





THE STUPID CONTENT TRACKER

Version control with git -- Dimitri Staessens





Sources:

https://www.slideshare.net/dreamiurg/introduction-to-git-8660499

https://git-scm.com



https://github.ugent.be/dstaesse





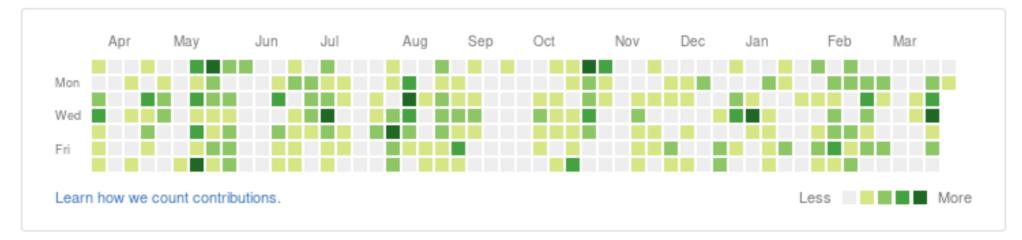
dstaesse dstaesse

Add a bio

Edit profile

- IBCN Zuiderpoort
- http://www.ibcn.intec.ugent.be
- (L) Joined on Aug 10, 2014

561 contributions in the last year



Contribution activity

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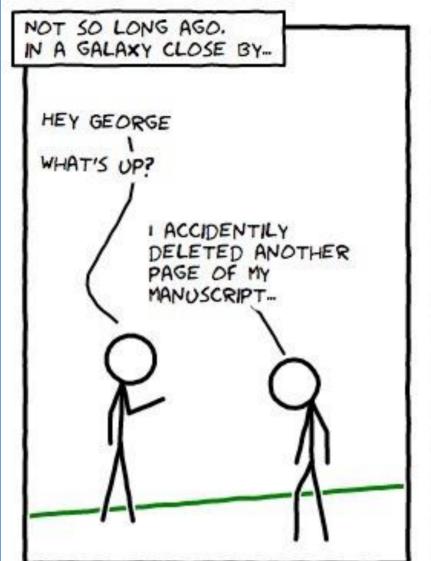
2017

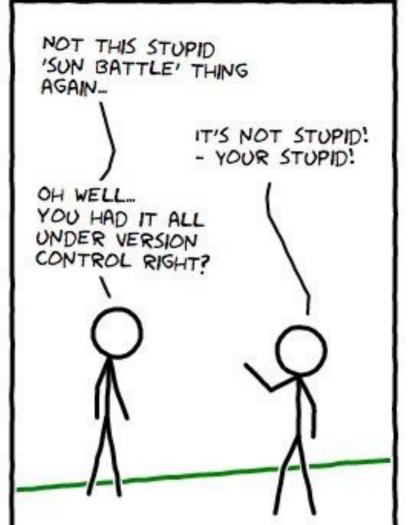
Contribution settings -

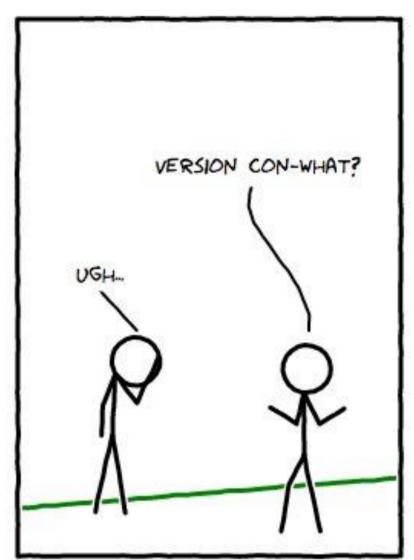












VERSION CONTROL





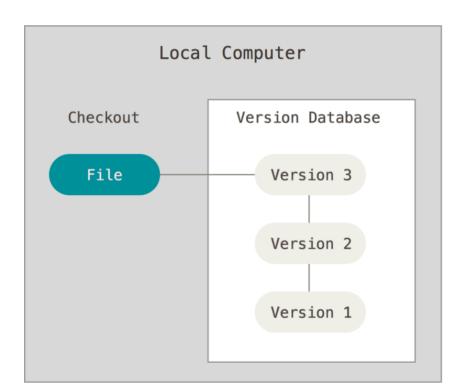


VERSION CONTROL

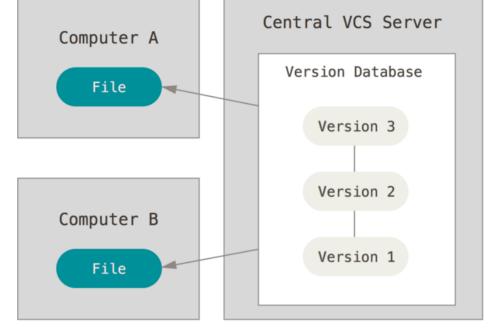
Version control

is a system that records changes to a file or set of files over time so that you can recall specific versions later.

local

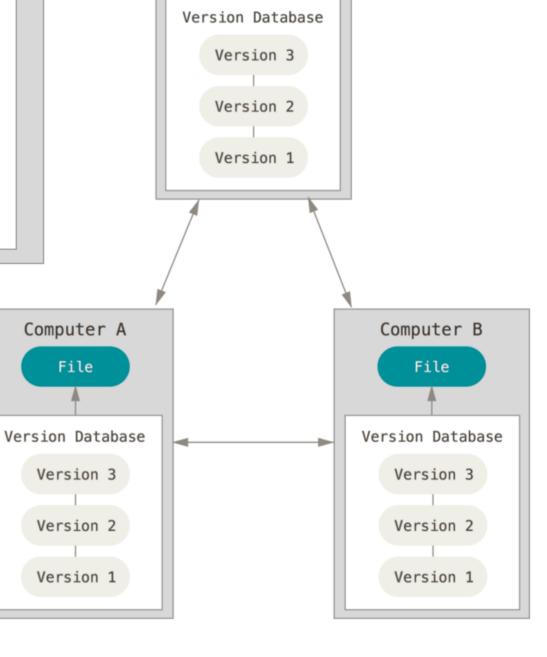


centralized



distributed

Server Computer











```
GIT(1)

Git Manual

GIT(1)

NAME

git - the stupid content tracker
```



is a fast, scalable, distributed revision control system with an unusually rich command set that provides both high-level operations and full access to internals.







