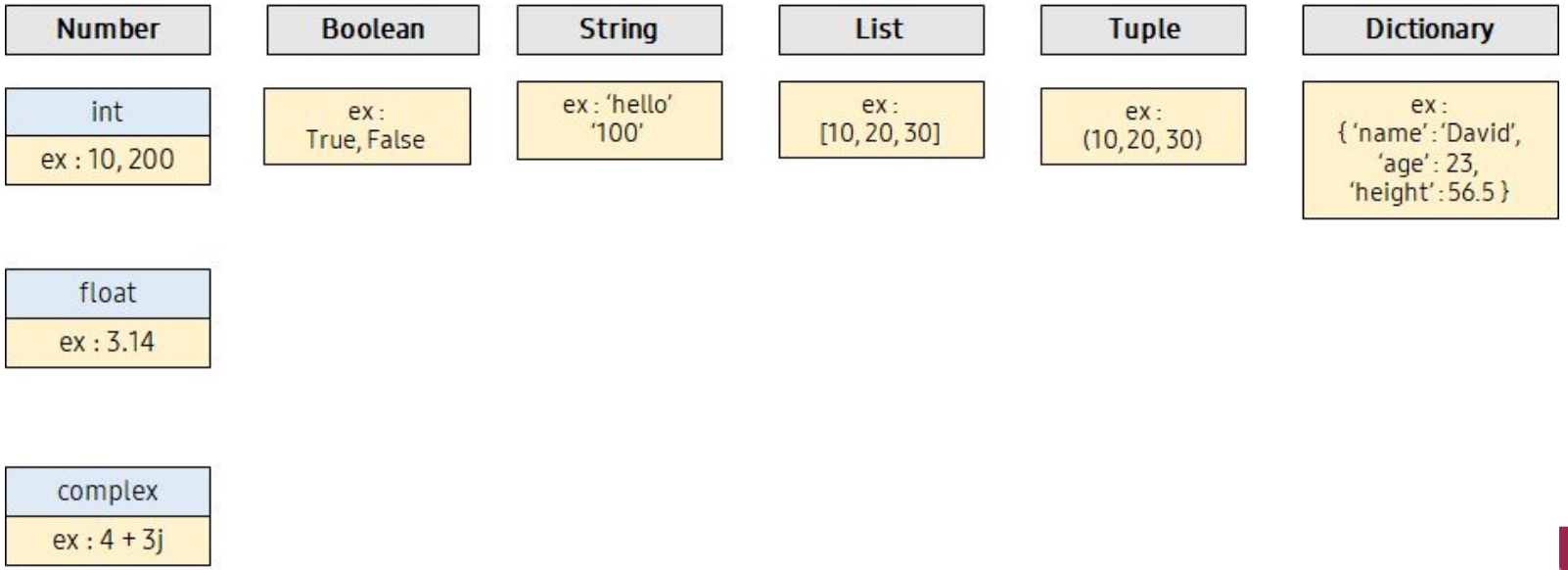
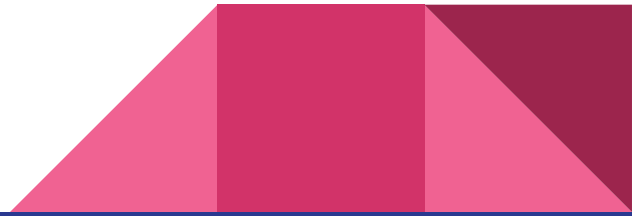
Week 1 - Python Basics

Python Data Type Basics



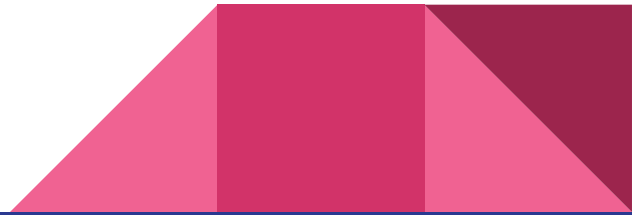
Variable Declaration

- b = “joshua” → string
- x,y = 12,13 → integer
- sebuah_tuple = (1,2,3) → tuple
- a=b=c=[1,2,3] → lists



Variable Declaration Rules!!!

