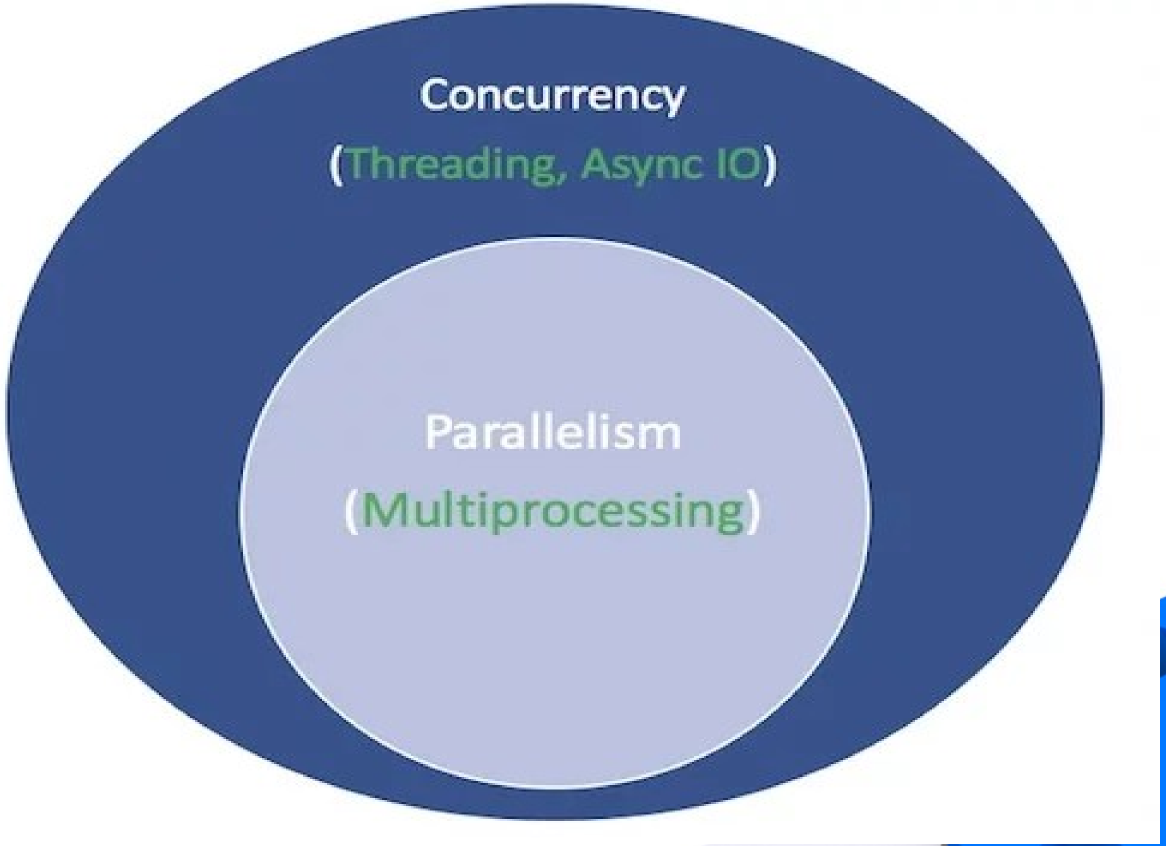
Concurrency/Parallelism Options in Python 3

- Sagar Chalise



Src: realpython.com

Background

- Global Interpreter Lock (GIL)
- Pickle
- Concurrency and Parallelism in python.
- Where CPU is related especially mathematical operations. Go for parallelism. CPU Bound i.e. Multiple Process
- I/O related operations such as network, connections,

  files etc. Go for concurrency. IO Bound. i.e threads or asyncio

Modules Available

- _thread and threading
- `multiprocessing`
- `concurrent.futures`: python3 only
- `asyncio`: python3.4 and above

Concurrent.futures

- *`from concurrent.futures import Executor`*
- Executor Class: Abstract Interface

  - map for ordered execution

  - submit for execution
- ThreadPoolExecutor: based on threading
- ProcessPoolExecutor: based on multiprocessing
- Future Object: Results
- as_completed and wait

asyncio

- `asyncio` module
  - introduced in python 3.4
  - still progressing
- Asynchronous Programming
- Event Loop
- Task
- Future Object
- async/await

Utilities

- Asgi
- https://github.com/aio-libs
- Some sample implementations

Finally

- Use Python3 . Python2 will be EOL from 2020
- Use Black
- Use pytest
- Use flake8 or pylint.
- Use venv [virtualenv] and poetry [pipenv]
- Not sure of structure use cookiecutter.

Github: sagarchalise