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INTRO TO PYTHON

February 3, 2020 **Prepared by Niti / TDMDAL**

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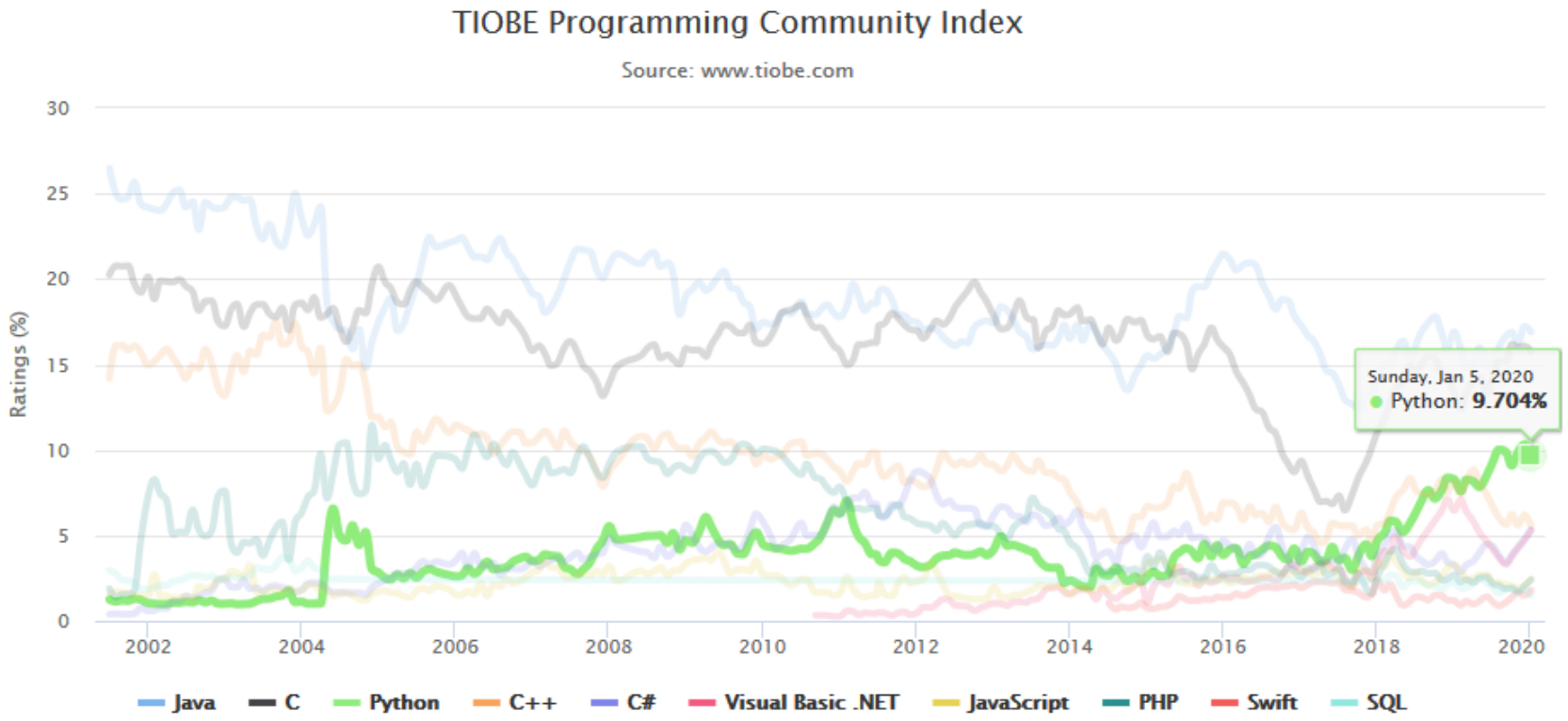
Agenda

1. Python’s Popularity
2. Data Structures
3. Programming Structures
4. Functions
5. Third Party Modules for Data Science

Python's Popularity

In 2019, Python became the biggest gainer in the Tiobe index of language popularity, again!



