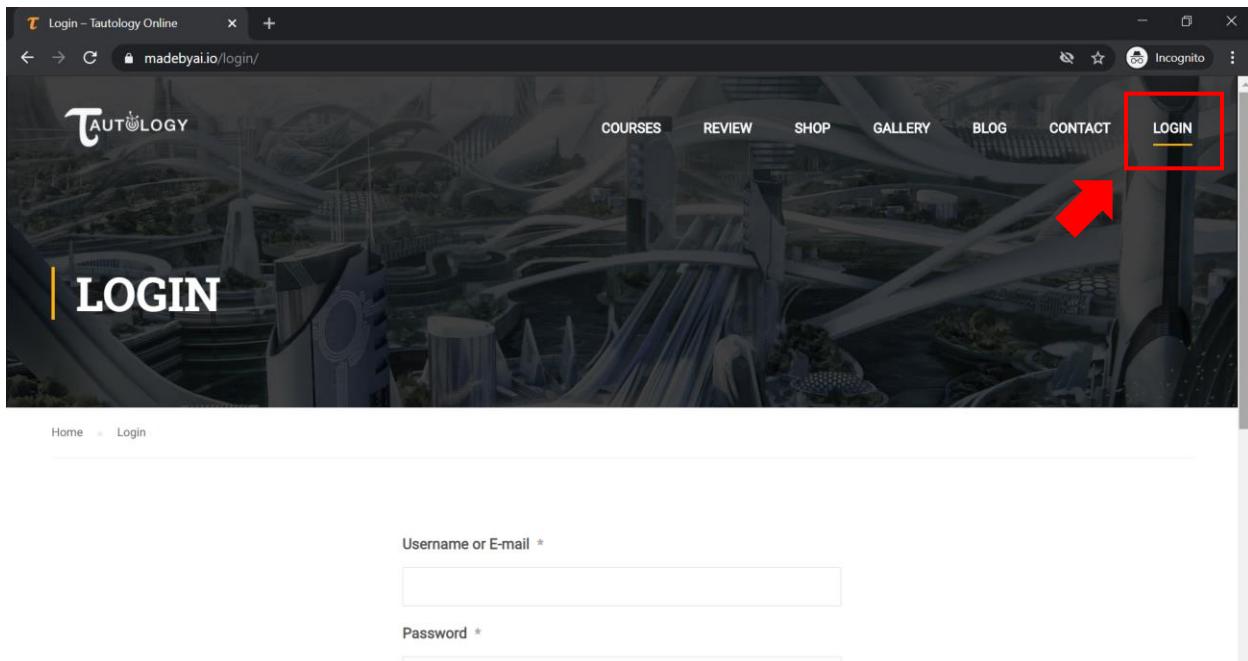
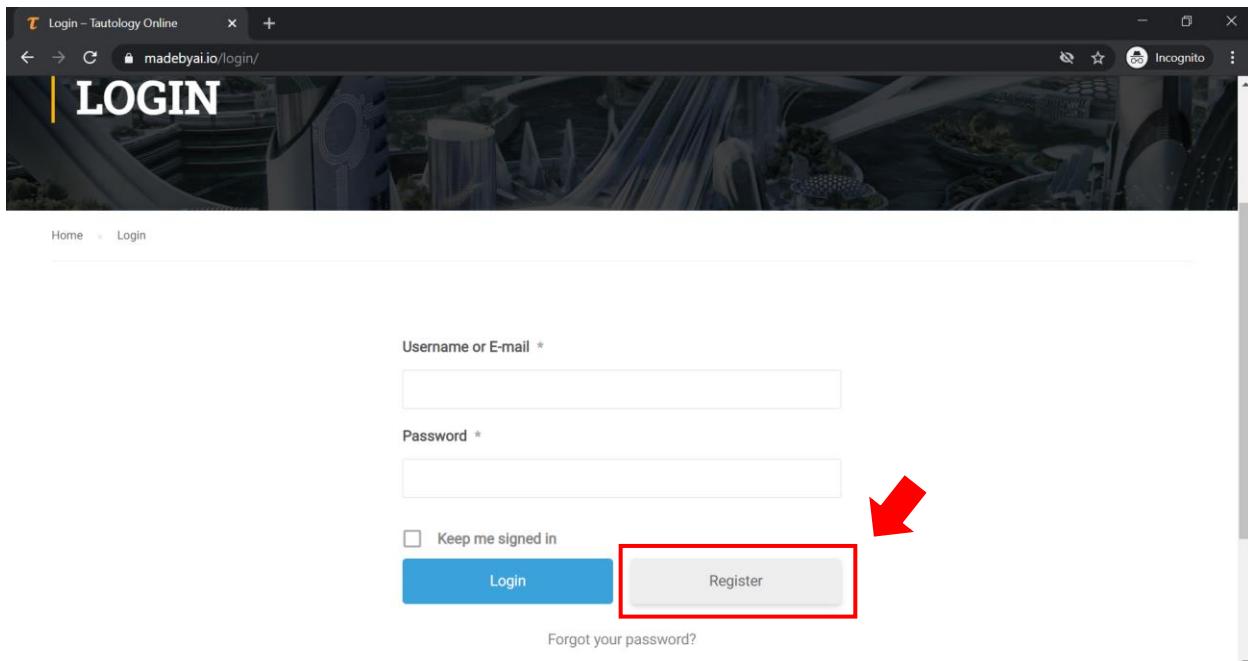


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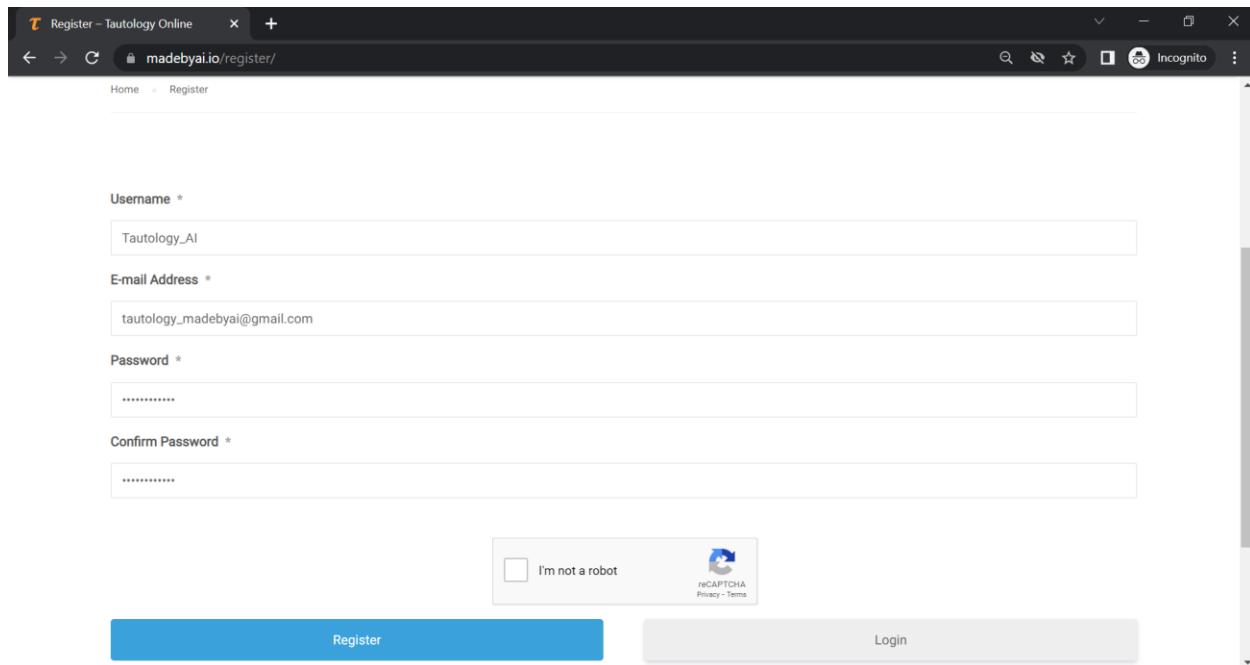
1. เข้าไปที่ <https://madebyai.io> จากนั้นคลิกปุ่ม LOGIN



2. คลิกปุ่ม Register เพื่อสมัครสมาชิก



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Register – Tautology Online

Home Register

Username *

Tautology_AI

E-mail Address *

tautology_madebyai@gmail.com

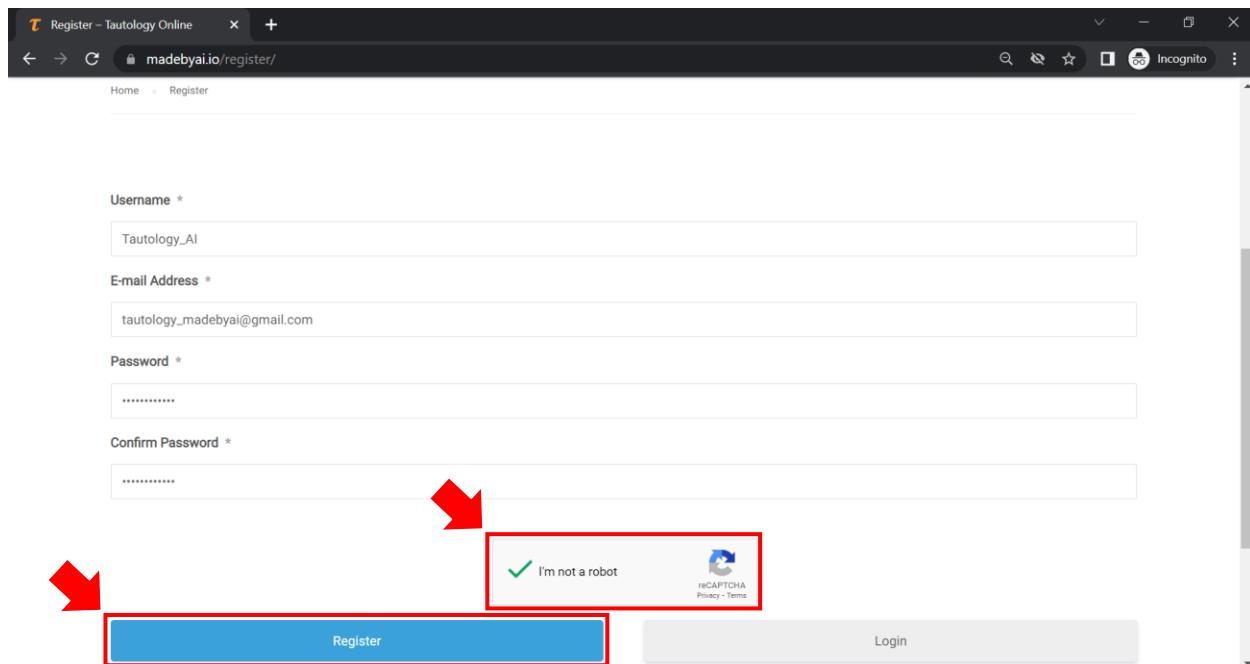
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Confirm Password *

I'm not a robot reCAPTCHA Privacy - Terms

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Register – Tautology Online

Home Register

Username *

Tautology_AI

E-mail Address *

tautology_madebyai@gmail.com

Password *

Confirm Password *

I'm not a robot reCAPTCHA Privacy - Terms

Register **Login**



PYTHON

PROGRAMMING WITH ChatGPT



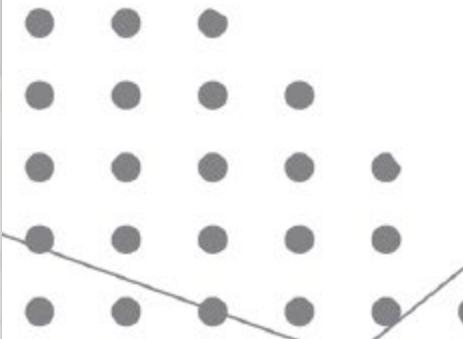
ดำเนินการสอนโดย
ขุน ชินประสาทศักดิ์



KRIN CHINPRASATSAK

DATASCIENTIST
INSTRUCTOR
SPEAKER

Experienced data scientist, instructor and speaker,
AI consultant for the public and private sectors,
CEO & Co-founder of MADEBYAI and QuantMetric



Introduction

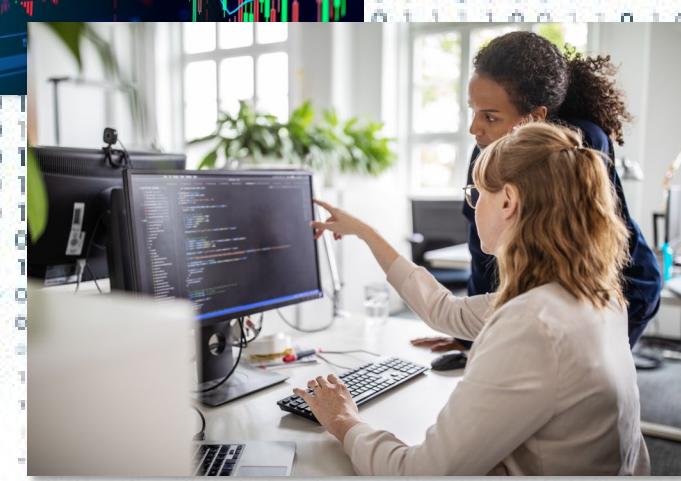
ແບະນຳຄວົສ

- Fundamental of Python Programming
- Project with ChatGPT

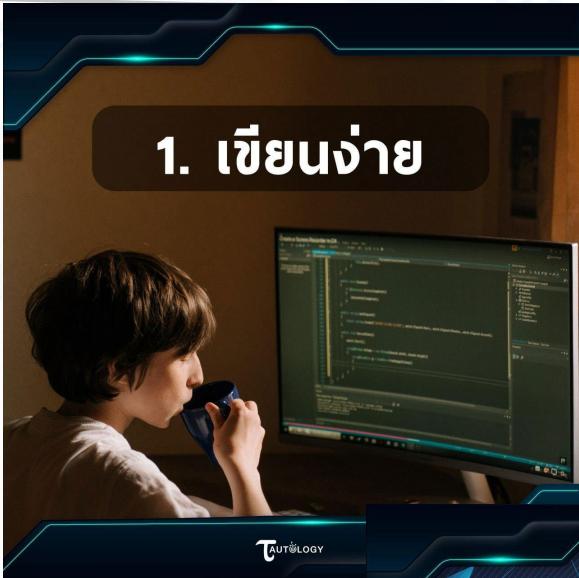
"All Level"



"Beginner to Expert"



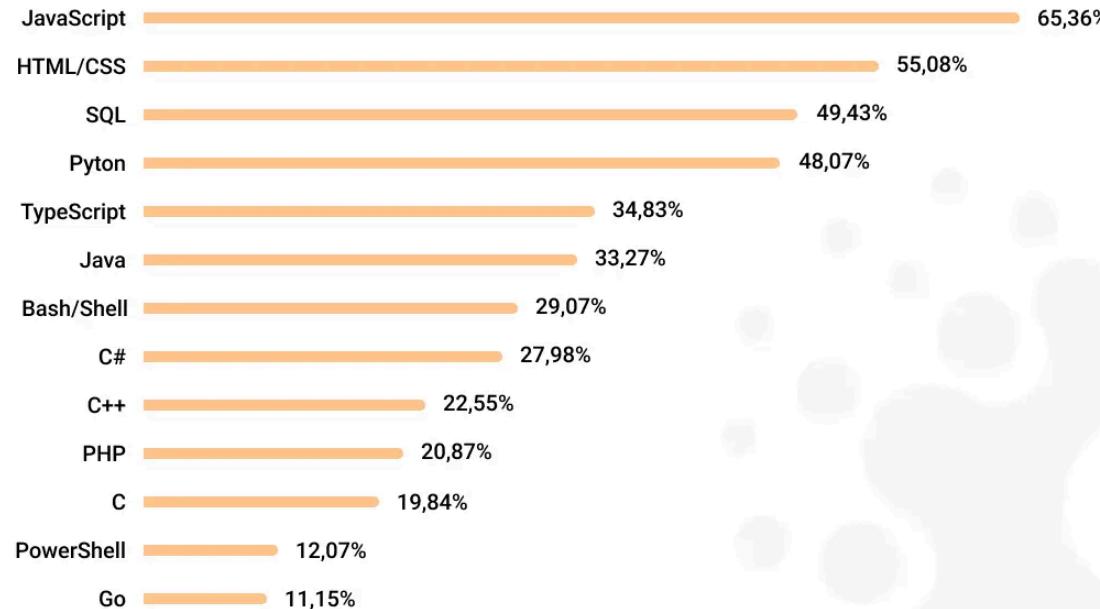
Why Python?