THE GIT MODEL

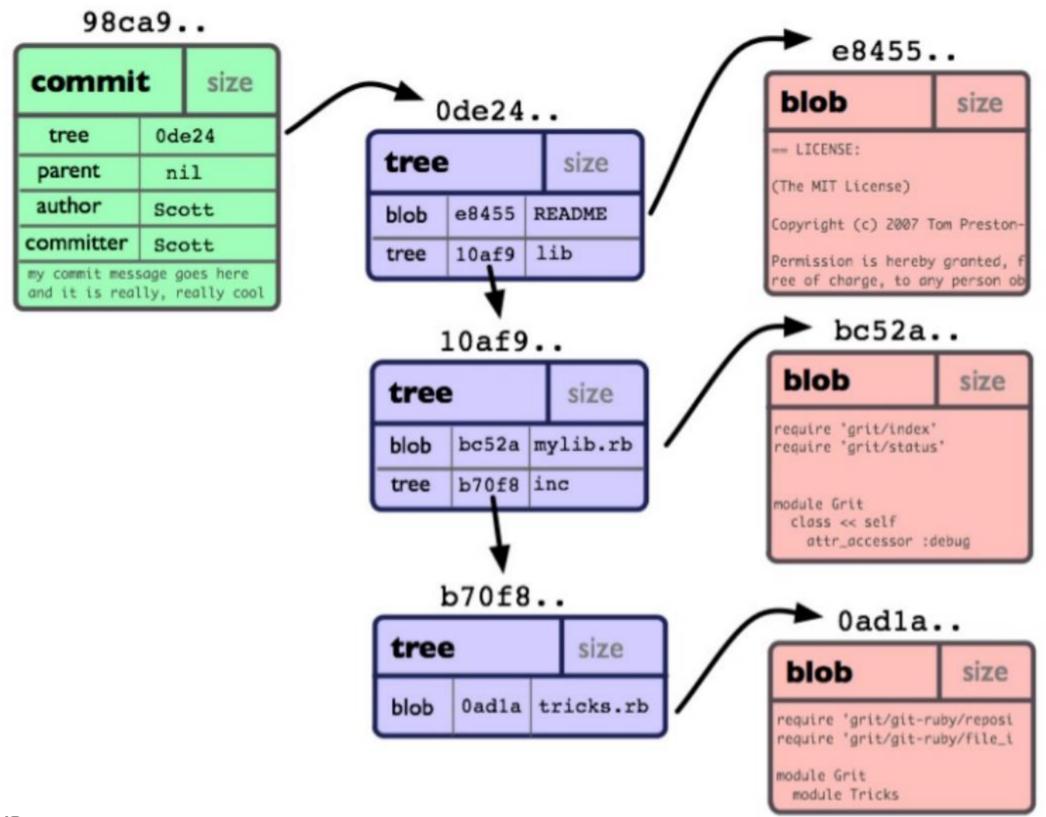
- 4 types of immutable objects
 - blob (a file under version control)
 - tree (a directory)
 - commit (revision)
 - tag (named reference)
- Identifier
 - SHA-1 hash
 - 160 bits / 40 char HEX string
- Ref
 - Mutable pointer to an object (HEAD, BRANCH)
- Objects refer to eachother using the hashes







COMMIT

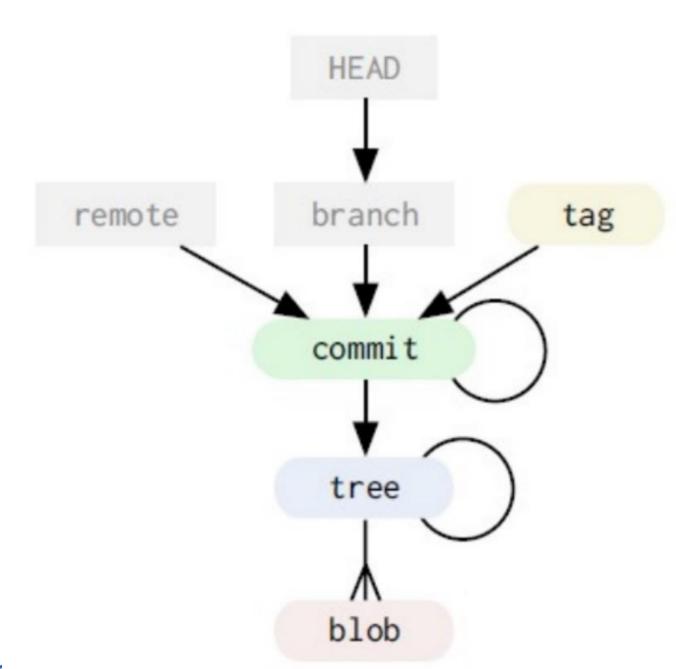


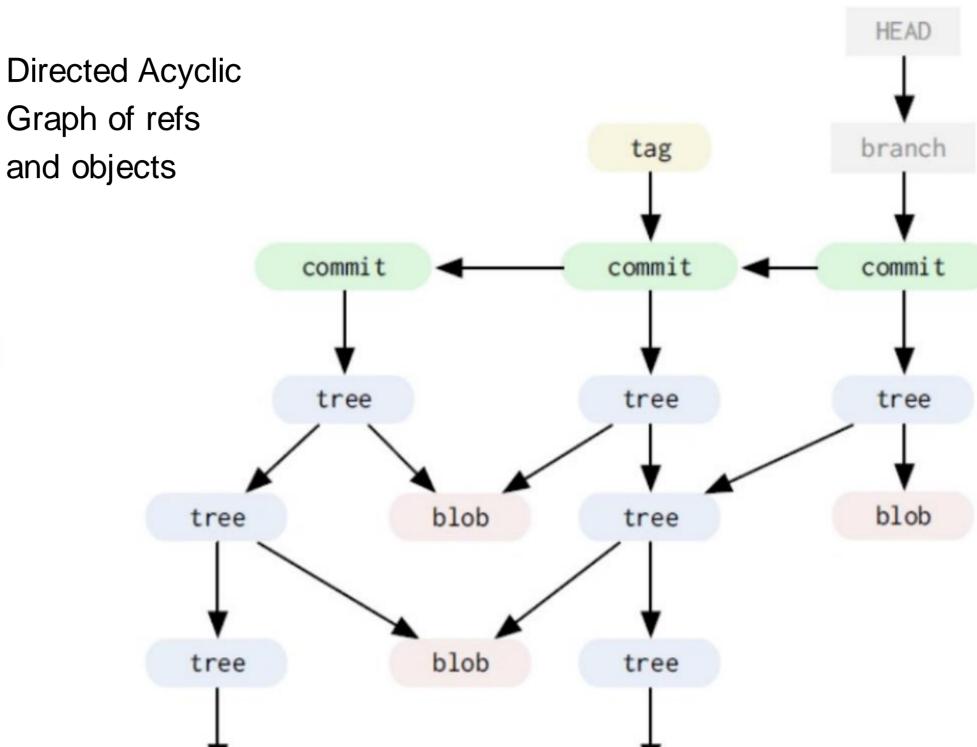


IDLab



HISTORY





blob







blob

EX PROJ: FILE 0-20

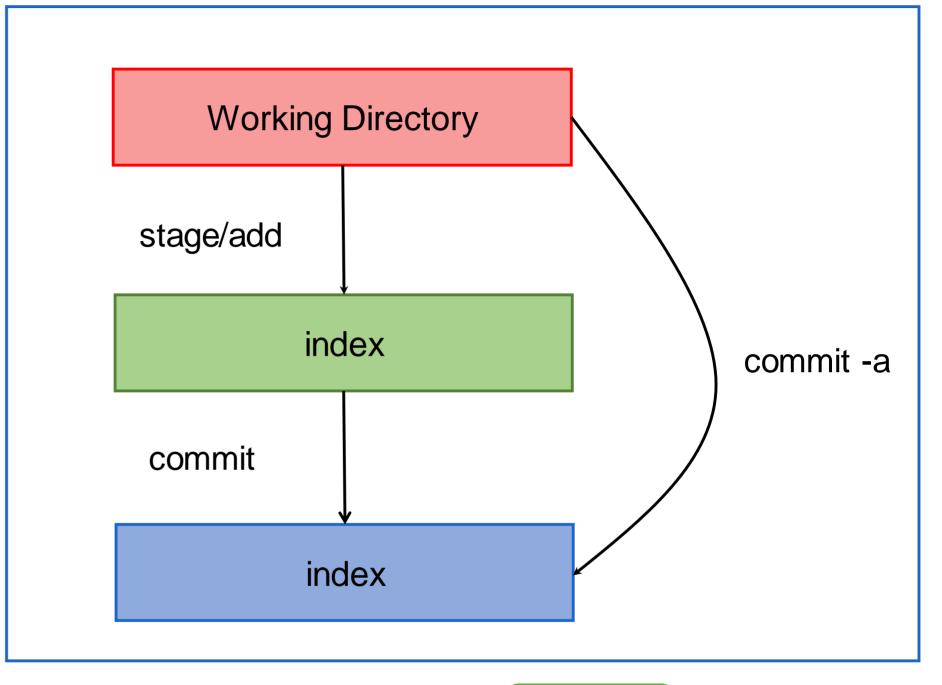
```
[dstaesse@phoneutria foo]$ git init
Initialized empty Git repository in /home/dstaesse/foo/.git/
[dstaesse@phoneutria foo]$ echo "please, read me" > README
[dstaesse@phoneutria foo]$ git status
On branch master
Initial commit
Untracked files:
 (use "git add <file>..." to include in what will be committed)
        README
nothing added to commit but untracked files present (use "git add" to track)
[dstaesse@phoneutria foo]$ git add README
[dstaesse@phoneutria foo]$ qit status
On branch master
Initial commit
Changes to be committed:
 (use "git rm --cached <file>..." to unstage)
        new file: README
[dstaesse@phoneutria foo]$ git commit -m "Create README"
[master (root-commit) dc00877] Create README
1 file changed, 1 insertion(+)
create mode 100644 README
[dstaesse@phoneutria foo]$ git branch -v

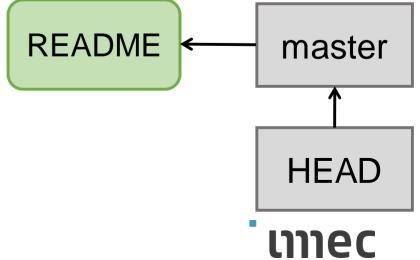
    master dc00877 Create README

[dstaesse@phoneutria foo]$ git log
commit dc008777648cf02a086b194f233270939223e983
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 16:57:29 2017 +0200
    Create README
[dstaesse@phoneutria foo]$
```



