Version Control

CSC207 Winter 2015

Computer Science
UNIVERSITY OF TORONTO

Problem I: Working Solo

How do you keep track of changes to your program?

Option 1: Don't bother

- Hope you get it right the first time
- Hope you can remember what changes you made if you didn't
- (You probably won't get it right)
- (Or remember)
- (You will end up rewriting code)

Problem I: Working Solo

How do you keep track of changes to your program?

Option 2: Periodically save "backups"

Save snapshots of your program in another directory or under a different name

- E.g. Main.java, Main2.java, Main_FINAL.java, Main_USE_THIS_VERSION.java, Main_FINAL_v2.java,
- Or save it in a directory by date

Problems:

- Totally ad hoc
- Only the programmer knows how to interpret the names
- Hard to pick a version to go back to
- Prone to error
- No tools to help you

Problem II: Working in a Team

How do you coordinate who has the authority to change a file?

Option 1: Worry about it after the fact

- "Hey, why is this broken?"
- "My changes got overwritten!"
- "You weren't supposed to change that file!"

Option 2: Coordinate by email, phone calls, etc.

- "Okay, I'm going to work on A.java, so don't touch it."

Problem III: Moving around

After a day of work in the lab, you want to go home and do some work at home in the evening.

How do you know which files to copy to your home machine?

- **Copy everything**
  - potentially slow
  - might overwrite something you did at home, but forgot to copy from home to school
- **Try to remember what changed**
  - highly likely to get it wrong
- **Work in a cloud**
- **Work on a removable storage device**

Version Control

- Two flavours:
  - centralized (e.g., SVN, CSV)
  - distributed (e.g., Git, Mercurial)
- In this course, we study the centralized flavour.
- In later courses (e.g., CSC301, CSC302) you may study distributed.

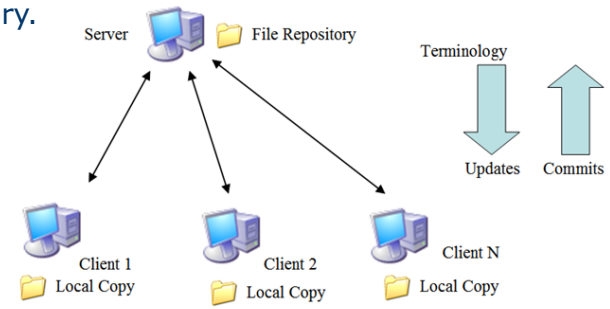
Centralized Version Control

Keep code in a central location, called a repository.

This is the "master copy". Never directly modify this!

Create a local copy of the repository in your account at school, on your machine at home, on your laptop...

When the local copy changes, "commit" the changes to the repository.



Version Control — Tracking changes when working solo

When you get something working, or you want to try something making sure you can revert to the current version, or for whatever other reason, commit the changes.

Tools allow you to revert to a previous version.

Write good log messages so that you don't have to remember what changed in each version.