1 Introduction to Python

Exercises

Whenever you learn a new feature, you should try it out in interactive mode and make errors on purpose to see what goes wrong and what types of errors you run into.

Exercise 1.1.

- In a `print` statement, what happens if you leave out one of the parentheses, or both?
- If you are trying to print a string, what happens if you leave out one of the quotation marks, or both?
- You can use a minus sign to make a negative number like -2. What happens if you put a plus sign before a number? What about 2++2?
- In math notation, leading zeros are ok, as in 09. What happens if you try this in Python? What about 011?
- What happens if you have two values with no operator between them?[1]

Exercise 1.2. Try the commands below in an interactive mode. Explain why some of them fail and correct the errors[2].

a = 2
a1 = b
x = 2
y = X + 4 # is it 6?
from Math import tan
print tan(pi)
pi = ”3.14159’
print tan(pi)

c = 4**3**2**3
_ = ((c-78564)/c + 32))
discount = 12%
AMOUNT = 120.-
amount = 120$
address = abc@gmail
and = duck
class = ’INF1100, gr 2”

continue_ = x ¿ 0
brtype = ”””jordb ”””
rev = fox = True
Norwegian = [’a human language’]
true = fox is rev in Norwegian

Exercise 1.3. Practice using the Python interpreter as a calculator:

- We’ve seen that n = 42 is legal. What about 42 = n? How about x = y = 1?
- In some languages every statement ends with a semi-colon, ;. What happens if you put a semi-colon at the end of a Python statement? What if you put a period at the end of a statement?
- In math notation you can multiply x and y like this: x y. What happens if you try that in Python?
- How many seconds are there in 52 minutes and 52 seconds?
- How many miles are there in 10 kilometres? Hint: there are 1.61 kilometers in a mile.
- If you run a 10 kilometre race in 52 minutes 52 seconds, what is your average pace (time per mile in minutes and seconds)? What is your average speed in miles per hour?
- Suppose the cover price of a book is 24.95 euros, but bookstores get a 50% discount. Shipping costs 3 euros for the first copy and 75 cents for each additional copy. What is the total wholesale cost for 50 copies?
- 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?

[1] Exercise adapted from Downey (2016)
[2] Exercise adapted from **?**

- If I leave my house at 6:50 am and run 1 mile at an easy pace (8:15 min per mile), then 3 miles at tempo (7:12 per mile) and 1 mile at easy pace again, what time do I get home for breakfast?

Exercise 1.4. Can a newborn baby expect to live for one billion (10^9) seconds?

Exercise 1.5. Write a program converting the temperature given in Fahrenheit degrees to Celsius. A formula between those units: $C = \frac{5}{9}(F - 32)$.

Exercise 1.6. Let p be a bank's interest rate in percent per year. An initial amount A has then grown to

$$A(1 + \frac{p}{100})^n$$

after n years. Make a program for computing how much money 1000 euros have grown to after three years with 5% interest rate.

References

Downey, A. B. (2016). *Think Python. How to Think Like a Computer Scientist.* O'Reilly Media, 2nd edition.

Lutz, M. (2013). *Learning Python.* O'Reilly Media, 5th edition.

Python (2020). Python 3.8.5 documentation. `https://docs.python.org/3/` [Accessed 10 December 2019].