# Terminology of Computing Environments

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# Terms

- Terminal
- Shell, Bash
- Text editor, Vim
- Python interpreter
- Terminal Emulator
- PC, Local shell, local software
- IDLE
- Jupyter Notebook

# Terminal

- A keyboard + a text display

  - Physically connected to a computer (in the computer room)
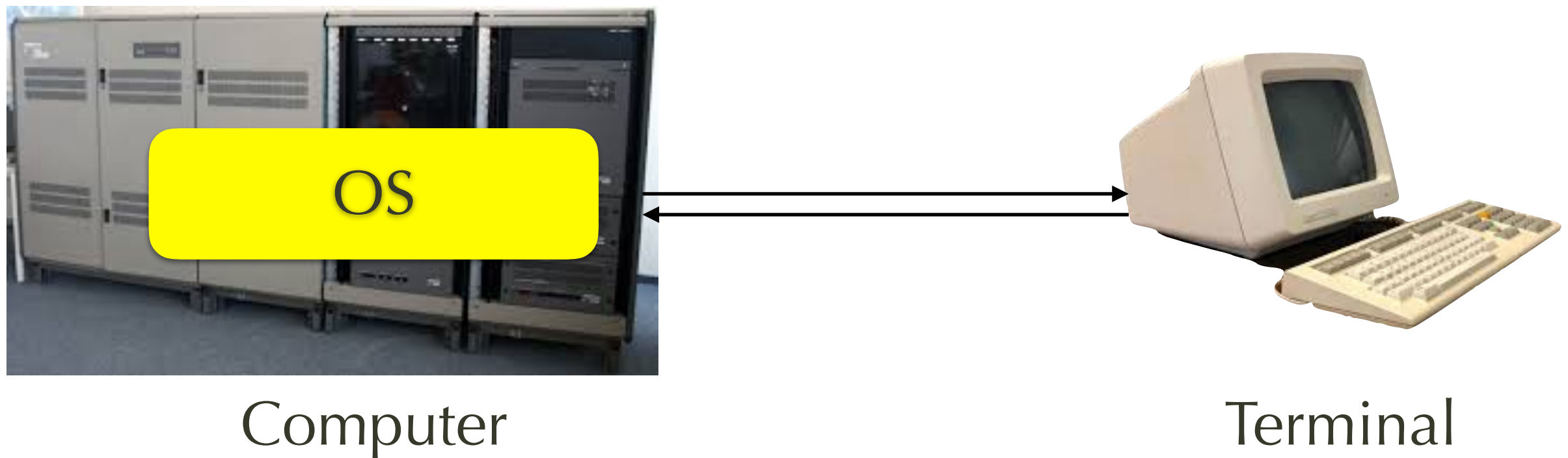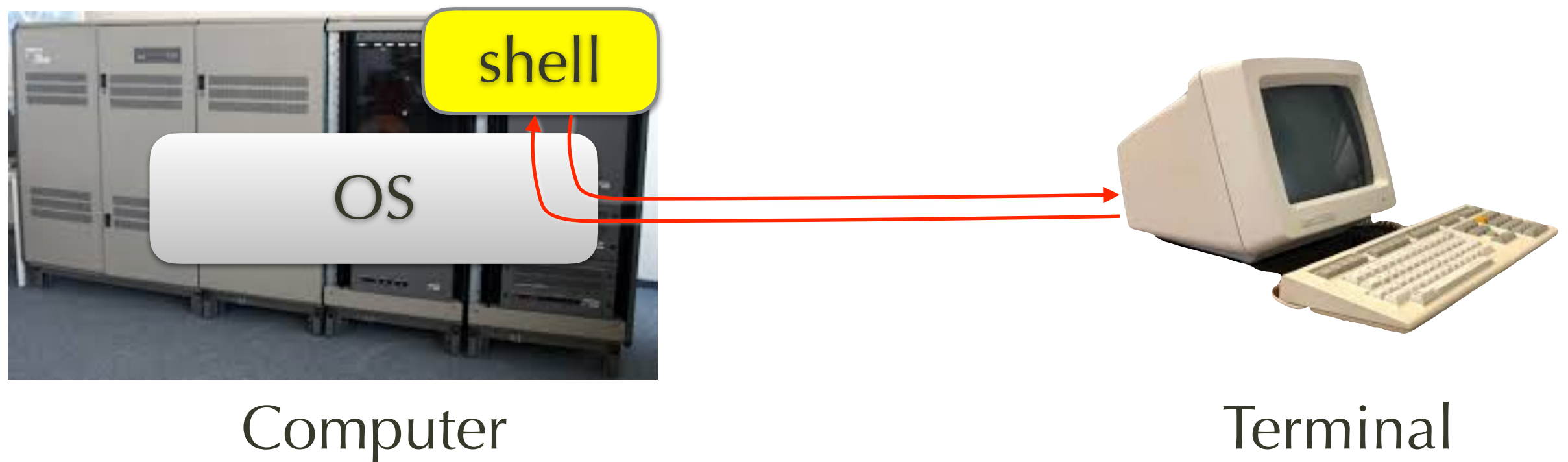


