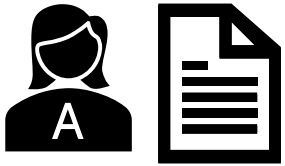
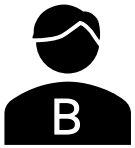
Revision Control

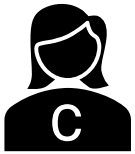
S2

Git

Revisions...







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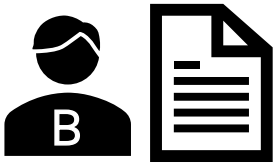
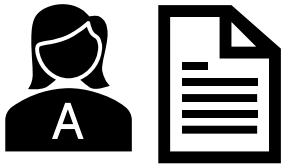
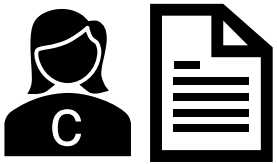
Revisions...







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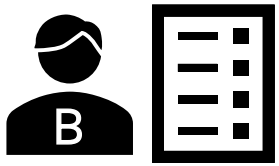

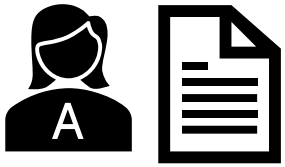

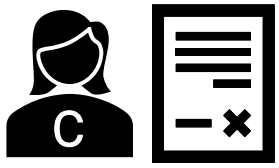

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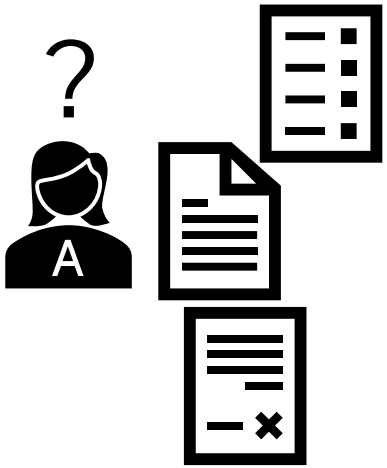
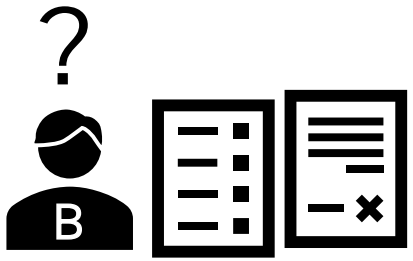
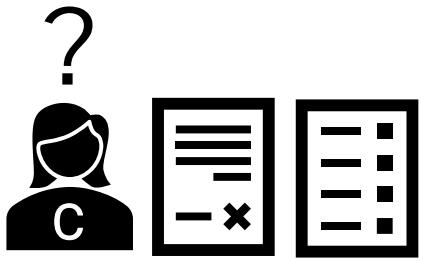
Revisions...







For “binary” files, this is always bad

But code typically consists of a number of distinct text files

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Commits/Patches/Change-Lists

Track

- Files added
- Files delete
- Files changed
  - Lines added
  - Lines deleted

Showing 8 changed files with 110 additions and 89 deletions

src/comp1110/ass1/Animal.java

```
...  ...  @@ -7,17 +7,21 @@ import java.util.Objects;
 7    7    */
 8    8   public class Animal {
 9    9
10         -    /** The animal's orientation. If this animal is on a tile, i
      10    +    /**
      11    +     * The animal's orientation. If this animal is on a tile, it
11   12         * it would be facing if the Tile is in the North orientatio
12   13         */
13   14        private final Orientation orientation;
14   15
15         -    /** The type of the animal **/
      16    +    /**
      17    +     * The type of the animal
      18    +     **/
16   19        private final Type type;
17   20
18   21
19   22        /**
20   23         * Construct a new Animal given an animal object.
      24    +     *
21   25         * @param animal an animal
22   26         */
23   27        public Animal(String animal) {
...  ...  @@ -28,6 +32,7 @@ public class Animal {
28   32        /**
```


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Timeline of a File

A sequence of groups of additions and deletions, each belonging to a particular commit.

