Source Control 101

with GitHub

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Beautiful accounting software

Imagine...

Imagine you worked on a team with a product that had 500,000 lines of code over thousands of files with dozens of developers all around the world?

How would you work together as a team? How would you share files?

Why source control? Teamwork

- “I’m working on file X, nobody else touch it”
- Multiple people can work on the same files, then you can merge the changes together at integration time.
- Full history of who changed what, when. No lost code.

Why source control? Backups

Repository of code - one source of truth

Backed up

“I lost my laptop…”

“I deleted the shared directory…”

“The production server died…”

Why source control?
Change management

- History of revisions over time - who changed what and when
- When was a defect introduced?
- What code is running on environment x?
- The only way to maintain changes to multiple different versions at the same time
- No need to comment out code!

Why source control?
Rapid innovation

With your source code backed up, you can do crazy things

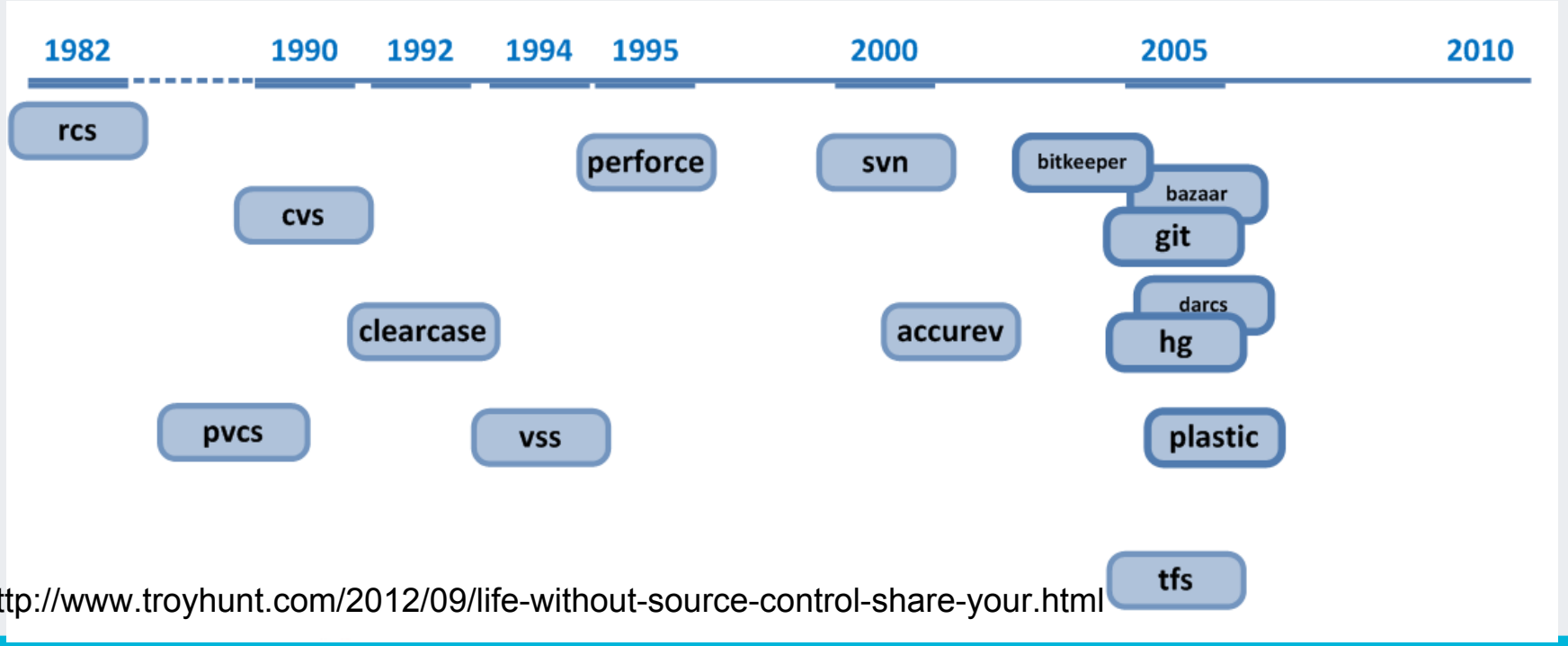
“what happens if I delete all of these dependencies then re-write this class…”

Why source control?
Automate all the things

Once you have a centralised repository of your code you can automate builds, testing, deployment from it.

Triggered by changes.