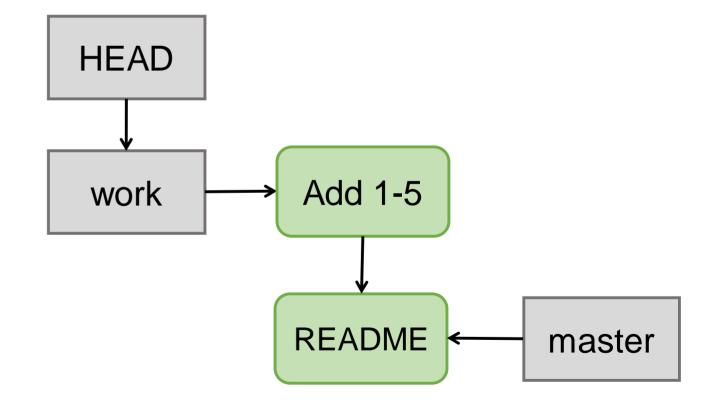






EXAMPLE: ADDING 1-5 IN A WORK BRANCH

```
[dstaesse@phoneutria foo]$
[dstaesse@phoneutria foo]$ git checkout -b work
Switched to a new branch 'work'
[dstaesse@phoneutria foo]$ git branch -v
  master dc00877 Create README
* work dc00877 Create README
[dstaesse@phoneutria foo]$ seq 5 > numbers.txt
[dstaesse@phoneutria foo]$ git stage numbers.txt
[dstaesse@phoneutria foo]$ git commit -a -m "Create numbers, Add 1-5"
[work c2ee811] Create numbers, Add 1-5
 1 file changed, 5 insertions(+)
 create mode 100644 numbers.txt
[dstaesse@phoneutria foo]$ git show
commit c2ee8110f02b1807824c61c92c1c7e7dcc302c9c
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 16:57:29 2017 +0200
    Create numbers, Add 1-5
diff --git a/numbers.txt b/numbers.txt
new file mode 100644
index 0000000..8a1218a
--- /dev/null
+++ b/numbers.txt
   -0.0 + 1.5 @@
[dstaesse@phoneutria foo]$
```





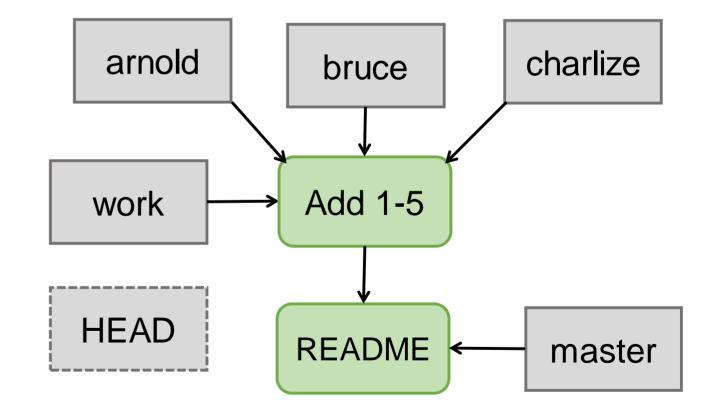




EXAMPLE: COLLABORATION

```
[dstaesse@phoneutria foo]$ git config --list user.email=dimitri.staessens@ugent.be user.name=dimitri staessens core.editor=emacs push.default=matching core.repositoryformatversion=0 core.filemode=true core.bare=false [dstaesse@phoneutria foo]$ ■
```

```
[dstaesse@phoneutria foo]$
[dstaesse@phoneutria foo]$ git checkout -b arnold
Switched to a new branch 'arnold'
[dstaesse@phoneutria foo]$ git checkout -b bruce
Switched to a new branch 'bruce'
[dstaesse@phoneutria foo]$ git checkout -b charlize
Switched to a new branch 'charlize'
[dstaesse@phoneutria foo]$
```







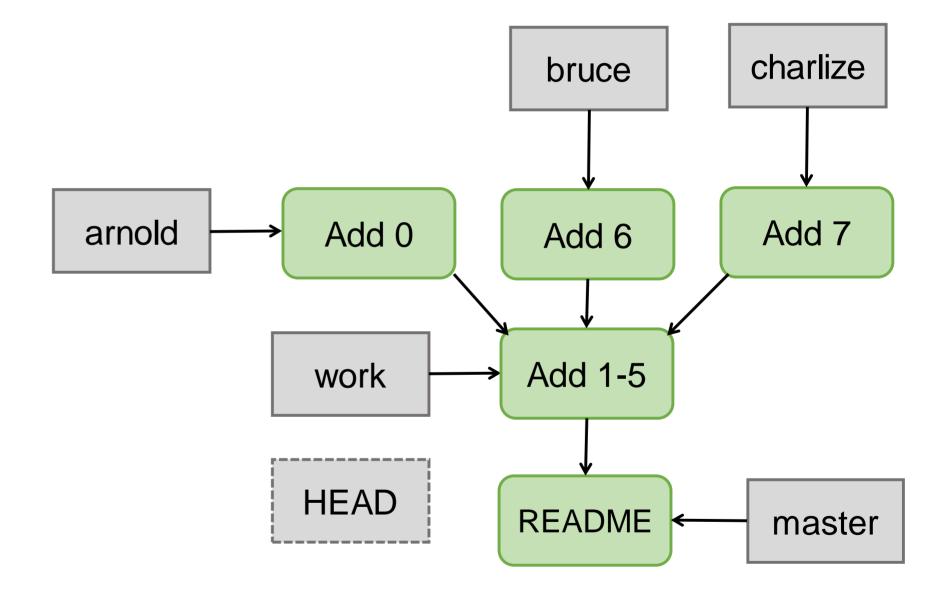


EXAMPLE: COLLABORATION

```
[dstaesse@phoneutria foo]$ git checkout arnold
Switched to branch 'arnold'
[dstaesse@phoneutria foo]$ (echo 0; cat numbers.txt) | sponge numbers.txt
[dstaesse@phoneutria foo]$ git commit -a -m "Add 0"
[arnold 050f657] Add 0
 1 file changed, 1 insertion(+)
[dstaesse@phoneutria foo]$ git show
commit 050f6574790166e32449fd0eb93a2959b3d89c85
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 16:57:29 2017 +0200
     Add 0
diff --git a/numbers.txt b/numbers.txt
index 8a1218a..e8371f0 100644
--- a/numbers.txt
+++ b/numbers.txt
@ -1,3 +1,4 @
[dstaesse@phoneutria foo]$
[dstaesse@phoneutria foo]$ git checkout bruce
Switched to branch 'bruce'
[dstaesse@phoneutria foo]$ echo 6 >> numbers.txt
[dstaesse@phoneutria foo]$ git commit -a -m "Add 6"
[bruce 0ab7293] Add 6
1 file changed, 1 insertion(+)
[dstaesse@phoneutria foo]$ git show
commit 0ab7293cb4e40b9d81ac7171b246208cf6bfb698
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 16:57:29 2017 +0200
     Add 6
diff --git a/numbers.txt b/numbers.txt
index 8a1218a..b414108 100644
--- a/numbers.txt
+++ b/numbers.txt
 @ -3,3 +3,4 @
[dstaesse@phoneutria foo]$
```