Can jump to each version of the file by replaying the changes up to that point

2a4926d0c657e5e3c99e22aa60cd799fc91d676a

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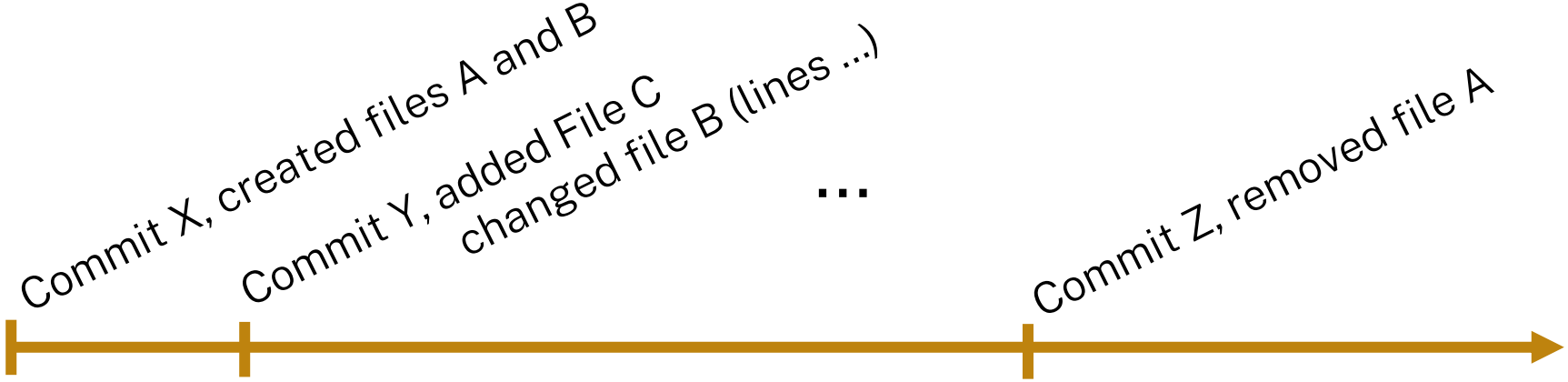
Timeline of a Branch

A sequence of commits (groups of file adds/deletes/updates)



Can jump to a particular state of all files by replaying commits up to that point

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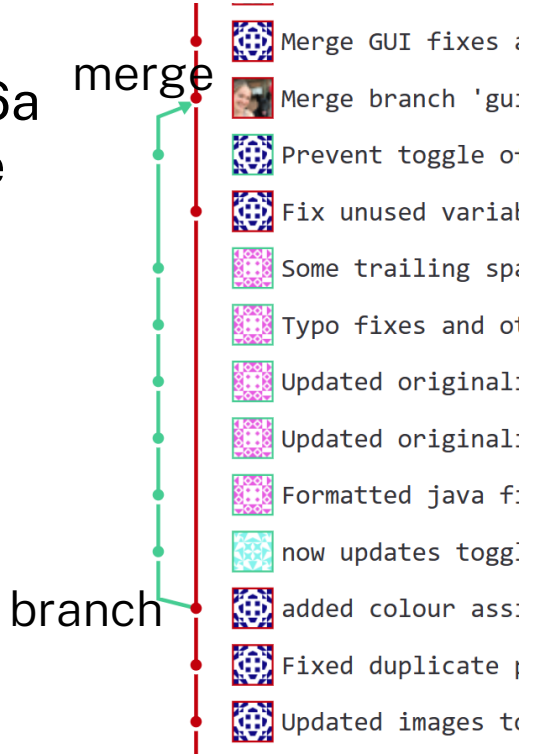
Multiple Branches

Each commit has a unique ID, like
2a4926d0c657e5e3c99e22aa60cd799fc91d676a
usually shortened to something locally unique, like
2a4926d0

Parent-Child relationships:

- Single parent, single child is the simple case
- Multiple children indicates a “branch”
- Multiple parents indicates a “merge”



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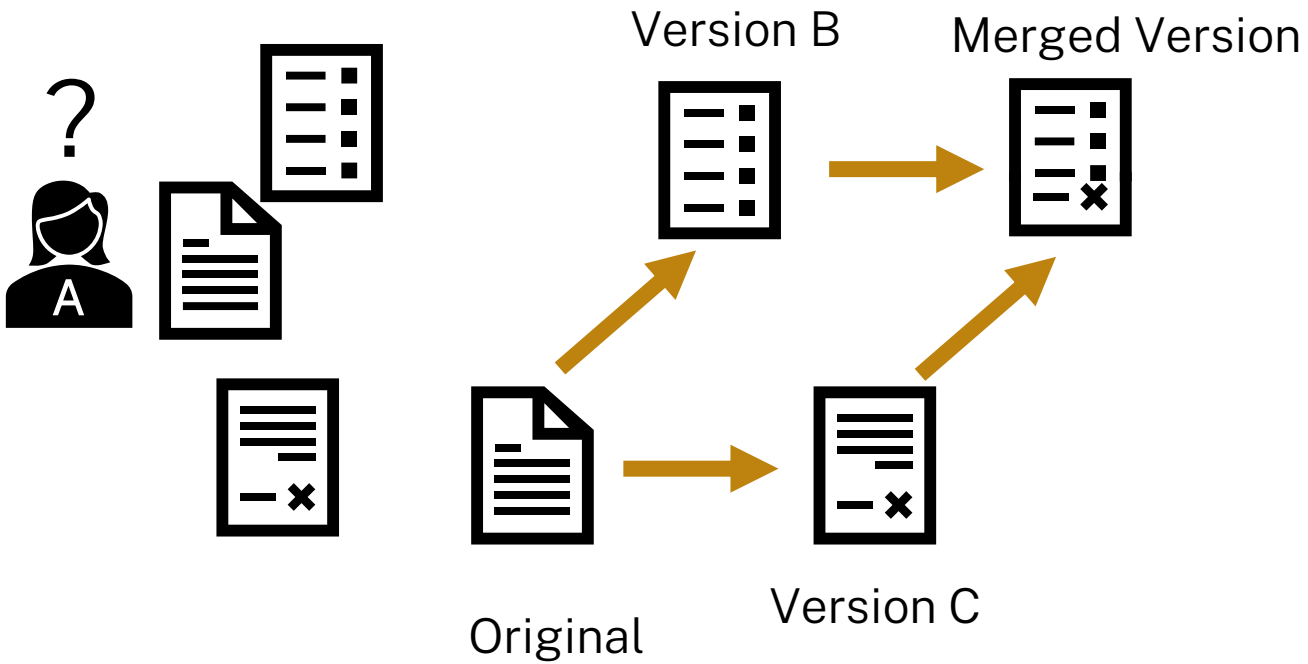
Three-Way-Merge



