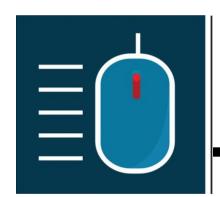


Simple Knowledge Data School

WELCOME

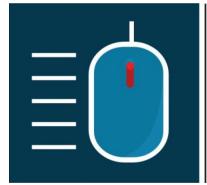
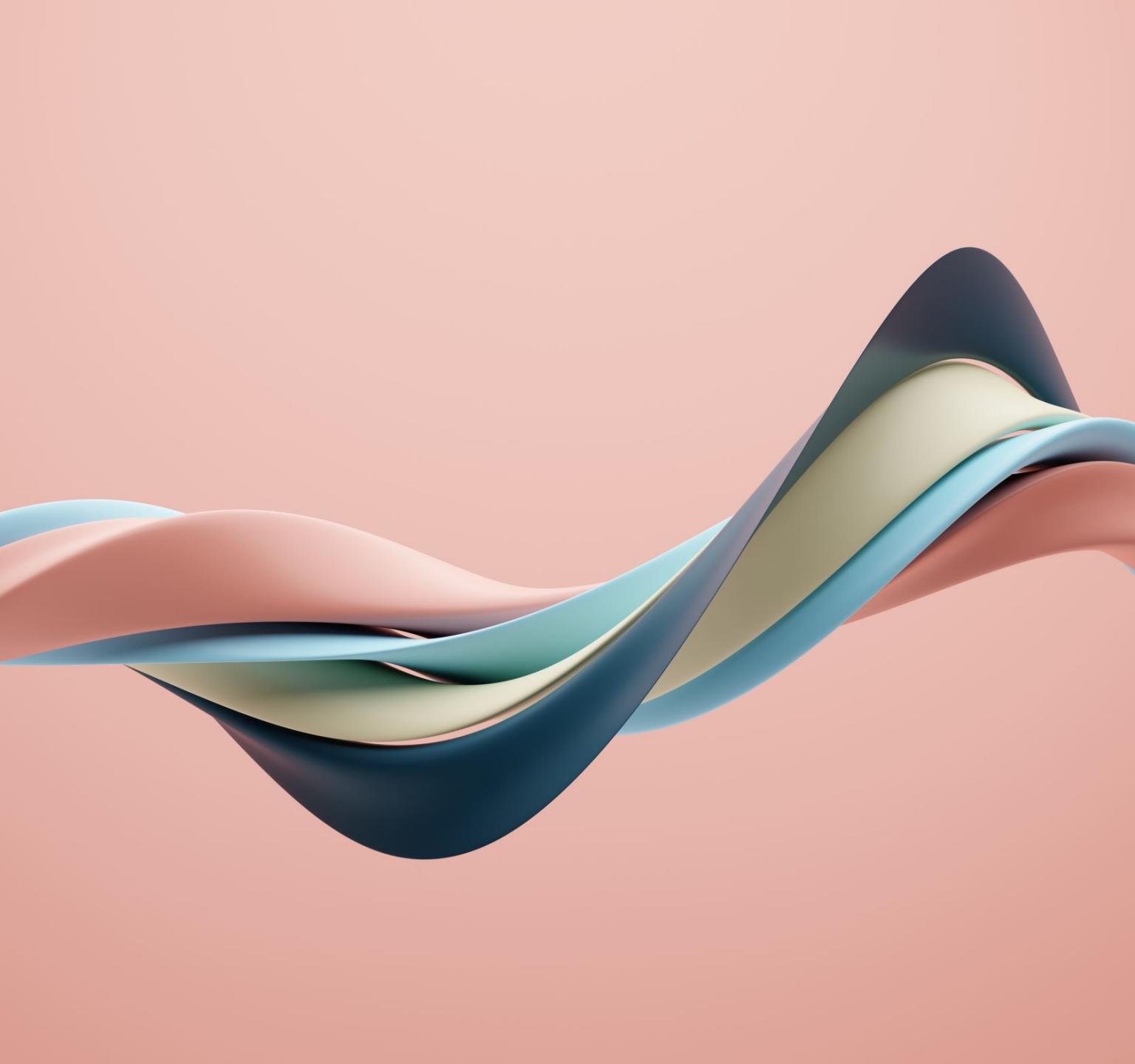




Simple Knowledge Data School

QUESTIONS



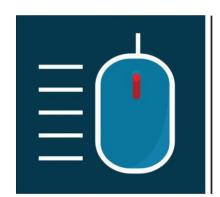


Simple Knowledge Data School

PYTHON ESSENTIALS – PART 1

(Beginner)

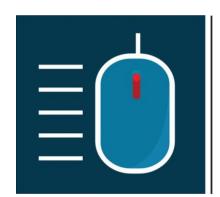




INTRODUCTION TO PYTHON AND PROGRAMMING

1
module





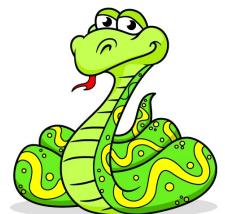
HOW DOES A COMPUTER PROGRAM WORK?

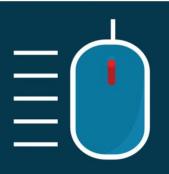


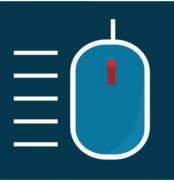


NATURAL LANGUAGE VS PROGRAMMING LANGUAGE

- Natural language is the language spoken by people
- programming language is intended for machines.
- Both languages contain important similarities, such as the differentiation they make between syntax and semantics, their purpose to communicate and the existence of a basic composition.





