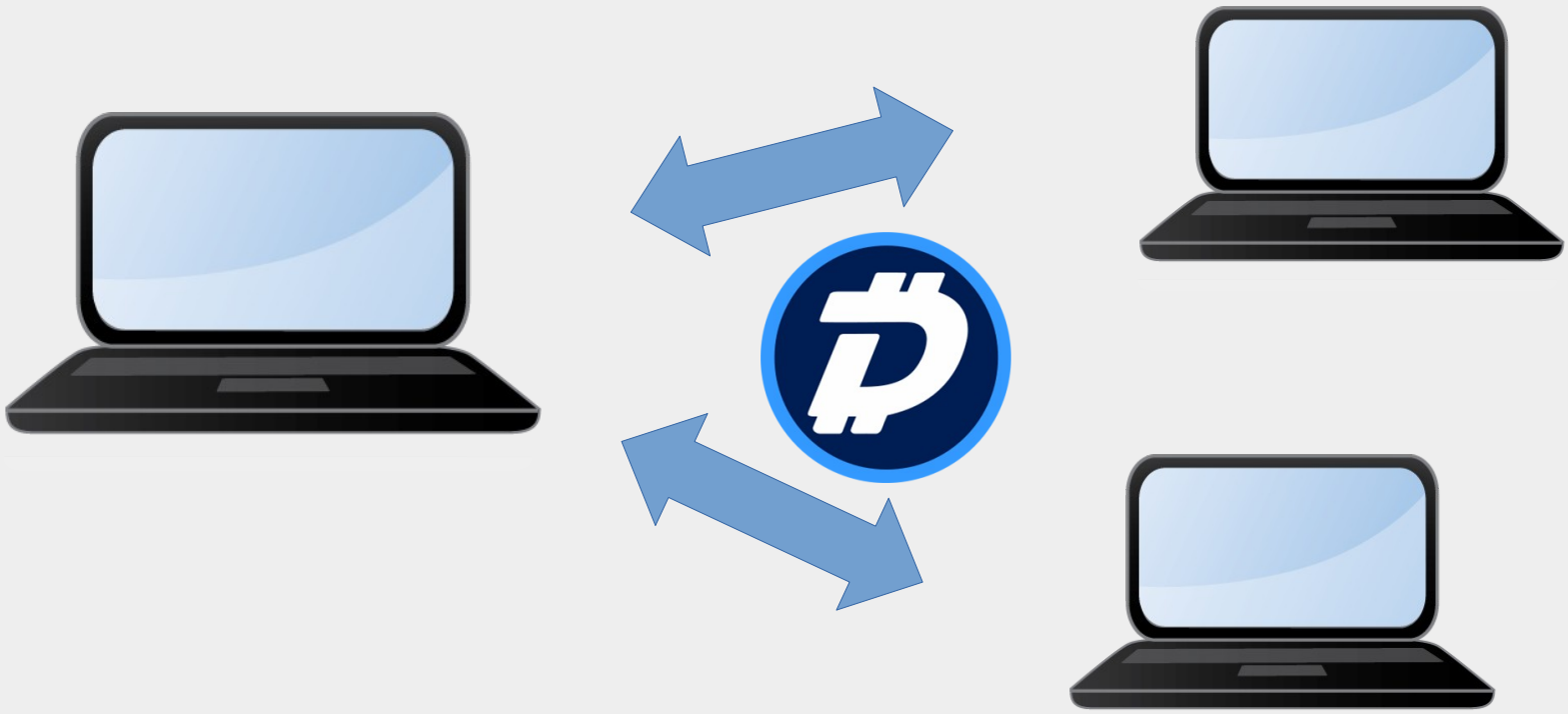
Git and Github – Version Control for the Unversed



What I Do

- Software Engineer at Microsoft (Pittsburgh)
  - Day to Day, I write code for a cloud storage product
- Tech educator at chaintuts
  - I create free and open content about cybersecurity, cryptography, digital currencies, computer science topics
- Volunteer at the Cryptocurrency Certification Consortium (C4)
  - I help educate people about digital currencies and security
- Outside of work – usually find me doing something active or learning something new

Version Control

- What is git? Why do we need it?
- “Version control” software – allows users to track **changes** and store mostly text data
- Useful for everything from one-person personal code projects to enterprise software
  - I use git for solo projects to work on code
  - Use it for other text data like articles
  - Use it for work extensively – teams of engineers

Git

- Why git?
  - Allows users to store **distributed** copies of the code, without updating the server
  - Other ones require server access and sync, git only syncs when you specifically choose to push code
  - Used for tons and tons of open source projects, especially given this property of allowing local code

Git vs. Github

- *Git* is the software itself – anyone can use git on any computer, run their own server, etc.
- *Github* is git as a service
  - Allows convenience *use* of git – storage, sharing, collaboration
- Git is to Github as food is to a restaurant
- Git is to Github as a climbing is to a climbing gym

