# Exercise 4 – String Handling

## Objective

To consolidate string manipulation in Python. This includes further practise at general Python constructs, such as loops.

## Questions

1. Open the script **sep.py** in a text editor. You’ll see a string defined called 'Belgium'. Add code to print:
   1. A line of hyphens the same length as the Belgium string, followed by
   2. the string with the comma separators replaced by colons ':'., followed by
   3. the population of Belgium (the second field) **plus** the population of the capital city (the forth field). Hint: the answer should be 11183818.
   4. A line of hyphens the same length as the Belgium string.

**If time allows…**

1. Examine the file **messier.txt** in the **labs** directory, which contains details of celestial "Messier" objects. It consists of several columns for each object, identified by the 'M' number. The columns are as follows:

MessierNumber CommonName ObjectType Constellation

Note that many have no common name. Read the file using a **for** loop:

for line in open('messier.txt', encoding='latin\_1'):

if not line: break

# The text is in the variable named 'line'

Ignore lines that do not start with 'M'. Print the fields from each line delimited with '|' characters. Where there is no common name, use 'no name'. Ignore any lines not beginning with a Messier number. For example:

|M1|The Crab Nebula|Supernova remnant|Taurus|

|M2|no name|Globular cluster|Aquarius|

|M3|no name|Globular cluster|Canes Venatici|

Hint: the header on the file should assist in getting the field positions.

## Solutions

**Question 1**

1. A line of hyphens the same length as the Belgium string, followed by
2. the string with the comma separators replaced by colons ':'., followed by
3. the population of Belgium (the second field) **plus** the population of the capital city (the fourth field). Hint: the answer should be 11183818.

If you did this:

print(items[1] + items[3])

then you would’ve got string concatenation, and an apparently very large number! You need to change each value to an int.

1. A line of hyphens the same length as the Belgium string.

items = Belgium.split(',')

print('-' \* len(Belgium)) # a)

print(':' . join(items)) # b)

print(int(items[1]) + int(items[3])) # c)

print('-' \* len(Belgium)) # d)

**If time allows…**

**Question 2**

for line in open('messier.txt'):

if not line: break

if line.startswith('M'):

# Slice each field

mes\_num = line[:6].rstrip()

com\_name = line[6:40].rstrip()

if not com\_name: com\_name = 'no name'

obj\_type = line[40:64].rstrip()

const = line[64:].rstrip()

print(f"|{mes\_num}|{com\_name}|{obj\_type}|{const}|")