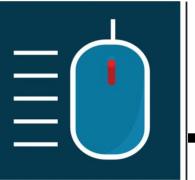


Alphabet - a set of symbols used to build words of a certain language

Lexis - (aka a dictionary) a set of words the language offers its users

Syntax - a set of rules (formal or informal, written or felt intuitively) used to determine if a certain string of words forms a valid sentence

Semantics - a set of rules determining if a certain phrase makes sense (e.g., "I ate a doughnut" makes sense, but "A doughnut ate me" doesn't)



Interpreter

vs

Compiler

DIFFERENCE BETWEEN

COMPILER INTERPRETER

READS ENTIRE PROGRAM AND LISTS ALL ERRORS AFTERWARDS.

MEMORY REQUIRED IS MORE DUE TO INTERMEDIATE OBJECT CODE

OVERALL EXECUTION TIME IS FASTER

DEBUGGING IS DIFFICULT AS YOU HAVE TO COMPILE EVERYTIME YOU CORRECT AN ERROR

EXAMPLE : C, C++

READS PROGRAM LINE BY LINE AND STOPS EXECUTION ON ENCOUNTERING ERROR

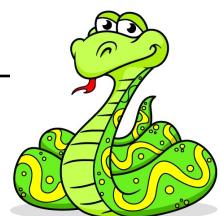
MEMORY EFFICIENT AS NO INTERMEDIATE CODE IS GENERATED

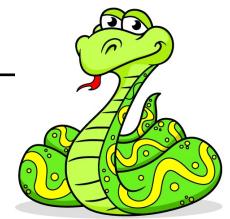
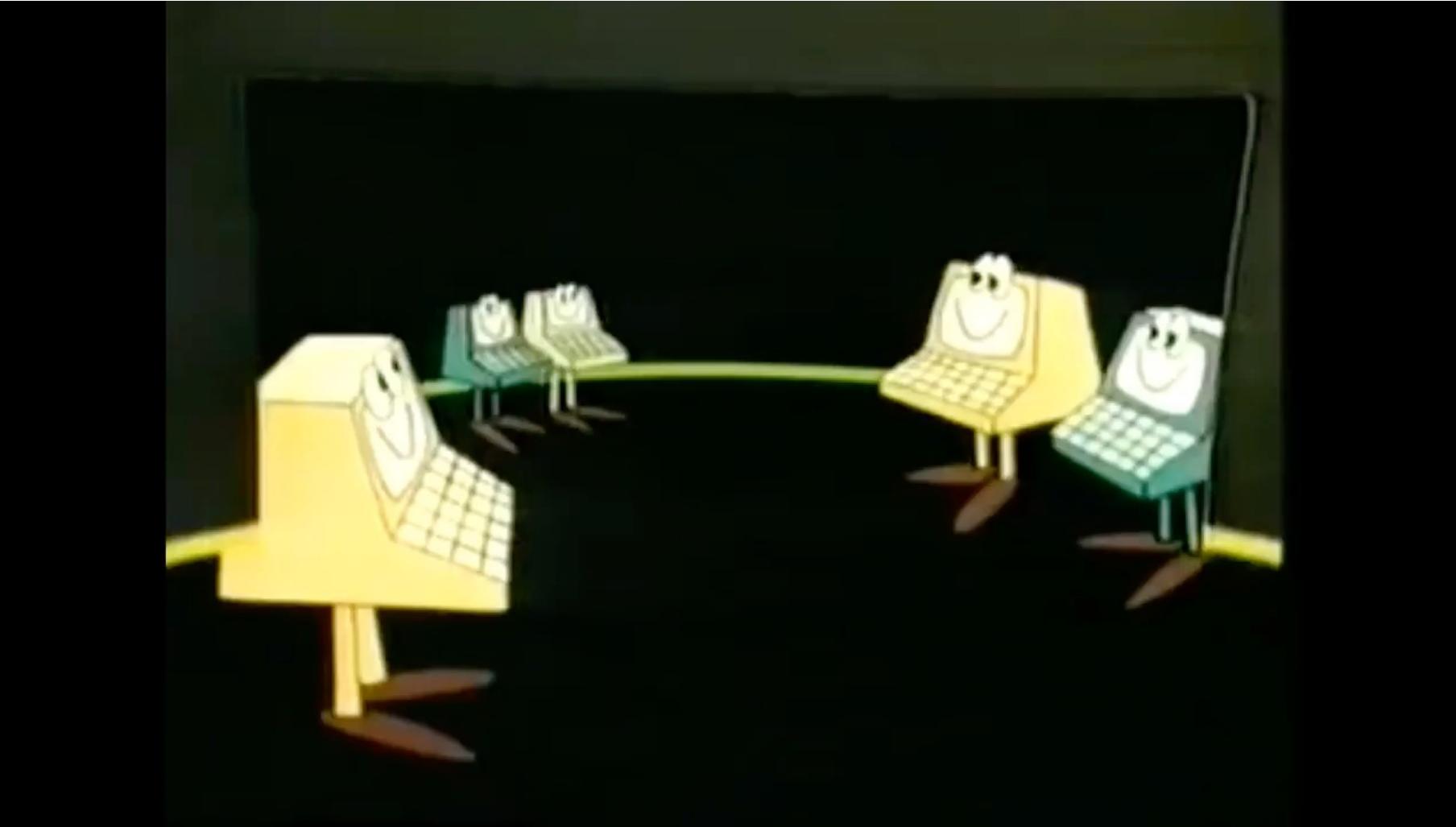
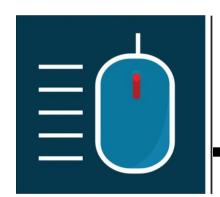
EXECUTION IS SLOWER AS AFTER EVERY STATEMENT THE INTERPRETER CHECKS FOR ERRORS

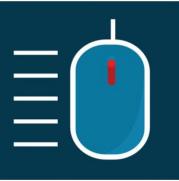
DEBUGGING IS EASY AS THE INTERPRETER IMMEDIATELY INDICATES THE ERRORS

EXAMPLE: BASIC,
PYTHON

- A compiled language is a programming language which are generally compiled and not interpreted. It is one where the program, once compiled, is expressed in the instructions of the target machine; this machine code is undecipherable by humans.
- An interpreted language is a programming language which are generally interpreted, without compiling a program into machine instructions. It is one where the instructions are not directly executed by the target machine, but instead read and executed by some other program.

