Functions

A function is a like a factory with **inputs** and **output**

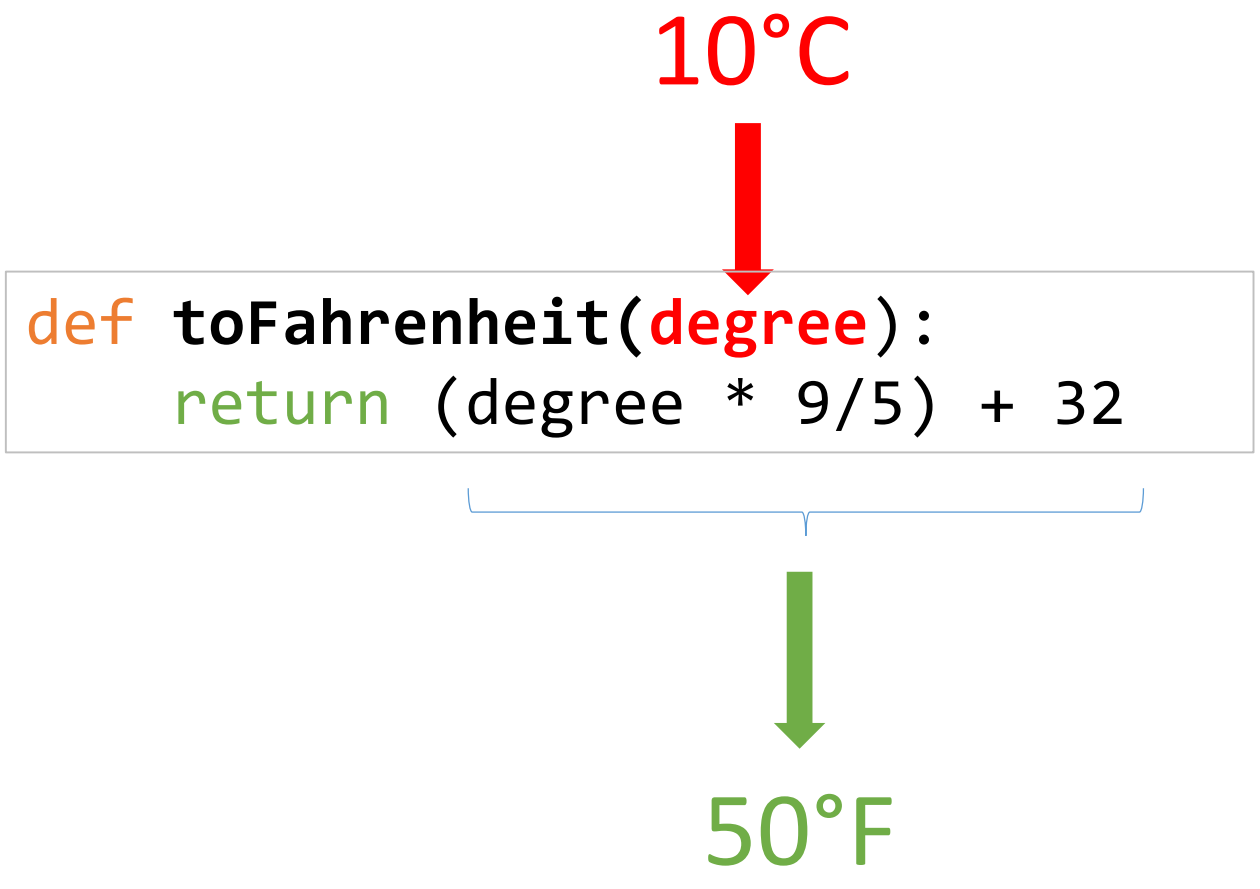
*Let's say we want a function to convert **Celsius** degrees to **Fahrenheit** degrees*

toFahrenheit factory

Formula : (10**°C** × 9/5) + 32 = 50**°F**

inputs are parameters

output are returns



Make the difference !