There are lots of source control systems



http://www.troyhunt.com/2012/09/life-without-source-control-share-your.html

Git

- git: distributed source control
- you have a local copy of the repository
- can push to remote server repository

Written by some famous nerd...

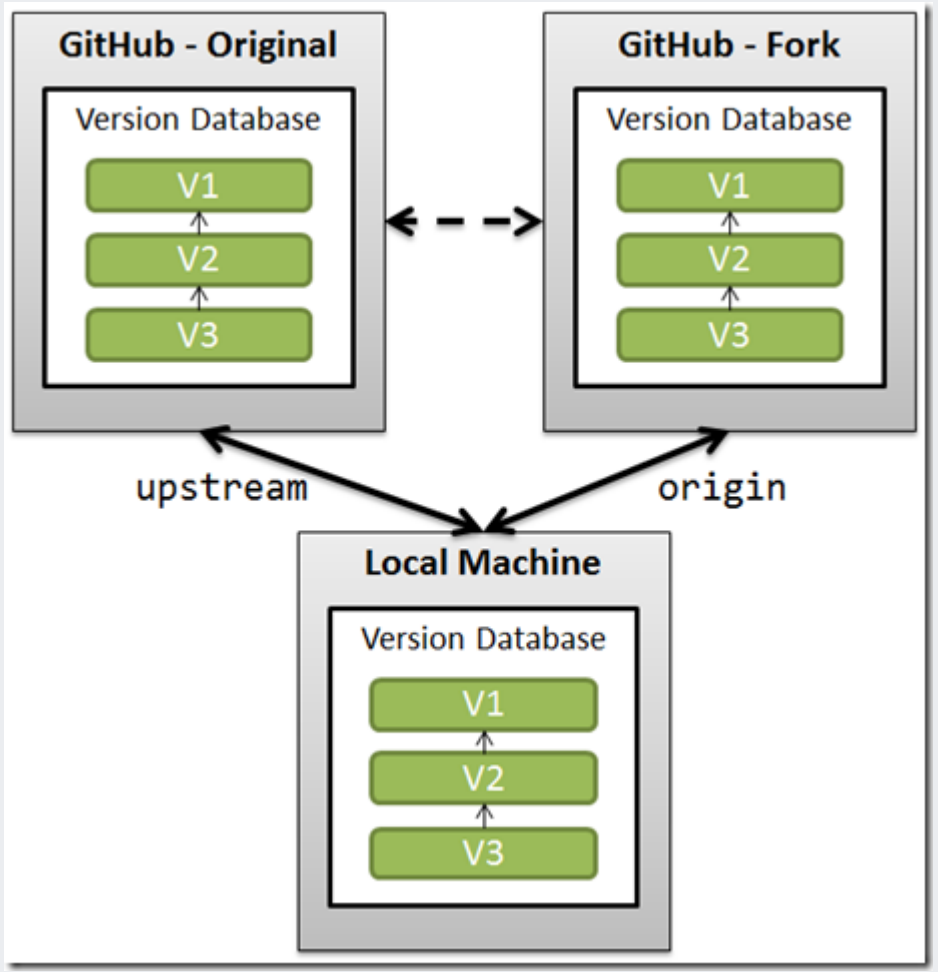
in 3 weeks.

GitHub

- Sweet online version of git
- Makes social coding easy (pull requests)
- Demo

Forks

- Isolated server copy of the repository
- Useful if you don’t have permission to push to the remote repository
- Demo



Git Clients

- Git Bash (Command line)
- GitHub for windows/mac
- GitExtensions
- Atlassian SourceTree

- Today we are using Git Bash

Your turn - Fork

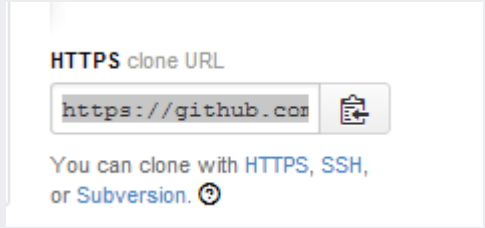
Create a github account at http://github.com

Go to **https://github.com/lukeryanxero/summer-of-tech**

Click ‘Fork Repository’

Your turn - Clone

- Clone it locally
  - Get HTTPS clone URL from your github fork
  - Open Git command line
  - Type git clone [URL]