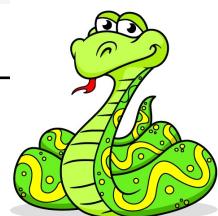






COMPILATION VS. INTERPRETATION - ADVANTAGES AND DISADVANTAGES

	COMPILATION	INTERPRETATION
ADVANTAGES	<ul style="list-style-type: none">the execution of the translated code is usually faster;only the user has to have the compiler - the end-user may use the code without it;the translated code is stored using machine language - as it is very hard to understand it, your own inventions and programming tricks are likely to remain your secret.	<ul style="list-style-type: none">you can run the code as soon as you complete it - there are no additional phases of translation;the code is stored using programming language, not machine language - this means that it can be run on computers using different machine languages; you don't compile your code separately for each different architecture.
DISADVANTAGES	<ul style="list-style-type: none">the compilation itself may be a very time-consuming process - you may not be able to run your code immediately after making an amendment;you have to have as many compilers as hardware platforms you want your code to be run on.	<ul style="list-style-type: none">don't expect interpretation to ramp up your code to high speed - your code will share the computer's power with the interpreter, so it can't be really fast;both you and the end user have to have the interpreter to run your code.



A large, stylized Python logo is positioned on the left side of the slide. It features a thick, coiled body in shades of blue and yellow, with a head and two small eyes. The Python is resting on a stack of four books. In front of the books are two laptops; the screen of the laptop on the left displays the text "WHAT IS PYTHON?".

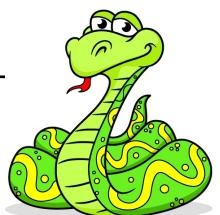
PYTHON
EXPLAINED

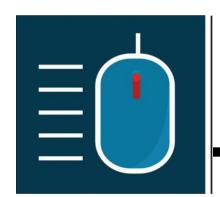
What is Python?



WHAT IS PYTHON

- Python is an interpreted, object-oriented, high-level programming language with dynamic semantics. Its high-level built in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development, as well as for use as a scripting or glue language to connect existing components together.

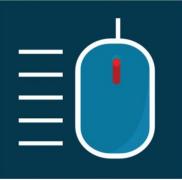




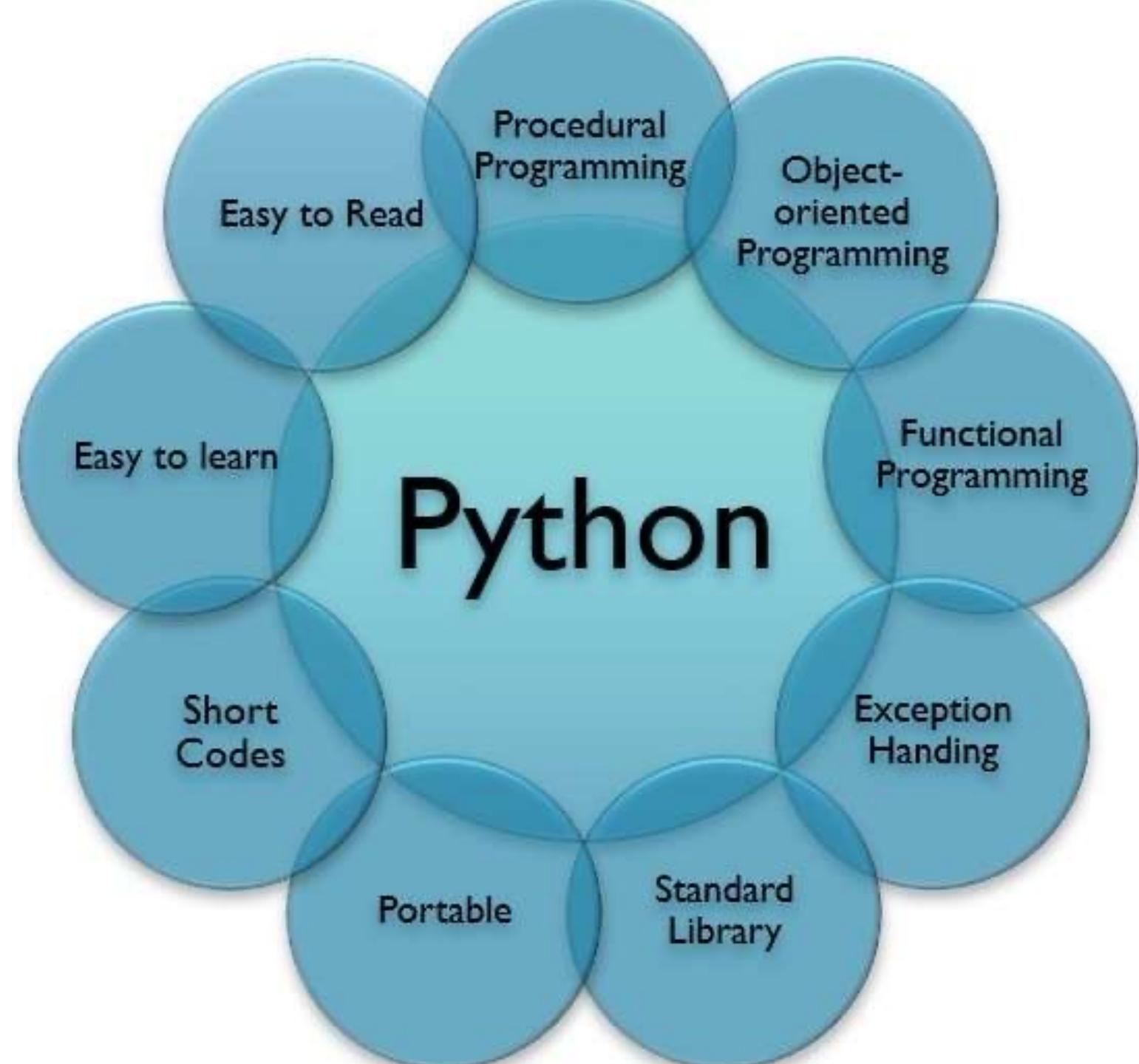
WHO CREATED PYTHON

Guido
van
Rossum





Python goals



WHAT MAKES PYTHON SPECIAL?

