

The Git Parable

Johan Herland

<jherland@cisco.com>

The Git Parable

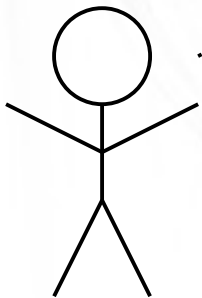
- Shamelessly stolen from Tom Preston-Werner
<http://tom.preston-werner.com/2009/05/19/the-git-parable.html>
- I'm lazy...
- Also: Best introduction to Git I've found so far

The Git Parable

- Git - simple & powerful

The Git Parable

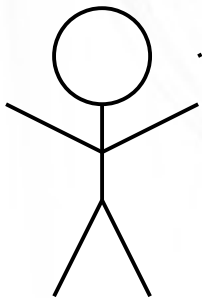
- Git - simple & powerful



```
git init  
git add ...  
git commit ...  
git branch ...  
git checkout ...  
git tag ...  
git diff ...  
git log ...  
git remote ...  
git fetch ...  
git pull ...  
git push ...  
...
```

The Git Parable

- Git - simple & powerful

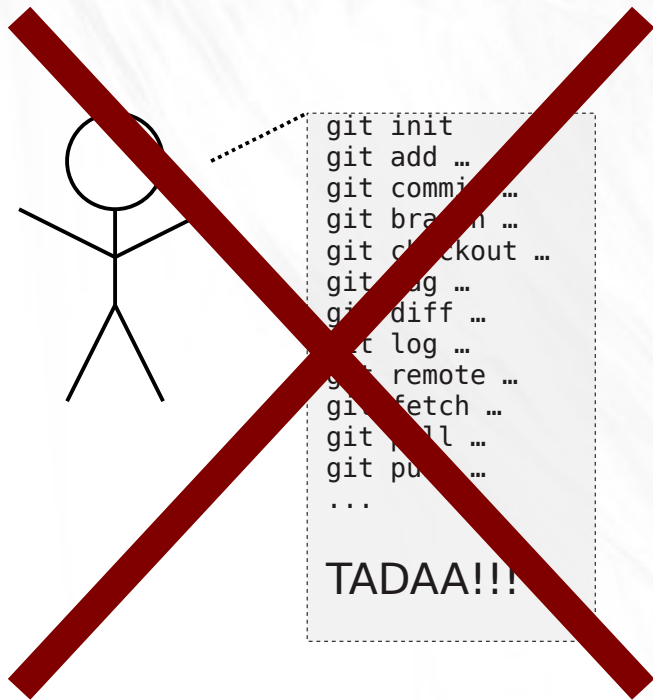


```
git init  
git add ...  
git commit ...  
git branch ...  
git checkout ...  
git tag ...  
git diff ...  
git log ...  
git remote ...  
git fetch ...  
git pull ...  
git push ...  
...
```

TADAA!!!

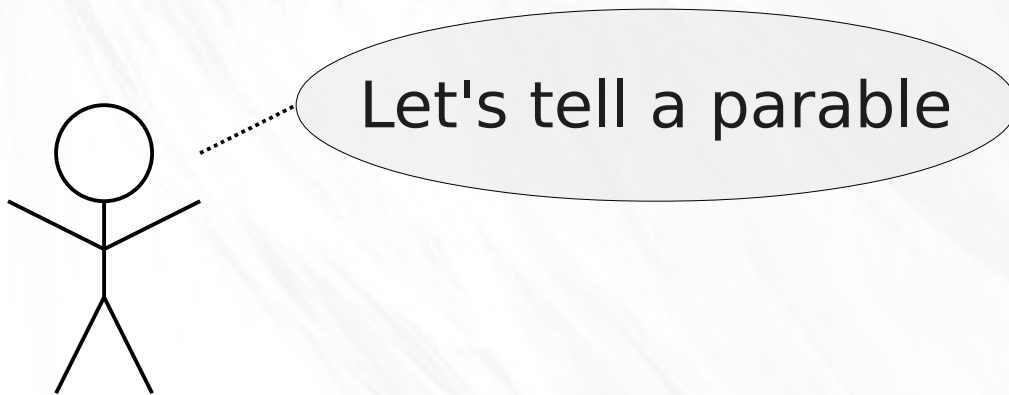
The Git Parable

- Git - simple & powerful



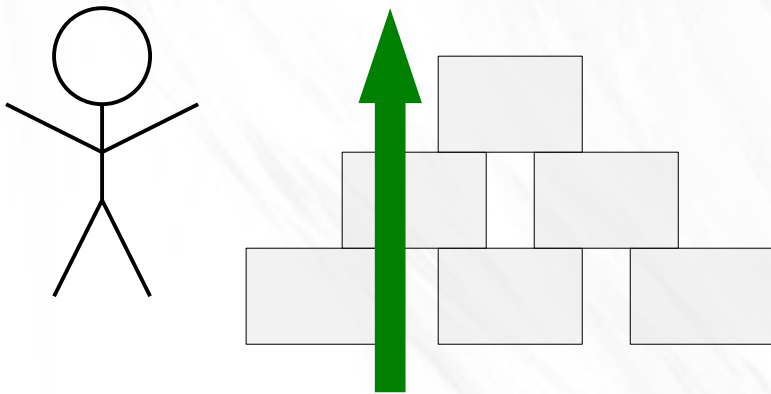
The Git Parable

- Git - simple & powerful



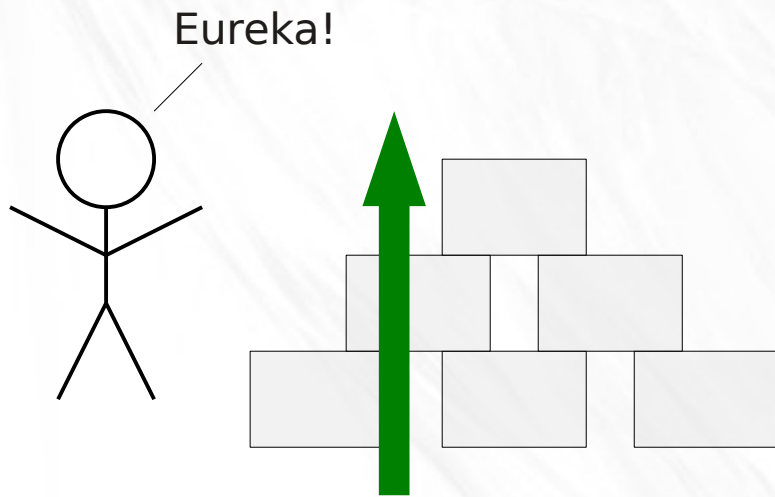
The Git Parable

- Git - simple & powerful



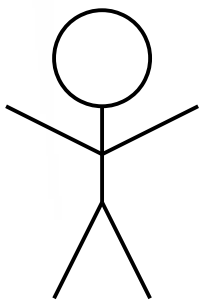
The Git Parable

- Git - simple & powerful



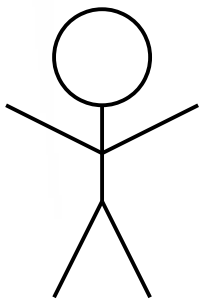
The Parable

- A simple computer
 - A text editor
 - A few filesystem commands



The Parable

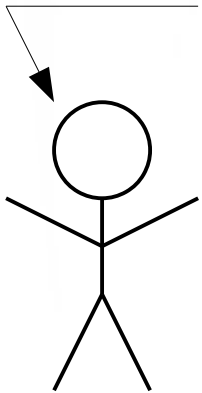
- Write a large software program



The Parable

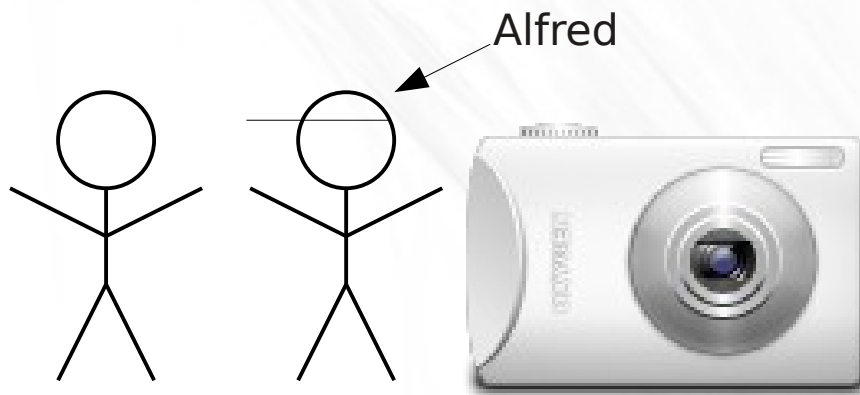
- Write a large software program
- Invent some method to keep track of versions
 - retrieve code that you changed/deleted

Responsible!



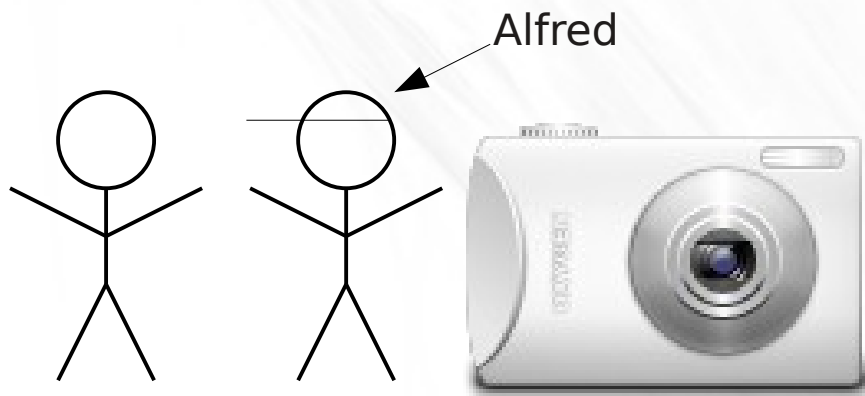
Snapshots

- Alfred, the photographer



Snapshots

- Alfred, the photographer



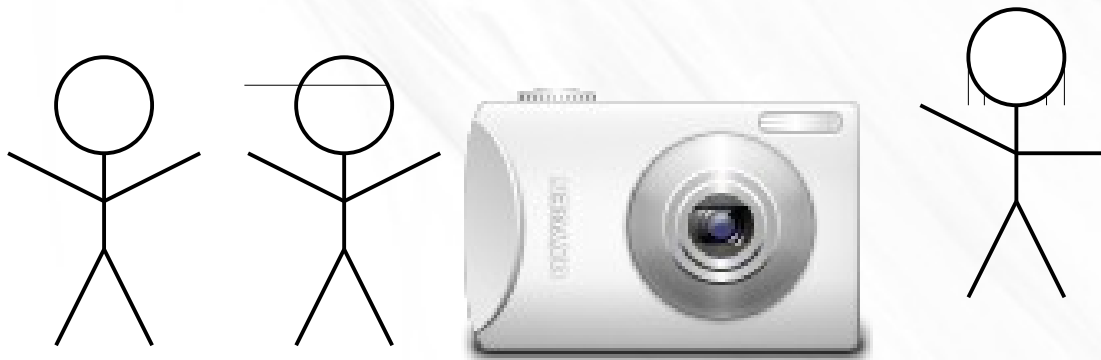
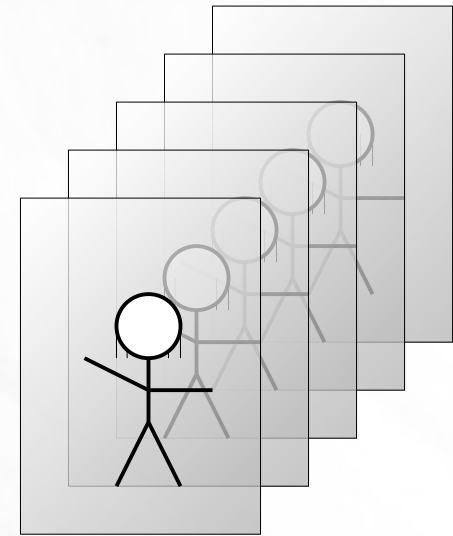
Snapshots

- Alfred, the photographer
- Hazel and her daughter



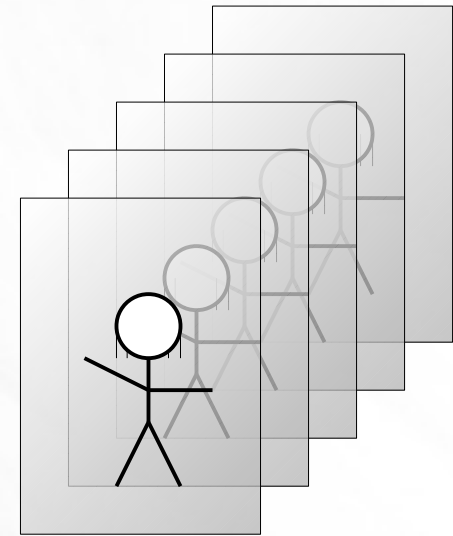
Snapshots

- Alfred, the photographer
- Hazel and her daughter
 - Remember what the daughter was like at each different stage



Snapshots

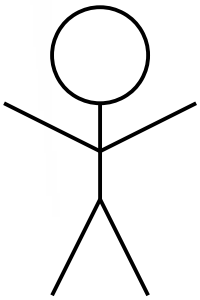
- Alfred, the photographer
- Hazel and her daughter
 - Remember what the daughter was like at each different stage



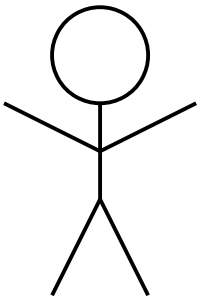
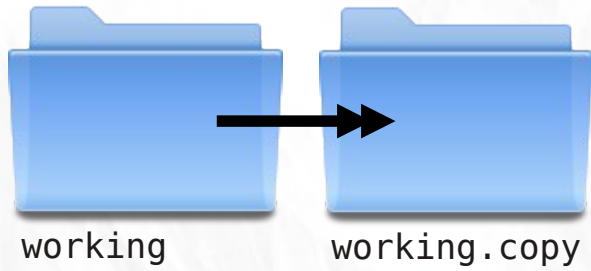
Snapshots



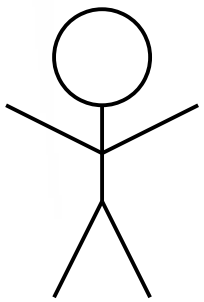
working



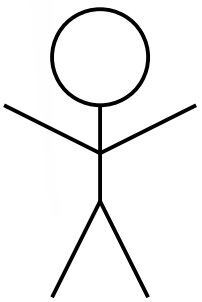
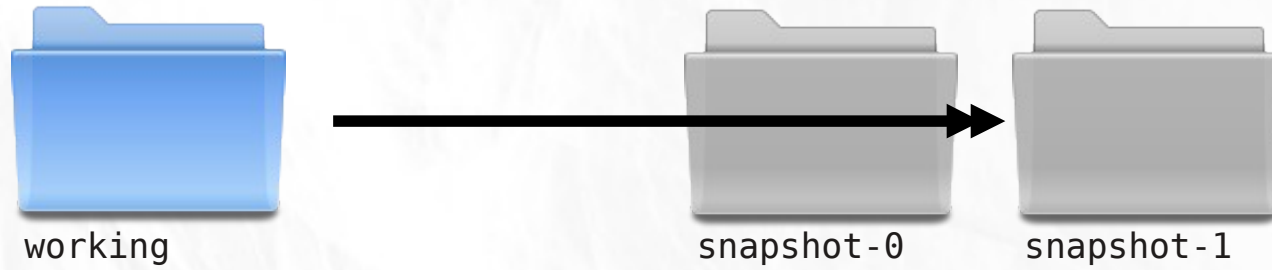
Snapshots



Snapshots



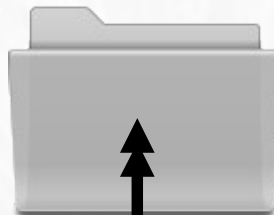
Snapshots



Snapshots



working



snapshot-0



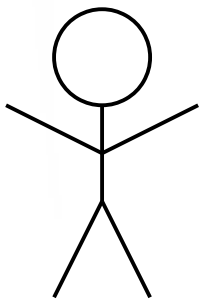
snapshot-1



message



message



2009-05-20 12:34:56

Initial version

2009-05-21 23:45:01

Introduced a new foo,
and reset the bar to
xyzyz.

Branches



working



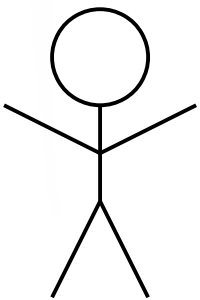
snapshot-0



snapshot-1



snapshot-99



Branches



working



snapshot-0



snapshot-1

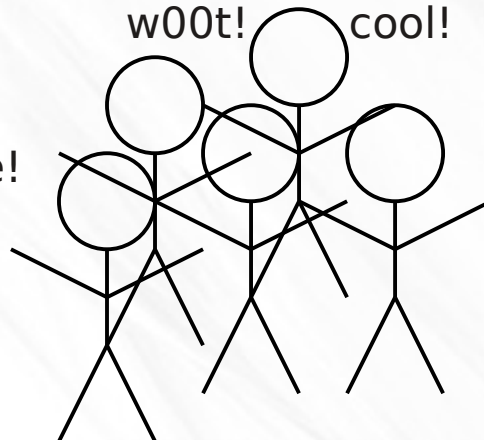
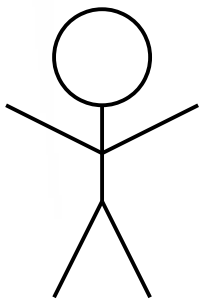


snapshot-99



w00t! cool!

nice!



Branches



working



snapshot-0



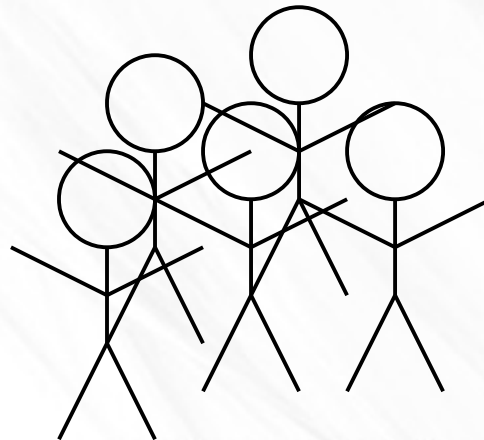
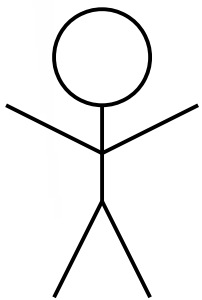
snapshot-1



snapshot-99



snapshot-109



Branches



working



snapshot-0



snapshot-1

...



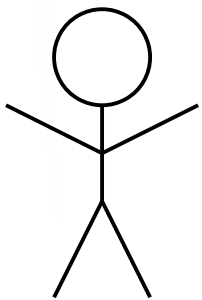
snapshot-99

...

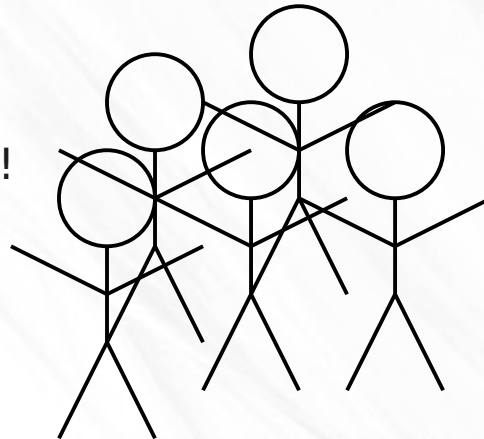


snapshot-109

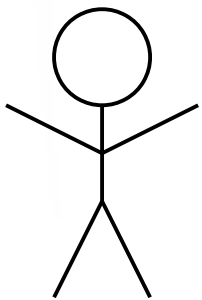
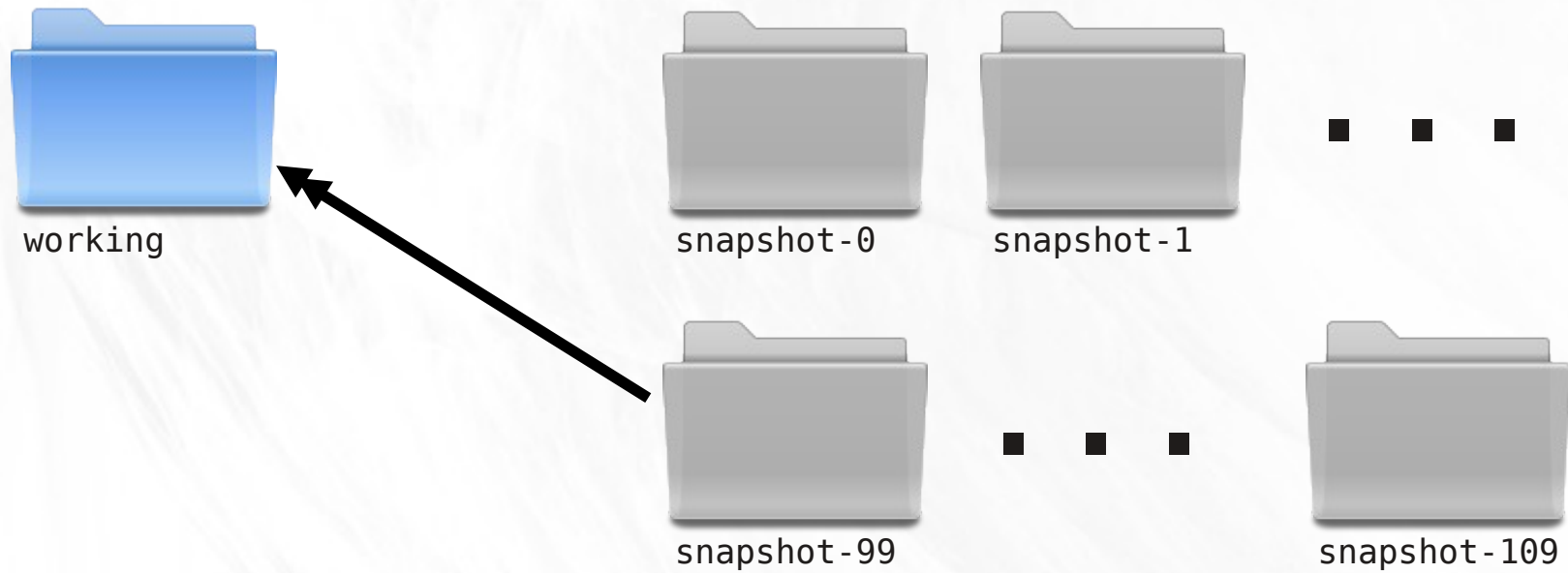
Does not work!



Boo!



Branches



Branches



working



snapshot-0



snapshot-1

...

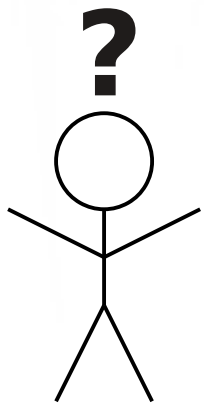


snapshot-99

...



snapshot-109

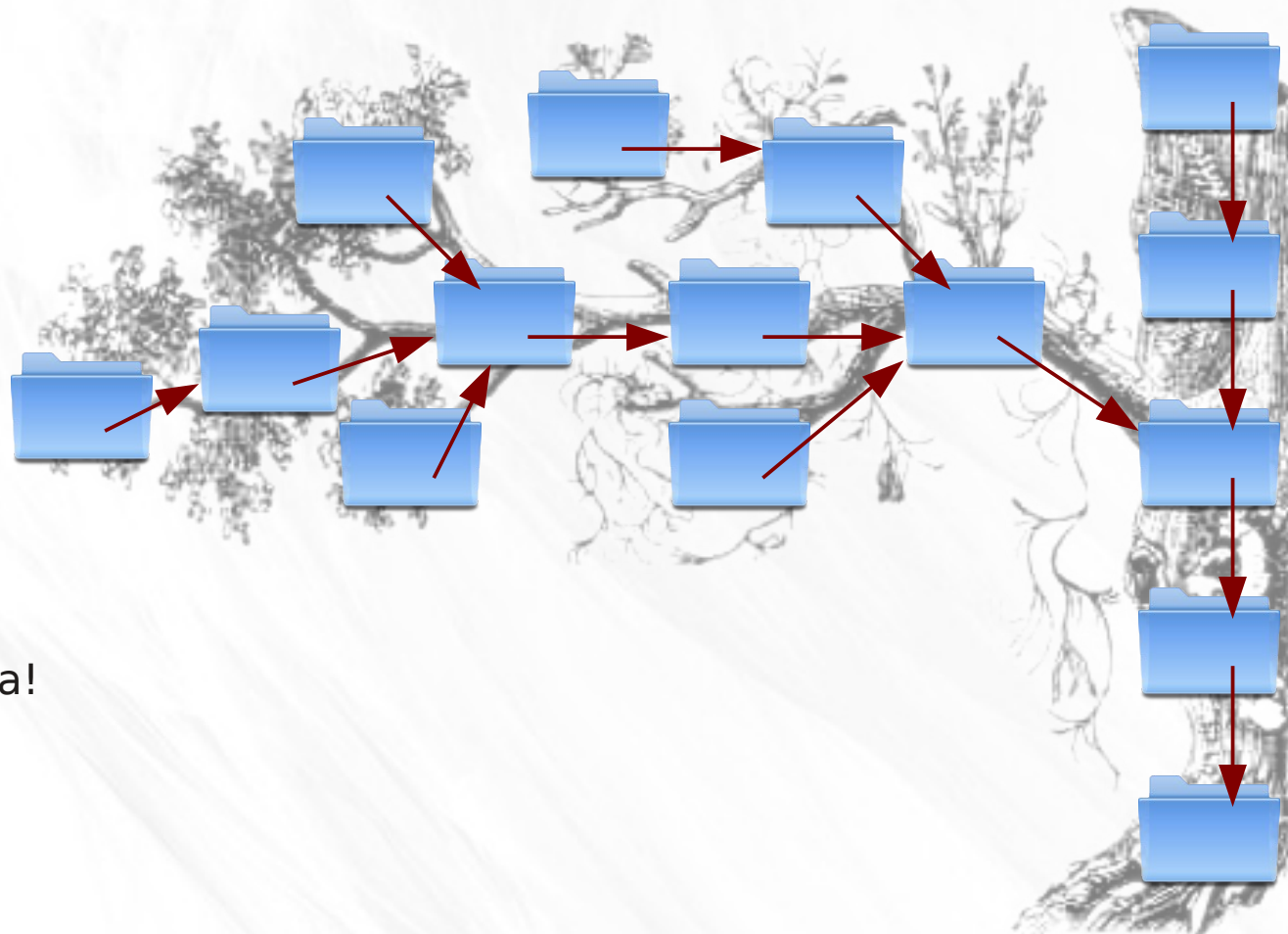


snapshot-110

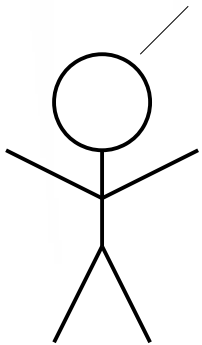
Branches



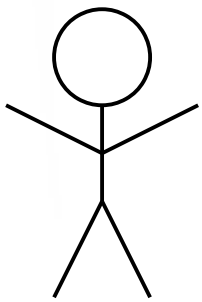
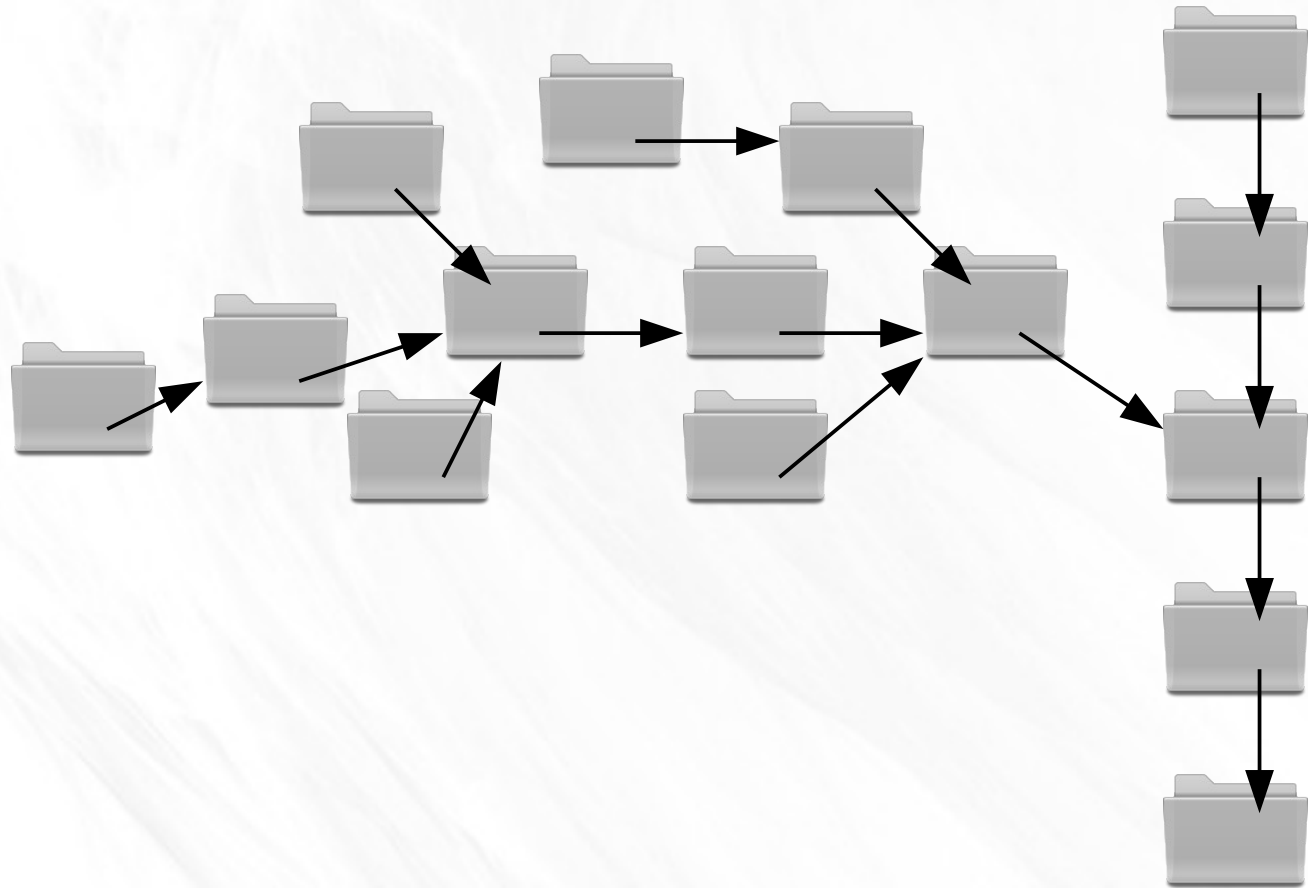
Branches



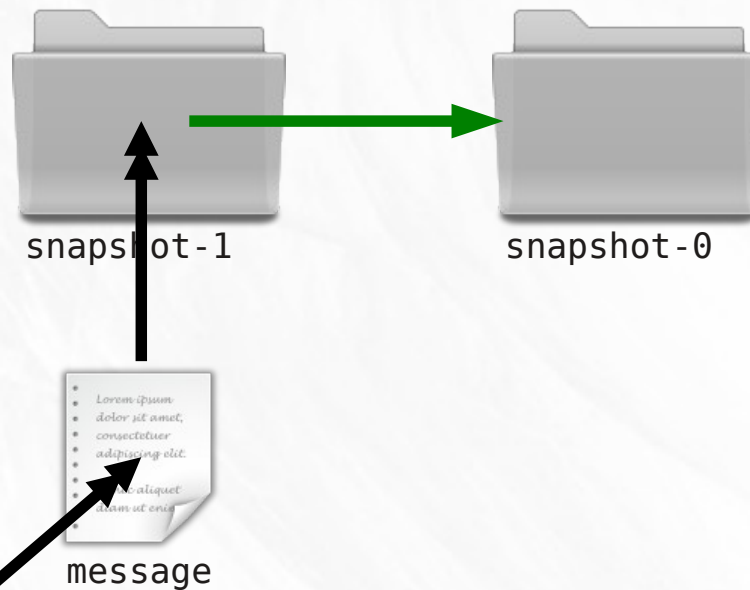
Eureka!



Branches



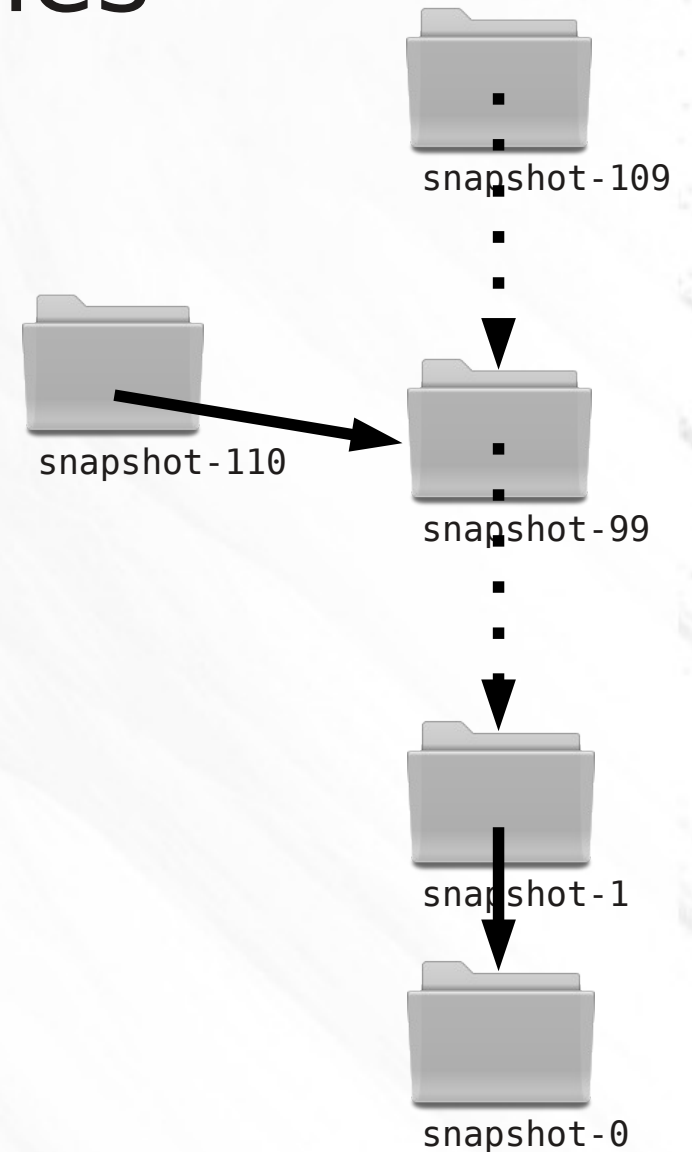
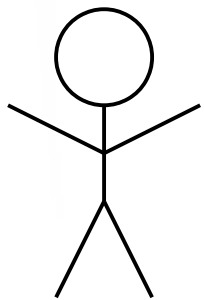
Branches



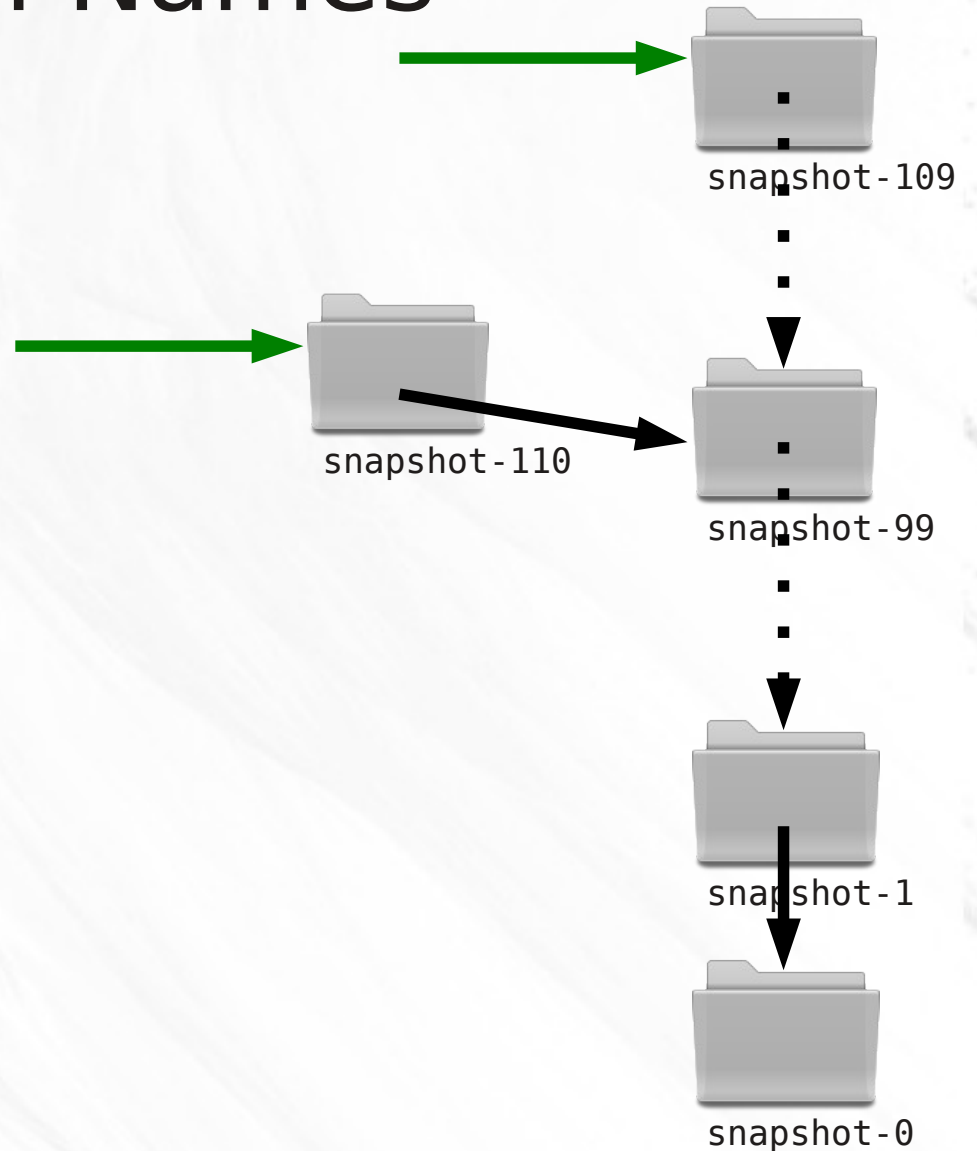
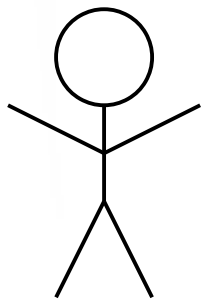
2009-05-21 23:45:01
parent: snapshot-0

Introduced a new foo,
and reset the bar to
xyzyy.