- *Identifier* dapat berupa kombinasi huruf atau angka atau garis bawah (_), tetapi tidak dapat terdiri dari simbol khusus apa pun.
- *Identifier* tidak dapat dimulai dengan angka.
- *Identifier* tidak boleh berisi spasi atau tab.
- *Identifier* peka terhadap huruf besar dan kecil. Oleh karena itu, variabel index dan INDEX adalah variabel yang berbeda.
- *Identifier* tidak dapat menggunakan salah satu dari *Python Reserved Word*s.



Print Function and Comments

- Print function berguna untuk menampilkan output program pada console
  - Syntax : print(...), i.e print(“Hello World!”)

- Comments berguna sebagai penanda bahwa perintah tersebut tidak dieksekusi oleh program
  - Comment dapat dilakukan dengan
    - # untuk meng-comment 1 line
    - “”” untuk comment beberapa line code

Comparison Operator

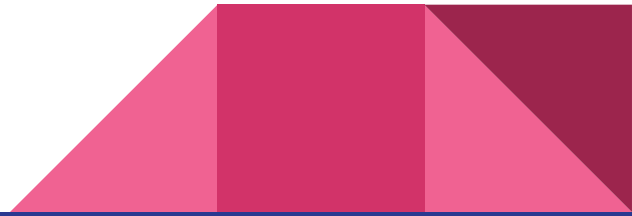
Operator	Description	a = 100 b = 200
==	Jika dua operand memiliki nilai yang sama, return True	a == b is False
!=	Jika dua operand memiliki nilai yang berbeda, return True	a != b is True
>	Jika operand kiri lebih besar dari operand kanan, return True	a > b is False
<	Jika operand kiri kurang dari operand kanan, return True	a < b is True
>=	Jika operand kiri lebih besar dari atau sama dengan operand kanan, return True	a >= b is False
<=	Jika operand kiri kurang dari atau sama dengan operand kanan, return True	a <= b is True

Arithmetic Operator

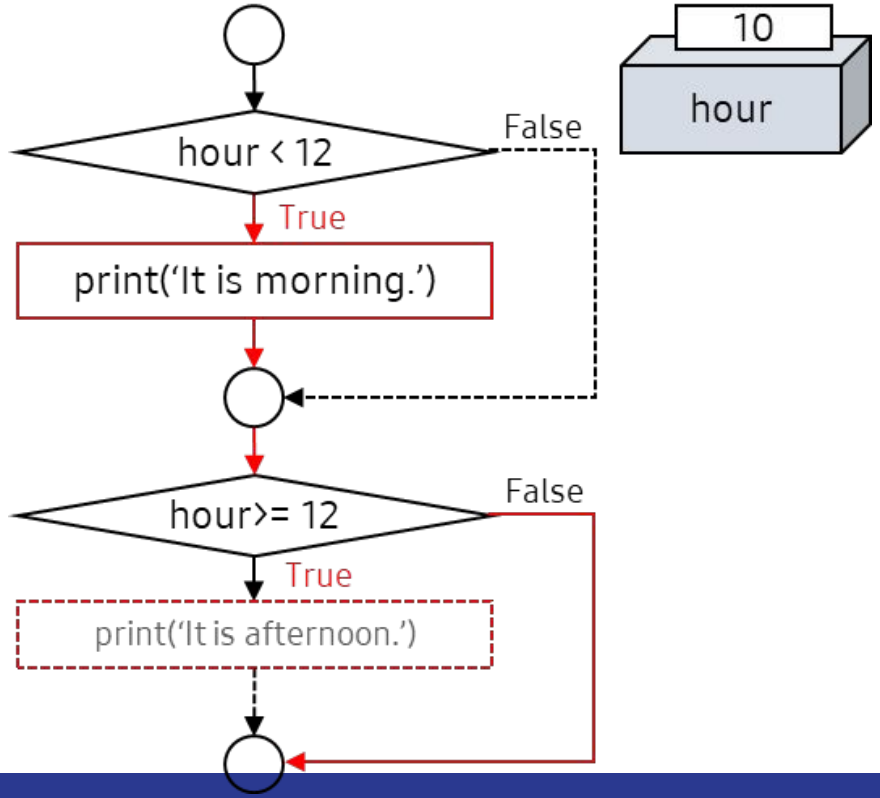
Operator	Sign	Example	Value Result
Addition	+	7 + 4	11
Subtraction	-	7 – 4	3
Multiplication	*	7 * 4	28
Real Division	/	7 / 4	1.75
Integer Division (Quotient)	//	7 // 4	1
Modulo	%	7 % 4	3
Exponentiation	**	7 ** 2	49

