TP1 Python: Introduction – Variables and Assignment

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Program a set of instructions that directs a computer's hardware to perform a task
Directory folder, a collection of files and subdirectories
Terminal an interface in which you can type and execute text based commands
Basic Terminal Commands
- `pwd` allows to find out what directory your terminal is in (Print Working Directory)
- `ls` allows to show the files or folders in your current directory
- `mkdir directory_name` allows to create a new directory (MaKe DIRectory)
- `cd directory_name` allows to navigate to a different folder or "directory" in your computer (Change Directory)
- `rm file_name` allows to remove a file

1 Familiarization with the interactive environment: terminal

Download course materials

1. Login to the computer.
2. Open the terminal window.
3. Type `pwd` to find out what directory your are in now
4. Type `cd your_directory_name` to switch to the directory you want to save the course materials
5. Type `git clone https://github.com/bingzhilee/python4linguists.git` to download the course materials

   (You can also download the course materials directly:

   • go to the page `https://github.com/bingzhilee/python4linguists` ,

   • click the green `'code'` button, then click `'Download Zip'`.

   • unzip the file and enter the unzipped folder.)

Python interpreter

Google Colab If you wish to use your own laptop and don't want to/can't install Python or PyCharm, you can use Google Colab to run programs in your browser, that is sufficient to do all the exercices for this class

1. Open the terminal window.
2. Type the command `python3`
3. Enter the following instructions and observe the result:

   ```
   x = 3
   print(x)
   print('x')
   ```

   what's the type of `x` ? What's the type of `'x'` ?
4. Enter the following instructions and observe the result:

```
age = 3
a = ‘The value of the variable’
b = "is"
print(a, ‘age’, b, age)
```

5. Type the following instruction and observe the message that appears. What does this error message mean?

   ```
   print(a+‘age’+b+age)
   ```

6. Fix the issue using the method `str()`. This method allows for example to convert an integer `i` into a string. It is used as follows: `str(i)`.

7. Write instructions that print out your first name, your last name, the number of characters in each name and concatenate and print the two names(with a space)

8. Enter the command `exit()` to exit the Python interpreter.

2 Variables and Assignment

To use the Python interpreter, we must again enter the command `python`.

9. For the following three sequences of instructions, predict the result(s) of the statements `print()`. Check the answers in the terminal.

```
a = ’Hello’
b = a
print(b)
```

```
x = 3
y = x + 2
print(y)
```

```
x = 3
y = x + 3
x = 7
print(y)
print(x)
```

10. Enter the following instructions in the terminal. An error message appears. Why?

    ```
    >>> x = 3
    >>> print(z)
    ```

11. Assign values to the variables `a` and `b` so that the instruction `print(a + b)` produces the result: `Hello world!`

12. Use the string methods `.upper()` and `.lower()` to produce `HELLO WORLD!` and `hello world!`

13. Type the following instructions in the terminal, What does the function `input()` do ?

    ```
    >>> x = input()
    3 + 4
    >>> print(x)
    ```

    Another example:

    ```
    >>> y = input("Write something:")

    >>> print(y)
    ```

3 Towards a first program

Now we are going to put a sequence of instructions (i.e. a program) in a file. To do this, we'll use a **text editor**.

14. Open a text editor(Spider,Sublime Text, PyCharm, Atom, Emacs...)

15. Enter the following program in the file.

    ```
    name = input("Please enter your name: ")
    print("The user’s name is : ",name)
    ```

Save and Run Files containing Python code must be named with the extension `.py`, for example, prog1.py. It's important that the program be in the same directory that the terminal window is in. You can use command `cd directory_name` to instruct the terminal to switch to the directory containing your code file prog1.py. Then to execute the program, type the command `python3 prog1.py` in the terminal.

16. Save the file, run it and observe the result.

Comments Comments are lines of code that remind the programmer of what the code does or should do. Inserting comments in a program allows either to hide code or to explain code. Comments are marked with a `#` on their left. Everything on the same line after that `#` has no effect on the program.

```
 # return what the user entered as string object and assign it to a variable named 'n'
n = input("Please enter you name:  ") # n is a string object
```

17. Return to the text editor and create a program:

    • ask the user to enter: a verb, a noun, and a determiner

    • the program must store the verb, the noun and the determiner in three separate variables (respectively `v`, `n` and `d`). To do this, we use the method `input()`.

    • The program must display a syntactically correct sentence in the terminal window. For example, if the user has entered the verb "works", the noun "program" and the determiner "The", by running the program in the terminal window, we will have : The program works

    • calculate how many times the letter 'a' occurs in this sentence and show the output in terminal