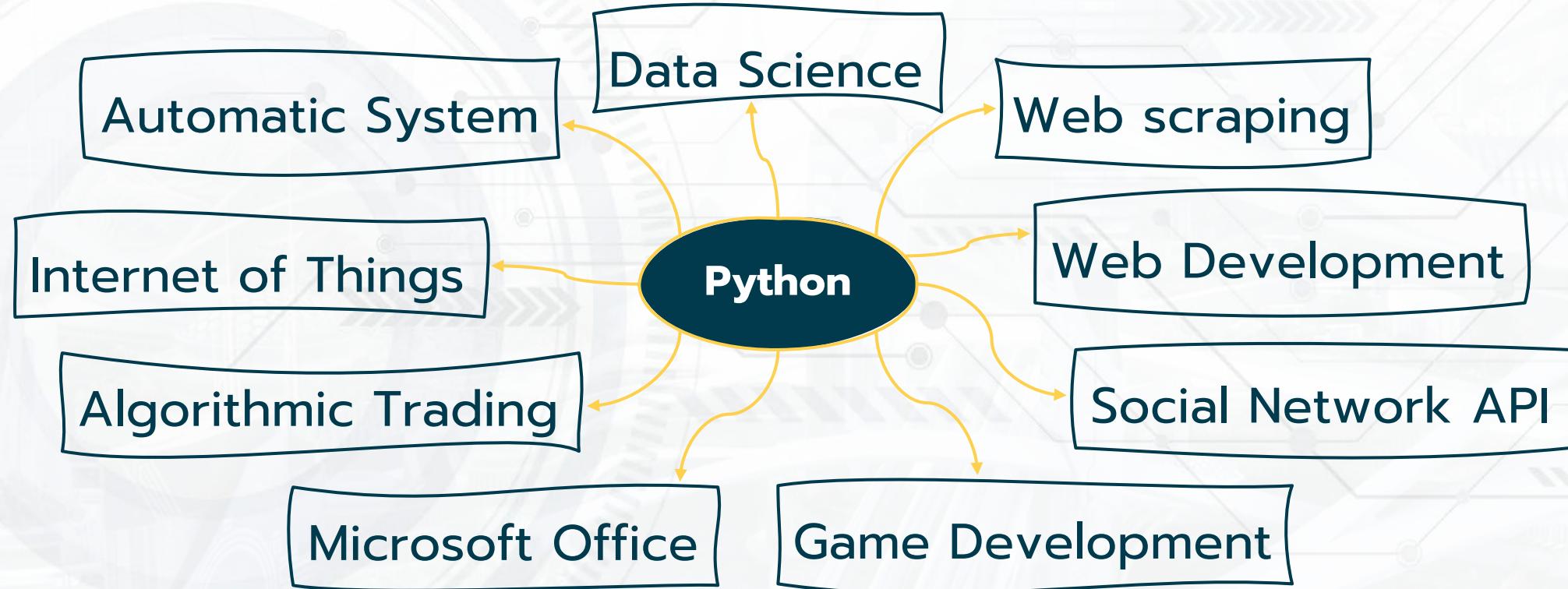
Ref: <https://www.facebook.com/tautologyai/posts/2987242824730932>

Why Python?

The most widely used programming languages worldwide



Ref: <https://www.softmii.com/blog/top-programming-languages-and-frameworks-for-software-development>



Facebook Group



TAUTOLOGY ตะลุยโจทย์ Python 500 ข้อ

กลุ่มส่วนตัว · สมาชิก 519 คน



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วิธีการติดตั้งใช้งาน Python

colab



Print Command

Print Command

1. Print String
2. Print Numeric
3. Print String + Numeric

1. Print String

1.1 Quote

1.2 Double Quote

1.3 Multiple Line

1.1 Quote

```
In [1]: ┌ 1 print('Hello')
```

```
Hello
```

```
In [2]: ┌ 1 print('I Love Python')
```

```
I Love Python
```

```
In [3]: ┌ 1 print('100')
```

```
100
```

1.2 Double Quote

```
In [4]: 1 print("Hello")
```

Hello

```
In [5]: 1 print("I Love Python")
```

I Love Python

```
In [6]: 1 print("100")
```

100

1.3 Multiple Line

In [7]: ►

```
1 print(''  
2 Hello  
3 Hello Python  
4 I Love Python''' )
```

```
Hello  
Hello Python  
I Love Python
```

1.3 Multiple Line

In [8]:

```
1 print("""  
2 Hello  
3 Hello Python  
4 I Love Python""")
```

```
Hello  
Hello Python  
I Love Python
```

Print Command

- ✓ 1. Print String
- 2. Print Numeric
- 3. Print String + Numeric

2. Print Numeric

```
In [9]: print(1)
```

```
1
```

```
In [10]: print(1.5)
```

```
1.5
```

```
In [11]: print(3.50)
```

```
3.5
```

Print Command

- ✓ 1. Print String
- ✓ 2. Print Numeric
- 3. Print String + Numeric

3. Print String + Numeric

3.1 Comma

3.2 String Concatenation

3.3 F-strings

3.1 Comma

```
In [12]: print('I Love You', 3000)
```

I Love You 3000

```
In [13]: print('5 + 7 =', 5 + 7)
```

5 + 7 = 12

3.2 String Concatenation

```
In [14]: print('I Love You ' + str(3000))
```

```
I Love You 3000
```

```
In [15]: print('5 + 7 = ' + str(5 + 7))
```

```
5 + 7 = 12
```

3.3 F-strings

```
In [16]: print(f'I Love You {3000}')
```

```
I Love You 3000
```

```
In [17]: print(f'5 + 7 = {12}')
```

```
5 + 7 = 12
```

Print Command

- ✓ 1. Print String
- ✓ 2. Print Numeric
- ✓ 3. Print String + Numeric

Variable

Variable

1. Create & Assign
2. Create Multiple Variable
3. Identifier

1. Create & Assign

```
In [1]: ┌ 1 | firstname = 'John'
```

```
In [2]: ┌ 1 | lastname = 'Doe'
```

```
In [3]: ┌ 1 | age_full = 'I'm 32 years old.'
```

```
In [4]: ┌ 1 | print('My firstname is', firstname + '.')
      2 | print('My lastname is', lastname + '.')
      3 | print(age_full)
```

My firstname is John.
My lastname is Doe.
I'm 32 years old.

1. Create & Assign

```
In [5]: 1 a = 5
```

```
In [6]: 1 b = 7
```

```
In [7]: 1 print('a =', a)
2 print('b =', b)
3 print('a + b =', a + b)
```

```
a = 5
b = 7
a + b = 12
```

Variable

- ✓ 1. Create & Assign
- 2. Create Multiple Variable
- 3. Identifier

2. Create Multiple Variable

```
In [8]: ➜ 1 c = d = e = 5
```

```
In [9]: ➜ 1 print('c =', c)
          2 print('d =', d)
          3 print('e =', e)
```

```
c = 5
d = 5
e = 5
```

2. Create Multiple Variable

```
In [10]: ► 1 f = 6; g = 7; h = 8;
```

```
In [11]: ► 1 print('f =', f)
          2 print('g =', g)
          3 print('h =', h)
```

```
f = 6
g = 7
h = 8
```

Variable

- ✓ 1. Create & Assign
- ✓ 2. Create Multiple Variable
- 3. Identifier

3. Identifier

3.1 Character & Underscore First

3.2 Case Sensitive

3.3 No Special Character

3.4 Reversed Word

3.1 Character & Underscore First

```
In [12]: ➜ 1 a1 = 5
```

```
In [13]: ➜ 1 print('a1 =', a1)  
a1 = 5
```

```
In [14]: ➜ 1 _a = 7
```

```
In [15]: ➜ 1 print('_a =', _a)  
_a = 7
```

3.1 Character & Underscore First

In [16]: ➜ 1 1a = 5

```
File "<ipython-input-16-ce2af4c14e7e>", line 1
  1a = 5
  ^
SyntaxError: invalid syntax
```

In [17]: ➜ 1 3x = 7

```
File "<ipython-input-17-c7219bffa8d3>", line 1
  3x = 7
  ^
SyntaxError: invalid syntax
```

3.2 Case sensitive

```
In [18]: ➜ 1 a = 5  
2 b = 7
```

```
In [19]: ➜ 1 A = 10  
2 B = 14
```

```
In [20]: ➜ 1 print('a =', a)  
2 print('b =', b)  
3 print('A =', A)  
4 print('B =', B)
```

```
a = 5  
b = 7  
A = 10  
B = 14
```

Special Character

”

{ } [] ! @ # \$ % ^
& * () - = / | \ . < >

”

3.3 No Special Character

In [21]: ➜ 1 c\$d = 7

```
File "<ipython-input-21-81e2e827bf95>", line 1
  c$d = 7
  ^
SyntaxError: invalid syntax
```

3.3 No Special Character

In [22]: 1 c.d = 8

```
-----  
AttributeError                                Traceback (most recent call last)  
<ipython-input-22-56b67979db83> in <module>  
----> 1 c.d = 8
```

AttributeError: 'int' object has no attribute 'd'

3.3 No Special Character

In [23]: ➜ 1 c d = 9

```
File "<ipython-input-23-757563a21641>", line 1
  c d = 9
  ^
SyntaxError: invalid syntax
```

Reserved Word

and, assert, break, class, continue, def,
del, elif, else, except, exec, finally, for, from,
global, if, import, in, is, lambda, not, or,
pass, print, raise, return, try, while, yield

3.4 Reserved Word

```
In [24]: ┌ 1 | if = 5
          File "<ipython-input-24-1a9bb92cc795>", line 1
            if = 5
            ^
SyntaxError: invalid syntax
```

3.4 Reserved Word

In [25]: ┶ 1 for = 10

```
File "<ipython-input-25-597287a2d762>", line 1
  for = 10
  ^

```

SyntaxError: invalid syntax

3.4 Reserved Word

```
In [26]: 1 del = 15
```

```
File "<ipython-input-26-f23a0aa76da8>", line 1
  del = 15
^
```

```
SyntaxError: invalid syntax
```

Variable

- ✓ 1. Create & Assign
- ✓ 2. Create Multiple Variable
- ✓ 3. Identifier

Data Structure

Data Structure

1. Basic Data Structure
2. Composite Data Structure

1. Basic Data Structure

1.1 Numeric

1.2 String

1.1 Numeric

1.1.1 Integer

1.1.2 Floating-Point Number

1.1.3 Boolean

1.1.4 Complex Number

1.1.1 Integer

```
In [1]: ➜ 1 a = 1
```

```
In [2]: ➜ 1 b = 2
```

```
In [3]: ➜ 1 type(a)
```

Out[3]: int

```
In [4]: ➜ 1 type(b)
```

Out[4]: int

1.1.2 Floating-Point Number

```
In [5]: ► 1 c = 0.5
```

```
In [6]: ► 1 d = 3/4
```

```
In [7]: ► 1 type(c)
```

Out[7]: float

```
In [8]: ► 1 type(d)
```

Out[8]: float

1.1.3 Boolean

```
In [9]: 1 t = True
```

```
In [10]: 1 f = False
```

```
In [11]: 1 type(t)
```

Out[11]: bool

```
In [12]: 1 type(f)
```

Out[12]: bool

1.1.4 Complex Number

```
In [13]: 1 z = 1 + 2j
```

```
In [14]: 1 z.real
```

Out[14]: 1.0

```
In [15]: 1 z.imag
```

Out[15]: 2.0

```
In [16]: 1 type(z)
```

Out[16]: complex

1. Basic Data Structure

1.1 Numeric 

1.2 String

1.2 String

1.2.1 Create String

1.2.2 Read String

1.2.3 String + replace

1.2.4 String + len

1.2.5 String + in

1.2.6 String + split

1.2.7 String + Concatenation

1.2.1 Create String

```
In [17]: ➜ 1 char1 = 'Hello Wold'
```

```
In [18]: ➜ 1 char2 = '0123456789'
```

```
In [19]: ➜ 1 type(char1)
```

Out[19]: str

```
In [20]: ➜ 1 type(char2)
```

Out[20]: str

1.2.2 Read String

```
In [21]: 1 char3 = '0123456789'
```

```
In [22]: 1 char3[0]
```

```
Out[22]: '0'
```

```
In [23]: 1 char3[5]
```

```
Out[23]: '5'
```

```
In [24]: 1 char3[-1]
```

```
Out[24]: '9'
```

```
In [25]: 1 char3[-2]
```

```
Out[25]: '8'
```

1.2.2 Read String

```
In [26]: ➜ 1 char3 = '0123456789'
```

```
In [27]: ➜ 1 char3[3:]
```

```
Out[27]: '3456789'
```

```
In [28]: ➜ 1 char3[:7]
```

```
Out[28]: '0123456'
```

```
In [29]: ➜ 1 char3[3:7]
```

```
Out[29]: '3456'
```

1.2.3 String + replace

In [30]: ➔ 1 | char4 = 'abc'

In [31]: ➔ 1 | char4.replace('a', 'A')

Out[31]: 'Abc'

In [32]: ➔ 1 | char4 = 'abc'

In [33]: ➔ 1 | char4.replace('bc', 'DE')

Out[33]: 'aDE'

1.2.4 String + len

```
In [34]: ➜ 1 char5 = '12345'
```

```
In [35]: ➜ 1 len(char5)
```

```
Out[35]: 5
```

1.2.5 String + in

```
In [36]: 1 char6 = 'Python'
```

```
In [37]: 1 'P' in char6
```

Out[37]: True

```
In [38]: 1 'p' in char6
```

Out[38]: False

1.2.6 String + split

```
In [39]: 1 char7 = 'one-two-three'
```

```
In [40]: 1 char7.split('-')
```

```
Out[40]: ['one', 'two', 'three']
```

```
In [41]: 1 char8 = 'I love coding'
```

```
In [42]: 1 char8.split(' ')
```

```
Out[42]: ['I', 'love', 'coding']
```

1.2.7 String + Concatenation

In [43]: ► 1 | char9 = 'ab'
2 | char10 = 'cd'

In [44]: ► 1 | char9 + char10

Out[44]: 'abcd'

1.2.7 String + Concatenation

```
In [45]: 1 char11 = 'A'  
          2 char12 = 'B'  
          3 char13 = 'C'
```

```
In [46]: 1 char11 + char12 + char13
```

Out[46]: 'ABC'

1. Basic Data Structure

1.1 Numeric 

1.2 String 

Data Structure

- ✓ 1. Basic Data Structure
- 2. Composite Data Structure

2. Composite Data Structure

2.1 List

2.2 Tuple

2.3 Dictionary

2.4 Set

List

“CRUD + sort + len + in”

2.1 List

2.1.1 Create List

2.1.2 Read List

2.1.3 Update List

2.1.4 Delete List

2.1.5 List + sort

2.1.6 List + len

2.1.7 List + in

2.1.1 Create List

```
In [47]: 1 list1 = [1, 2, 3, 4, 5]
          2 list2 = ['a', 'b', 'c', 'd']
          3 list3 = [1, 2, 3, 'a', 'b', 'c']
```

```
In [48]: 1 type(list1)
```

Out[48]: list

```
In [49]: 1 type(list2)
```

Out[49]: list

```
In [50]: 1 type(list3)
```

Out[50]: list

2.1.2 Read List

```
In [51]: █ 1 list4 = [1, 2, 3, 'a', 'b', 'c']
```

```
In [52]: █ 1 list4[0]
```

Out[52]: 1

```
In [53]: █ 1 list4[-1]
```

Out[53]: 'c'

```
In [54]: █ 1 list4[-2]
```

Out[54]: 'b'

2.1.2 Read List

```
In [55]: ┏━ 1 ┡ list5 = [1, 2, 3, 'a', 'b', 'c']
```

```
In [56]: ┏━ 1 ┡ list5[3:]
```

Out[56]: ['a', 'b', 'c']

```
In [57]: ┏━ 1 ┡ list5[:5]
```

Out[57]: [1, 2, 3, 'a', 'b']

```
In [58]: ┏━ 1 ┡ list5[3:5]
```

Out[58]: ['a', 'b']

2.1.3 Update List : Replace

```
In [59]: 1 list6 = [1, 2, 3, 'a', 'b', 'c']
```

```
In [60]: 1 list6[0] = 0
```

```
In [61]: 1 list6
```

```
Out[61]: [0, 2, 3, 'a', 'b', 'c']
```

```
In [62]: 1 list6[-1] = 'x'
```

```
In [63]: 1 list6
```

```
Out[63]: [0, 2, 3, 'a', 'b', 'x']
```

2.1.3 Update List : append

```
In [64]: 1 list7 = [1, 2, 3, 'a', 'b', 'c']
```

```
In [65]: 1 list7.append('d')
```

```
In [66]: 1 list7
```

```
Out[66]: [1, 2, 3, 'a', 'b', 'c', 'd']
```

```
In [67]: 1 list7.append('e')
```

```
In [68]: 1 list7
```

```
Out[68]: [1, 2, 3, 'a', 'b', 'c', 'd', 'e']
```

2.1.3 Update List : extend

```
In [69]: ► 1 list8 = [1, 2, 3]
          2 list9 = ['a', 'b', 'c']
```

```
In [70]: ► 1 list8.extend(list9)
```

```
In [71]: ► 1 list8
```

```
Out[71]: [1, 2, 3, 'a', 'b', 'c']
```

2.1.3 Update List : insert

```
In [72]: 1 list10 = [1, 2, 3, 'a', 'b', 'c']
```

```
In [73]: 1 list10.insert(1, 'one')
```

```
In [74]: 1 list10
```

```
Out[74]: [1, 'one', 2, 3, 'a', 'b', 'c']
```