Source: https://www.tiobe.com/tiobe-index/

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Python's Popularity

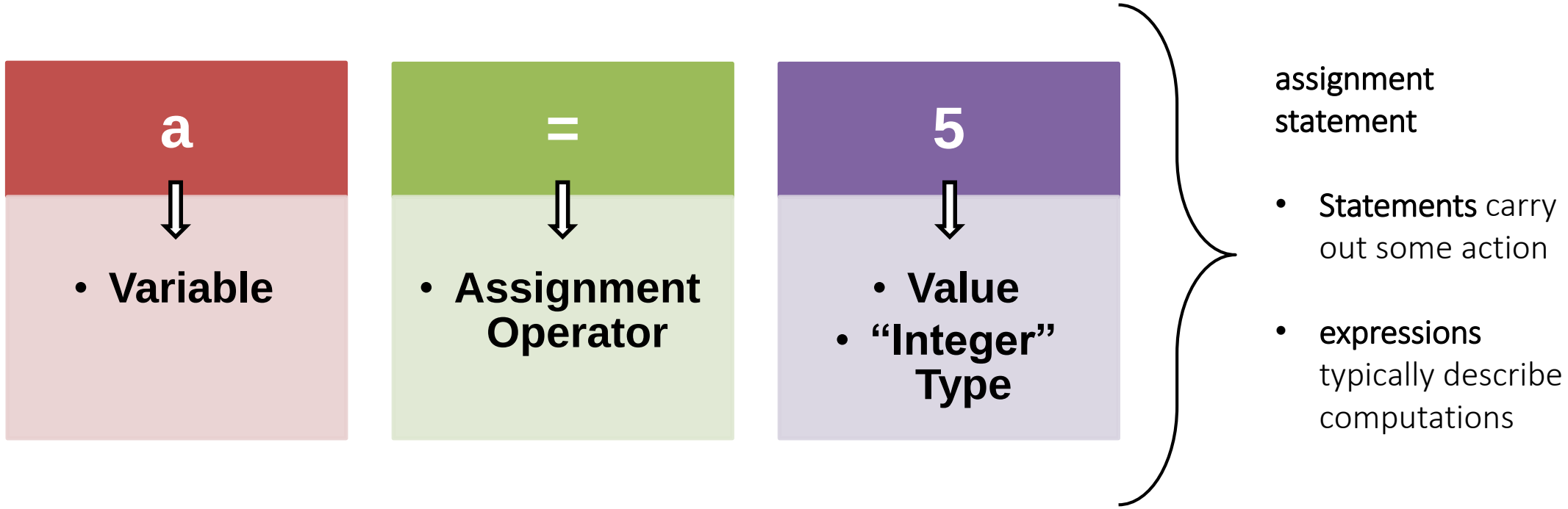
1. Statistical analysis
2. Scientific computing
3. Machine learning
4. Data visualization
5. Artificial intelligence
6. Others:
    a) Scripting & automation
    b) Web development
    c) Systems testing & prototyping
    d) Desktop & mobile applications
    e) Education!

Data Structures

Data Structures

1. Basic
    i. Values
    ii. Types
    iii. Variables
2. Native to Python
    i. List
    ii. Dictionary

Data Structures: Basic



- A program works with values
- Values can be numbers, texts and/or special characters
- Values belong to different **data types**

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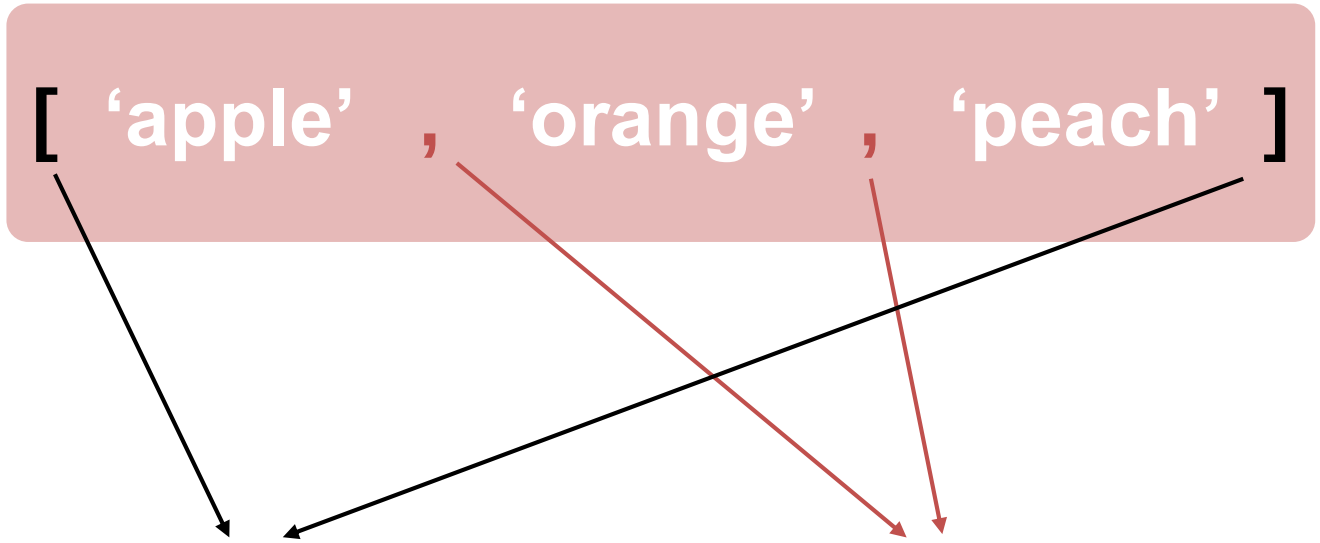
1. LIST

