

Lab 1

(Prof. Carlos J. Costa)

Solve the following questions without using decision statements (e.g. if) or loops (e.g. for).

1) Verify if a value is an integer

▶ In [1]: `#Code here`

2) Verify if a value is even

▶ In [2]: `#Code here`

3) Insert two numbers. Is the first is bigger than the second?

▶ In [3]: `#Code here`

4) Verify if one value is multiple of another

▶ In [4]: `#Code here`

5) Calculate the interest earn by an investor that invested an amount of capital of 200 during three years with an interest rate of 3%.

($I = P * R * T$)

▶ In [5]: `#Code here`

6) Capital that an investor obtained after investing an amount of capital of 200 during three years with an interest rate of 3%. (Compound interest)

▶ In [6]: `#Code here`

7) Calculate your BMI (Body Mass Index)

$BMI = mass(kg) / height^2(m)$

▶ In [7]: `#Code here`

8) Calculate the Golden ration:

$gr = (1 + \sqrt{5}) / 2$

1. Solve the problem without using libraries
2. Use module math (import math) and function sqr (math.sqrt)

▶ In [8]: `#Code here`

9) Calculate the NPV (Net present value) of an investment, considering an initial investment of 10000, the following

Cashflows 2000,3000, 4000, 4000 and 5000 and a discount rate of 10%.

$$NPV = \sum_{t=1}^n \frac{FV_t}{(1+k)^t} - I$$

Where:

FV = Future cost of the cash inflows, I = Initial Investment k = Discount rate equal to the owner's cost of capital

▶ In [9]: `#Code here`

10) Ask the user to insert name and age. Calculate the birth year. Print a result saying the 'this person was born in.'

1. Solve the problem without using modules and libraries
2. Solve the problem using the date library from module datetime, as follow:

```
from datetime import date
today = date.today()
today.year
```

▶ In [10]: `#Code here`

11) Ask the user to insert forenames, surnames. Create a new variable (name) with your complete name.

Create the following variables:

nameBig - all the characters of the name are capitalized

nameTitle - only the first character of each name (word) is capitalized

nameSmall - all the characters of the name are lowercase.

nameCapitalized - only the first character of the first name is capitalized

▶ In [11]: `#Code here`

12) Use the following method to show in which character appears the first "da"

```
str.find(sub, start, end)
```

What happens if the content of sub is not found in str?

▶ In [12]: `#Code here`