Function definition

```
def toFahrenheit(degree):
    return (degree * 9/5) + 32
```

Function call

```
print(toFahrenheit(10))
print(toFahrenheit(15))
```

Call function with parameter 10 degrees

Call function with parameter 15 degrees

A simple program starts at first line, ends at last line…

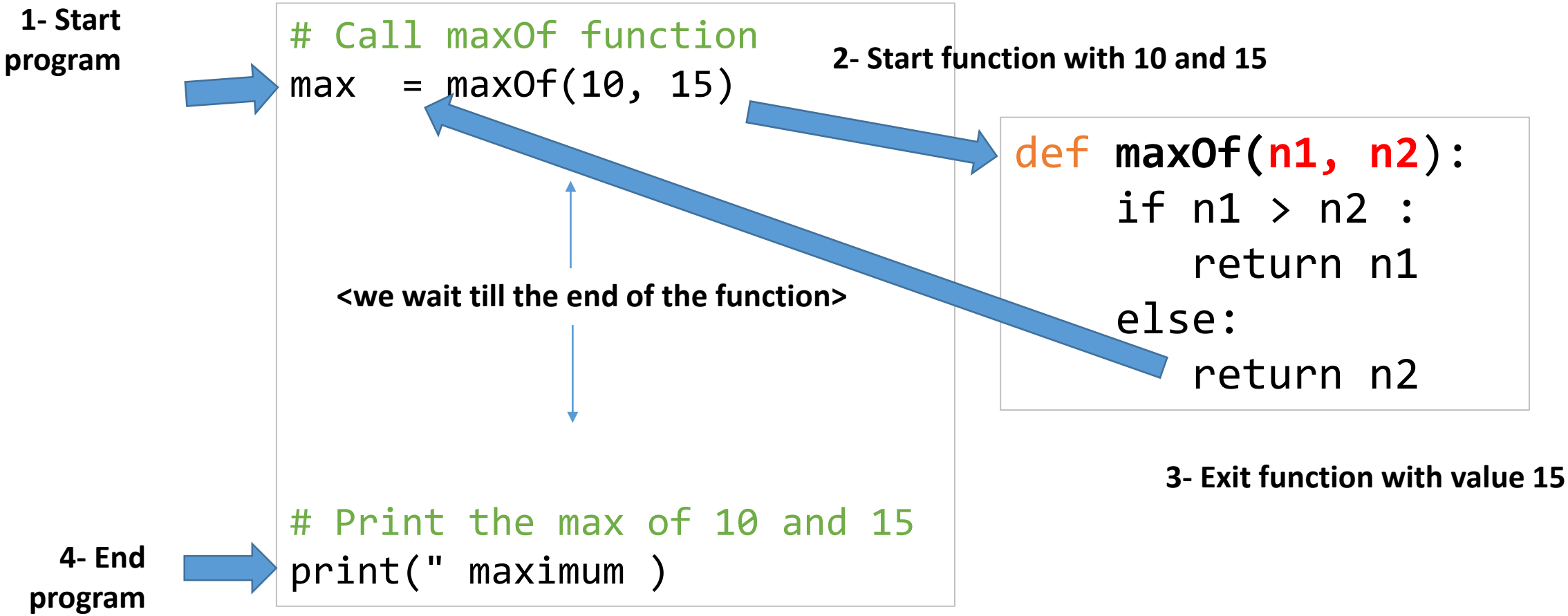
Start program

```
# Get the maximum value
maximum = int(input("Max= "))

# Compute the sum of squares
result = 0
for n in range (1:maximum+1):
  result = result + n*n

print("Sum of the square is: ", result)
```

