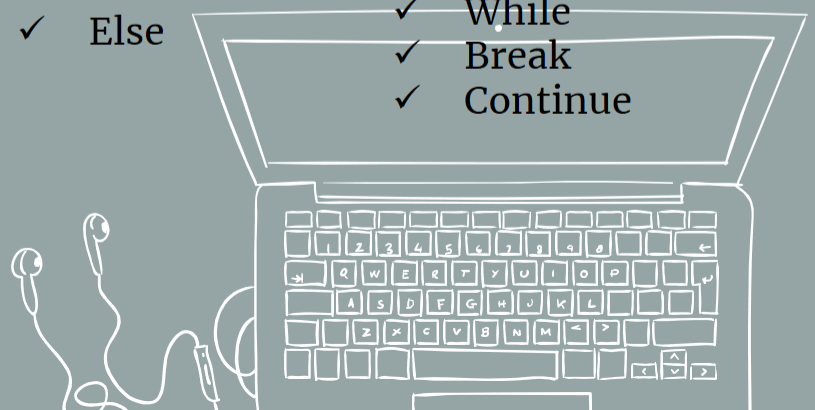
5.

Control flow statements

- Hands-on Tests!
- Quizzes

Conditional Statements	Loops	List Comprehension
✓ If ✓ Elif ✓ Else	✓ Range() ✓ For ✓ While ✓ Break ✓ Continue	



Previously on the course…

- ✓ We learnt how to make different *data structures* and *variables* in python:
  - int , float , str , bool
  - list, dictionary, set , tuple
- ✓ We learnt how to calculate and operate *different operations* between variables:
  - X + Y , X * Y , X // Y …
  - X in Y , X is Z
  - …

And now…

- But how can we change *control flow*?
  1. How to run only a specific parts of the code? → Conditional Statements
  2. How to run some parts of the code more than once? → Loops

Contents

1 **Conditional Statements**
if … elif … else

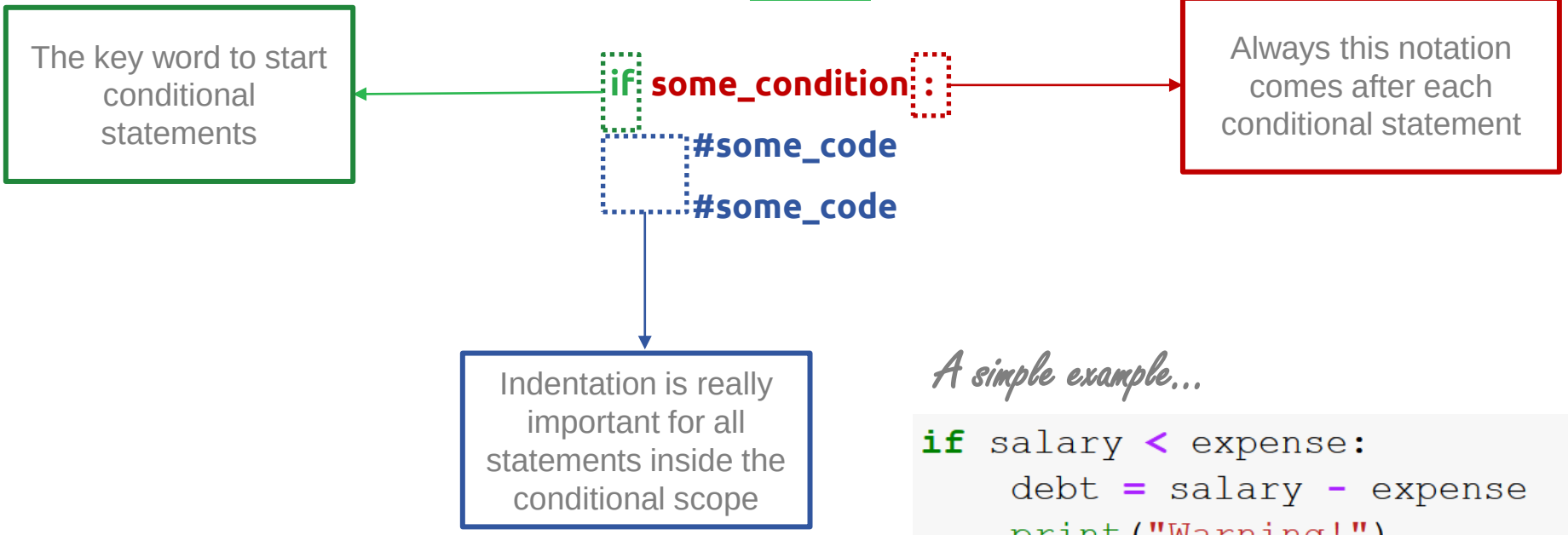
2 **Loops**
while… for

3 **List Comprehension**
A way to make lists quickly

Conditional Statements

- Sometimes we just want to execute certain parts of the code,
  - For example
    - if my salary < expenses → Send a warning for me.
    - If my salary >= equal to my expenses → Print “You’re fine!”
- Three important key words:
  - *if*
  - *elif*
  - *else*

if Syntax



A simple example...

```
if salary < expense:
    debt = salary - expense
    print("Warning!")
```

if-else Syntax

If and else notations are lined up with each other

```
if some_condition:
    #some_code
    #some_code
else:
    #some_code
    #some_code
```

if-elif-else Syntax

If and else and elif notations are all lined up with each other again

You can have as many elif statements as you want!

```
if some_condition:
    #some_code
    #some_code
elif some_other_condition :
    #some_code
    #some_code
else:
    #some_code
    #some_code
```

