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COMPUTER SCIENCE 2

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CHAPTER 2

FUNCTIONS AND PROCEDURES

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1. Introduction

Let's say we have the following array, and we want to calculate the sum of all the elements,

so we do as follow:

```
t = [4,8,7,12,5]

s = 0

for i in range(len(t)):

    s = s + t[i]

print("the sum is", s)
```

1. Introduction

Now let say I have to other arrays t2 and t3 and I want to do the sum again, so I must do the

following:

```
t2 = [4,18,17,12,5]
s = 0
for i in range(len(t)):
    s = s + t[i]
print("the sum is", s)

t3 = [14,1,11,10,15]
s = 0
for i in range(len(t)):
    s = s + t[i]
print("the sum is", s)
```

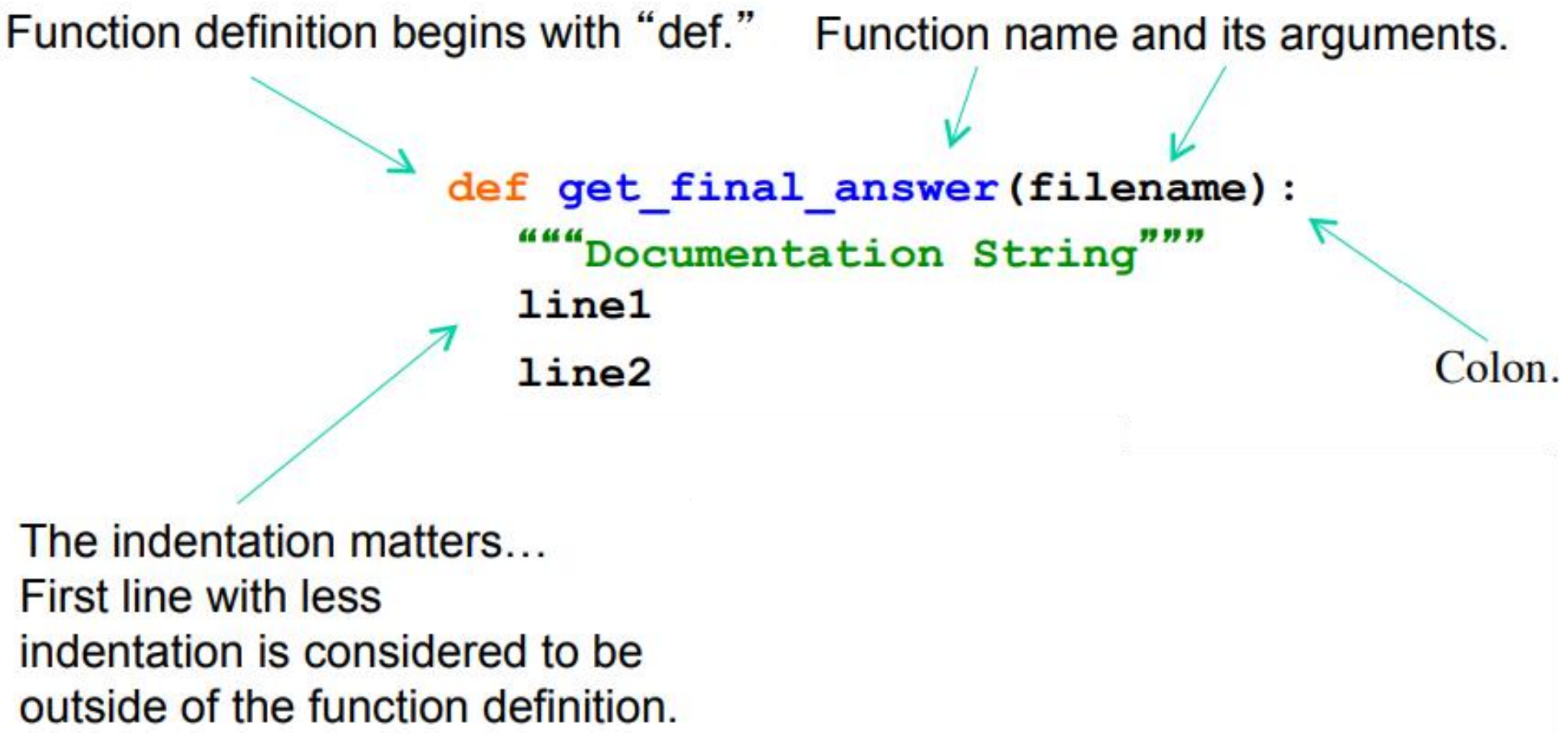
1. Introduction

So, we got redundances, and we must write many lines of codes, To avoid that there something called functions, so we can solve the problem as follows:

```
def sumArray(t):
    s = 0
    for i in range(len(t)):
        s = s + t[i]
    print("the sum is", s)

a = [4,8,7,12,5]
sumArray(a)
```

How to write a “Function”?



Calling a Function

- The syntax for a function call is:

Function code or core or part

```
def myfun(x, y):
    return x * y
```

Main code

```
myfun(3, 4)        #The output will be: 12
```

Function Vs Procedure

In programming there is a difference between a procedure and a function, where a function contain the keyword **return** and the procedure doesn't contain that keyword,

Example:

```
def Mul(x, y):
    a = x * y
    print(a)

Mul(5, 4)
#output will be: 20
```

VS

```
def Mul(x, y):
    a = x * y
    return a

result = Mul(5, 4)
print(result)
#output will be: 20
```

So, a Python function is like a math function where the function itself get a value:

$y = f(x)$

and $f(x) = ax + b$ for example

We are here

Default Values for Arguments

- You can provide default values for a function's arguments
- These arguments are optional when the function is called

```
def myfun(b, c=3, d="hello"):
        return b + c
myfun(5,3,"hello")
myfun(5,3)
myfun(5)
```

All of the above function calls return 8

Local and Global variable in a function

The variables of the function are locale, and we can not use them outside the function,

Example:

```
def foo(x, y):
    z = 5
    return x+y+z

print(x)      #NameError: name 'x' is not defined
print(y)      #NameError: name 'x' is not defined
print(z)      #NameError: name 'x' is not defined
a = 5
print(a)      #output: 5
```

THANK YOU FOR YOUR ATTENTION