

COMP64803: Introduction to Responsible & Reproducible AI

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In the previous lecture

You were supposed to:

- ▶ Pick **5 specific ways** to write better Python (discuss with your supervisor to determine which ones can be crucial to know for your future research)
- ▶ Prepare a **10-min talk** on your selected effective Python ways
- ▶ Give a **live demo or executable code snippets** in a docker environment
- ▶ **Git push your codes** to our course unit repository via pull request (before the lecture)

One quick quiz

What animal is this operator := named after?

¹Image credit to: <https://www.bbc.co.uk/newsround/59080386>

One quick quiz

What animal is this operator := named after?



1

Walrus? Elephant? Warthog?

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In this lecture

- ▶ Remote development
- ▶ Computational Shared Facility (CSF)

Remote development (1)

Remote Development allows to use a container, remote machine, or the Windows Subsystem for Linux (WSL) as a full-featured development environment.

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Remote Development allows to use a container, remote machine, or the Windows Subsystem for Linux (WSL) as a full-featured development environment.

- ▶ Develop on the same operating system you deploy to or use larger or more specialized hardware.
- ▶ Separate your development environment to avoid impacting your local machine configuration.
- ▶ Make it easy for new contributors to get started and keep everyone on a consistent environment.
- ▶ Use tools or runtimes not available on your local OS or manage multiple versions of them.
- ▶ Access an existing development environment from multiple machines or locations.
- ▶ Debug an application running somewhere else such as a customer site or in the cloud.

Remote development (2)

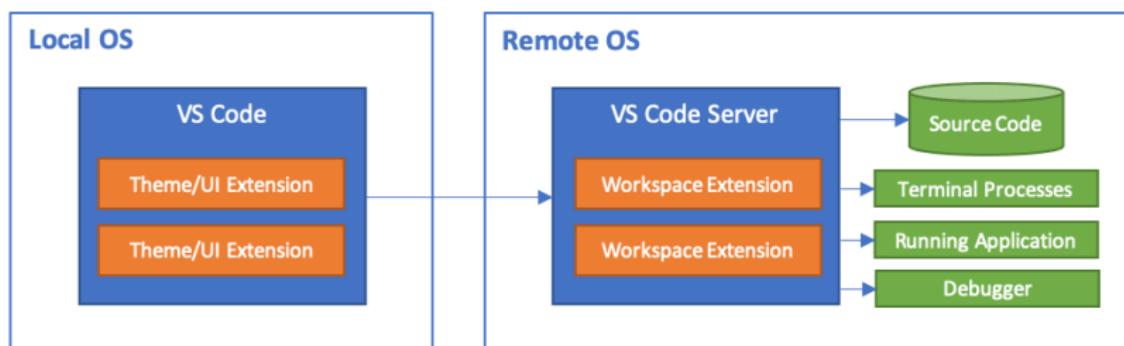
No source code needs to be on your local machine!!!

Remote development (2)

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How does it work?

► VS Code Remote Development



Remote development (3)

VS Code Remote Development

- ▶ **Remote via SSH or dev tunnels**

Connect to remote and virtual machines with Visual Studio Code via SSH.

- ▶ **Develop in Containers**

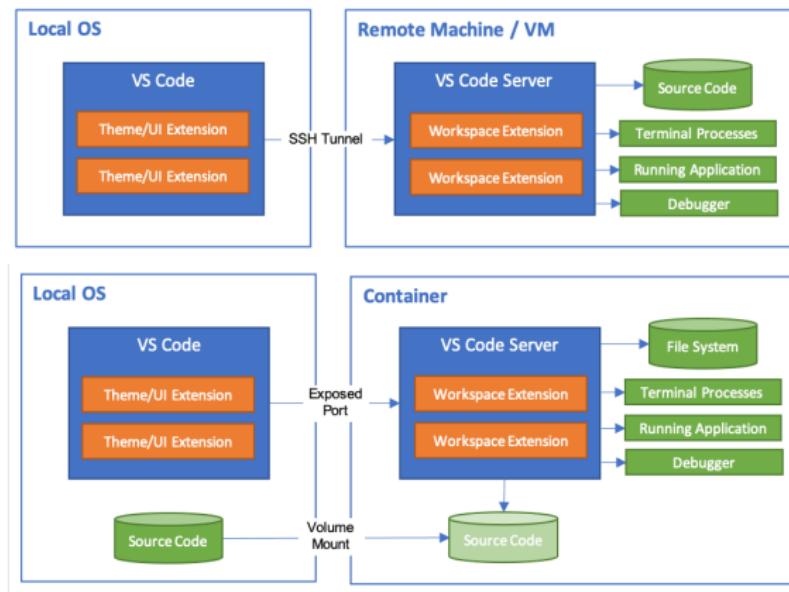
Run Visual Studio Code in a Docker Container.

