Week 3

Introduction to Programming

19.9.2024

Last week (week 2)

- More conditional statements
  - elif
  - else
  - logical operators
- Simple loop: while True

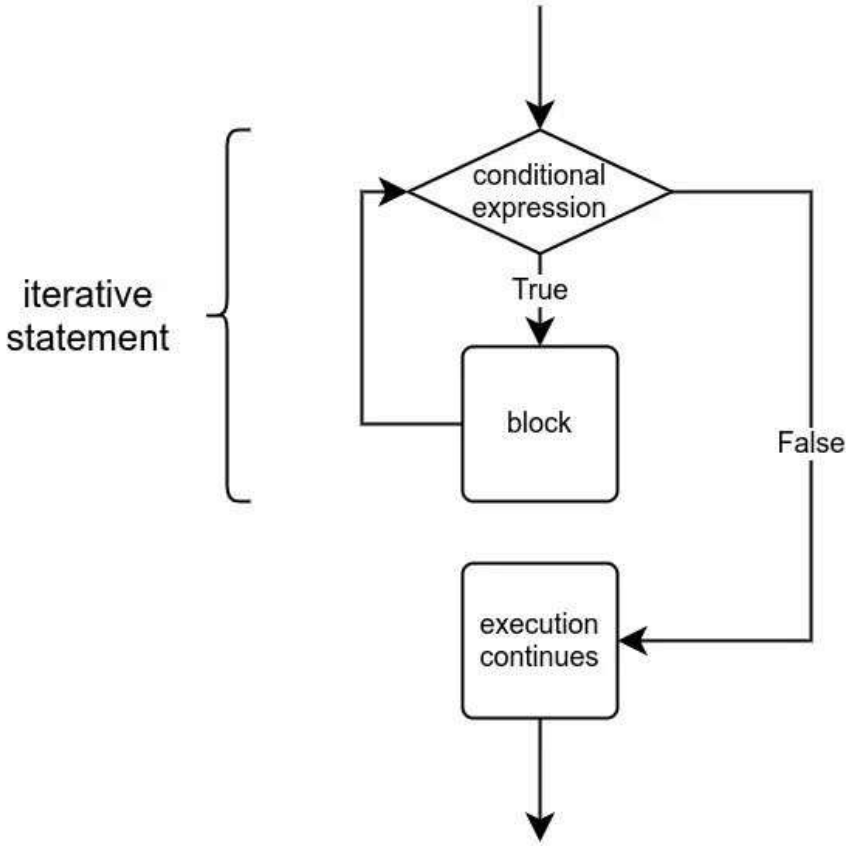
Questions

- Using external editor
- Private msgs to instructors

Repetition: while

Loop continues while the condition is True

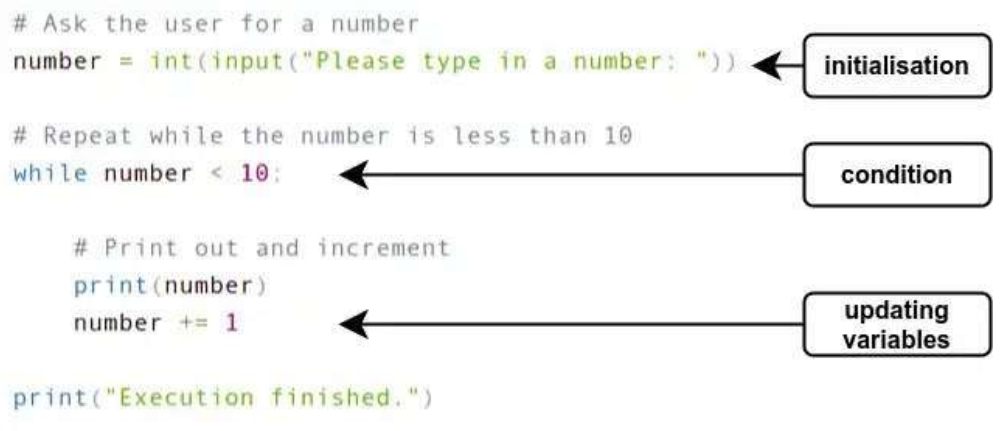
If the condition is False to begin with, the loop is not executed at all