2.1.4 Delete List : del

```
In [75]: 1 list11 = [1, 2, 3, 'a', 'b', 'c']
```

```
In [76]: 1 del list11[2]
```

```
In [77]: 1 list11
```

```
Out[77]: [1, 2, 'a', 'b', 'c']
```

2.1.4 Delete List : del

```
In [78]: 1 list11 = [1, 2, 3, 'a', 'b', 'c']
```

```
In [79]: 1 del list11[-2]
```

```
In [80]: 1 list11
```

```
Out[80]: [1, 2, 3, 'a', 'c']
```

2.1.4 Delete List : remove

```
In [81]: ➜ 1 list12 = [1, 2, 3, 'a', 'b', 'c']
```

```
In [82]: ➜ 1 list12.remove(1)
```

```
In [83]: ➜ 1 list12
```

```
Out[83]: [2, 3, 'a', 'b', 'c']
```

```
In [84]: ➜ 1 list12.remove('a')
```

```
In [85]: ➜ 1 list12
```

```
Out[85]: [2, 3, 'b', 'c']
```

2.1.4 Delete List : clear

```
In [86]: ➜ 1 list13 = [1, 2, 3, 'a', 'b', 'c']
```

```
In [87]: ➜ 1 list13.clear()
```

```
In [88]: ➜ 1 list13
```

```
Out[88]: []
```

2.1.5 List + sort

```
In [89]: ┏━ 1 ┡ list14 = [1, 5, 4, 2, 3]
```

```
In [90]: ┏━ 1 ┡ list14.sort()
```

```
In [91]: ┏━ 1 ┡ list14
```

```
Out[91]: [1, 2, 3, 4, 5]
```

2.1.5 List + sort

```
In [92]: ┏ 1 list14 = [1, 5, 4, 2, 3]
```

```
In [93]: ┏ 1 list14.sort(reverse = True)
```

```
In [94]: ┏ 1 list14
```

```
Out[94]: [5, 4, 3, 2, 1]
```

2.1.5 List + sort

```
In [95]: ┏ 1 list14 = [1, 5, 4, 2, 3]
```

```
In [96]: ┏ 1 sorted_list14 = sorted(list14)
```

```
In [97]: ┏ 1 sorted_list14
```

Out[97]: [1, 2, 3, 4, 5]

2.1.5 List + sort

```
In [98]: 1 list14 = [1, 5, 4, 2, 3]
```

```
In [99]: 1 sorted_list14 = sorted(list14, reverse = True)
```

```
In [100]: 1 sorted_list14
```

```
Out[100]: [5, 4, 3, 2, 1]
```

2.1.7 List + len

```
In [101]: ➜ 1 list15 = [1, 2, 3, 'a', 'b', 'c']
```

```
In [102]: ➜ 1 len(list15)
```

Out[102]: 6

```
In [103]: ➜ 1 list16 = ['a', 'b', 'c', 'd', 'e']
```

```
In [104]: ➜ 1 len(list16)
```

Out[104]: 5

2.1.5 List + in

```
In [105]: 1 list17 = [1, 2, 3, 'a', 'b', 'c']
```

```
In [106]: 1 'b' in list17
```

Out[106]: True

```
In [107]: 1 4 in list17
```

Out[107]: False

2. Composite Data Structure

2.1 List 

2.2 Tuple

2.3 Dictionary

2.4 Set

Tuple

“CR~~IXX~~ + len + in”

2.2 Tuple

2.2.1 Create Tuple

2.2.2 Read Tuple

2.2.3 Tuple + len

2.2.4 Tuple + in

2.2.1 Create Tuple

```
In [108]: 1 tuple1 = (1, 2, 3, 4, 5)
           2 tuple2 = ('a', 'b', 'c', 'd')
           3 tuple3 = (1, 2, 3, 'a', 'b', 'c')
```

```
In [109]: 1 type(tuple1)
```

Out[109]: tuple

```
In [110]: 1 type(tuple2)
```

Out[110]: tuple

```
In [111]: 1 type(tuple3)
```

Out[111]: tuple

2.2.2 Read Tuple

```
In [112]: 1 tuple4 = (1, 2, 3, 'a', 'b', 'c')
```

```
In [113]: 1 tuple4[0]
```

Out[113]: 1

```
In [114]: 1 tuple4[-1]
```

Out[114]: 'c'

```
In [115]: 1 tuple4[-2]
```

Out[115]: 'b'

2.2.2 Read Tuple

```
In [116]: 1 tuple5 = (1, 2, 3, 'a', 'b', 'c')
```

```
In [117]: 1 tuple5[3:]
```

```
Out[117]: ('a', 'b', 'c')
```

```
In [118]: 1 tuple5[:5]
```

```
Out[118]: (1, 2, 3, 'a', 'b')
```

```
In [119]: 1 tuple5[3:5]
```

```
Out[119]: ('a', 'b')
```

2.2.3 Tuple + len

```
In [120]: 1 tuple6 = (1, 2, 3, 'a', 'b', 'c')
```

```
In [121]: 1 len(tuple6)
```

Out[121]: 6

```
In [122]: 1 tuple7 = ('a', 'b', 'c', 'd', 'e')
```

```
In [123]: 1 len(tuple7)
```

Out[123]: 5

2.2.4 Tuple + in

```
In [124]: 1 tuple8 = (1, 2, 3, 'a', 'b', 'c')
```

```
In [125]: 1 'b' in tuple8
```

Out[125]: True

```
In [126]: 1 4 in tuple8
```

Out[126]: False

2. Composite Data Structure

2.1 List 

2.2 Tuple 

2.3 Dictionary

2.4 Set

Dictionary

“CRUD + len + in”

2.3 Dictionary

2.1.1 Create Dictionary

2.1.2 Read Dictionary

2.1.3 Update Dictionary

2.1.4 Delete Dictionary

2.1.5 Dictionary + len

2.1.6 Dictionary + in

2.3.1 Create Dictionary

```
In [127]: ➜ 1 dict1 = {'firstname' : 'John', 'lastname' : 'Doe', 'age' : 32}  
2 dict2 = {'fullname' : 'John Doe', 'hobby' : ['coding', 'study']}
```

```
In [128]: ➜ 1 type(dict1)
```

Out[128]: dict

```
In [129]: ➜ 1 type(dict2)
```

Out[129]: dict

2.3.2 Read Dictionary

```
In [130]: 1 dict3 = {'firstname' : 'John', 'lastname' : 'Doe', 'age' : 32}
```

```
In [131]: 1 dict3['firstname']
```

```
Out[131]: 'John'
```

```
In [132]: 1 dict3['age']
```

```
Out[132]: 32
```

2.3.3 Update Dictionary : Replace

```
In [133]: 1 dict4 = {'firstname' : 'John', 'lastname' : 'Doe', 'age' : 32}
```

```
In [134]: 1 dict4['firstname'] = 'Mario'
```

```
In [135]: 1 dict4
```

```
Out[135]: {'firstname': 'Mario', 'lastname': 'Doe', 'age': 32}
```

2.3.3 Update Dictionary : Add

```
In [136]: 1 dict5 = {'firstname' : 'John', 'lastname' : 'Doe', 'age' : 32}
```

```
In [137]: 1 dict5['blood_group'] = 'O'
```

```
In [138]: 1 dict5
```

```
Out[138]: {'firstname': 'John', 'lastname': 'Doe', 'age': 32, 'blood_group': 'O'}
```

2.3.3 Update Dictionary : update

```
In [139]: 1 dict6 = {'firstname' : 'John', 'lastname' : 'Doe', 'age' : 32}
```

```
In [140]: 1 dict6.update({'blood_group' : 'O', 'height' : 180})
```

```
In [141]: 1 dict6
```

```
Out[141]: {'firstname': 'John',
            'lastname': 'Doe',
            'age': 32,
            'blood_group': 'O',
            'height': 180}
```

2.3.4 Delete Dictionary : **del**

```
In [142]: 1 dict7 = {'firstname' : 'John', 'lastname' : 'Doe', 'age' : 32}
```

```
In [143]: 1 del dict7['lastname']
```

```
In [144]: 1 dict7
```

```
Out[144]: {'firstname': 'John', 'age': 32}
```

2.3.4 Delete Dictionary : clear

```
In [145]: 1 dict8 = {'firstname' : 'John', 'lastname' : 'Doe', 'age' : 32}
```

```
In [146]: 1 dict8.clear()
```

```
In [147]: 1 dict8
```

```
Out[147]: {}
```

2.3.5 Dictionary + len

```
In [148]: ➜ 1 dict9 = {'firstname' : 'John', 'lastname' : 'Doe', 'age' : 32}
```

```
In [149]: ➜ 1 len(dict9)
```

Out[149]: 3

```
In [150]: ➜ 1 len(dict9.keys())
```

Out[150]: 3

```
In [151]: ➜ 1 len(dict9.values())
```

Out[151]: 3

2.3.6 Dictionary + in

```
In [152]: 1 dict10 = {'firstname' : 'John', 'lastname' : 'Doe', 'age' : 32}
```

```
In [153]: 1 'firstname' in dict10
```

Out[153]: True

```
In [154]: 1 'firstname' in dict10.keys()
```

Out[154]: True

```
In [155]: 1 'John' in dict10.values()
```

Out[155]: True

2.3.6 Dictionary + in

```
In [156]: 1 dict10 = {'firstname' : 'John', 'lastname' : 'Doe', 'age' : 32}
```

```
In [157]: 1 'weight' in dict10
```

Out[157]: False

```
In [158]: 1 'weight' in dict10.keys()
```

Out[158]: False

```
In [159]: 1 70 in dict10.values()
```

Out[159]: False

2. Composite Data Structure

2.1 List 

2.2 Tuple 

2.3 Dictionary 

2.4 Set

Set

“ CRUD + len + in ”

Set

- + union
- + intersection
- + difference
- + Symmetric Difference

2.4 Set

2.4.1 Create Set

2.4.2 Read Set

2.4.3 Update Set

2.4.4 Delete Set

2.4.5 Set + len

2.4.6 Set + in

2.4 Set

2.4.7 Set + Union

2.4.8 Set + Intersection

2.4.9 Set + Difference

2.4.10 Set + Symmetric Difference

2.4.1 Create Set

```
In [160]: 1 set1 = {1, 2, 3, 4, 5}  
          2 set2 = {1, 2, 3, 'a', 'b', 'c'}
```

```
In [161]: 1 type(set1)
```

Out[161]: set

```
In [162]: 1 type(set2)
```

Out[162]: set

2.4.2 Read Set

```
In [163]: ➜ 1 set3 = {'a', 'b', 'c', 'd', 'e'}
```

```
In [164]: ➜ 1 for x in set3:  
2     print(x)
```

```
d  
b  
c  
e  
a
```

2.4.3 Update Set : add

```
In [165]: 1 set4 = {'a', 'b', 'c', 'd', 'e'}
```

```
In [166]: 1 set4.add(1)
```

```
In [167]: 1 set4
```

```
Out[167]: {1, 'a', 'b', 'c', 'd', 'e'}
```

2.4.3 Update Set : update

```
In [168]: 1 set5 = {'a', 'b', 'c', 'd', 'e'}
```

```
In [169]: 1 set5.update({1, 2})
```

```
In [170]: 1 set5
```

```
Out[170]: {1, 2, 'a', 'b', 'c', 'd', 'e'}
```

2.4.4 Delete Set : remove

```
In [171]: 1 set6 = {'a', 'b', 'c', 'd', 'e'}
```

```
In [172]: 1 set6.remove('a')
```

```
In [173]: 1 set6
```

```
Out[173]: {'b', 'c', 'd', 'e'}
```

```
In [174]: 1 set6.remove('c')
```

```
In [175]: 1 set6
```

```
Out[175]: {'b', 'd', 'e'}
```

2.4.4 Delete Set : clear

```
In [176]: 1 set7 = {'a', 'b', 'c', 'd', 'e'}
```

```
In [177]: 1 set7.clear()
```

```
In [178]: 1 set7
```

```
Out[178]: set()
```

2.4.5 Set + len

```
In [179]: 1 set8 = {1, 2, 3, 4, 5}
```

```
In [180]: 1 len(set8)
```

Out[180]: 5

2.4.6 Set + in

```
In [181]: 1 set9 = {1, 2, 3, 4, 5}
```

```
In [182]: 1 1 in set9
```

Out[182]: True

```
In [183]: 1 'a' in set9
```

Out[183]: False

2.4.7 Set + Union

```
In [184]: ➜ 1 setA = {1, 2, 3, 4, 5}  
2 setB = {3, 4, 5, 6, 7}
```

```
In [185]: ➜ 1 setA | setB
```

Out[185]: {1, 2, 3, 4, 5, 6, 7}

2.4.8 Set + Intersection

```
In [186]: ➔ 1 setA = {1, 2, 3, 4, 5}  
          2 setB = {3, 4, 5, 6, 7}
```

```
In [187]: ➔ 1 setA & setB
```

Out[187]: {3, 4, 5}

2.4.9 Set + Difference

```
In [188]: ➔ 1 setA = {1, 2, 3, 4, 5}  
          2 setB = {3, 4, 5, 6, 7}
```

```
In [189]: ➔ 1 setA - setB  
  
Out[189]: {1, 2}
```

```
In [190]: ➔ 1 setB - setA  
  
Out[190]: {6, 7}
```

2.4.10 Set + Symmetric Difference

```
In [191]: ➔ 1 setA = {1, 2, 3, 4, 5}  
2 setB = {3, 4, 5, 6, 7}
```

```
In [192]: ➔ 1 setA ^ setB
```

Out[192]: {1, 2, 6, 7}

2. Composite Data Structure

2.1 List 

2.2 Tuple 

2.3 Dictionary 

2.4 Set 

Data Structure

- ✓ 1. Basic Data Structure
- ✓ 2. Composite Data Structure

Conclusion

	List	Tuple	Dictionary	Set
Create	listA=[] listB=[1, 2, 3]	tupleA=() tupleB=(1, 2, 3)	dictA={} dictB={'key':value}	setA=set() setB={1, 2, 3}
Read	listB[start] listB[start:end]	tupleB[start] tupleB[start:end]	dictB['key']	for b in setB: print(b)

Conclusion

	List	Tuple	Dictionary	Set
Update	Replace ✓ append ✓ insert ✓ extend ✓ add ✗ update ✗	✗	✓ ✗ ✗ ✗ ✗ ✗	✗ ✗ ✗ ✗ ✗ ✓ ✓

Conclusion

		List	Tuple	Dictionary	Set
Delete	del	✓		✓	✗
	remove	✓	✗	✗	✓
	clear	✓		✓	✓
	len	len(listB)	len(tupleB)	len(dictB)	len(setB)
	in	'a' in listB	'a' in tupleB	'keyA' in dictB	'a' in setB

Conclusion

Set

Union (|)

Intersection (&)

Difference (-)

Symmetric Difference
(^)

Input

Input

1. Input String
2. Input Numeric

1. Input String

```
In [1]: name = input('Please input your name : ')
print(f'your name is {name}.')
```

Please input your name : Krin
your name is Krin.

Input

- ✓ 1. Input String
- 2. Input Numeric

2. Input Numeric

```
In [2]: age = int(input('Please input your age : '))
print(f'you are {age} years old.')
```

Please input your age : 18
you are 18 years old.

```
In [3]: height = float(input('Please input your height (meters) : '))
print(f'you are {height} meters tall.')
```

Please input your height (meters) : 1.8
you are 1.8 meters tall.