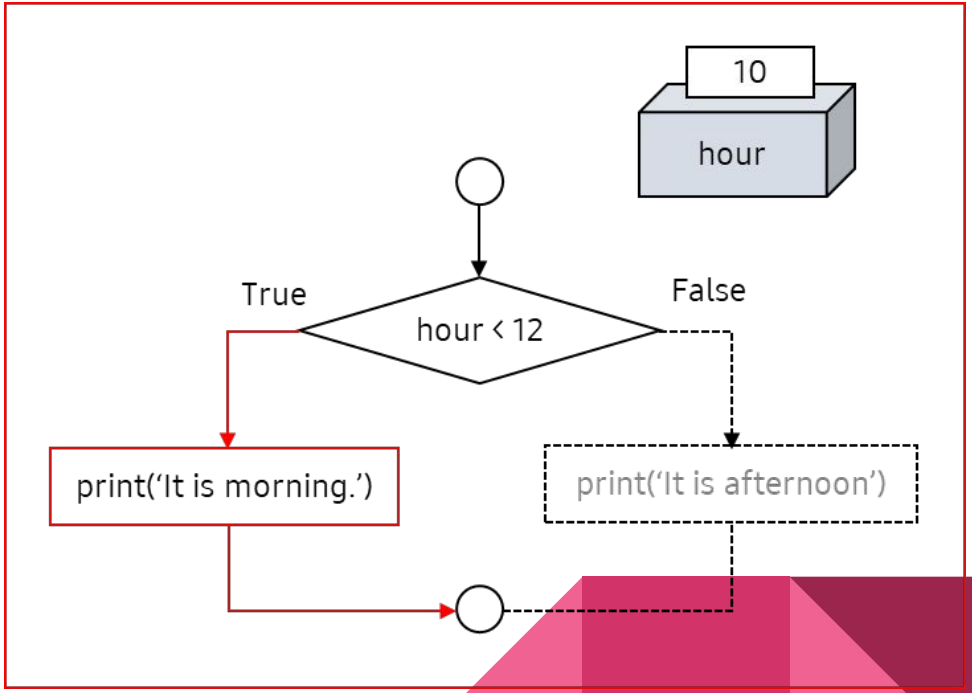
Conditional Statement

- If Statement
- If-Else Statement
- If-Elif-Else Statement
- Nested If Statement