- Mutable
- Ordered
- Sequence of items



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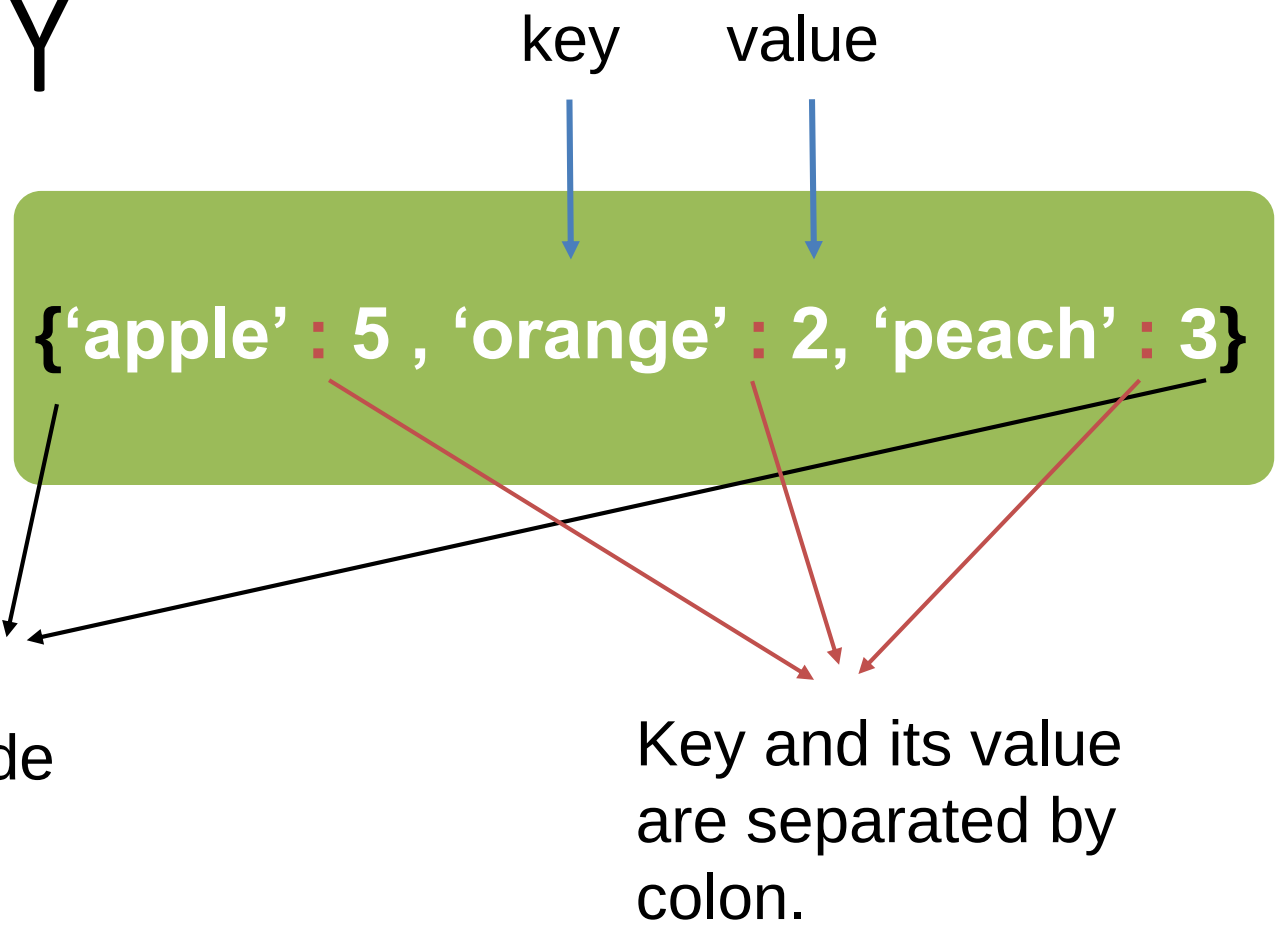
2. DICTIONARY