Input

- ✓ 1. Input String
- ✓ 2. Input Numeric

Operator

Operator

$$y = x^2 + 2x + 1$$

- $y, x, 1$ คือ ตัวถูกดำเนินการ (Operand)
- $=, +$ คือ ตัวดำเนินการ (Operator)
- $y = x^2 + 2x + 1$ ก็งหมด คือ นิพจน์ (expression)

Operator

1. Arithmetic Operators
2. Comparison Operators
3. Logical Operators
4. Membership Operators
5. Operator Precedence

1. Arithmetic Operators

1.1 บวก (+)

1.2 ลบ (-)

1.3 คูณ (*)

1.4 หาร (/)

1.5 ยกกำลัง (**)

1.6 เศษจารการหาร (%)

1.7 ผลหารปัดเศษลง (//)

1.1 บวก (+)

```
In [1]: ┌ 1 | a = 5  
      2 | b = 10  
      3 | c = 7
```

```
In [2]: ┌ 1 | a + b
```

Out[2]: 15

```
In [3]: ┌ 1 | print(b + c)
```

17

1.2 au (-)

```
In [4]: 1 a = 5  
         2 b = 10  
         3 c = 7
```

```
In [5]: 1 a - b
```

Out[5]: -5

```
In [6]: 1 b - c
```

Out[6]: 3

1.3 គុណ (*)

```
In [7]: ► 1 a = 5  
2 b = 10  
3 c = 7
```

```
In [8]: ► 1 a * b
```

Out[8]: 50

```
In [9]: ► 1 b * c
```

Out[9]: 70

1.4 မျှေး (/)

```
In [10]: ┏ 1 a = 5  
         2 b = 10  
         3 c = 7
```

```
In [11]: ┏ 1 a/b
```

Out[11]: 0.5

```
In [12]: ┏ 1 b/c
```

Out[12]: 1.4285714285714286

1.5 ยกกำลัง (**)

In [13]: ► 1 | a = 2
2 | b = 3
3 | c = 4

In [14]: ► 1 | a**b

Out[14]: 8

In [15]: ► 1 | b**c

Out[15]: 81

1.6 ເສຫວາກරາດ (%)

In [16]:

```
1 a = 5
2 b = 10
3 c = 7
```

In [17]:

```
1 a%b
```

Out[17]: 5

In [18]:

```
1 b%c
```

Out[18]: 3

1.7 မაနარပါဒ်ဆောင် (//)

```
In [19]: 1 a = 5  
          2 b = 10  
          3 c = 7
```

```
In [20]: 1 a//b
```

Out[20]: 0

```
In [21]: 1 b//c
```

Out[21]: 1

Operator

- ✓ 1. Arithmetic Operators
- 2. Comparison Operators
- 3. Logical Operators
- 4. Membership Operators
- 5. Operator Precedence

2. Comparison Operators

2.1 ตรวจสอบความเท่ากัน (==)

2.2 ตรวจสอบความไม่เท่ากัน (!=)

2.3 ตรวจสอบความมากกว่า (>)

2.4 ตรวจสอบความน้อยกว่า (<)

2.5 ตรวจสอบความมากกว่าหรือเท่ากับ (>=)

2.6 ตรวจสอบความน้อยกว่าหรือเท่ากับ (<=)

2.1 ตรวจสอบความเท่ากัน (==)

```
In [22]: 1 a = 5  
          2 b = 'name'
```

```
In [23]: 1 a == 5
```

Out[23]: True

```
In [24]: 1 a == 7
```

Out[24]: False

```
In [25]: 1 b == 'name'
```

Out[25]: True

```
In [26]: 1 b == 'fullname'
```

Out[26]: False

2.2 ตรวจสอบความไม่เท่ากัน (\neq)

```
In [27]: █ 1 a = 5  
2 b = 'name'
```

```
In [28]: █ 1 a != 5
```

Out[28]: False

```
In [29]: █ 1 a != 7
```

Out[29]: True

```
In [30]: █ 1 b != 'name'
```

Out[30]: False

```
In [31]: █ 1 b != 'fullname'
```

Out[31]: True

2.3 តារាងសែបគារមាត្រក់ (>)

In [32]:  1 a = 5

In [33]:  1 a > 4

Out[33]: True

In [34]:  1 a > 5

Out[34]: False

In [35]:  1 a > 6

Out[35]: False

2.4 ตรวจสอบความน้อยกว่า (<)

In [36]:  1 a = 5

In [37]:  1 a < 4

Out[37]: False

In [38]:  1 a < 5

Out[38]: False

In [39]:  1 a < 6

Out[39]: True

2.5 ตรวจสอบความมากกว่าหรือเท่ากับ (\geq)

In [40]: `1 a = 5`

In [41]: `1 a >= 4`

Out[41]: True

In [42]: `1 a >= 5`

Out[42]: True

In [43]: `1 a >= 6`

Out[43]: False

2.6 ตรวจสอบความน้อยกว่าหรือเท่ากับ (\leq)

In [44]:  1 | a = 5

In [45]:  1 | a \leq 4

Out[45]: False

In [46]:  1 | a \leq 5

Out[46]: True

In [47]:  1 | a \leq 6

Out[47]: True

Operator

- ✓ 1. Arithmetic Operators
- ✓ 2. Comparison Operators
- 3. Logical Operators
- 4. Membership Operators
- 5. Operator Precedence

3. Logical Operators

3.1 and

3.2 or

3.3 not

3.1 and

p	q	p and q
True	True	True
True	False	False
False	True	False
False	False	False

3.1 and

```
In [48]: ➜ 1 t = True  
2 f = False
```

```
In [49]: ➜ 1 t and f
```

Out[49]: False

3.2 or

p	q	p or q
True	True	True
True	False	True
False	True	True
False	False	False

3.2 or

In [50]: ► 1 t = True
2 f = False

In [51]: ► 1 t or f

Out[51]: True

3.3 not

p	not p
True	False
False	True

3.3 not

```
In [52]: ┏━ 1 t = True  
         2 f = False
```

```
In [53]: ┏━ 1 not t
```

Out[53]: False

```
In [54]: ┏━ 1 not f
```

Out[54]: True

Operator

- ✓ 1. Arithmetic Operators
- ✓ 2. Comparison Operators
- ✓ 3. Logical Operators
- 4. Membership Operators
- 5. Operator Precedence

4. Comparison Operators

4.1 in

4.2 not in

4.1 in

```
In [55]: ➜ 1 listA = [1, 2, 3, 4]
          2 tupleA = ('a', 'b', 'c', 'd')
```

```
In [56]: ➜ 1 1 in listA
```

Out[56]: True

```
In [57]: ➜ 1 1 in tupleA
```

Out[57]: False

4.1 in

```
In [58]: ➜ 1 dictA = {'name' : 'John', 'age' : 32}  
2 setA = {'Sushi', 'Salmon'}
```

```
In [59]: ➜ 1 'name' in dictA
```

Out[59]: True

```
In [60]: ➜ 1 'Egg' in setA
```

Out[60]: False

4.2 not in

```
In [61]: ➜ 1 listA = [1, 2, 3, 4]
          2 tupleA = ('a', 'b', 'c', 'd')
```

```
In [62]: ➜ 1 1 not in listA
```

Out[62]: False

```
In [63]: ➜ 1 1 not in tupleA
```

Out[63]: True

4.2 not in

```
In [64]: ➜ 1 dictA = {'name' : 'John', 'age' : 32}  
2 setA = {'Sushi', 'Salmon'}
```

```
In [65]: ➜ 1 'name' not in dictA
```

Out[65]: False

```
In [66]: ➜ 1 'Egg' not in setA
```

Out[66]: True

Operator

- ✓ 1. Arithmetic Operators
- ✓ 2. Comparison Operators
- ✓ 3. Logical Operators
- ✓ 4. Membership Operators
- 5. Operator Precedence

5. Operators Precedence

()

*** . / . % . //**

+ . -

<= . < . > . >=

== . !=

=

Operator

- ✓ 1. Arithmetic Operators
- ✓ 2. Comparison Operators
- ✓ 3. Logical Operators
- ✓ 4. Membership Operators
- ✓ 5. Operator Precedence

Flowchart

Flowchart



เริ่ม, จบ



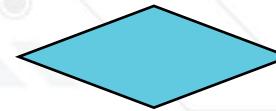
การประกาศตัวแปร
การคำนวณ



รับอินพุต



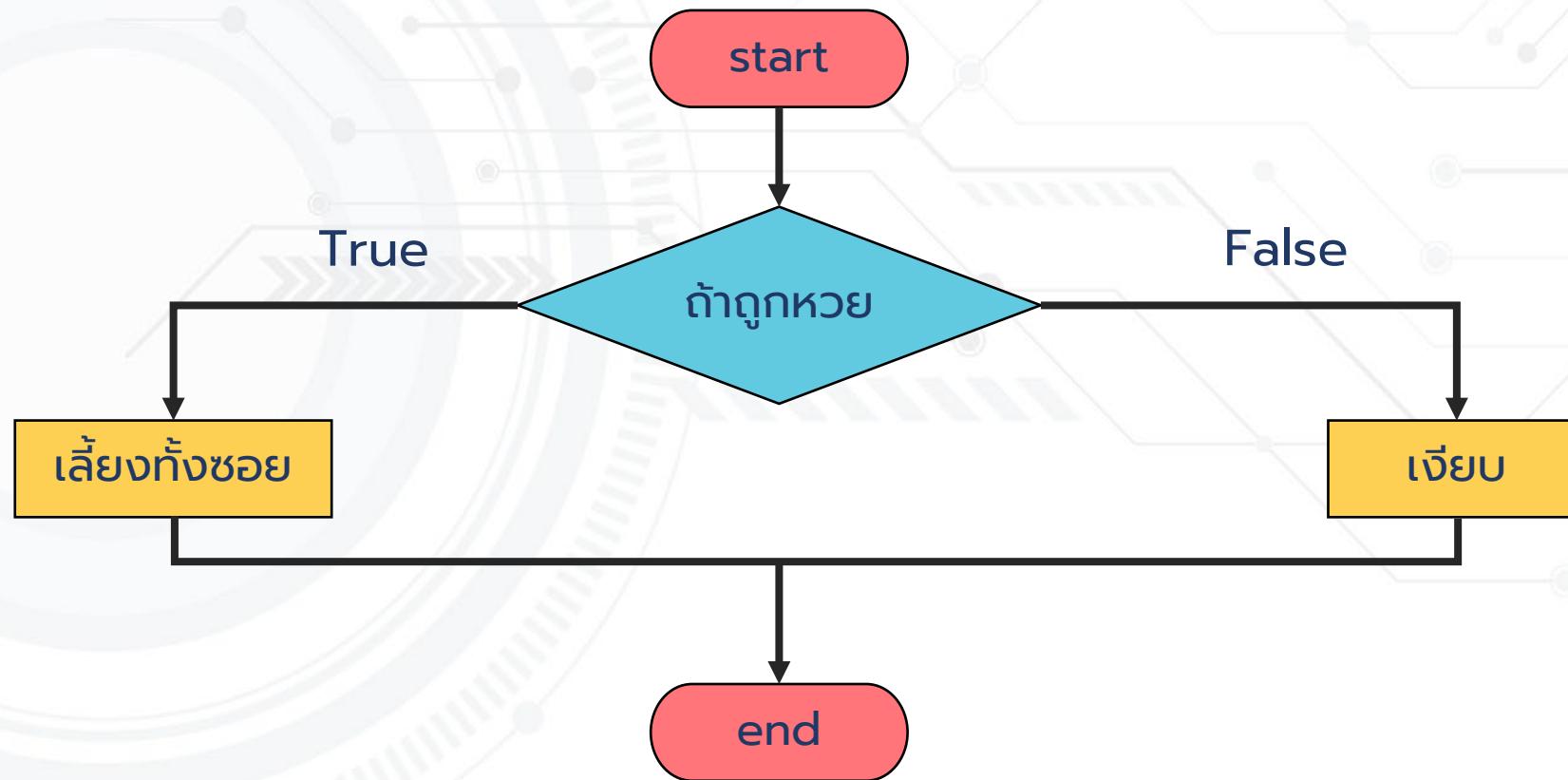
พิจพ



เงื่อนไข
(if-else)

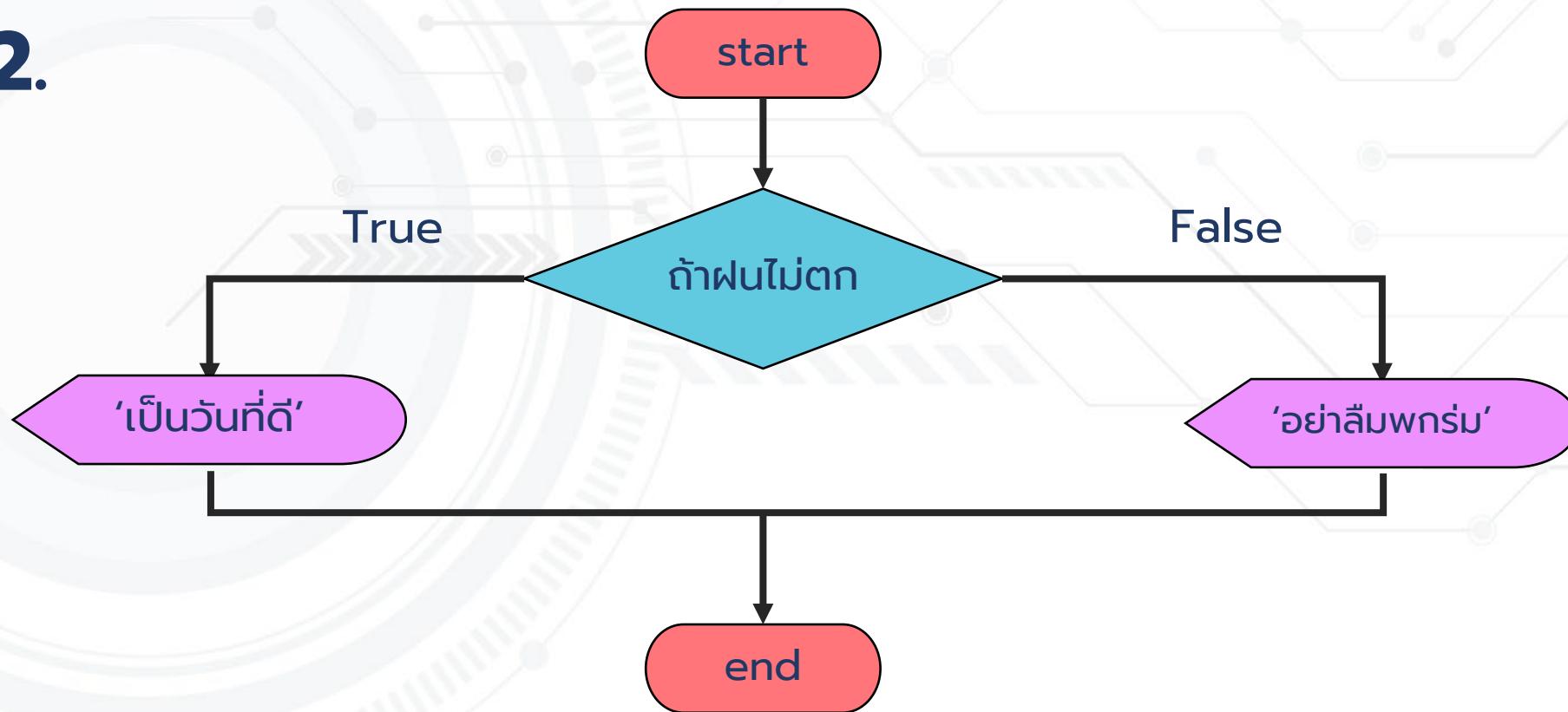
Flowchart

Ex 1.



Flowchart

Ex 2.



If-Else

If-Else

1. If
2. If-Else
3. If-Elif
4. If-Elif-Else

1. If

In [1]:

```
1 name = input('Please insert your name: ')
2 print()
3 if name == 'John':
4     print('Hi John')
5 print('Nice to meet you')
```

Please insert your name: John

Hi John
Nice to meet you

1. If

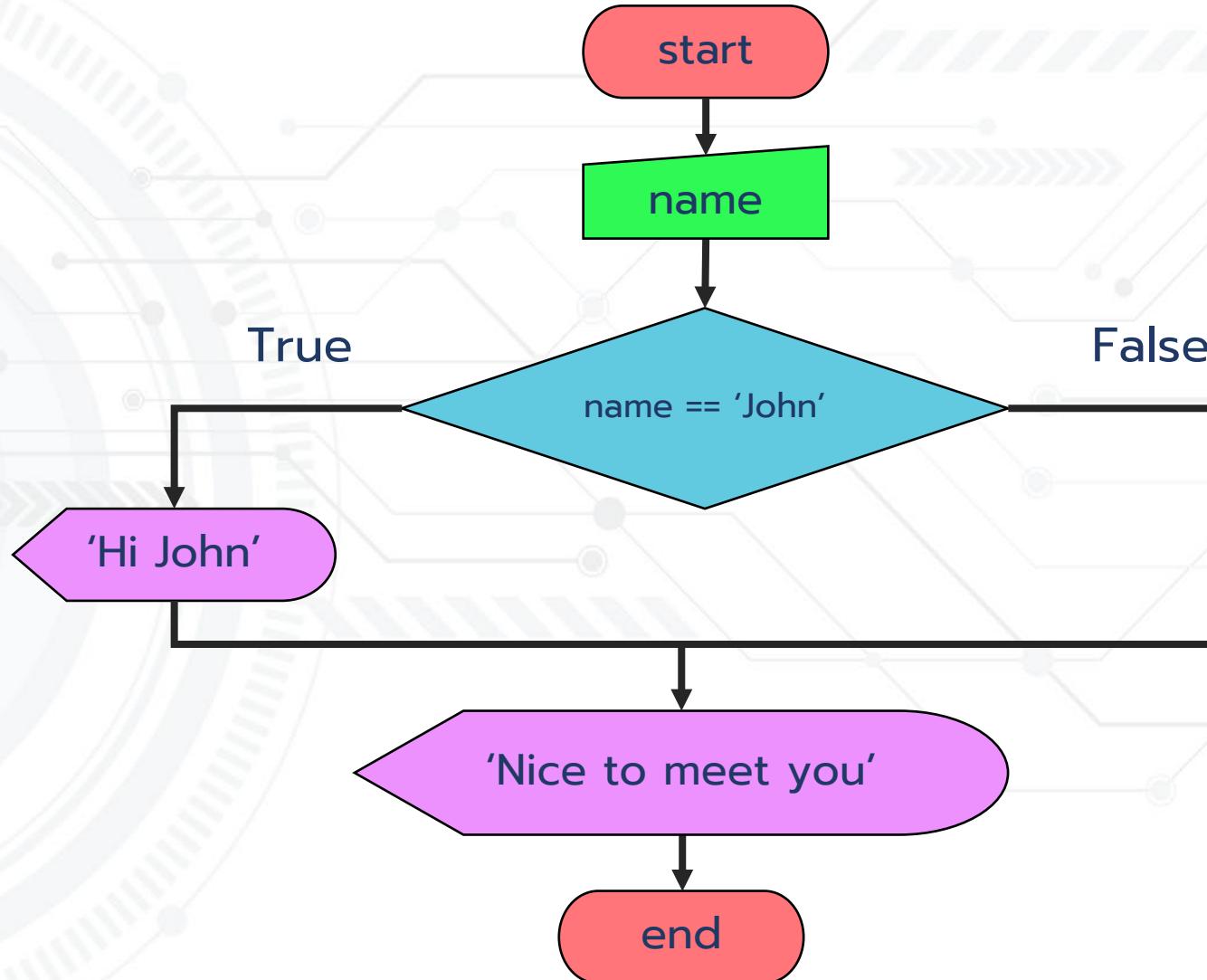
In [2]:

```
1 name = input('Please insert your name: ')
2 print()
3 if name == 'John':
4     print('Hi John')
5 print('Nice to meet you')
```

