Exercises - Part 1

October 19, 2020

0.0.1 Calculate

Use the cells below to make the following calculations:

1. 20 plus 30 (the code is given, just run the cell)
2. 20 minus 30
3. 20 times 30
4. 20 divided by 30
5. 20 to the power 30 (*hint*: use two asterisks: `**`)

[ ]:
```
# Exercise 1
20 + 30
```

[ ]:
```
# Exercise 2
```

[ ]:
```
# Exercise 3
```

[ ]:
```
# Exercise 4
```

[ ]:
```
# Exercise 5
```

0.0.2 Variables

1. Create a variable `a` and assign the value `20`, so `a = 20`
2. Create a variable `b` and assign the value `30`
3. Add `a` and `b`, the outcome should be 50
4. Multiply `a` by `b`, the outcome should be 600

Extra challenge: can you calculate the value of `c` in $a^2 + b^2 = c^2$? (Pythagorean Theorem)

[ ]:
```
# Exercise 1
```

[ ]:
```
# Exercise 2
```

[ ]:
```
# Exercise 3
```

[ ]:
```
# Exercise 4
```

[ ]:
```
# Extra challenge
```

0.0.3 Printing

```
# Example
city = "Amsterdam"
country = "The Netherlands"
print(city, country)
print(city, country, sep=",")
```

The exercise:

1. Assign your first name to a variable called `first_name`
2. Assign your last name to a variable called `last_name`
3. Print your first and last name to the screen with the `print` function
4. Again print your first and last name to the screen, but this time separated by a dot (`.`) instead of a space ()

[ ]:
```
# Exercise 1
```

[ ]:
```
# Exercise 2
```

[ ]:
```
# Exercise 3
```

[ ]:
```
# Exercise 4
```

0.0.4 Datatypes

1. Without using the computer, write down on a piece of paper what you think the `type` is for every letter (`a` to `i`)
2. Assign the values by running the cell below
3. Use the `type()` function to check your answers. For example, to check the first one use `type(a)`

[ ]:
```
# Exercise 2 - Run this cell
a = 42
b = "hello world"
c = 3.14
d = 100
e = "23"
f = 10 * 10
g = 10 / 10
h = [1, 2, 3]
i = {"name": "John", "age": 42, "role": "developer"}
```

[ ]:
```
# a
type(a)
```

[ ]:
```
# b
```

[ ]:
```
# c
```

[ ]:
```
# d
```

[ ]:
```
# e
```

[ ]:
```
# f
```

[ ]:
```
# g
```

[ ]:
```
# h
```

[ ]:
```
# i
```

0.0.5 Strings

```
# Example
pangram = "The five boxing wizards jump quickly."
print(pangram[0])
print(pangram.title())
print(pangram.replace("five", "ten"))
```

Exercise: 1. Run the cell below to assign the variable pangram 2. Use the `.upper()` method to print the pangram capital letters 3. Use the `.replace()` method to replace the word `"quickly"` with `"slowly"` 4. Use the square brackets `[ ]` to print only letter `"f"` (from `"five"`) 5. Use the square brackets `[ ]` to print only the word `"boxing"`

Extra challenge: explore other string methods in the documentation

[ ]:
```
# Exercise 1
pangram = "The five boxing wizards jump quickly."
```

[ ]:
```
# Exercise 2
```

[ ]:
```
# Exercise 3
```

[ ]:
```
# Exercise 4
```

[ ]:
```
# Exercise 5
```

[ ]:
```
# Extra challenge
```

0.0.6 Getting user input

```
# Example
day = input("Which day is it? ")
print("Today is", day)
```

Exercises: 1. Create a variable called `name`. Use the `input()` function to get the user's name 2. Use the variable `name` to print a greeting to the screen, like `Hello, nice to meet you John`

Extra challenge: print the sentence in the following format: `Hello John, how are you?`

[ ]:
```
# Exercise 1
```

[ ]:
```
# Exercise 2
```

[ ]:
```
# Extra challenge
```

0.0.7 Type casting

```
# Examples
days_per_week = 7
str(days_per_week)

score = "6700"
int(score)
```

The exercise: 1. Use the `str()` function to fix the bug in the code below 2. Use the `int()` function to fix the bug in the code below

Extra challenge: explore other functions like float() and bool() and how they deal with various inputs.

[ ]:
```
# Exercise 1
number_of_moons = 79
sentence = "The total number of (known) moons for the planet Jupiter is " +␣
 ↪number_of_moons
print(sentence)
```

[ ]:
```
# Exercise 2
age_in_years = input("What is your age? ")
age_in_months = age_in_years * 12
print("Your age in months is:", age_in_months)
```

[ ]:
```
# Extra challenge
```