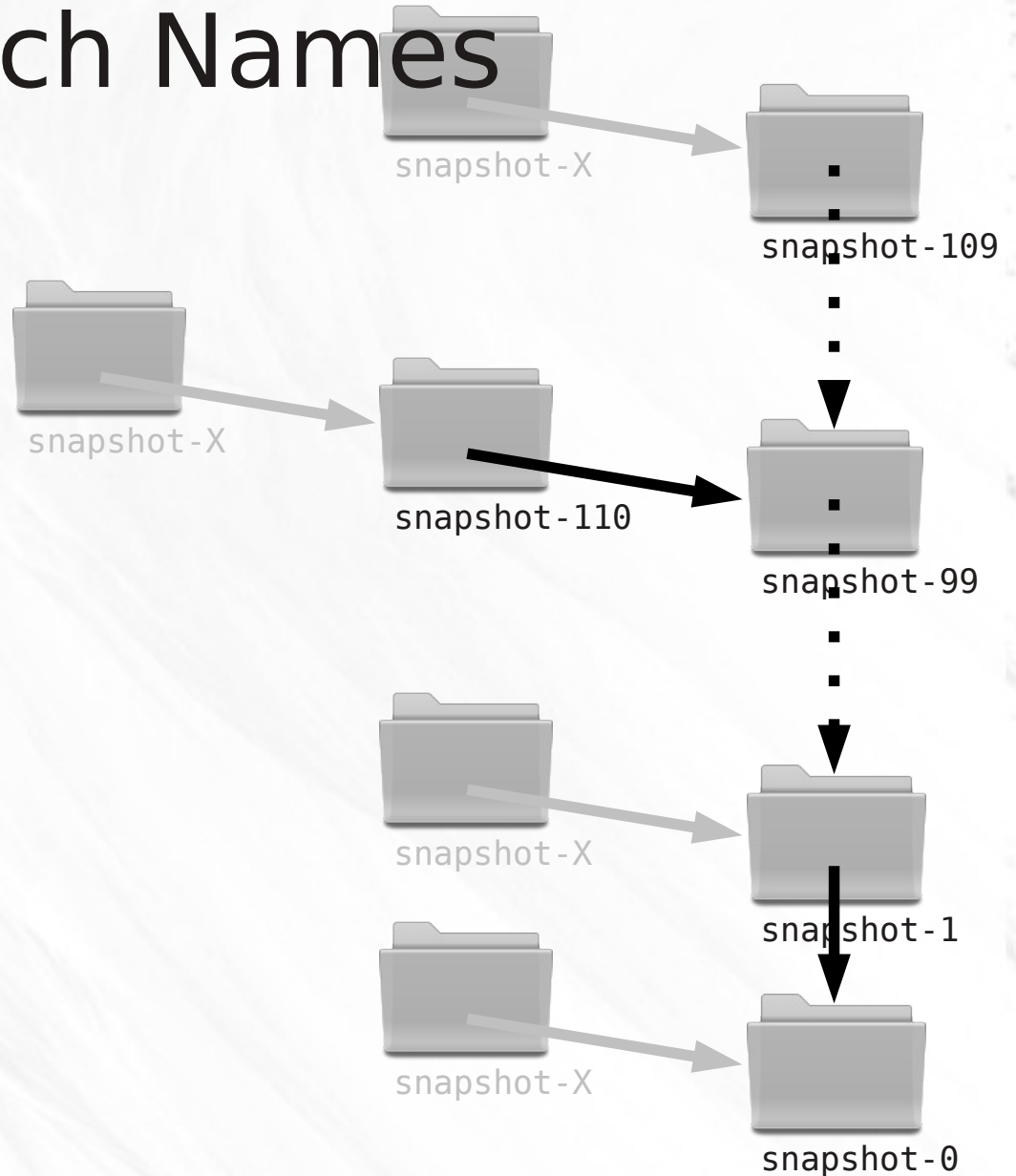
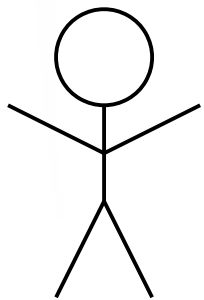
Branch Names



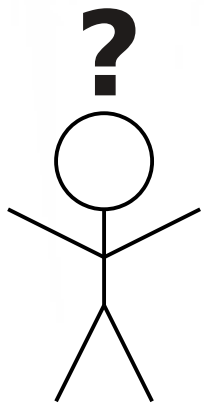
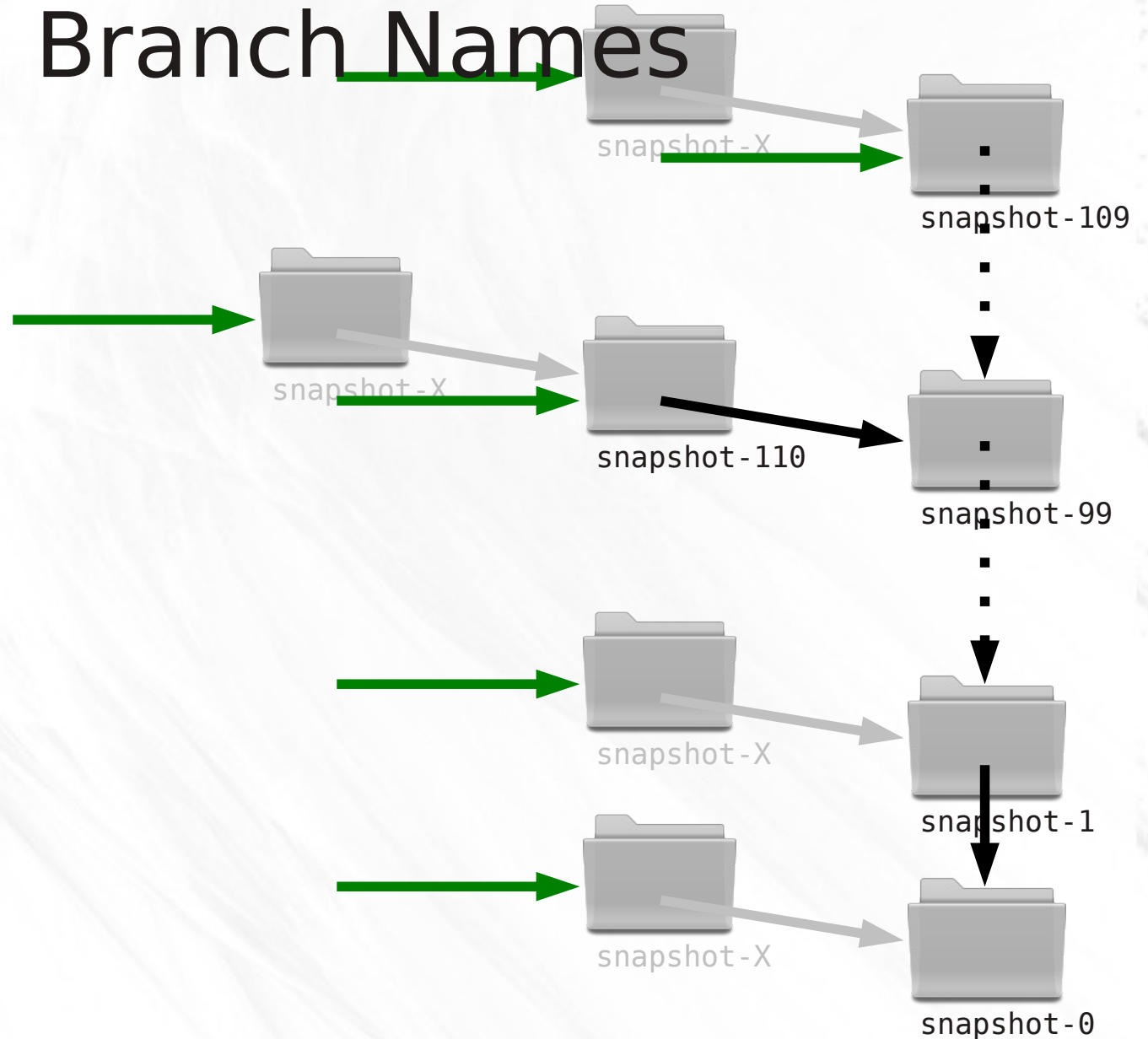
Branch Names



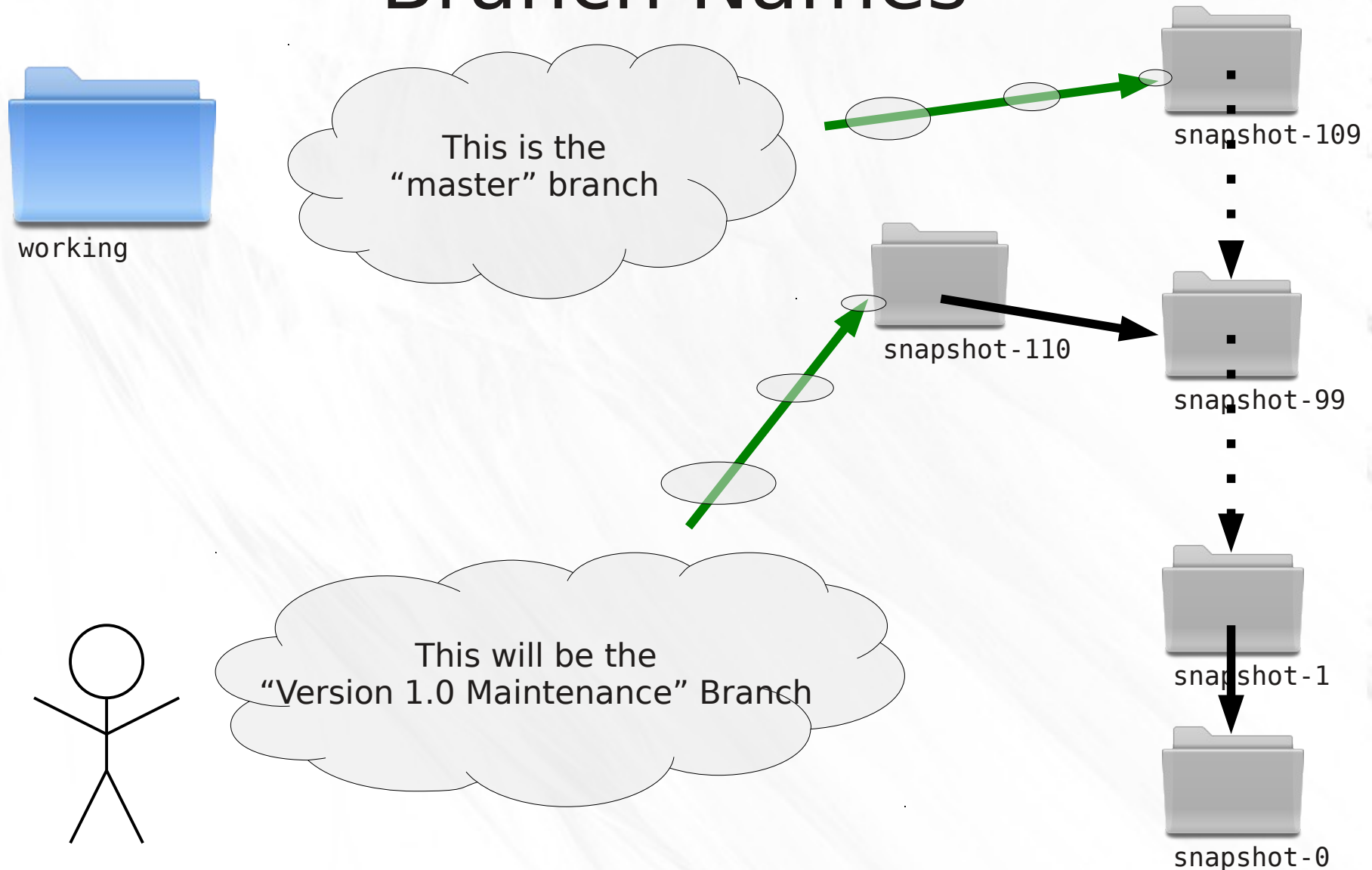
Branch Names



Branch Names



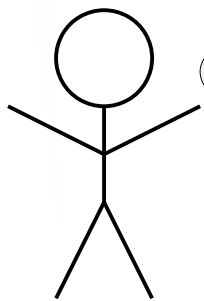
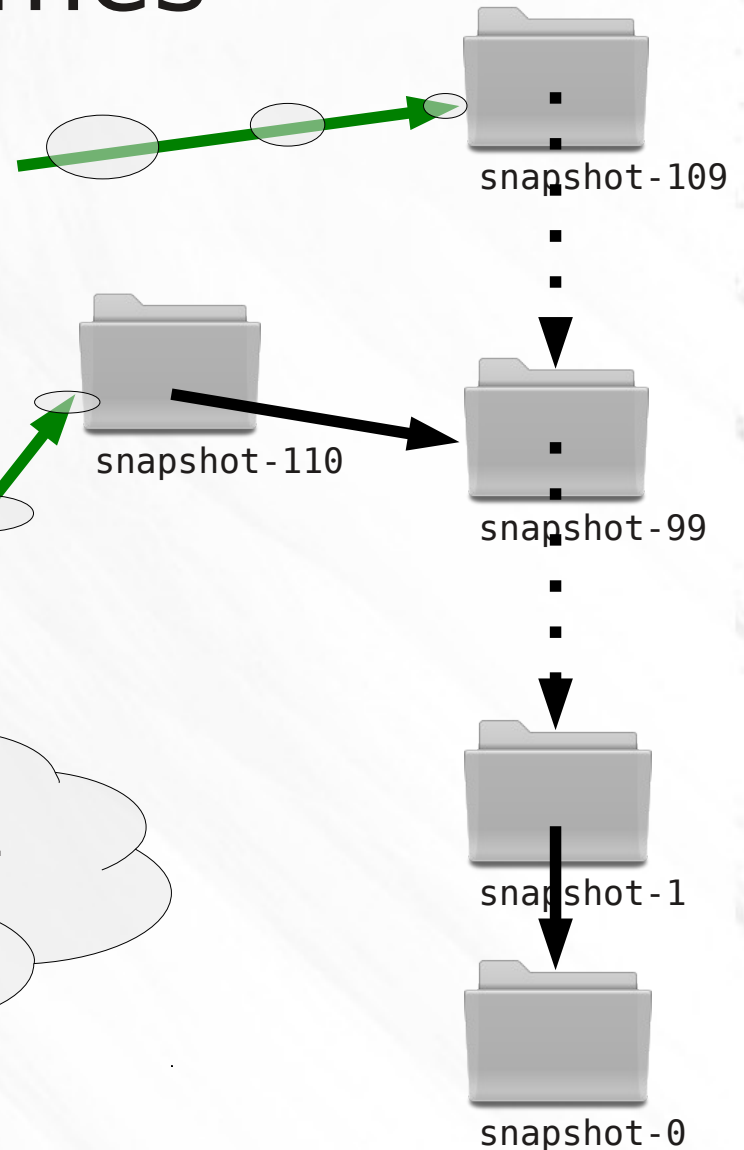
Branch Names



Branch Names

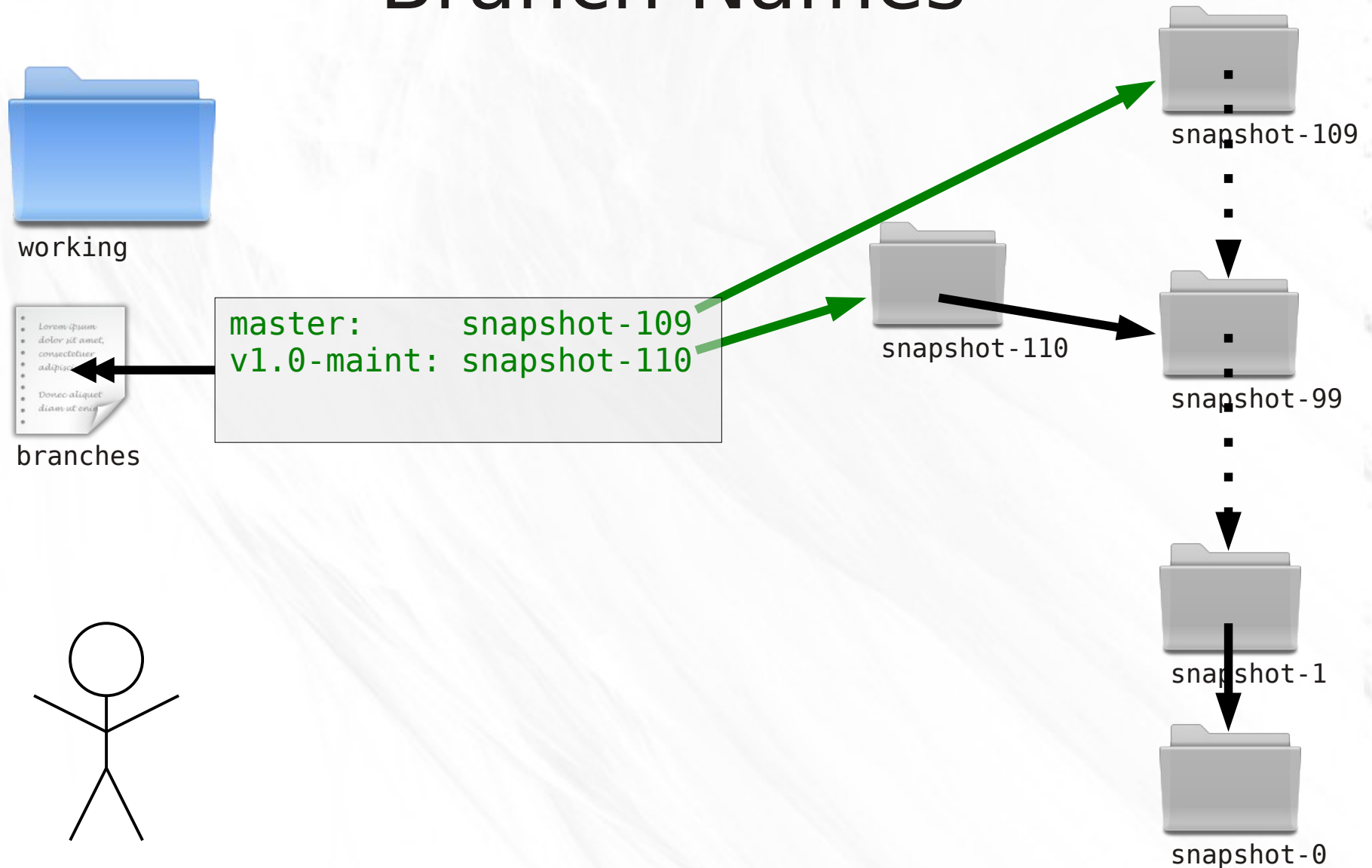


This is the
“master” branch.
It contains:
snapshot-109
(and its ancestors)

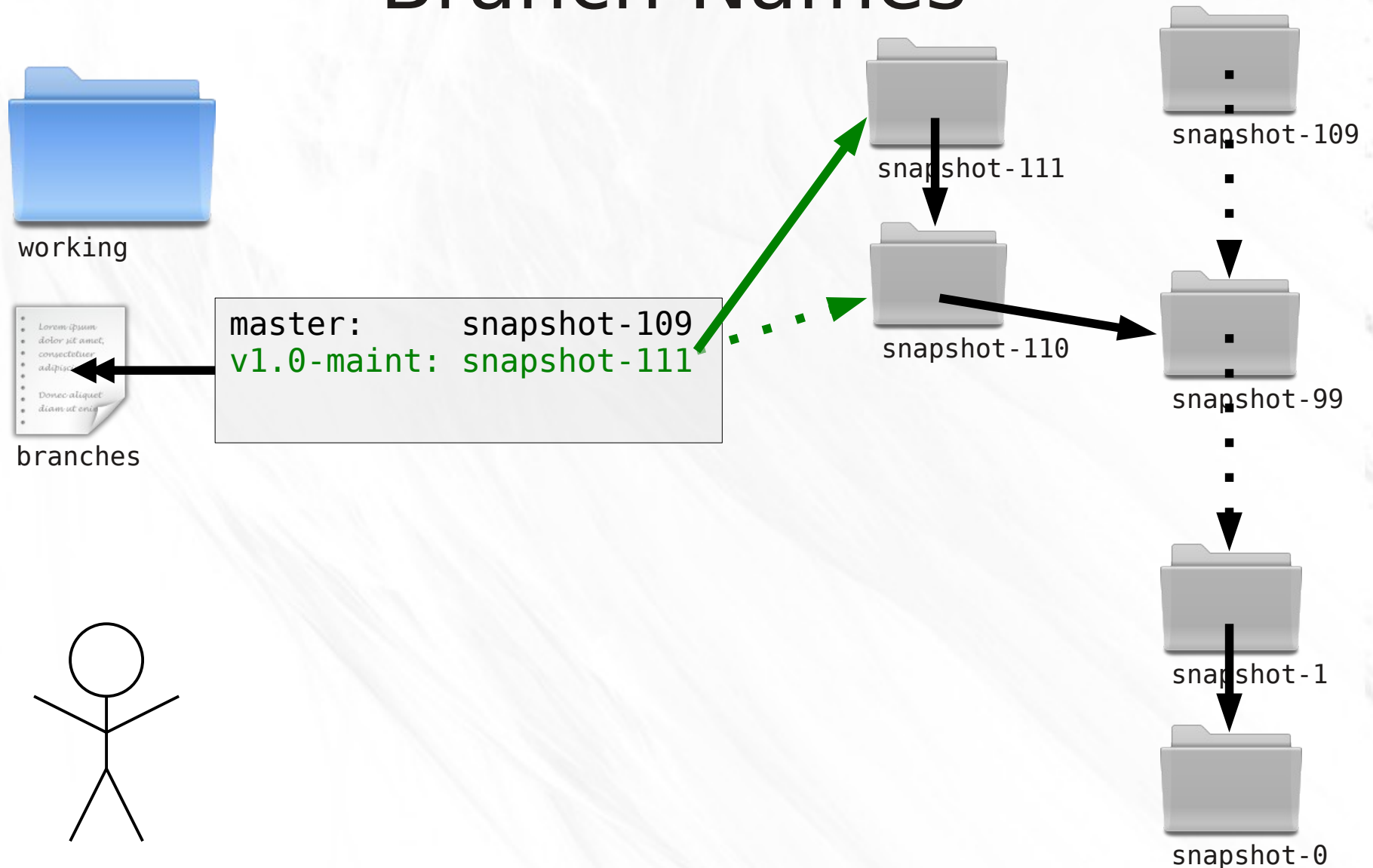


This is the
“Version 1.0 Maintenance” Branch.
It contains:
snapshot-110
(and its ancestors)

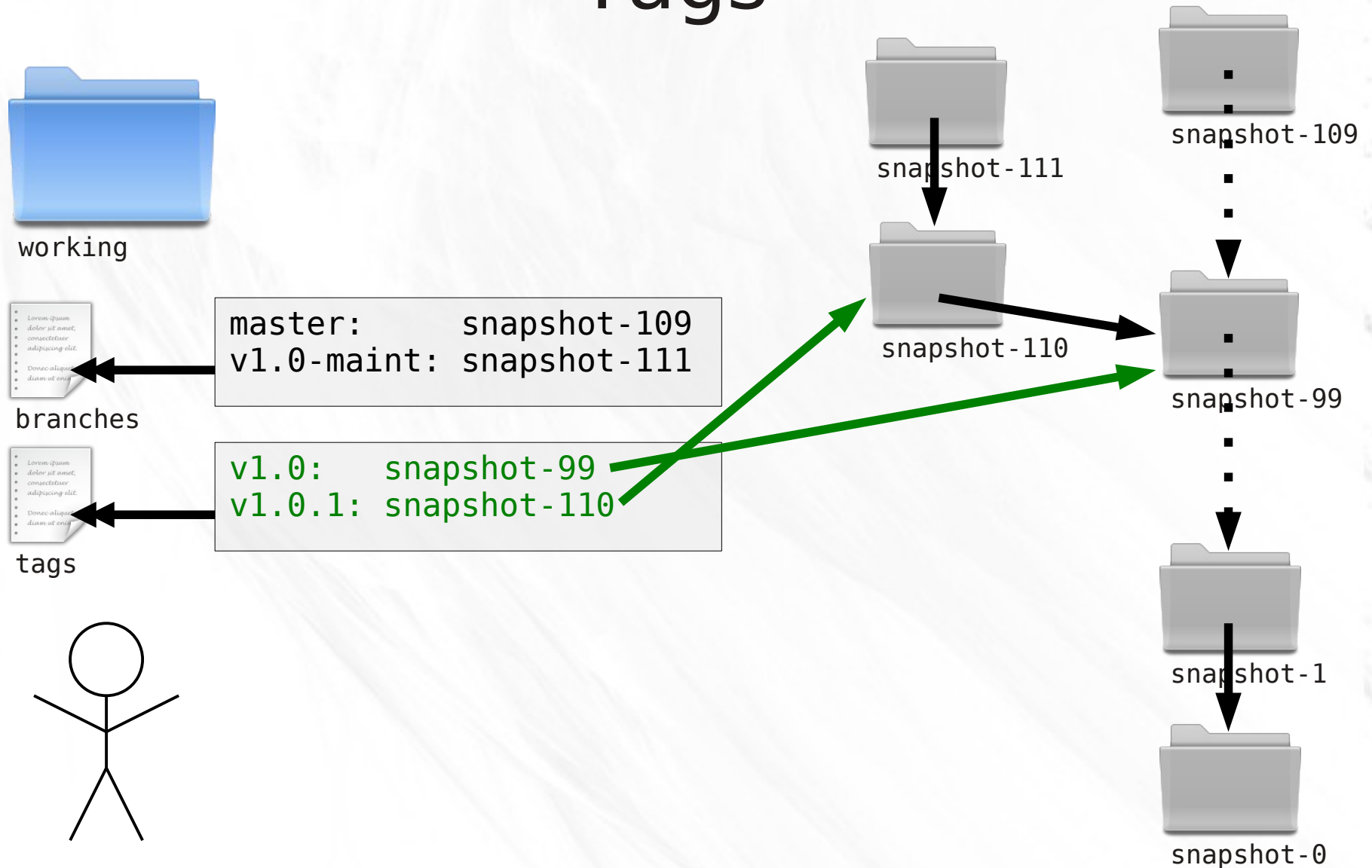
Branch Names



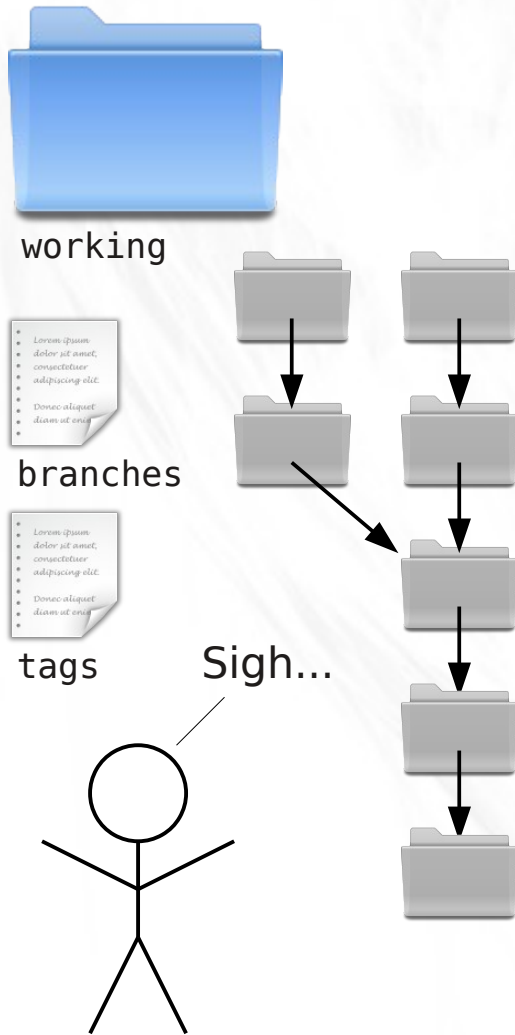
Branch Names



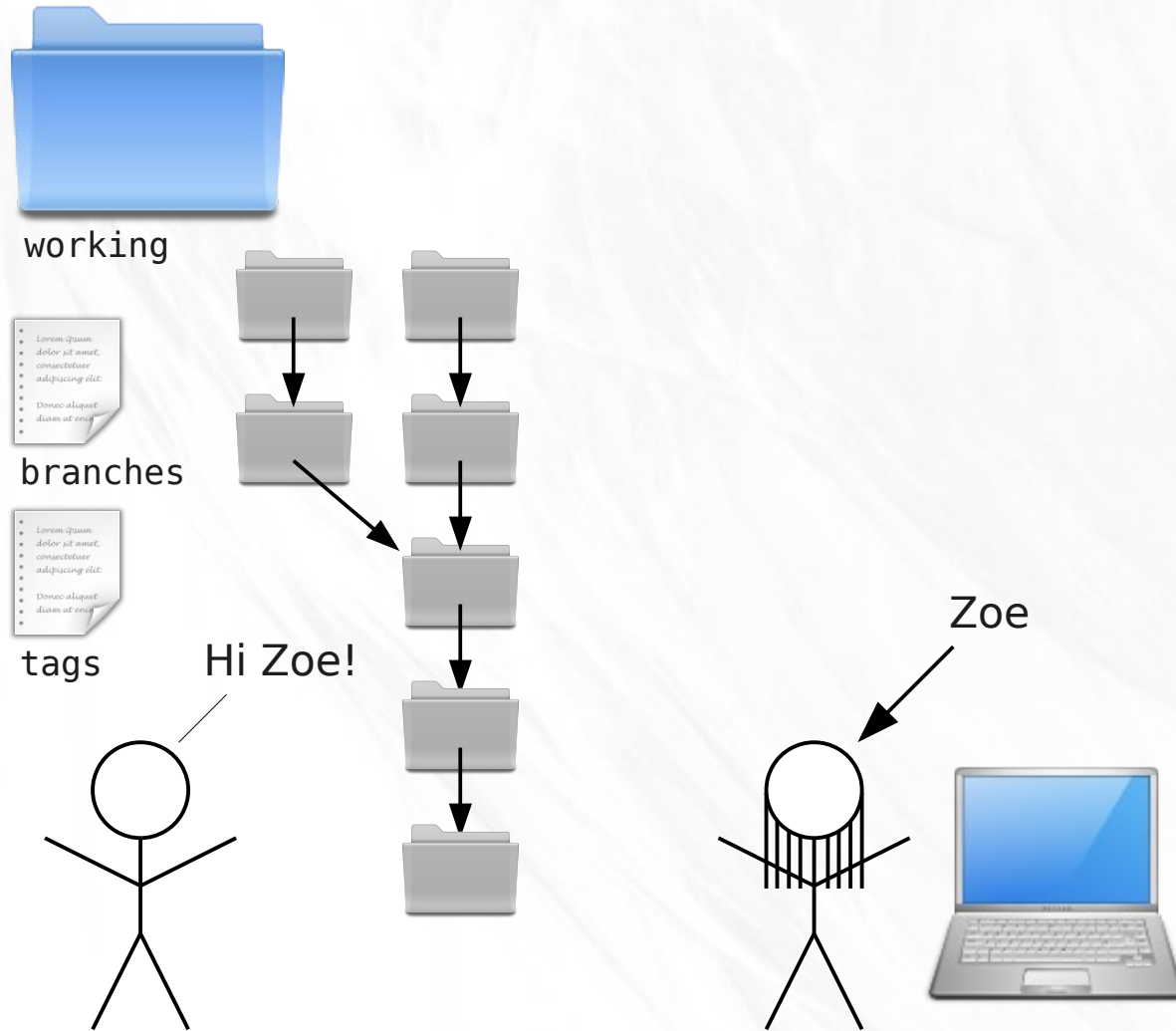
Tags



Distributed



Distributed



Distributed



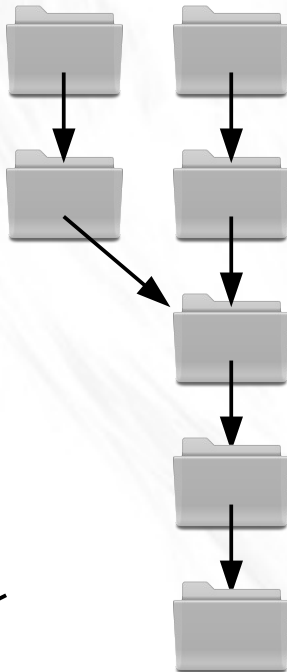
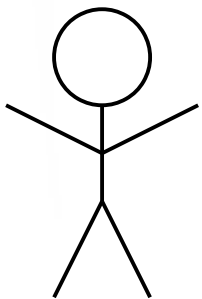
working



branches



tags



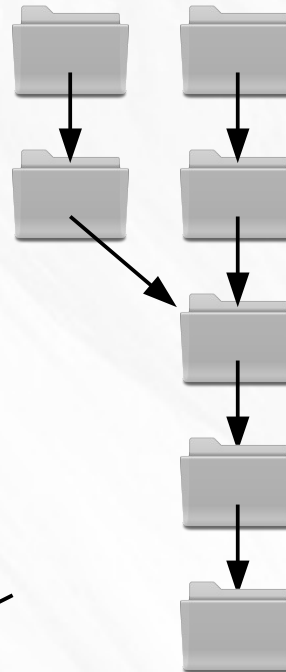
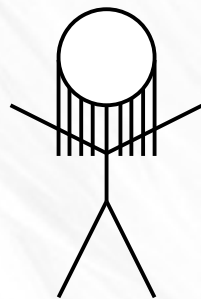
working



branches



tags



Distributed



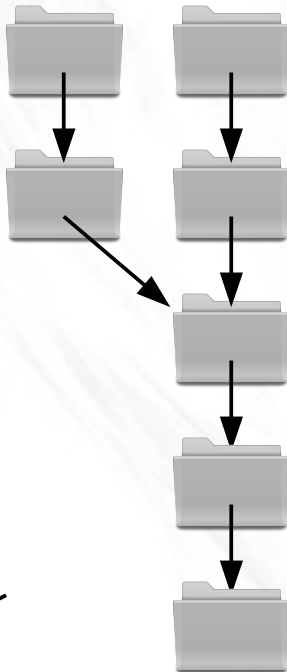
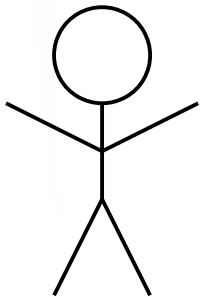
working



branches



tags



working

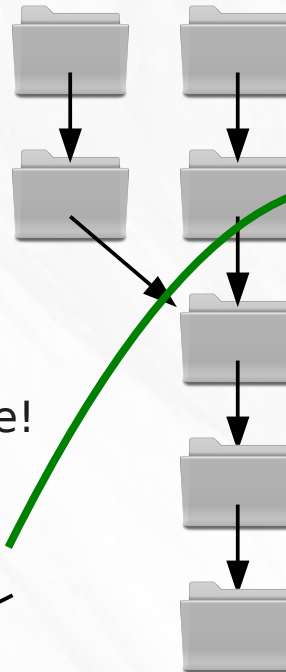
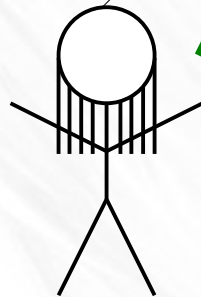


branches

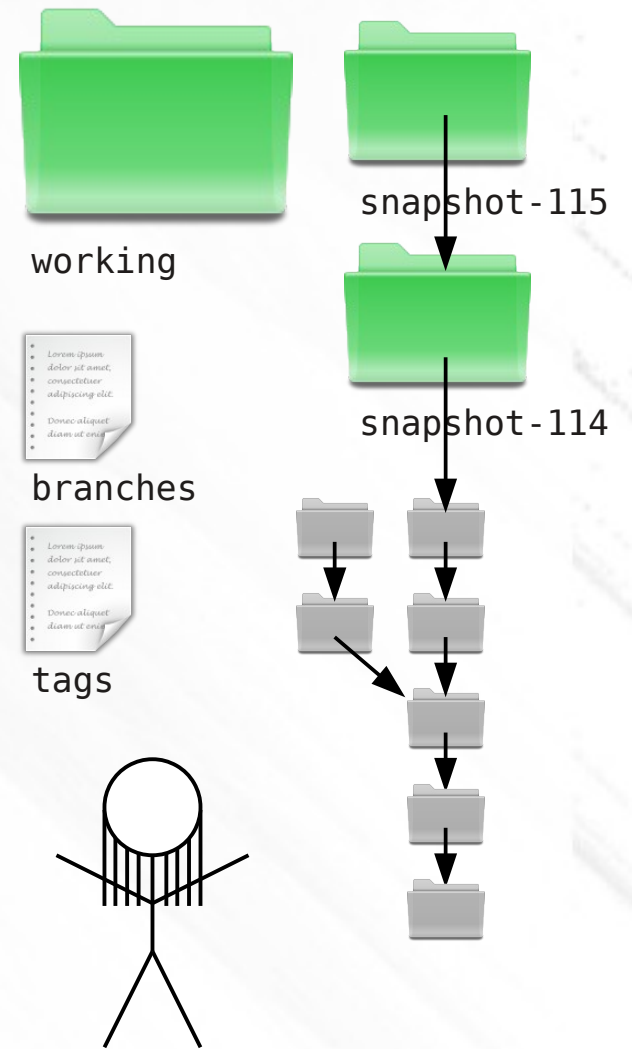
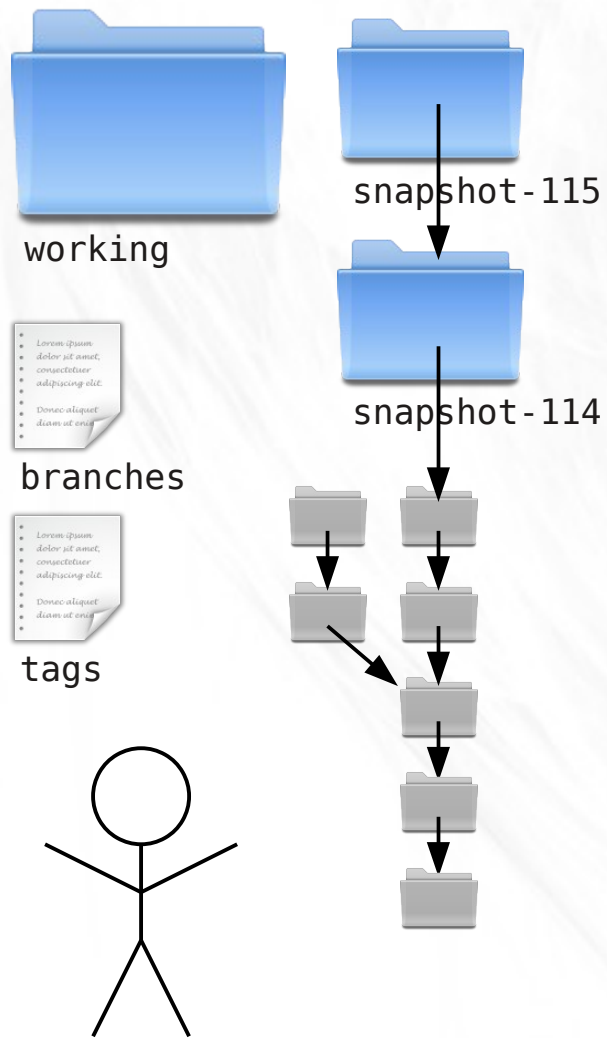


tags

Bye!