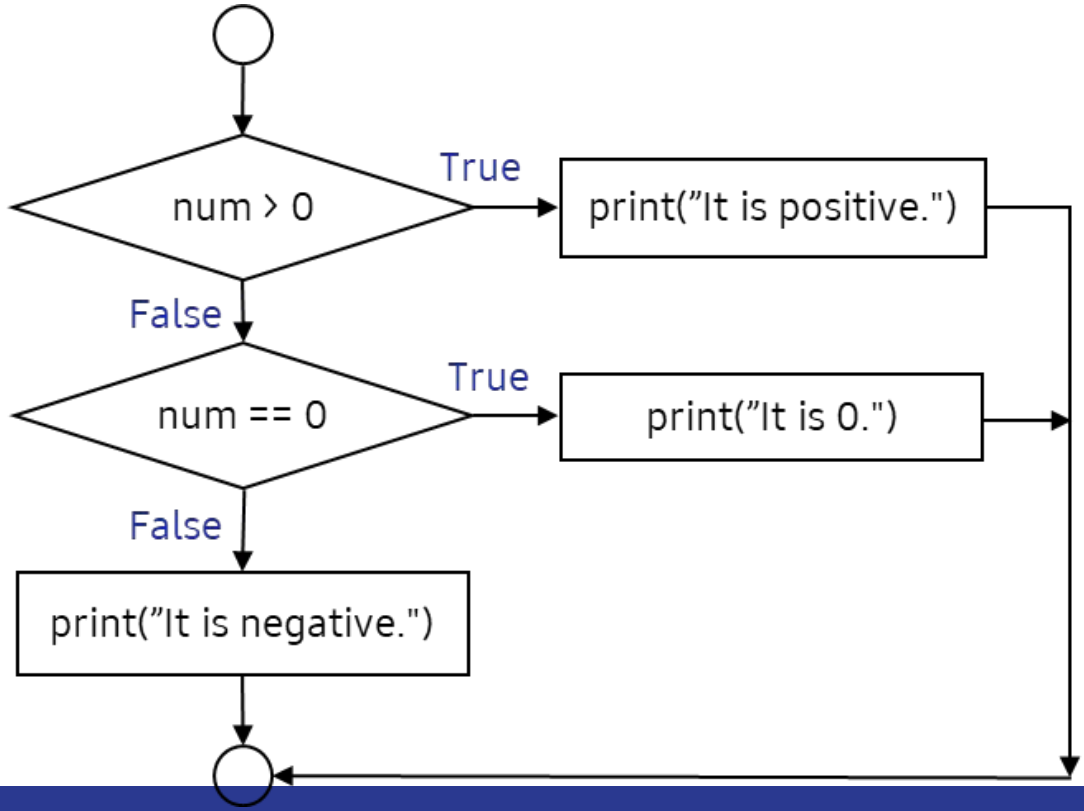


Conditional Statement If vs If else

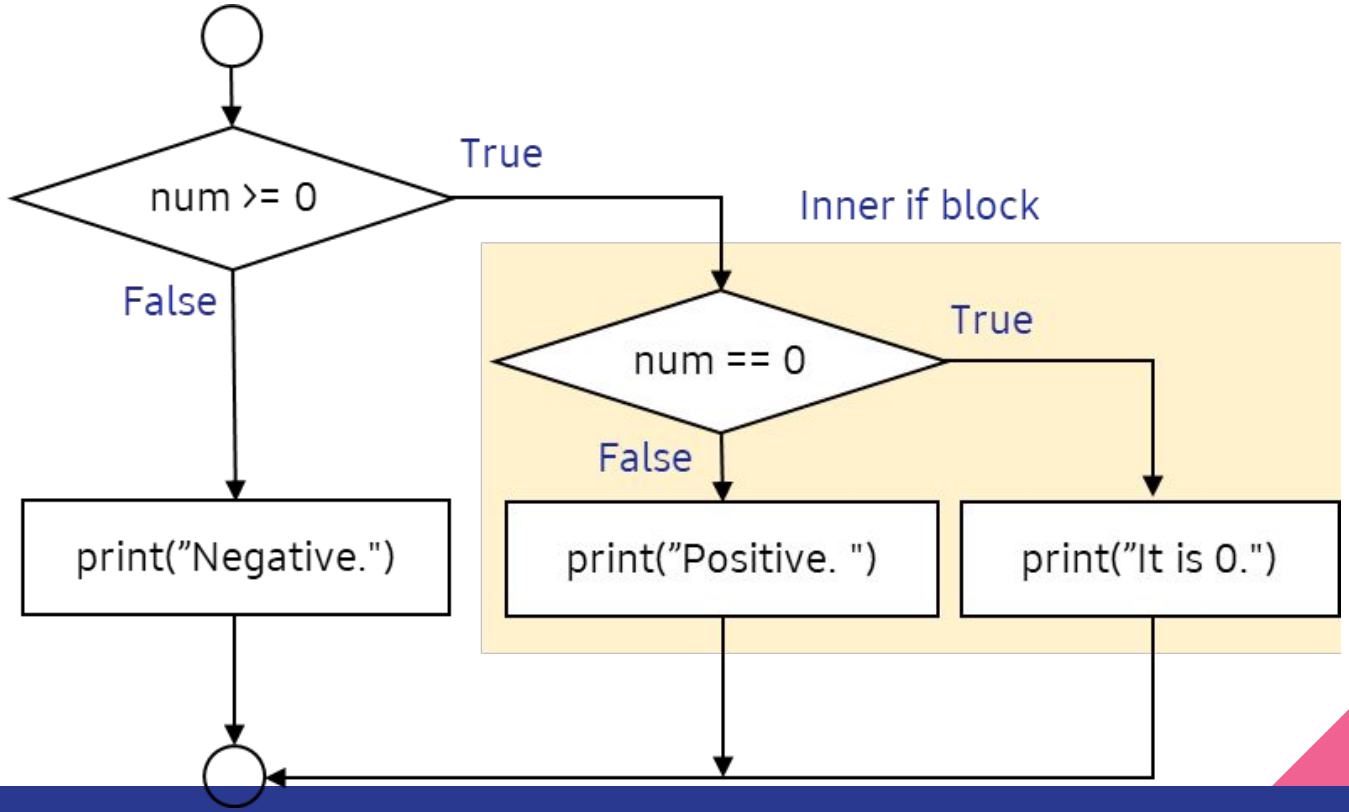




Conditional Statement If-Elif-Else

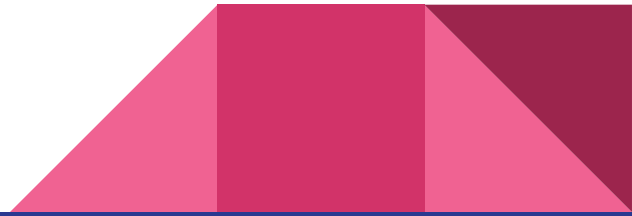


Nested if statement



