

Git_instead_of_31_rev_41_final_5.txt

Introduction to version control
with git and GitHub

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www.github.com/richelbilderbeek/CppPresentations



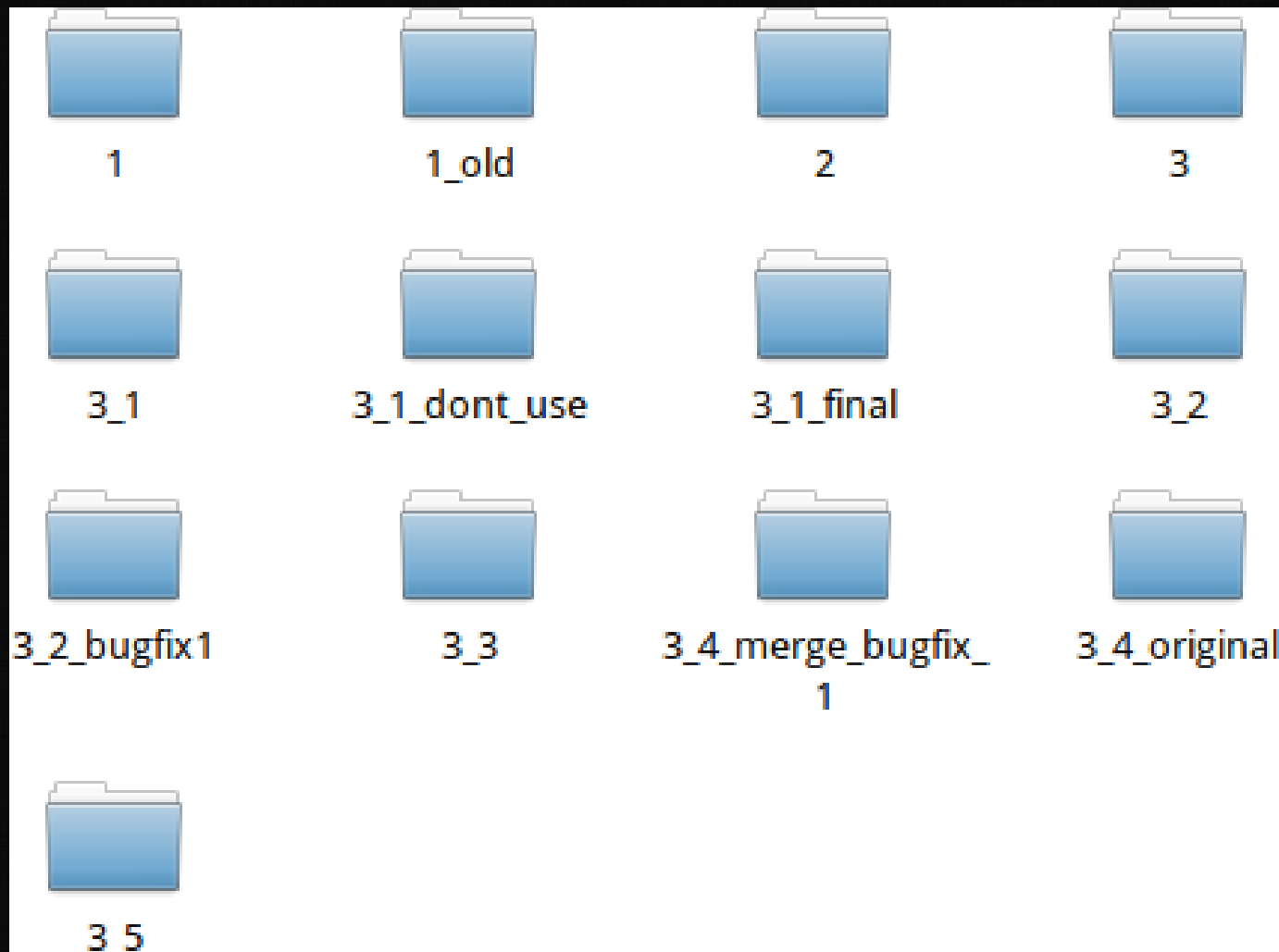
What?

- git and GitHub allow you to do version control on your files on multiple computers (connected to the internet)



Why?

- Because this feels stupid



Why?

- Because the experts say so

3. Use a version control system



Meyers, The Most Important C++ People...Ever, 2006

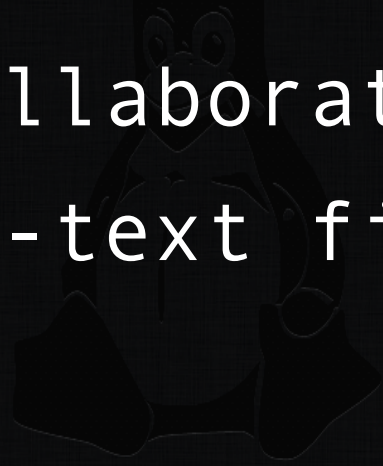
On this slide, there are 3 out of 5
of the most important C++ people