End program

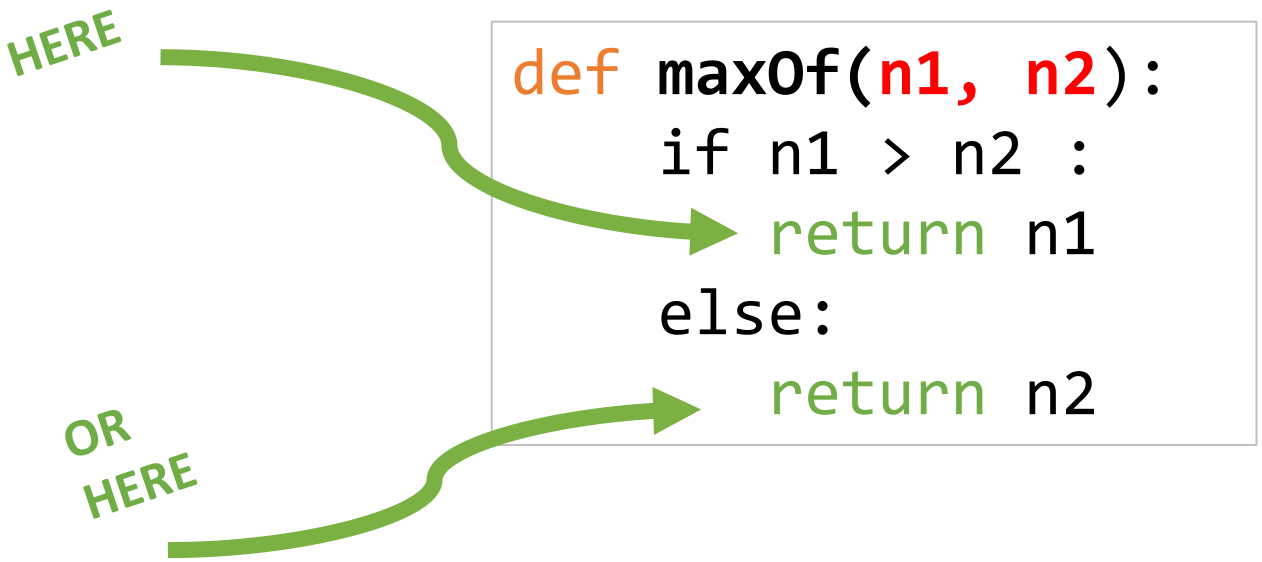
Bye bye computer

When calling a function, we go to a new program



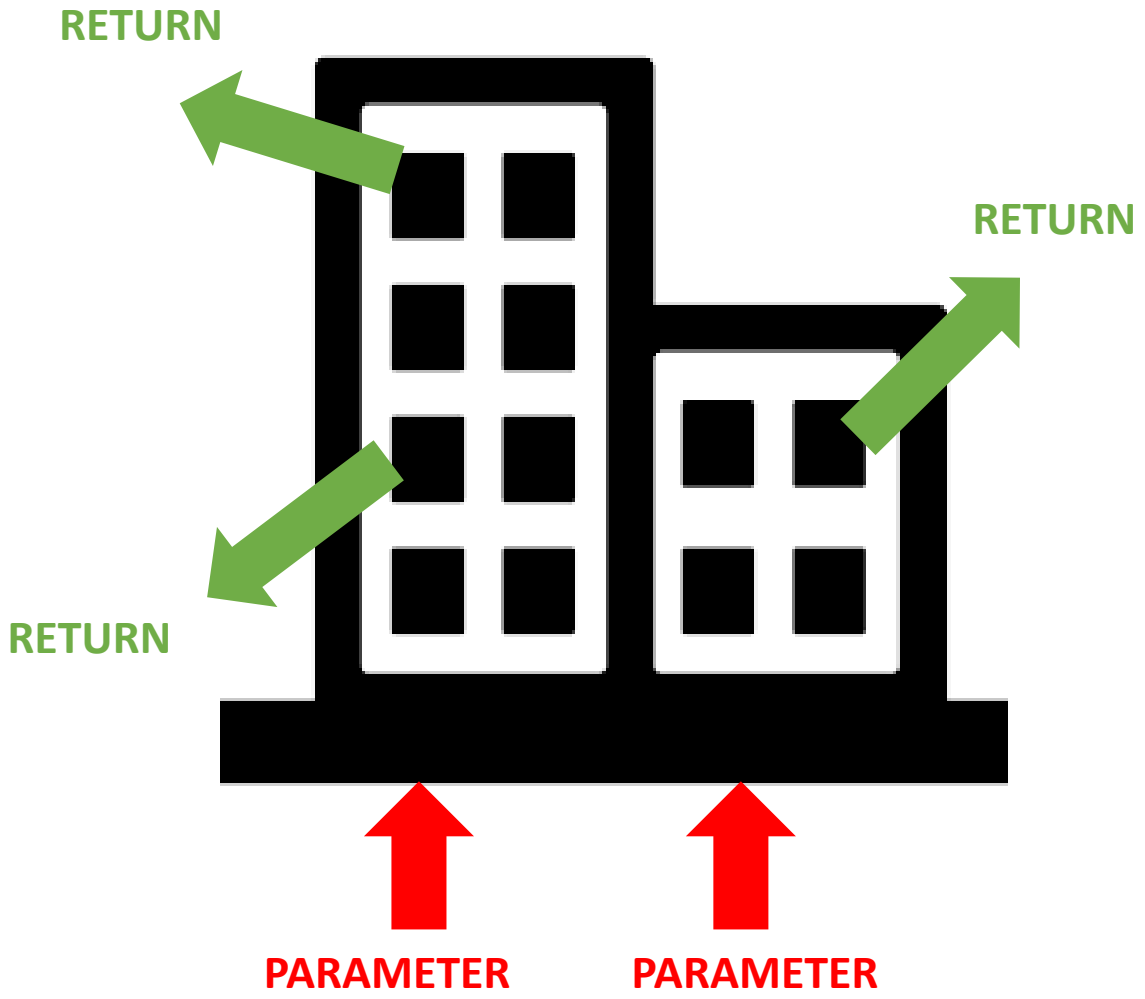
You exit a function

By returning a value



A function can have many exit points (return)

```
def maxOf(n1, n2):
    if n1 == n2 :
        return n1

    elif if n1 > n2:
        return n1

    else:
        return n2
```



Each exit points shall return the same type of value

```
def compute(n1, n2):
    if n1 == n2 :
        return n1

    else:
        return n1 + 1
```

INT

INT

```
def compute(n1, n2):
    if n1 == n2 :
        return n1

    else:
        return n1 > 1
```

INT

BOOL

LET’S SUM UP

THE FUNCTION RULES

1. A function must have at least 1 parameter

2. A function must return something

3. A function can have many exit points (return instruction)

4. All exit point shall return the same TYPE of value

5. Function definition must be written **before** you call them

What will be the return type of this function ?

INT

```
def myFunction(number):
    return “hello” + str(number)
```

A

string

B

boolean

C

integer

D

This code can produce errors

What will be the return type of this function ?

INT

```
def myFunction(number):