Computer

Terminal

# Operating System (OS)

- The software that manages a computer's resources

  - computing, input/output, storage,

  - e.g.: Unix (macOS, Linux), Windows



Computer                                      Terminal

# Shell

- A command interpreter program
  - Unix-like shells: sh, csh, bash, ksh, …
  - Windows shells: DOS, PowerShell, …
  - Graphical shells: Windows, iOS, macOS, Android



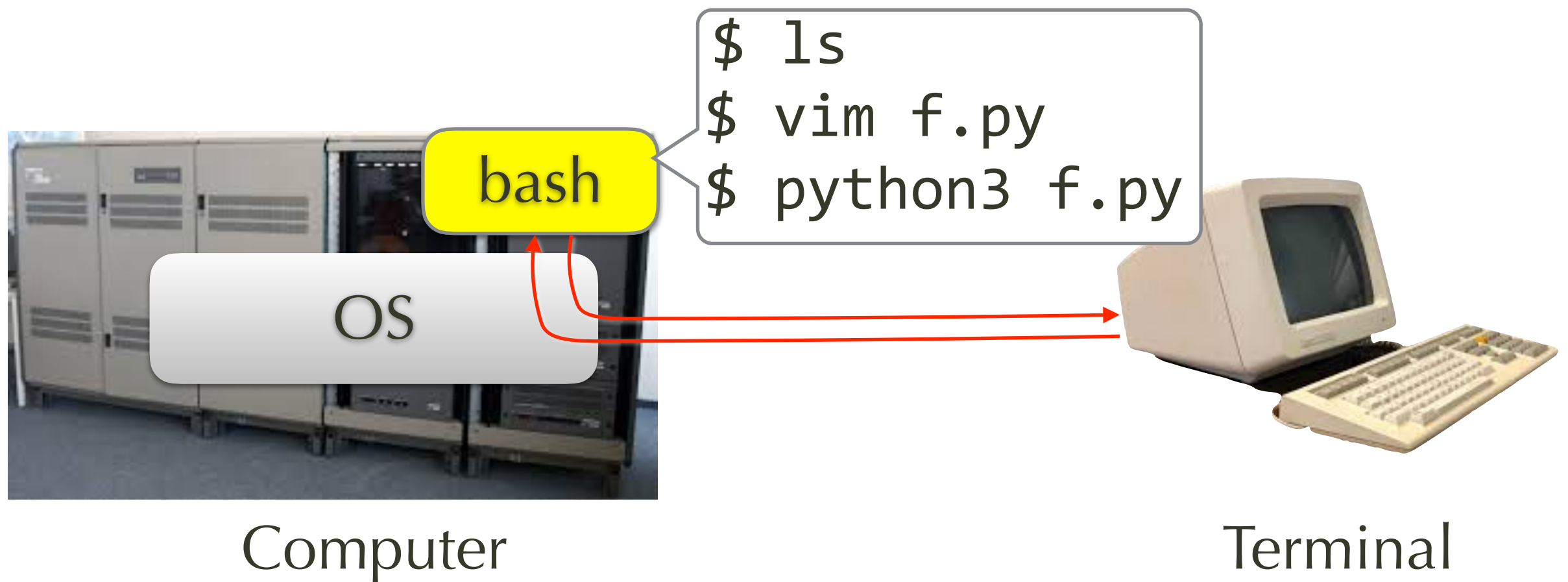Computer                                    Terminal

# What can a shell do?

- Interpret commands

- Launch programs

  - copy/rename files, list files

  - run text editor, file transfer, ...

  - run Python interpreter, run another shell, ...