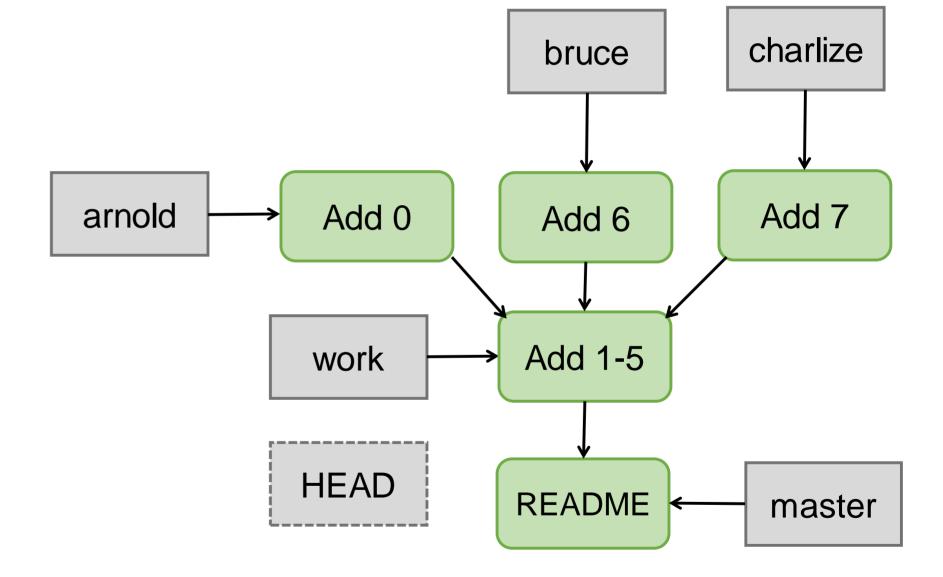






EXAMPLE: COLLABORATION

```
[dstaesse@phoneutria foo]$ git checkout arnold
Switched to branch 'arnold'
[dstaesse@phoneutria foo]$ (echo 0; cat numbers.txt) | sponge numbers.txt
[dstaesse@phoneutria foo]$ git commit -a -m "Add 0"
[arnold 050f657] Add 0
1 file changed, 1 insertion[dstaesse@phoneutria foo]$
[dstaesse@phoneutria foo]$ g[dstaesse@phoneutria foo]$ git checkout charlize
Author: dimitri staessens <
Date: Mon Mar 27 16:57:29 [dstaesse@phoneutria foo]$ echo 7 >> numbers.txt
                             [dstaesse@phoneutria foo]$ git commit -a -m "Add 7"
                             charlize 7970a251 Add 7
    Add 0
                              1 file changed, 1 insertion(+)
diff --git a/numbers.txt b/r[dstaesse@phoneutria foo]$ git show index 8a1218a..e8371f0 10064
                              commit 7970a25b8be2afea743f46343556820e50574f1b
--- a/numbers.txt
                             Author: dimitri staessens <dimitri.staessens@ugent.be>
+++ b/numbers.txt
                             Date: Mon Mar 27 16:57:29 2017 +0200
@ -1,3 +1,4 @
                                  Add 7
                             diff --git a/numbers.txt b/numbers.txt
[dstaesse@phoneutria foo]$
[dstaesse@phoneutria foo]$
                            index 8a1218a..119d9e8 100644
                             --- a/numbers.txt
Switched to branch 'bruce'
[dstaesse@phoneutria foo]$ +++ b/numbers.txt
[dstaesse@phoneutria foo]$ qaa -3,3 +3,4 @@
[bruce 0ab7293] Add 6
1 file changed, 1 insertior [dstaesse@phoneutria foo]$ gcommit 0ab7293cb4e40b9d81ac7
Author: dimitri staessens <d+7
Date: Mon Mar 27 16:57:29 [dstaesse@phoneutria foo]$
    Add 6
diff --git a/numbers.txt b/numbers.txt
index 8a1218a..b414108 100644
--- a/numbers.txt
+++ b/numbers.txt
 @ -3,3 +3,4 @
[dstaesse@phoneutria foo]$
```



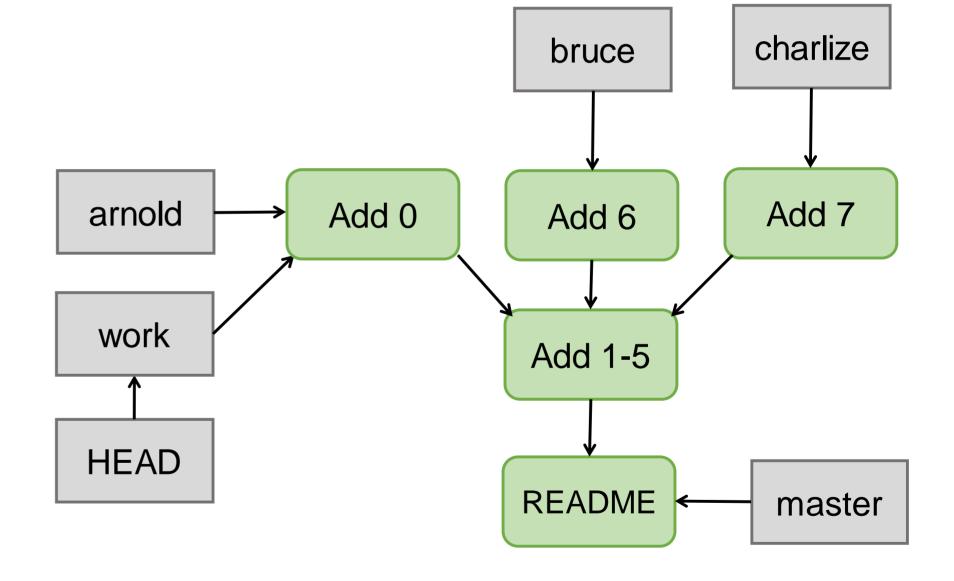






MERGING ARNOLD

```
[dstaesse@phoneutria foo]$
[dstaesse@phoneutria foo]$ git checkout work
Switched to branch 'work'
[dstaesse@phoneutria foo]$
[dstaesse@phoneutria foo]$ git merge arnold
Updating c2ee811..050f657
Fast-forward
 numbers.txt | 1 +
1 file changed, 1 insertion(+)
[dstaesse@phoneutria foo]$ git show
commit 050f6574790166e32449fd0eb93a2959b3d89c85
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 16:57:29 2017 +0200
    Add 0
diff --git a/numbers.txt b/numbers.txt
index 8a1218a..e8371f0 100644
--- a/numbers.txt
+++ b/numbers.txt
  -1,3 +1,4 @@
[dstaesse@phoneutria foo]$
```