Distributed



Distributed



snapshot-114



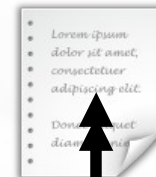
message

2009-05-22 12:12:12
parent: snapshot-113
author: Me <me@me.me>

Blarfle, a cool new
feature; extends the
existing blorg.



snapshot-114



message

2009-05-21 23:45:01
parent: snapshot-113
author: Zoe <zoe@z.oe>

Introduced a new foo,
and reset the bar to
xyzyz.

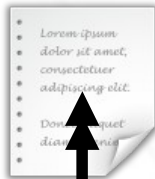
Distributed



8ba3441b6b89cad23387ee875f2ae55069291f4b



SHA1



message

2009-05-22 12:12:12
parent: snapshot-113
author: Me <me@me.me>

Blarfle, a cool new
feature; extends the
existing blorg.



db9ecb5b5a6294a8733503ab57577db96ff2249e



SHA1

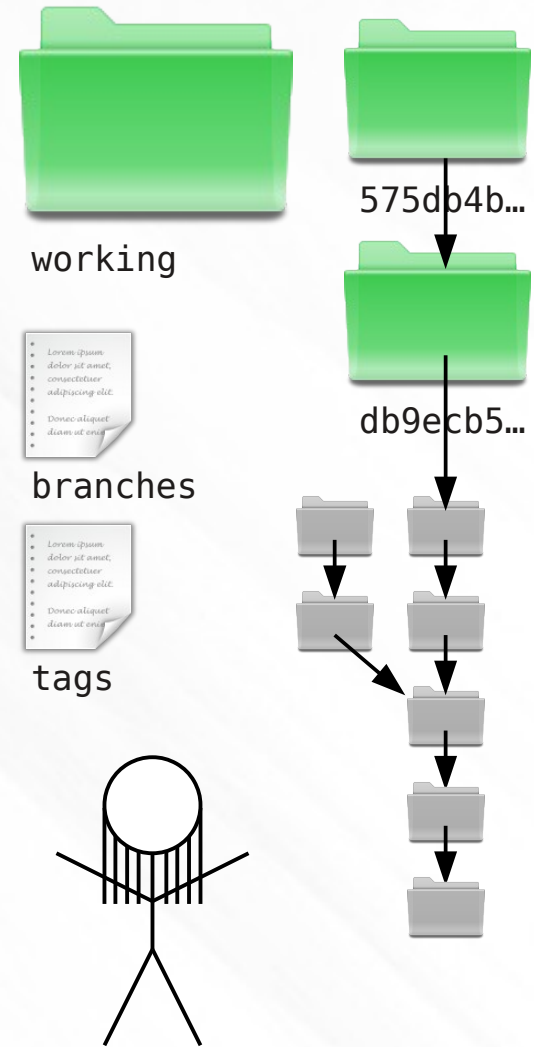
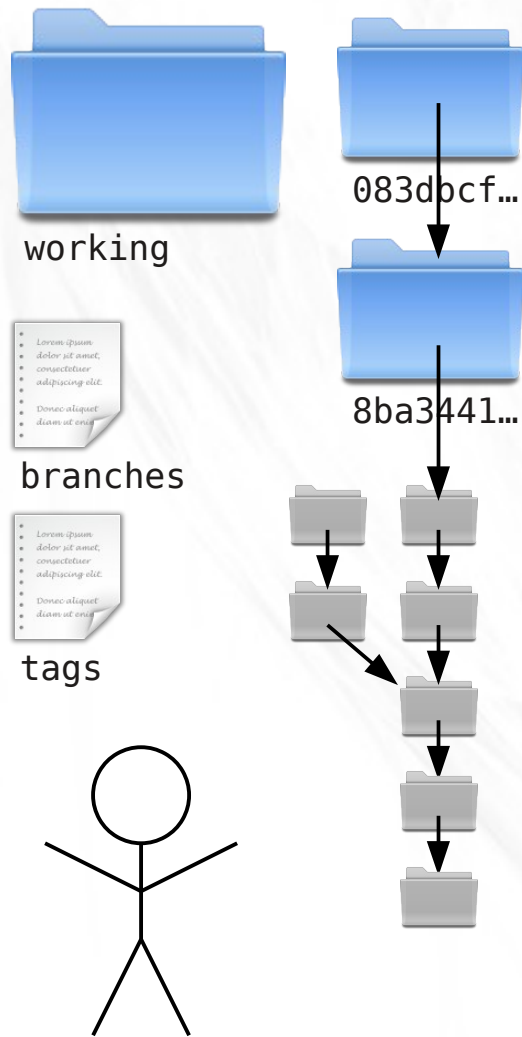


message

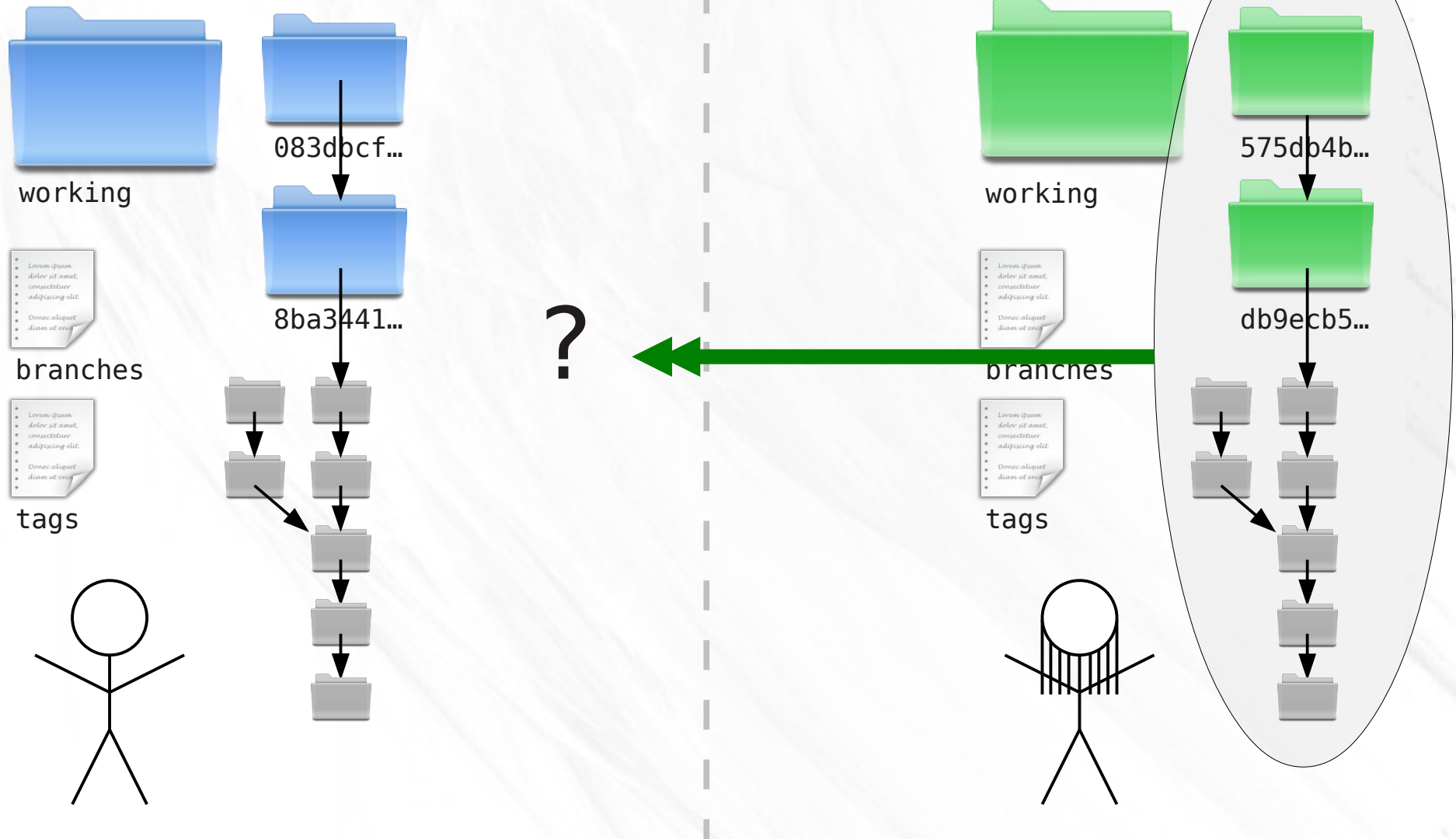
2009-05-21 23:45:01
parent: snapshot-113
author: Zoe <zoe@z.oe>

Introduced a new foo,
and reset the bar to
xyzyz.

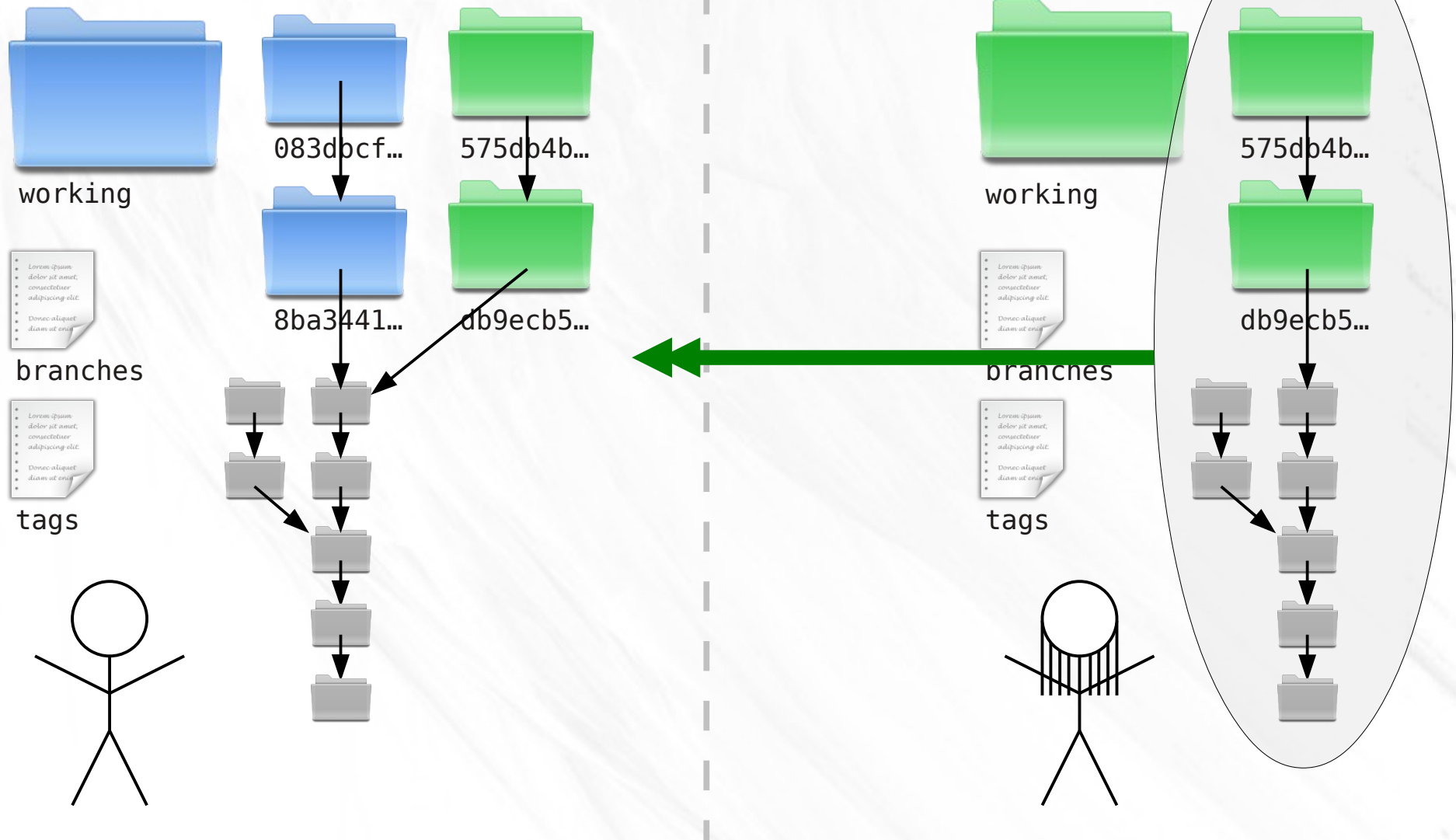
Distributed



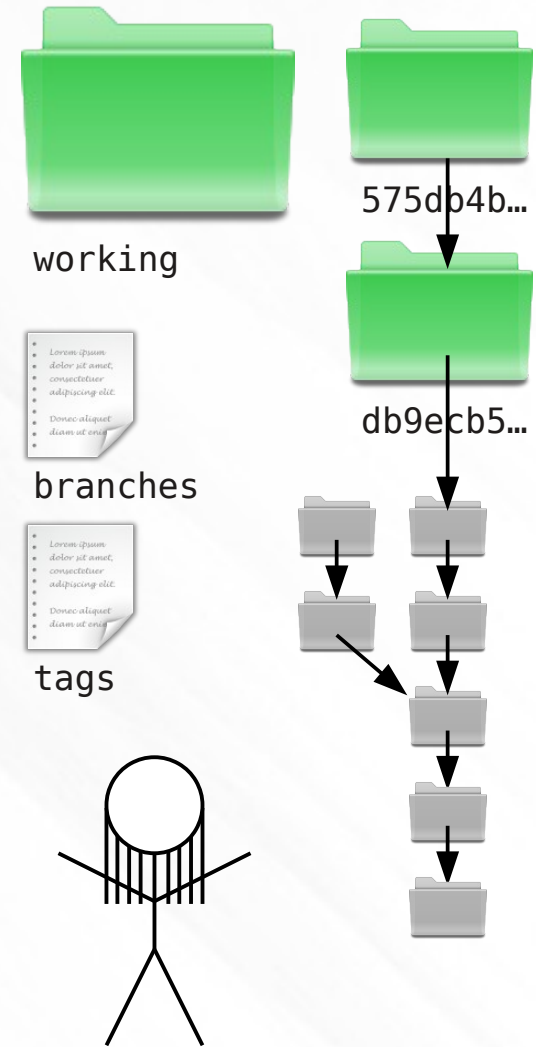
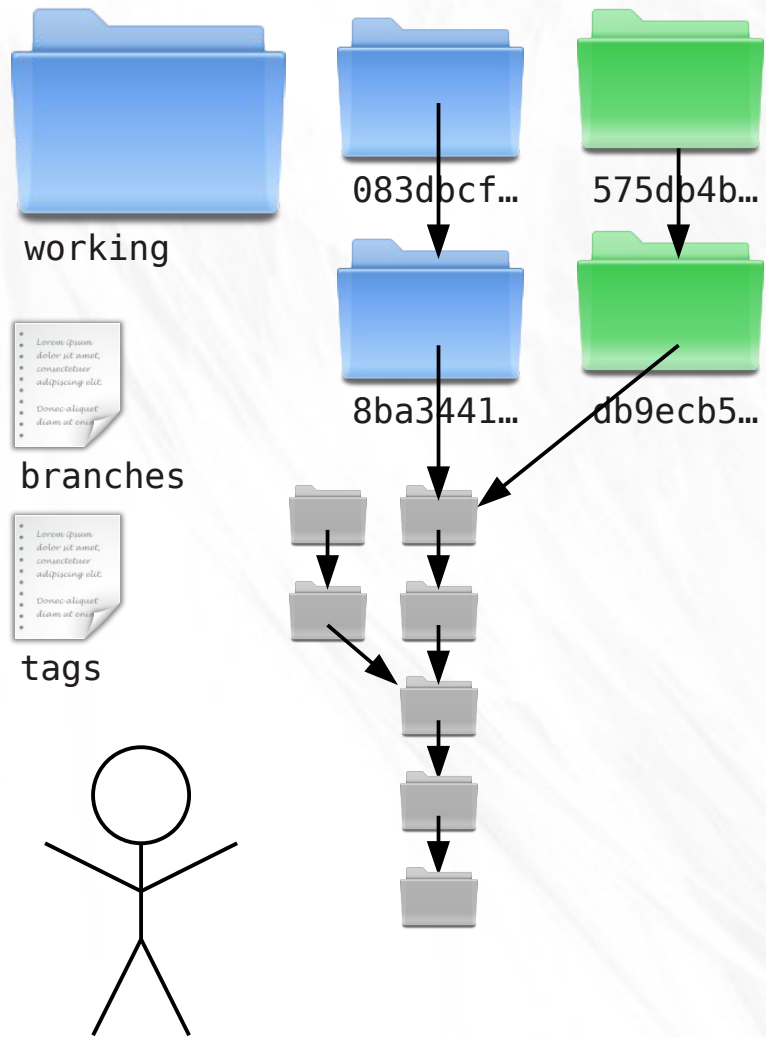
Distributed



Distributed



Distributed



Offline



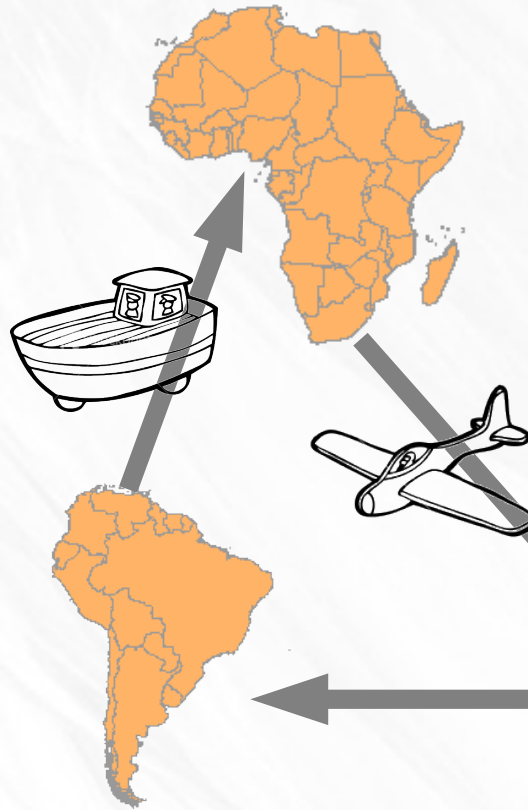
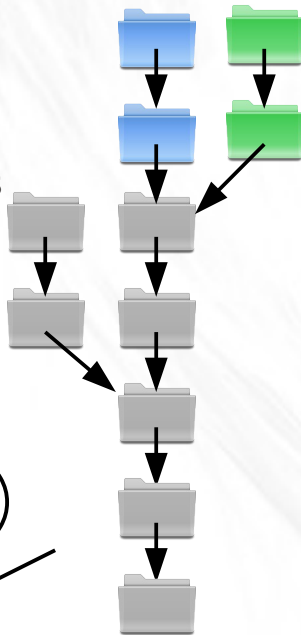
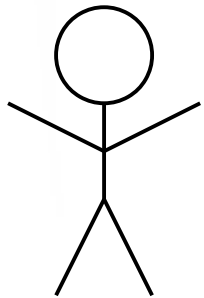
working



branches



tags



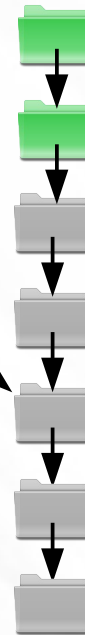
working



branches



tags



Offline



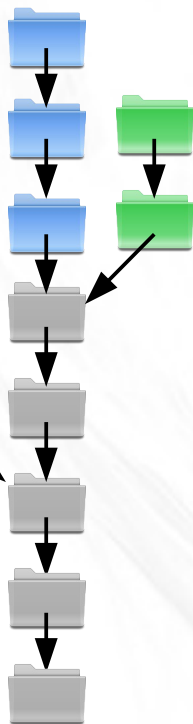
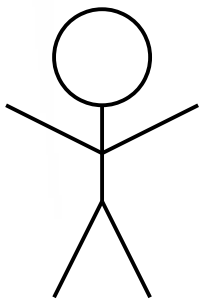
working



branches



tags



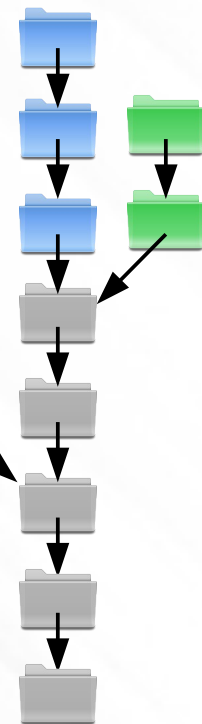
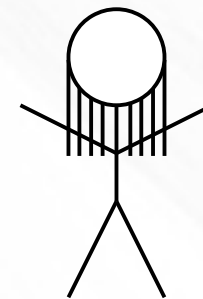
working



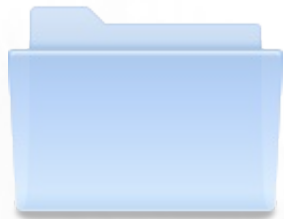
branches



tags



(simpler drawings)



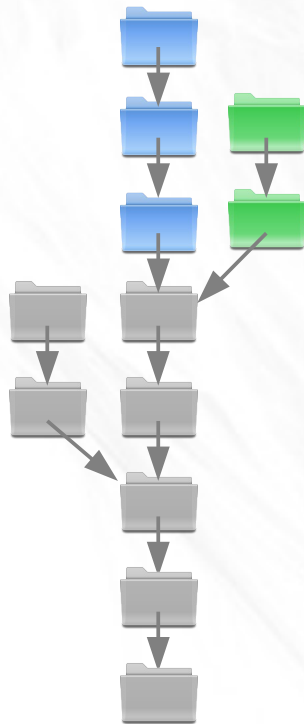
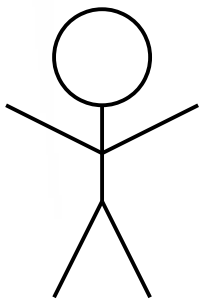
working



branches



tags



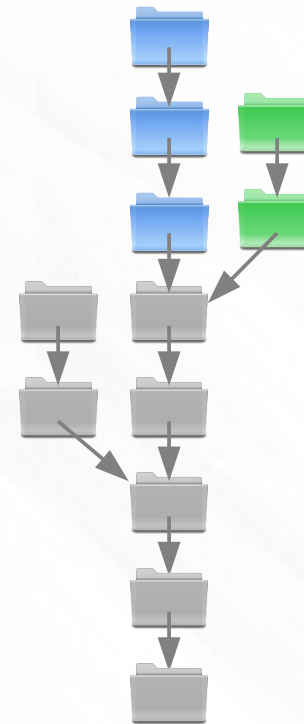
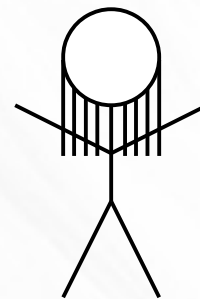
working



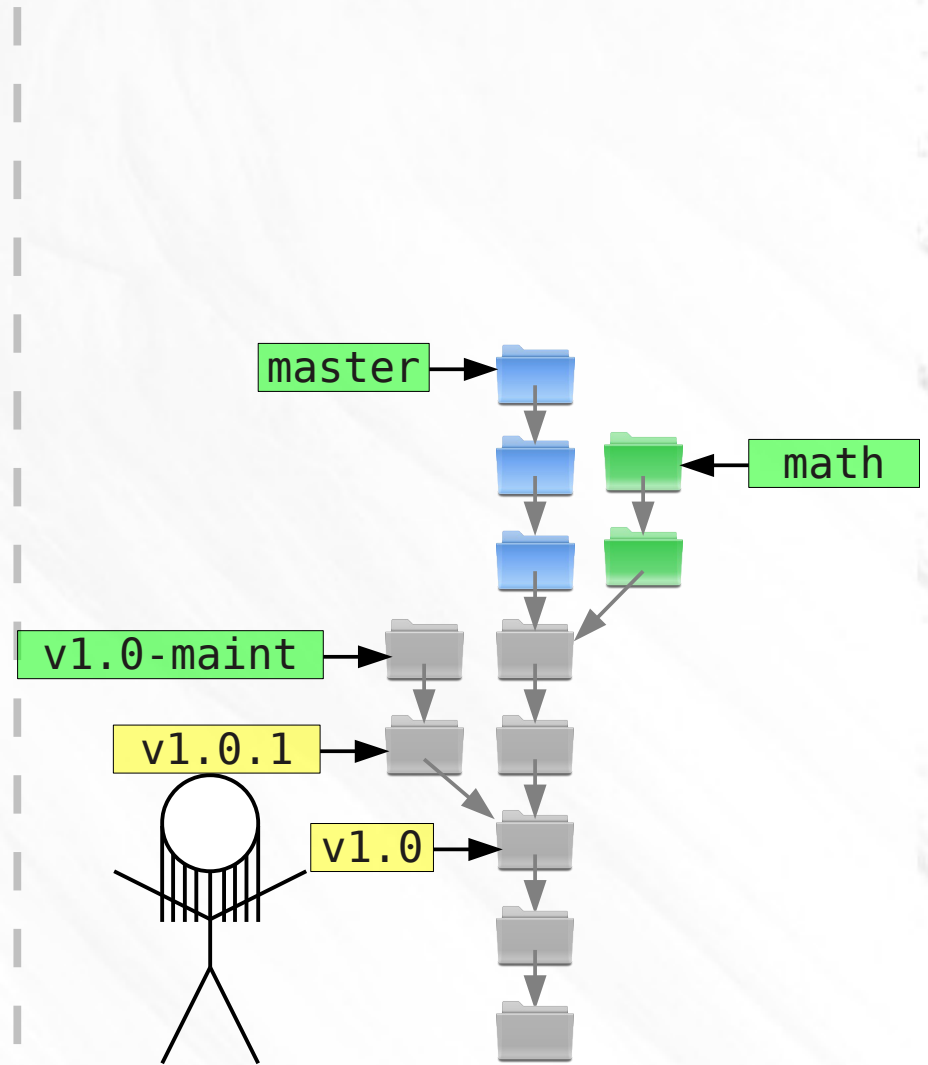
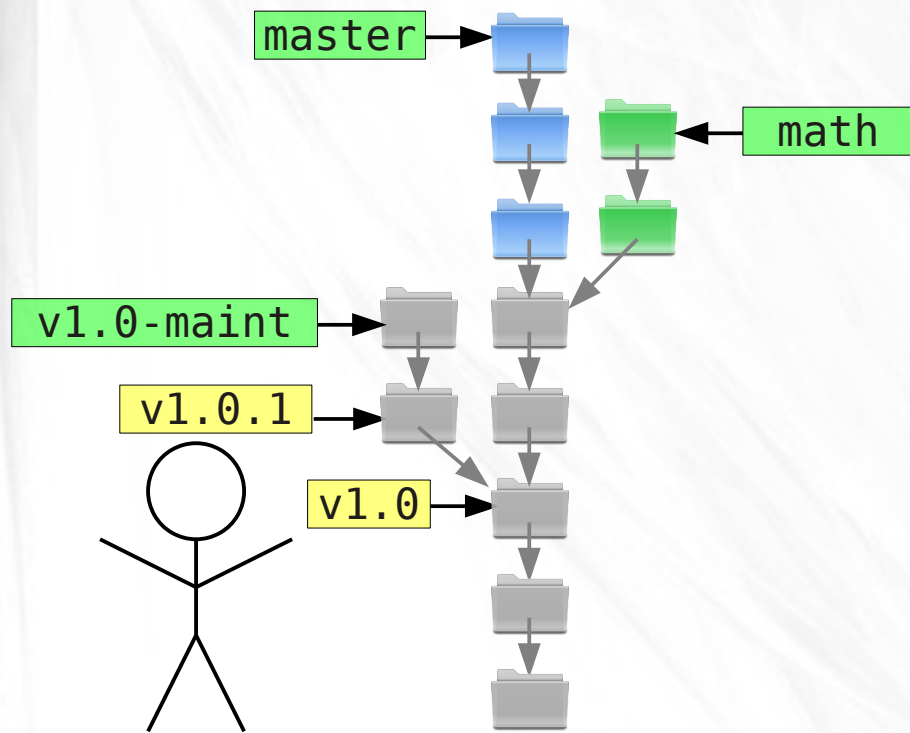
branches



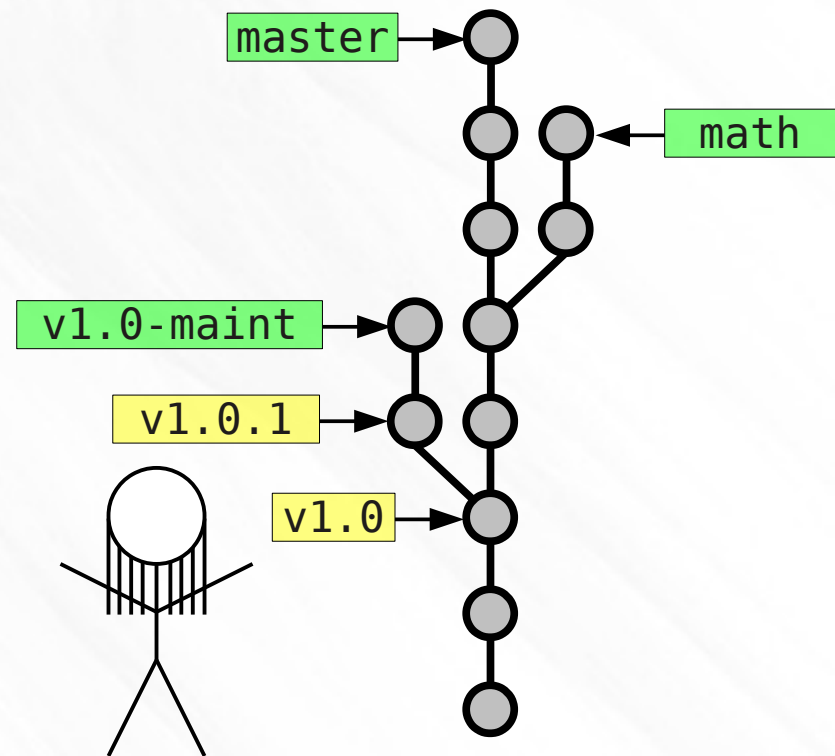
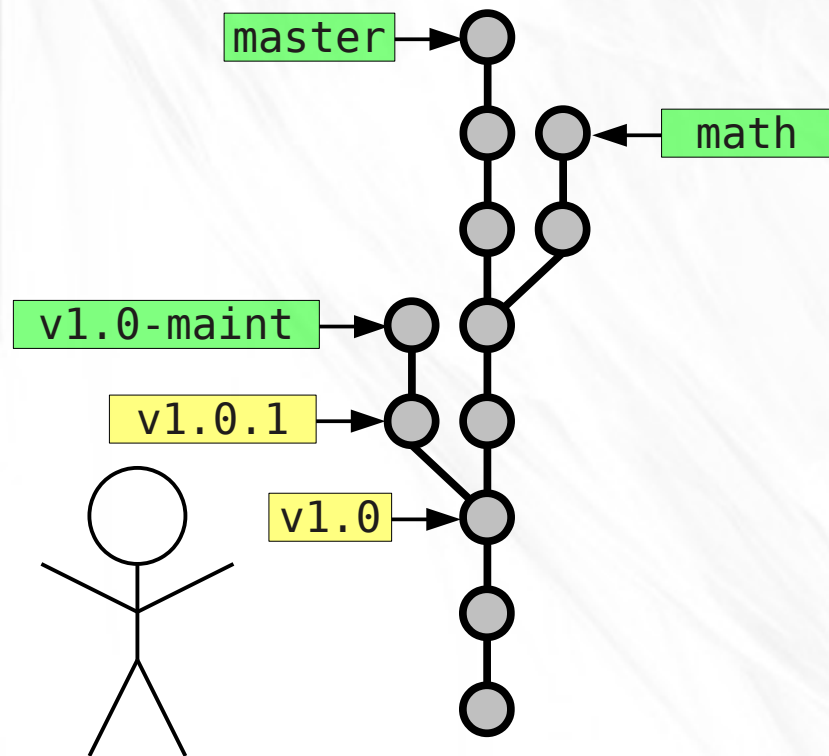
tags



