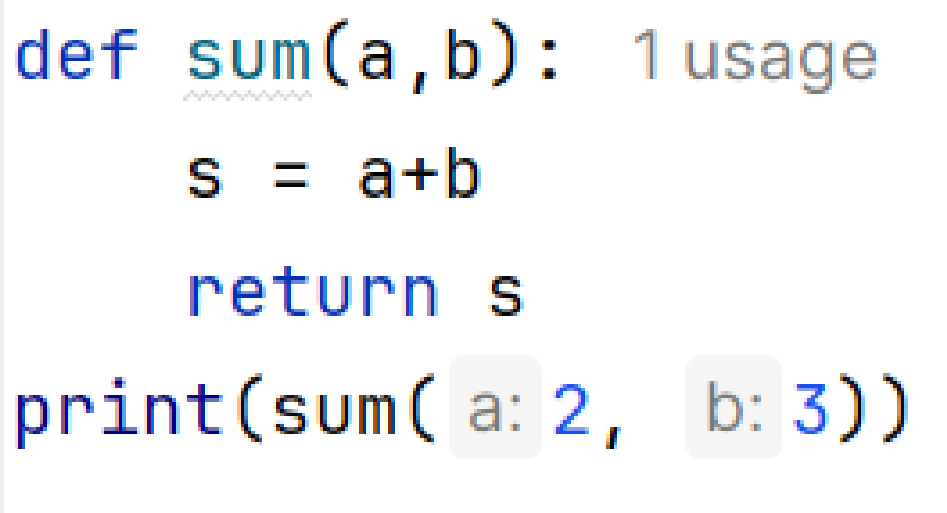
Functions in Python

Block of statements that perform a specific task.

```
def func_name( parameter1, parameter2..) :      ← Function Definition
        #some work
        return val

func_name( arg1, arg2 ..) #function call
```



```
def sum(a,b):  1 usage
    s = a+b
    return s
print(sum( a: 2,  b: 3))
```

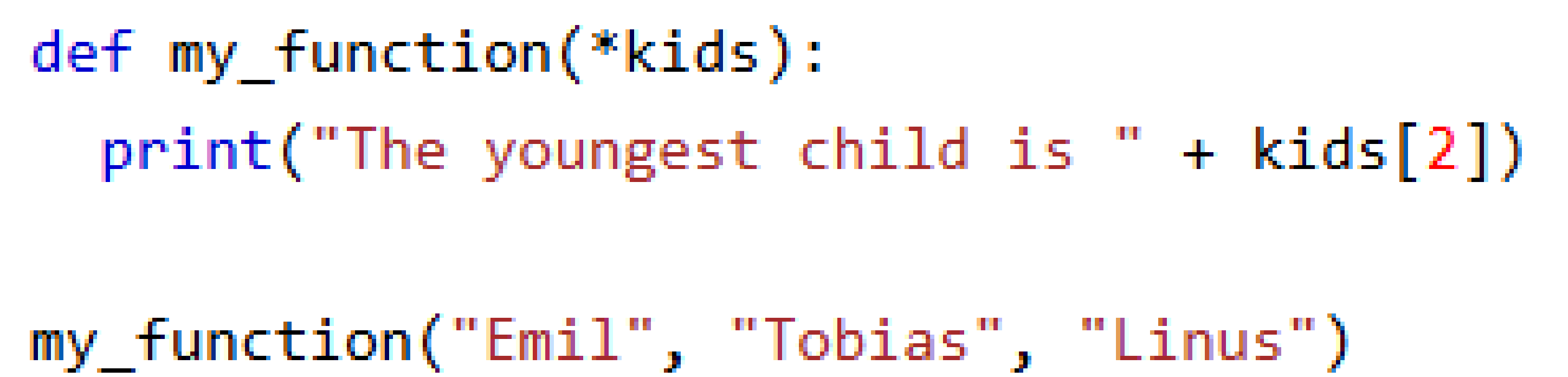
Functions in Python

in function Parameter and Return is optional

Arbitrary Arguments

If you do not know how many arguments that will be passed into your function, add a * before the parameter name in the function definition.

This way the function will receive a tuple of arguments, and can access the items accordingly:



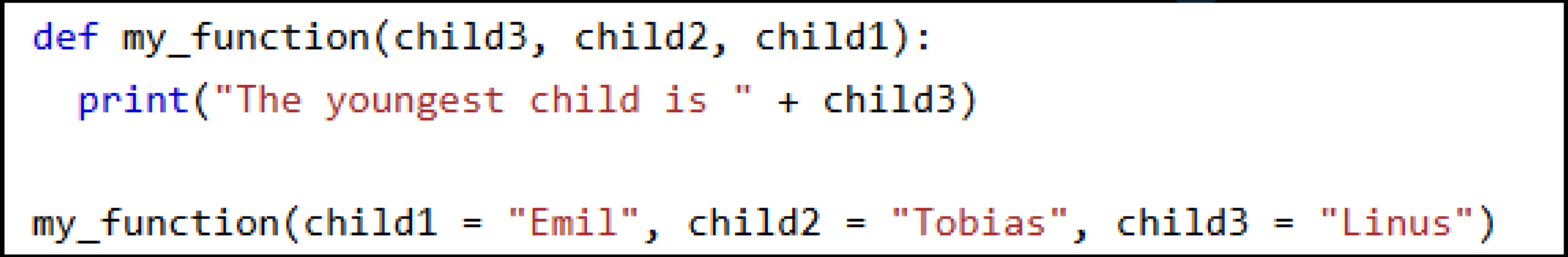
```
def my_function(*kids):
  print("The youngest child is " + kids[2])

my_function("Emil", "Tobias", "Linus")
```

