Some Computing/Programming concepts

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Contents

1   Tools

1. What is an IDLE?

   IDLE has two parts - an **Editor**, and a **Shell**.

2. What is an Editor?

   Python programs are **plain text files**, ie, file consist of text without formatting. This is different from **rich text files** like `.docx` (that contains text formatting).

   Therefore the **Editor** in IDLE can be used to write python programs, and save them in `.py` format. You can use **ANY** other plain text editor to write a python program too! An example is Notepad in Windows.

3. Where is the Editor in IDLE?

   `File -> New File`.

4. What editors are nice to use?

   I recommend PyCharm, a powerful Integrated Development Environment (IDE, Editor and more, usually with debugger), or VSCode. If you want to be amazed, check out Vim and Emacs. Sticking to IDLE/Notepad is of course fine.

Tips for IDLE users: when editing a file (in editor mode), go to `Options -> Toggle Line Numbers` for easier debugging - your errors will tell you which line got wrong.

5. What is a Shell then?

   It is also known as REPL, Read-Eval-Print-Loop. As the name suggests, it gives you a prompt: » and whatever you type after that, after you press Enter, your code will be **Read**, **Evaluated**, results **Printed** out. Then this process **Loops**, back to you typing, then Python will **Read**, *Eval*... Yup, you got what I mean.

   This is a quick way to test out program fragments. For long programs, use a text editor.

2 Quick Notes

1. The assignment operator (or, the equal = sign) is different from that of math.

   ```
   a = 3
   b = 4
   a = b # what, 3 = 4??
   ```

   The trick here is to remember:

   > Evaluate RHS, then give result to LHS.

   Then you will see that `a` gets the value of `b`. Now both `a` and `b` have value 4.

2. Functions in Python are actually procedures - a shorthand for doing several things. For example, if your mum says: "*help me buy the groceries!*", she actually meant that you should:

   - First find a way to go to your favourite grocery store (physical or online)
   - Then select the things you need
   - Pay for them
   - . . .

2

Not all procedures return something (for example, the groceries). She can also ask you to clean up your room which you don't need to return anything, so it is just a procedure. If you want to return something in Python, use the `return` keyword, otherwise `None` will be returned. (more on that later)

3   Some things I wish to share with you:

"Programs must be written for people to read, and only incidentally for machines to execute."