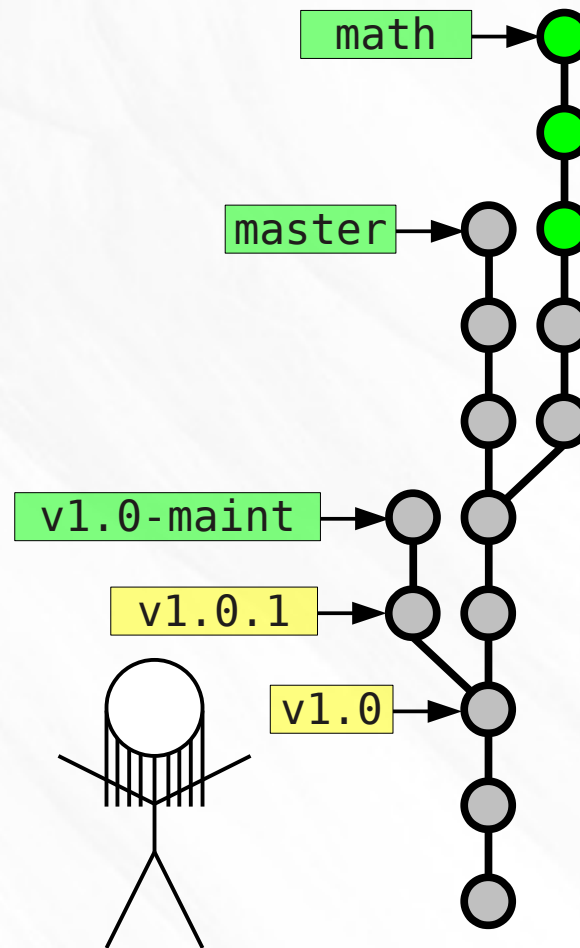
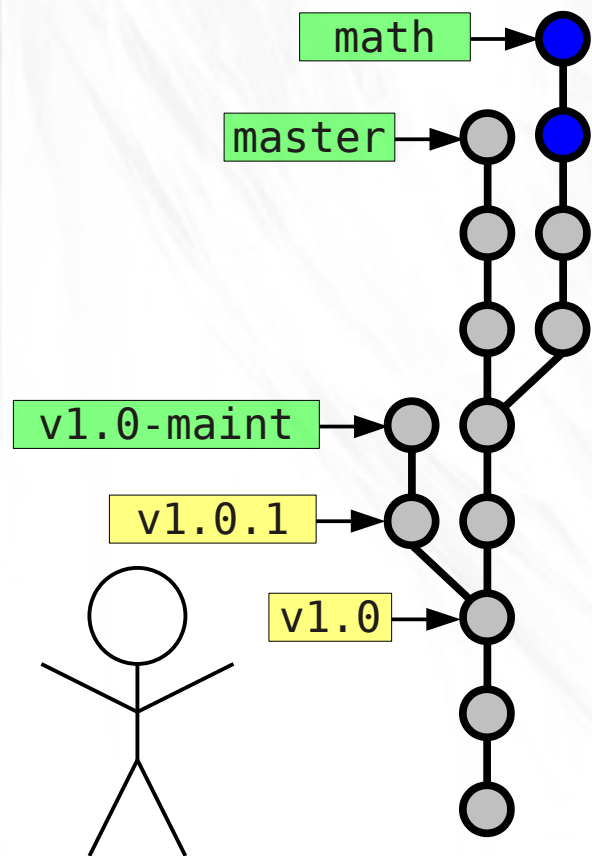
(simpler drawings)



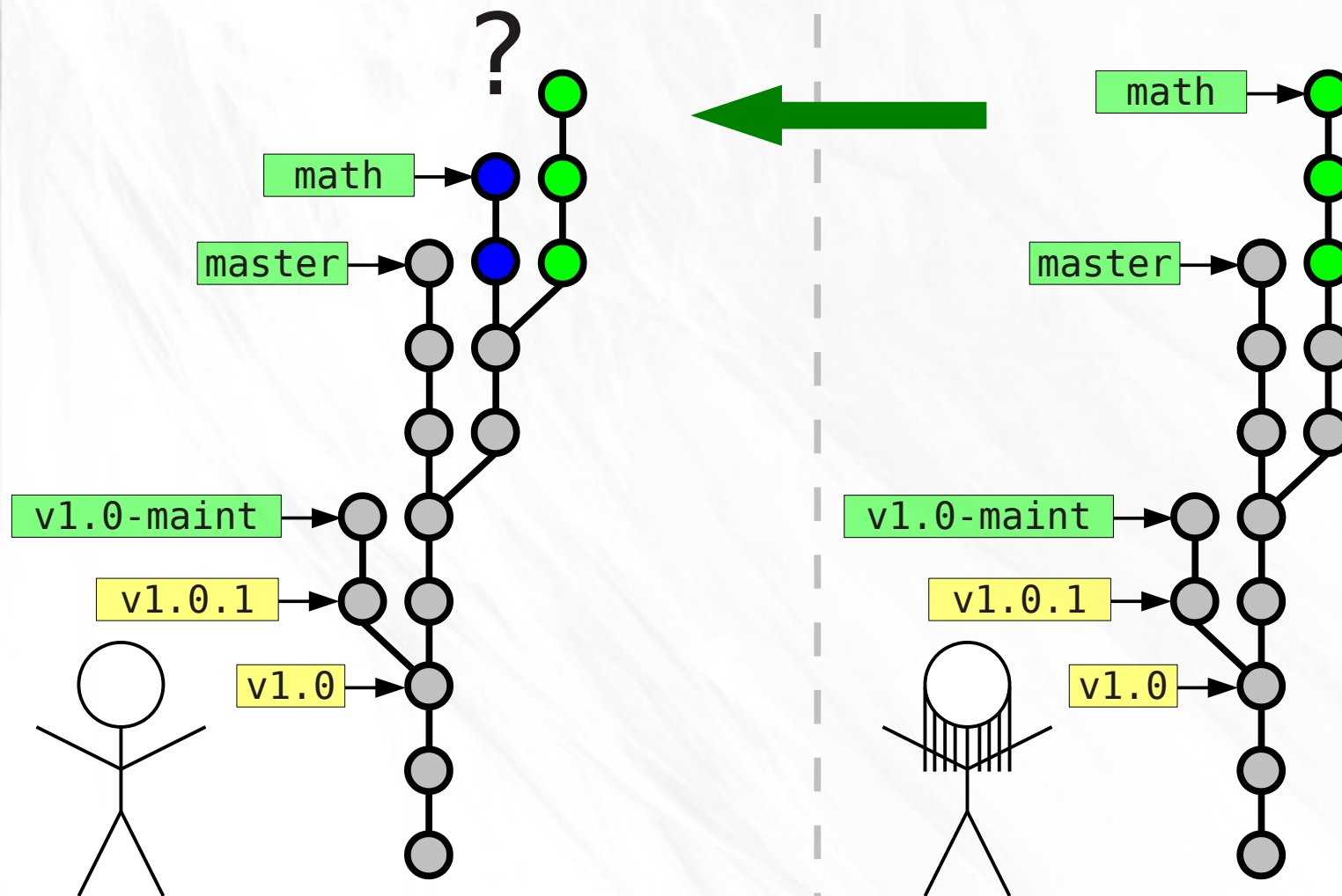
(simpler drawings)



