Lab 1: Introduction to Python, VS Code

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Python — overview

- General-purpose language for scientific computing, data analysis, automation, and teaching.
- Rich ecosystem: NumPy, SciPy, Matplotlib, pandas, JAX, PyTorch.
- We will use it for numerical methods, plotting, and reproducible workflows.

Python — install and verify

macOS

- Installer: python.org/downloads
- Homebrew (optional): `brew install python`
- Verify: `python3 --version` or `python --version`
- Package tool: `python3 -m pip --version`

Windows

- Installer: python.org/downloads/windows
- Winget (optional): `winget install --id Python.Python.3`

Visual Studio Code — overview

- Lightweight, extensible code editor with integrated terminal and debugger.
- Key extensions: Python, Jupyter, Git, Markdown, LaTeX Workshop (optional).
- Useful features: multi-cursor editing, intellisense, formatting, notebooks.

Visual Studio Code — install and verify

macOS

- Download: code.visualstudio.com/Download
- Homebrew (optional): `brew install --cask visual-studio-code`

Windows

- Download: code.visualstudio.com/Download
- Winget (optional): `winget install --id Microsoft.VisualStudioCode`

Recommended extensions

- Python (Microsoft), Jupyter, GitLens, Markdown All in One, LaTeX Workshop (optional).

Git — overview

- Distributed version control to track changes, branch/merge, and collaborate.
- Works locally and with remote platforms (GitHub, GitLab, Bitbucket).
- Typical workflow: init or clone → edit → stage → commit → push/pull.

Homework

- Install Python (3.13) and Visual Studio Code on your laptop
- Review Python basics: variables, data structures (list, tuple, set, dict), control flow; aim to understand what a function and a class are and how to define them.
- Recommended resources will be posted on the course GitHub page.
- In VS Code, complete the built-in "Get Started" tour (`Help` → `Get Started`) and run a simple Python script
- Set up an LLM assistant (e.g., ChatGPT, Claude, Gemini). A free plan is fine; use it to look up commands and help debug Python and VS Code issues.
- email to me **yaolang.zhong@g.ecc.u-tokyo.ac.jp** for office hours if any diffcuties