Merge conflicts

```
<<<<<<< HEAD
 Change in one version
=======
Change in the other version
 >>>>>>> branch-a
```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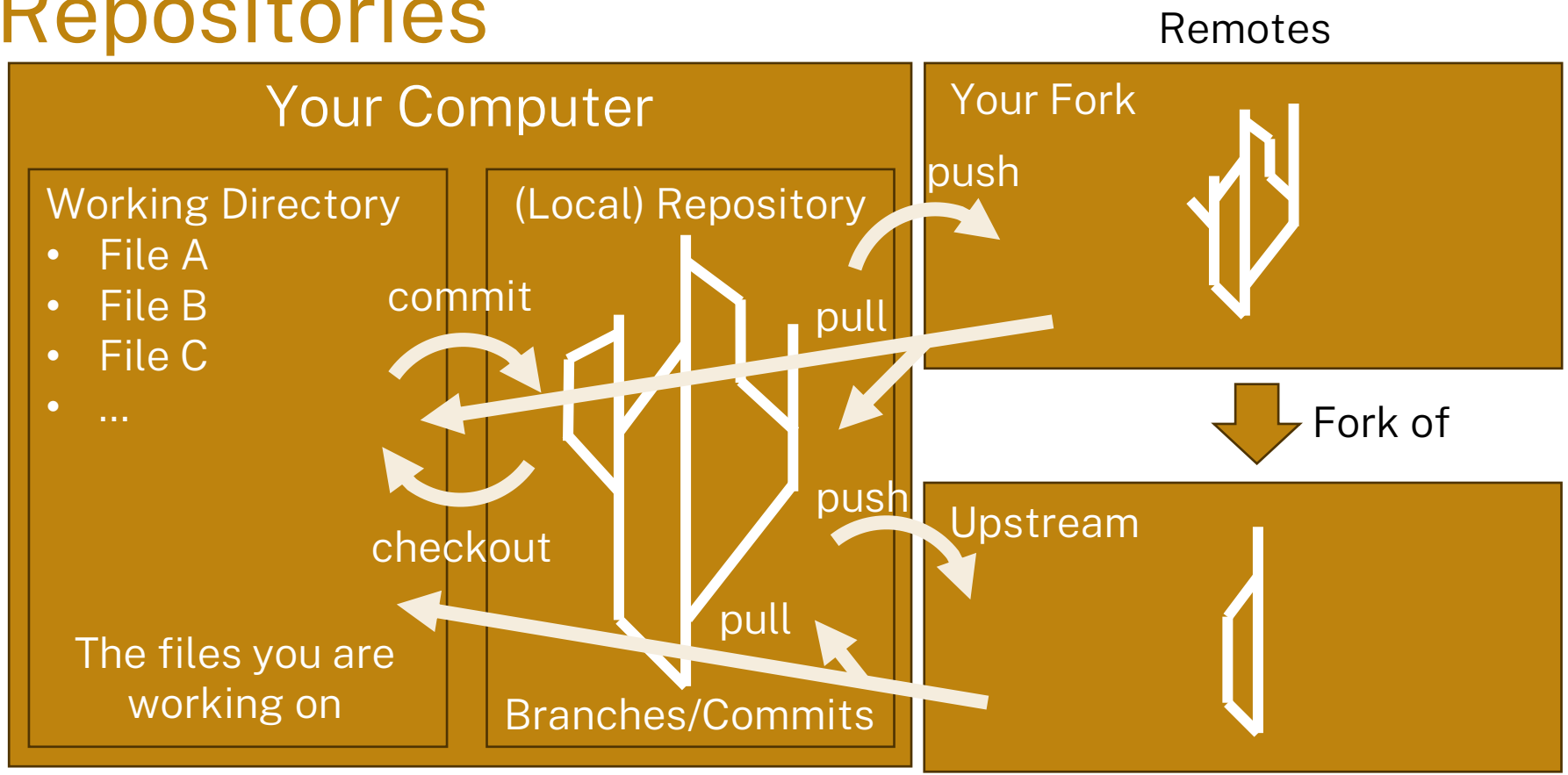
Repositories



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Git Concepts/Commands

- Staging – select which files(/changes) to include in commit (`git add`)
  - IntelliJ mostly does this automatically (it asks you whether you want to add a file to git when you create it)
- `commit` – atomically commit changes to repository
- `push` – push outstanding commits to remote
- `pull` – pull new changes from remote (and update working directory)
- `checkout` – switch working directory to different branch/commit
- `merge` – combine two different branches
- `revert` – change current files to undo changes from particular commit
- `restore` – undo changes in working directory

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