Please insert your name: Jane

Nice to meet you

1. If



If-Else

- ✓ 1. If
- 2. If-Else
- 3. If-Elif
- 4. If-Elif-Else

2. If-Else

In [3]: ➔

```
1 score = int(input('Please insert score: '))
2 if score >= 50:
3     print('Pass')
4 else:
5     print('Fail')
```

Please insert score: 50
Pass

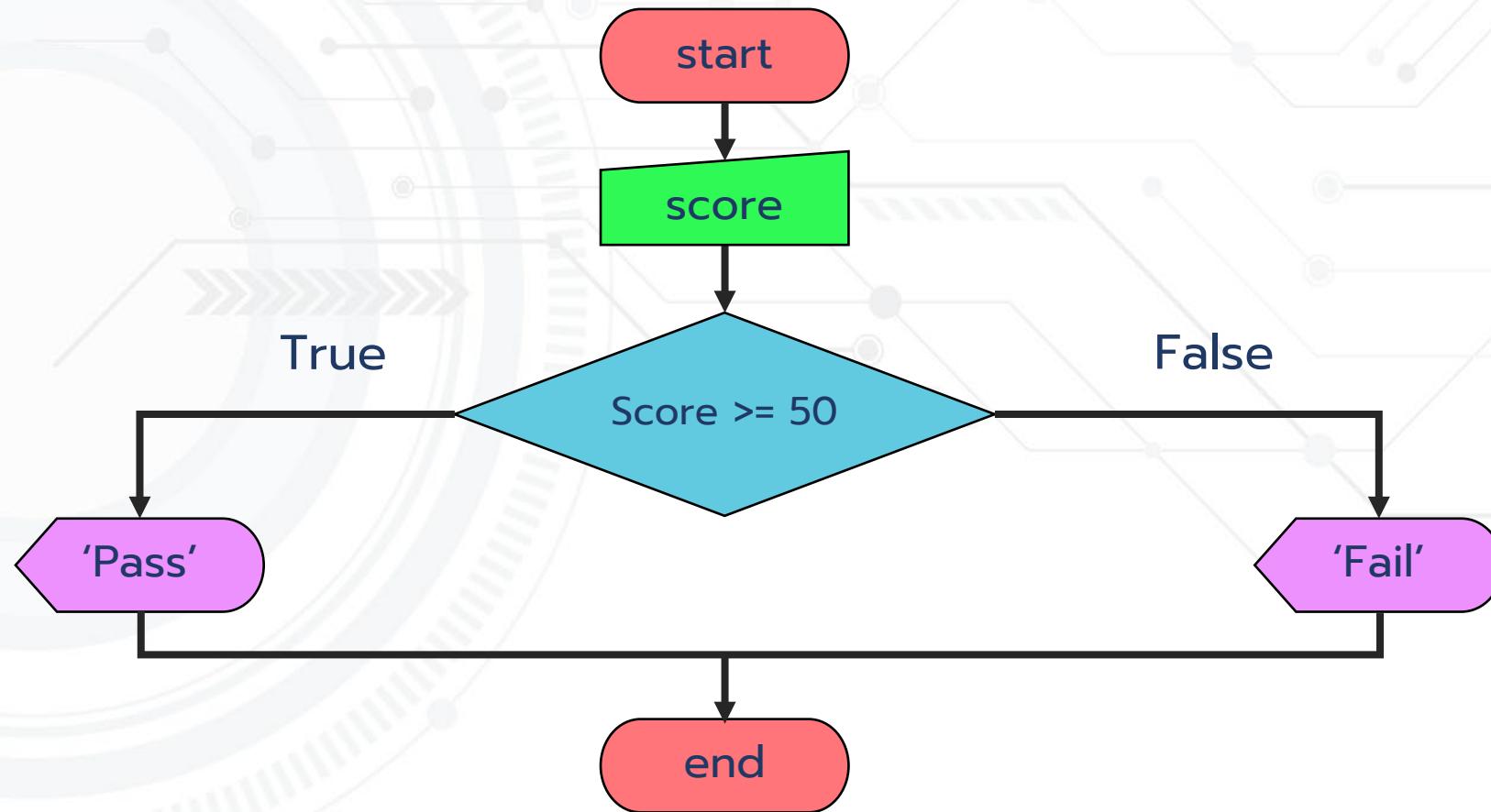
2. If-Else

In [4]: ►

```
1 score = int(input('Please insert score: '))
2 if score >= 50:
3     print('Pass')
4 else:
5     print('Fail')
```

Please insert score: 49
Fail

2. If-Else



If-Else

- ✓ 1. If
- ✓ 2. If-Else
- 3. If-Elif
- 4. If-Elif-Else

3. If-Elif

In [5]: ►

```
1 name = input('Please insert your name: ')
2 print()
3 if name == 'Alan Turing':
4     print('Oh God !')
5 elif name == 'Isac Newton':
6     print('OMG !')
7 print('Glad to see you')
```

Please insert your name: Alan Turing

Oh God !

Glad to see you

3. If-Elif

In [6]: ►

```
1 name = input('Please insert your name: ')
2 print()
3 if name == 'Alan Turing':
4     print('Oh God !')
5 elif name == 'Isac Newton':
6     print('OMG !')
7 print('Glad to see you')
```

Please insert your name: Isac Newton

OMG !

Glad to see you

3. If-Elif

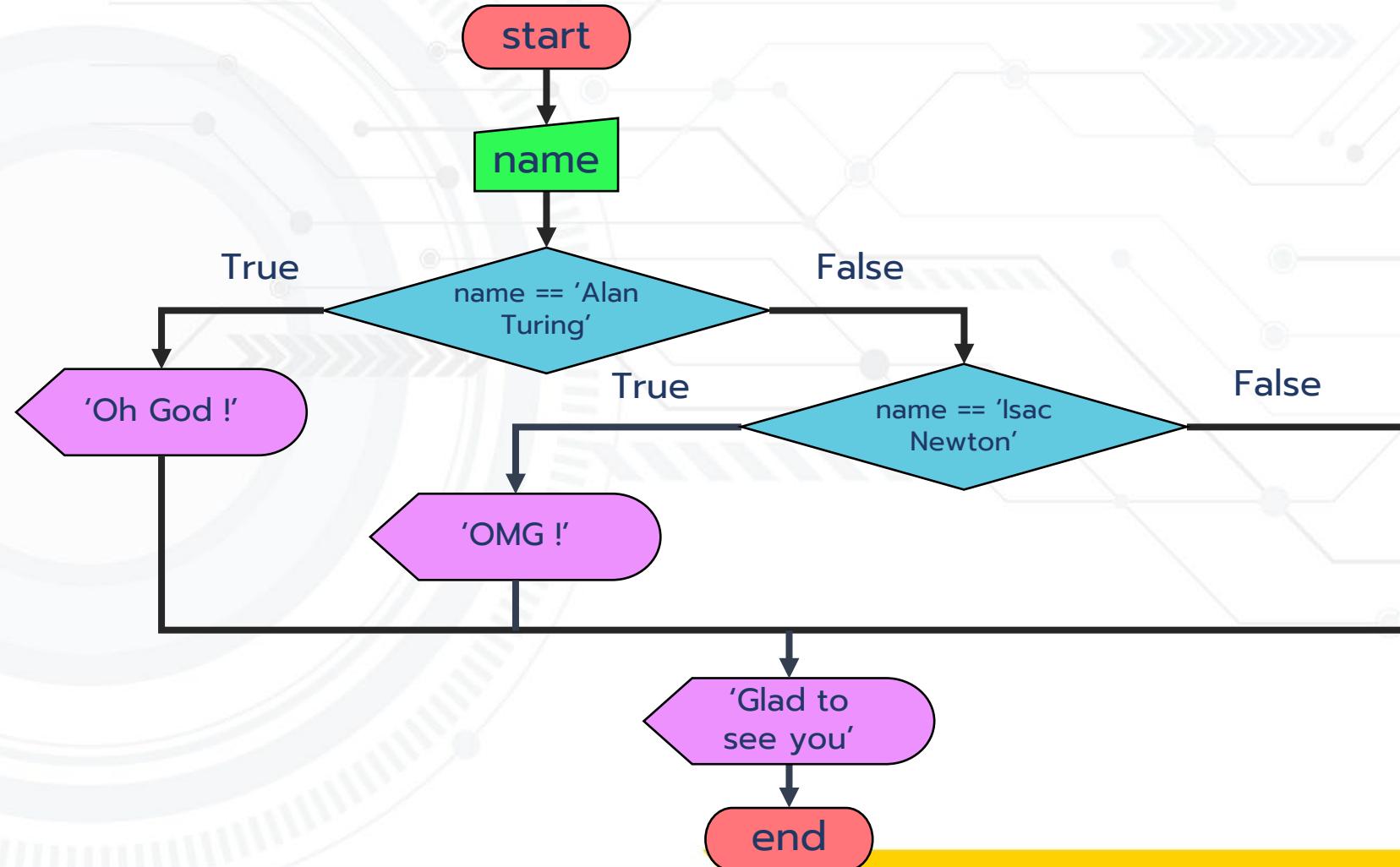
In [7]: ➔

```
1 name = input('Please insert your name: ')
2 print()
3 if name == 'Alan Turing':
4     print('Oh God !')
5 elif name == 'Isac Newton':
6     print('OMG !')
7 print('Glad to see you')
```

Please insert your name: Yoda

Glad to see you

3. If-Elif



If-Else

- ✓ 1. If
- ✓ 2. If-Else
- ✓ 3. If-Elif
- 4. If-Elif-Else

4. If-Elif-Else

In [8]:

```
1 name = input('Please insert your name: ')
2 print()
3 if name == 'Gift':
4     print('I miss you')
5 elif name == 'Cherry':
6     print('I love you')
7 elif name == 'Wine':
8     print('I need you')
9 else:
10    print('Leave me alone')
```

Please insert your name: Gift

I miss you

4. If-Elif-Else

In [9]:

```
1 name = input('Please insert your name: ')
2 print()
3 if name == 'Gift':
4     print('I miss you')
5 elif name == 'Cherry':
6     print('I love you')
7 elif name == 'Wine':
8     print('I need you')
9 else:
10    print('Leave me alone')
```

Please insert your name: Cherry

I love you

4. If-Elif-Else

In [10]: ►

```
1 name = input('Please insert your name: ')
2 print()
3 if name == 'Gift':
4     print('I miss you')
5 elif name == 'Cherry':
6     print('I love you')
7 elif name == 'Wine':
8     print('I need you')
9 else:
10    print('Leave me alone')
```

Please insert your name: Wine

I need you

4. If-Elif-Else

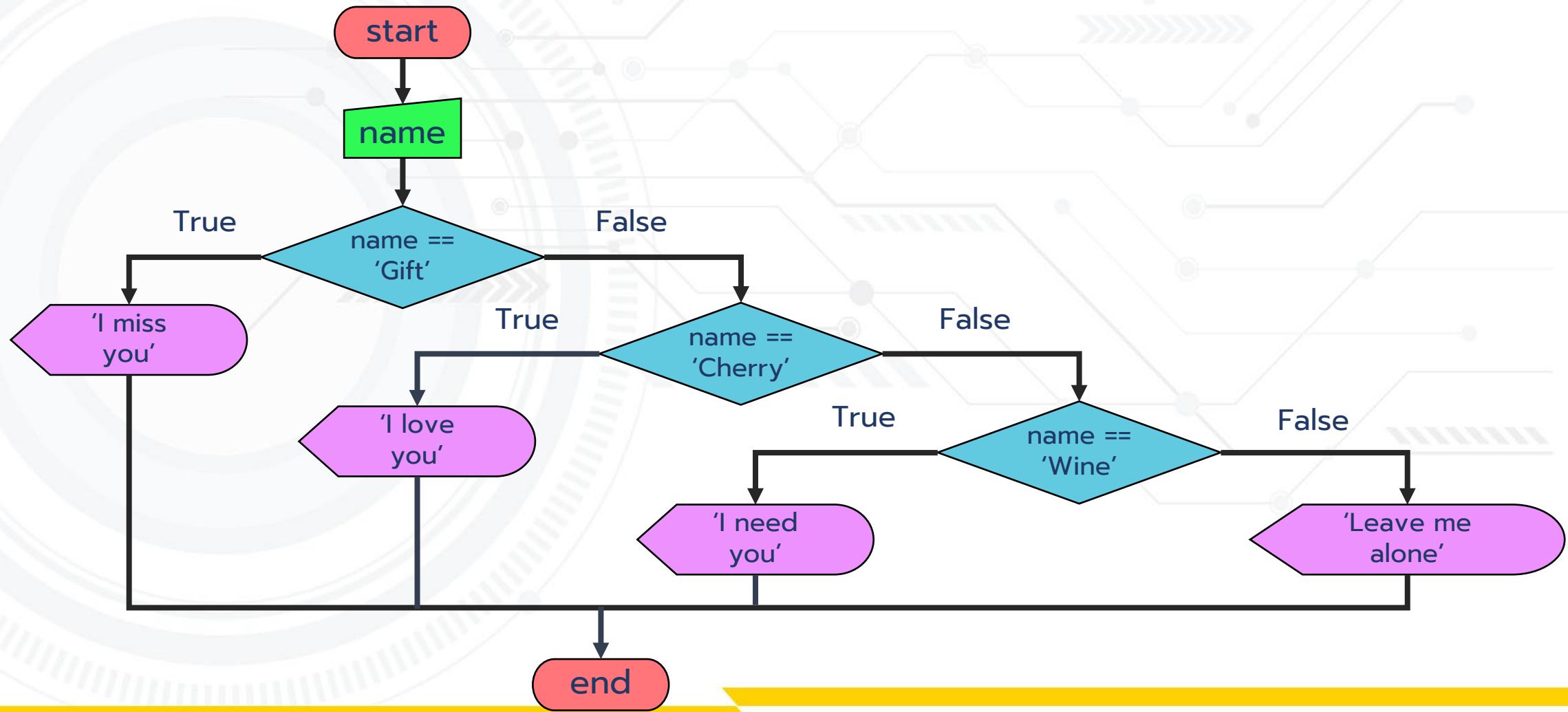
In [11]: ►

```
1 name = input('Please insert your name: ')
2 print()
3 if name == 'Gift':
4     print('I miss you')
5 elif name == 'Cherry':
6     print('I love you')
7 elif name == 'Wine':
8     print('I need you')
9 else:
10     print('Leave me alone')
```

Please insert your name: Longan

Leave me alone

4. If-Elif-Else



If-Else

- ✓ 1. If
- ✓ 2. If-Else
- ✓ 3. If-Elif
- ✓ 4. If-Elif-Else

For & While Loop

For & While Loop

1. For
2. While
3. Loop & Statement

1. For

1.1 Standard For

1.2 For + String

1.3 For + List

1.4 For + Tuple

1.5 For + Dictionary

1.6 For + Set

1.1 Standard For

1.1.1 for i in range (end)

1.1.2 for i in range (start, end)

1.1.3 for i in range (start, end, step)

1.1.1 for i in range (end)

In [1]: ┌ 1 for i in range(5):
 2 | print(i)

0
1
2
3
4

1.1.2 for i in range (start, end)

```
In [2]: ➜ 1 for i in range(5, 11):  
 2     print(i)
```

```
5  
6  
7  
8  
9  
10
```

1.1.3 for i in range (start, end, step)

```
In [3]: 1 for i in range(10, 20, 2):  
2     print(i)
```

```
10  
12  
14  
16  
18
```

1.2 For + String

In [4]: ►

```
1 char = 'Python'  
2 n = len(char)  
3 for i in range(n):  
4     print(char[i])
```

P
y
t
h
o
n

1.2 For + String

In [5]: ➔

```
1 char = 'Python'  
2 for i in range(len(char)):  
3     print(char[i])
```