Keyword Arguments

You can also send arguments with the key = value syntax.

This way the order of the arguments does not matter



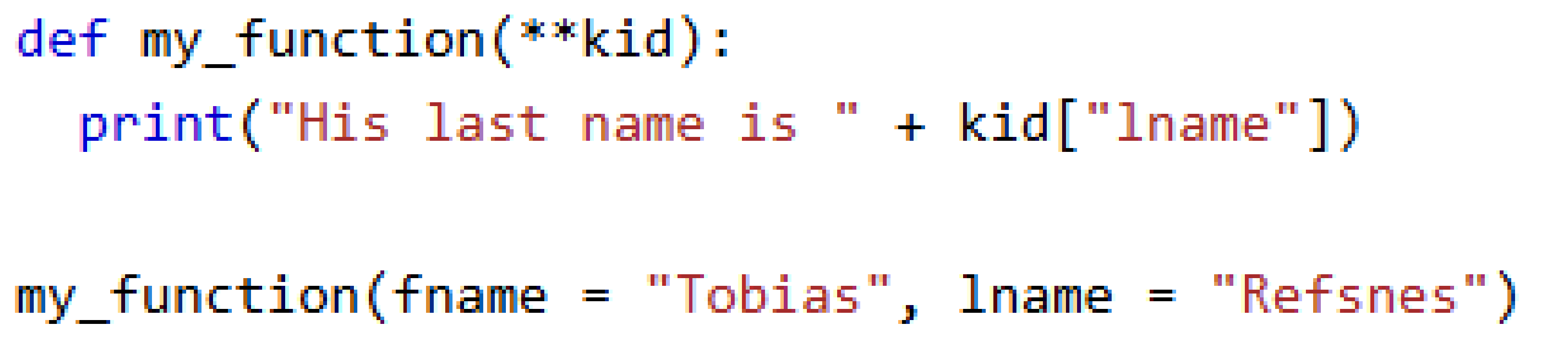
```
def my_function(child3, child2, child1):
  print("The youngest child is " + child3)

my_function(child1 = "Emil", child2 = "Tobias", child3 = "Linus")
```

Arbitrary Keyword Arguments

If you do not know how many keyword arguments that will be passed into your function, add two asterisk: ** before the parameter name in the function definition.

This way the function will receive a dictionary of arguments, and can access the items accordingly:



```
def my_function(**kid):
  print("His last name is " + kid["lname"])

my_function(fname = "Tobias", lname = "Refsnes")
```

Default Parameters

Assigning a default value to parameter, which is used when no argument is passed.

Let‘s Practice

Write a function that takes a word as input and prints the number of vowels in it.

Let‘s Practice

WAF to print the elements of a list in a single line. (list is the parameter)

Let‘s Practice

WAF to find the factorial of n. (n is the parameter)

Let‘s Practice

Write a function that takes a number and prints whether it is a prime number or not.