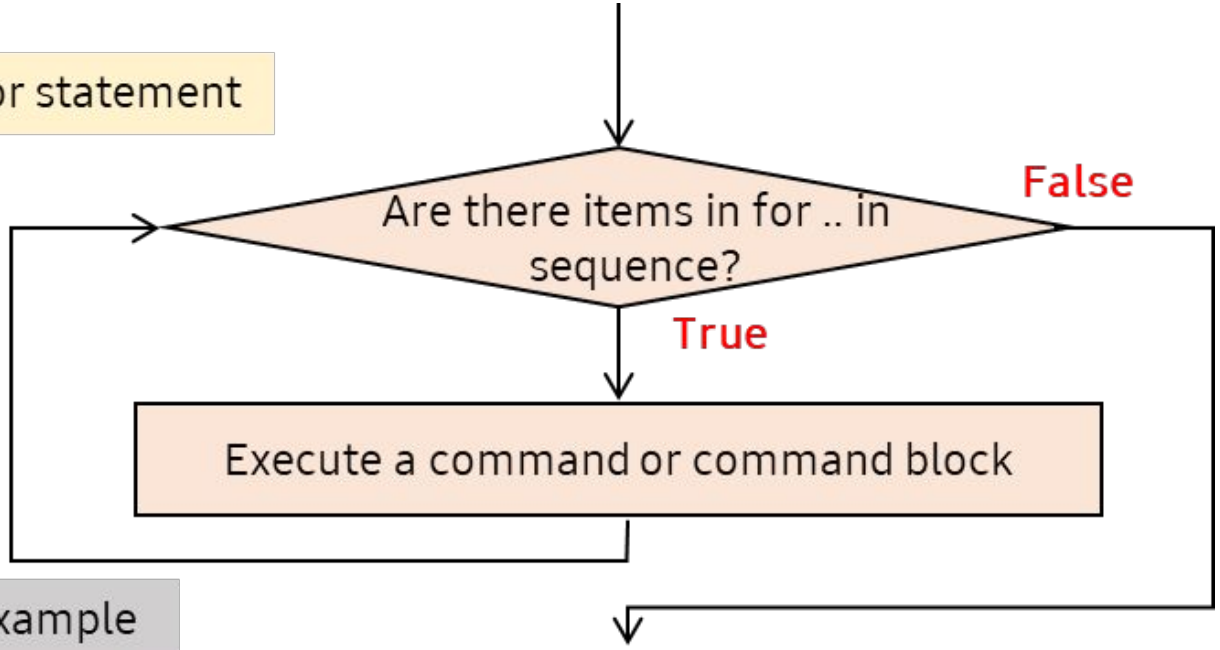
Loops

- For Loops
- While Loops
- Break vs Continue
- Nested Loop



For loops

for statement

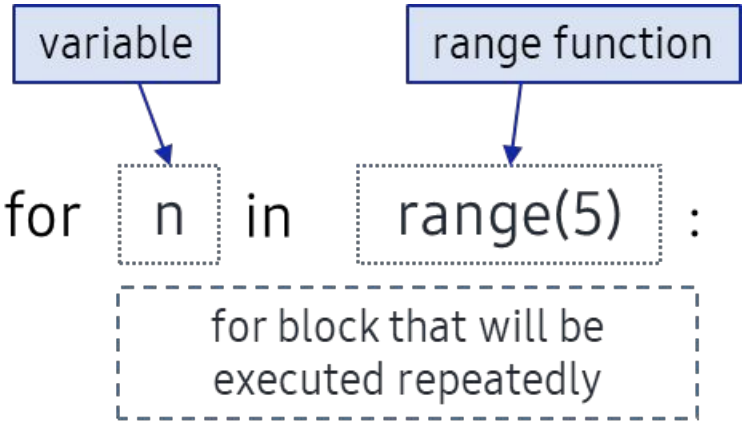


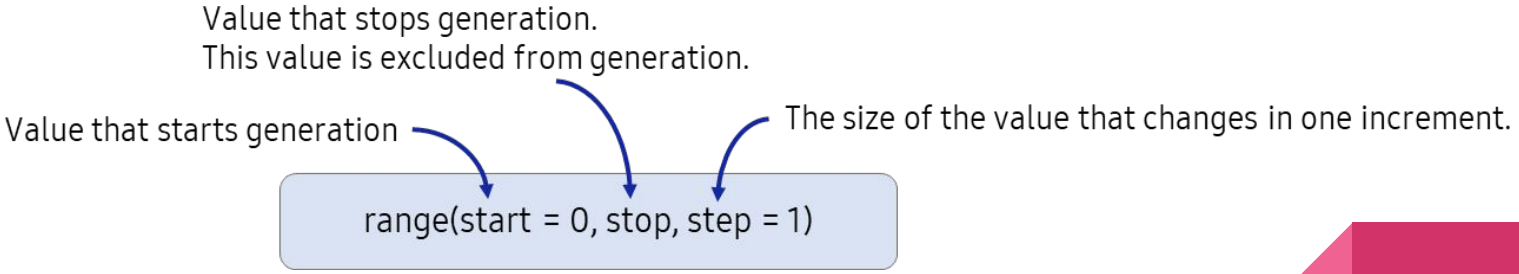
example

```
for i in range(5):
    print('welcome')
```

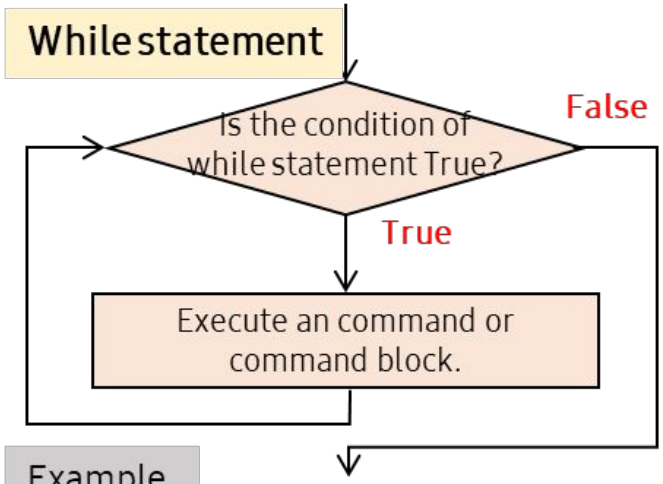
For loops

For loop digunakan untuk mengulangi sequence (baik itu list, tuple, dictionary, set, atau string).