P
y
t
h
o
n

1.2 For + String

In [6]: ➔

```
1 char = 'Python'  
2 for c in char:  
3     print(c)
```

P
y
t
h
o
n

1.2 For + String

In [7]:

```
1 char = 'Python'  
2 for i,c in enumerate(char):  
3     print(i, c)
```

```
0 P  
1 y  
2 t  
3 h  
4 o  
5 n
```

1.3 For + List

In [8]: ➞

```
1 listx = ['a', 'b', 'c', 'd', 'e']
2 n = len(listx)
3 for i in range(n):
4     print(listx[i])
```

a
b
c
d
e

1.3 For + List

In [9]: ➔

```
1 listx = ['a', 'b', 'c', 'd', 'e']
2 for i in range(len(listx)):
3     print(listx[i])
```

a
b
c
d
e

1.3 For + List

```
In [10]: ┏━
 1 listx = ['a', 'b', 'c', 'd', 'e']
 2 for x in listx:
 3     print(x)
```

```
a
b
c
d
e
```

1.3 For + List

In [11]: ➜

```
1 listx = ['a', 'b', 'c', 'd', 'e']
2 for i, x in enumerate(listx):
3     print(i, x)
```

```
0 a
1 b
2 c
3 d
4 e
```

1.4 For + Tuple

```
In [12]: ► 1 tuplex = ('a', 'b', 'c', 'd', 'e')
  2 n = len(tuplex)
  3 for i in range(n):
  4     print(tuplex[i])
```

```
a
b
c
d
e
```

1.4 For + Tuple

In [13]:

```
1 tuplex = ('a', 'b', 'c', 'd', 'e')
2 for i in range(len(tuplex)):
3     print(tuplex[i])
```

a
b
c
d
e

1.4 For + Tuple

In [14]: ►

```
1 tuplex = ('a', 'b', 'c', 'd', 'e')
2 for x in tuplex:
3     print(x)
```

a
b
c
d
e

1.4 For + Tuple

In [15]: ➜

```
1 tuplex = ('a', 'b', 'c', 'd', 'e')
2 for i, x in enumerate(tuplex):
3     print(i, x)
```

```
0 a
1 b
2 c
3 d
4 e
```

1.5 For + Dictionary

```
In [16]: ➜ 1 dictx = {'firstname' : 'John', 'lastname' : 'Doe', 'age' : 32}  
2 for key in dictx:  
3     print(key)
```

```
firstname  
lastname  
age
```

1.5 For + Dictionary

```
In [17]: ► 1 dictx = {'firstname' : 'John', 'lastname' : 'Doe', 'age' : 32}
      2 for key in dictx.keys():
      3     print(key)

firstname
lastname
age
```

1.5 For + Dictionary

```
In [18]: ► 1 dictx = {'firstname' : 'John', 'lastname' : 'Doe', 'age' : 32}  
2 for value in dictx.values():  
3     print(value)
```

John
Doe
32

1.6 For + Set

```
In [19]: ► 1 setx = {1, 2, 3, 'a', 'b', 'c'}  
2 for x in setx:  
3     print(x)
```

```
b  
1  
2  
3  
a  
c
```

For & While Loop

- ✓ 1. For
- 2. While
- 3. Loop & Statement

2. While

In [20]:

```
1 i = 1
2 while i <= 5:
3     print(i)
4     i = i + 1
```

```
1
2
3
4
5
```

2. While

In [21]:

```
1 i = 5
2 while i <= 15:
3     print(i)
4     i = i + 2
```

```
5
7
9
11
13
15
```

2. While

In [22]: ►

```
1 i = 0
2 while True:
3     print(i)
4     if i == 5:
5         break
6     i = i + 1
```

```
0
1
2
3
4
5
```

For & While Loop

- ✓ 1. For
- ✓ 2. While
- 3. Loop & Statement

3. Loop & Statement

3.1 break

3.2 continue

3.3 pass

3.1 break

```
In [23]: ➜ 1 for i in range(100000):  
 2     print(i)  
 3     if i == 5:  
 4         break
```

```
0  
1  
2  
3  
4  
5
```

3.2 continue

In [24]:

```
1 for i in range(10):
2     if i%2 == 0:
3         continue
4         print('hello')
5     else:
6         print(i)
```

```
1
3
5
7
9
```

3.3 pass

In [25]:

```
1 for i in range(10):
2     if i%2 == 0:
3         pass
4         print('hello')
5     else:
6         print(i)
```

```
hello
1
hello
3
hello
5
hello
7
hello
9
```

3.3 pass

In [26]:

```
1 v_list = [120, 70, 90]
2 for v in v_list:
3     if v >= 120:
4         pass
5     else:
6         print('500 baht finepage x')
```

500 baht finepage x
500 baht finepage x

For & While Loop

- ✓ 1. For
- ✓ 2. While
- ✓ 3. Loop & Statement

Function

ทำไมต้องใช้ Function

Ex. `list1 = [1, 3, 4, 7, 11]`
`list2 = [4, 3, 2, 1, 0]`

- ➔ อยากหาผลรวมของ `list1`
- ➔ อยากหาผลรวมของ `list2`

ทำไมต้องใช้ Function

Ex.

```
sum1 = 0
for i in range(len(list1)):
    sum1 = sum1+list1[i]
sum2
for i in range(len(list2)):
    sum2 = sum2+list2[i]
```

ทำไมต้องใช้ Function

Ex.

list1 = [1, 3, 4, 7, 11]

⋮

listN = [7, 5, 12, 4, 0]

➔ อยากรอรวมของ list1

⋮

➔ อยากรอรวมของ listN

ทำไมต้องใช้ Function

ช้าช่อน !

จะเขียนทำไม hairy รอบ !

ทำไมต้องใช้ Function

Ex.

```
def sum_list(list):  
    sumx = 0  
    for i in range(len(list)):  
        sumx = sumx + list[i]  
    return sumx
```

ทำไมต้องใช้ Function

Ex.

sum1 = sum_list(list1)

sum2 = sum_list(list2)

:

sumN = sum_list(listN)

Function

1. With Parameter
2. Without Parameter

1. With Parameter

```
In [1]: ► 1 def sum_list(listA):  
2     sumx = 0  
3     for i in range(len(listA)):  
4         sumx = sumx + listA[i]  
5     return sumx
```

```
In [2]: ► 1 list1 = [1, 2, 3, 4, 5]  
2 list2 = [6, 7, 8, 9, 10]
```

```
In [3]: ► 1 sum_list(list1)
```

Out[3]: 15

```
In [4]: ► 1 sum_list(list2)
```

Out[4]: 40

1. With Parameter

```
In [5]: ┏ 1 def plus(a, b):  
  2     c = a + b  
  3     return c
```

```
In [6]: ┏ 1 plus(1, 3)
```

Out[6]: 4

```
In [7]: ┏ 1 def minus(a, b):  
  2     d = a - b  
  3     return d
```

```
In [8]: ┏ 1 minus(1, 3)
```

Out[8]: -2

1. With Parameter

```
In [9]: ► 1 def plus_minus(a, b, c):  
 2     c = a + b + c  
 3     d = a - b - c  
 4     return c, d
```

```
In [10]: ► 1 result1, result2 = plus_minus(1, 3, 5)
```

```
In [11]: ► 1 result1
```

Out[11]: 9

```
In [12]: ► 1 result2
```

Out[12]: -11

Function

- ✓ 1. With Parameter
- 2. Without Parameter

2. Without Parameter

In [13]: ►

```
1 def tree():
2     print('''
3         ---1---
4         --121--
5         -12321-
6         1234321'''')
```

In [14]: ►

```
1 tree()
```

```
---1---
--121--
-12321-
1234321
```

2. Without Parameter

In [15]:

```
1 def PYTHON():
2     print('
3     --XXXXXX--XX----XX--XXXXXXXX--XX----XX----XXXXXX----XX----XX--
4     --XX----XX--XX----XX----XX----XX----XX----XX----XX----XXX----XX--
5     --XX----XX--XX--XX----XX----XX----XX----XX----XX----XX----XXXX--XX--
6     --XXXXXX----XXXX----XX----XXXXXXXX--XX----XX--XX--XX--XX--XX--XX--
7     --XX----XX----XX----XX----XX----XX----XX----XX----XX----XX----XXXX--'
8     --XX----XX----XX----XX----XX----XX----XX----XX----XX----XX----XX----XXX--'
9     --XX----XX----XX----XX----XX----XX----XX----XX----XX----XXXXXX----XX----XX--')
```

In [16]:

```
1 PYTHON()
```

```
--XXXXXX--XX----XX--XXXXXXXX--XX----XX----XXXXXX----XX----XX--
--XX----XX--XX----XX----XX----XX----XX----XX----XX----XX----XXX----XX--
--XX----XX--XX--XX----XX----XX----XX----XX----XX----XX----XX----XXXX--XX--
--XXXXXX----XXXX----XX----XXXXXXXX--XX----XX--XX--XX--XX--XX--XX--XX--
--XX----XX----XX----XX----XX----XX----XX----XX----XX----XX----XX----XX----XXXX--'
--XX----XX----XX----XX----XX----XX----XX----XX----XX----XX----XX----XX----XX----XXX--'
--XX----XX----XX----XX----XX----XX----XX----XX----XX----XX----XX----XX----XX----XXXXXX--XX----XX--'
```

Function

- ✓ 1. With Parameter
- ✓ 2. Without Parameter

OOP

ทำความรู้จัก OOP

- 1. OOP เป็นเทคนิคการเขียนโปรแกรมแบบหนึ่ง ที่มุ่งทุกอย่างเป็น Object**
- 2. การเขียน Code แบบ OOP ทำให้ง่าย & เป็นระเบียบ ในการ พัฒนา/ปรับปรุง**

OOP

1. Attribute
2. Method

1. Attribute

```
In [1]: ┏ 1 class Warrior:  
      2     def __init__(self, HP, ATK, DEF):  
      3         self.HP = HP  
      4         self.ATK = ATK  
      5         self.DEF = DEF
```

```
In [2]: ┏ 1 warrior1 = Warrior(100, 45, 25)
```

```
In [3]: ┏ 1 print("warrior1's HP =", warrior1.HP)  
      2 print("warrior1's ATK =", warrior1.ATK)  
      3 print("warrior1's DEF =", warrior1.DEF)
```

warrior1's HP = 100
warrior1's ATK = 45
warrior1's DEF = 25

1. Attribute

```
In [4]: ┏ 1 warrior2 = Warrior(100, 35, 30)
```

```
In [5]: ┏ 1 print("warrior2's HP =", warrior2.HP)
      2 print("warrior2's HP =", warrior2.ATK)
      3 print("warrior2's HP =", warrior2.DEF)
```

```
warrior2's HP = 100
warrior2's HP = 35
warrior2's HP = 30
```

1. Attribute

```
In [6]: ┏ 1 class Car:  
  2     def __init__(self, brand, model, color):  
  3         self.brand = brand  
  4         self.model = model  
  5         self.color = color
```

```
In [7]: ┏ 1 car1 = Car('Toyota', 'Camry', 'Black')
```

```
In [8]: ┏ 1 print("car1's brand =", car1.brand)  
  2 print("car1's model =", car1.model)  
  3 print("car1's color =", car1.color)
```

```
car1's brand = Toyota  
car1's model = Camry  
car1's color = Black
```

1. Attribute

```
In [9]: ► 1 car2 = Car('Honda', 'Civic', 'White')
```

```
In [10]: ► 1 print("car2's brand =", car2.brand)
2 print("car2's model =", car2.model)
3 print("car2's color =", car2.color)
```

```
car2's brand = Honda
car2's model = Civic
car2's color = White
```

OOP

- ✓ 1. Attribute
- 2. Method

2. Method

In [11]:

```
1 class Warrior:
2     def __init__(self, HP, ATK, DEF):
3         self.HP = HP
4         self.ATK = ATK
5         self.DEF = DEF
6
7     def training(self):
8         self.HP = self.HP + 5
9         self.ATK = self.ATK + 10
10        self.DEF = self.DEF + 5
```

In [12]:

```
1 warrior1 = Warrior(100, 45, 25)
2 print('HP = %d, ATK = %d, DEF = %d' %(warrior1.HP, warrior1.ATK, warrior1.DEF))
3 warrior1.training()
4 print('HP = %d, ATK = %d, DEF = %d' %(warrior1.HP, warrior1.ATK, warrior1.DEF))
```

```
HP = 100, ATK = 45, DEF = 25
HP = 105, ATK = 55, DEF = 30
```

2. Method

In [13]:

```
1 class Car:
2     def __init__(self, brand, model, color):
3         self.brand = brand
4         self.model = model
5         self.color = color
6
7     def set_color(self, color):
8         self.color = color
```

In [14]:

```
1 car1 = Car('Toyota', 'Camry', 'Black')
2 print('old color = %s' %car1.color)
3 car1.set_color('Red')
4 print('new color = %s' %car1.color)
```

```
old color = Black
new color = Red
```

OOP

- ✓ 1. Attribute
- ✓ 2. Method

File Management

File Management

1. txt
2. path

1. txt

1.1 write (w)

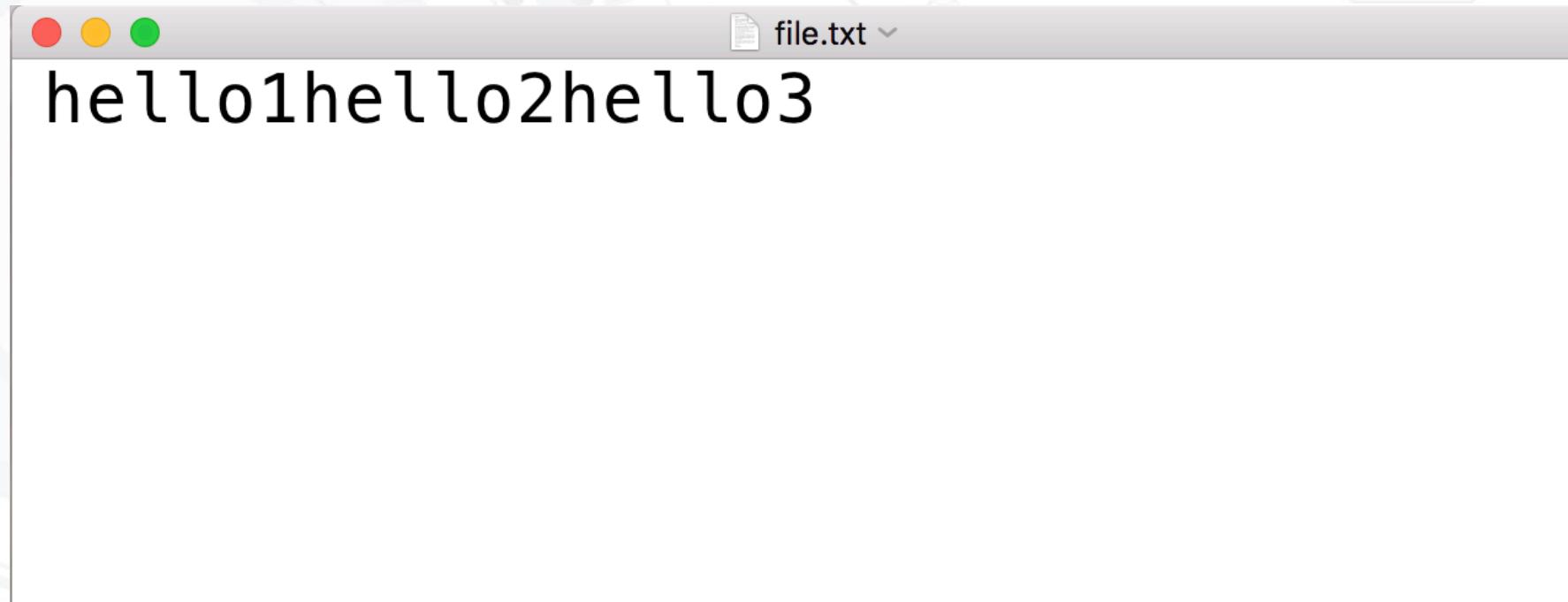
1.2 read (r)

1.3 append (a)

1.1 write (w)

```
In [1]: file = open('file.txt', 'w', encoding='utf8')
file.write('hello1')
file.write('hello2')
file.write('hello3')
file.close()
```

1.1 write (w)



1.1 write (w)

```
In [2]: file2 = open('file2.txt', 'w', encoding='utf8')
file2.write('hello1' + '\n')
file2.write('hello2' + '\n')
file2.write('hello3' + '\n')
file2.close()
```

1.1 write (w)

```
In [3]: file2 = open('file2.txt', 'w', encoding='utf8')
file2.write('hello1\n')
file2.write('hello2\n')
file2.write('hello3\n')
file2.close()
```

1.1 write (w)



1.1 write (w)

```
In [6]: file3 = open('file3.txt', 'w', encoding='utf8')  
file3.write(1)  
file3.close()
```