- Its easy to learn
- Its easy to teach
- Its easy to use
- Its easy to understand
- Its easy to obtain



Python is:
easy to learn,
easy to teach,
easy to use,
easy to understand,
easy to obtain.

Python Advantages and Disadvantages

Advantages



Improved Productivity



Interpreted Language



Dynamically Typed



Free and Open Source



Vast Libraries Support



Disadvantages



Slow Speed



Not Memory Efficient



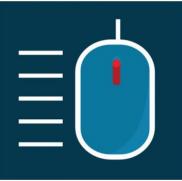
Weak in Mobile Computing



Database Access



Runtime Errors



PYTHON RIVALS



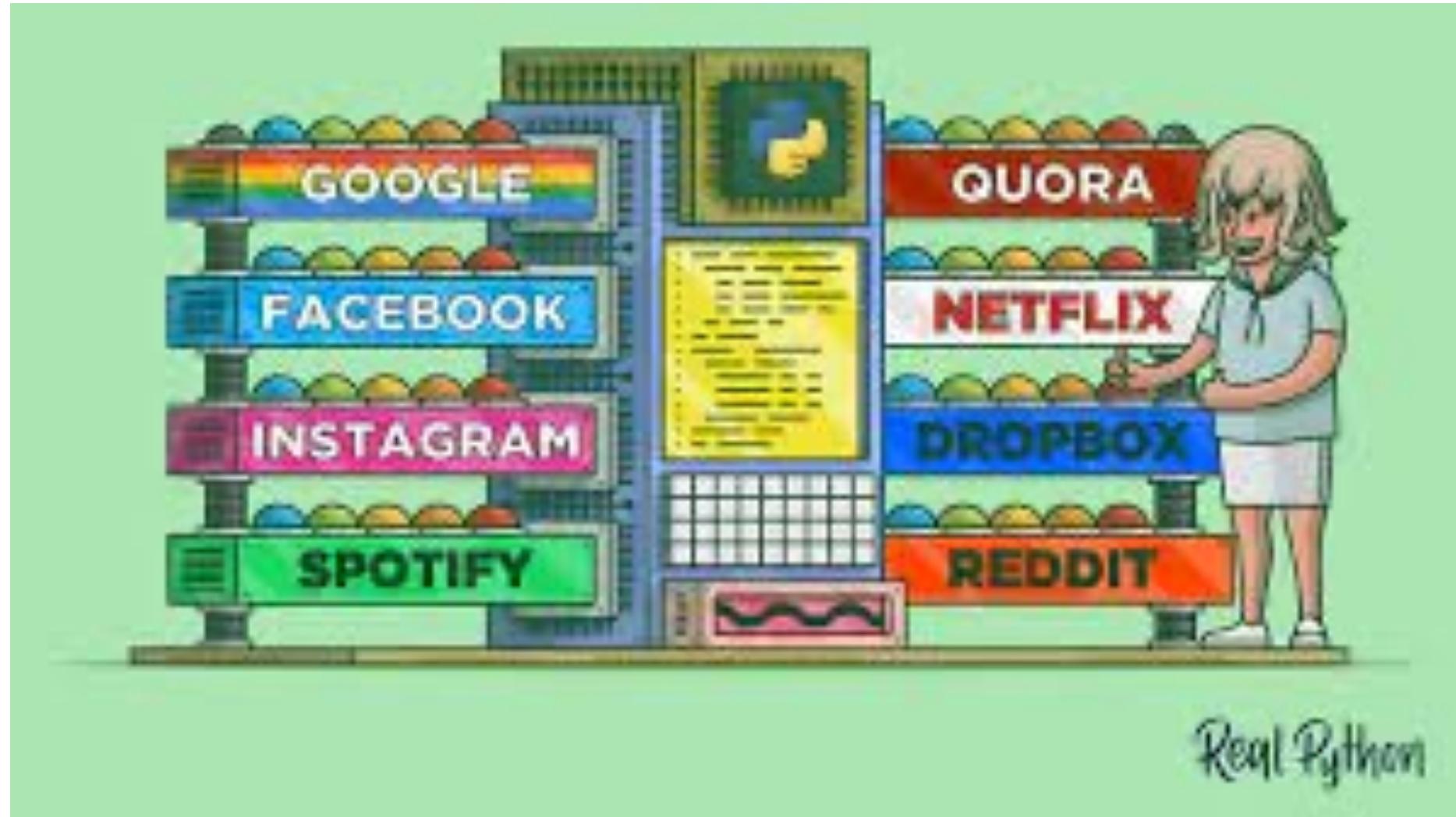
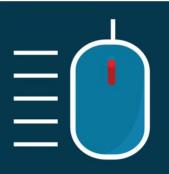
Python has two direct competitors, with comparable properties and predispositions.

Perl – a scripting language originally authored by Larry Wall

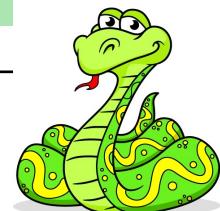
Ruby – a scripting language originally authored by Yukihiro Matsumoto.

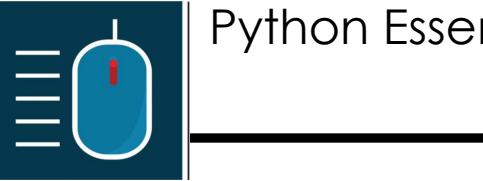
**WHERE CAN
WE SEE
PYTHON IN
ACTION?**





Real Python





WHY NOT PYTHON?