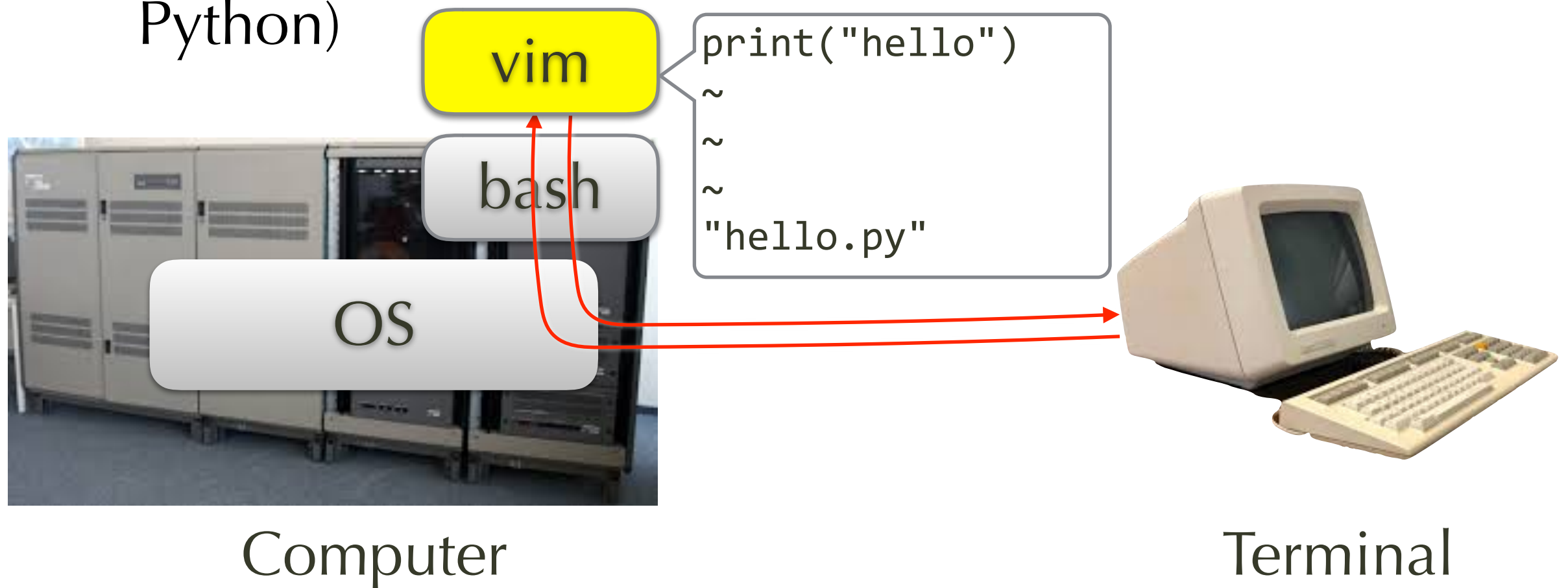- Suspend, stop (kill) running programs

# Bash

- A Unix-like shell
  - "Bourne-Again Shell"
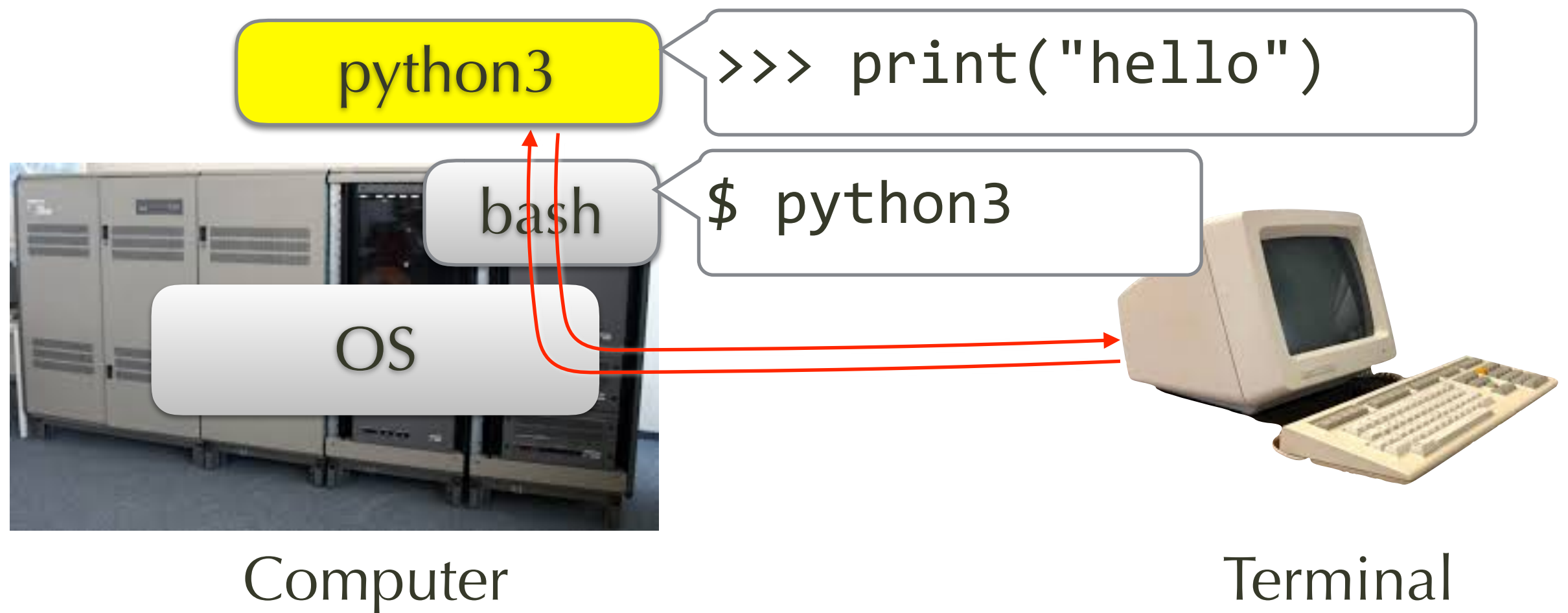  - Open-source, most popular, runs on most OS's

```
$ ls
$ vim f.py
$ python3 f.py
```