A simple example...

```
if salary < expense:
    debt = expense - salary
    print("Warning!")
elif salary > expense:
    saving = salary - expense
    print("Great")
else:
    debt = 0
    saving = 0
    print("Not Bad")
```

Now let’s get back to the code…

Contents

1 **Conditional Statements**
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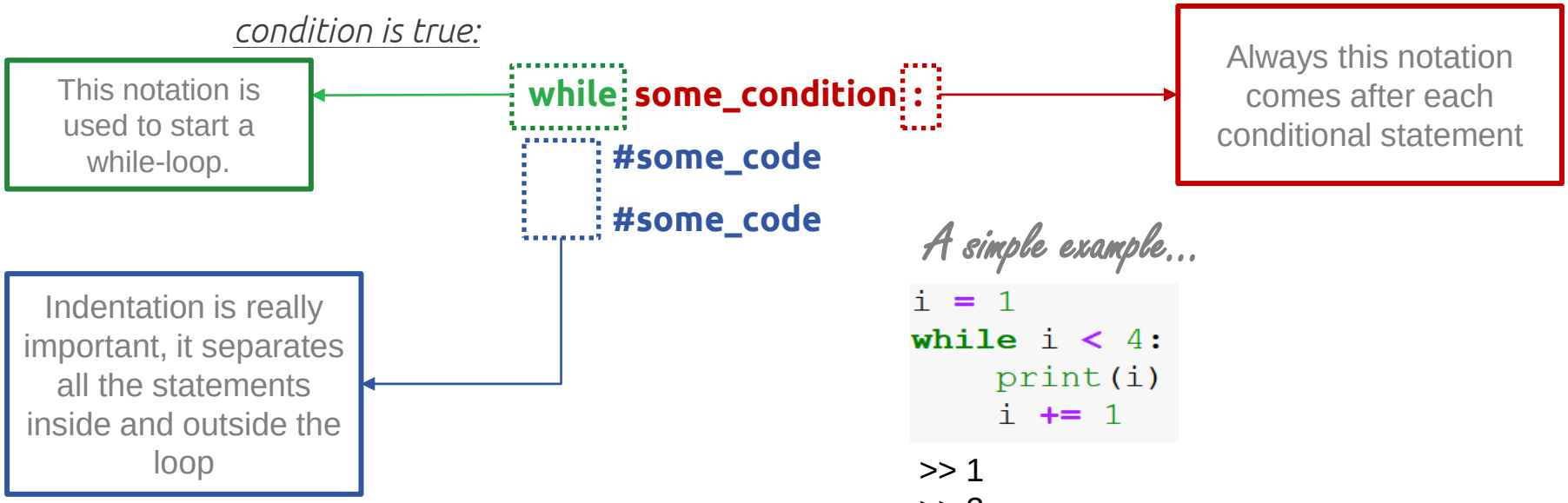
While loops

- With *while* loops in python, we can execute a set of lines of code as long as *the condition is true:*



A simple example...

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

```
>> 1
>> 2
>> 3
```

While loops

- With while loops → You can execute a set of commands as many times as you want.
- break – continue - pass
- Be careful about using while loops!
  - You need to make sure that at some point, the condition in while loop will be *True*! Otherwise your program keeps running with no ending.
  - These errors are called run-time errors.

Now let’s see some examples using ‘while’ in code…

For loops - Iteration

- Some objects in Python are iterable ,
  - it’s possible to iterate in every element of the object
    - **Mylist = [“hey” , 1 , 2 , 3]**
    - **#Some Iteration Code →**

```
>> hey
>> 1
>> 2
>> 3
```

- For iteration in python we use *for loops*

For loops - Iteration

This notation is used for for-loops

```
for i in iterable object:
    #some_code
    #some_code
```

Don't forget to use ":" here too!

Indentation is really important, it separates all the statements inside and outside the loop

A simple example...

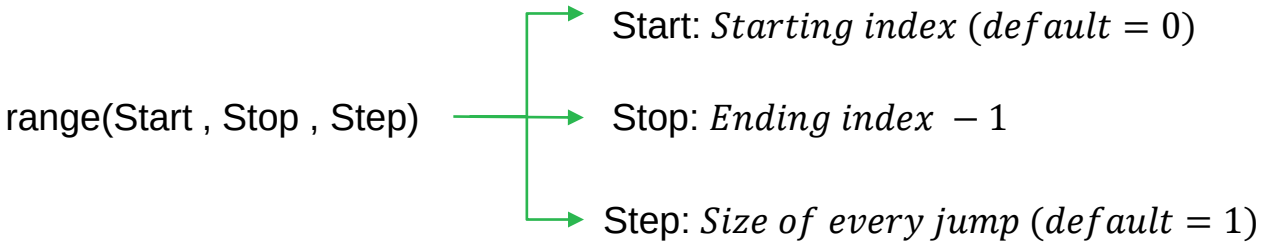
```
iterable_object = (1 , 5 , 3, 2)
for i in iterable_object:
    print(i ** 2)
```

```
>> 1
>> 25
>> 9
>> 4
```

Now let’s see the iteration concept in code…

For loops – range() function

- The *range()* function returns a sequence of numbers.



- We can use *range()* function to make another type of loops.

For loops – range() function

- Here's an example:

```
for i in range(0 , 5 , 1) :
    print(i)
```

```
>> 0
>> 1
>> 2
>> 3
>> 4
```

"in" operator is used here again.

Don't forget to use ":" here too!

- Let's return to the code for more examples…

Contents

List Comprehension

- List comprehension is one of the special ways of creating lists in python.
- Other ways like using *.append()* method is also available.
- But, list comprehension is easier and includes less lines of code.
- Let's see some examples…

Thanks!

Got any questions or suggestions?

Here's some contact info:

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