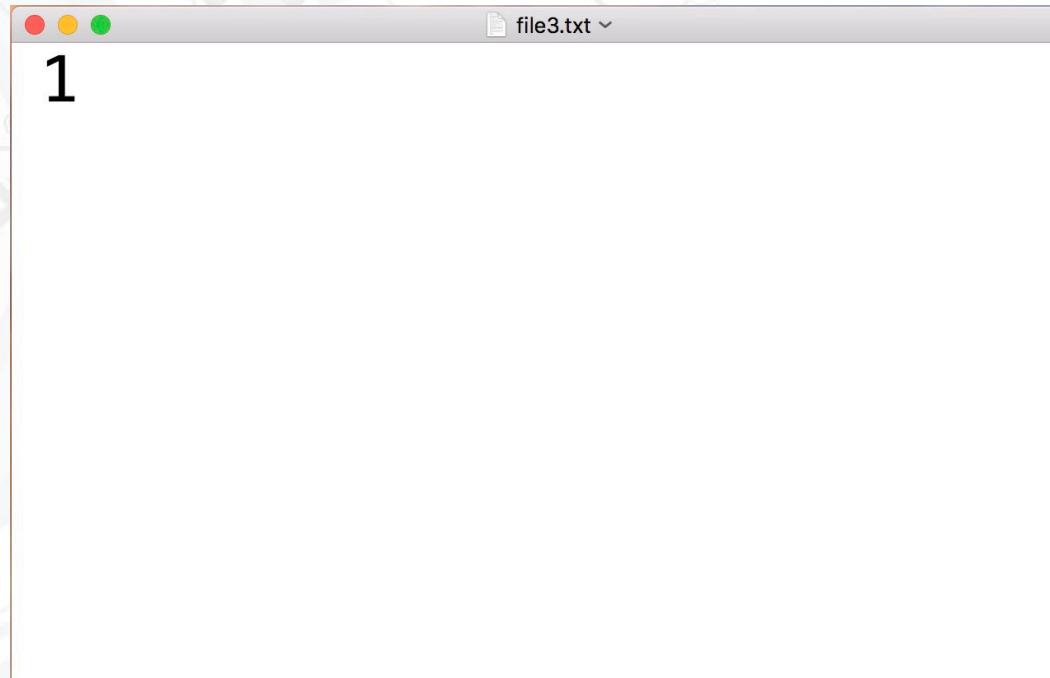
```
-----  
--  
TypeError                                         Traceback (most recent call last)  
t)  
<ipython-input-6-9b573a3a285f> in <module>()  
      1 file3 = open('file3.txt', 'w', encoding='utf8')  
----> 2 file3.write(1)  
      3 file3.close()
```

TypeError: write() argument must be str, not int

1.1 write (w)

```
In [7]: file3 = open('file3.txt', 'w', encoding='utf8')
file3.write('1')
file3.close()
```

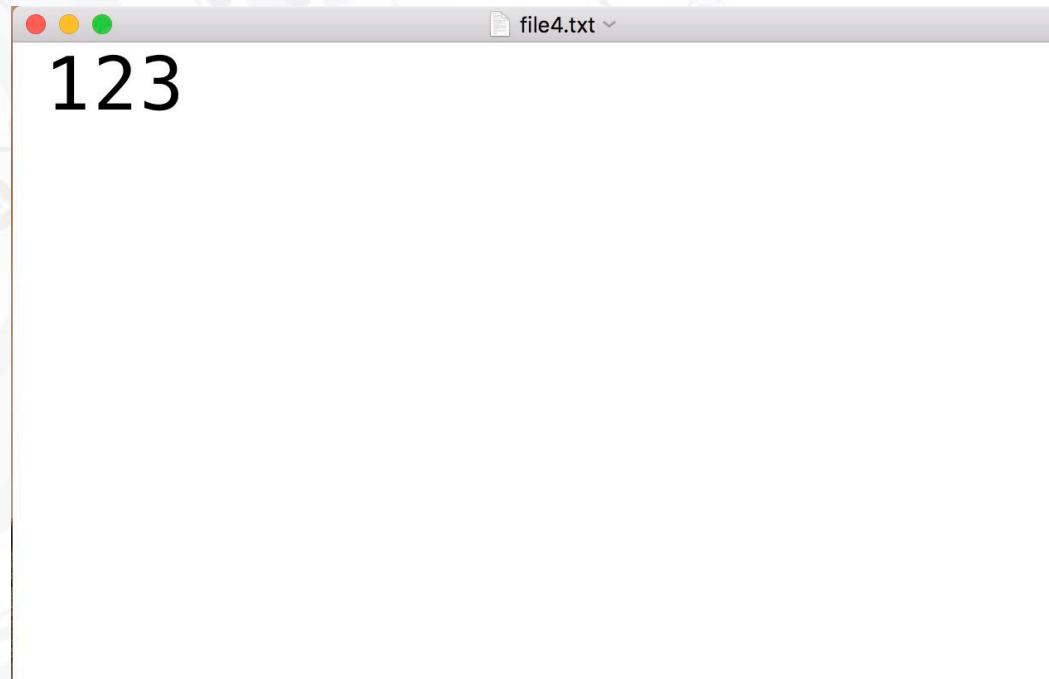
1.1 write (w)



1.1 write (w)

```
In [8]: file4 = open('file4.txt', 'w', encoding='utf8')
file4.write('1')
file4.write('2')
file4.write('3')
file4.close()
```

1.1 write (w)



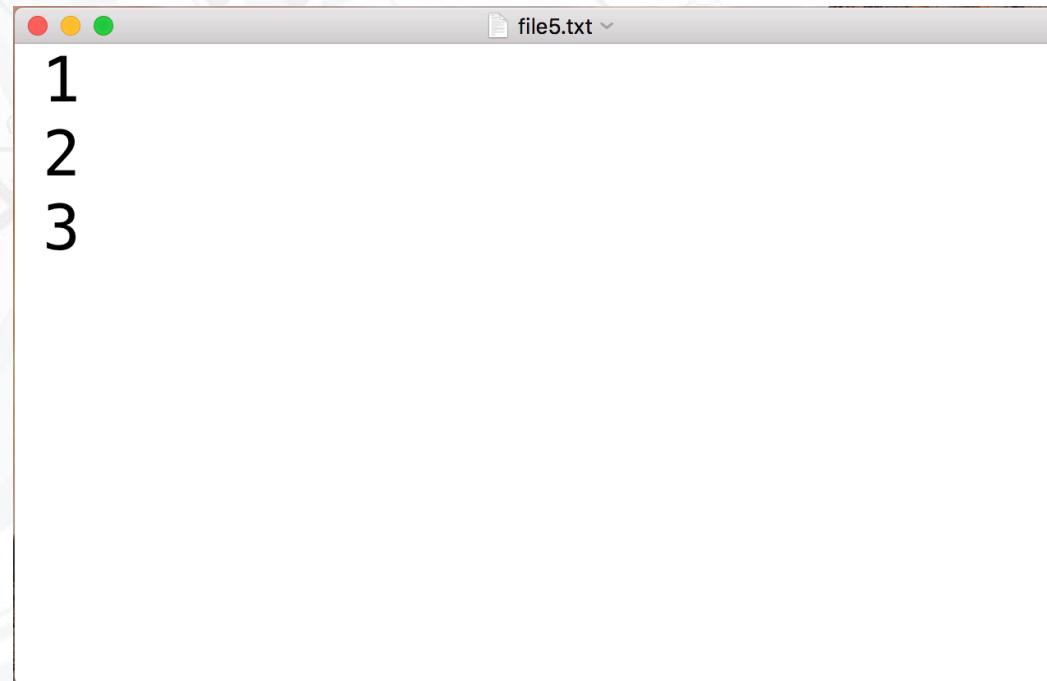
1.1 write (w)

```
In [9]: file5 = open('file5.txt', 'w', encoding='utf8')
file5.write('1' + '\n')
file5.write('2' + '\n')
file5.write('3' + '\n')
file5.close()
```

1.1 write (w)

```
In [10]: file5 = open('file5.txt', 'w', encoding='utf8')
file5.write('1\n')
file5.write('2\n')
file5.write('3\n')
file5.close()
```

1.1 write (w)



1.2 read (r)

```
In [4]: file2 = open('file2.txt', 'r', encoding='utf8')  
for line in file2:  
    print(line)
```

hello1

hello2

hello3

1.2 read (r)

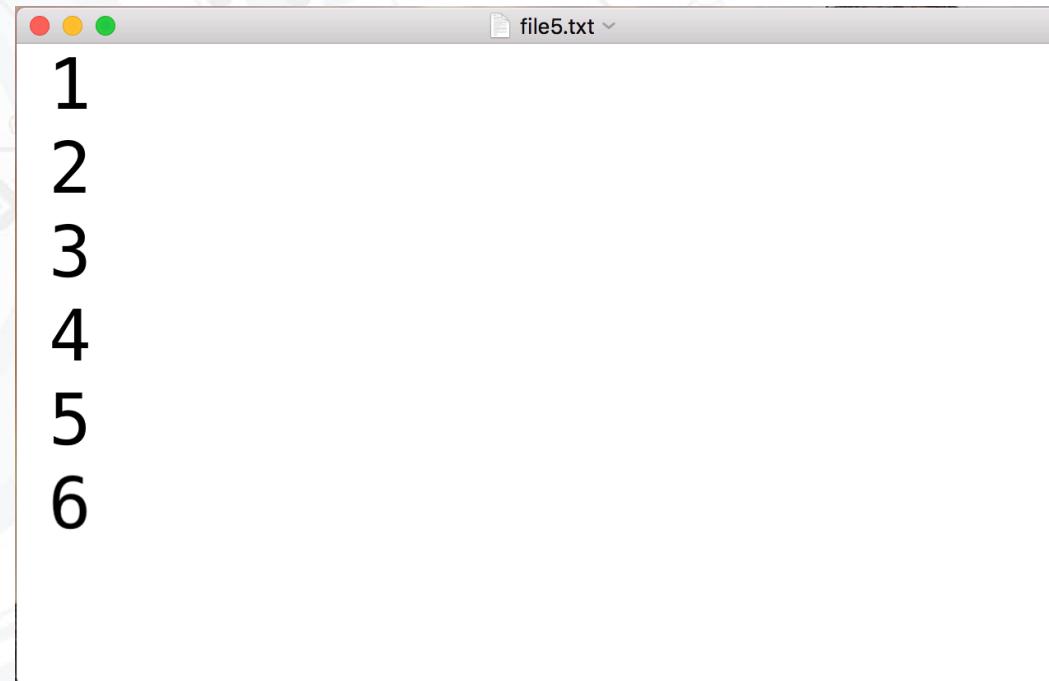
```
In [5]: file2 = open('file2.txt', 'r', encoding='utf8')
for line in file2:
    print(line[:-1])
```

```
hello1
hello2
hello3
```

1.3 append (a)

```
In [11]: file5 = open('file5.txt', 'a', encoding='utf8')
file5.write('4' + '\n')
file5.write('5' + '\n')
file5.write('6' + '\n')
file5.close()
```

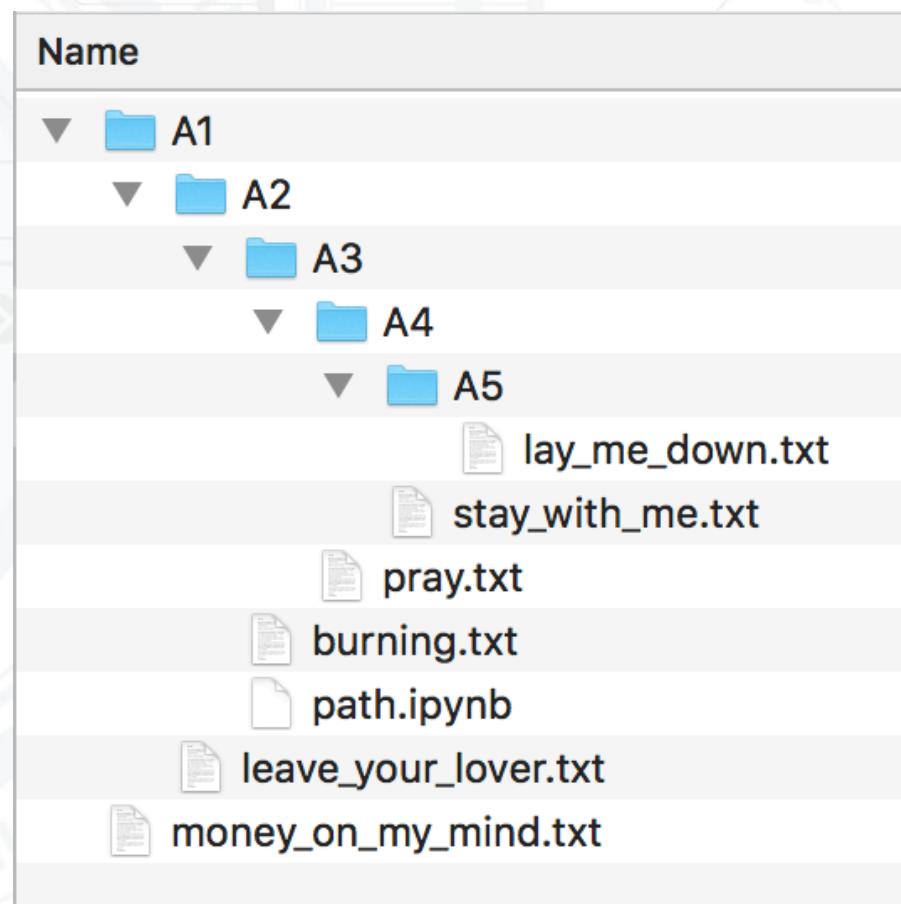
1.3 append (a)



File Management

- ✓ 1. txt
- 2. path

2. path



2. path

```
In [1]: money_on_my_mind = open('.../.../money_on_my_mind.txt')
```

```
In [2]: leave_your_lover = open('.../leave_your_lover.txt', 'r', encoding='utf8')
```

```
In [3]: burning = open('burning.txt', 'r', encoding='utf8')
```

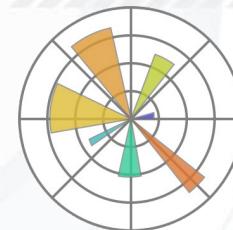
```
In [4]: stay_with_me = open('A3/pray.txt', 'r', encoding='utf8')
```

```
In [5]: lay_me_down = open('A3/A4/A5/lay_me_down.txt', 'r', encoding='utf8')
```

File Management

- ✓ 1. txt
- ✓ 2. path

Interesting Library



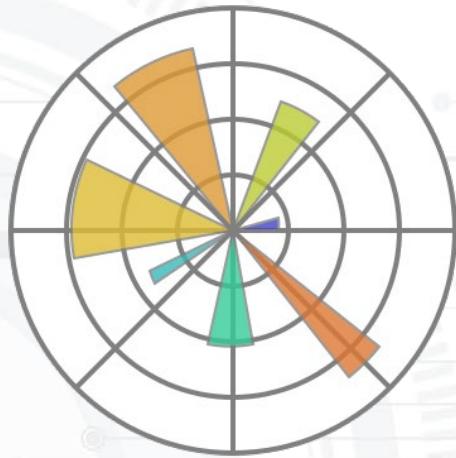


library สำหรับการคำนวณทางวิทยาศาสตร์และ
การวิเคราะห์ข้อมูล



pandas

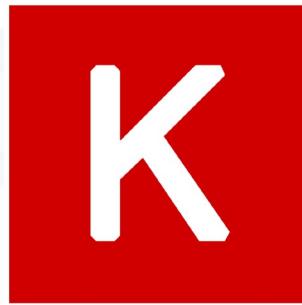
library สำหรับการจัดการข้อมูลและวิเคราะห์ข้อมูล



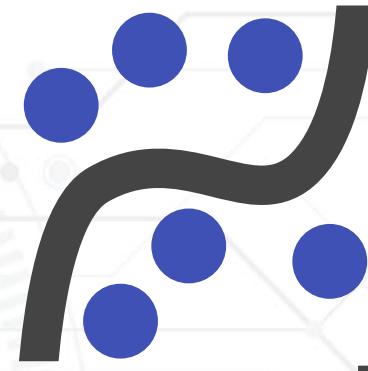
library สำหรับทำ data visualization



library สำหรับงานด้าน machine learning



library สำหรับงานด้าน deep learning



statsmodels

library สำหรับการสร้างแบบจำลองทางสถิติ



library สำหรับทำ natural language processing

BeautifulSoup



library สำหรับกำ web scraping



library สำหรับกำ automating task (ควบคุมเมาส์ & keyboard อัตโนมัติ)



library สำหรับงานด้าน computer vision และ
image processing



library สำหรับการพัฒนาเกม



Flask

web development,
one drop at a time

django

library สำหรับ web development

Introduction to ChatGPT

12 Python Projects

1. สร้างໂຈທຍ & ເລຍໂຈທຍ



2. โปรแกรมแก้พิมพ์เก้อ



dkigiupoi^hgxHolbj'mujle8yP
fy'oyhovpjkrbj'sp6fgiupoi^hc]try<ok9
y;gv' 0tme.sh86ldhk;wx-
hk'sohkwfh.o=u;b9
Fvhppppp]n,gx]ujpo4kKk
rb,rN9yh'pk;;;