- Mutable
- Unordered
- Key-value pairs



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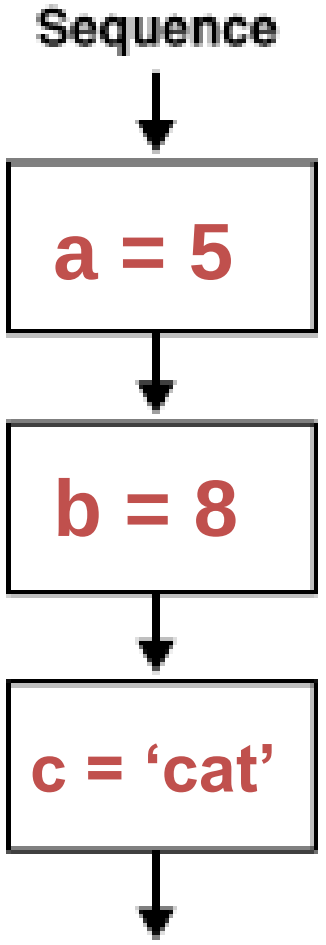
Programming Structures

Programming Structures

1. Sequential
2. Iteration
3. Conditional

1. SEQUENIAL

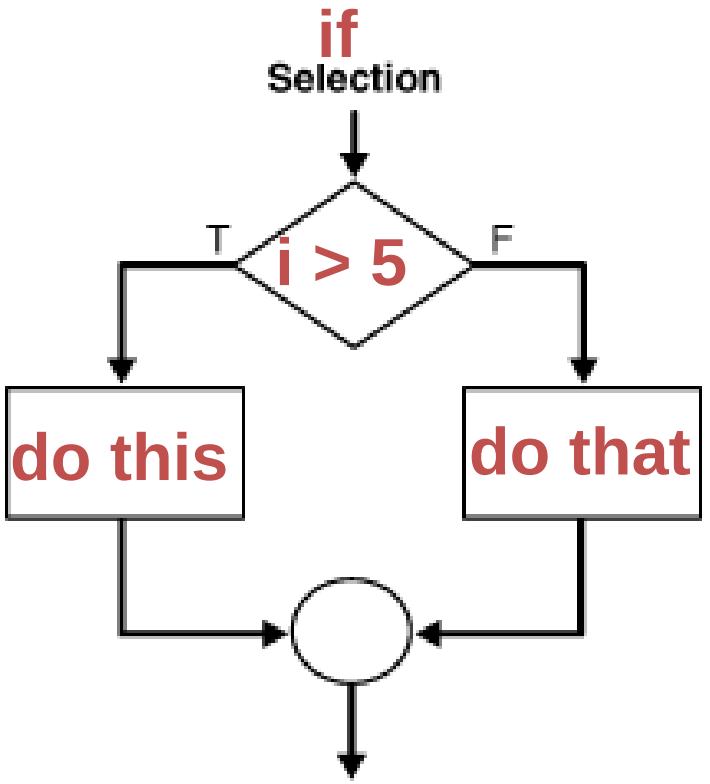
Programs are mostly written sequentially, meaning the first line of program runs first followed by the program in the second line, then the third line and so on.



2. Conditional

Programs become more useful when we can change its behavior given a condition is satisfied.

numlist = [4,6,10, 15]



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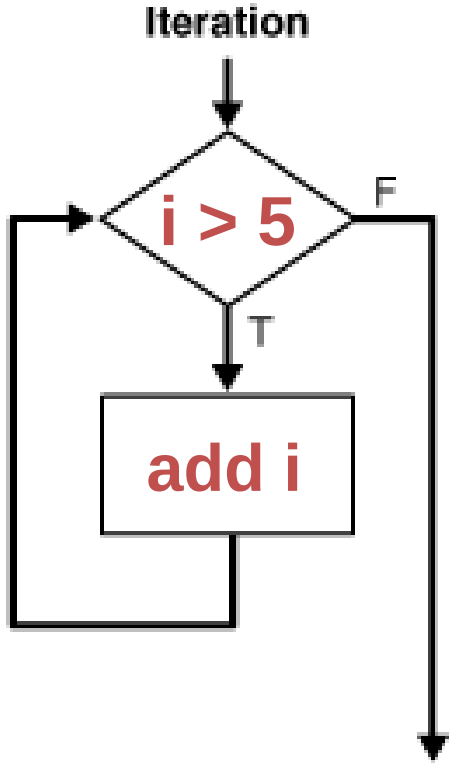
3. ITERATION