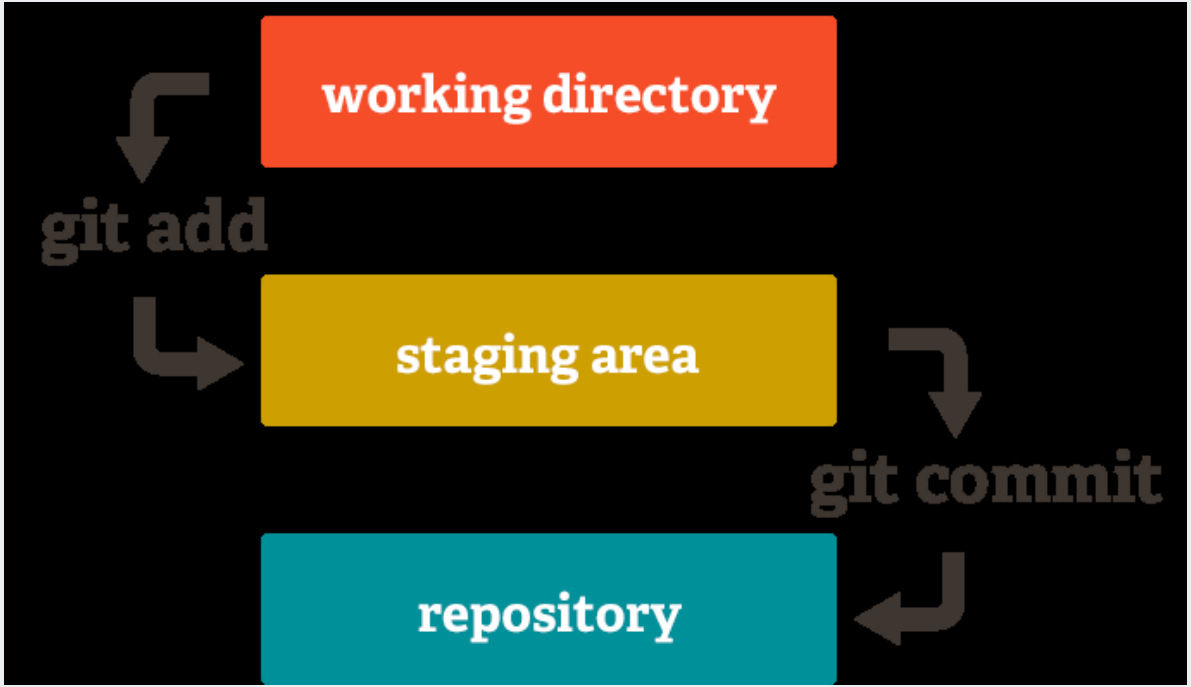



```
max.henderson@                    /c/dev/sot
$ git clone https://github.com/max-xero/summer-of-tech.git
Cloning into 'summer-of-tech'...
remote: Counting objects: 6, done.
remote: Compressing objects: 100% (3/3), done.
remote: Total 6 (delta 0), reused 6 (delta 0)
Unpacking objects: 100% (6/6), done.
```

Commit

- Has a unique hash
- Set of changes to many files
- Represents a piece of work from one person
- Has a comment - can include issue numbers

