InPy-00 – Help, variables, expressions & statements

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1 GETTING HELP IN PYTHON

Start the Python interpreter and type `help()` to start the online help utility. Or you can type `help(print)` to get information about the `print` function. When finished with the help utility, type `quit` at the prompt to return to the interpreter.

2 DOING CALCULATION THE PYTHON WAY

1. Assume that we execute the following assignment statements:

   ```
   width = 17
   height = 12.0
   delimiter = '.'
   ```

   For each of the following expressions, write the value of the expression and the type (of the value of the expression).

   a) `width/2`

   b) `width/2.0`

   c) `height/3`

   d) `1 + 2 * 5`

   e) `delimiter * 5`

   Use the Python interpreter and the `type` function to check your answers.

2. Practice using the Python interpreter as a calculator:
   The volume of a sphere with radius r is $\frac{4}{3}\pi r^3$. What is the volume of a sphere with radius 5? Hints: Be sure to execute the statement `pi = 3.1415926535897931` first and 392.6 is wrong!

3 Knowing more about data types and their operations

Assign variables with the values `1, 5, and "ten"` with the types int, float, and string respectively.

1. Confirm that the types are `int, float`.

2. Determine for which of the following pairs of the set of `int, float, and str`, the `+` operation gives an error.
   (i) `int-int`
   (ii) `int-float`
   (iii) `float-float`
   (iv) `float-str`
   (v) `str-str`
   Any surprises?

3. Repeat 2. with the `*, -, /, %, <, >, >=, <= and ==` operators. Any surprises?

4. Read the output of `help(int), help(float)` to know more about these data types.

4 About Random number generator

Investigate how python generates random numbers.

5 More on data types

Here you will use `math.log10()` and `math.floor()`, which require the line `import math` for you to access these functions. For these two functions, determine their value and data type.

1. What is the value and type of log10(42)?

2. What is the value and type of log10(-0.32)?

3. What is the return type of floor acting on an int? Acting on a float? floor is in the math namespace. It will work only after `import math` and it is invoked as `math.floor()`.

4. `len()` is a builtin function to count the length of things. For which of the basic data types so far does `len()` return a value? Does it return the length or the length+1?

5. Write an expression to determine the number of digits in a non-negative integer. *Hint: maybe* `len()` *or* `math.log()` *might be useful here.*