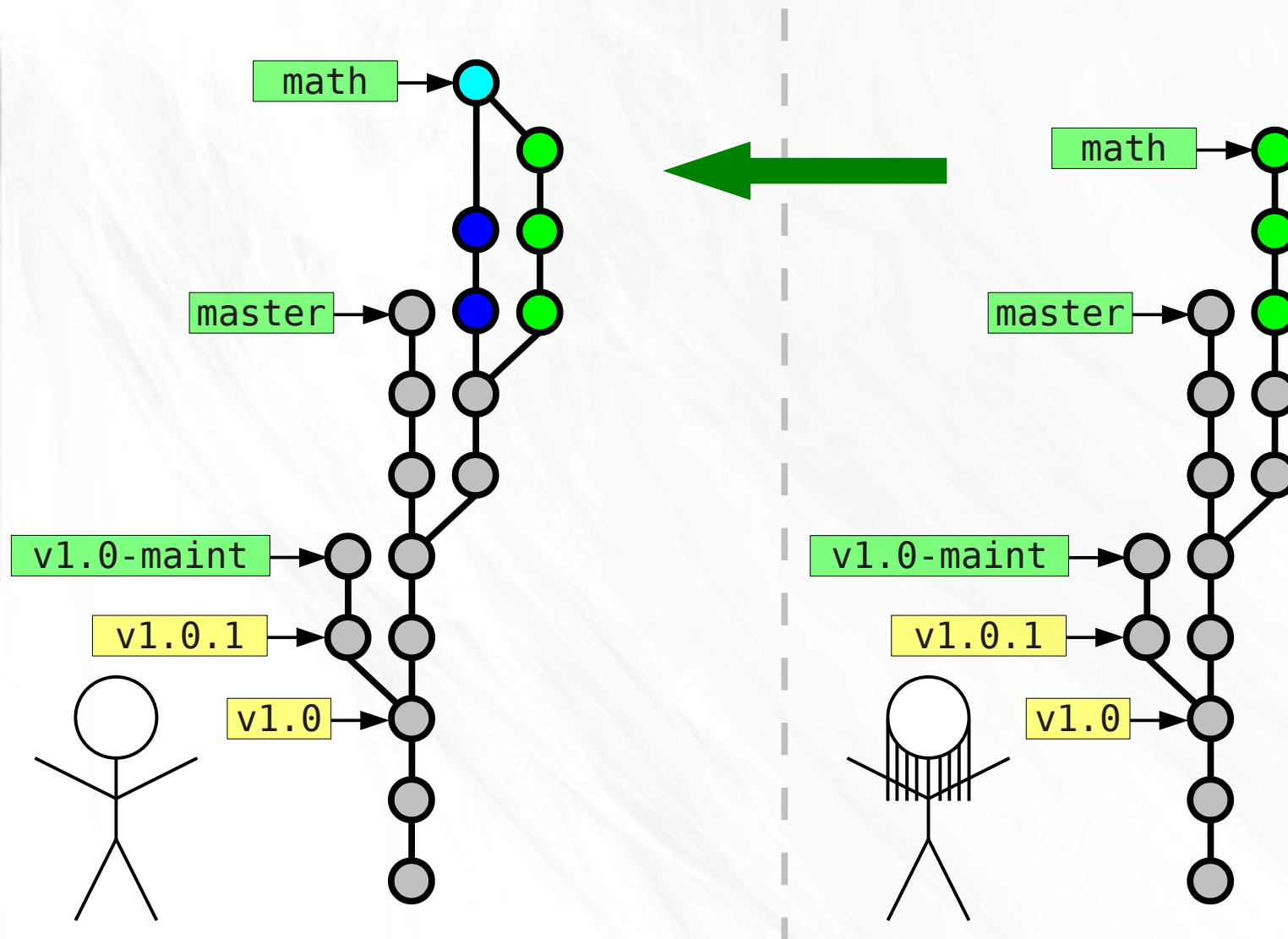
Merges



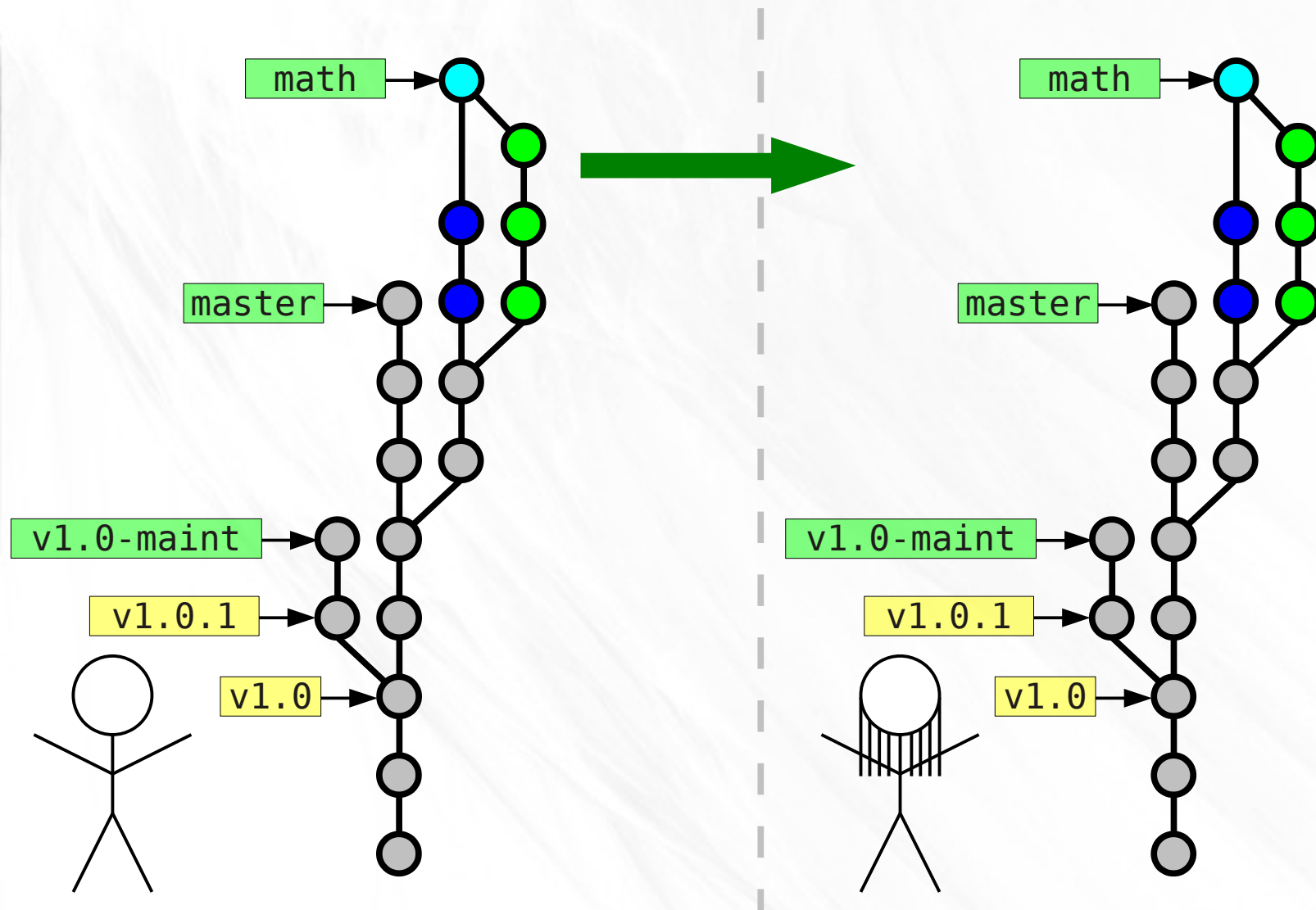
Merges



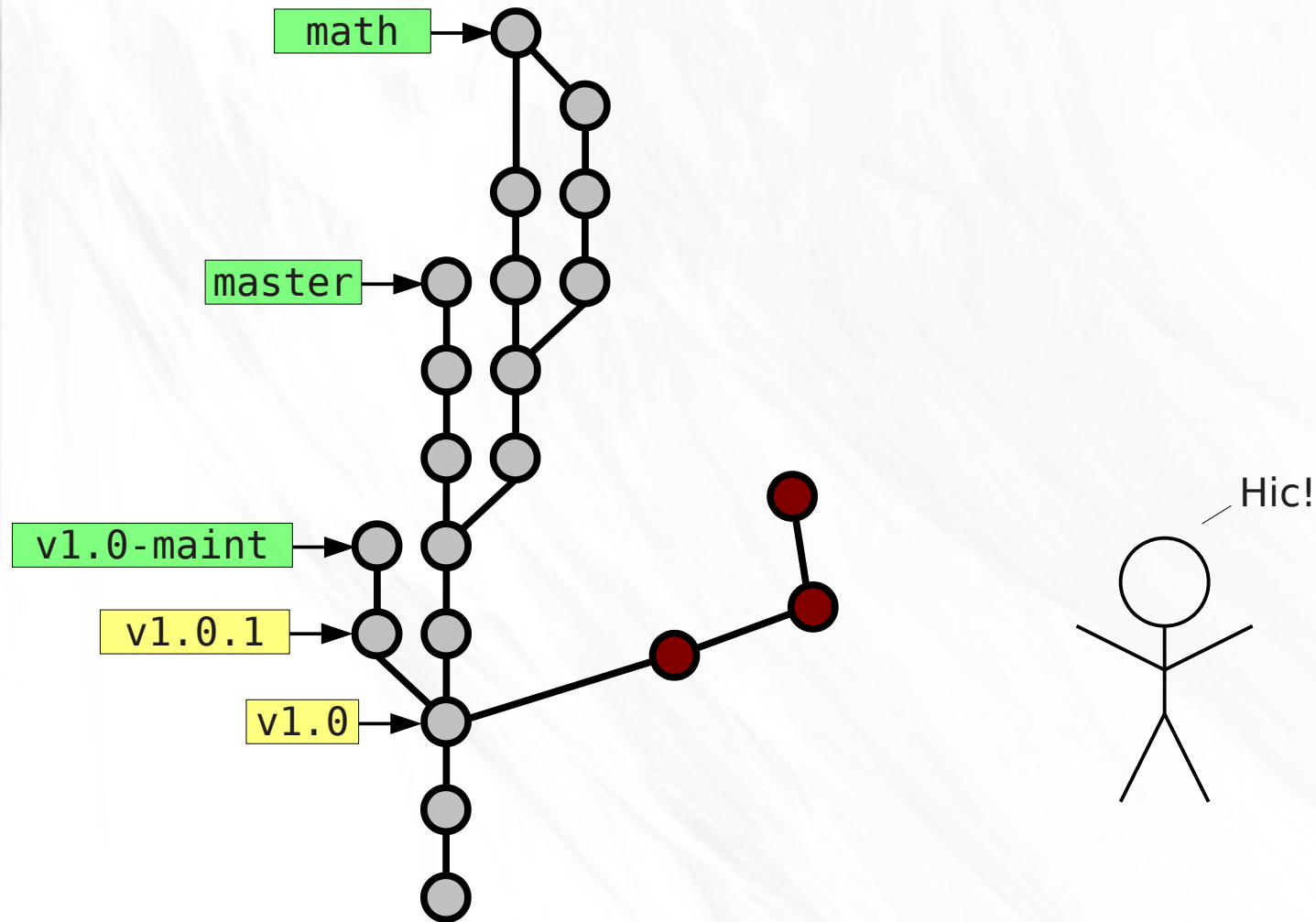
Merges



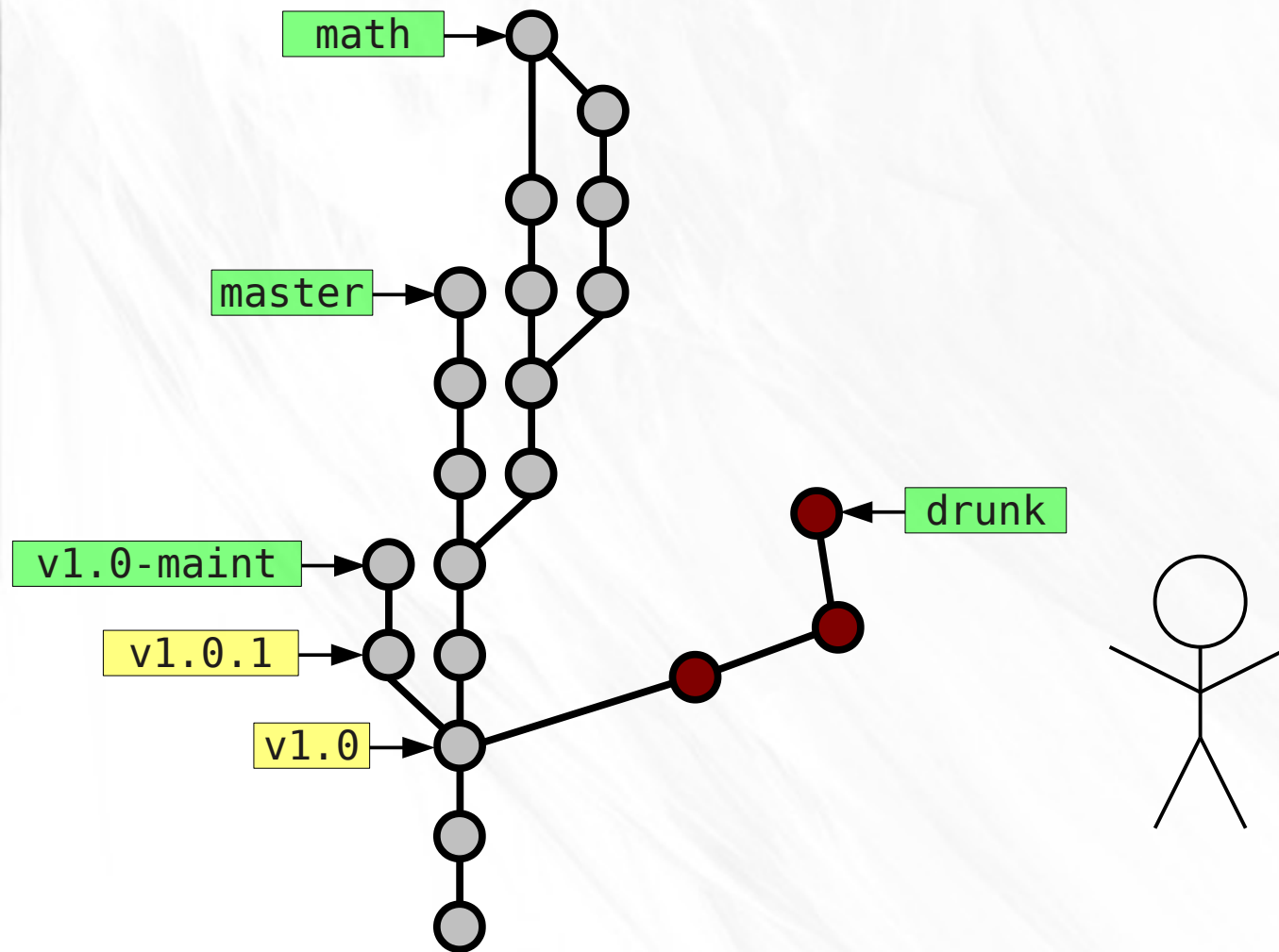
Merges



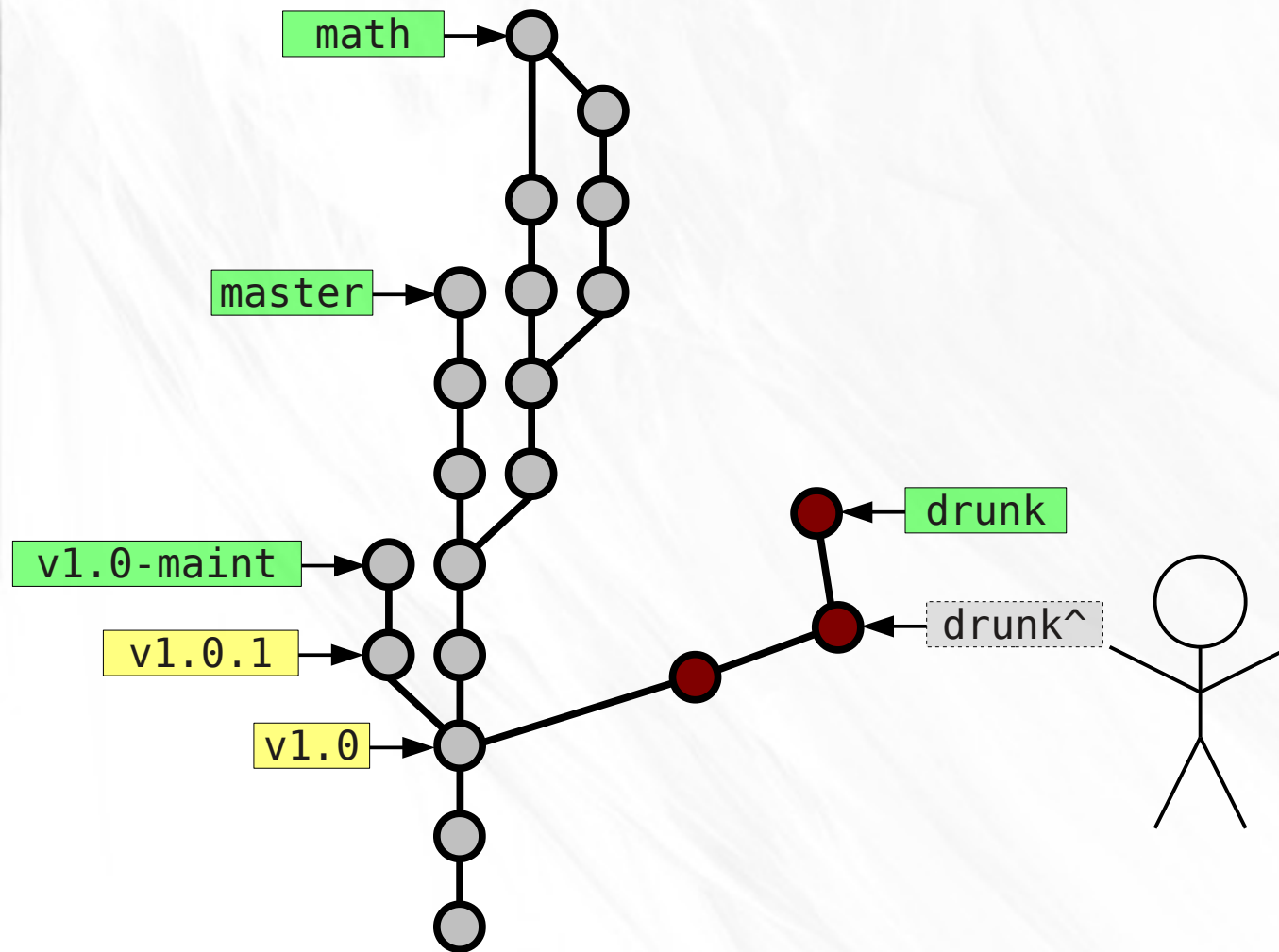
Rewriting History



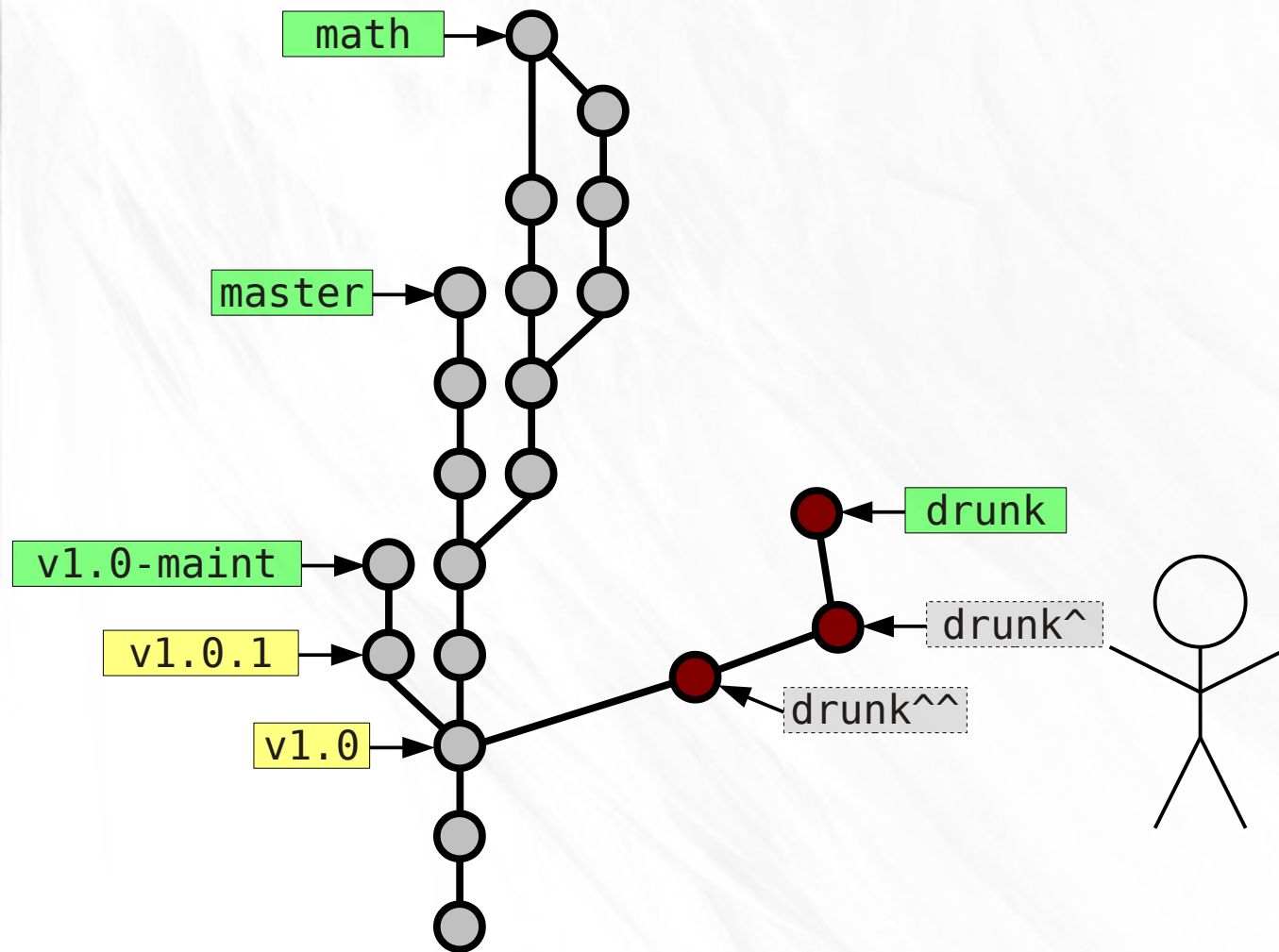
Rewriting History



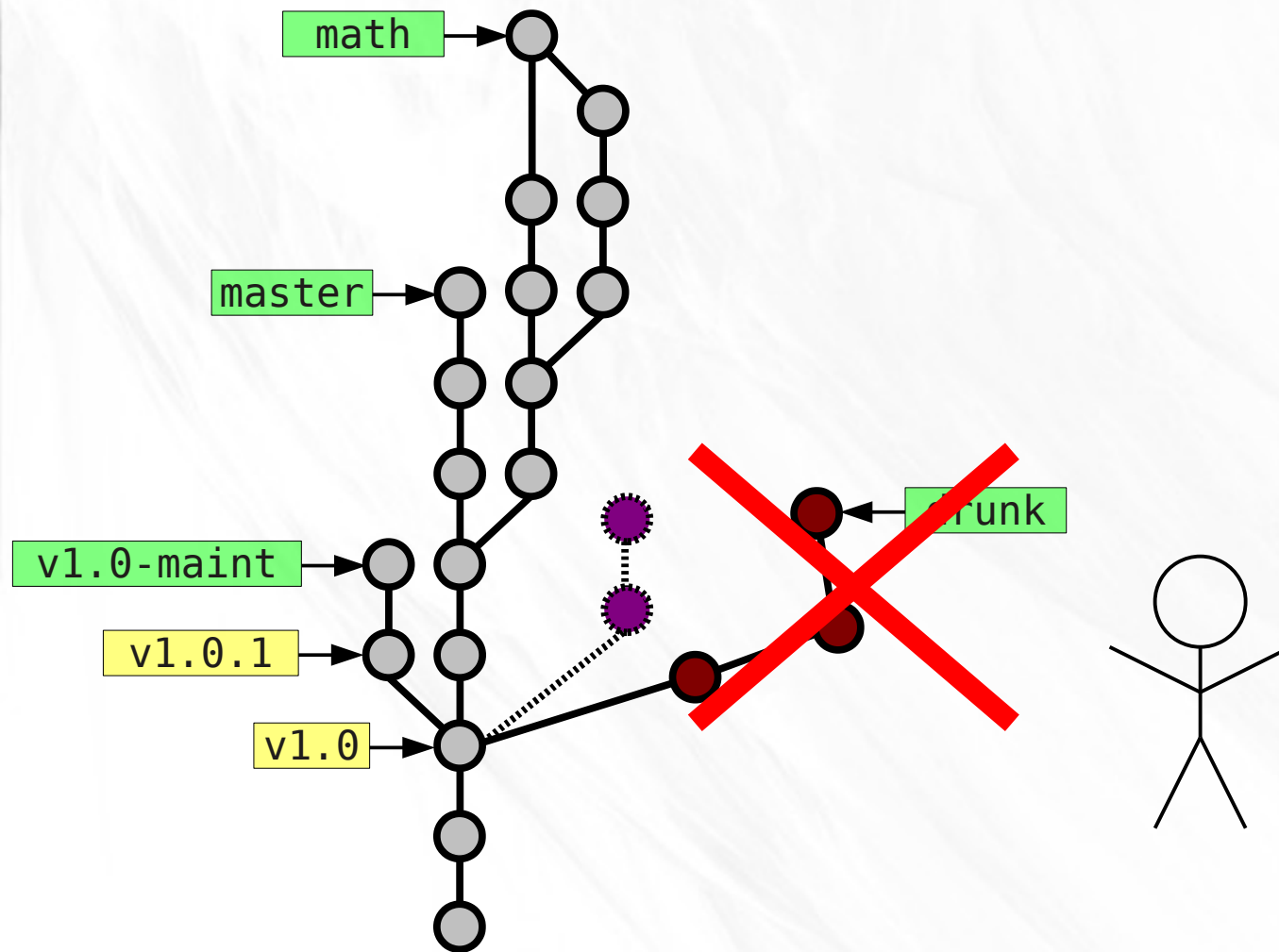
Rewriting History



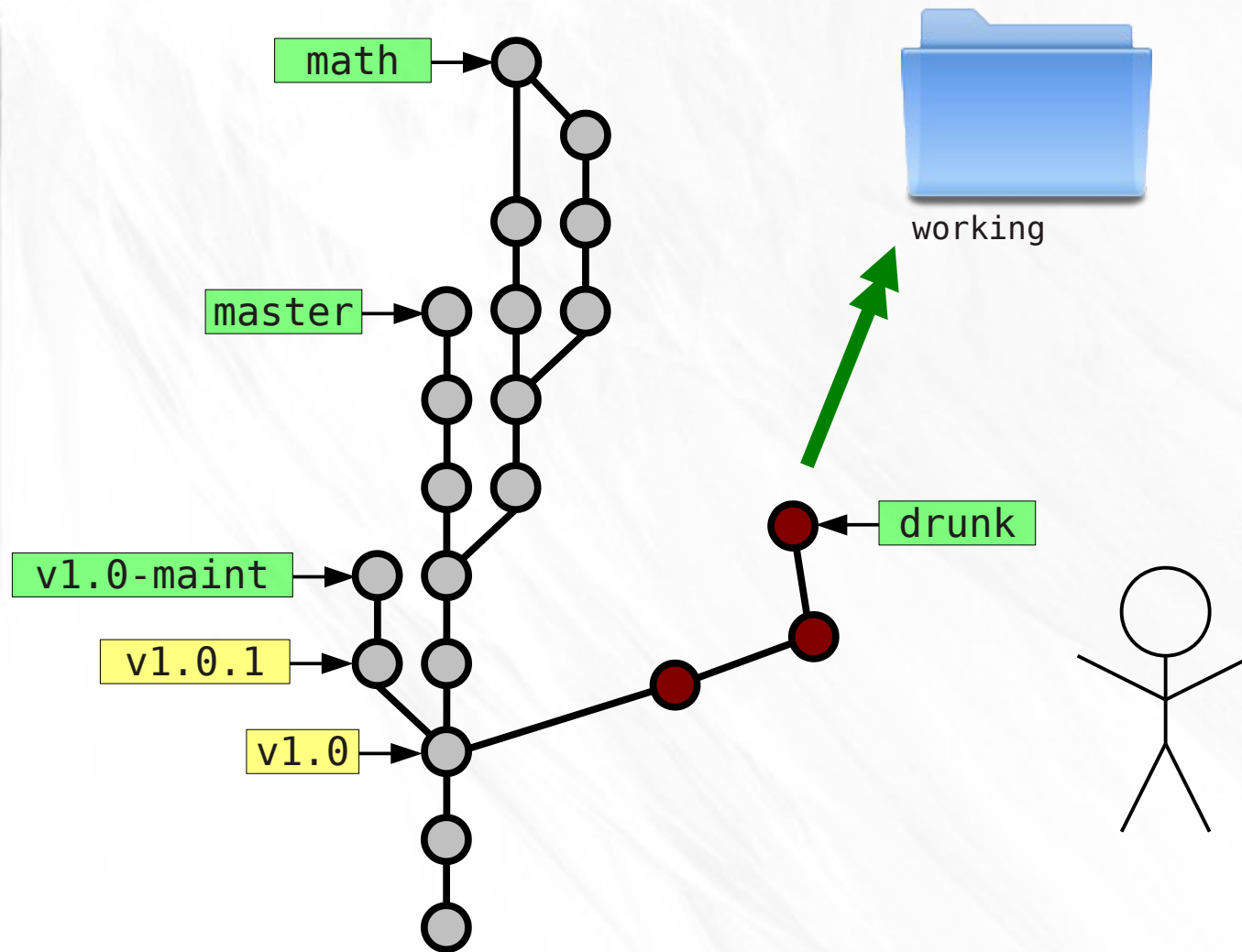
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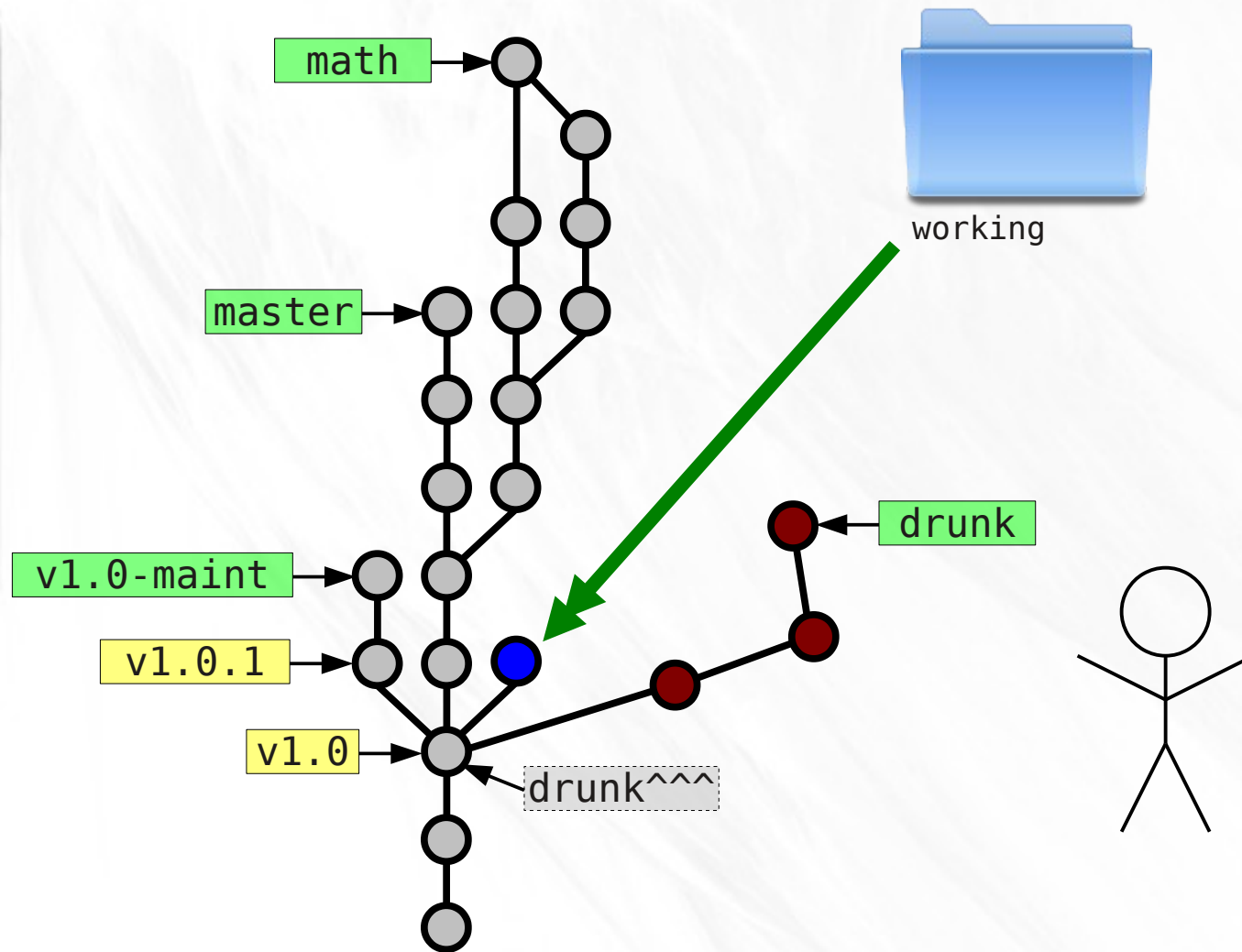
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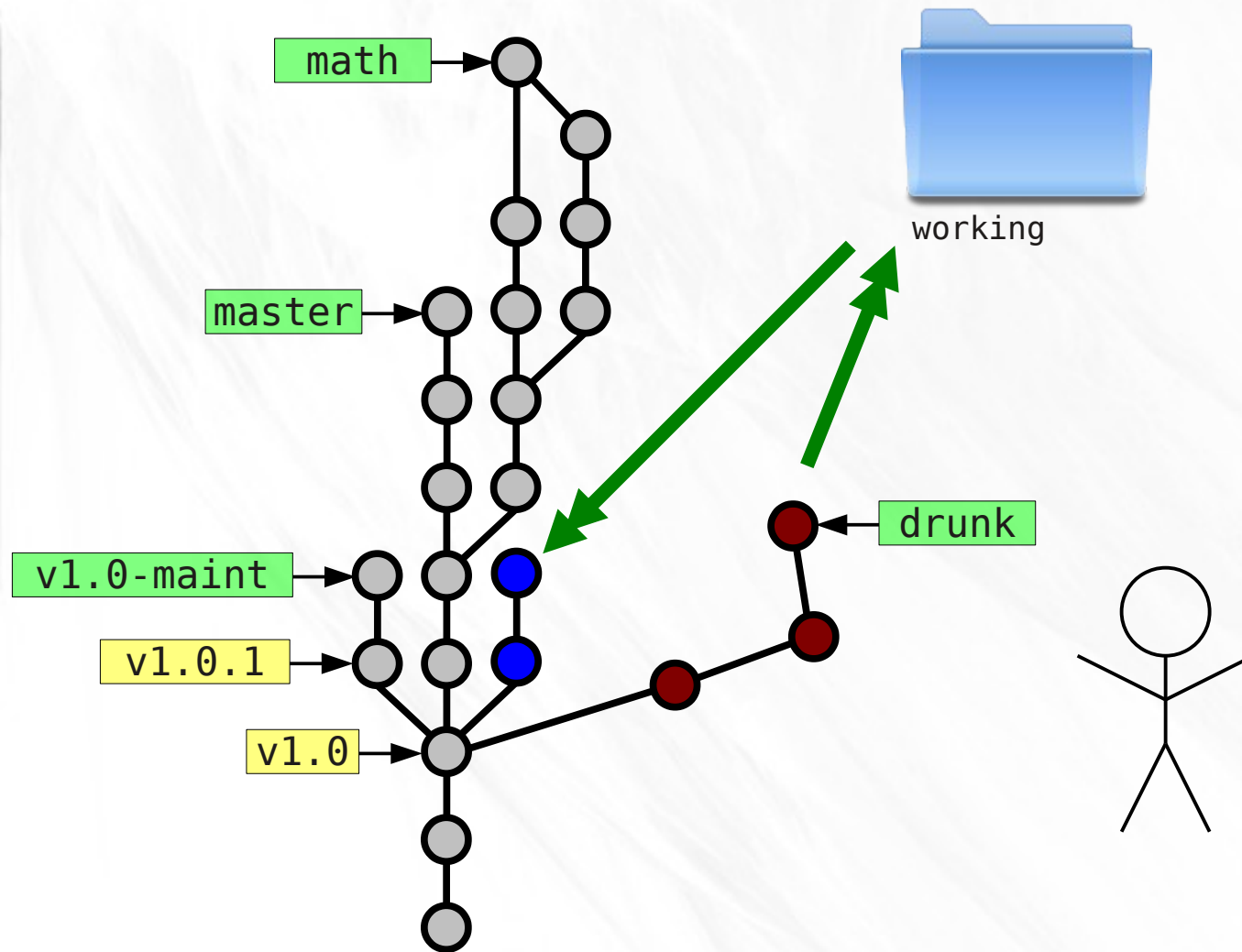
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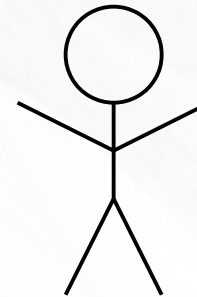
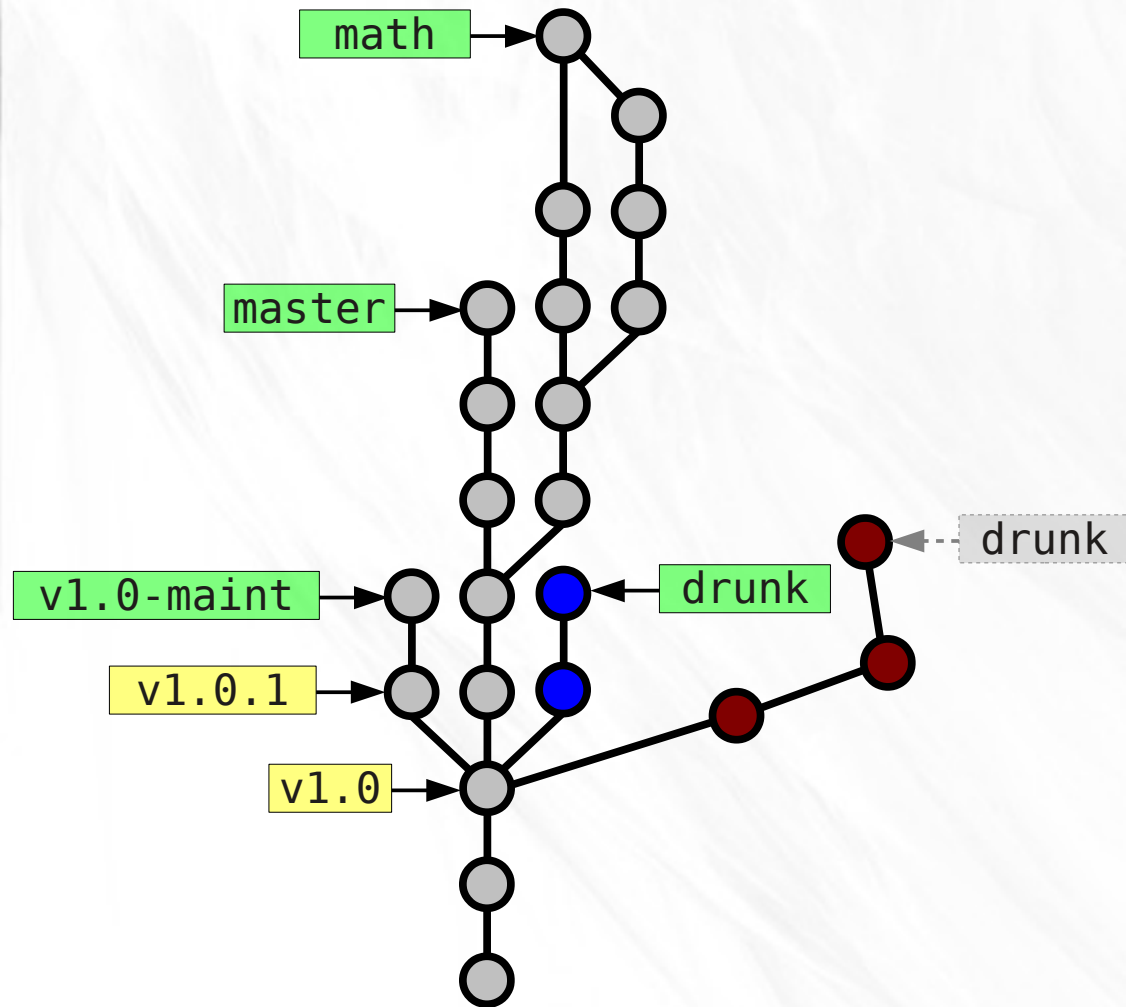
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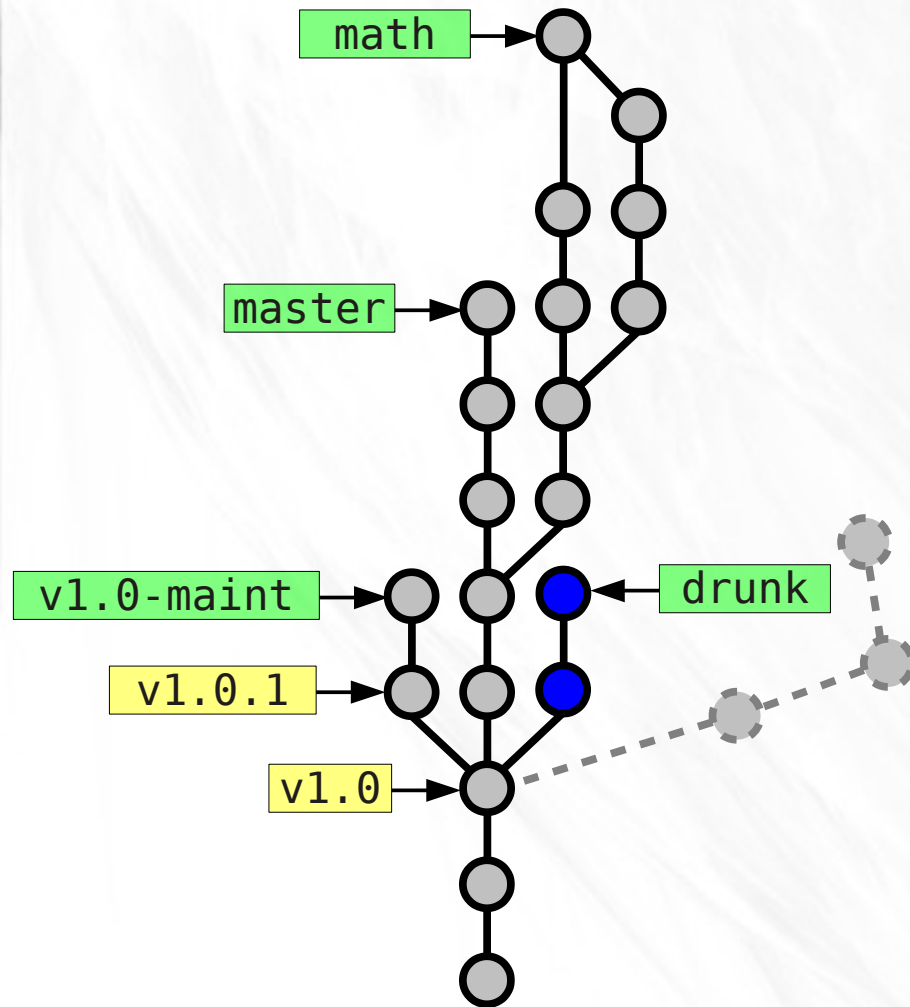
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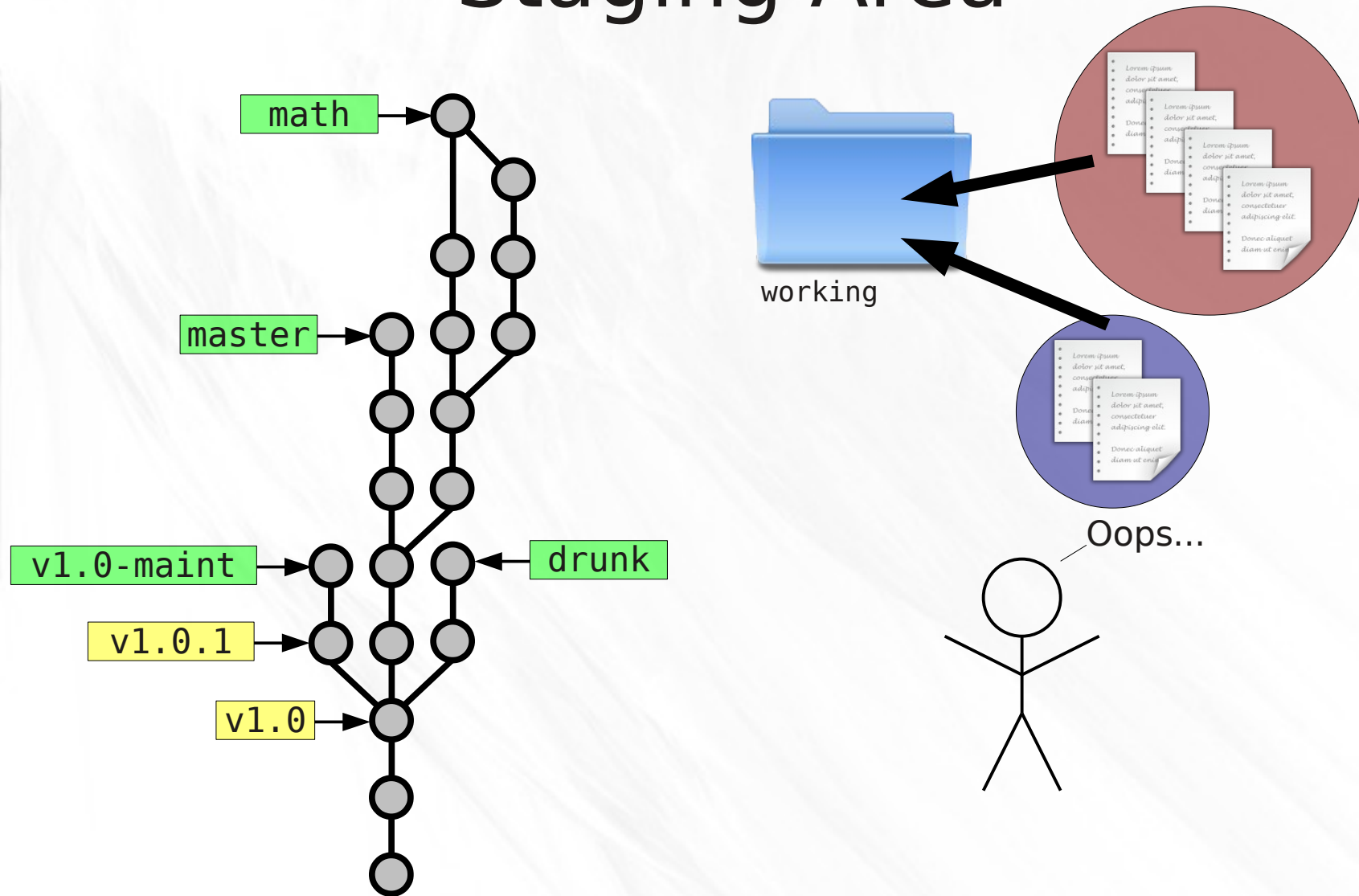
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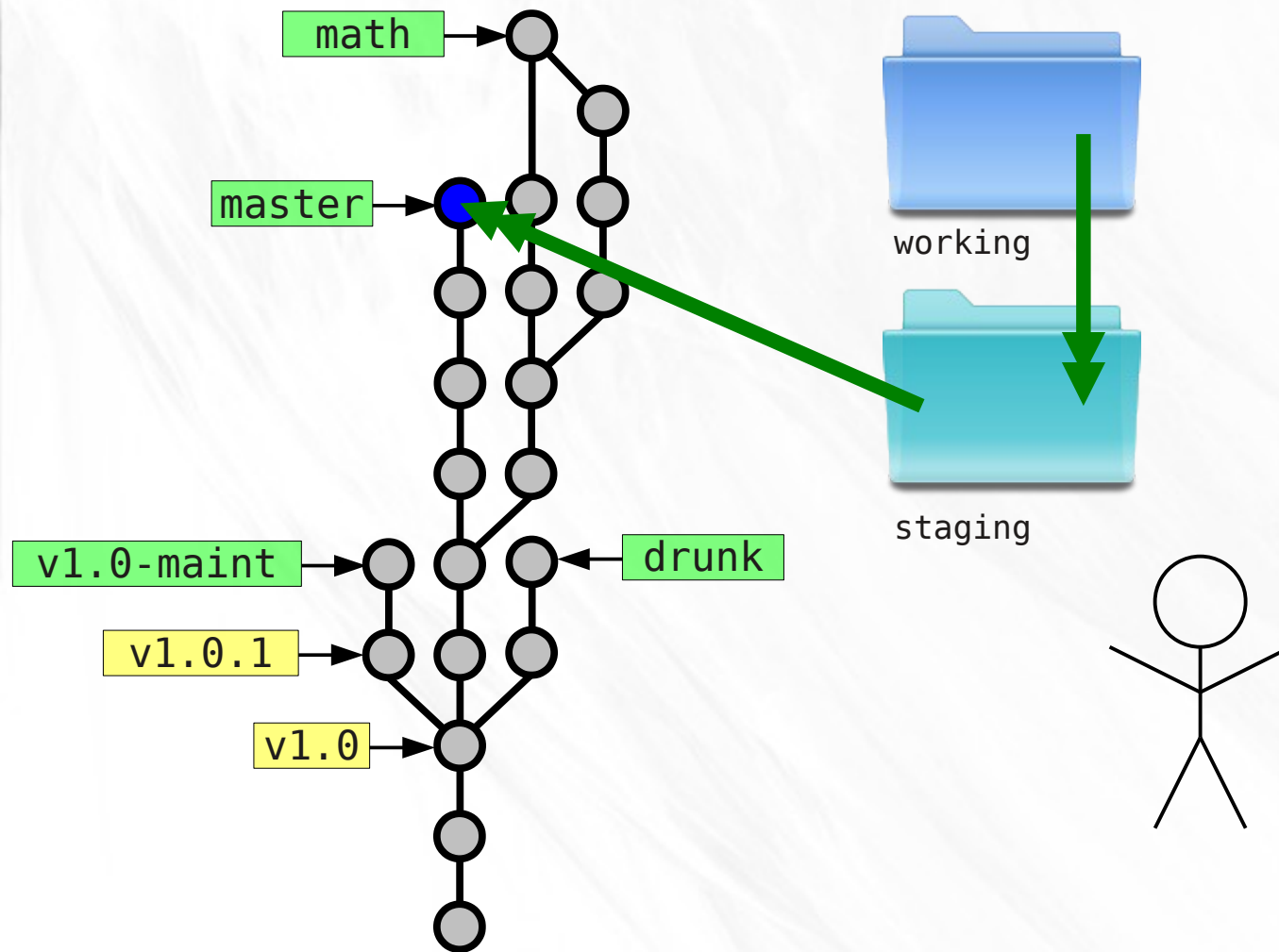
Rewriting History



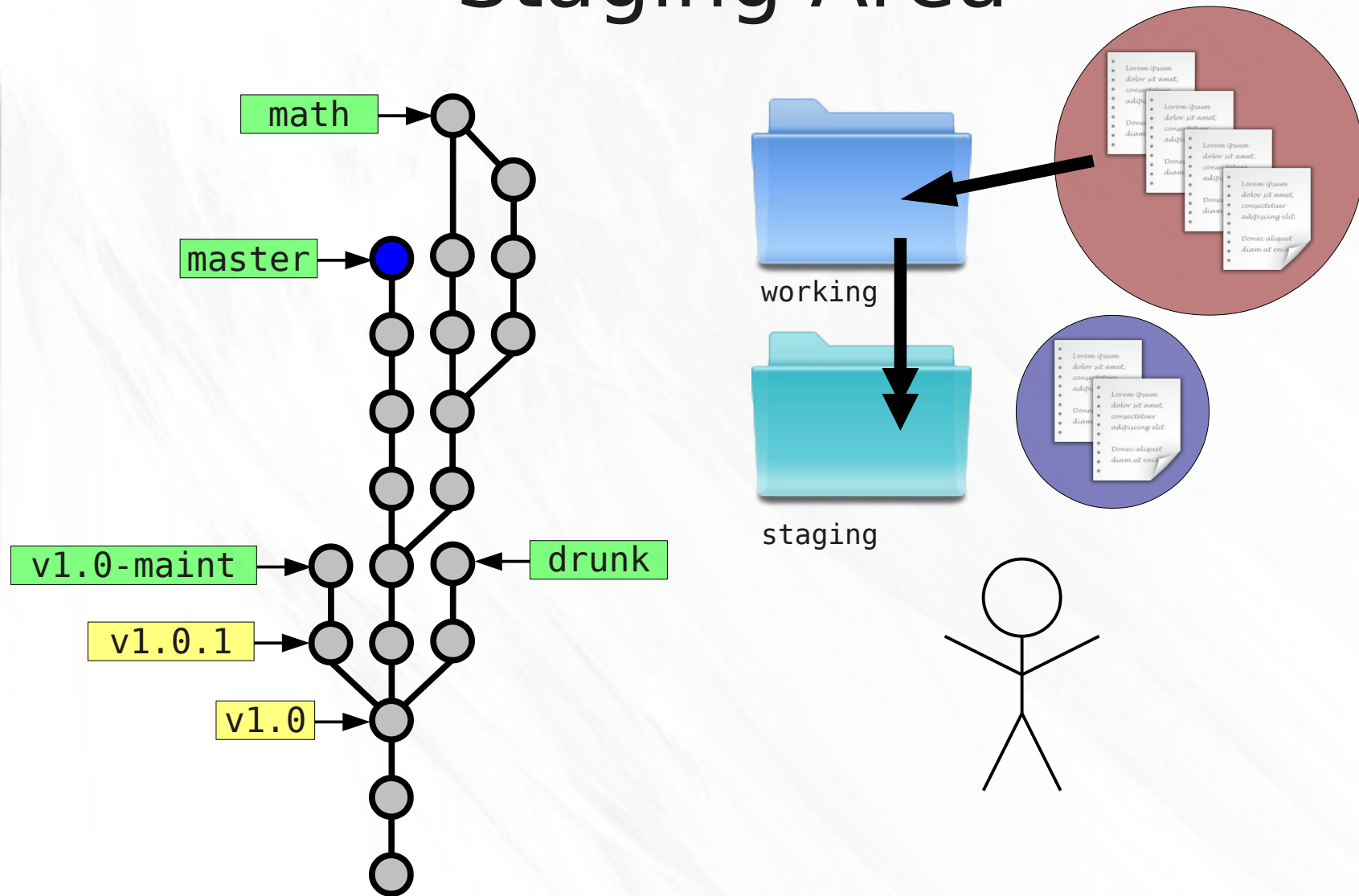
Staging Area



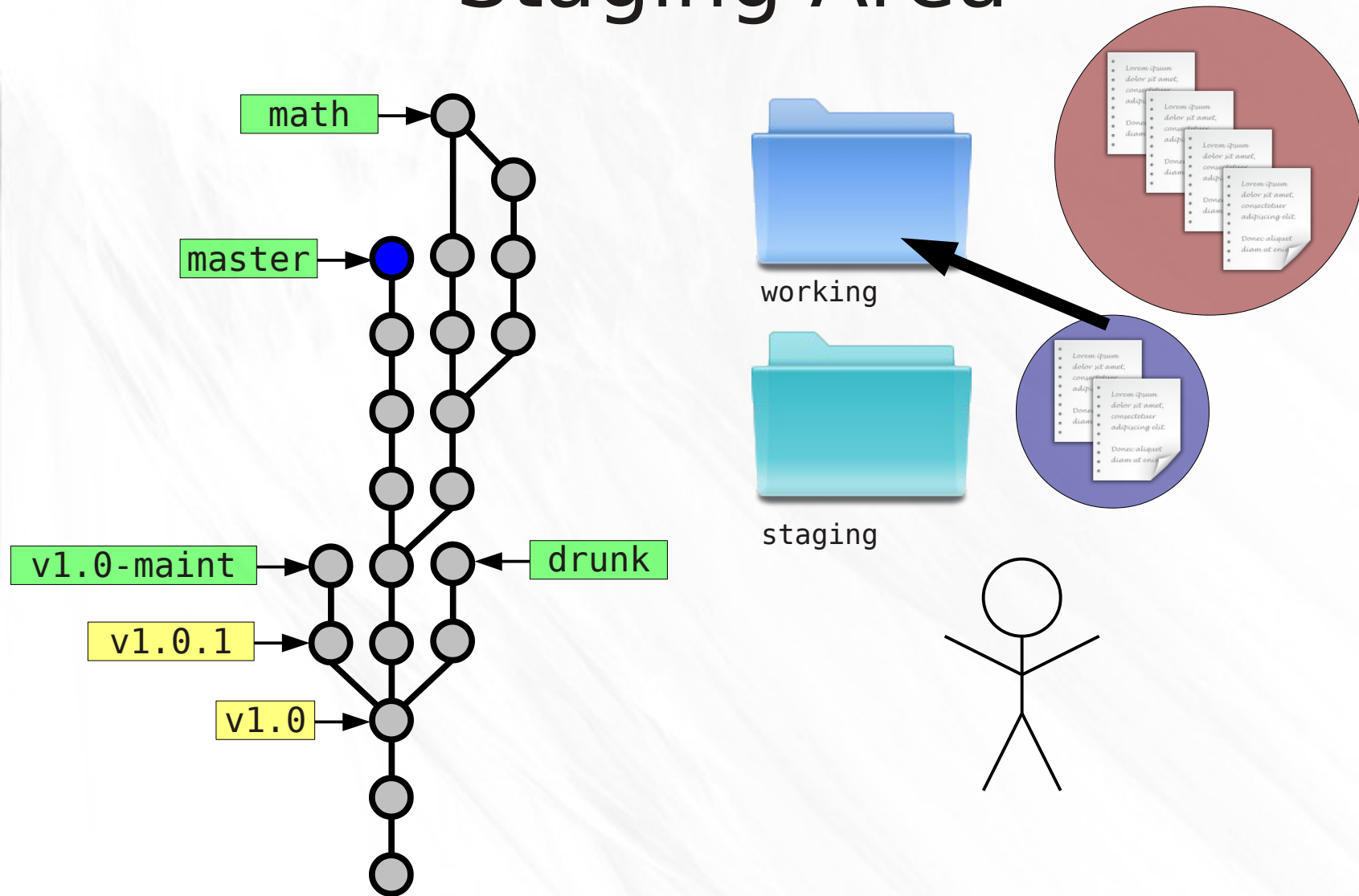
Staging Area



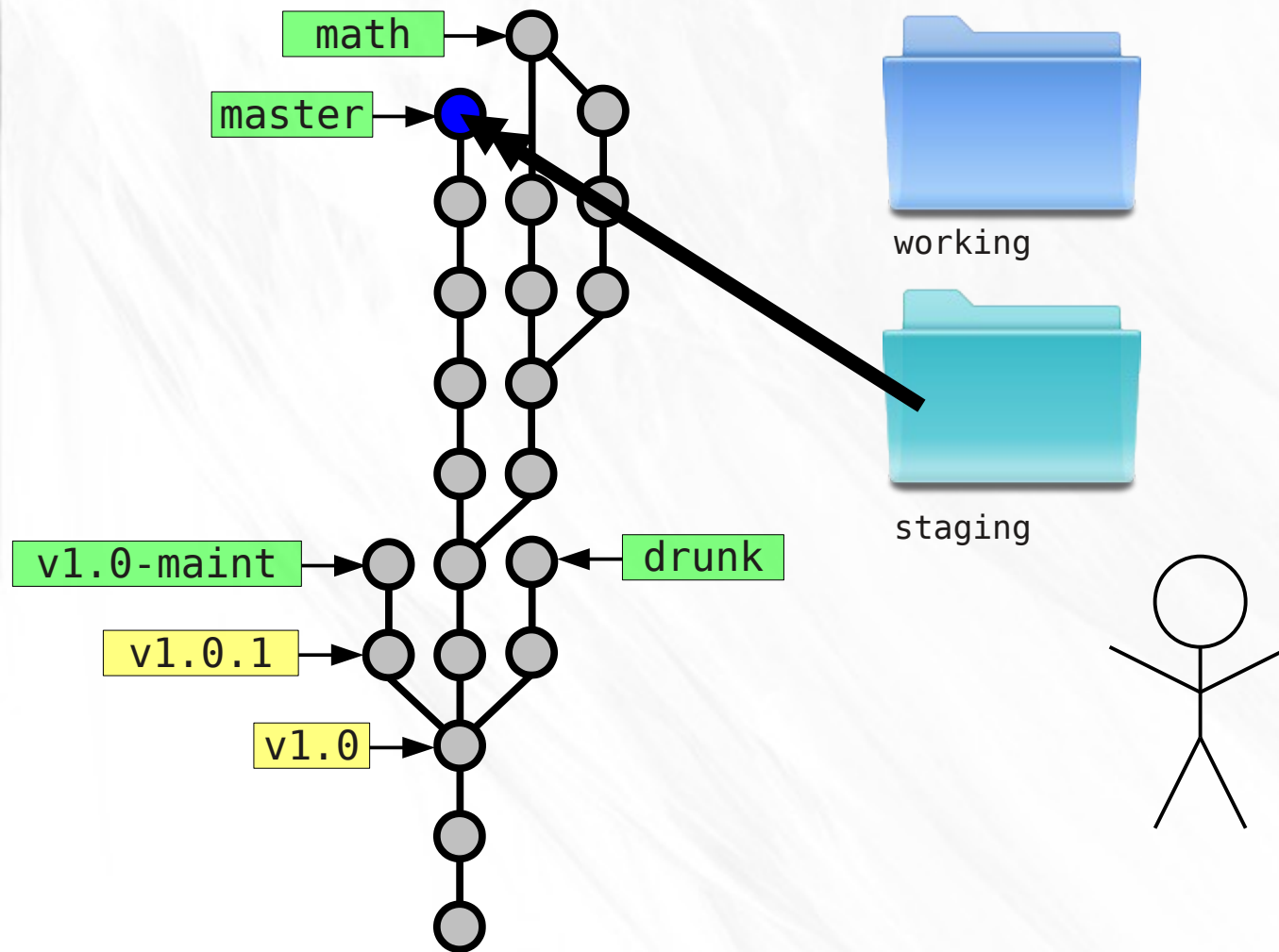
Staging Area



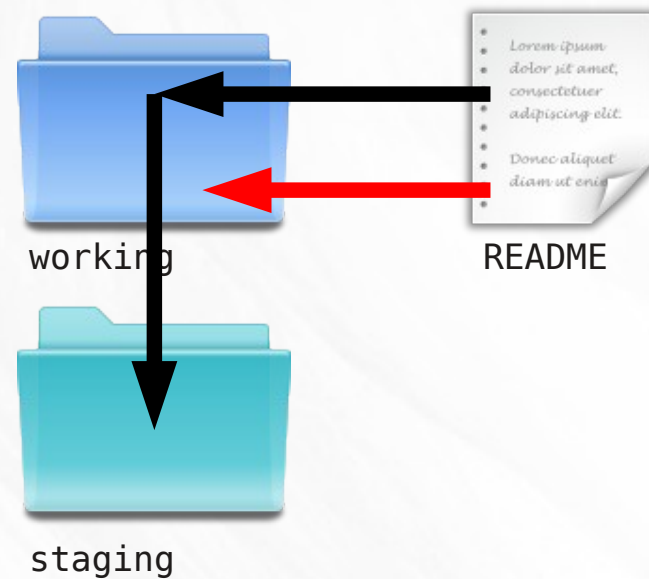
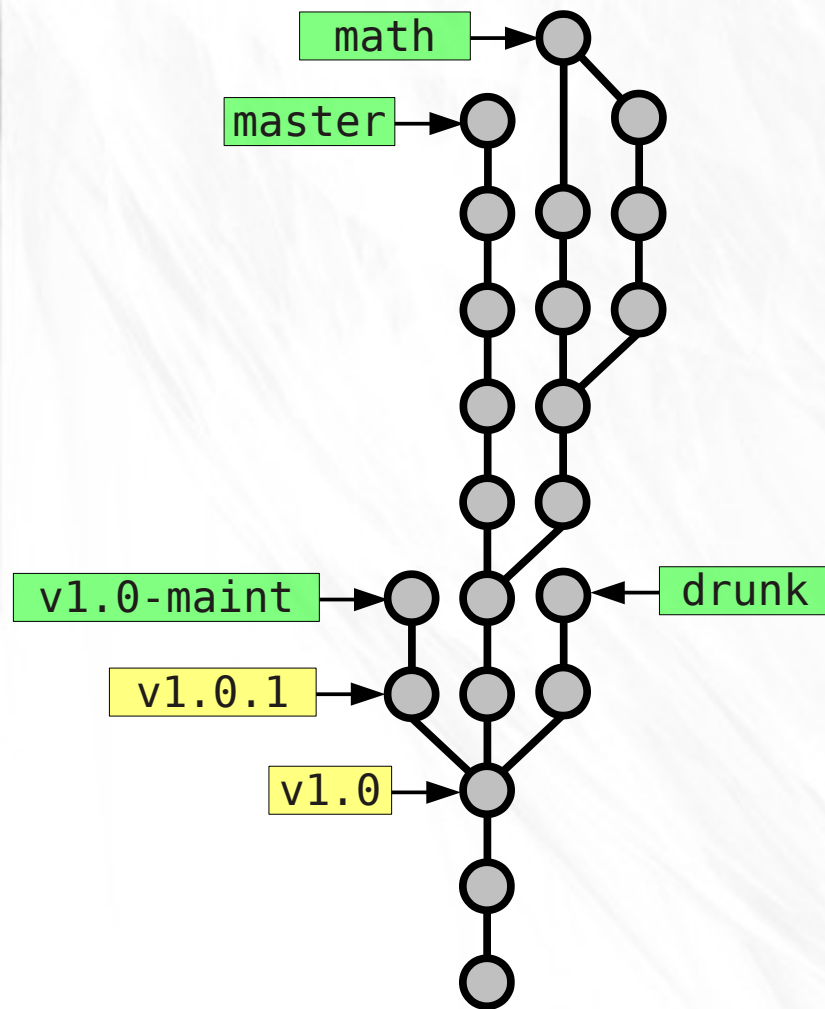
Staging Area