http://bit.ly/1k43n47


working directory
git add
staging area
git commit
repository

Your turn

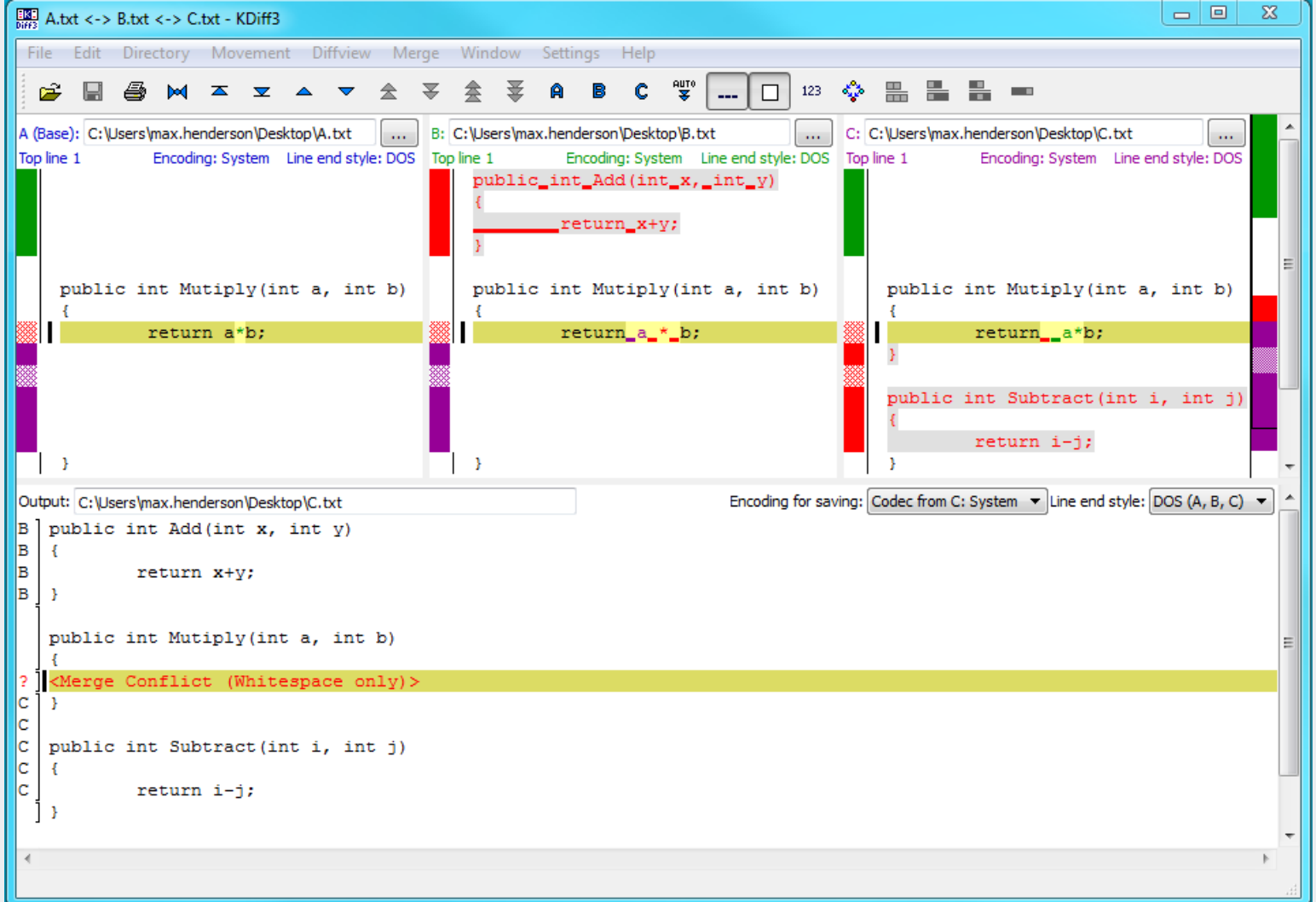
- Change the readme.MD file from the repo you cloned earlier
- git status
- git add *
- git status
- git commit -m “Some awesome message”

Push

Sends your changes (commits) back to the server (your fork)

- git push origin

Merging


A.txt <-> B.txt <-> C.txt - KDiff3
File Edit Directory Movement Diffview Merge Window Settings Help
A (Base): C:\Users\max.henderson\Desktop\A.txt
Top line 1 Encoding: System Line end style: DOS
public int Mutiply(int a, int b)
{
return a*b;
}
B: C:\Users\max.henderson\Desktop\B.txt
Top line 1 Encoding: System Line end style: DOS
public int Add(int x, int y)
{
return x+y;
}
public int Mutiply(int a, int b)
{
return a * b;
}
C: C:\Users\max.henderson\Desktop\C.txt
Top line 1 Encoding: System Line end style: DOS
public int Mutiply(int a, int b)
{
return a*b;
}
public int Subtract(int i, int j)
{
return i-j;
}
Output: C:\Users\max.henderson\Desktop\C.txt
Encoding for saving: Codec from C: System
Line end style: DOS (A, B, C)
B public int Add(int x, int y)
B {
B return x+y;
B }
public int Mutiply(int a, int b)
{
? <Merge Conflict (Whitespace only)>
C }
C
C public int Subtract(int i, int j)
C {
C return i-j;
}

Pull Requests

- Request to pull changes from our Fork to the master Repo.
- Internally we use this for code reviews

https://github.com/lukeryanxero/summer-of-tech/pull/1

Resources

https://try.github.io

http://gitimmersion.com/

http://git-scm.com/book/en/Getting-Started-Git-Basics

https://www.youtube.com/watch?v=1ffBJ4sVUb4 1:40:00

http://gitref.org/index.html

Branching

- Why
- What it is
- Branching strategies
- Change control and software versioning
- http://nvie.com/posts/a-successful-git-branching-model/