S2

Revision Control

Git

Git Concepts

- **Commit** (noun)

- **Staging** (files are added to the staging area before commit)

✓ **Commit** (atomically commit changes to your local repo)

✓ **Push** (push outstanding local changes to a remote repo)

✓ **Pull** (pull new changes from a remote repo)

✓ **Update** (update your working version)

- **Merge**

- **Reset and Revert**

Git Commits

Captures a set of changes (including modifications, additions and deletions) that may span multiple files.

- Globally unique commit ID (large hexadecimal number)

- Parent – child relationship (based on changeset ID)
  - Single parent, single child is simple case
  - Multiple children indicates a *branch*
  - Multiple parents indicates a *merge*

- A push sends commits, a pull gets commits

- Commits are usually never deleted

A Little More on Update

Update will by default take you to the "HEAD" (the most recent known commit).

You can, however, "update" to any particular revision, moving yourself back and forward in time. To do this, you need to specify the revision.

In IntelliJ you can do this by double-clicking on the revision (VCS -> Git -> Show History, then select the revision)

Branches and Merging

A **branch** occurs when a commit has more than one *child*.

A **merge** is special commit with two *parents* (thus uniting branches).

If branches are *conflicting* (changes to the same file), those conflicts must be **resolved** before merging.
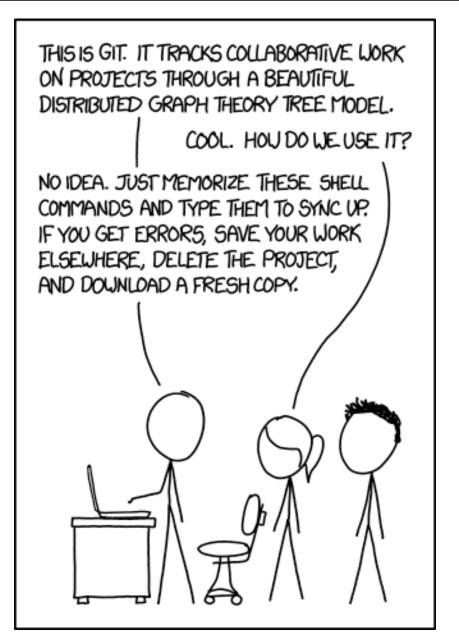
Amend Reset and Revert

You can amend a commit message with **amend**

You can reset your local state to a particular commit (throwing away un-pushed changes whether committed or) with **reset**.

You can also **revert** any particular commit. This amounts to applying a counteracting commit.

When All Else Fails

https://xkcd.com/1597/