bash

OS

Computer

Terminal

# vim

- "Vi-improved"
  - Vi = "Visual" text editor, on most Unix systems
  - can edit, save plain text files (e.g., source in Python)

vim

bash
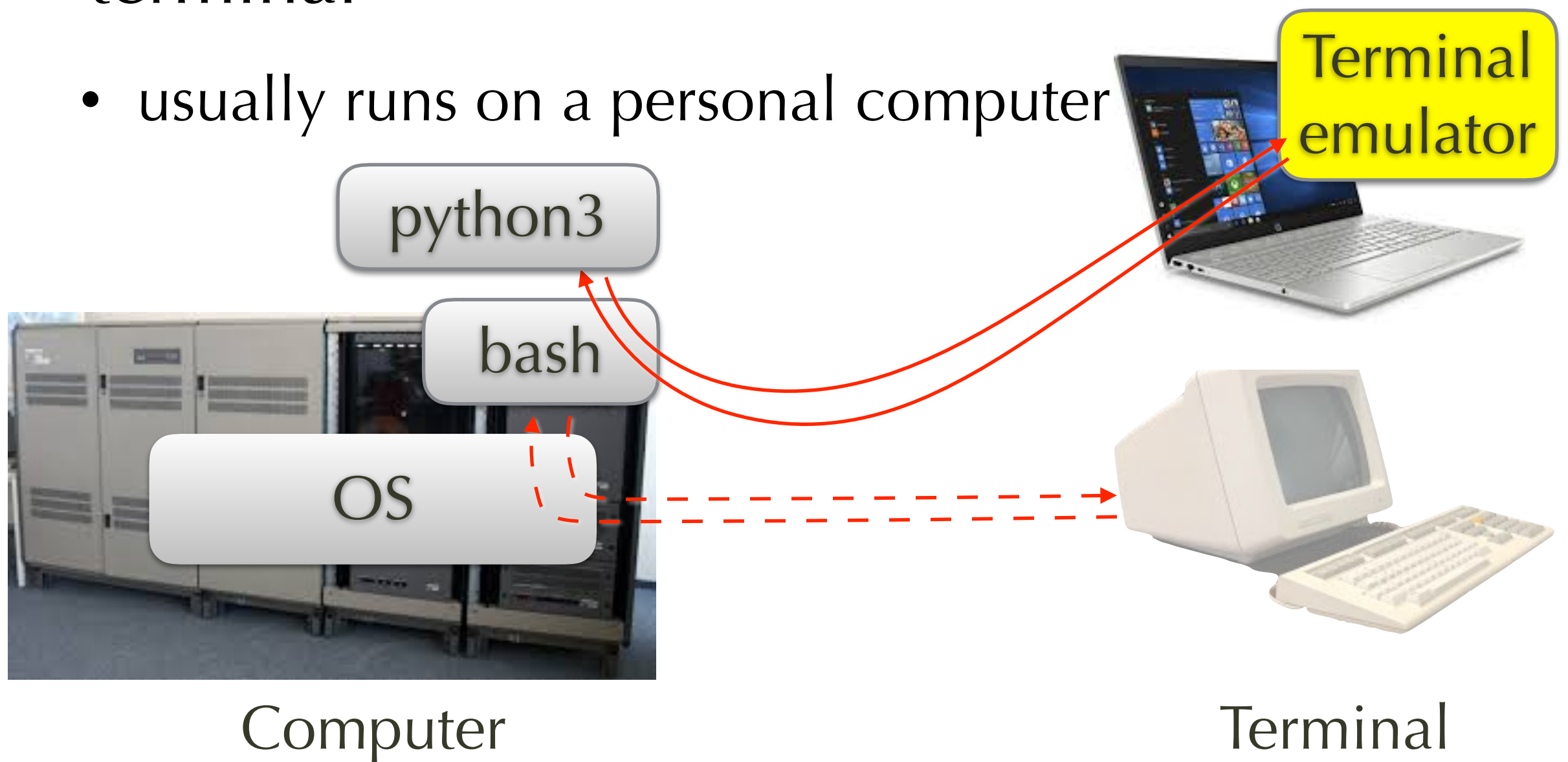
OS

```
print("hello")
~
~
~
"hello.py"
```