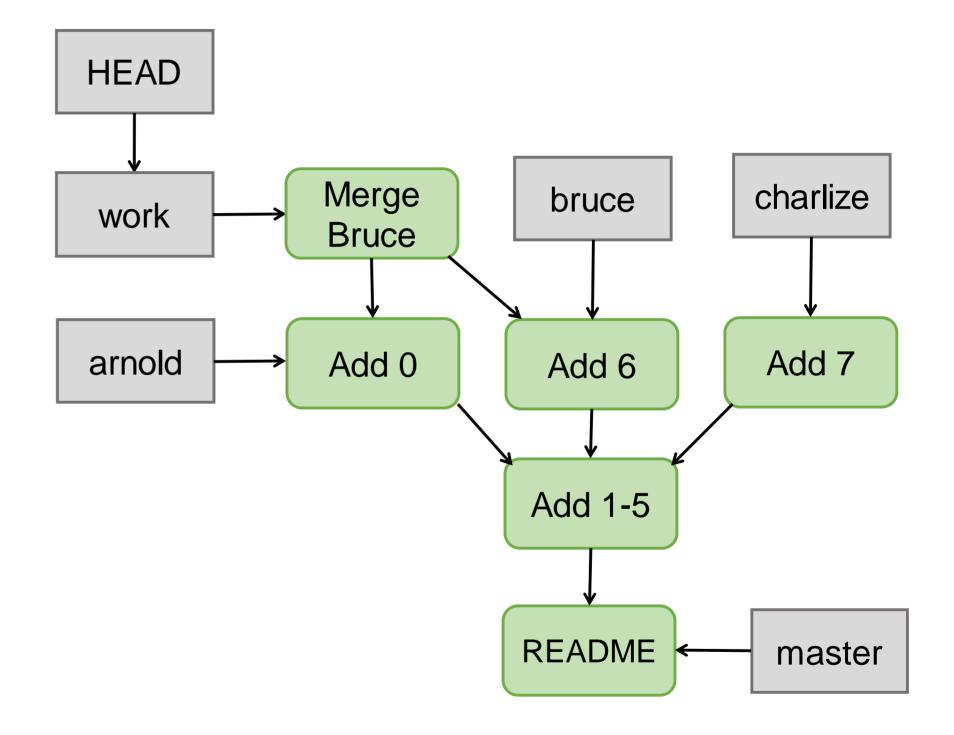




MERGING BRUCE

```
[dstaesse@phoneutria foo]$
[dstaesse@phoneutria foo]$ git merge bruce --no-edit
Auto-merging numbers.txt
Merge made by the 'recursive' strategy.
  numbers.txt | 1 +
    1 file changed, 1 insertion(+)
[dstaesse@phoneutria foo]$ git show
  commit b726dce297ac7f560e86a50a856217c214e7977d
Merge: 050f657 0ab7293
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 16:57:29 2017 +0200

    Merge branch 'bruce' into work
[dstaesse@phoneutria foo]$
```







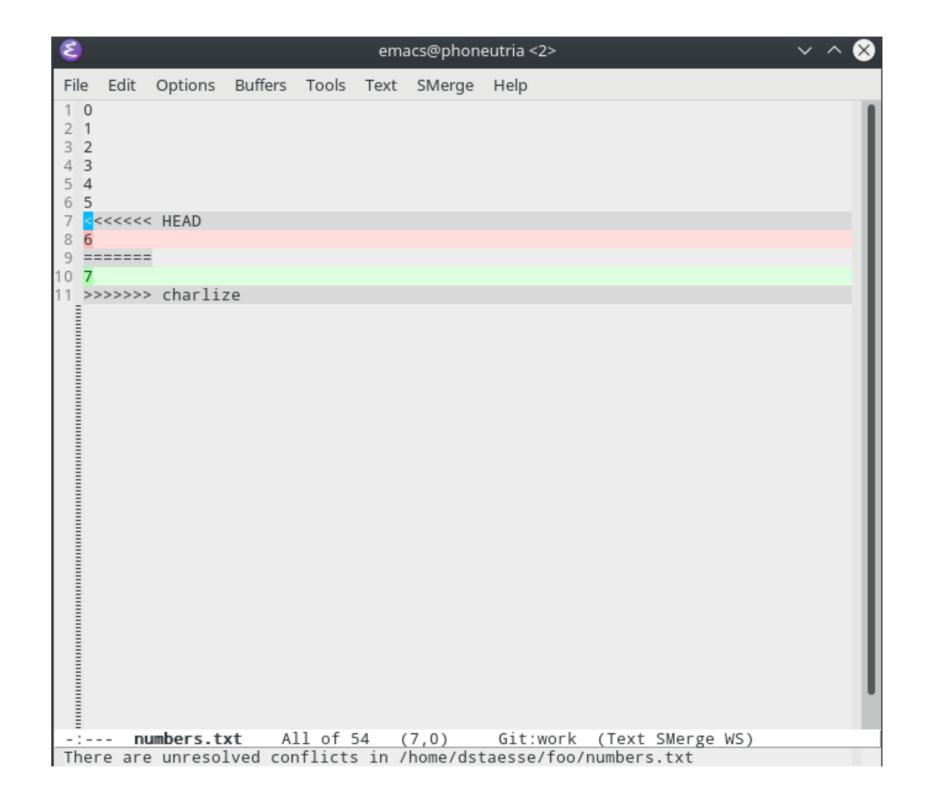


MERGING CHARLIZE

```
[dstaesse@phoneutria foo]$
[dstaesse@phoneutria foo]$ git merge charlize
Auto-merging numbers.txt
CONFLICT (content): Merge conflict in numbers.txt
Automatic merge failed; fix conflicts and then commit the result.
[dstaesse@phoneutria foo]$ emacs numbers.txt
[dstaesse@phoneutria foo]$ git add numbers.txt
[dstaesse@phoneutria foo]$ git commit --no-edit
[work 03725eb] Merge branch 'charlize' into work
[dstaesse@phoneutria foo]$ git show
commit 03725eb19d8270a66d0a99d4d6b5fb984c4c2870
Merge: b726dce 7970a25
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 16:57:36 2017 +0200
   Merge branch 'charlize' into work
   # Conflicts:
           numbers.txt
diff --cc numbers.txt
index 09c277a,119d9e8..95cabal
--- a/numbers.txt
+++ b/numbers.txt
aaa -4,4 -3,4 +4,5 aaa
[dstaesse@phoneutria foo]$
```