Programs becomes powerful when the same block of code can be repeatedly executed on either identical tasks or similar tasks.

numlist = [4,6,10,15]
newlist = [6,10,15]

for



Go to next element or end

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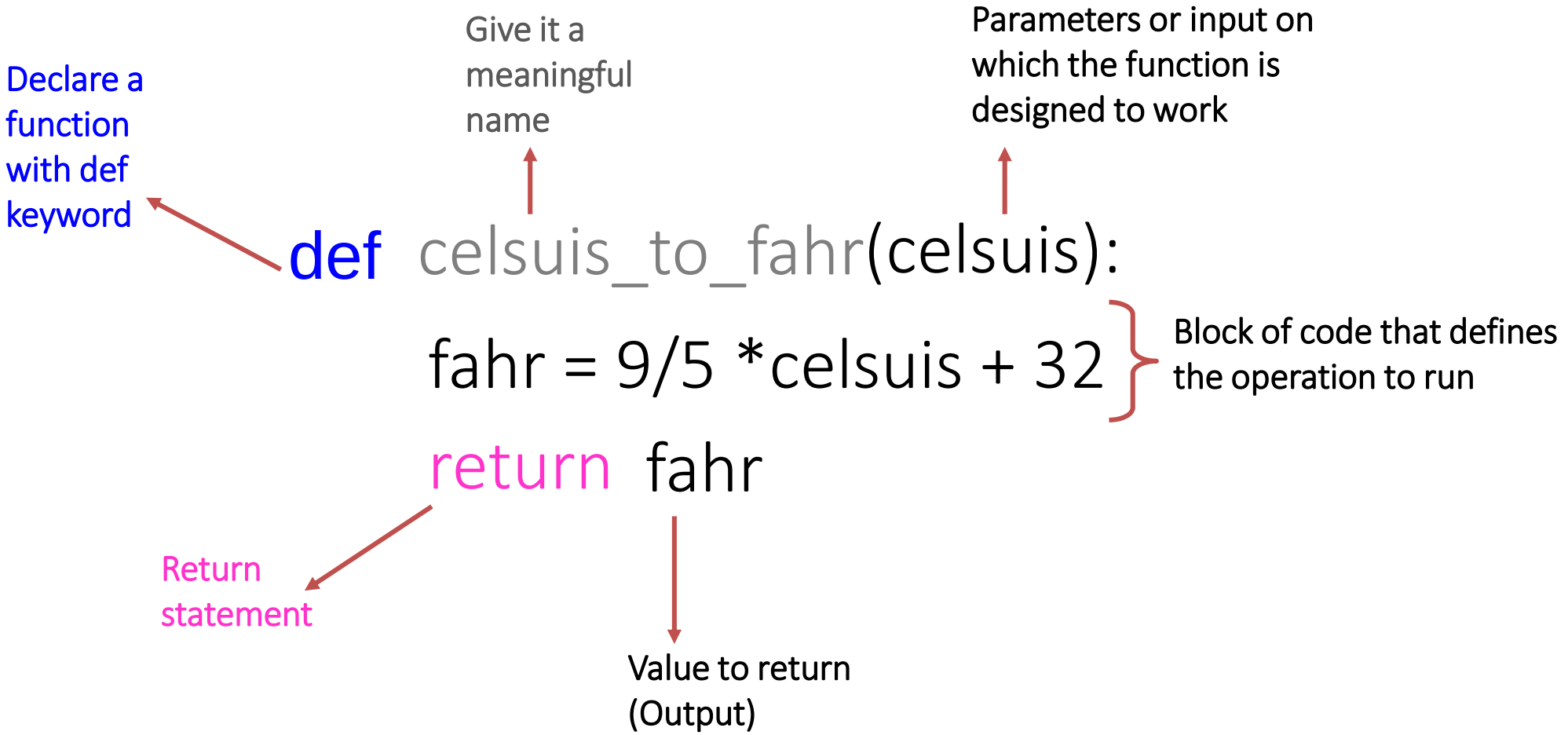
Functions

