Problem Set 3 - Variables and Data types

Hello student!

The goal of this problem-set is to familiarize with the differend data-type.

As you learned in the lectures, despite it is not required to specify the data type when declaring a variable, each variable has its data-type.

The available data-types are:

- Numeric: `int`, `float`, `complex`
- Text: `string`
- Sequence: `list`, `tuple`, `complex`
- Set: `set`, `frozenset`
- Boolean: `bool`
- Binary: `bytes`, `bytearray`, `memoryview`

Remember, you can check the data type of a variable using the function `type()`:

```
my_var = 14.2
print(type(my_var))

<class 'float'>
```

Assignment 3.1 - Is multiple (1 point)

Develop a program that requires two integers from the users, then prints if the first is a multiple of the second.

The output will be:

```
Insert first number: 4
Insert second number: 2
Is the first number a multiple of the second? True
```

Hint: a number is the multiple of another if the remainder of the division is 0.

Assignment 3.2 - Calculator (3 points)

Write a program that asks the user for two decimal values (e.g. `3.1415`), and then calculates and prints the following:

```
First value: 3.2
Second value: 10.6
Sum: 3.2 + 10.6 = 13.8
Difference: 3.2 - 10.6 = -7.3999999999999995
Product: 3.2 * 10.6 = 33.92
Quotient: 3.2 / 10.6 = 0.30188679245283023
```

Assignment 3.3 - String manipulation (3 points)

Write a program that asks the user for a long string and prints it with every word capitalized and without whitespaces.

For example:

```
my NaMe is AlbErt Einstein.
```

Becomes:

```
My Name Is Albert Einstein.
```

Hint: check the official documentation for all the methods available on strings.

Assignment 3.4 - Value swap (optional)

Develop a software asking for two floats. The values must be printed and then they must be swapped between variables.
The final value must then be printed.

Example of output:

```
Insert first value: 1.234
Insert second value: 6.789
Values before swapping:
    first_val: 1.234
    second_val: 6.789
Values after swap:
    first_val: 6.789
    second_val: 1.234
```

Important: the values have to actually be swapped between the first and the second variable!

Assignment 3.5 - Circle (optional)

Develop a software asking for the radius of a circle as a float number, then calculate and print the values of the diameter, circumference, and the area of the circle.

Remember:

- Diameter: $d = 2 \times r$
- Circumference: $C = 2 \times \pi \times r$
- Area: $A = \pi \times r^2$

Output example:

```
Insert circle's radius: 42
Diameter: 84.0
Circumference: 263.89378290154264
Area: 5541.769440932395
```

Hint: in almost every programming language the mathematical package contains the value of the constant π, to import it in Python use:

```
from math import pi
```