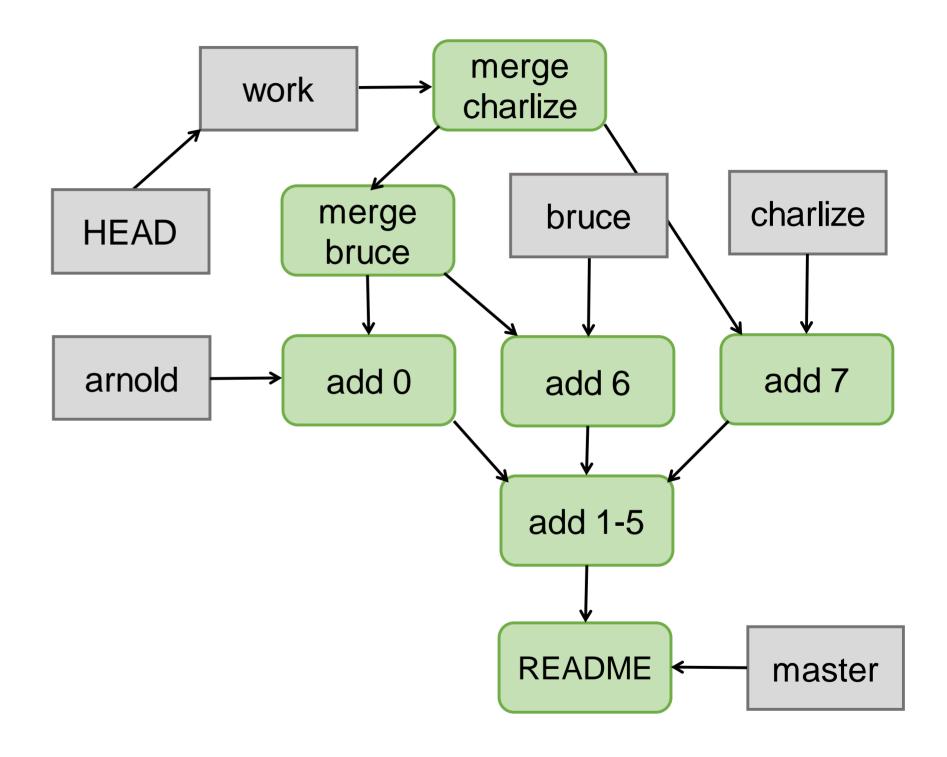


MERGING CHARLIZE

```
[dstaesse@phoneutria foo]$
[dstaesse@phoneutria foo]$ git merge charlize
Auto-merging numbers.txt
CONFLICT (content): Merge conflict in numbers.txt
Automatic merge failed; fix conflicts and then commit the result.
[dstaesse@phoneutria foo]$ emacs numbers.txt
[dstaesse@phoneutria foo]$ git add numbers.txt
[dstaesse@phoneutria foo]$ git commit --no-edit
[work 03725eb] Merge branch 'charlize' into work
[dstaesse@phoneutria foo]$ git show
commit 03725eb19d8270a66d0a99d4d6b5fb984c4c2870
Merge: b726dce 7970a25
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 16:57:36 2017 +0200
     Merge branch 'charlize' into work
      # Conflicts:
                 numbers.txt
diff --cc numbers.txt
index 09c277a,119d9e8..95cabal
--- a/numbers.txt
+++ b/numbers.txt
@@@ -4,4 -3,4 +4,5 @@@
[dstaesse@phoneutria foo]$
```







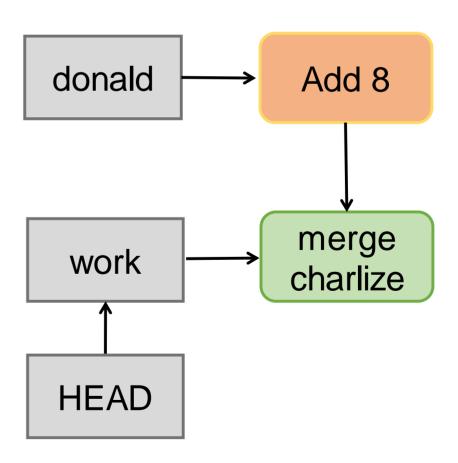


SOMEONE IS MAKING A MESS

```
[dstaesse@phoneutria foo]$
[dstaesse@phoneutria foo]$ git checkout -b donald
Switched to a new branch 'donald'
[dstaesse@phoneutria foo]$ echo 8 >> numbers.txt
[dstaesse@phoneutria foo]$ echo 4 >> numbers.txt
[dstaesse@phoneutria foo]$ git commit -a -m "Add 8 and 9"
[donald 08da3c6] Add 8 and 9
1 file changed, 2 insertions(+)
[dstaesse@phoneutria foo]$ git show
commit 08da3c6bb354945a5665b643304f78b3f23696bf
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 16:57:36 2017 +0200
    Add 8 and 9
diff --git a/numbers.txt b/numbers.txt
index 95cabal..c3a7ac2 100644
--- a/numbers.txt
+++ b/numbers.txt
@ -6,3 +6,5 @
[dstaesse@phoneutria foo]$
```





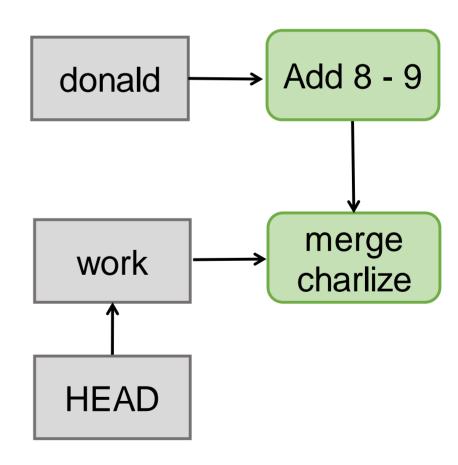


COVERING YOUR MESS - GIT AMEND

```
[dstaesse@phoneutria foo]$
[dstaesse@phoneutria foo]$ sed -i '$ d' numbers.txt
[dstaesse@phoneutria foo]$ echo 9 >> numbers.txt
[dstaesse@phoneutria foo]$ git add numbers.txt
[dstaesse@phoneutria foo]$ git commit --amend --no-edit
[donald 7f2237c] Add 8 and 9
 Date: Mon Mar 27 16:57:36 2017 +0200
1 file changed, 2 insertions(+)
[dstaesse@phoneutria foo]$ git show
commit 7f2237ce6411995565297ea04685df435ed53fc3
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 16:57:36 2017 +0200
   Add 8 and 9
diff --git a/numbers.txt b/numbers.txt
index 95cabal..8blaccl 100644
--- a/numbers.txt
+++ b/numbers.txt
@ -6,3 +6,5 @
[dstaesse@phoneutria foo]$ git log -4
commit 7f2237ce6411995565297ea04685df435ed53fc3
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 16:57:36 2017 +0200
   Add 8 and 9
commit 03725eb19d8270a66d0a99d4d6b5fb984c4c2870
Merge: b726dce 7970a25
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 16:57:36 2017 +0200
   Merge branch 'charlize' into work
```



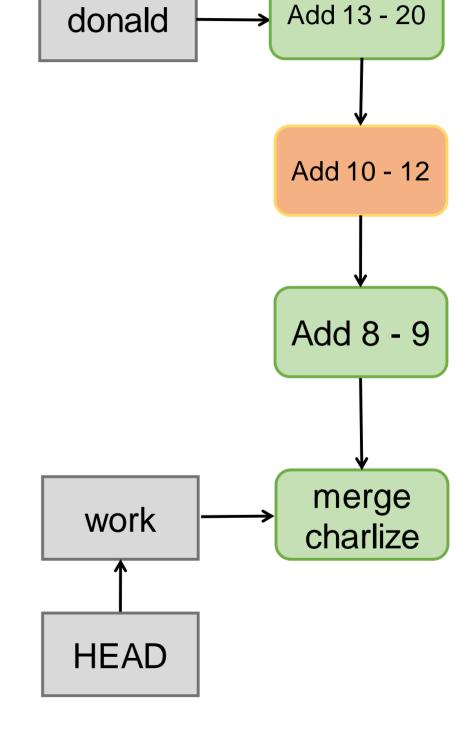






TOTAL DISASTER

```
[dstaesse@phoneutria foo]$
[dstaesse@phoneutria foo]$ echo 1011 >> numbers.txt
[dstaesse@phoneutria foo]$ echo 12 >> numbers.txt
[dstaesse@phoneutria foo]$ git commit -a -m "Add 10 - 12"
[donald 7f674e5] Add 10 - 12
1 file changed, 2 insertions(+)
[dstaesse@phoneutria foo]$
[dstaesse@phoneutria foo]$ for i in {13..20}; do echo $i >> numbers.txt; done
[dstaesse@phoneutria foo]$ git commit -a -m´"Add 13 - 20"
[donald ed039d3] Add 13 - 20
1 file changed, 8 insertions(+)
[dstaesse@phoneutria foo]$ git show HEAD~1
commit 7f674e5ddb88ceedff400bbbe33371f1a7806718
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 16:57:36 2017 +0200
   Add 10 - 12
diff --git a/numbers.txt b/numbers.txt
index 8blacc1..2b9e86b 100644
--- a/numbers.txt
+++ b/numbers.txt
@ -8,3 +8,5 @
+1011
[dstaesse@phoneutria foo]$
```







