Lecture 1: An Introduction to Git and Version Control

CDM Computing Subgroup Workshop

Albert Kong

THE UNIVERSITY of ADELAIDE

ARC CENTRE OF EXCELLENCE FOR DARK MATTER PARTICLE PHYSICS

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Questions to Answer

- What is Git?
- What's the difference between Git, Github, Gitlab, etc...?
- How do you use Git?

What is Git?

From the Git website:

> *Git is a free and open source distributed version control system designed to handle everything from small to very large projects with speed and efficiency.*

Version Control Systems

- Tools to track changes (to code)
- File history is retained
- Can track multiple (divergent) lines of development

Why Version Control?

- Easily maintain/organise all the versions of your code
- Very important when working in teams to manage/merge parallel lines of development
- Convenient way to backup your work
- Freedom to experiment

Git as a Version Control System

- A series of snapshots and pointers to snapshots
- Stage files with `add`, create a snapshot with `commit`
- Go back to previous versions of files with `checkout`
- Start new lines of development with `branch` and recombine them with `merge`

Git as a Distributed System

Cloning copies the entire repository (including history), not just the last snapshot

- Most actions are local (and fast!)
- Every clone is completely functional and can be used independently

Sites like Github and Gitlab are just hosting services for clones of your repositories

A Summary of Git

Git is:

- A version control system
- A distributed system
- A collaborative tool

Useful Resources

Computing Subgroup GitHub Repo for these slides and materials for all workshop components.
Official Git website for more detailed documentation and other learning material.