Computer

Terminal

# Python

- A Python-language interpreter
  - Interactive mode => Python shell



`python3`

`>>> print("hello")`

`bash`

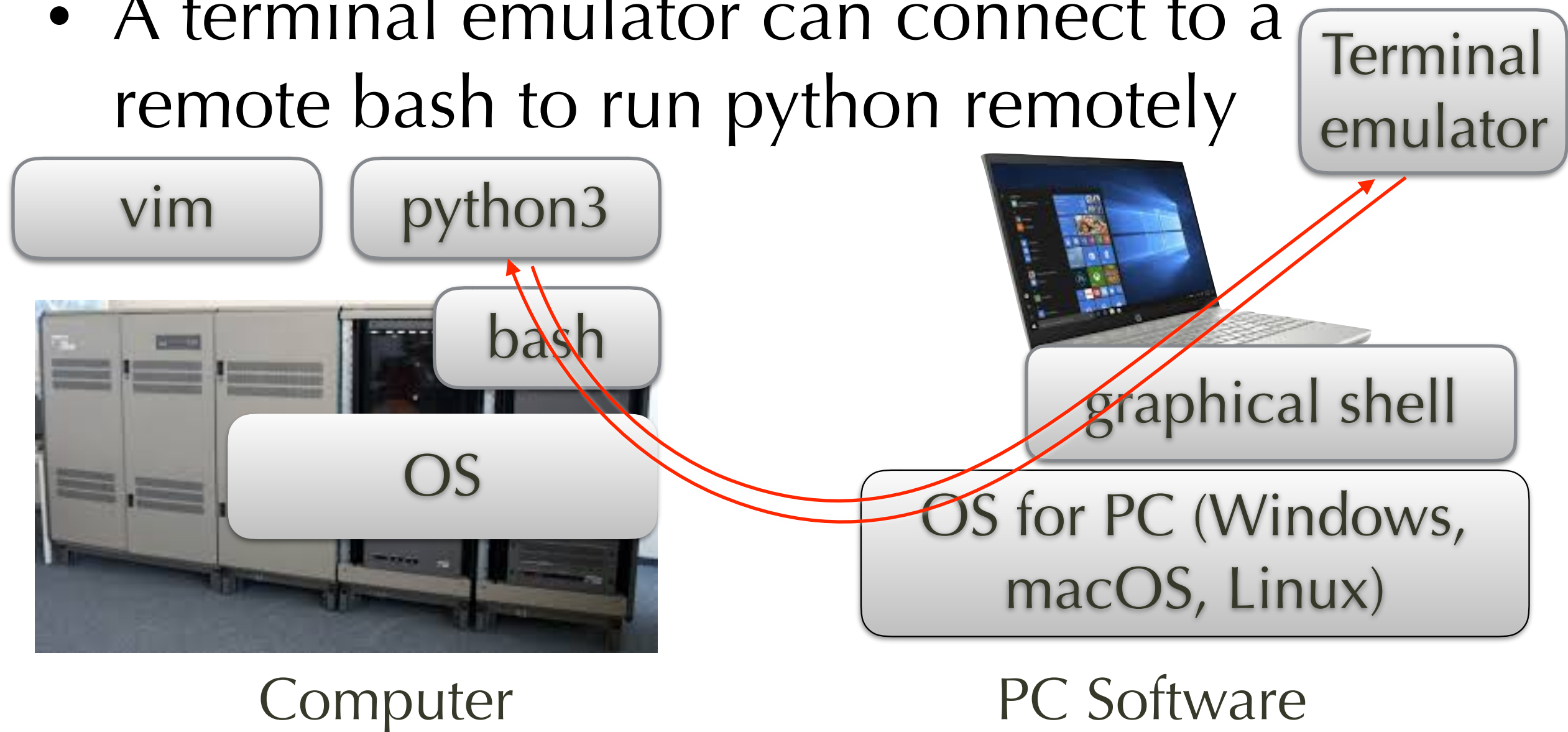`$ python3`

`OS`

Computer

Terminal

# Terminal Emulator

- An application program that emulates a terminal