Initialisation, Condition & Update

The three components of a loop

Forgetting update is a common mistake
→ may lead to "inifinite" loop



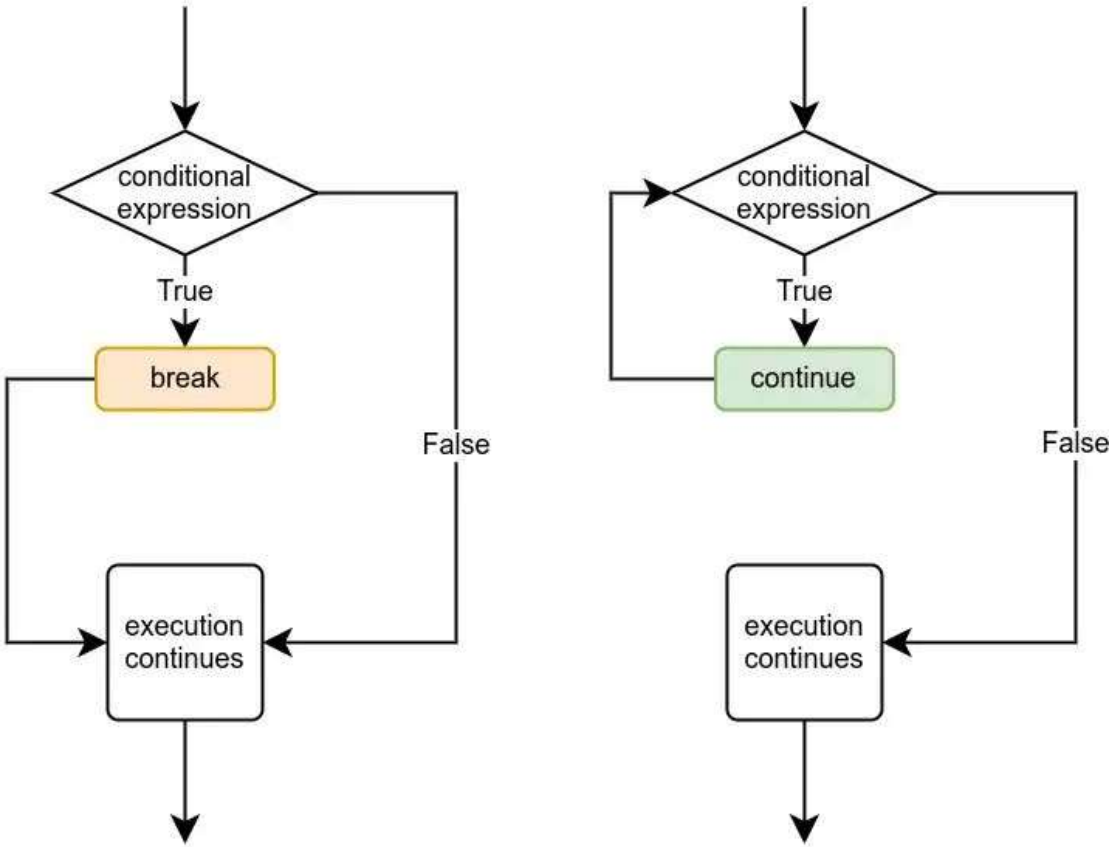

```
# Ask the user for a number
number = int(input("Please type in a number: "))

# Repeat while the number is less than 10
while number < 10:

    # Print out and increment
    print(number)
    number += 1

print("Execution finished.")
```

Break and continue



Nested loops

Pay attention to

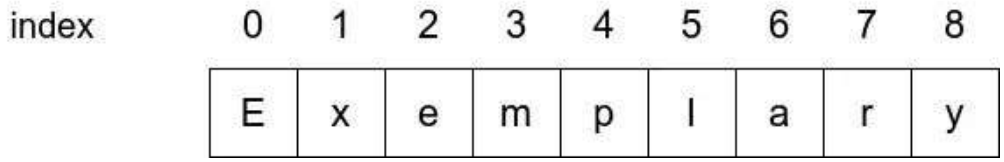
- variables and their updates
- indentation

Indexing strings

A string has characters between indices

`[0, len(string) - 1]`

```
String my_string = "Exemplary";
```



Character from a string

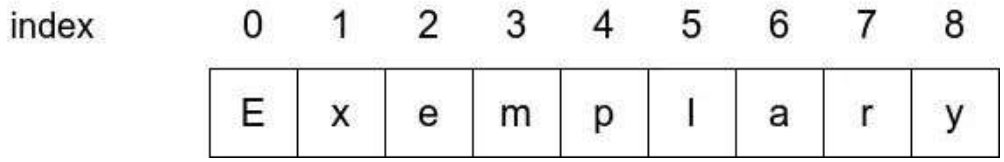
With brackets:

```
String my_string = "Exemplary";
```

```
my_string[0] # "E"

my_string[2] # "e"

my_string[4] # "p"
```



Indexing from end, negative indices

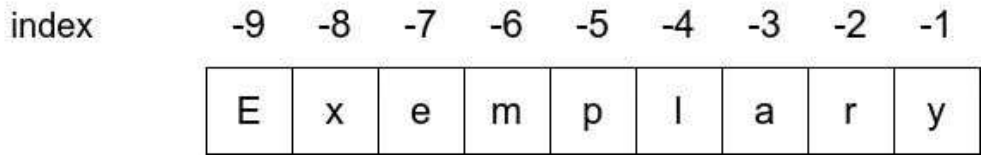
With brackets:

```
my_string[-1] # "i"

my_string[-5] # "e"

my_string[-9] # "E"
```

```
my_string = "Exemplary"
```



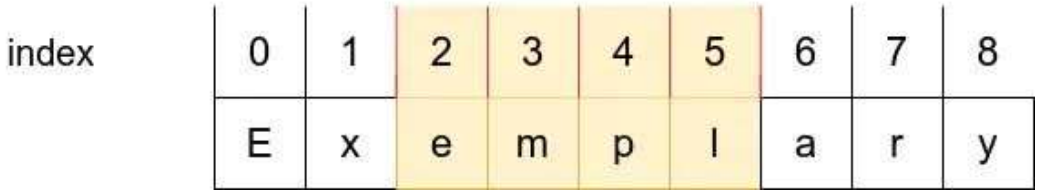
Substrings and slicing

Also with brackets

Syntax:

```
my_string[begin : end]
```

```
string = "Exemplary"
sub = string[2 : 6]
```



Finding substrings

Operator **in** returns True, if substring can be found in string, False otherwise

Method **find** returns the first index of substring in a string or -1 if the substring cannot be found

Own functions

Functions are defined as

```
def function_name():
    function code
```

Functions and parameters

Functions are defined as

```
def function_name(parameter list):
    function code
```

Testing functions

Test code inside "main program":

```
def greet():
    print("Hi!")

# Write your main function within a block like this:
if __name__ == "__main__":
    greet()
```

Next week

More functions

Lists

More tools for string manipulation