Sutter & Alexandrescu, 101 C++ Coding Guidelines, 2005

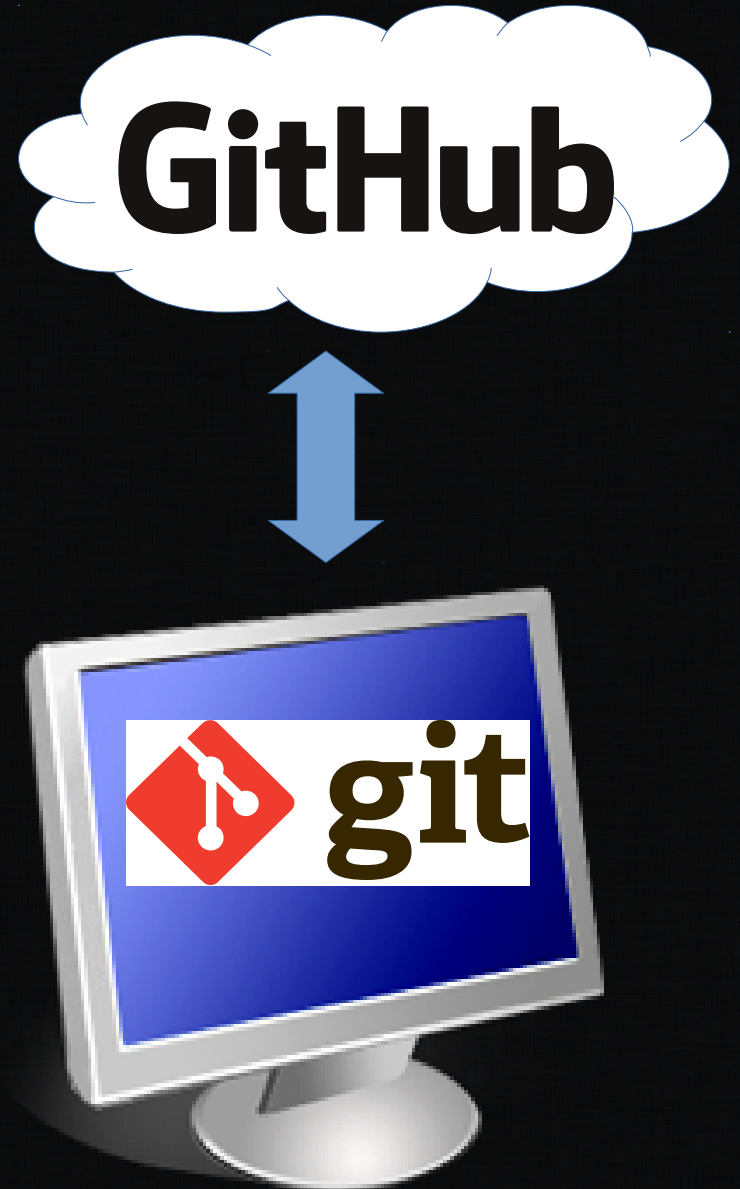
An expert git and GitHub user...

- does version control in a smart way
- has no/less loss of data
- is easy to collaborate with
- prefers plain-text files over binary files



git and GitHub

- git is a program program to do version control on your local computer
- GitHub is a website to host your git repository



Why git?

- Free (as in freedom) and open source
- Emphasis on speed and data integrity
- Widely used
- Alternatives: mercurial, SVN, etc.

Google

facebook

Microsoft

twitter

LinkedIn

NETFLIX



Why GitHub?

- Free (as in beer) for open source development
- Promotes collaboration
- Most used: 9M users, 21M repositories
- Alternatives: BitBucket, GNU Savannah, Google Code, SourceForge, etc.