การเรียนรู้เป็นสิ่งที่สำคัญ ดังนั้นอย่าเพิ่ง
หยุดเรียนรู้และพัฒนาตัวเอง จะทำให้คุณ
ก้าวไปข้างหน้าได้ในชีวิต
อย่ายยั่ย ลืมเปลี่ยนภาษา พิมพ์ตั้งยาวๆ

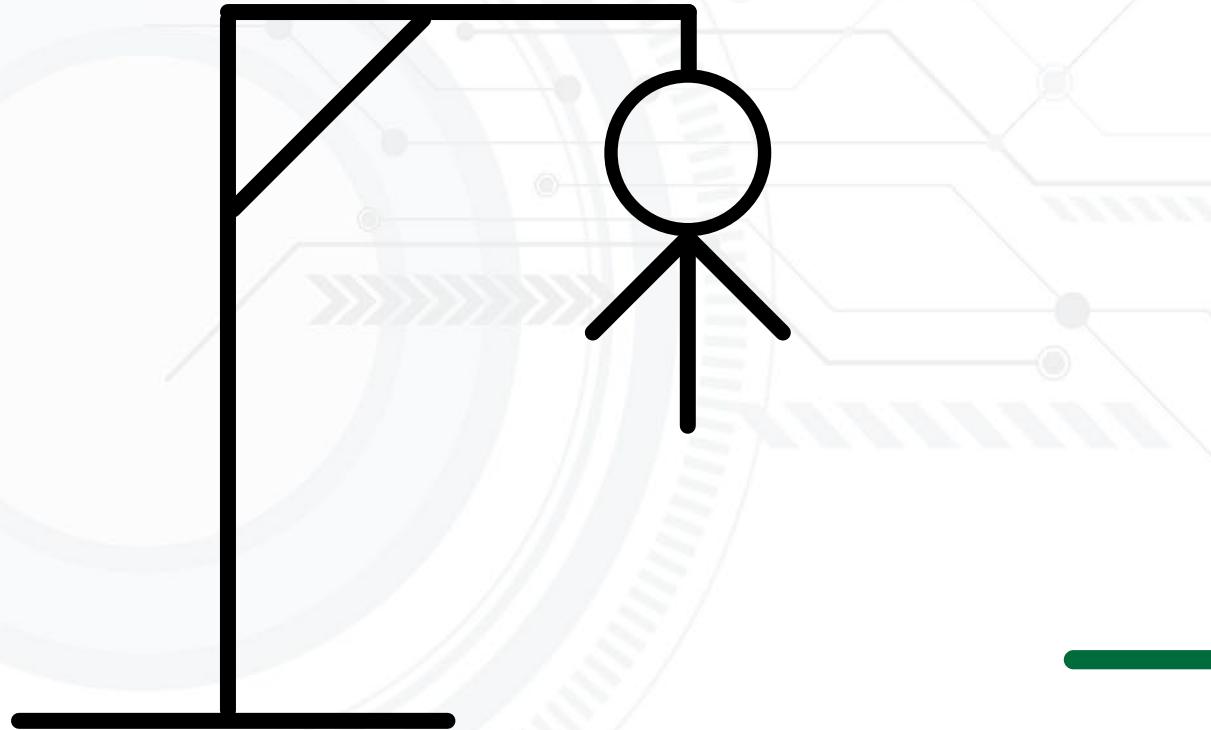


3. ເຂົ້າຫັສ Morse

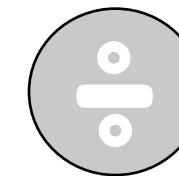
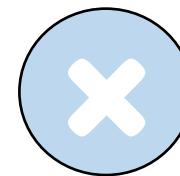
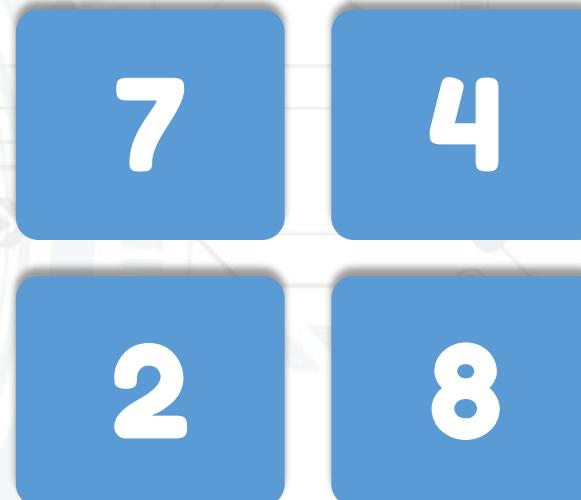
Morse code

A	• —	U	• • —
B	— • • •	V	• • • —
C	— • — •	W	• — —
D	— • •	X	— • • —
E	•	Y	— • — —
F	• • — •	Z	— — • •
G	— — •		
H	• • • •		
I	• •		
J	• — — —		
K	— • —	1	• — — — —
L	• — • •	2	• • — — —
M	— —	3	• • • — —
N	— •	4	• • • • —
O	— — —	5	• • • • •
P	— — •	6	— • • • •
Q	— — • —	7	— — • • •
R	— — •	8	— — — • •
S	— — —	9	— — — — •
T	—	0	— — — — —

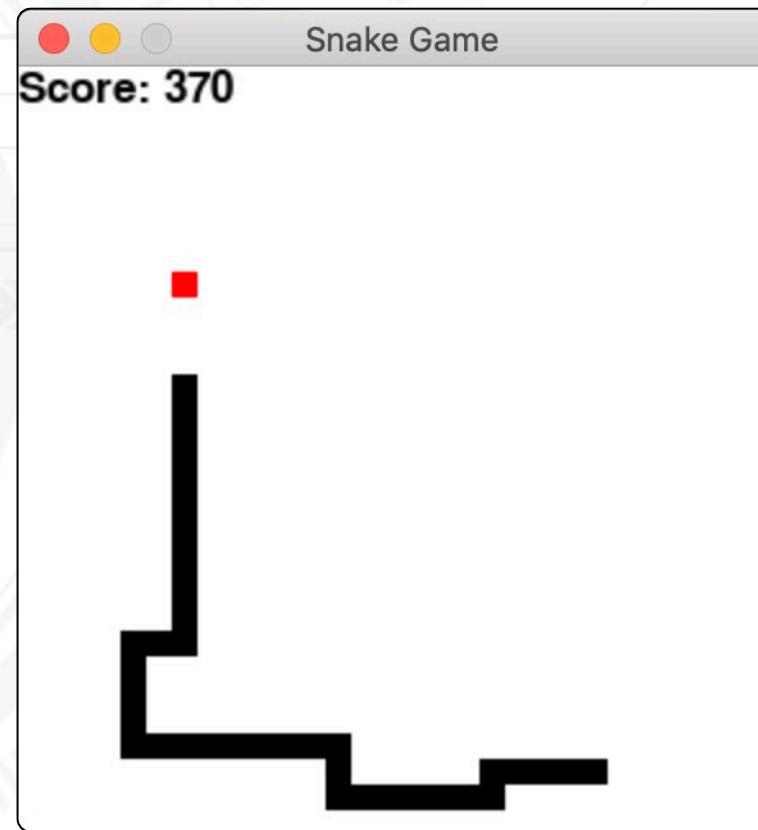
4. Hangman



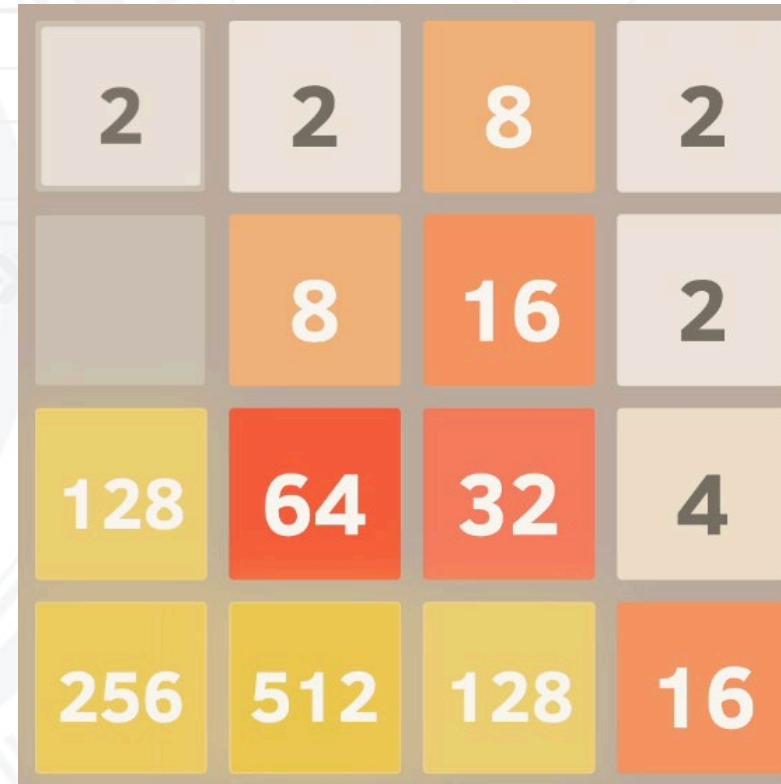
5. Game 24



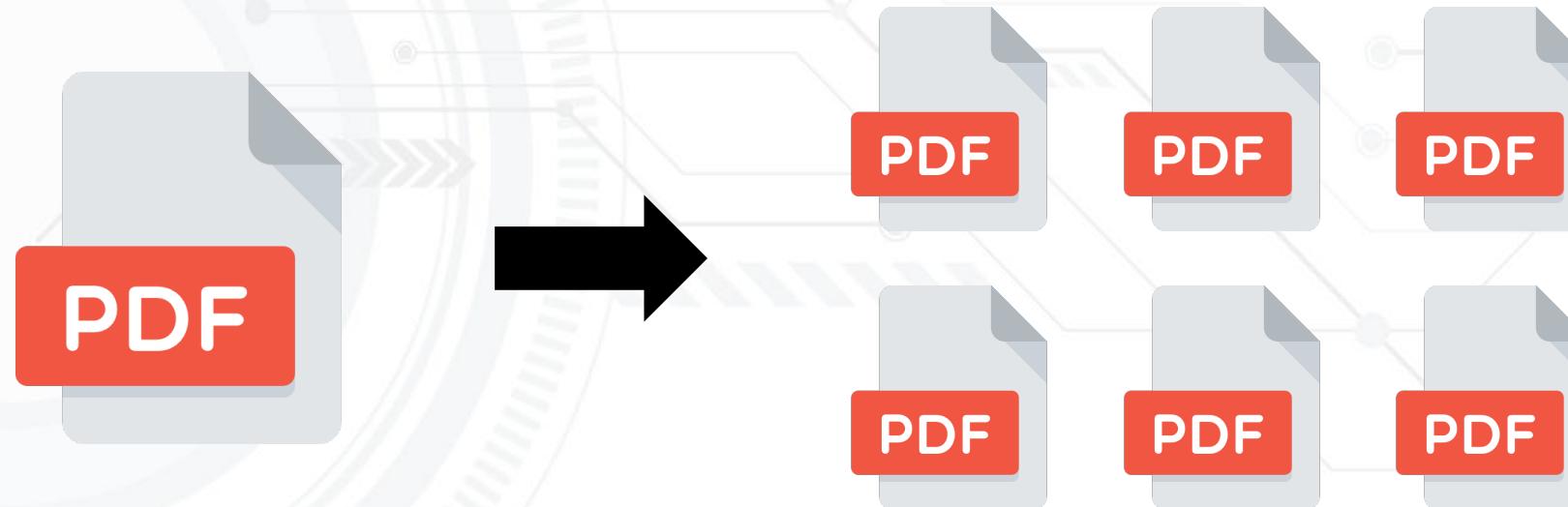
6. Snake Game



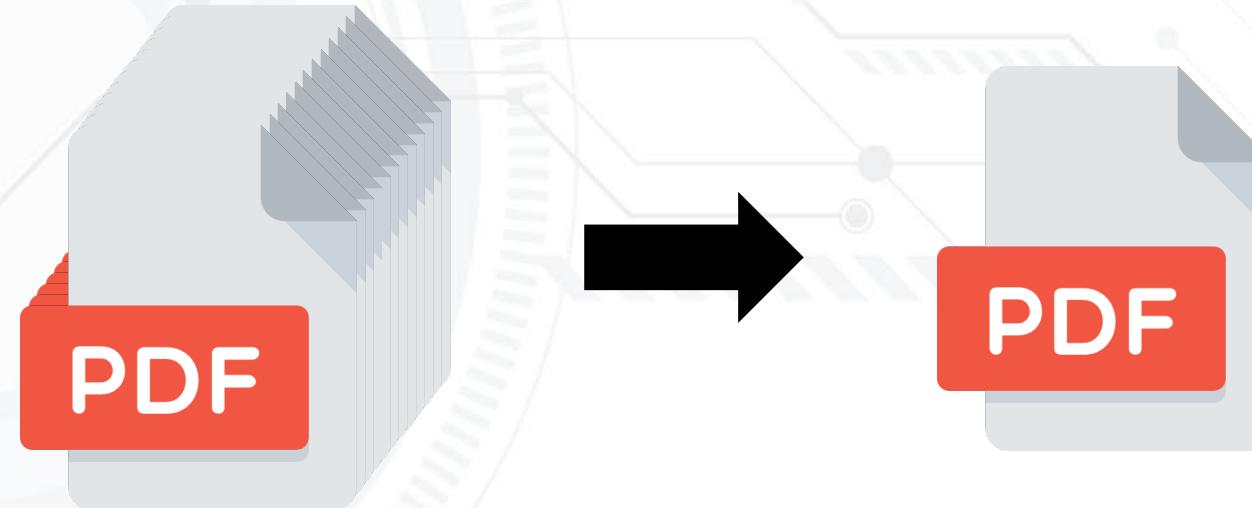
7. เกม 2048



8. ໂປຣແກຣມແຍກໄຟຣ໌ PDF



9. ໂປຣແກຣມໄວ້ PDF



10. ໂປຣແກຣມໃສ່ watermark ຂອງໄຟຣ໌ PDF

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3
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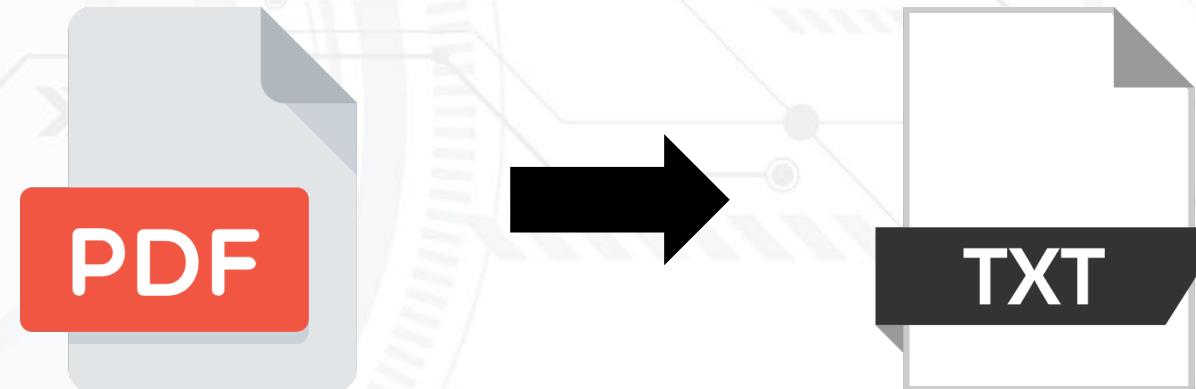
5
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11. ໂປຣແກຣມແປລັງ PDF ເປີ້ນ text



12. โปรแกรมใส่รหัสในไฟล์ PDF



Prompt for Python

Prompt for Python

1. ช่วยในการเป็น instructor
2. ช่วยในการเขียน code
3. ช่วยในการ debug
4. ช่วยในการอธิบาย code
5. ช่วยในการสร้าง & เวลยแบบฝึกหัด

Conclusion

Conclusion

- Fundamental of Python Programming
- Project with ChatGPT

Fundamental of Python Programming

- Introduction to Python Programming
- Print Command
- Variable
- Data Structure
- Input
- Operators
- Flowchart
- If-Else
- For & While
- Function
- OOP
- File Management

Project with ChatGPT

- Introduction to ChatGPT
- Project1 - สร้างโจทย์ & เฉลยโจทย์
- Project2 - โปรแกรมแก้พิมพ์เก้อ
- Project3 - โปรแกรมเข้ารหัส Morse
- Project4 - Hangman
- Project5 - Game 24
- Project6 - Snake Game
- Project7 - Game 2048
- Project8 - โปรแกรมแยกไฟล์ PDF
- Project9 - โปรแกรมรวมไฟล์ PDF
- Project10 - โปรแกรมใส่ watermark
- Project11 - โปรแกรมแปลง PDF เป็น text
- Project12 - โปรแกรมใส่รหัสในไฟล์ PDF



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INNOVATION SCHOOL.

Thank You