While loops



Example

```
i = 0
while i < 5:
    print('Welcome')
    i = i + 1
```

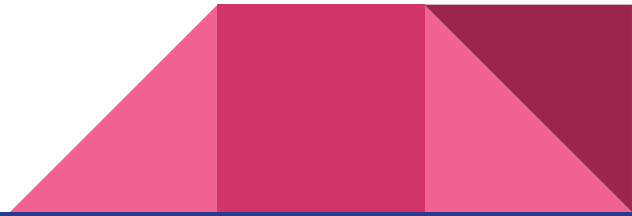
While Loops

Form

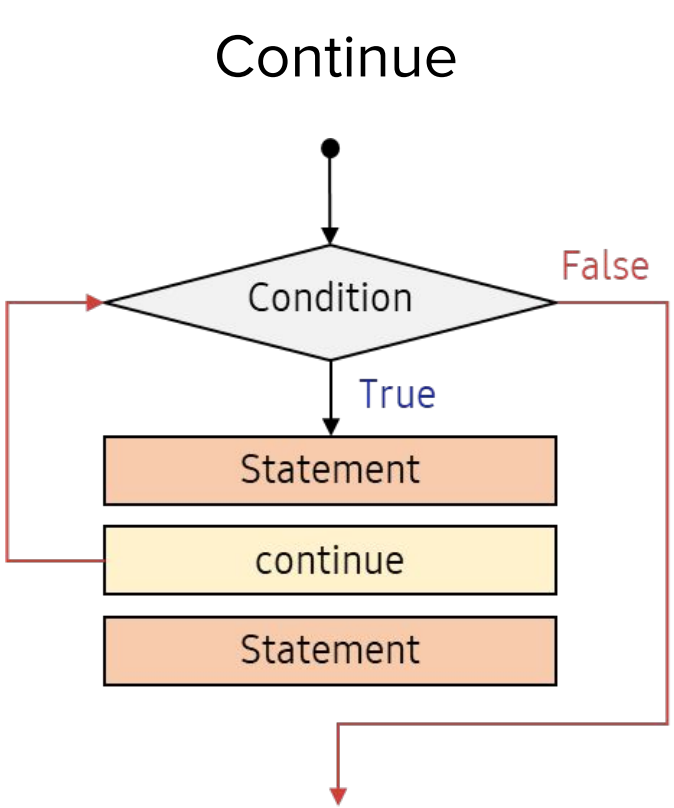
```
set initial value
while conditional statement :
    code block to be excuted
```

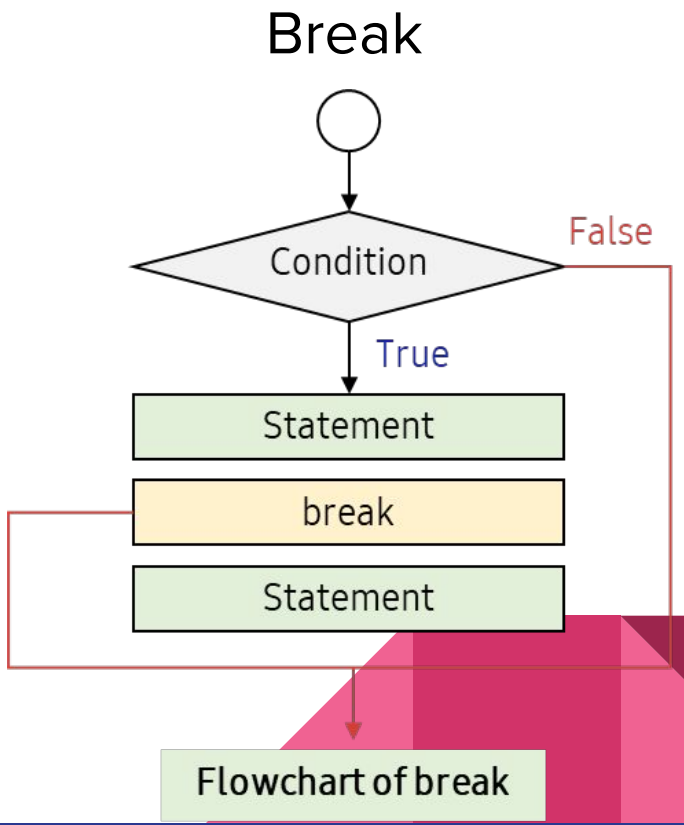
Example

```
i = 0        # Set initial value
while i<5 :   # conditional expression
        print('Welcome to everyone!!')
        i += 1
```

