Sentinel

Python Workshop: Functions

DEFENDING OUR DIGITAL WAY OF LIFE

Introduction

You will be shown 2 code sections.

Which one is simpler?

(Don’t panic).

Code #1

```
got_a_number = False
while not got_a_number:
    user_number = input("please enter a number")
    if user_number.isdigit() or (user_number[0] == "-" and user_number[1:].isdigit()):
        got_a_number = True
        user_number = int(user_number)
    else:
        print("please enter a valid number")

numbers_list = []
for i in range(user_number):
    got_a_number = False
    while not got_a_number:
        user_number = input("please enter a number")
        if user_number.isdigit() or (user_number[0] == "-" and user_number[1:].isdigit()):
            got_a_number = True
            user_number = int(user_number)
        else:
            print("please enter a valid number")
    numbers_list.append(user_number)

result = sum(numbers_list) / len(numbers_list)
print(result)
```

Code #2

```
numbers_list = []
numbers_list_length = get_a_number_from_user()

for i in range(numbers_list_length):
    user_number = get_a_number_from_user()
    numbers_list.append(user_number)

result = average(numbers_list)
print(result)
```

Functions

The second code uses functions.

Functions are like shortcuts.

Which functions do you know and use?

- print
- input

Now you'll learn how to write your own functions!

Defining functions

Functions are defined using the keyword *def*:

```
def print_hello():
    print("hello")
```

That's it. Now when you call the function, every line inside it will run.

Defining functions

Functions run only when they are called:

```
print_hello()
```

This will call (run) the function from the previous slide.

Calling with arguments

Let's call the function with an argument:

```
print_hello(5)
```

What would be printed?

```
hello
hello
hello
hello
hello
```

Return values

Some functions, like machines, return an output.

This input is called *return value*.

```
def power_of_two(number):
    return number ** 2
```

The value after the word “return” will be what the function returns.

Calling with return values

Let's call the function and get its return value:

```
result = power_of_two(2)
print(result)
```

What would be printed?

```
4
```

What did we learn?

Functions, and why we need them

Defining a function

Calling a function

Arguments

Return values

Introduction

Let's say that we have a list of students, and we want to save the grade in Python of each student.

How would you do that?

Is there a better way?