Workflows

- Most basic workflow for a single user – single branch we add commits to
- More complex workflow for open source, pro development – main branch, feature branches, pull requests/merges

Git Repository Basics

- git init – creates a new repository in the current directory/folder
- git remote add <URL> - set remote/server URL (like your github account)
- git clone – clones a repository from a URL – useful for open source!
- git push <remote name> <branch name> - push changes to the remote server
- git pull <remote name> <branch name> - get your local copy up-to-date with server

Git Code Operations

- git add <filename> or “.” - adds file to git tracking
  - Must add/remove files from git tracking manually
  - Doesn’t automatically add files just because they’re in your git folder
- git rm <filename>
- git commit -m <message> - creates a new commit, a distinct set of changes to the code, docs, etc. on a branch

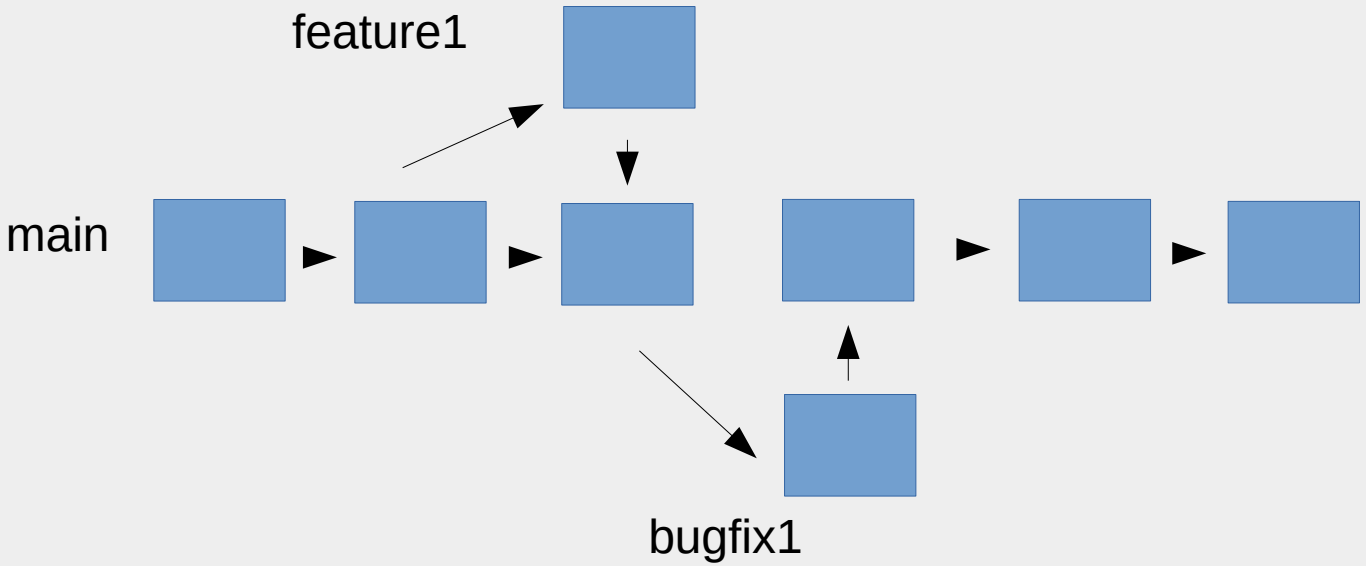
Simple Workflow (Personal Github)

- User creates a new repository in their account
- git init && git branch -m <name>
- git add . (adds all files in the directory recursively. Careful with this!)
- git commit -m “Initial commit”
- git remote add <remote name> <URL Github gave you>
- git push <remote name> <branch name>

Git Branch Basics

- git branch – show the current branch – usually something like main, development, or <feature name>
- git checkout -b <branch name> - create a new branch, using current branch as a base
- Git in general uses the concept of *branches* heavily
  - Independently tracked sets of changes
  - Can “pull” one branch into another – called a “merge” or “pull request”

Git Branch Basics



Open Source Workflow (Github)

- You create a “fork” of the target repository
- Either use your own main branch or a feature branch on your repo
- git add && git commit your contribution
- Create a “pull request” to the target repo & branch, with the source as your repo & branch – following repo’s contribution guidelines
- Repo owner(s) approve PR, merging your changes with their branch

How About a Real Example?

- This is a lot of tech talk. Confused? - that’s okay!
- Git is a great tool to learn through experience
- Here’s some ideas!
  - Create your own repo for some writing, art, or basic code (if you know how)
  - Contribute to an existing open source project

How About a Real Example?

- https://github.com/chaintuts/addrvalid
- This example requires no code (or you could contribute code too!)
  - Directory `tests/res/`
  - Add a `.txt` file with a valid (legacy) DigiByte address – see example file `address1.txt`
  - Submit a pull request
  - Could also add an invalid address, some code improvements, whatever you like. I'll do my best to review and approve them.

Q&A - Ask Me Anything!

Find My Stuff

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