Let‘s Practice

WAF to determine if a number is odd or even

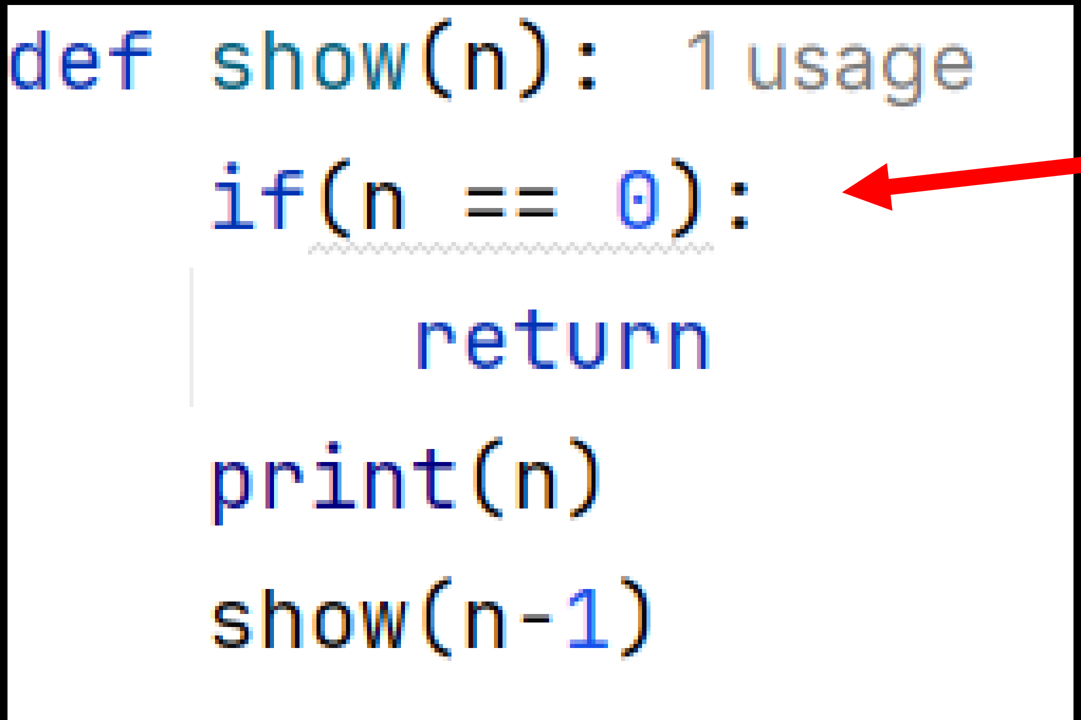
Let‘s Practice

WAF to determine if a list has more odd or even values and print which is greater.

Recursion

When a function calls itself repeatedly.

#prints n to 1 backwards



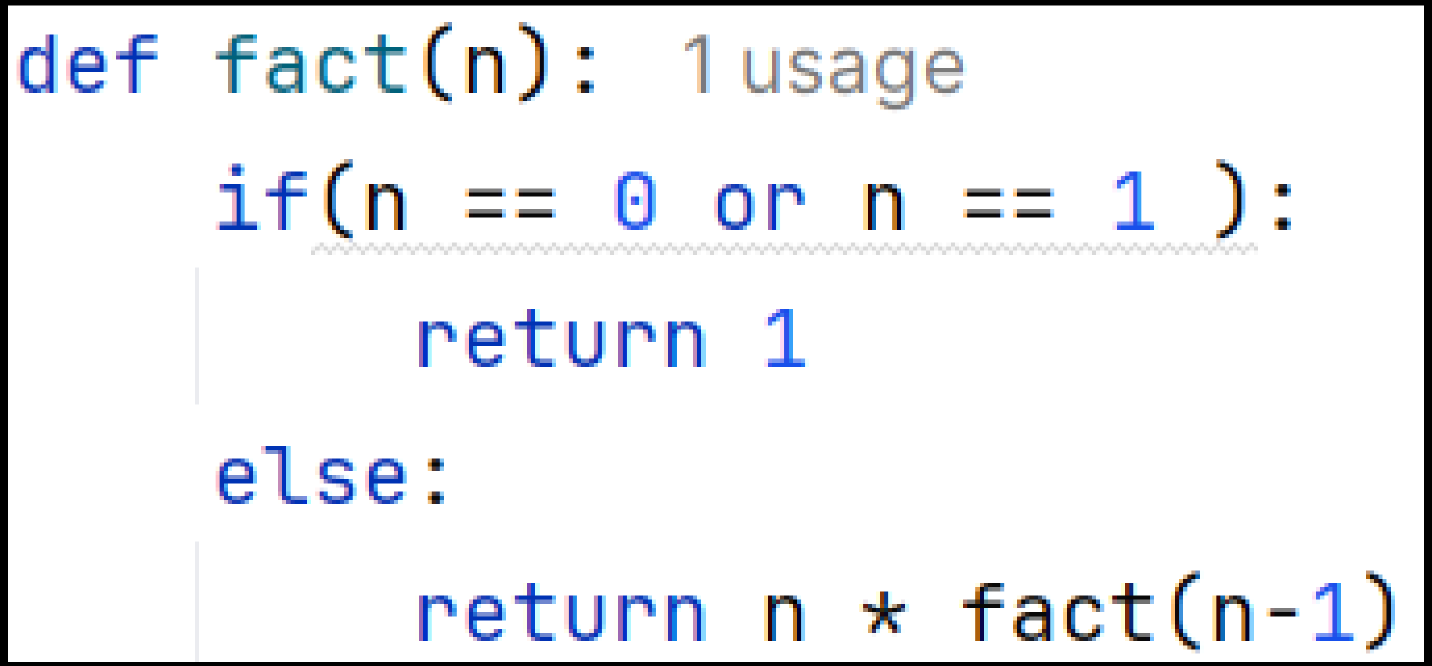
```
def show(n):  1 usage
    if(n == 0):
        return
    print(n)
    show(n-1)
```

Base case

link

Recursion

#returns n!



```
def fact(n):  1 usage
    if(n == 0 or n == 1 ):
        return 1
    else:
        return n * fact(n-1)
```

Let‘s Practice

Write a recursive function to calculate the sum of first n natural numbers.

Let‘s Practice

Write a recursive function to print all elements in a list.
Hint : use list & index as parameters.