- ▶ **Work in WSL** (if on Windows machine)

Run Visual Studio Code in Windows Subsystem for Linux (WSL).

VS code remote development

Remote via SSH or dev tunnels vs Develop in Containers

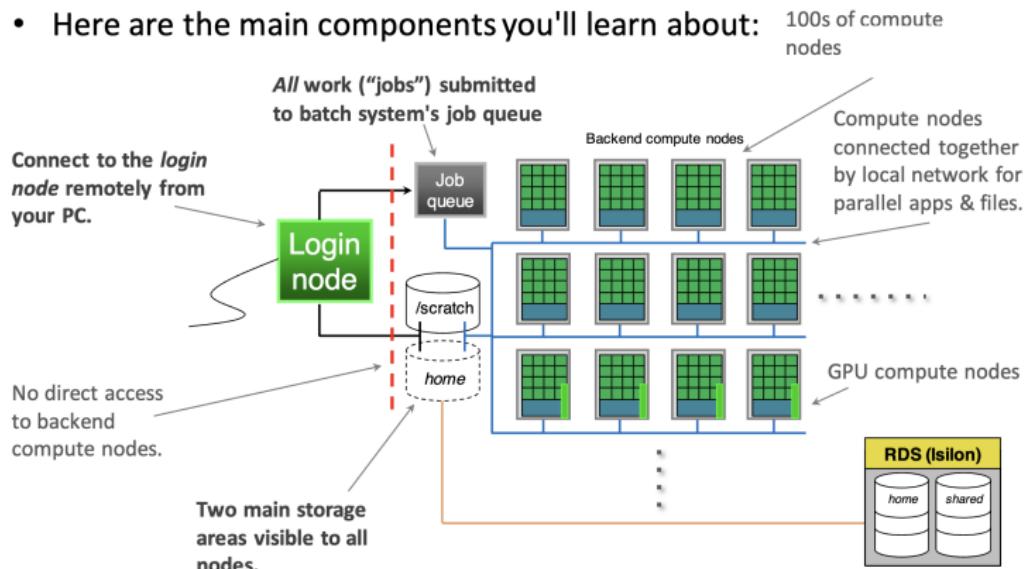


The 1st Lab Session (12 Nov at Kilburn Tootill 0):

- ▶ Remote development over SSH
- ▶ Dev Containers tutorial

What is the CSF?(more details)

- Computational Shared Facility
- A *batch* compute *cluster* to run your "jobs" (simulations, analysis,...)
- Here are the main components you'll learn about:



Computational Shared Facility (2)

Currently: **CSF3 (GPU cluster)** an **CSF4 (CPU cluster)**

- ▶ A large Linux cluster system
- ▶ 8,644 CPU cores (all Intel Xeon CPUs)
- ▶ 100 GPUS (68 Nvidia V100s + 32 Nvidia A100s)
- ▶ Can access 2 V100s (and, maybe, 1 more A100) at one time

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Soon (really????), we'll have a new cluster

- ▶ 40 Nvidia H100 GPUs (ultimate target number is 200)
- ▶ Full support of docker
- ▶ Kubernetes (K8s) for automating deployment, scaling, and management of containerized applications.

Cloud computing (pilot phase): I've added your supervisors to the Teams channel

Computational Shared Facility (3)

The 2nd Lab Session (19 Nov at Kilburn Tootill 0):

Use VS code remote development to finish the following practicals:

- ▶ Practical 1: Using ssh to connect to the CSF, running some basic commands

Link to [Practical 1](#)

- ▶ Practical 2: Using SGE to submit a serial job

Link to [Practical 2](#)

- ▶ Practical 3: File transfer

Link to [Practical 3](#)

For the Hackthon

Hackthon projects (3 days):

- ▶ To team up: up to 3 members for each group
- ▶ To create a project page at Team Project and include the following:
 - ▶ Team composition and task split
 - ▶ Project idea (no need to be research but should be relevant to decision-making in complex systems)
 - ▶ Grant support (up to £1K GBP): submit your budget request by 31 Dec, 2025
- ▶ One dedicated workstation: 2 x Nvidia RTX 4090 (24GB) cards
 - ▶ Remote development: Ubuntu system, docker supported
- ▶ Winning team: a special award and certificate

END LECTURE