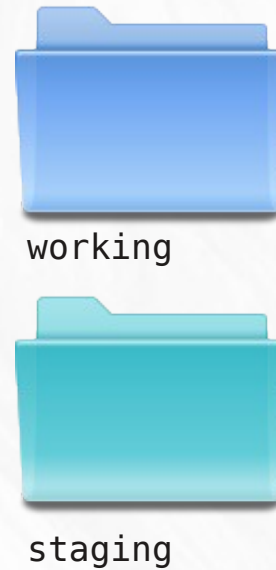
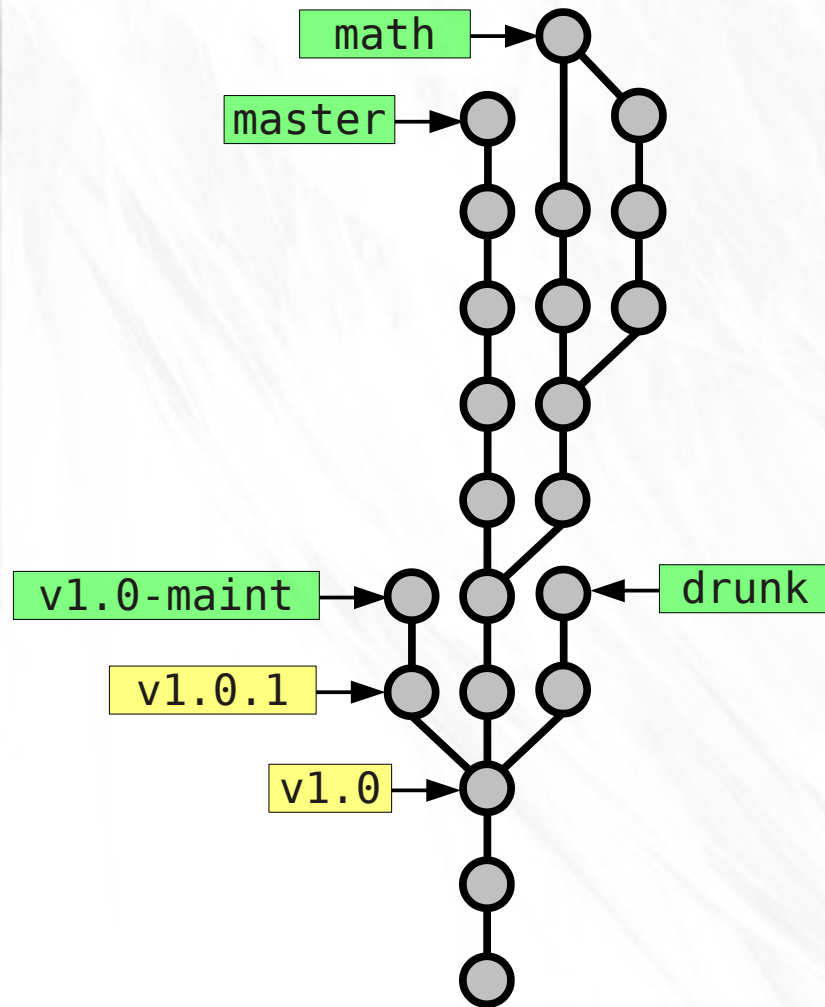
Staging Area



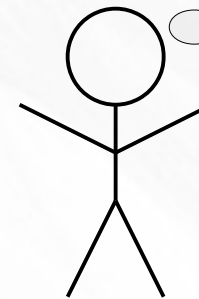
Staging Area



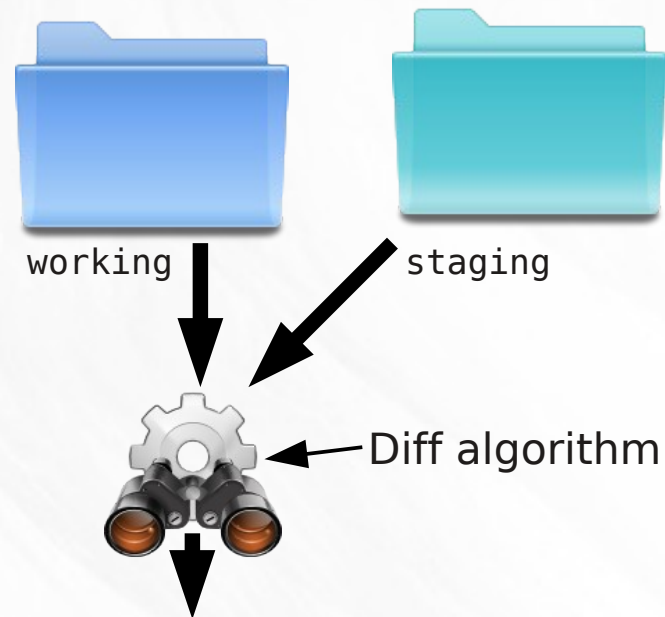
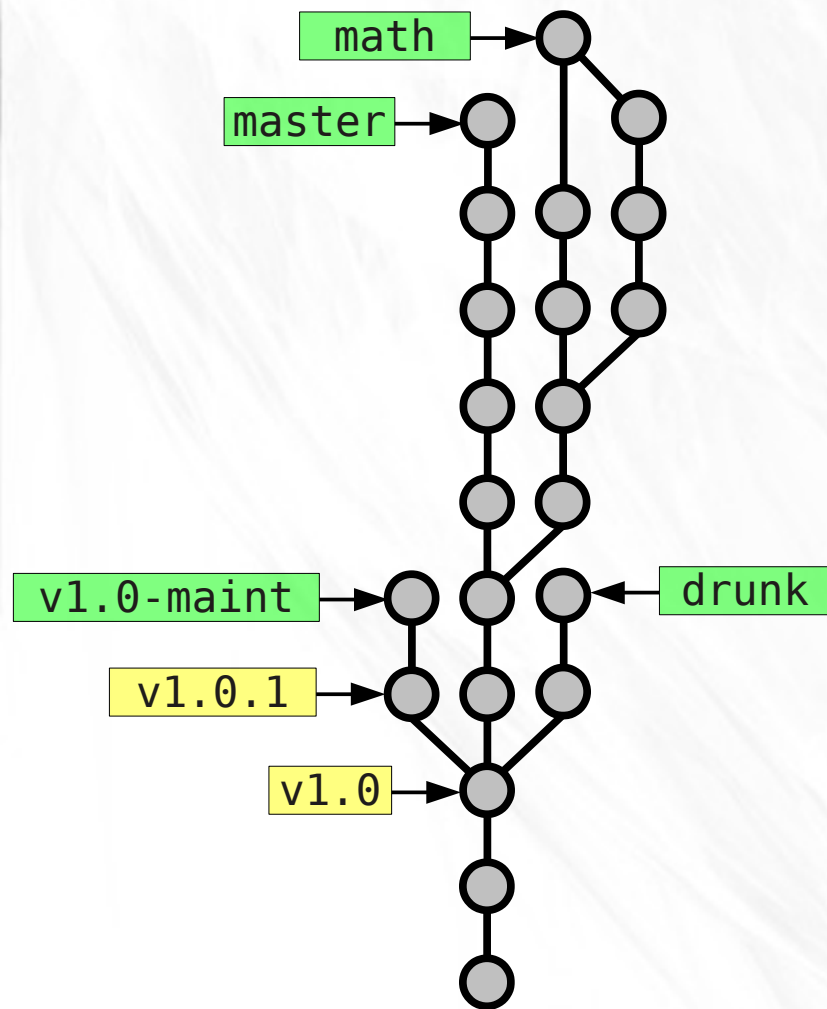
Diffs



- What are the changes?
- working vs. staging
 - working vs. snapshot X
 - staging vs. snapshot X
 - snapshot X vs. snapshot Y

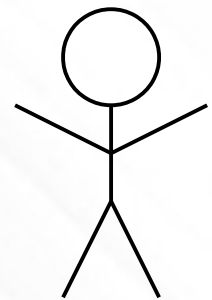


Diffs

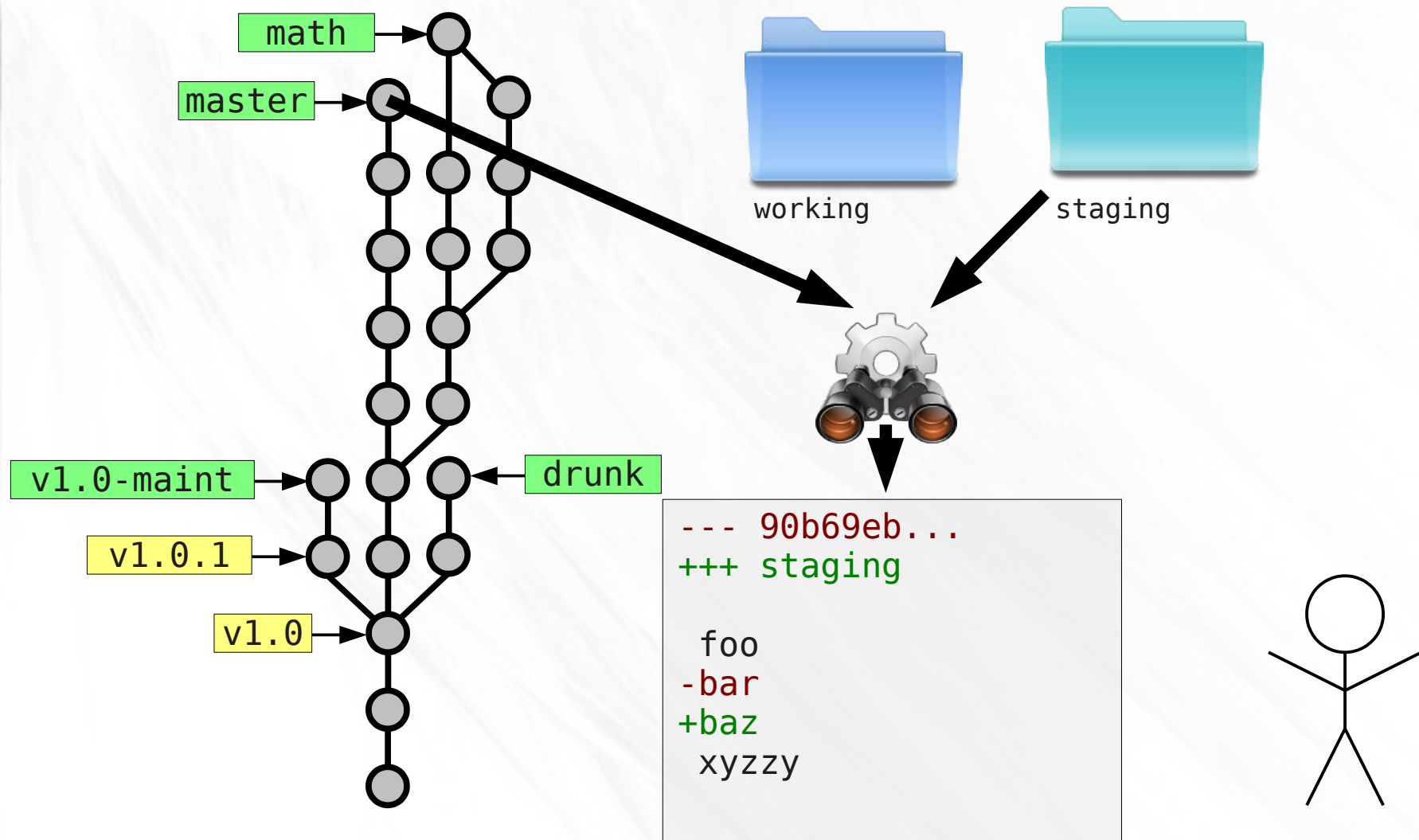


```
--- staging  
+++ working
```

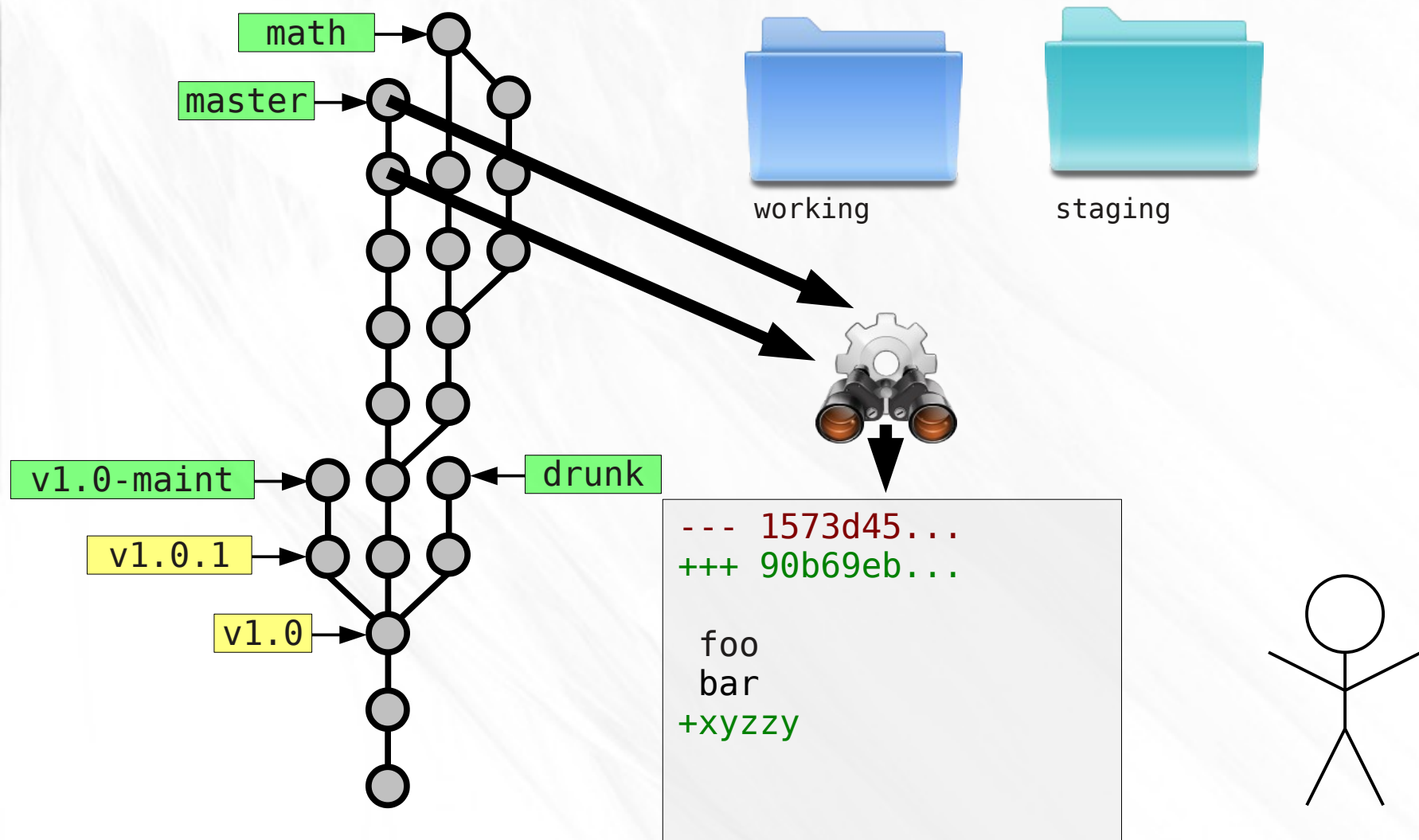
```
foo  
-baz  
+bazzle  
xyzy
```



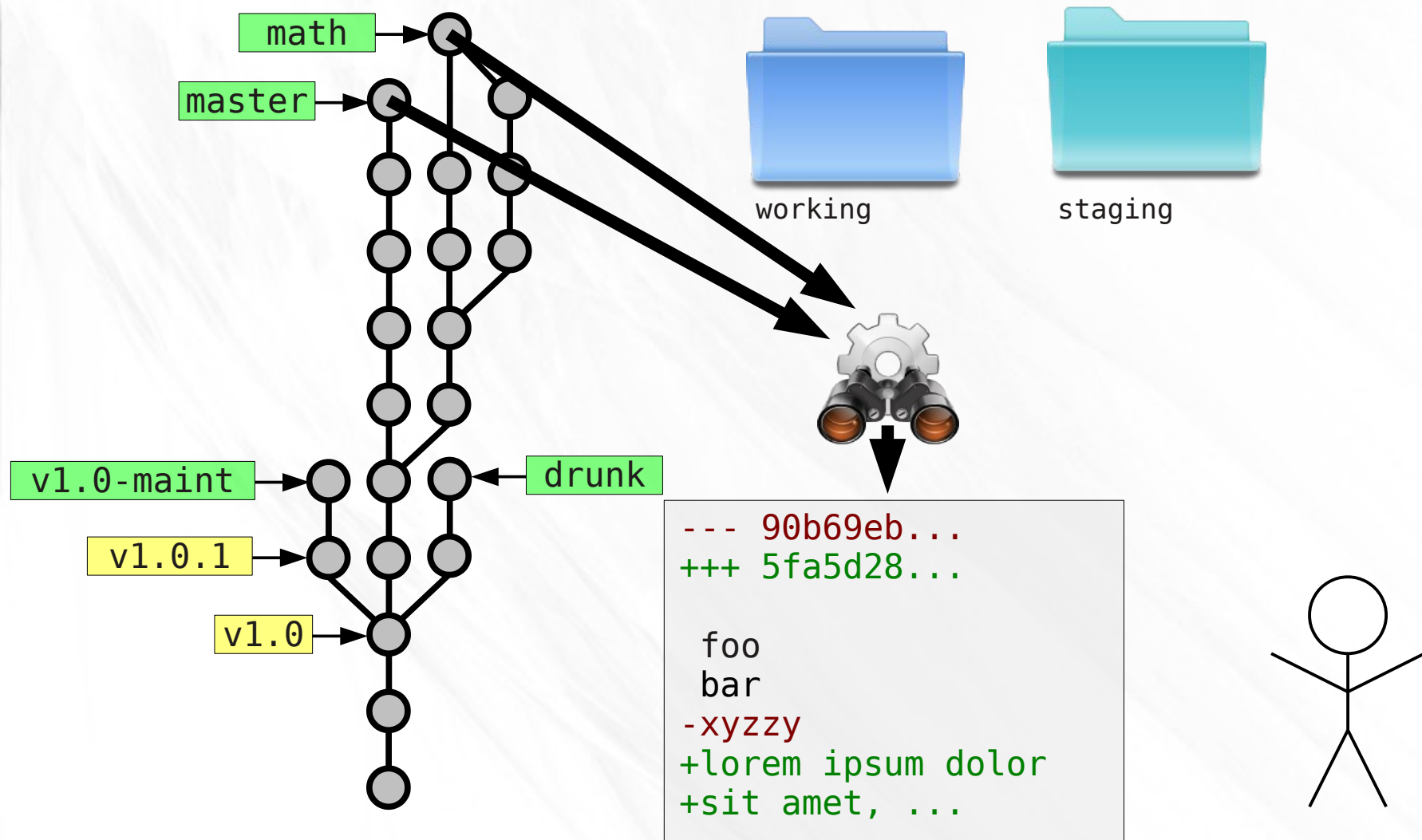
Diffs



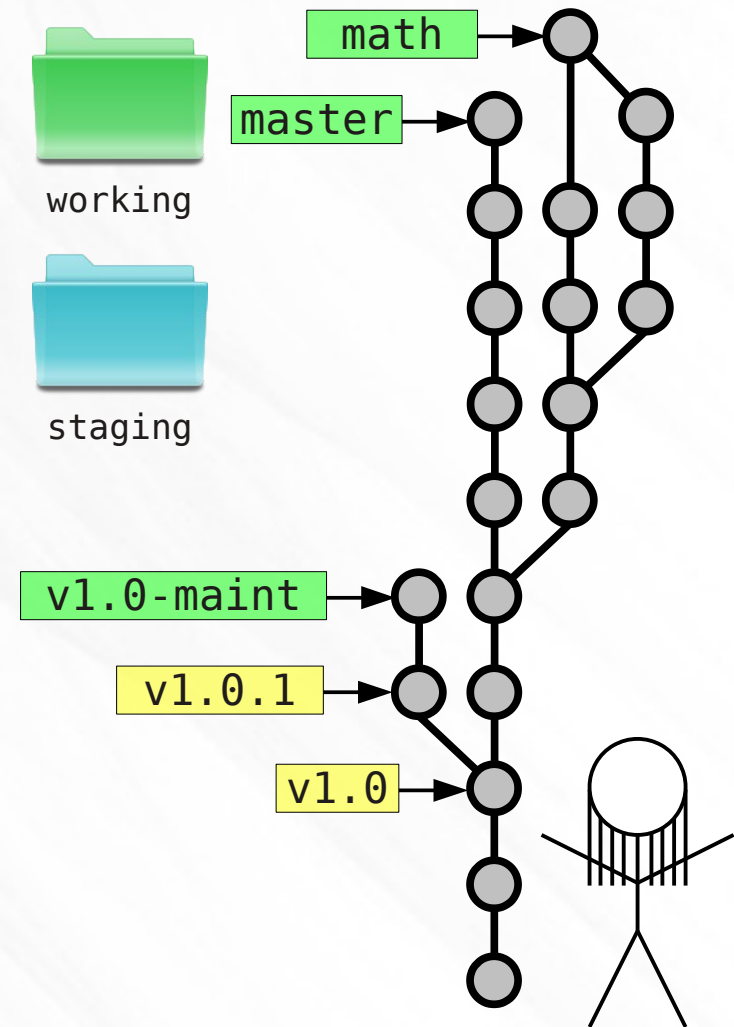
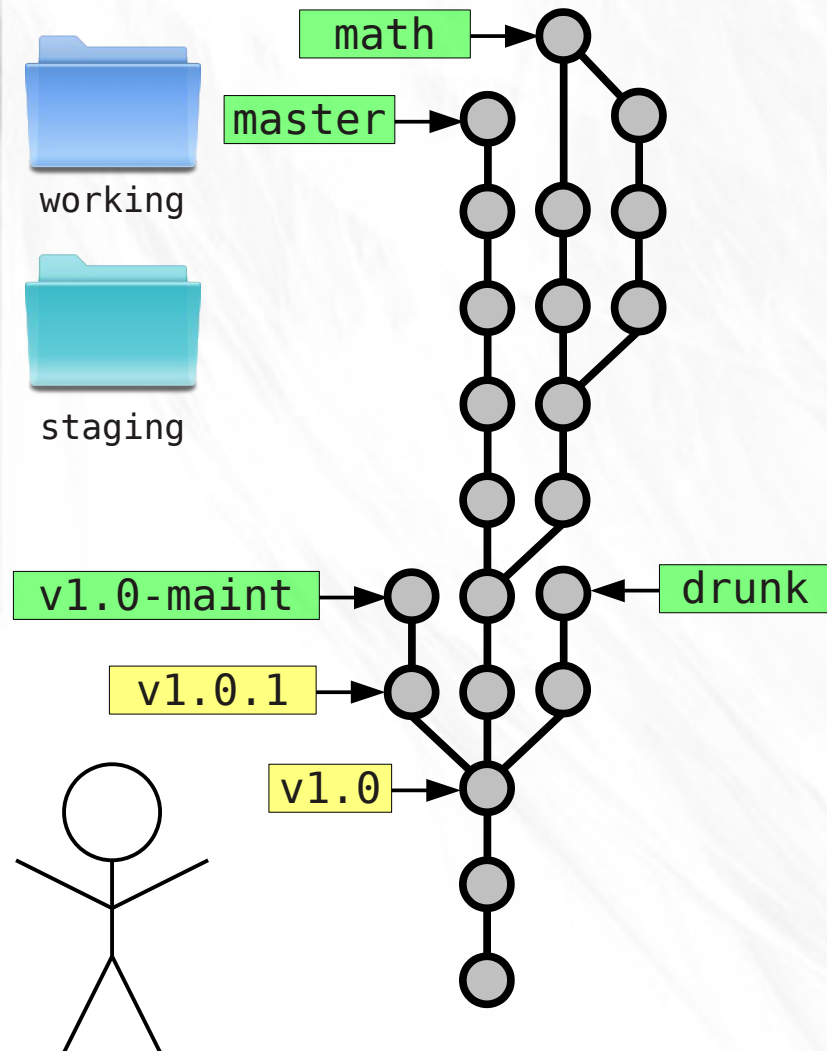
Diffs