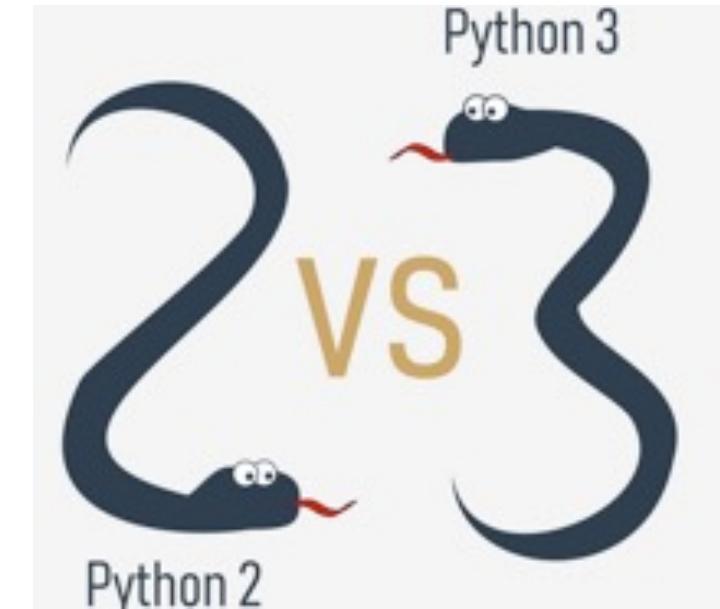
- low-level programming
- applications for mobile devices:

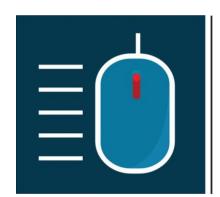




PYTHON VERSIONS

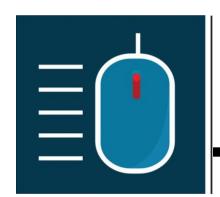
- Python 3 is the newer (or to be more precise, the current) version of the language. It's going through its own evolutionary path, creating its own standards and habits.





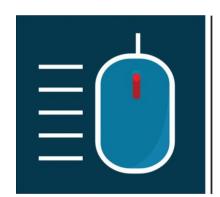
PYTHON AKA..





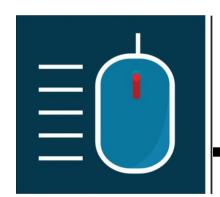
CYTHON





JYTHON





PYPY & RPYTHON



pypy



DOWNLOADING AND INSTALLING PYTHON

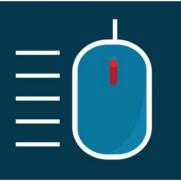
<https://www.python.org/downloads/>

The screenshot shows the Python.org Downloads page. The top navigation bar includes links for About, Downloads, Documentation, Community, Success Stories, News, and Events. The Downloads menu is open, showing options like All releases, Source code, Windows, macOS, Other Platforms, Docker images, License, and Alternative Implementations. The macOS section displays a large image of a hot air balloon with a yellow and white basket. A callout box highlights the "Python 3.10.7" download link, which is also enclosed in a red rectangle. Below the download links, a note states: "Not the OS you are looking for? Python can be used on many operating systems and environments." and a link to "View the full list of downloads".

Active Python Releases

For more information visit the [Python Developer's Guide](#).

Python version	Maintenance status	First released	End of support	Release schedule
3.10	bugfix	2021-10-04	2026-10	PEP 619
3.9	security	2020-10-05	2025-10	PEP 596
3.8	security	2019-10-14	2024-10	PEP 569
3.7	security	2018-06-27	2023-06-27	PEP 537
2.7	end-of-life	2010-07-03	2020-01-01	PEP 373

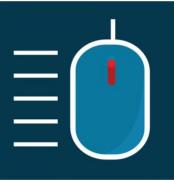


STARTING YOUR WORK WITH PYTHON

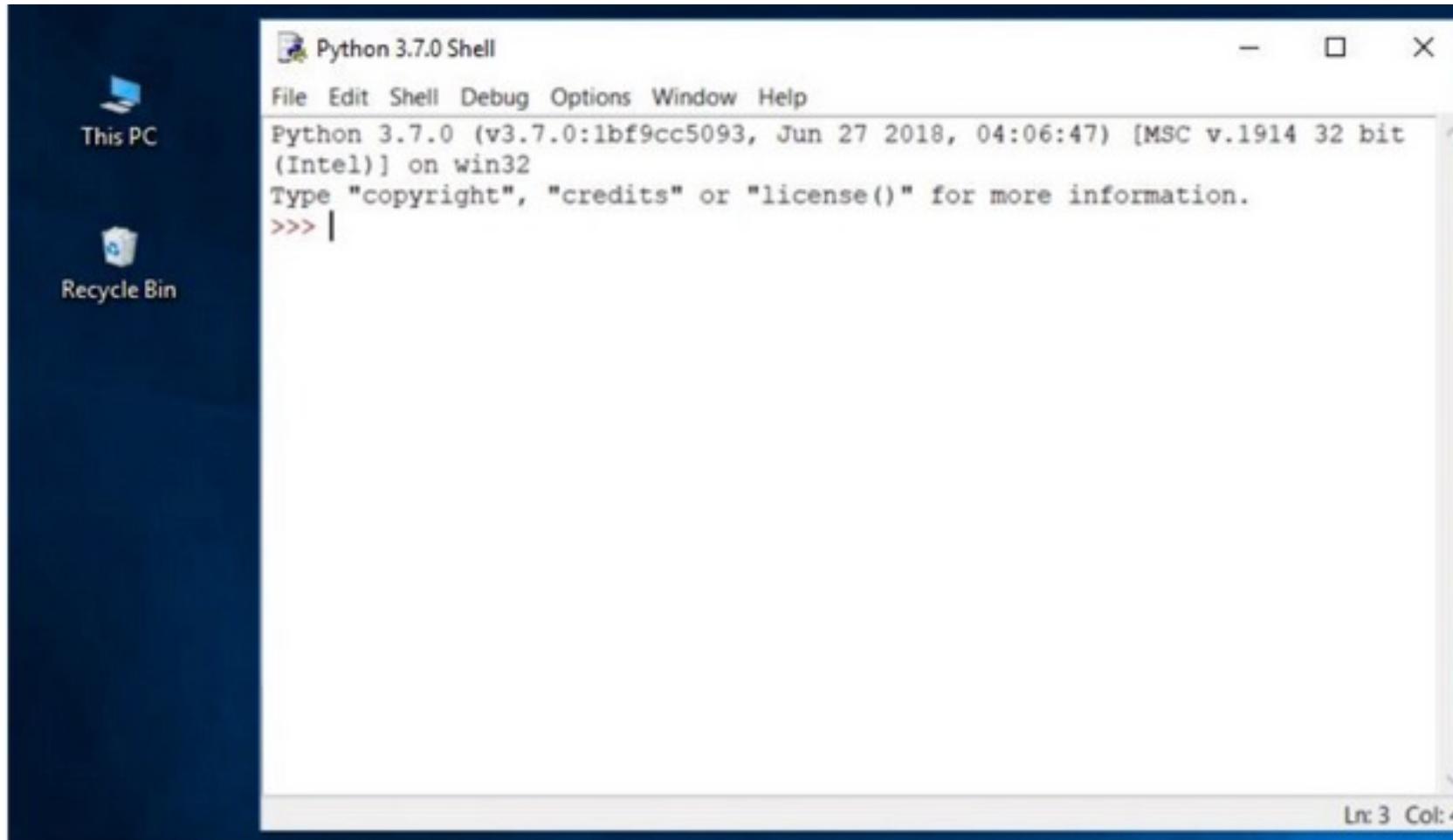
A screenshot of the IDLE Shell 3.10.5 interface. The title bar reads "IDLE Shell 3.10.5". The main window displays the following text:

```
Python 3.10.5 (v3.10.5:f377153967, Jun  6 2022, 12:36:10) [Clang 13.0.0 (clang-1300.0.29.30)] on darwin
Type "help", "copyright", "credits" or "license()" for more information.
```