  - usually runs on a personal computer
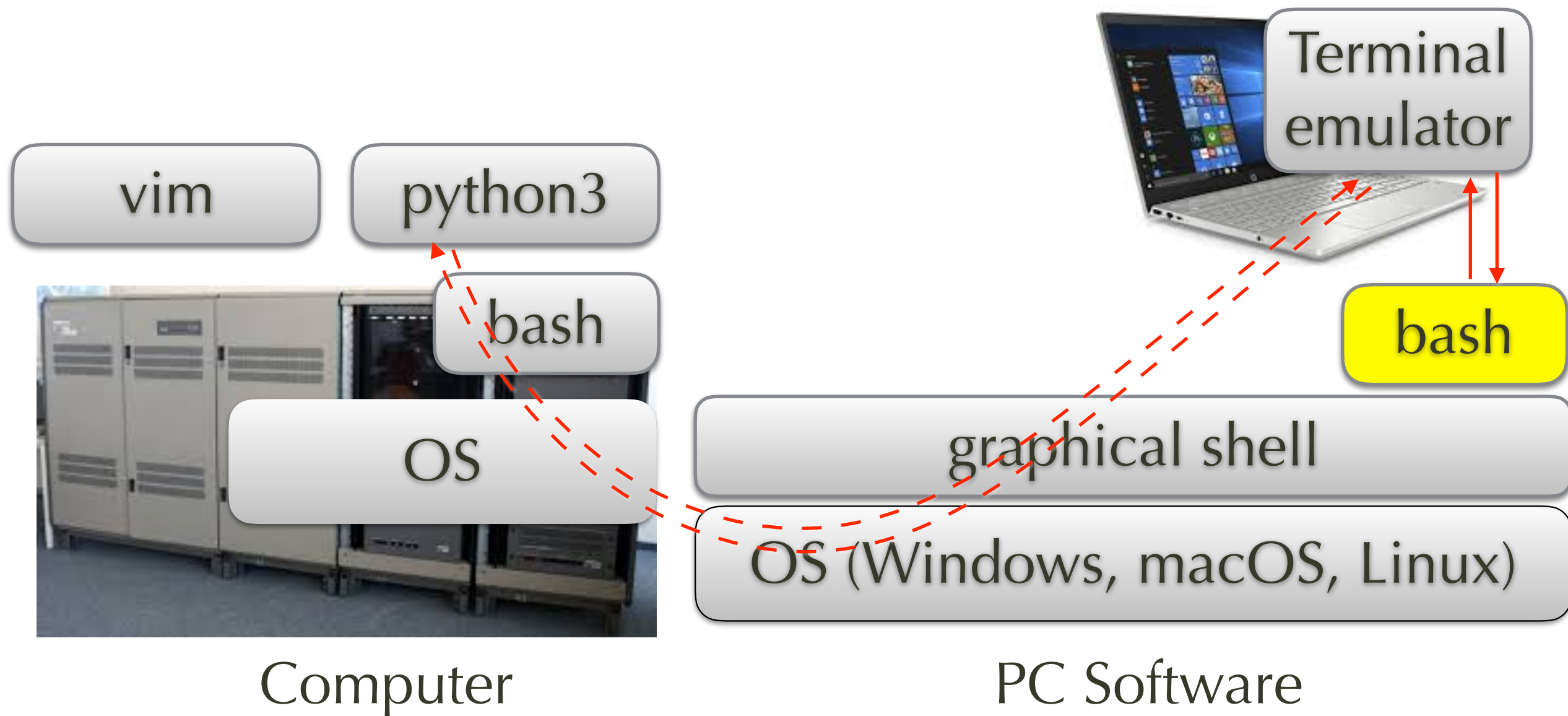


Terminal emulator

python3

bash

OS

Computer

Terminal

# Personal Computer (PC)

- A computer that runs its own OS

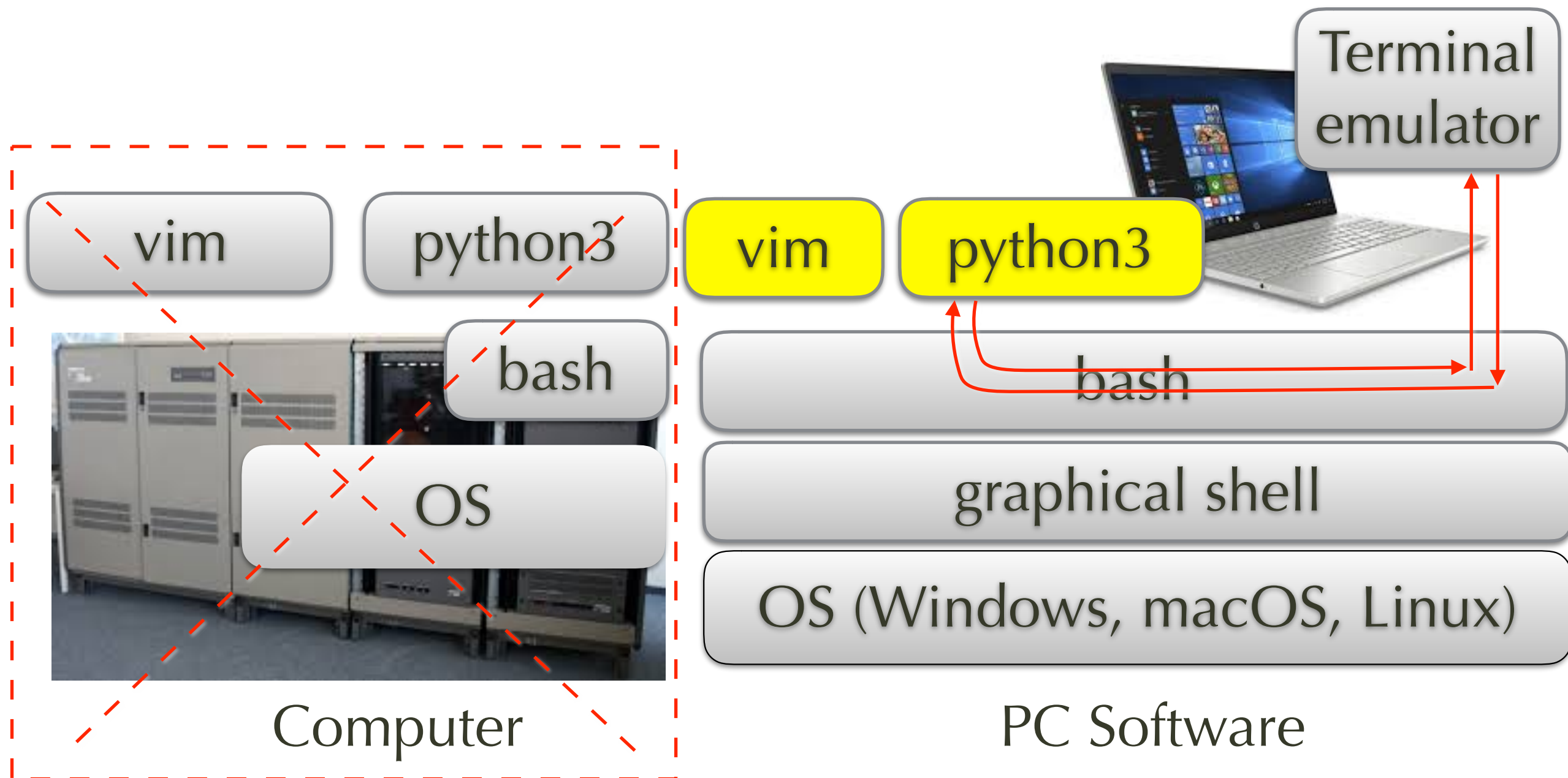- A terminal emulator can connect to a remote bash to run python remotely

