

A painting of a white house with a blue roof and green trees. The style is impressionistic with visible brushstrokes. The house has a chimney and a window with a blue shutter. There are green trees and bushes in the foreground and background. The sky is light blue and white.

S02 Revision Control

Git

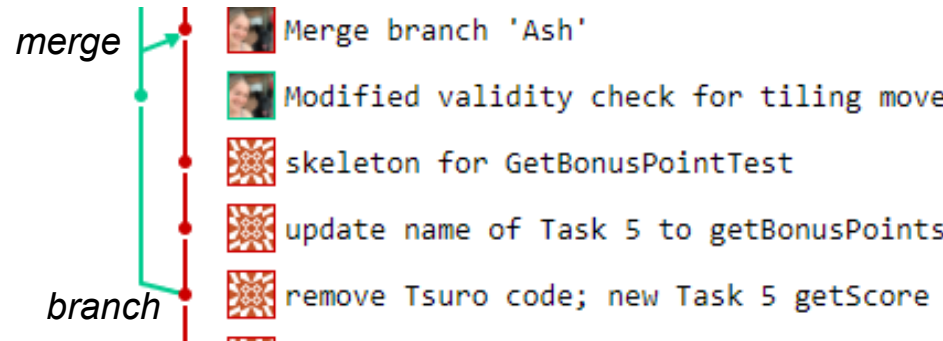
Git Concepts

- Commit (noun)
- Staging (IntelliJ allows you to more or less ignore this, so we will)
- ✓ Commit (atomically commit changes to your local repo)
- ✓ Push (push outstanding local changes to a remote repo)
- ✓ Pull (*fetch* new changes from a remote repo and merge / rebase locally)
- ✓ Update (update your working version – specific to IntelliJ)
- Merge / Rebase
- Reset and Revert

Git Commits

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

- Globally unique commit ID (large hexadecimal number)
- Parent – child relationship
 - Single parent, single child is simple case
 - Multiple children indicates a **branch**
 - Multiple parents indicates a **merge**
- 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 (Git -> Show Git Log, select the revision right click “Checkout 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, Revert and Rebase

You can reset your local state to a particular commit (throwing away un-pushed changes whether committed or not) with **reset**.

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

WARNING: The following commands will cause trouble if they “modify” commits that have been previously pushed:

You can amend a commit message, add more changes with **amend**.

You can interactively remove, combine, reorder and edit commits with **rebase interactive**.

When All Else Fails



<https://xkcd.com/1597/>