Functions

1. Custom functions
2. Built-in functions
3. Methods
4. Third-party packages

Functions: Custom Functions



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Functions: Custom Functions

```
def celsuis_to_fahr(celsuis):
    fahr = 9/5 *celsuis + 32
    return fahr
```

Functions: Built-in Functions

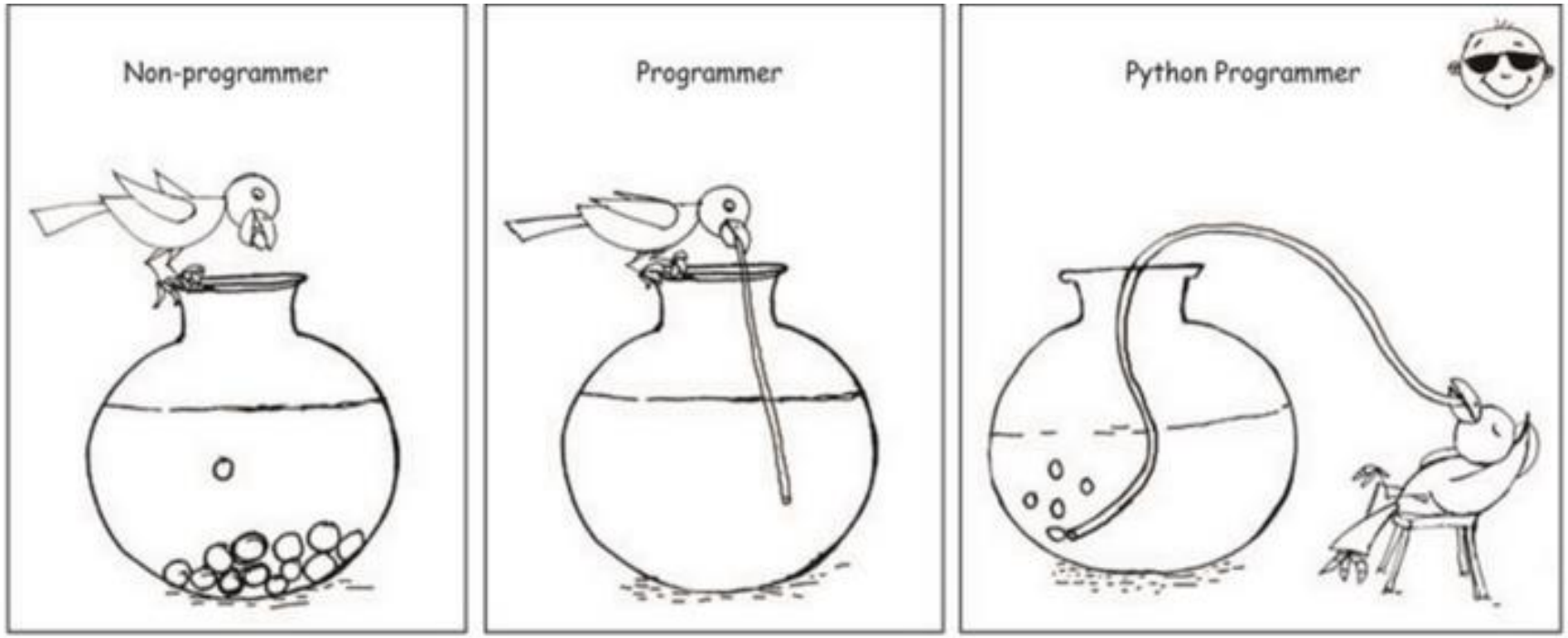
- Python interpreter has a number of functions and types built into it that are always available.
- print() is an example of built-in function. It prints the given object to the standard output device (screen) or to the text stream file.
- Here is the list of Python's built-in functions.

Functions: Methods

- Functions that are attached to specific class of objects.
- Methods are accessed using the dot expression.
- Methods available to an object can be viewed using "dir" function.

Functions: Third Party Packages

- Python has an active supporting community of contributors and users who also make their software available for other Python developers to use under its open source license terms.
- The SciPy stack is a Python based eco-system of open-source software for mathematics, science, and engineering. In particular, these are some of its core packages that we will use:
  - NumPy
  - Pandas
  - Matplotlib
- Scikit-Learn is another Python's go-to package for Machine Learning.



Who wants to become a Python Programmer?

Questions?

Thank you