    return “hello” + str(number)
```

A

string

B

boolean

C

integer

D

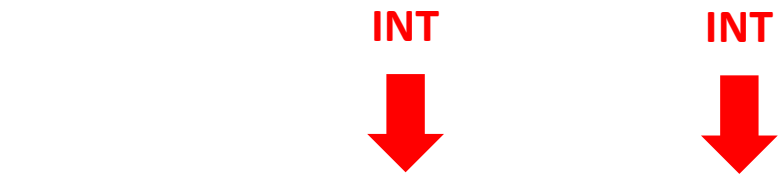
This code can produce errors

What will be the return type of this function ?


```
def myFunction(number1, number2):
    if number1> 10
        return number1
    return number2
```

A	B	C	D
string	boolean	integer	This code can produce errors

What will be the return type of this function ?




```
def myFunction(number1, number2):
    if number1> 10
        return number1
    return number2
```

A

string

B

boolean

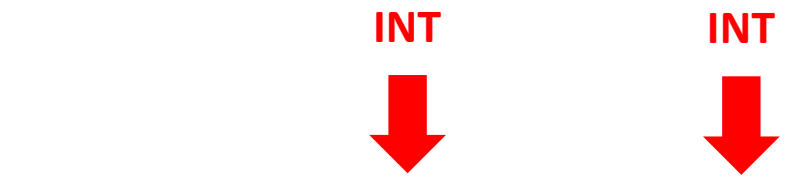
C

integer

D

This code can produce errors

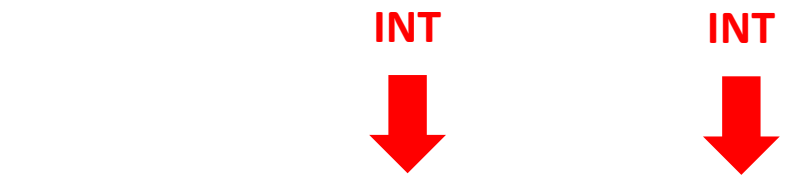
What will be the return type of this function ?




```
def myFunction(number1, number2):
    if number1 > 10
        return number1 == 20
    return number2

print(myFunction(11) + 2)
```

A	B	C	D
string	boolean	integer	This code can produce errors

What will be the return type of this function ?




```
def myFunction(number1, number2):
    if number1 > 10
        return number1 == 20
    return number2

print(myFunction(11) + 2)
```

A

string

B

boolean

C

integer

D

This code can produce errors

What will be the return type of this function ?