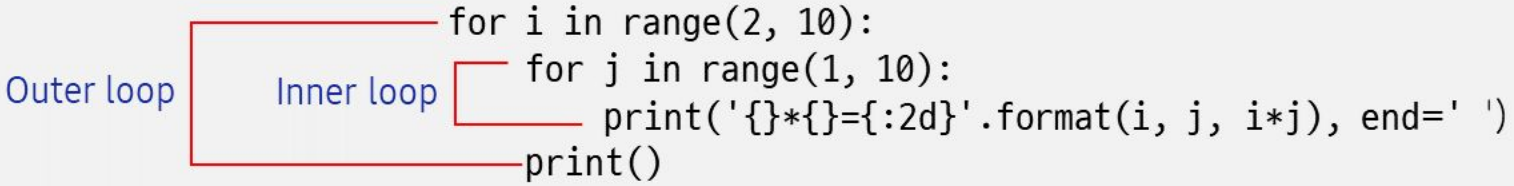


Break and Continue





Nested Loop



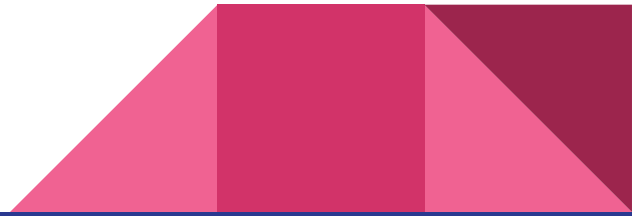

```
1  for i in range(2, 10):                # outer for loop
2      for j in range(1, 10):            #inner for loop
3          print('{}x{} = {:2d}, '.format(i, j, i*j), end = ' ')
4      print()       # executes inner loop and change line
```

```
2x1 =  2,  2x2 =  4,  2x3 =  6,  2x4 =  8,  2x5 = 10,  2x6 = 12,  2x7 = 14,  2x8 = 16,  2x9 = 18,
3x1 =  3,  3x2 =  6,  3x3 =  9,  3x4 = 12,  3x5 = 15,  3x6 = 18,  3x7 = 21,  3x8 = 24,  3x9 = 27,
4x1 =  4,  4x2 =  8,  4x3 = 12,  4x4 = 16,  4x5 = 20,  4x6 = 24,  4x7 = 28,  4x8 = 32,  4x9 = 36,
5x1 =  5,  5x2 = 10,  5x3 = 15,  5x4 = 20,  5x5 = 25,  5x6 = 30,  5x7 = 35,  5x8 = 40,  5x9 = 45,
6x1 =  6,  6x2 = 12,  6x3 = 18,  6x4 = 24,  6x5 = 30,  6x6 = 36,  6x7 = 42,  6x8 = 48,  6x9 = 54,
7x1 =  7,  7x2 = 14,  7x3 = 21,  7x4 = 28,  7x5 = 35,  7x6 = 42,  7x7 = 49,  7x8 = 56,  7x9 = 63,
8x1 =  8,  8x2 = 16,  8x3 = 24,  8x4 = 32,  8x5 = 40,  8x6 = 48,  8x7 = 56,  8x8 = 64,  8x9 = 72,
9x1 =  9,  9x2 = 18,  9x3 = 27,  9x4 = 36,  9x5 = 45,  9x6 = 54,  9x7 = 63,  9x8 = 72,  9x9 = 81,
```

Challenge!

Buat sebuah program yang jika kita berikan sebuah input array seperti

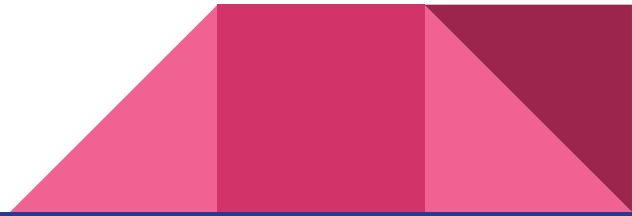
[1,2,3,4,5] maka akan menghasilkan output [1,4,9,16,25]!



Challenge!

Buat sebuah program dimana jika input yang diberikan adalah

[1,2,3,4,5] maka outputnya adalah [“ganjil”,”genap”,”ganjil”,”genap”,”ganjil”]



Challenge!

Buat sebuah program dimana jika input yang diberikan adalah

[[1,2,3],[2,3,4],[3,4,5]] maka outputnya adalah [6,9,12]!