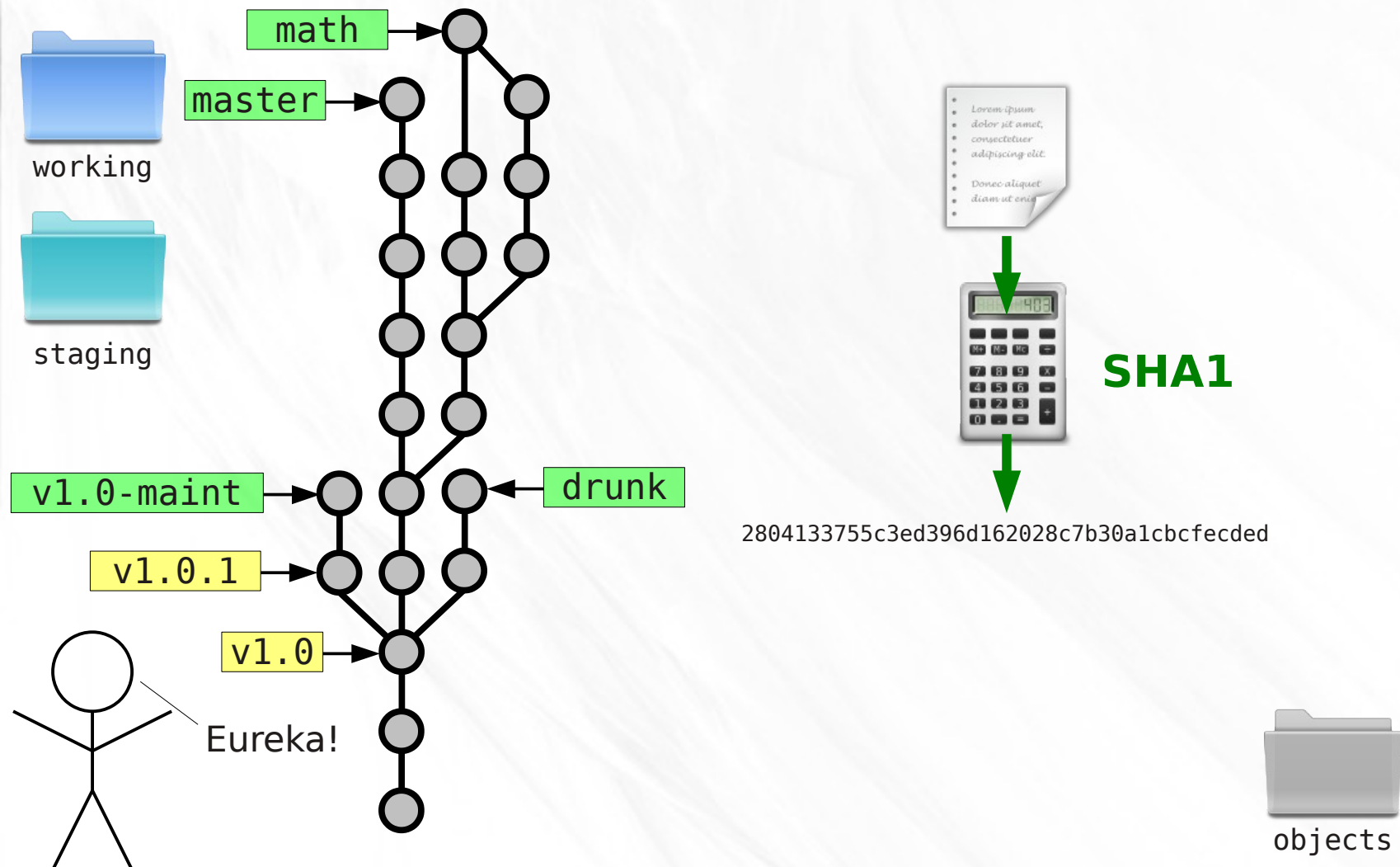
Diffs



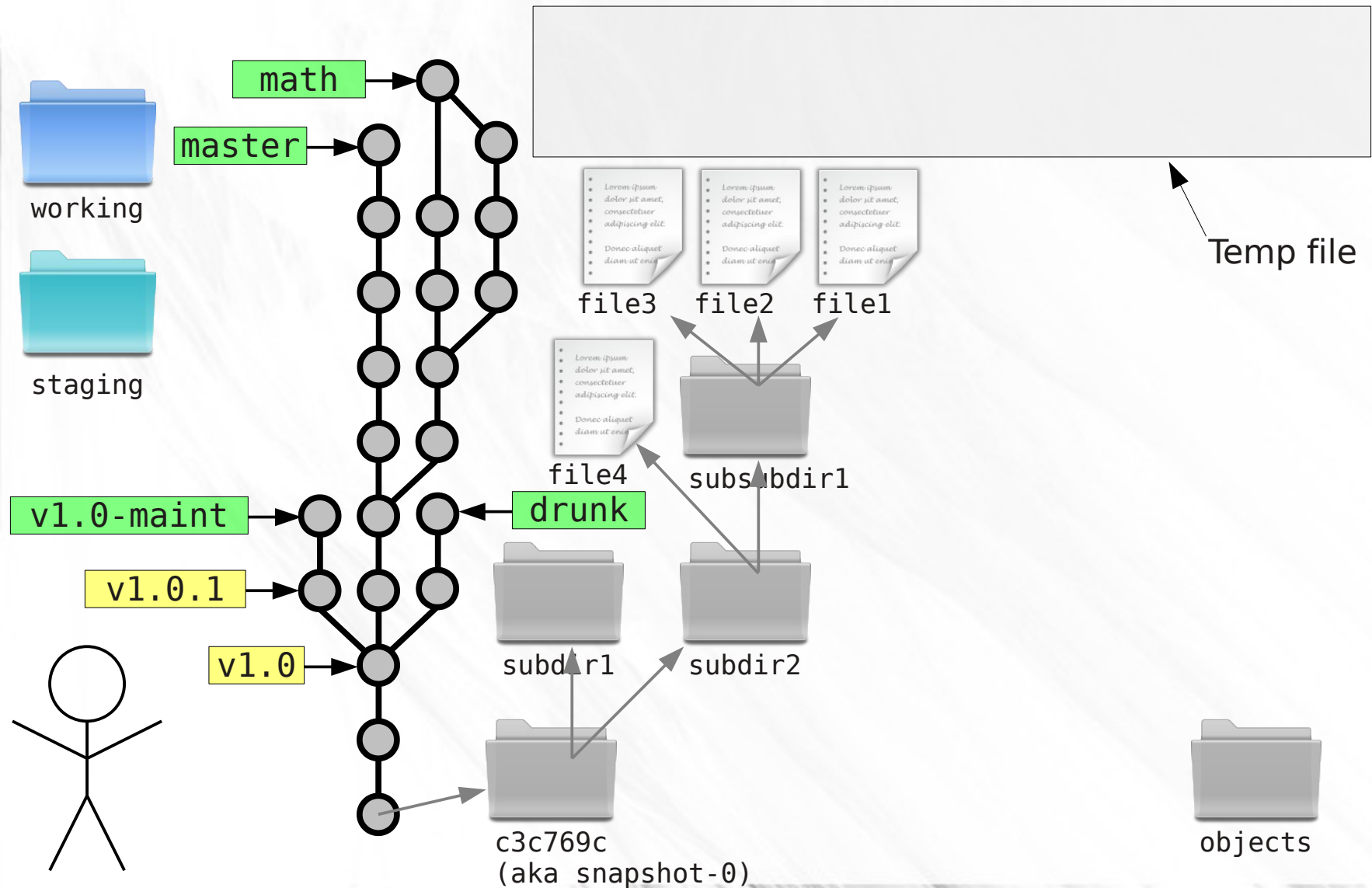
Eliminating Duplication



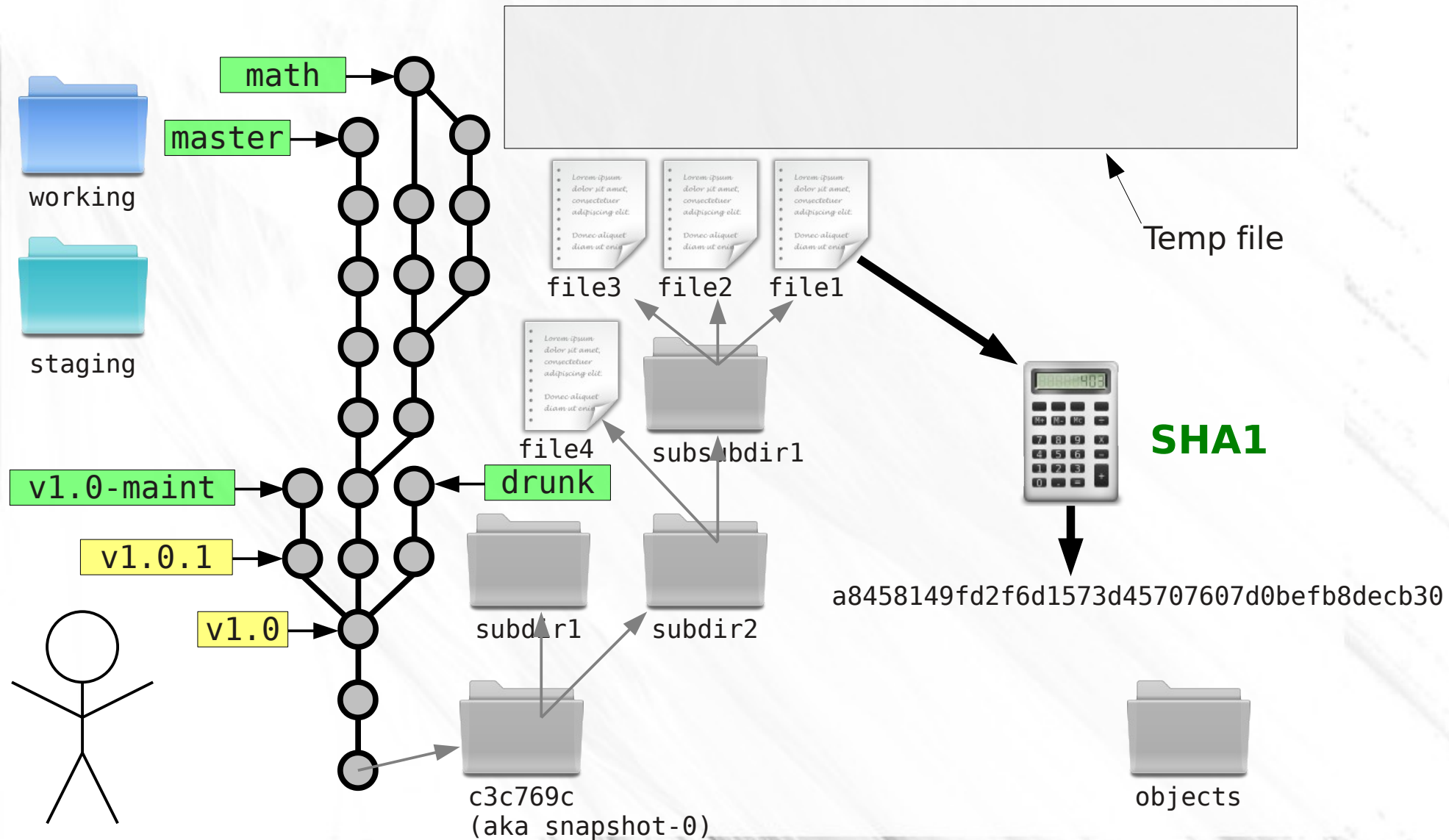
Eliminating Duplication



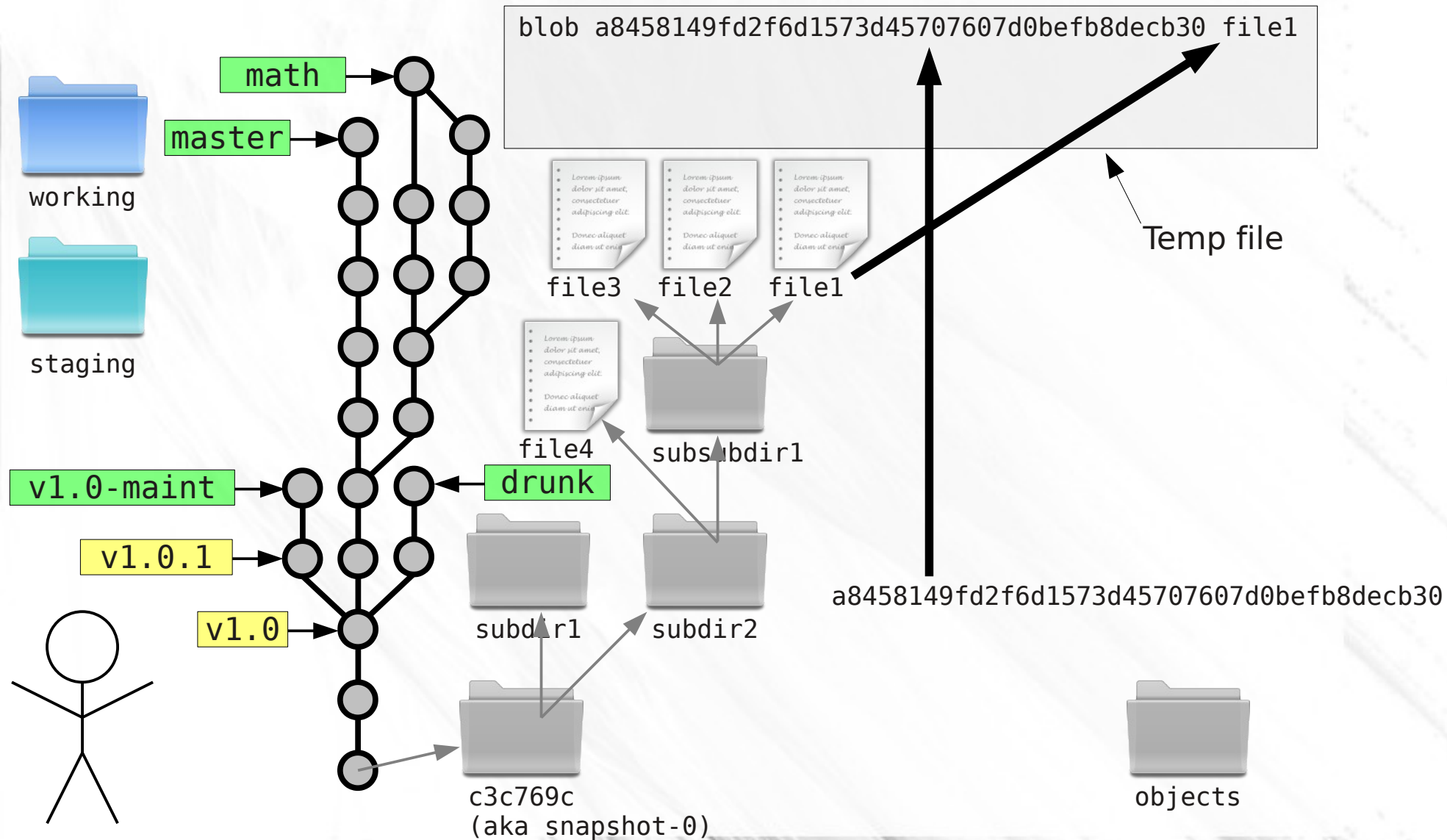
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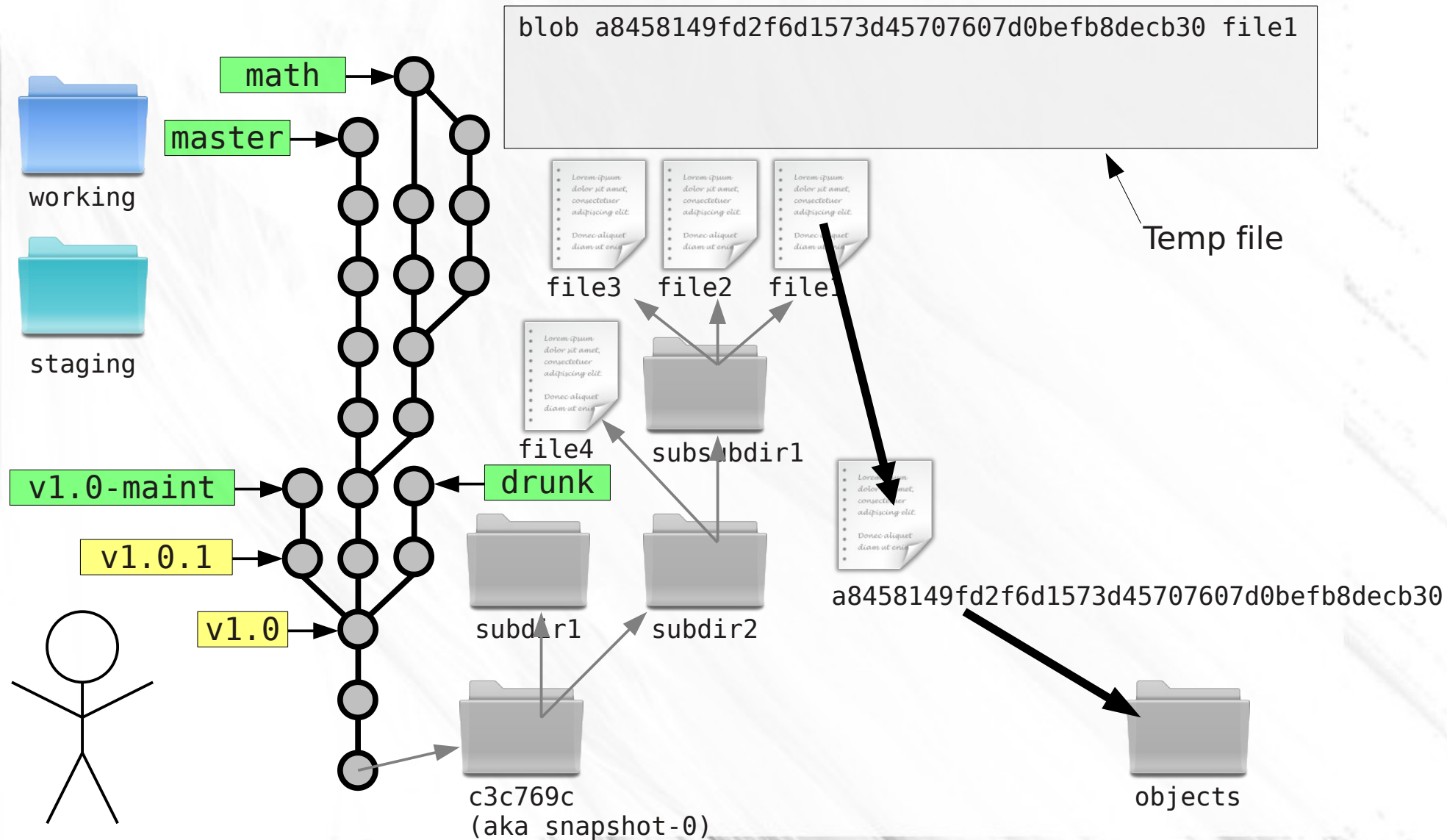
Eliminating Duplication



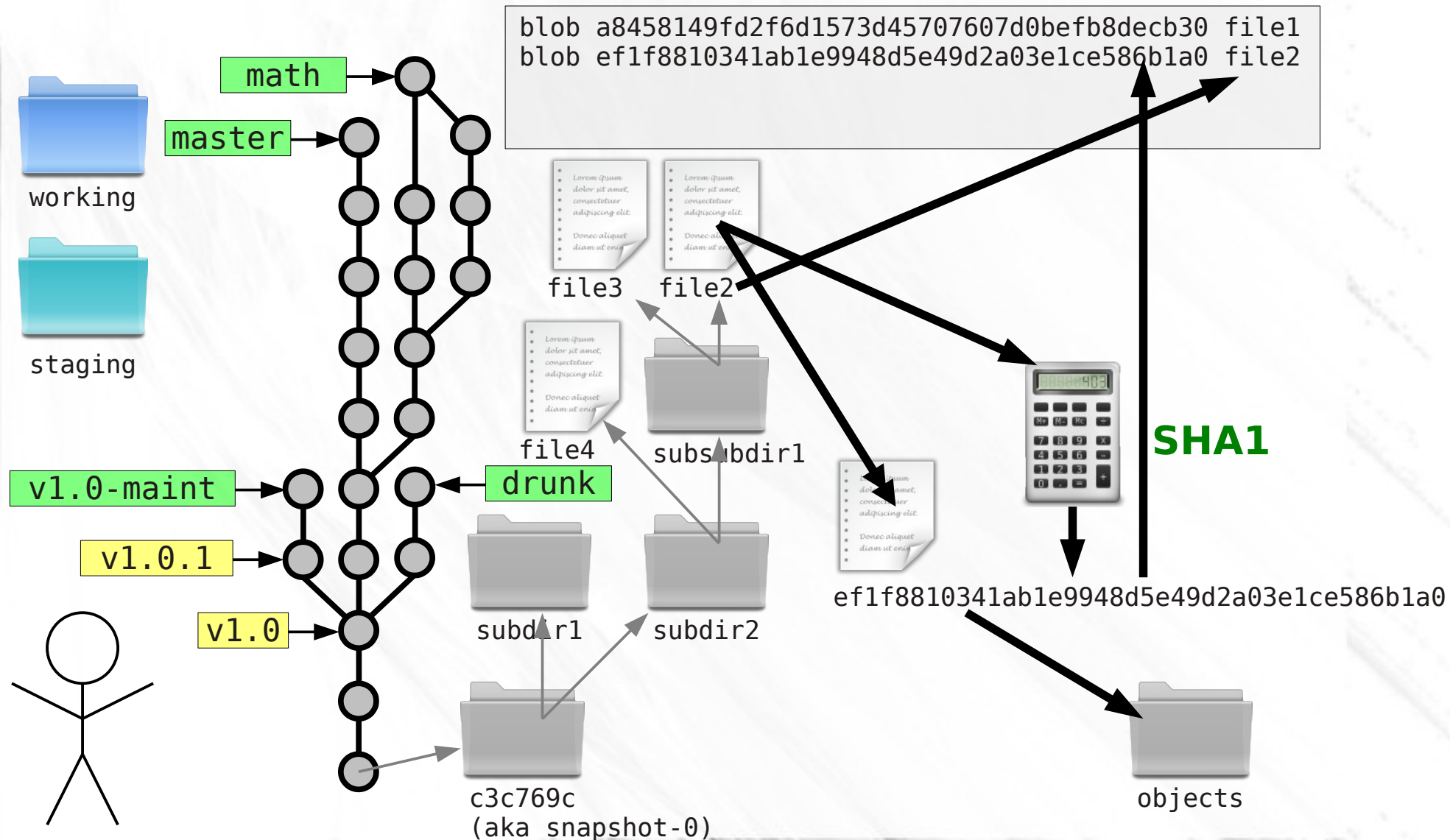
Eliminating Duplication



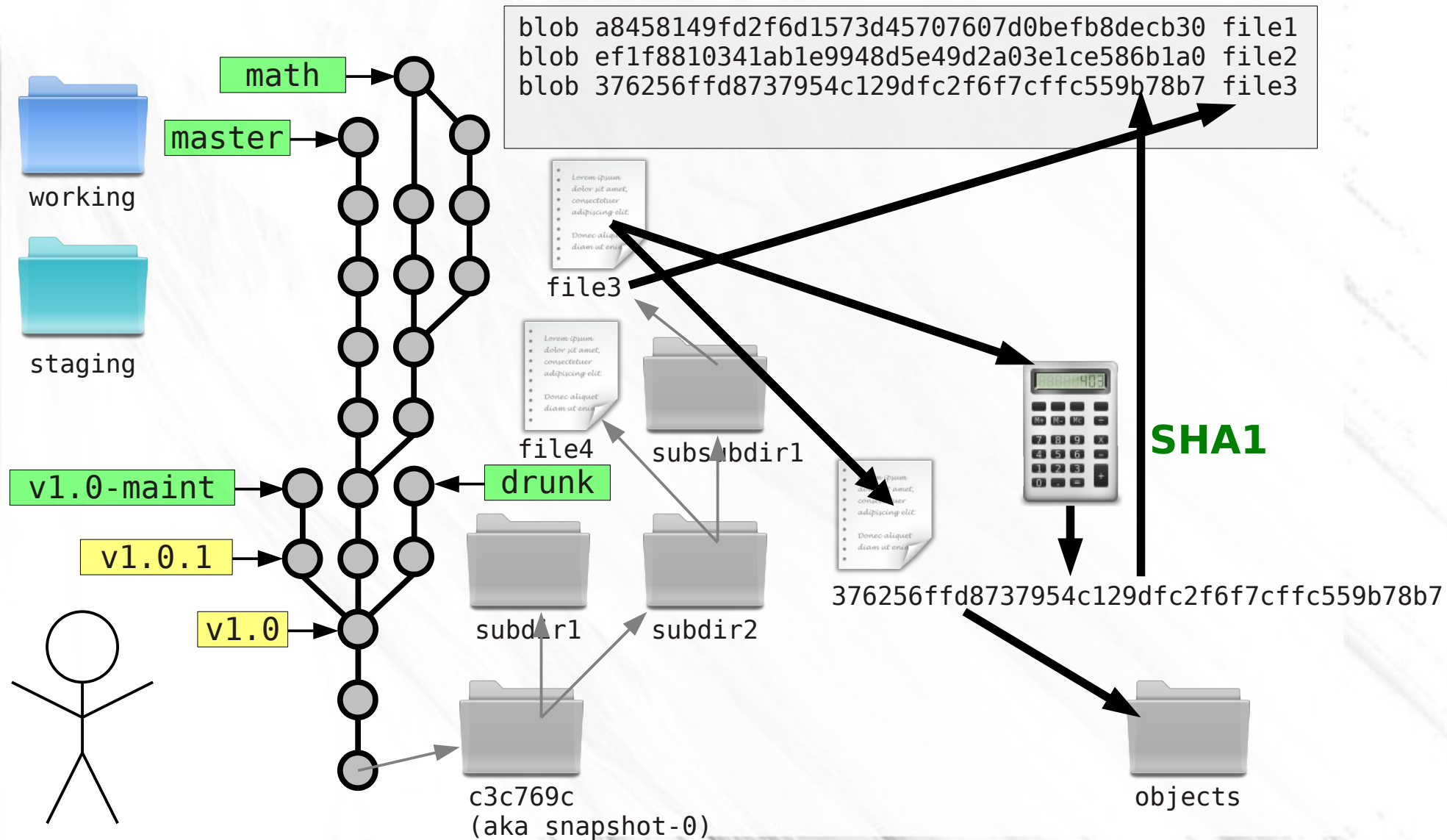
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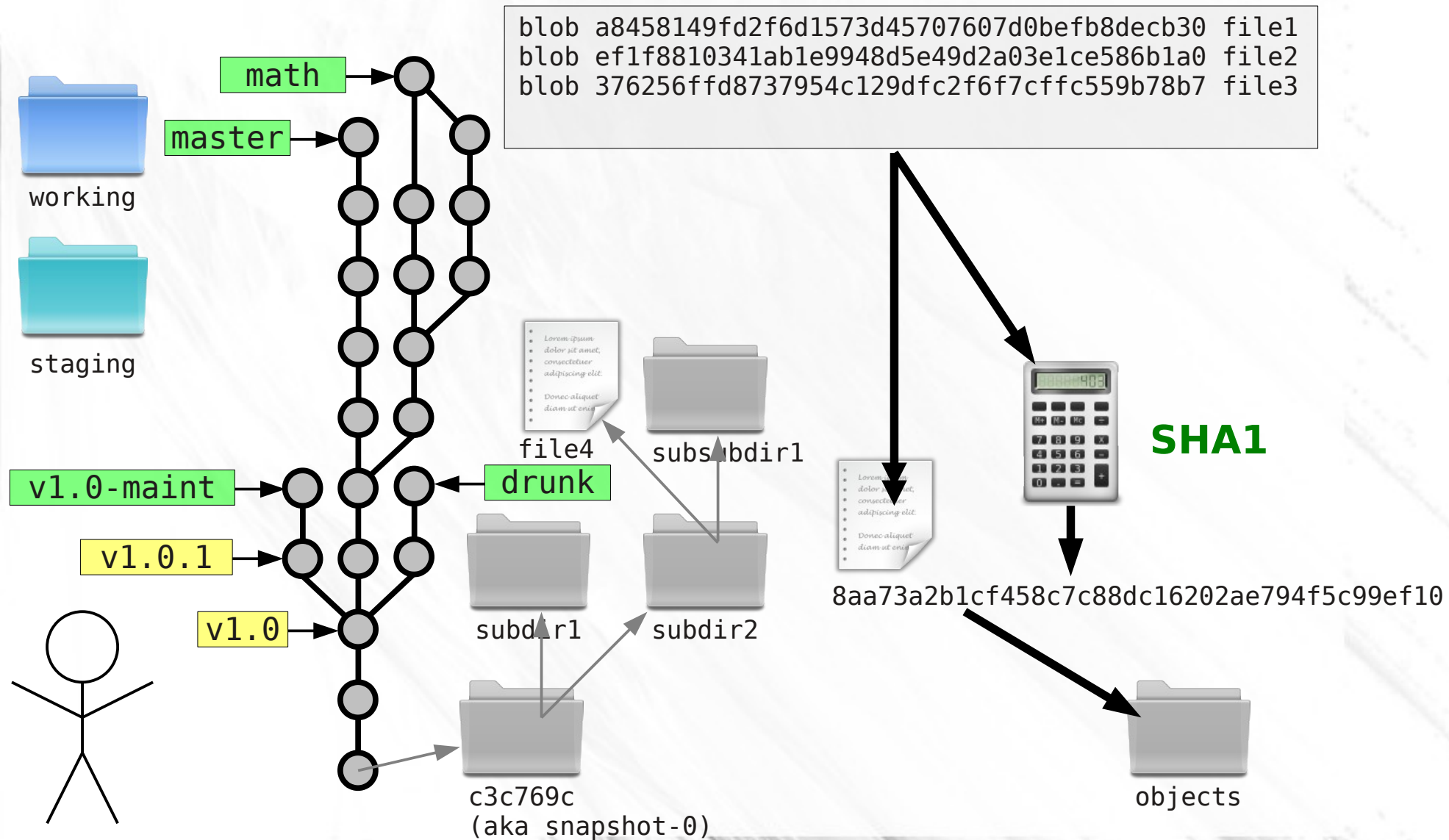
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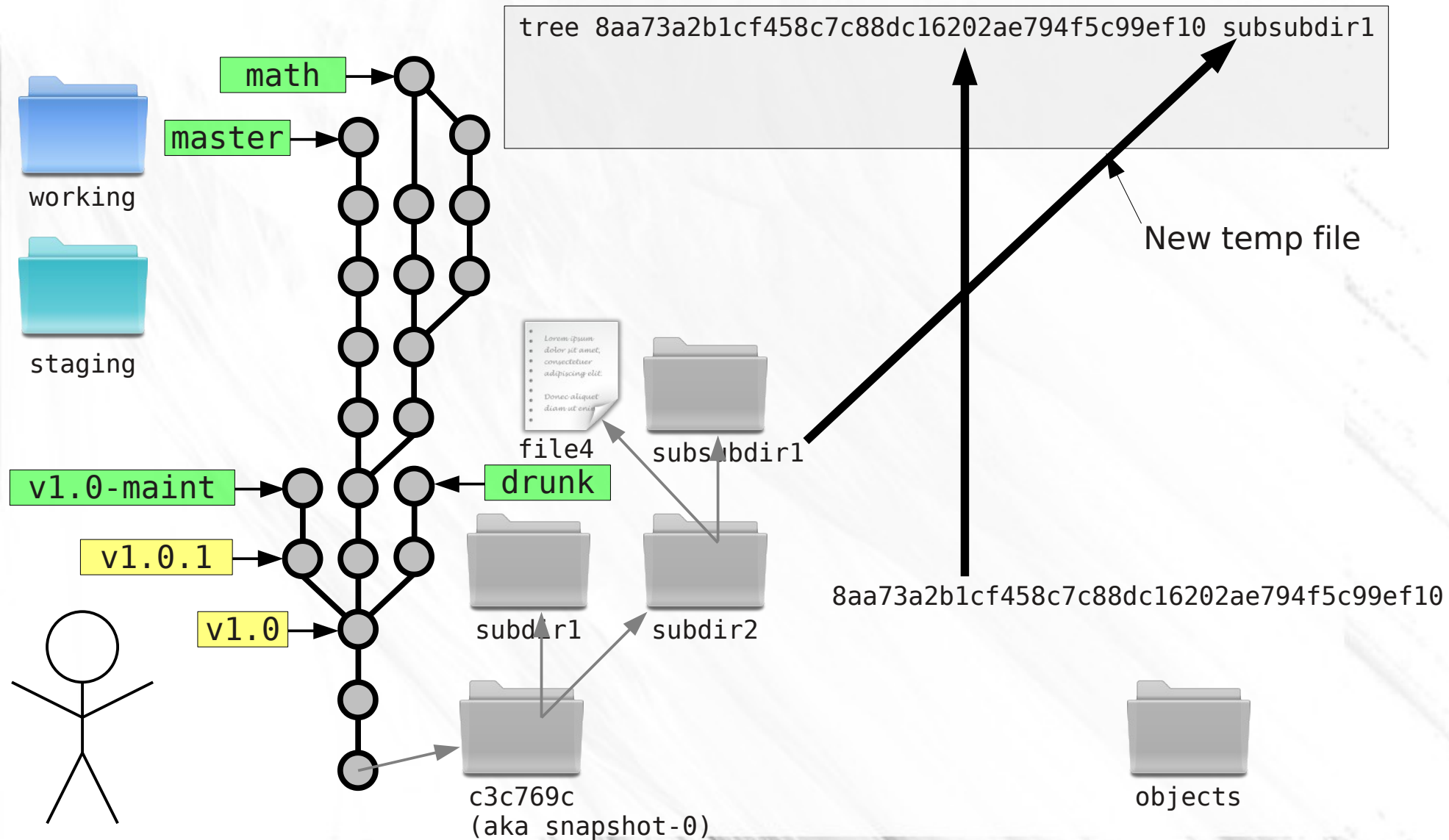
Eliminating Duplication



