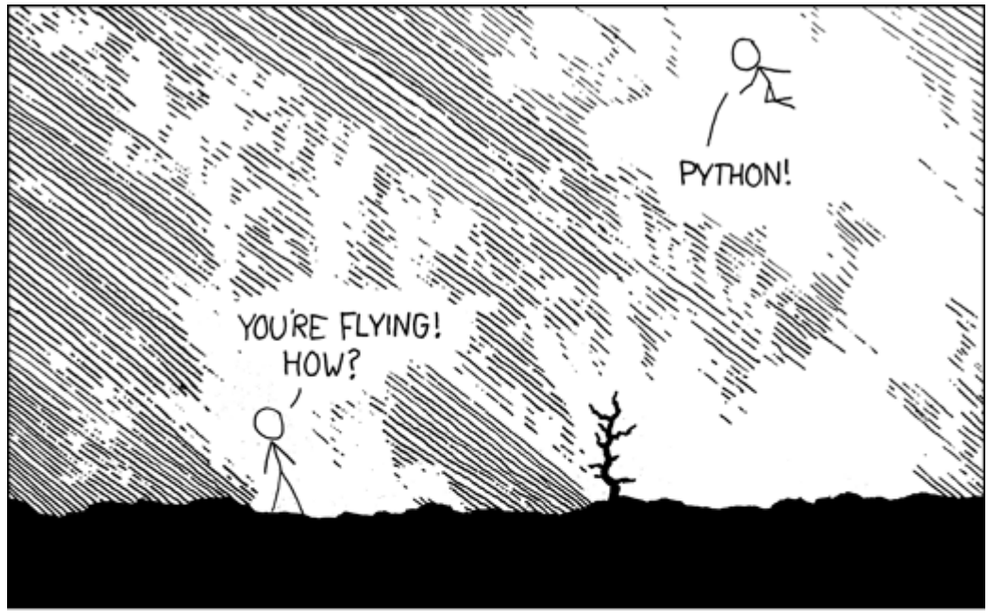
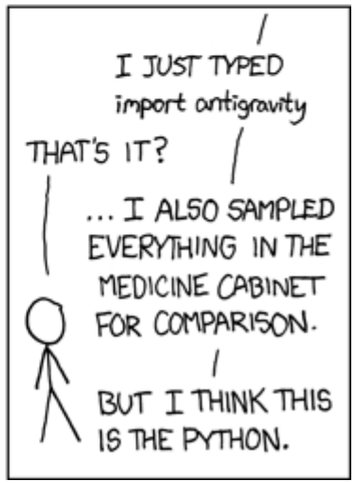
# pythonclub 03






Try it in your python3 console !

# pythonclub 03

Start your VM, open your terminal (`Ctrl+Alt+T`) and try to type the commands shown on screen, we're going to go through:

- functions
- csv files

Try it in your python3 console !

# functions

> A function is a group of connected statements (code) that perform a specific task.

```
def function_name( input_variables ):
   something happens
   if something is True:
       then something else
   else:
       stuff here
   then, other thing happen
   maybe even another thing
   return output_variables
```

- Functions help break our code into **smaller** and **modular** parts.
- Functions make larger codes more **organized** and **manageable**
- A function does not necessarily **return** something
- When called, the content of the function is executed sequentially.

Try it in your python3 console !

# functions

Let's write a function which tells us if today is Monday.

We will use the `datetime` package (provided with python), open your python shell:

- `date` refers to a "class" from the `datetime` package, which contains a function, `today()`, that returns today's date. Try it:

```
>>> from datetime import date
>>> date.today()
>>> datetime.date(2019, 1, 28)
```

- `datetime` also provides a function which finds the day of the week for a specific date (https://docs.python.org/3/library/datetime.html#datetime.date.weekday):

```
>>> from datetime import date
>>> today = date.today()
>>> isitmonday = today.weekday()
>>> isitmonday
>>> 0 #Because I executed this on a Monday (the 28th of January)
```

# functions

Now that we're able to determine if today is a Monday or not, let's write our function:

- Our function will take the date as an `input_variable`
- It will return a certain message if it is Monday and a different one if it isn't

```
from datetime import date

def monday_check(specimen_date):
    if specimen_date.weekday() == 0:
        message = "Monday again ... Go away Monday!"
    else:
        message = "Today is not a Monday!"
    return message
```

Try it in your python3 console !

# functions

Let's now call our function in our script *(to execute a script* `python3 script.py`*)*:

```
#IMPORTS
from datetime import date

#FUNCTIONS
def monday_check(specimen_date):
    if specimen_date.weekday() == 0:
        message = "Monday again ... Go away Monday!"
    else:
        message = "Today is not a Monday!"
    return message

#SCRIPT
print("This program will tell you if it is already the worst day of the week.")
today = date.today()
print( monday_check(today) )
```

Try this code: https://github.com/pythonclubmtl/learning_python3 -> `ex_mondaycheck.py`

Try it in your python3 console !

# functions : You do it now.

> In number theory, a perfect number is a positive integer that is equal to the sum of its proper positive divisors, that is, the sum of its positive divisors excluding the number itself. Equivalently, a perfect number is a number that is half the sum of all of its positive divisors (including itself).
> The first perfect number is 6, because 1, 2, and 3 are its proper positive divisors, and 1 + 2 + 3 = 6.
> Equivalently, the number 6 is equal to half the sum of all its positive divisors: ( 1 + 2 + 3 + 6 ) / 2 = 6.

- Your function should input a **number** (any integer number)
- Your function should return the **boolean value** `False` or `True`

> Hint: `message = False` affects the **boolean value** `False` to message. Not `false`, `False`. `False` is not a string, not an integer, it is a boolean.

Solution : https://www.w3resource.com/python-exercises/python-functions-exercise-11.php

# csv reader

Download the dataset `learning_python3/datasets/Popular_Baby_Names_NY.csv`
(Click `Raw`, then right-clic somehwere and `Save As`.
Open the dataset (with `atom` or `LibreOffice`) and explore it a bit.

The first thing we want to do now is load this file in python (you do it):

```
import csv

csv_data = []
with open('../datasets/Popular_Baby_Names_NY.csv') as csv_file:
    csv_reader = csv.reader(csv_file, delimiter=',')
    line_count = 0
    for row in csv_reader:
        if line_count == 0:
            print("The first line contains the column headers:")
            print(row)
            line_count += 1
        else:
            csv_data.append(row)
            line_count += 1
    print(f'Processed {line_count} lines.') #Can also use len(csv_data)
```

# csv reader : you do it now

1. Create a function ( `get_csv_data` ) which takes a path (as a string) and returns the content of a CSV file as a list which itself contains each column as a list (without the header): `[[column_1], [column_2], ... , [column_n]]`
2. Write a script which provides (use your `get_csv_data` function in it):

- The **most popular female name** for **each year**
- The **most popular hispanic name for males between 2011-2016**
- The **most popular female name for any ethnicity between 2012-2015**

```
string.lower() # Converts given string into lowercase and returns it
max(list) # Returns maximum value from a list
set(list) # Returns a list without any duplicates
```

Think about your *data storage* strategy with respect to lists:

`[ [ col1 ], [ col2 ], [ col3 ] ]` or `[ col1 ] [ col2 ] [ col3 ]` or `[row1], [row2], [row3]` or ...

- We will use this script again ! Add comments and it and keep it somehere safe.

# Additional exercises

### Change counter

Given a number between 0 and 99, determine the smallest amount of coins necessary to get that number using Canadian coin values only.

- Solution: https://gist.github.com/yasminlucero/4241342