INT

```
def myFunction(number1):
    if number1 > 10 :
        return number1


result = myFunction(4) + 4
```

A	B	C	D
string	boolean	integer	This code can produce errors

What will be the return type of this function ?

INT

```
def myFunction(number1):
    if number1 > 10 :
        return number1


result = myFunction(4) + 4
```

A

string

B

boolean

C

integer

D

This code can produce errors

What this code will print on console ?

INT

```
def myFunction(number1):
      return 99
      return number1 + 1

print(myFunction(9))
```

A

9

B

99

C

10

D

This code can produce errors

What this code will print on console ?

INT

```
def myFunction(number1):
      return 99
      return number1 + 1

print(myFunction(9))
```

A

B

C

D

9

99

10

This code can produce errors

What will be the return type of this function ?

STRING

```
def myFunction(text):
    nbChars = len(text)
    if nbChars>10:
        return nbChars
    else :
        return nbChars + 1
```

A

string

B

boolean

C

integer

D

This code can produce errors

What will be the return type of this function ?

STRING

```
def myFunction(text):
    nbChars = len(text)
    if nbChars>10:
        return nbChars
    else :
        return nbChars + 1
```

A

string

B

boolean

C

integer

D

This code can produce errors

What this code will print on console ?

```
def myFunction(text):
      nbChars = len(text)
      if nbChars>10:
          return nbChars
      else :
          return nbChars + 1

result = myFunction(“rady”)
print(result)
```

A	B	C	D
rady	4	5	This code can produce errors

What this code will print on console ?

```
def myFunction(text):
      nbChars = len(text)
      if nbChars>10:
          return nbChars
      else :
          return nbChars + 1

result = myFunction("rady")
print(result)
```

A	B	C	D
rady	4	5	This code can produce errors

What this code will print on console ?

```
result = myFunction(“rady”)
print(result)


def myFunction(text):
      nbChars = len(text)
      if nbChars>10:
          return nbChars
      else :
          return nbChars + 1
```

A

rady

B

4

C

5

D

This code can produce errors

What this code will print on console ?

```
result = myFunction("rady")
print(result)


def myFunction(text):
      nbChars = len(text)
      if nbChars>10:
          return nbChars
      else :
          return nbChars + 1
```

A

rady

B

4

C

5

D

This code can produce errors

What this code will print on console ?

```
def moreOne(number):
        return number + 1

def multiplyBy2(number):
        return number * 2


result = moreOne(multiplyBy2(moreOne(moreOne(2))))
print(result)
```

A	B	C	D
2	8	9	This code can produce errors

What this code will print on console ?

```
def moreOne(number):
        return number +1

def multiplyBy2(number):
        return number * 2


result = moreOne(multiplyBy2(moreOne(moreOne(2))))
print(result)
```

A	B	C	D
2	8	9	This code can produce errors

Move code to function when it's the same

BEFORE

```
print("Good morning Ronan!")
print("Good night sweet dream!")
print("Good Bye!")

print("Good morning Seiha!")
print("Good night sweet dream!")
print("Good Bye!")

print("Good morning Hugo!")
print("Good night sweet dream!")
print("Good Bye!")

print("Good morning Sievny!")
print("Good night sweet dream!")
print("Good Bye!")
```

AFTER

```
def getHello(name):
    text = "Good morning " + name + "!\n"
    text += "Good night sweet dream!\n"
    text += "Good Bye!\n"
    return text


print(getHello("ronan"))
print(getHello("seiha"))
print(getHello("hugo"))
print(getHello("sievny"))
```