Terminal emulator

vim

python3

bash

graphical shell

OS

OS for PC (Windows, macOS, Linux)

Computer

PC Software

# Local shell (on PC)

- PC can run its own bash locally



Computer           PC Software

# 1. Local text-based software installation

- Python3, vim, etc have been ported to PC



Terminal emulator

vim    python3

vim    python3

bash

bash

OS

graphical shell

OS (Windows, macOS, Linux)

Computer

PC Software

# 2. IDLE

- Graphical user interface (GUI) for Python

  - contains built-in editor

  - provides Python shell

IDLE

Terminal emulator

python3  vim

bash

graphical shell

OS (Windows, macOS, Linux)

PC Software
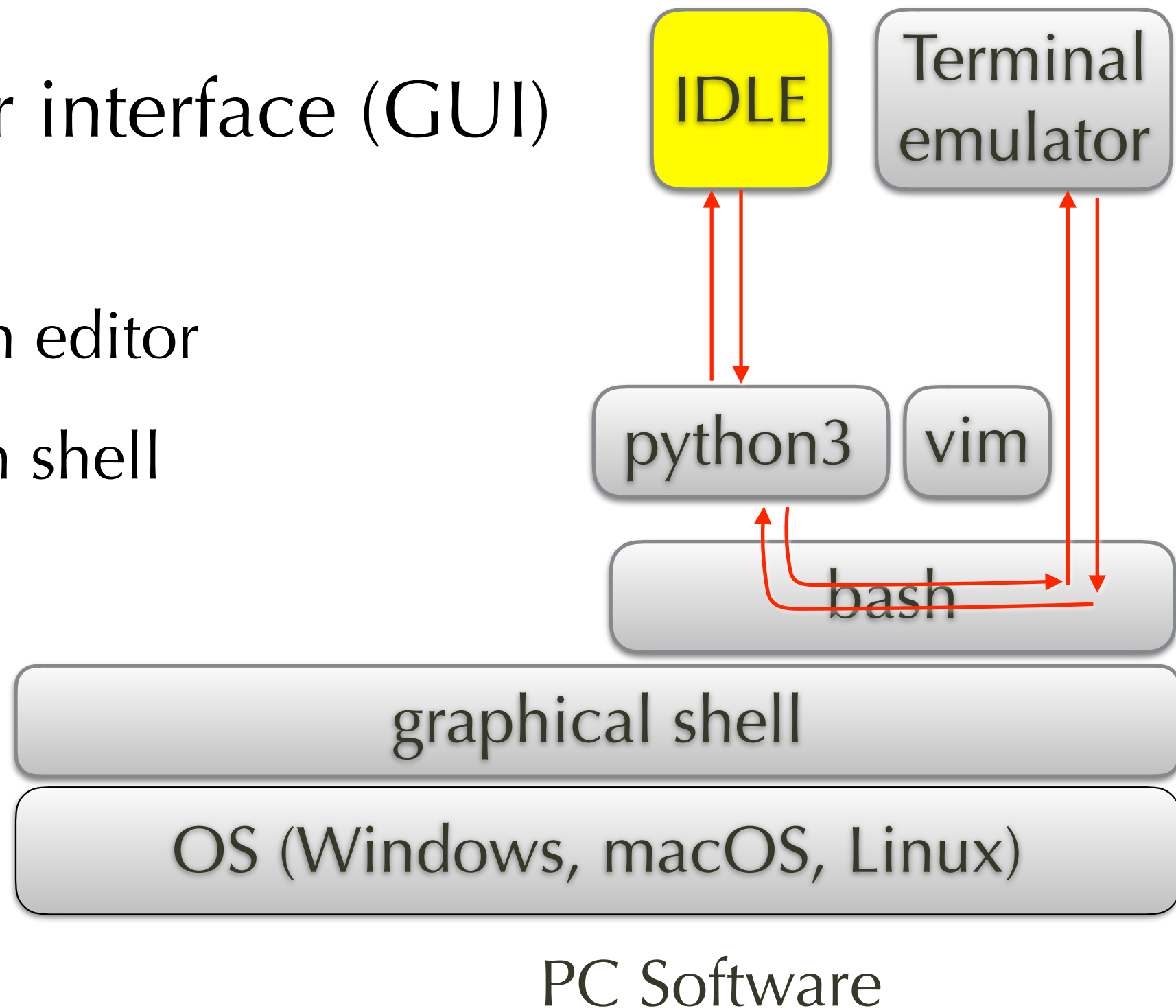
# 3. Jupyter Notebook

- Browser as graphic terminal

  - runs as a local web server

  - bash terminal, text editors, bash, file browser,

web browser

bash | vim

IDLE

Terminal emulator

python3 | vim

Jupyter Notebook (server)

bash

graphical shell

OS (Windows, macOS, Linux)