The cursor is positioned at the start of a new line after the prompt. In the bottom right corner of the window, there is a status bar with the text "Ln: 3 Col: 0".



STARTING YOUR WORK WITH PYTHON





Helpful Colours

Purple is for built-in functions for example `print()` is a built in function.

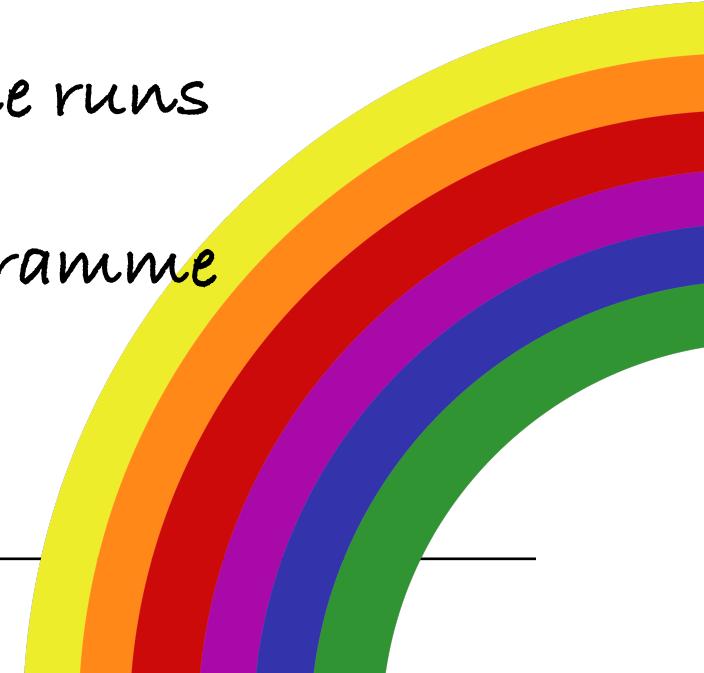
Orange is for key words that have special meaning like "if" and "true".

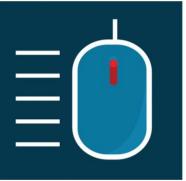
Green is for all text that appears in quotation marks.