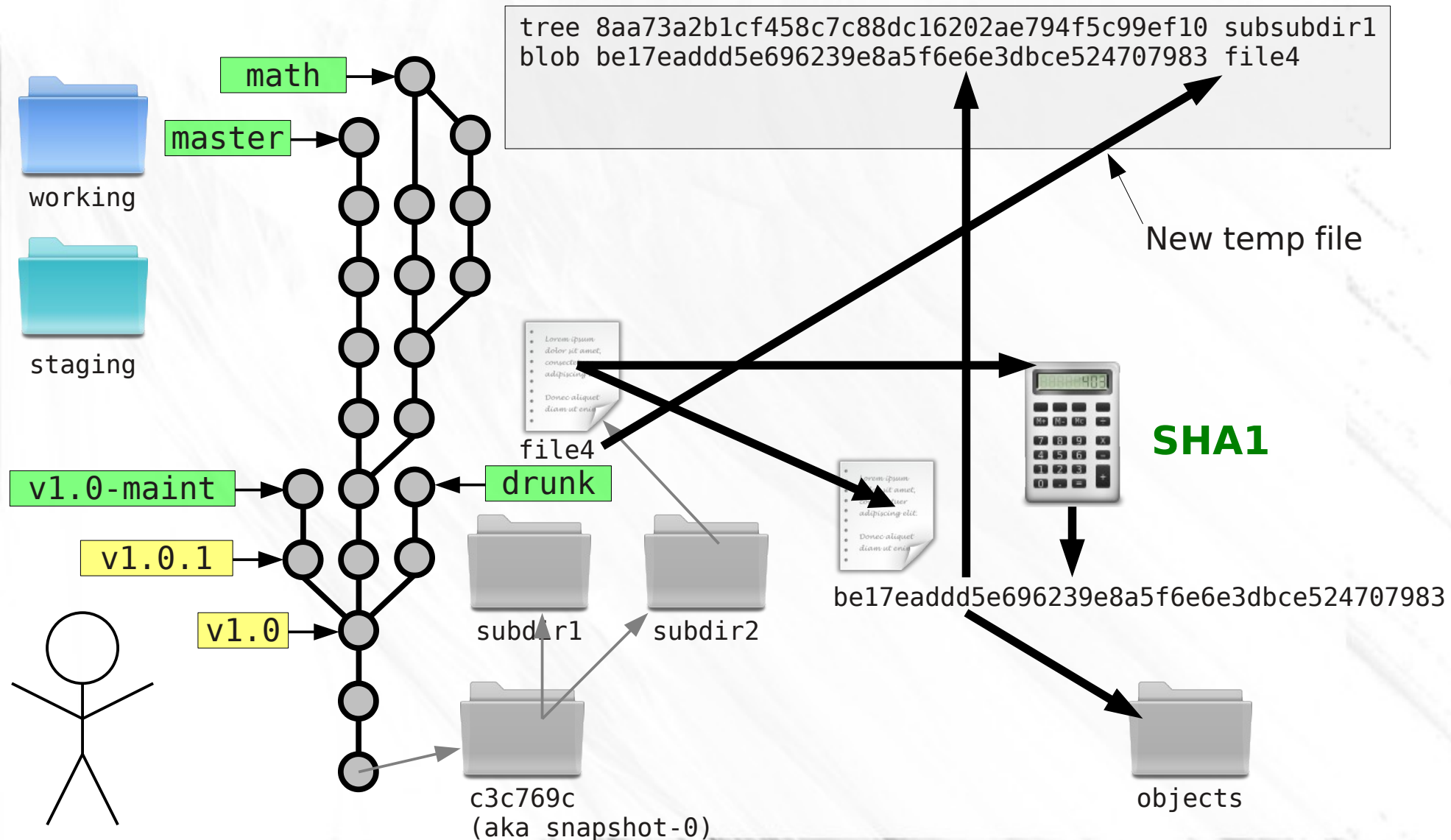
Eliminating Duplication



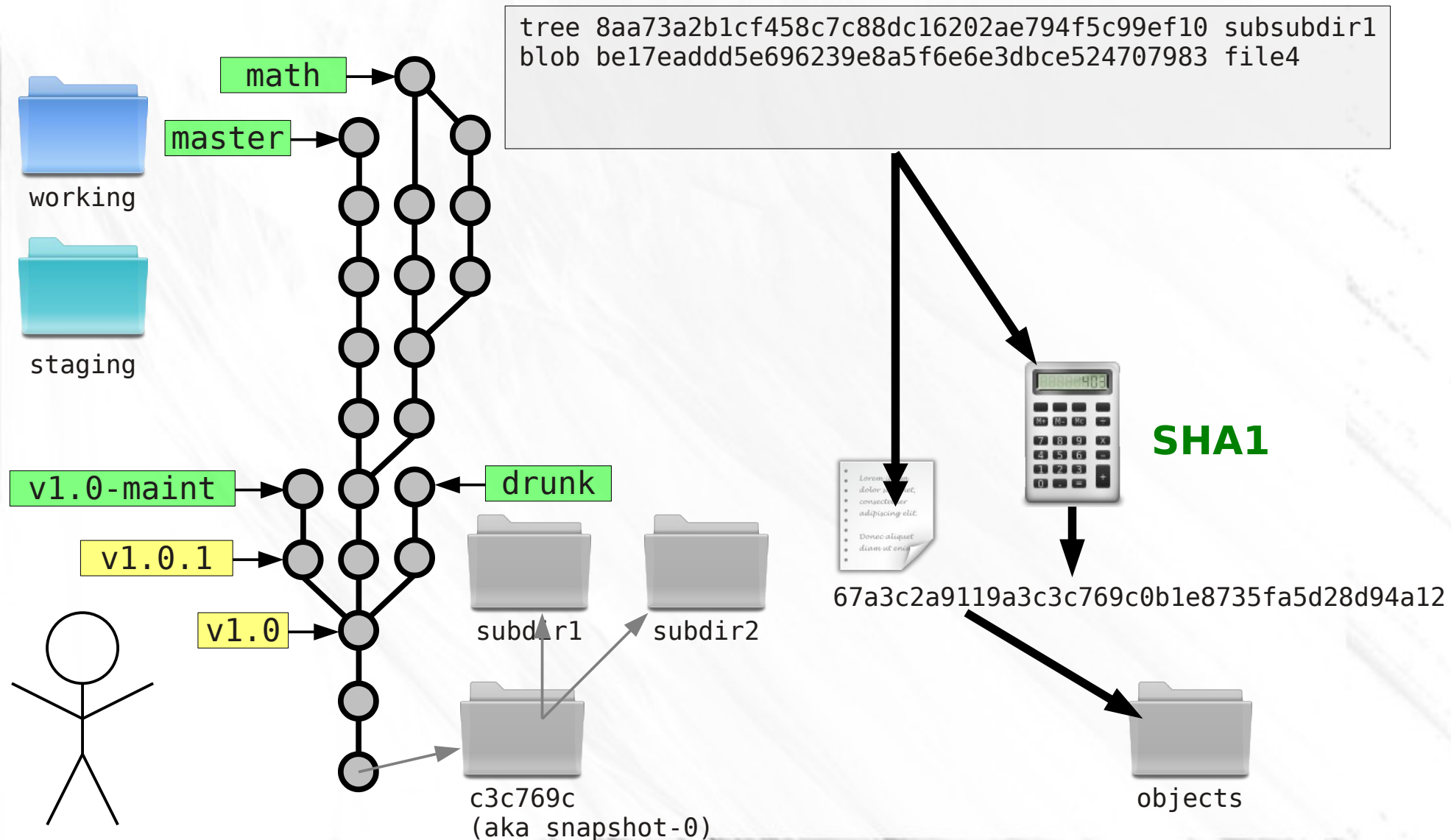
Eliminating Duplication



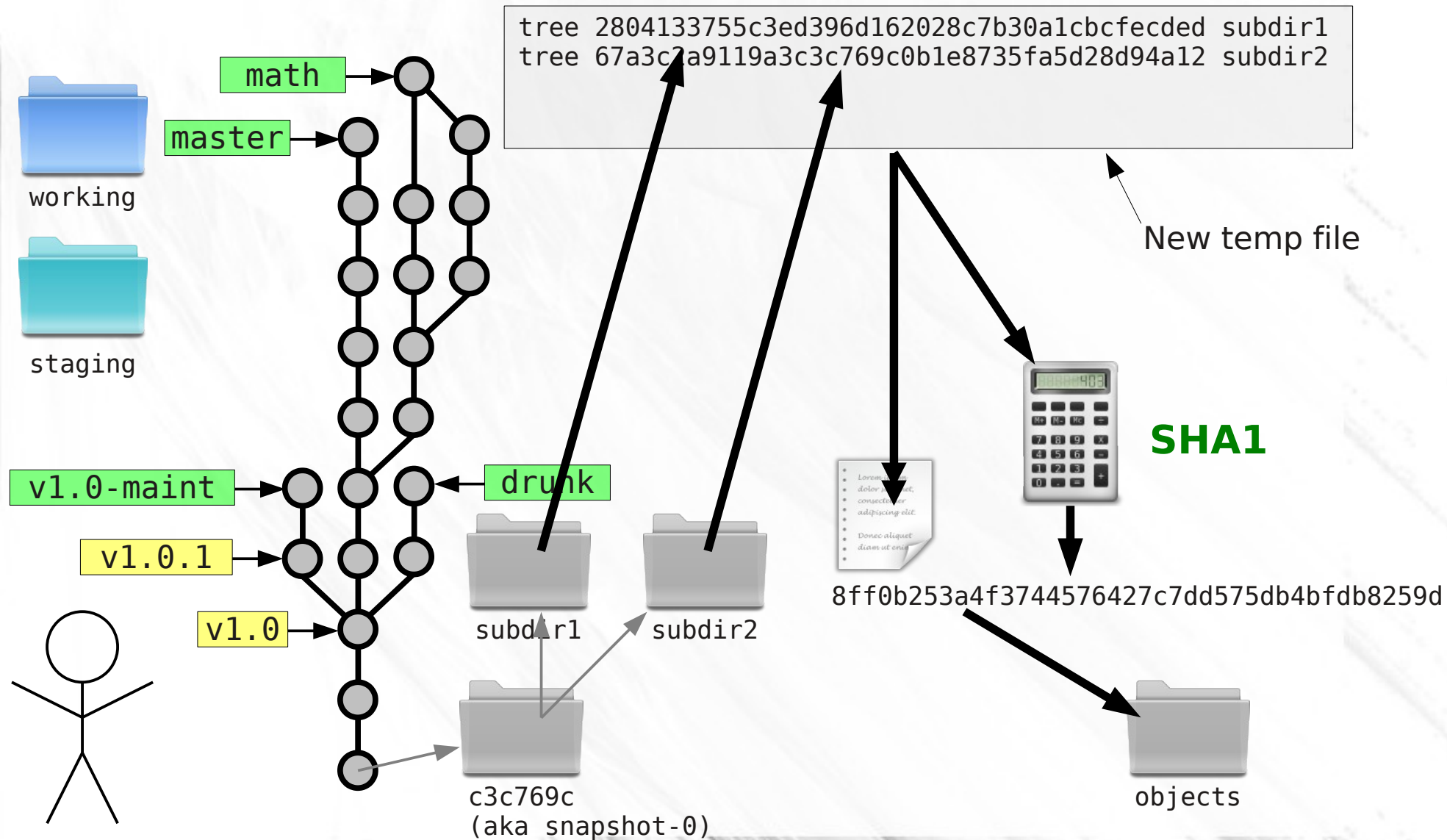
Eliminating Duplication



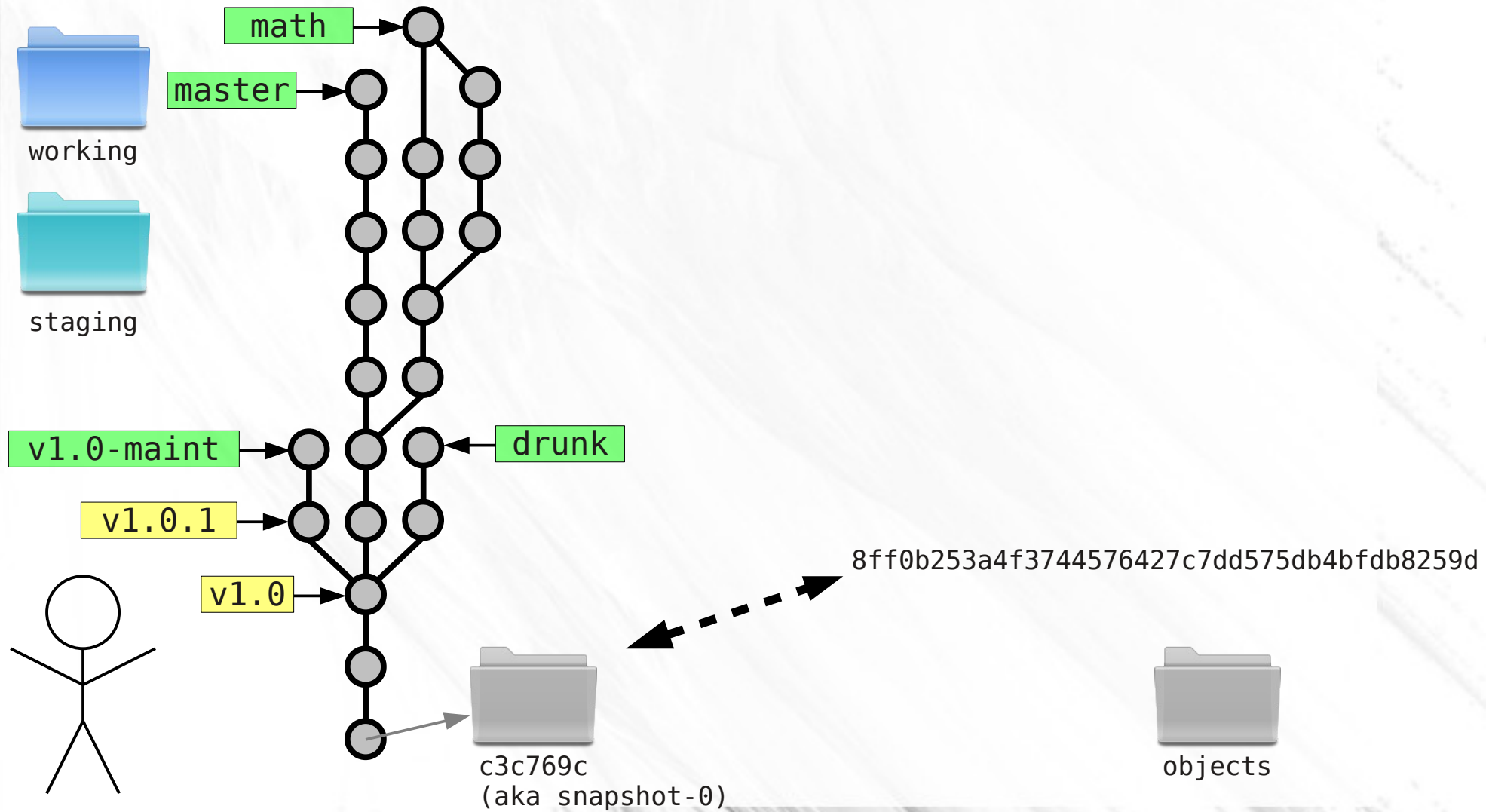
Eliminating Duplication



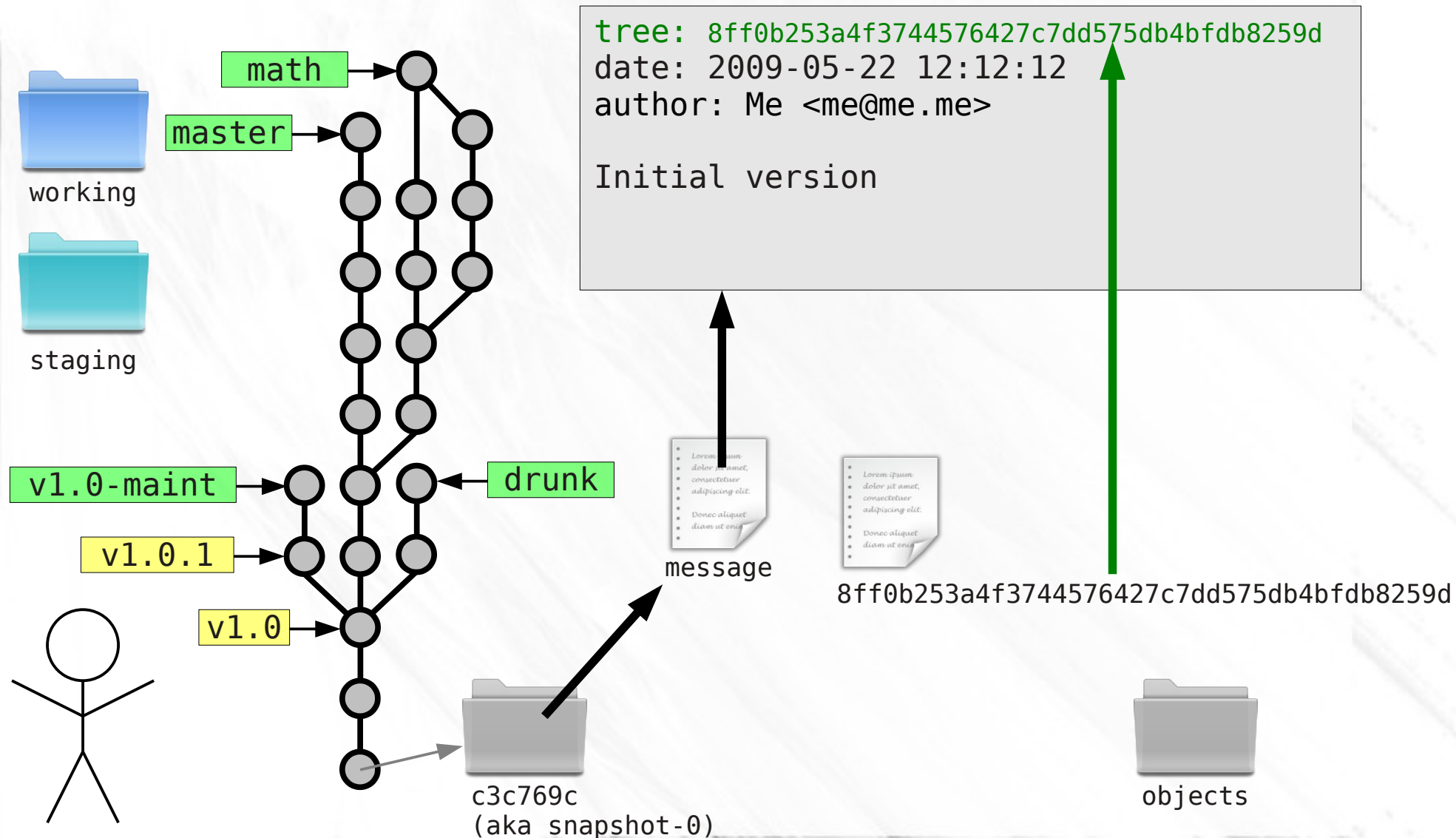
Eliminating Duplication



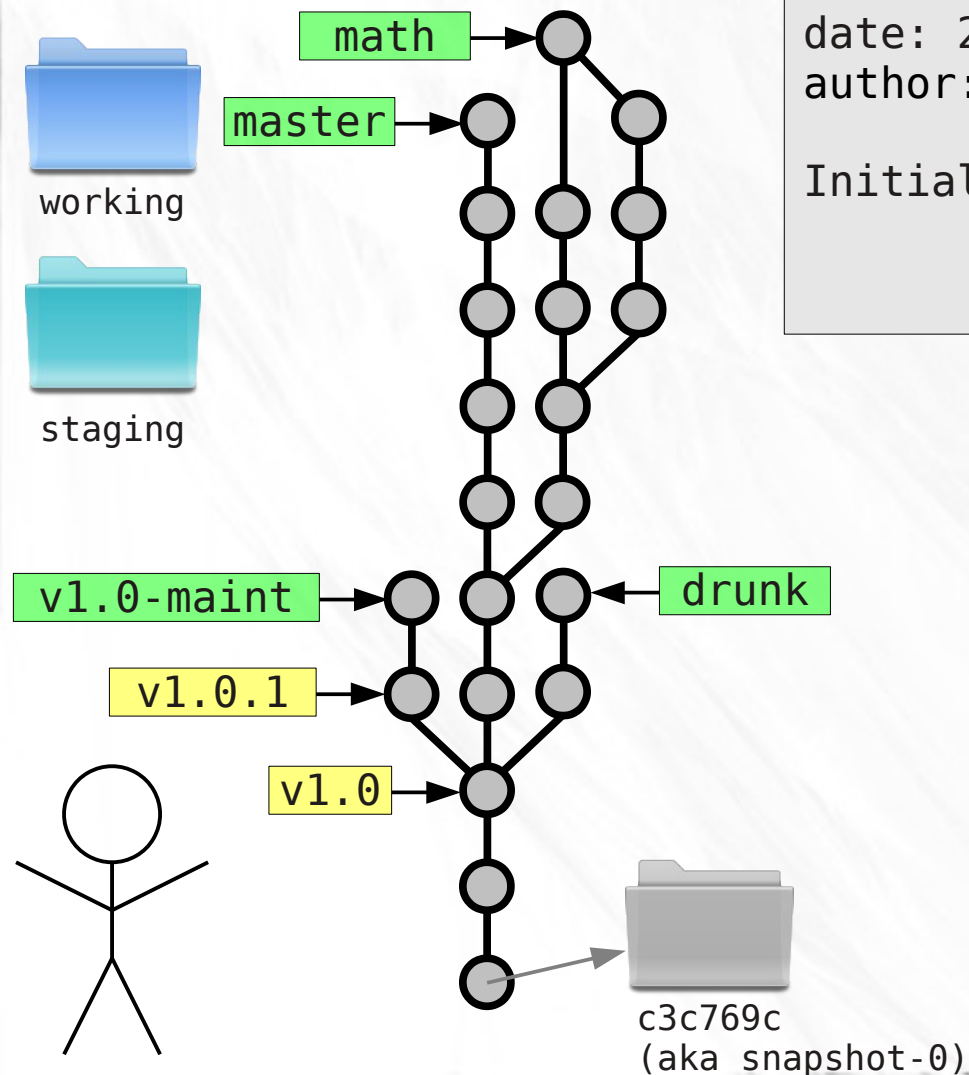
Eliminating Duplication



Eliminating Duplication

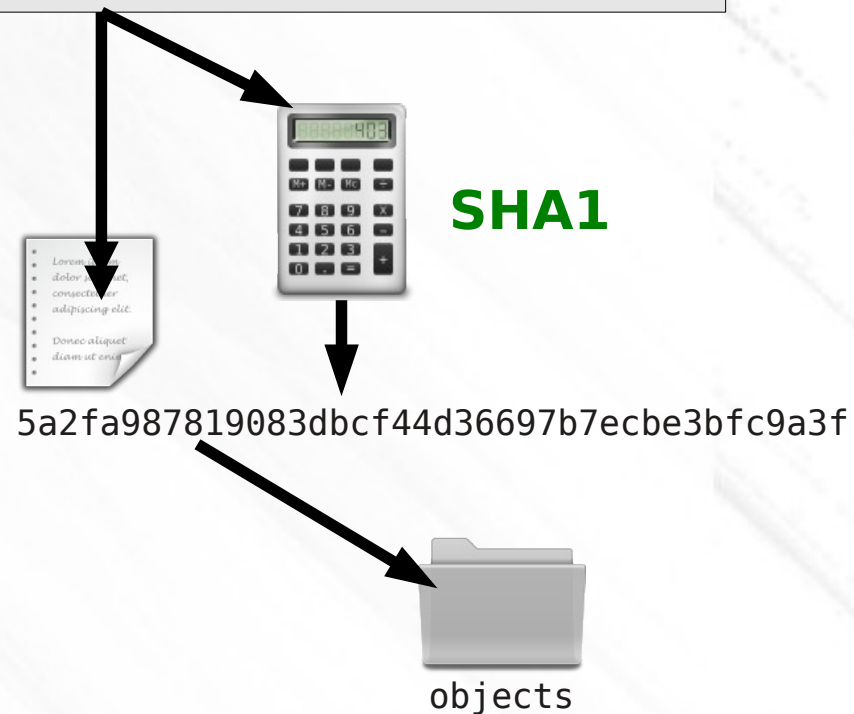


Eliminating Duplication

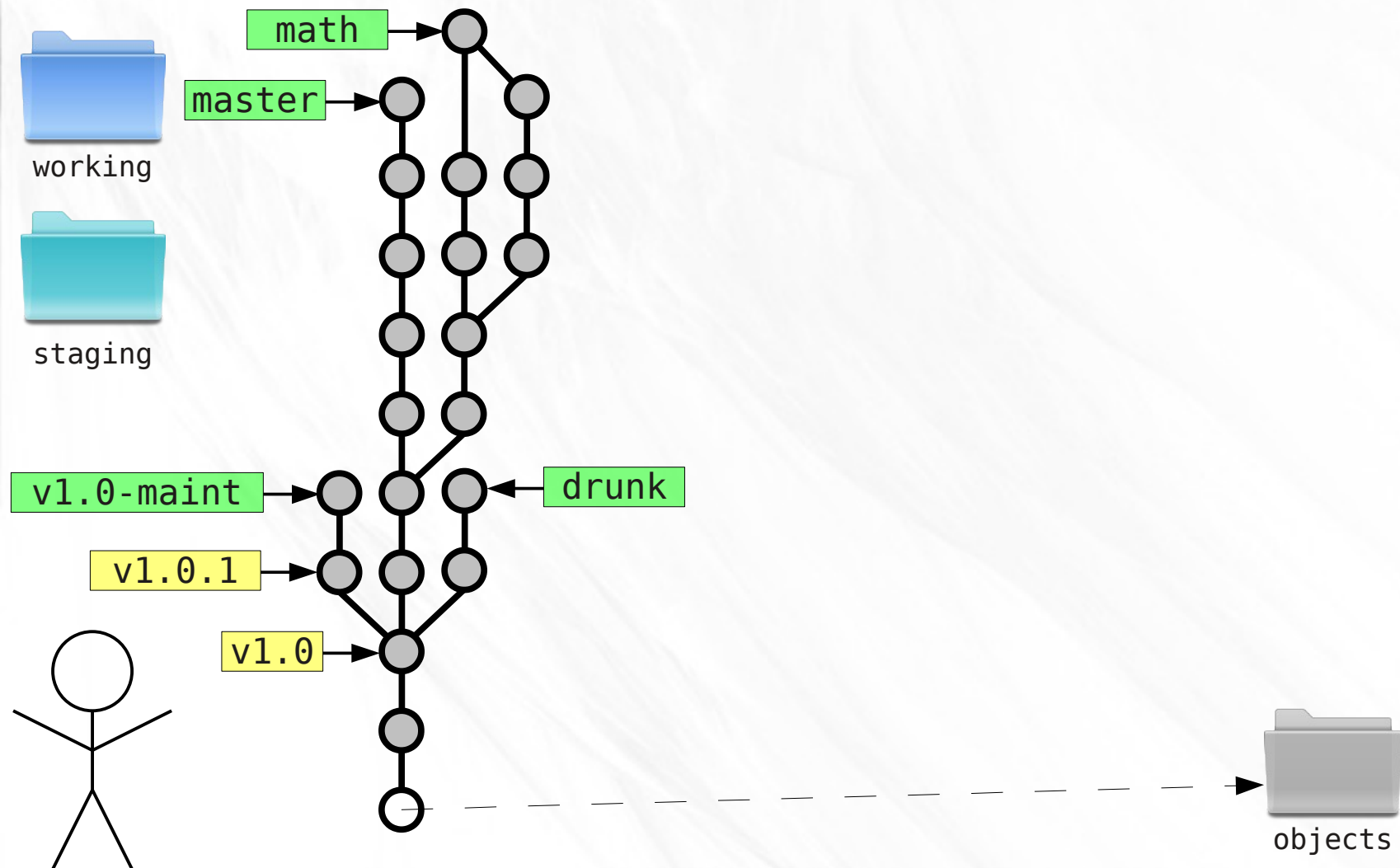


```
tree: 8ff0b253a4f3744576427c7dd575db4bfdb8259d
date: 2009-05-22 12:12:12
author: Me <me@me.me>
```

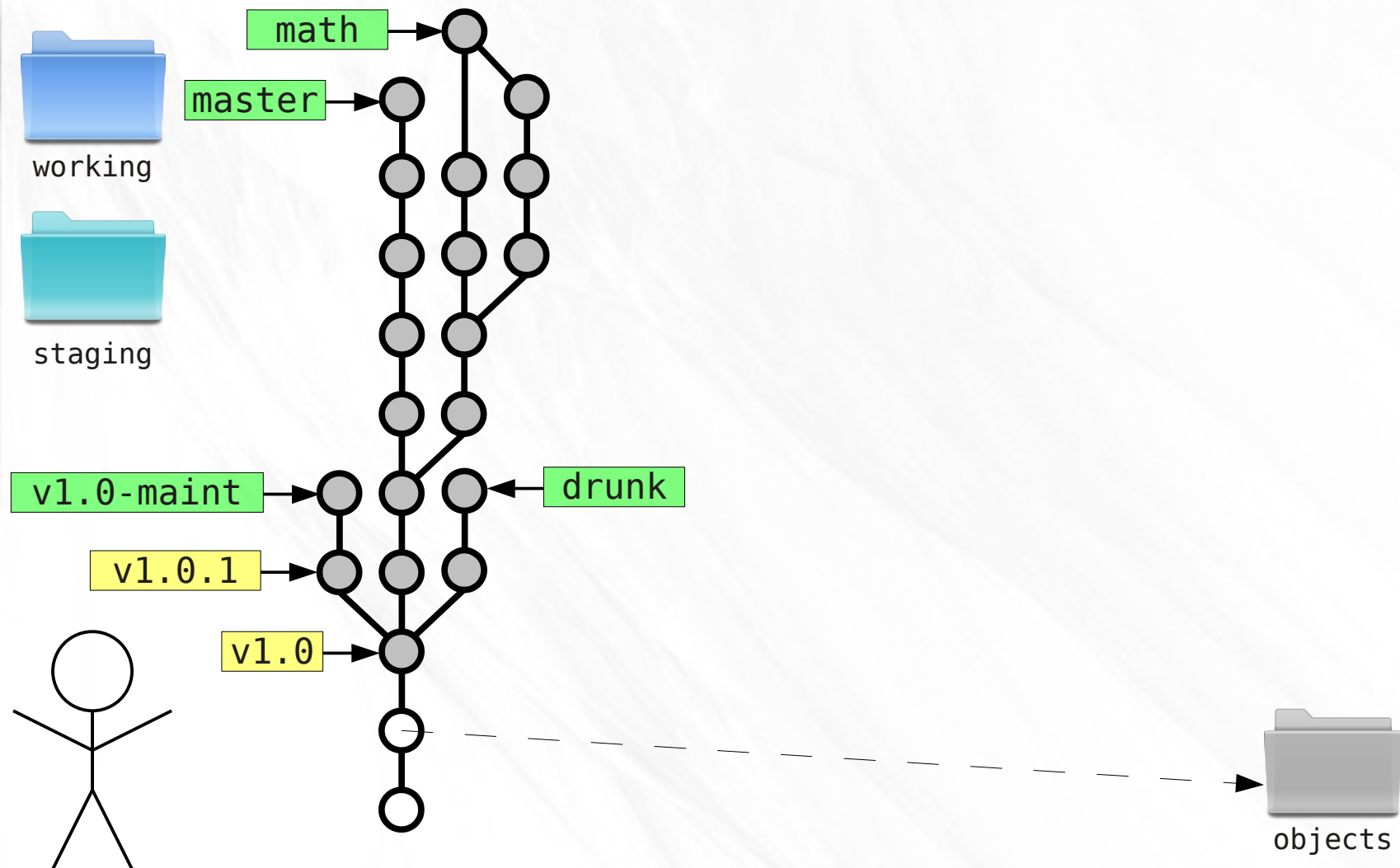
Initial version



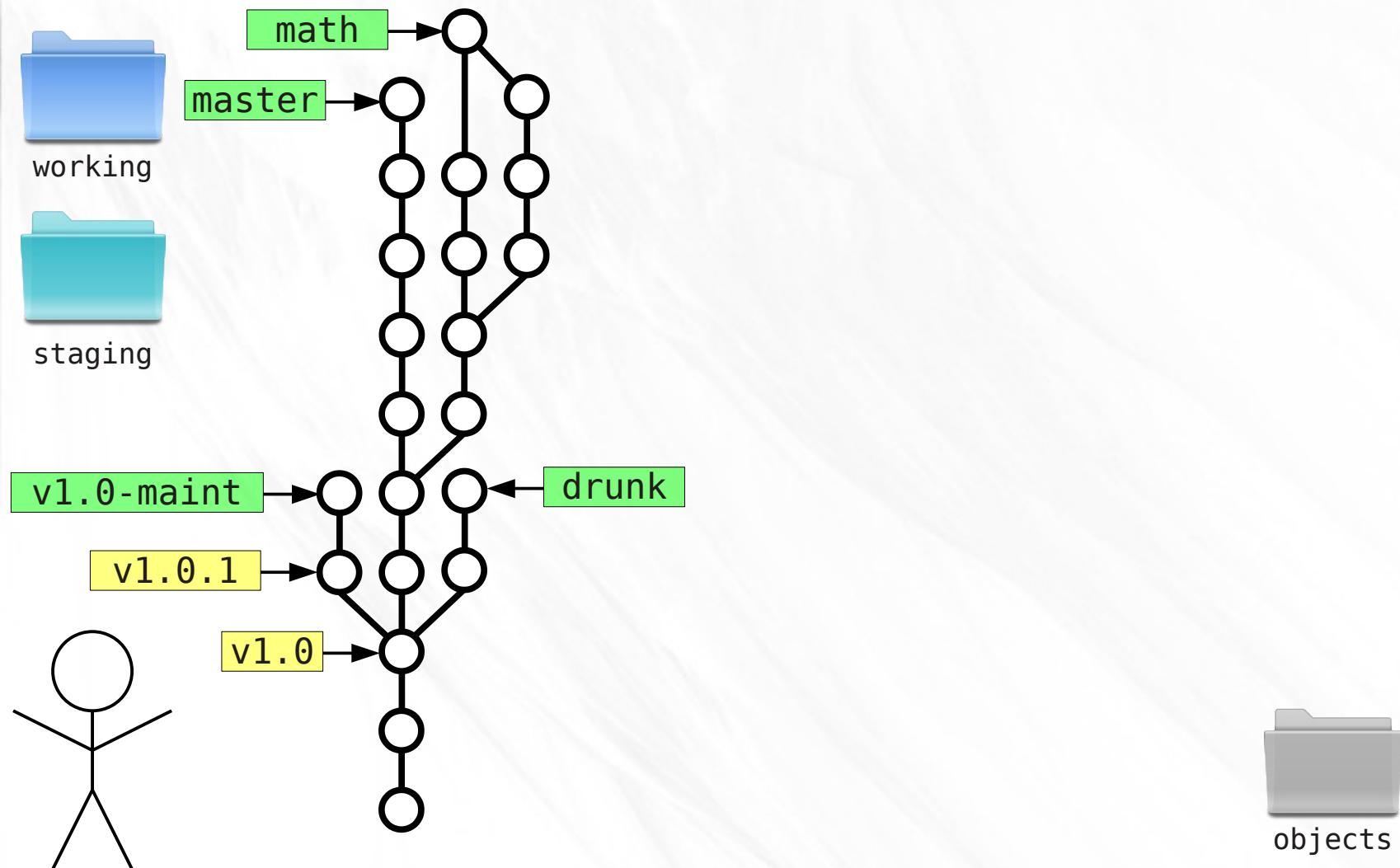
Eliminating Duplication



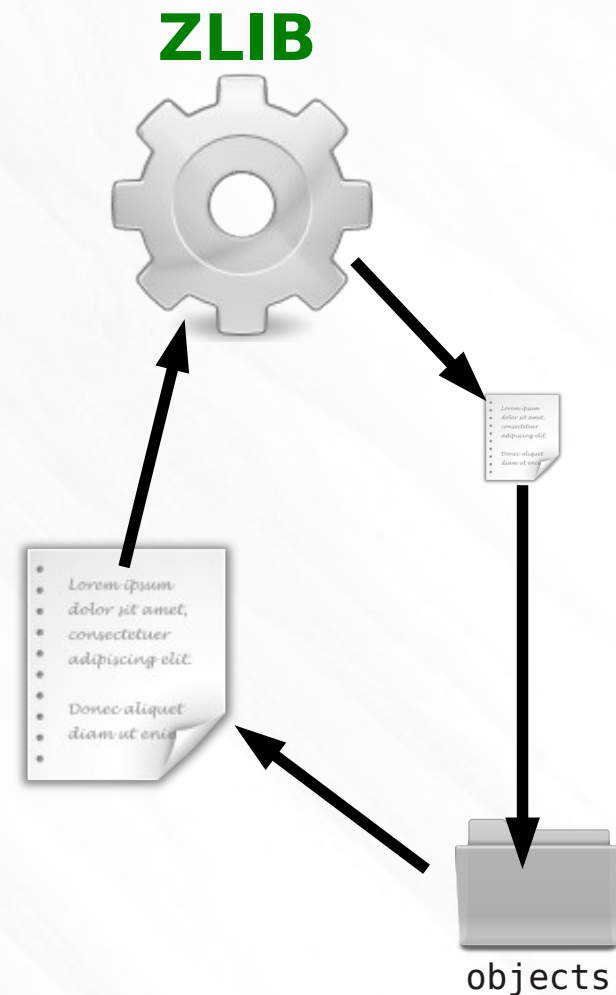
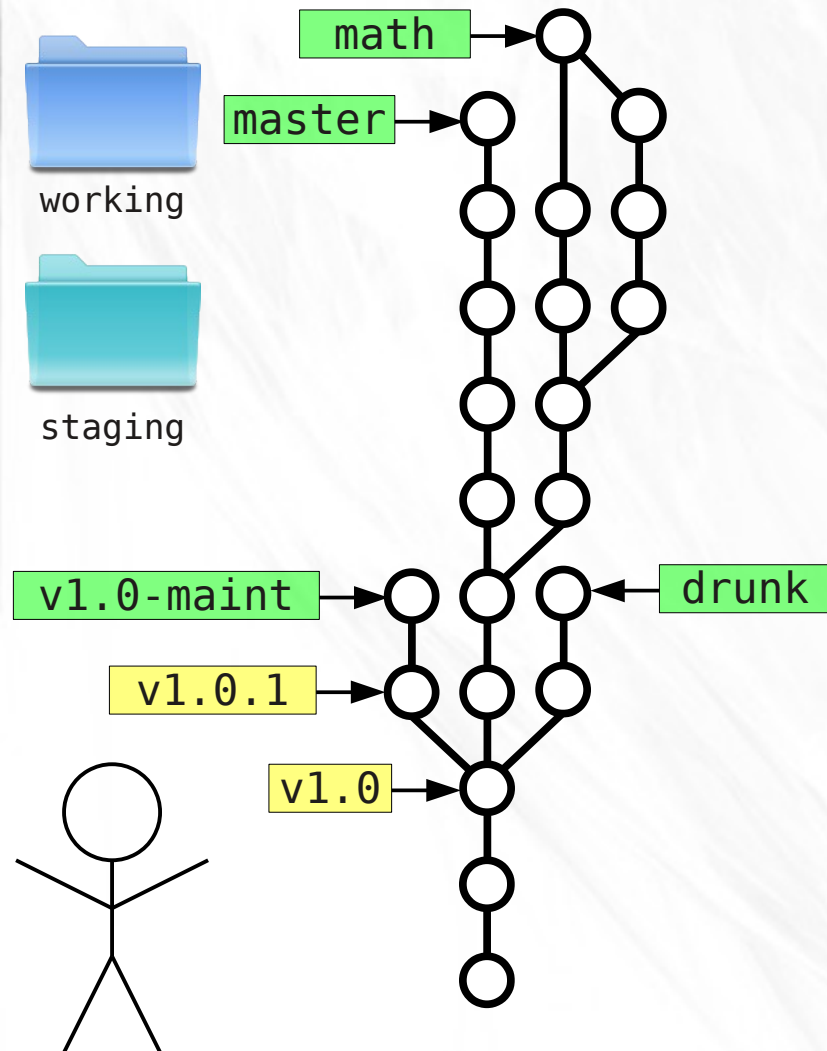
Eliminating Duplication



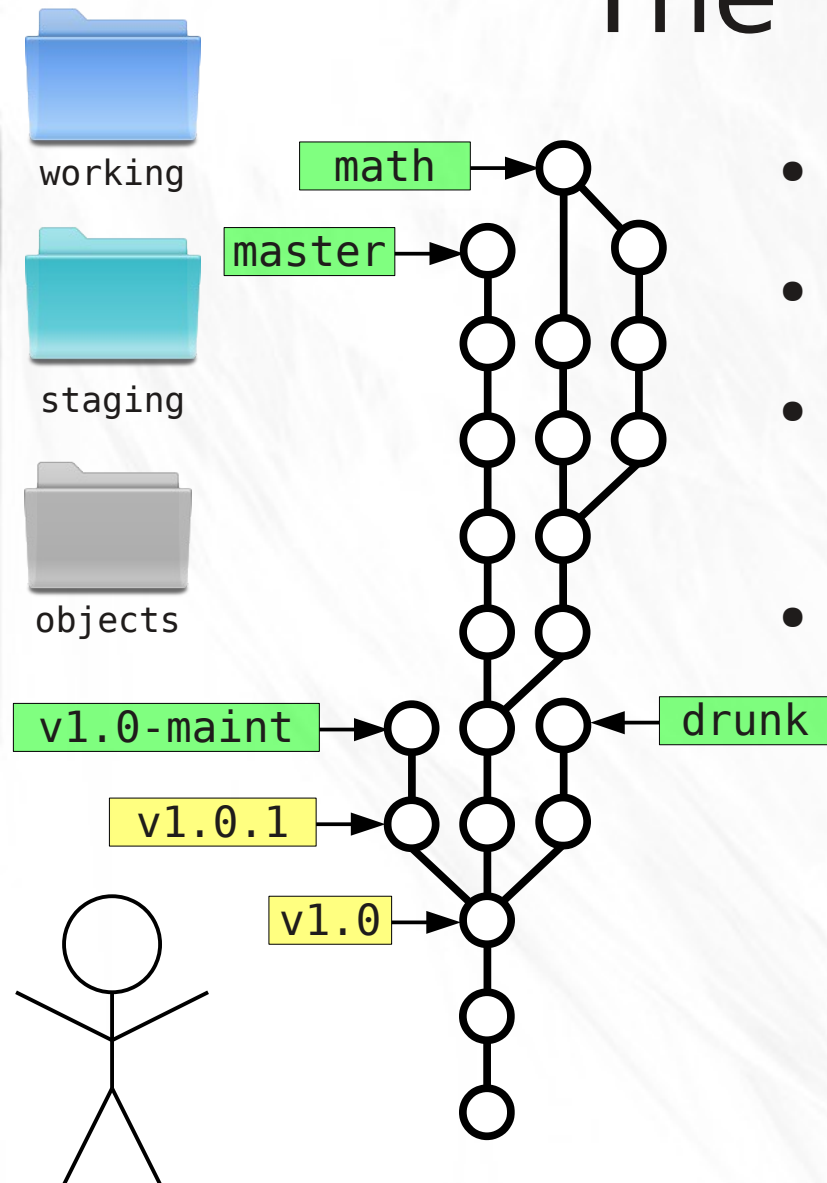
Eliminating Duplication



Compressing Blobs



The True Git

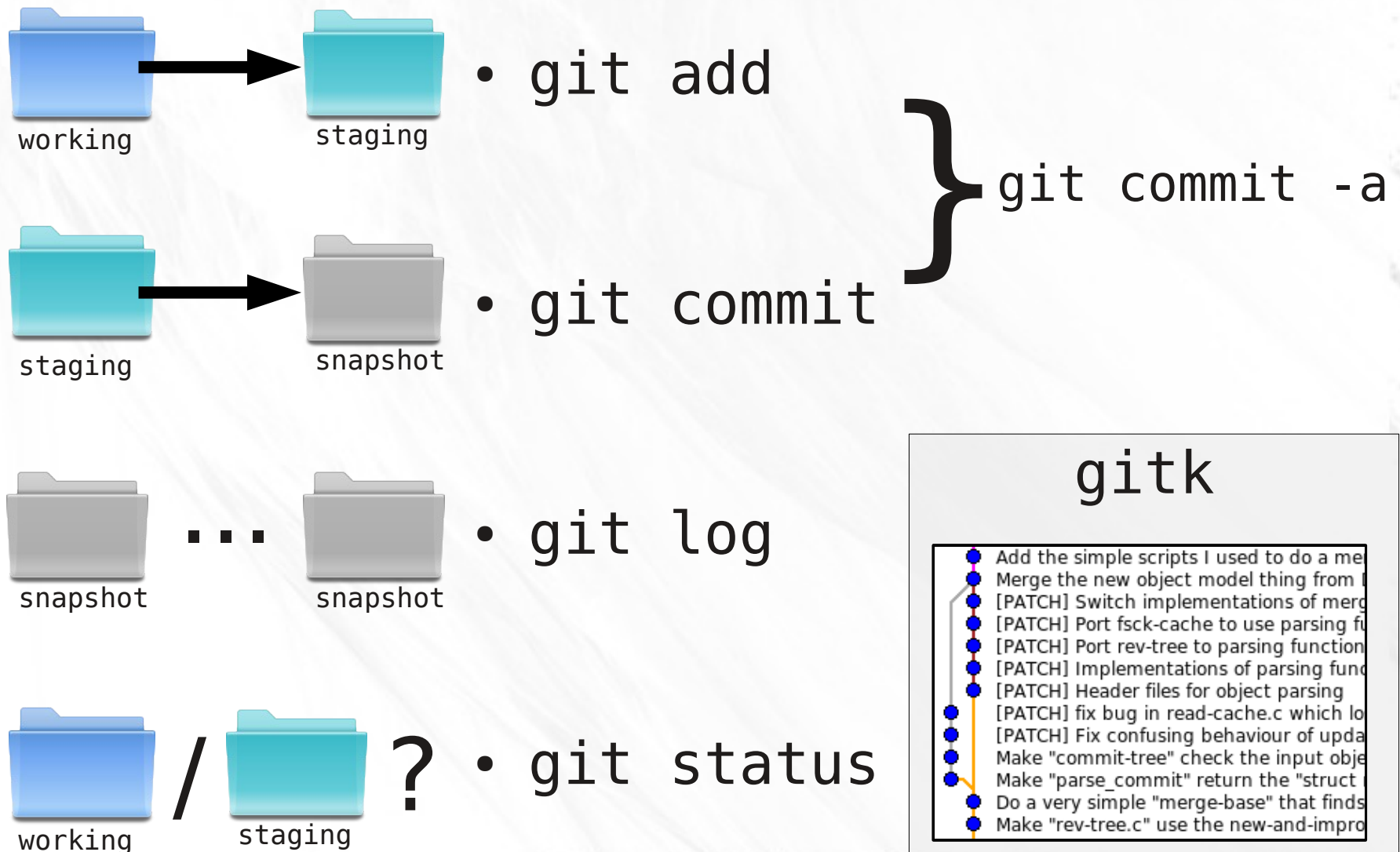


- TADAA!
- This is pretty much Git
- Nicer command line tools for all these operations
- Many, many other tools

Commands: Getting Started

- First, tell Git who you are:
 - `git config --global user.name "My Name"`
 - `git config --global user.email "my@email.address"`
- Get help:
 - `git <command> -h`
 - `git help <command>`
- Start a new Git repository:
 - `git init`

Commands: Making snapshots



gitk

- Add the simple scripts I used to do a merge
- Merge the new object model thing from I
- [PATCH] Switch implementations of merge
- [PATCH] Port fsck-cache to use parsing fu
- [PATCH] Port rev-tree to parsing function
- [PATCH] Implementations of parsing func
- [PATCH] Header files for object parsing
- [PATCH] fix bug in read-cache.c which lo
- [PATCH] Fix confusing behaviour of upda
- Make "commit-tree" check the input obje
- Make "parse_commit" return the "struct
- Do a very simple "merge-base" that finds
- Make "rev-tree.c" use the new-and-impro

Commands: Diffing



working

vs.



staging

• `git diff`



staging

vs.



snapshot

• `git diff --staged`



working

vs.



snapshot

• `git diff HEAD`



snapshot

vs.



snapshot

• `git diff <from> <to>`

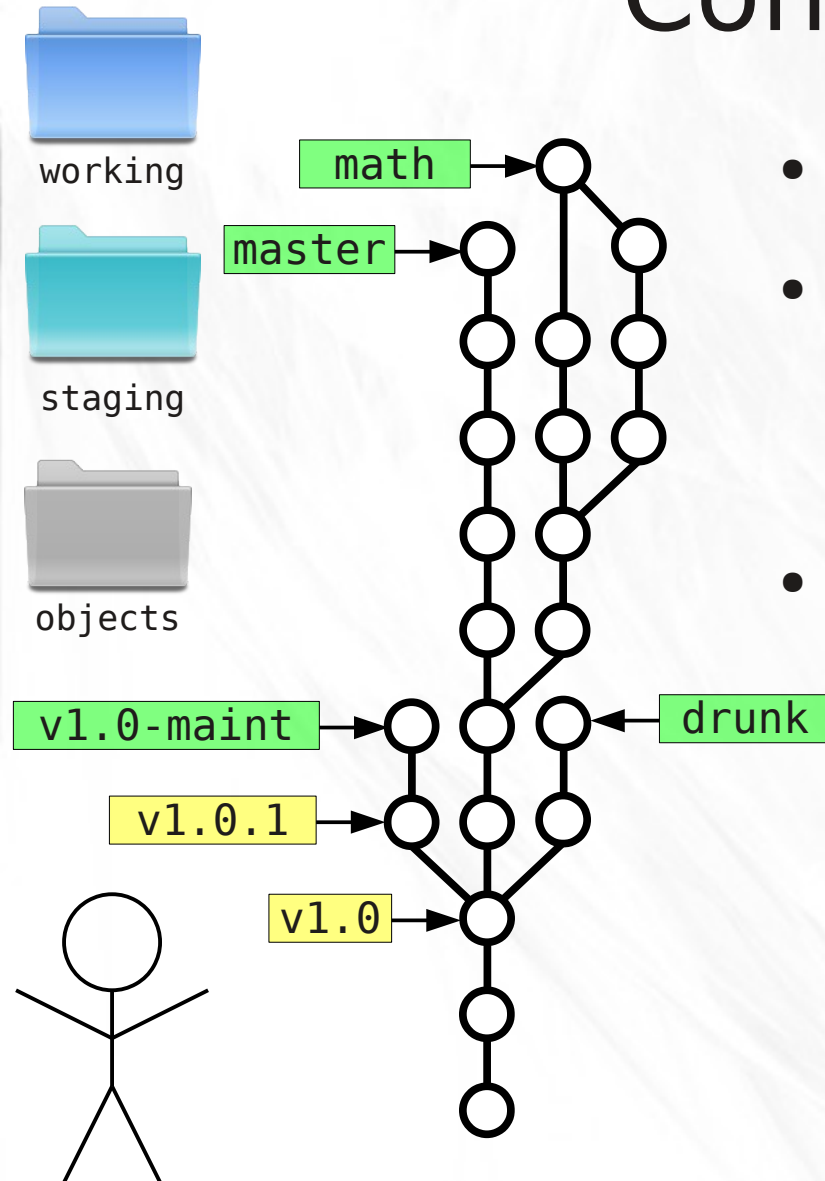
Commands: Branches & Tags

- `git branch`
 - `git branch <branch>`
 - `git checkout <branch>`
- } `git checkout -b ...`
- `git tag -l`
 - `git tag <tag>`

Commands: Fetching & Merging

- `git remote add <name> <URL>`
 - `git fetch <name>`
 - `git merge <name>/<branch>`
- } `git pull`

Conclusion



- Keep this parable in mind
- Git is simple and powerful

- One more thing:

`git reflog`

Where to go next?

- @ Cisco:
 - https://rdwiki.cisco.com/wiki/Git_Tutorial
 - Especially the “More resources” section
 - IRC: [#git](#) / Email: gitadmin@cisco.com
- In general:
 - Git homepage: <http://git-scm.com>
 - Pro Git: <http://git-scm.com/book>
 - Git Reference: <http://gitref.org>
 - GitHub: <http://github.com>
 - Gitorious: <http://gitorious.org>

Questions?

- Thanks for your attention!
- This presentation is available at:
git@git.rd.tandberg.com:users/jherland/git_parable
- Reach me at <jherland@cisco.com>