PC Software
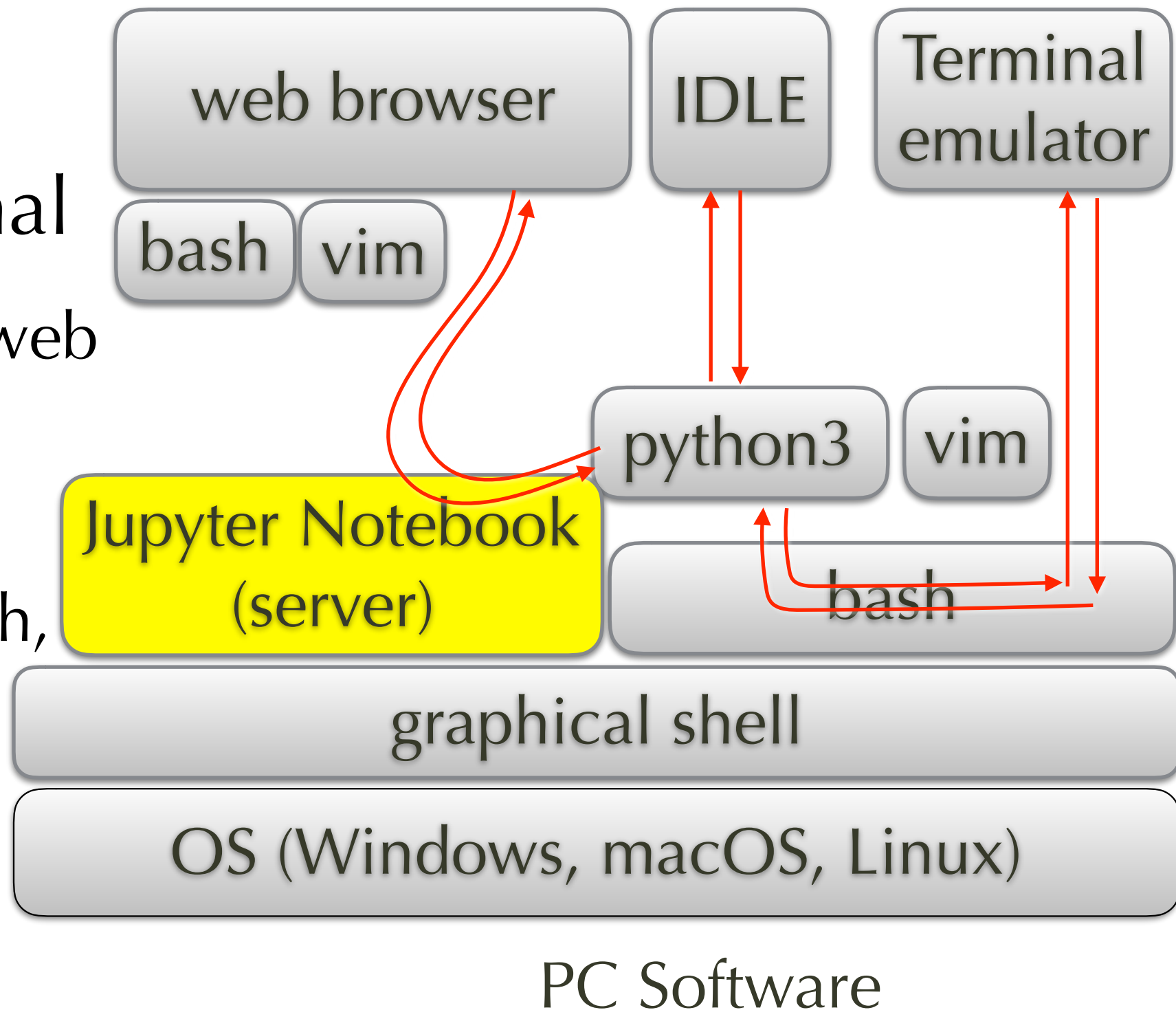
# What should you install?

- #1 (Local text-based) for CS majors

  - may have learning curve, but worth it

- #2 (IDLE) for Non-CS majors

  - friendlier, but no access to bash CLI

  - ok for just learning Python only

- #3 (Jupyter) for both

  - Superset of #1, also brings in latest Python

  - You may need #1 to install Juypter (macOS, Linux)