Blue is for the output text from when your programme runs

Red is for error messages that appear when your programme does not run properly

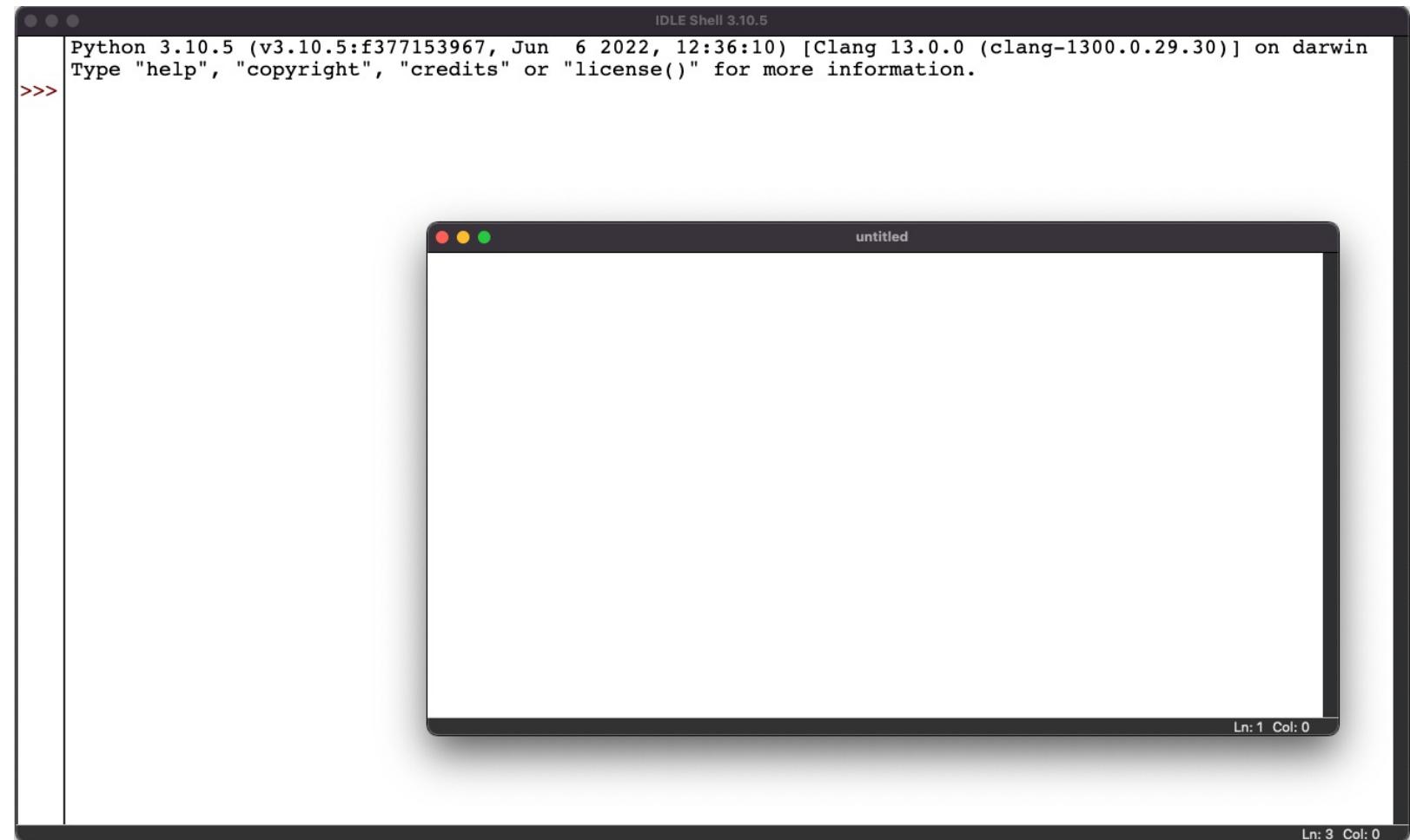
Black is for all the rest of the text in the programme

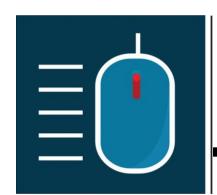




HOW TO WRITE AND RUN YOUR VERY FIRST PROGRAM

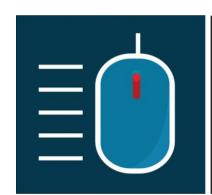
Windows / MAC - Click
File in the IDLE menu
and choose **New file**



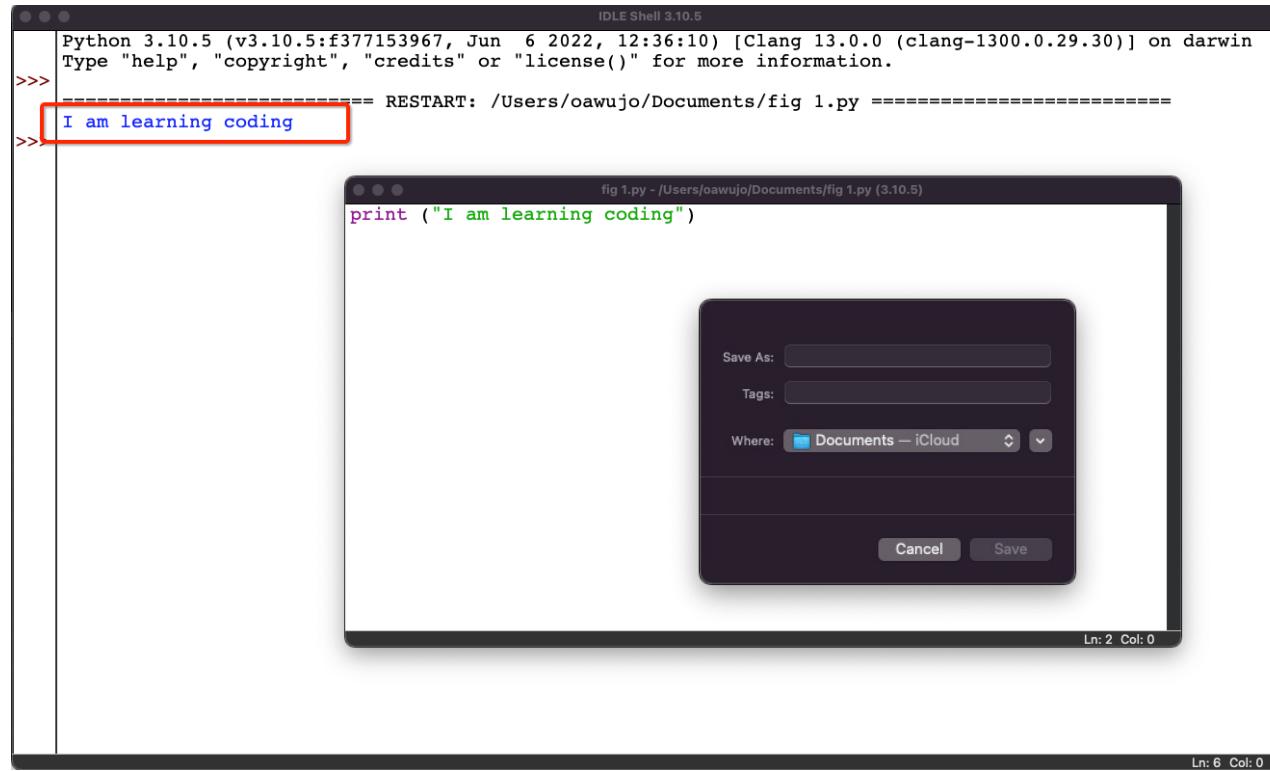


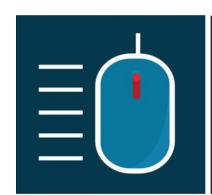
HOW TO WRITE AND RUN YOUR VERY FIRST PROGRAM

The image shows a screenshot of the Python IDLE environment. At the top, a terminal window titled "IDLE Shell 3.10.5" displays Python version information: "Python 3.10.5 (v3.10.5:f377153967, Jun 6 2022, 12:36:10) [Clang 13.0.0 (clang-1300.0.29.30)] on darwin". It also includes a help message: "Type "help", "copyright", "credits" or "license()" for more information." Below the terminal is a code editor window titled "*untitled*" containing the single-line print statement "print ('I am learning coding')". The status bar at the bottom of the code editor shows "Ln: 1 Col: 30". A horizontal line at the bottom of the code editor indicates the end of the code block. The entire interface is set against a dark background.