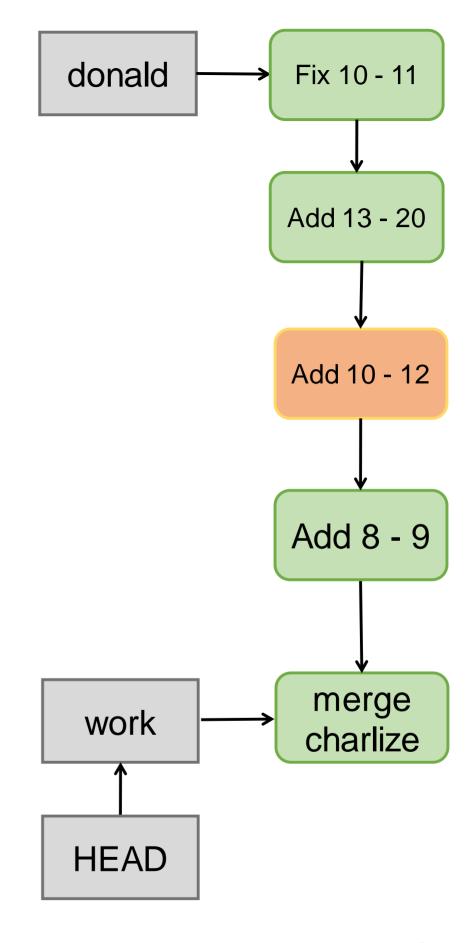


TOTAL DISASTER

```
[dstaesse@phoneutria foo]$
[dstaesse@phoneutria foo]$ emacs numbers.txt
[dstaesse@phoneutria foo]$ git commit -a -m "Fix 10 - 11"
[donald f3dc9a3] Fix 10 - 11
1 file changed, 2 insertions(+), 1 deletion(-)
[dstaesse@phoneutria foo]$ git log -4
commit f3dc9a313697cd8b93bc7114d907364f8b3b1815
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 16:57:40 2017 +0200
    Fix 10 - 11
commit ed039d373a1ef8e3c5bdd2173a1f3500d43511cf
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 16:57:36 2017 +0200
    Add 13 - 20
commit 7f674e5ddb88ceedff400bbbe33371f1a7806718
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 16:57:36 2017 +0200
    Add 10 - 12
commit 7f2237ce6411995565297ea04685df435ed53fc3
Author: dimitri staessens <dimitri.staessens@ugent.be>
       Mon Mar 27 16:57:36 2017 +0200
Date:
   Add 8 and 9
```









REWRITING HISTORY – GIT REBASE

```
[dstaesse@phoneutria foo]$
[dstaesse@phoneutria foo]$ git rebase -i HEAD~4
[detached HEAD 7c048e1] Add 10 - 12
Date: Mon Mar 27 16:57:36 2017 +0200
1 file changed, 3 insertions(+)
Successfully rebased and updated refs/heads/donald.
[dstaesse@phoneutria foo]$
```

```
emacs
File Edit Options Buffers Tools Help
                                   File Edit Options Buffers Tools Help
 1 pick 7f2237c Add 8 and 9
                                      pick 7f2237c Add 8 and 9
 2 pick 7f674e5 Add 10 - 12
 3 pick ed039d3 Add 13 - 20
                                   2 pick 7f674e5 Add 10 - 12
 4 pick f3dc9a3 Fix 10 - 11
                                   3 fixup f3dc9a3 Fix 10 - 11
 6 # Rebase 03725eb..f3dc9a3 onto 0
                                   4 pick ed039d3 Add 13 - 20
 8 # Commands:
9 # p, pick = use commit
10 # r, reword = use commit, but edit the commit message
11 # e, edit = use commit, but stop for amending
12 # s, squash = use commit, but meld into previous commit
13 # f, fixup = like "squash", but discard this commit's log message
14 # x, exec = run command (the rest of the line) using shell
15 # d, drop = remove commit
17 # These lines can be re-ordered; they are executed from top to bottom.
18 #
19 # If you remove a line here THAT COMMIT WILL BE LOST.
21 # However, if you remove everything, the rebase will be aborted.
23 # Note that empty commits are commented out
 -:--- git-rebase-todo All of 739 (1,0)
                                              (Fundamental WS)
 For information about GNU Emacs and the GNU system, type C-h C-a.
```

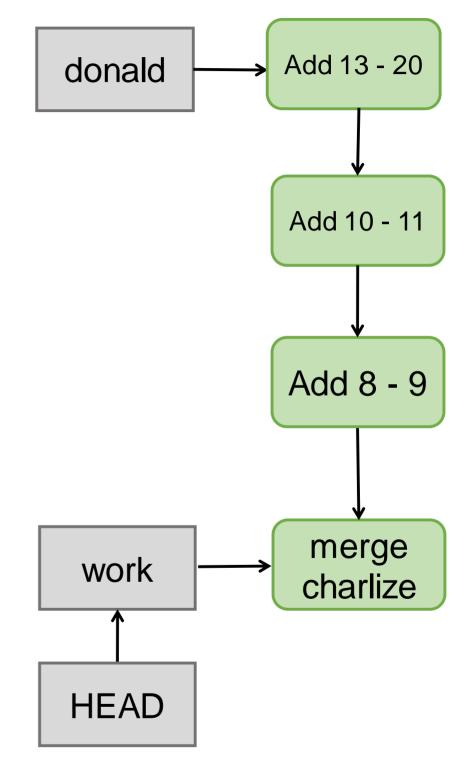






REWRITING HISTORY – GIT REBASE

```
[dstaesse@phoneutria foo]$ git rebase -i HEAD~4
[detached HEAD 7c048e1] Add 10 - 12
Date: Mon Mar 27 16:57:36 2017 +0200
1 file changed, 3 insertions(+)
Successfully rebased and updated refs/heads/donald.
[dstaesse@phoneutria foo]$
[dstaesse@phoneutria foo]$ git log -4
commit d7292ec23b74d5683b4ba38e3a08cef400971ed8
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 16:57:36 2017 +0200
    Add 13 - 20
commit 7c048e19bdd45bec1426153fd6e8cdf14c02b69f
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 16:57:36 2017 +0200
    Add 10 - 12
commit 7f2237ce6411995565297ea04685df435ed53fc3
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 16:57:36 2017 +0200
    Add 8 and 9
commit 03725eb19d8270a66d0a99d4d6b5fb984c4c2870
Merge: b726dce 7970a25
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 16:57:36 2017 +0200
    Merge branch 'charlize' into work
    # Conflicts:
            numbers.txt
```