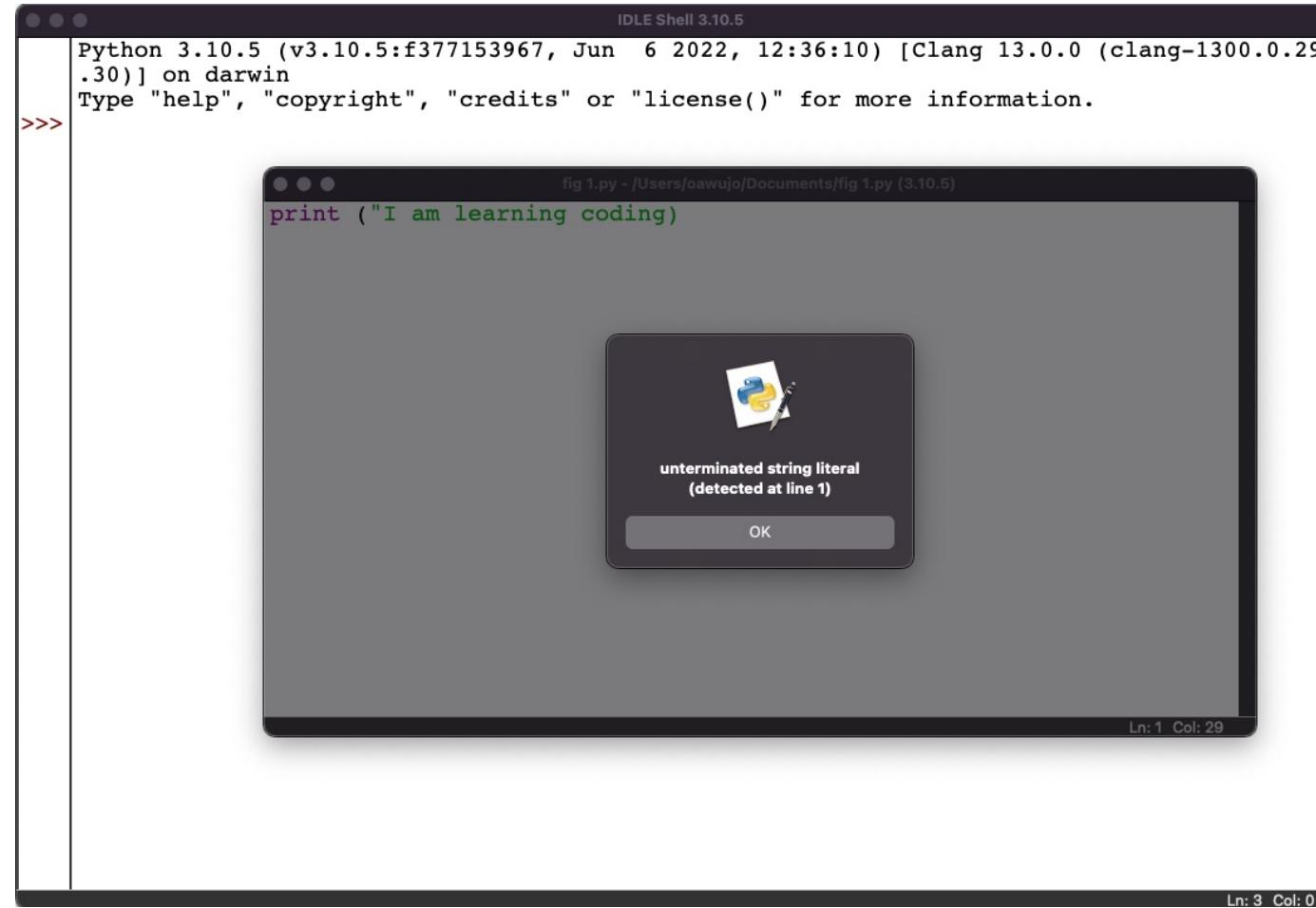


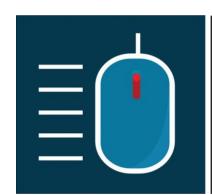
HOW TO WRITE AND RUN YOUR VERY FIRST PROGRAM





HOW TO SPOIL AND FIX YOUR CODE





HOW TO SPOIL AND FIX YOUR CODE

A screenshot of the IDLE Shell 3.10.5 interface. The title bar reads "IDLE Shell 3.10.5". The window displays the following text:

```
Python 3.10.5 (v3.10.5:f377153967, Jun  6 2022, 12:36:10) [Clang 13.0.0 (clang-1300.0.29.30)] on darwin
Type "help", "copyright", "credits" or "license()" for more information.

>>> ===== RESTART: /Users/oawujo/Documents/fig 1.py =====
Traceback (most recent call last):
  File "/Users/oawujo/Documents/fig 1.py", line 1, in <module>
    prit ("I am learning coding")
NameError: name 'prit' is not defined. Did you mean: 'print'?
>>> |
```

The word "prit" is highlighted in red, indicating a spelling mistake. The status bar at the bottom right shows "Ln: 9 Col: 0".



Congratulations!

You have completed Module 1