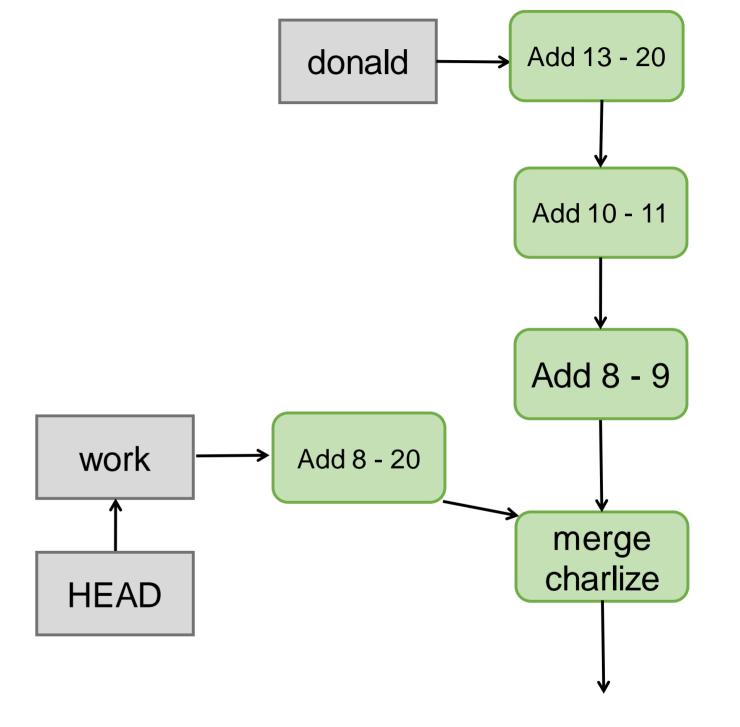






SQUASH MERGING DONALD

```
[dstaesse@phoneutria foo]$ git checkout work
Switched to branch 'work'
[dstaesse@phoneutria foo]$ git merge donald --squash
Updating 03725eb..d7292ec
Fast-forward
Squash commit -- not updating HEAD numbers.txt | 13 +++++++++++
1 file changed, 13 insertions(+)
[dstaesse@phoneutria foo]$ git status
On branch work
Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)
         modified: numbers.txt
 [dstaesse@phoneutria foo]$ git commit -m "Added 8 - 20"
 [work 1daf5c1] Added 8 - 20
1 file changed, 13 insertions(+)
[dstaesse@phoneutria foo]$ git log -3
commit 1daf5c1f975b60bbefce1da729cf69f5b5a936de
Author: dimitri staessens <dimitri.staessens@ugent.be>
Date: Mon Mar 27 17:20:01 2017 +0200
     Added 8 - 20
 commit 03725eb19d8270a66d0a99d4d6b5fb984c4c2870
Merge: b726dce 7970a25
Author: dimitri staessens <dimitri.staessens@ugent.be>
 Date: Mon Mar 27 16:57:36 2017 +0200
     Merge branch 'charlize' into work
     # Conflicts:
              numbers.txt
 commit b726dce297ac7f560e86a50a856217c214e7977d
Merge: 050f657 0ab7293
Author: dimitri staessens <dimitri.staessens@ugent.be>
 Date: Mon Mar 27 16:57:29 2017 +0200
Merge branch 'bruce' into work
```







REFLOG

```
[dstaesse@phoneutria foo]$ git reflog
ldaf5c1 HEAD@{0}: commit: Added 8 - 20
03725eb HEAD@{1}: checkout: moving from donald to work
d7292ec HEAD@{2}: rebase -i (finish): returning to refs/heads/donald
d7292ec HEAD@{3}: rebase -i (pick): Add 13 - 20
7c048e1 HEAD@{4}: rebase -i (fixup): Add 10 - 12
7f674e5 HEAD@{5}: rebase -i (start): checkout HEAD~4
f3dc9a3 HEAD@{6}: commit: Fix 10 - 11
ed039d3 HEAD@{7}: commit: Add 13 - 20
7f674e5 HEAD@{8}: commit: Add 10 - 12
7f2237c HEAD@{9}: commit (amend): Add 8 and 9
08da3c6 HEAD@{10}: commit: Add 8 and 9
03725eb HEAD@{11}: checkout: moving from work to donald
03725eb HEAD@{12}: commit (merge): Merge branch 'charlize' into work
b726dce HEAD@{13}: merge bruce: Merge made by the 'recursive' strategy.
050f657 HEAD@{14}: merge arnold: Fast-forward
c2ee811 HEAD@{15}: checkout: moving from charlize to work
7970a25 HEAD@{16}: commit: Add 7
c2ee811 HEAD@{17}: checkout: moving from bruce to charlize
0ab7293 HEAD@{18}: commit: Add 6
c2ee811 HEAD@{19}: checkout: moving from arnold to bruce
050f657 HEAD@{20}: commit: Add 0
c2ee811 HEAD@{21}: checkout: moving from charlize to arnold
c2ee811 HEAD@{22}: checkout: moving from bruce to charlize
c2ee811 HEAD@{23}: checkout: moving from arnold to bruce
c2ee811 HEAD@{24}: checkout: moving from work to arnold
c2ee811 HEAD@{25}: commit: Create numbers, Add 1-5
dc00877 HEAD@{26}: checkout: moving from master to work
dc00877 HEAD@{27}: commit (initial): Create README
[dstaesse@phoneutria foo]$ □
```





OTHER COMMANDS

- git cherry-pick <commit>
 - Constructs a new commit on HEAD that performs the same changes as commit.
- git revert <commit>
 - Constructs a new commit on HEAD that performs the reverse of the changes in commit.





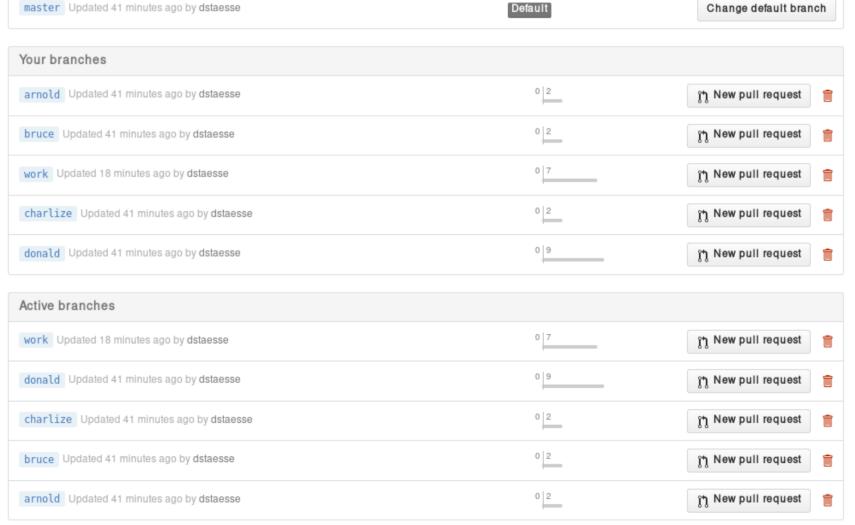


COLLABORATION: ADDING REMOTES

```
[dstaesse@phoneutria foo]$ git remote add origin git@github.ugent.be:dstaesse/foo
[dstaesse@phoneutria foo]$ git remote -v
origin git@github.ugent.be:dstaesse/foo (fetch)
origin git@github.ugent.be:dstaesse/foo (push)
[dstaesse@phoneutria foo]$ git push -u origin --all
Enter passphrase for key '/home/dstaesse/.ssh/id_rsa':
Counting objects: 31, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (21/21), done.
Writing objects: 100% (31/31), 2.47 KiB | 0 bytes/s, done.
Total 31 (delta 5), reused 0 (delta 0)
remote: Resolving deltas: 100% (5/5), done.
To github.ugent.be:dstaesse/foo
  [new branch]
                     arnold -> arnold
  [new branch]
                     bruce -> bruce
                charlize -> charlize
  [new branch]
                donald -> donald
* [new branch]
* [new branch]
                    master -> master
                    work -> work
* [new branch]
Branch arnold set up to track remote branch arnold from origin.
Branch bruce set up to track remote branch bruce from origin.
Branch charlize set up to track remote branch charlize from origin.
Branch donald set up to track remote branch donald from origin.
Branch master set up to track remote branch master from origin.
Branch work set up to track remote branch work from origin.
[dstaesse@phoneutria foo]$ ■
```









Default branch

SOME OTHER COLLABORATION COMMANDS

- git clone https://github.ugent.be/dstaesse/foo
- git fetch -> update local view of the repository
- git pull origin
branch>
 - performs a fetch and a merge

– git push <remote> <local_branch>:<remote_branch>









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