Linus
Torvalds



Bjarne
Stroustrup



Herb
Sutter

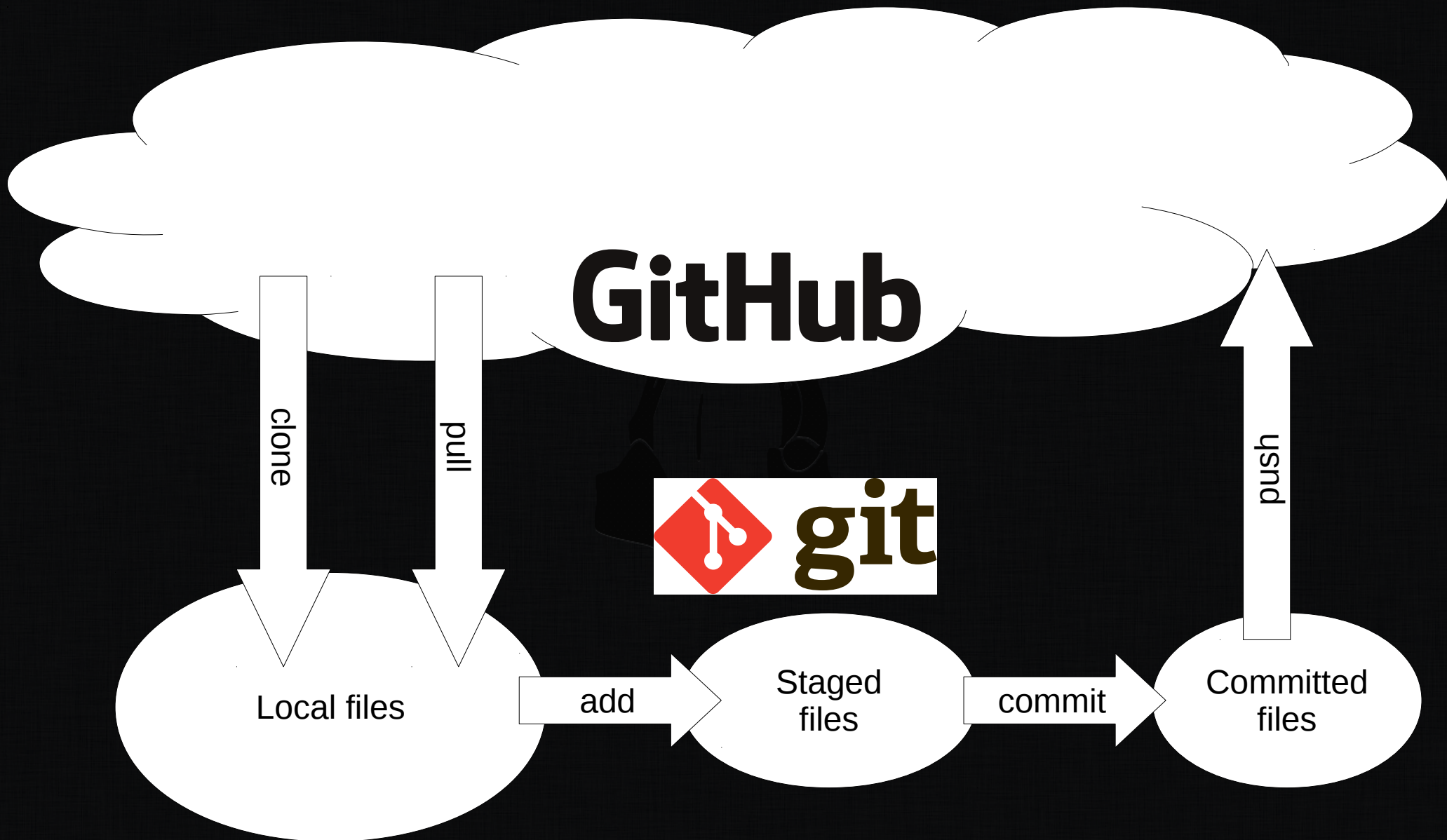


Sean
Parent



Andrei
Alexandrescu

Main workflow



Main workflow

- Update newest code

```
git pull
```

- Change code
- Stage and commit the change

```
git add --all :/
```

```
git commit -m 'Fixed bug'
```

- Upload code

```
git push
```


Command Line?

- There are also free graphical versions for all platforms
- Also GitHub has a graphical interface

The screenshot displays the GitHub web interface for the 'gitready' repository. The main section shows a list of commits with a graphical history view on the left. The commit list includes the following entries:

Subject	Author	Date
Squashing commits with the git monster truck.	Nick Qu...	2009-02-10...
Adding post on git reflog	Nick Qu...	2009-02-09...
Switching to multilingual deployment	Nick Qu...	2009-02-09...
pt-br origin/pt-br Resolving merge conflicts	Nick Qu...	2009-02-12...
more some translations	root	2009-02-12...
Fixing index page block. I really need to impleme...	Nick Qu...	2009-02-07...
Hiding some recent posts	Nick Qu...	2009-02-07...
Merge branch 'master' into pt-br	Nick Qu...	2009-02-07...
Bringing out the languages block	Nick Qu...	2009-02-07...
update category to post "helpful command aliases"	root	2009-02-06...
post helpful command aliases translated	root	2009-02-06...
translated fo posts page	root	2009-02-06...
translated of home page	root	2009-02-06...
some updates	root	2009-02-06...
Merge branch 'master' into pt-br	Nick Qu...	2009-02-04...
Fixing categories and setting published flag on ...	Nick Qu...	2009-02-04...
Merging in recent changes	Nick Qu...	2009-02-04...
taylorrr/pt-br post "text-based graph" traslated to ...	root	2009-02-01...
post "installing git" translated to pt-br	root	2009-02-01...
more some pages translated	root	2009-02-01...
page index translated to pt-br	root	2009-02-01...
some translations in this page	root	2009-02-01...

The detailed commit view at the bottom shows the following information:

- SHA: 2c30f76e9cf7b57a5608fcee9acb4bda92c82fbf
- Author: Nick Quaranto <nick@quaran.to>
- Date: Tue Feb 10 2009 21:04:16 GMT-0500 (EST)
- Subject: Squashing commits with the git monster truck.
- Refs:
- Parent: [280b10cdd211c18a7e0046ea8c9a82eb45ff1b4e](#)

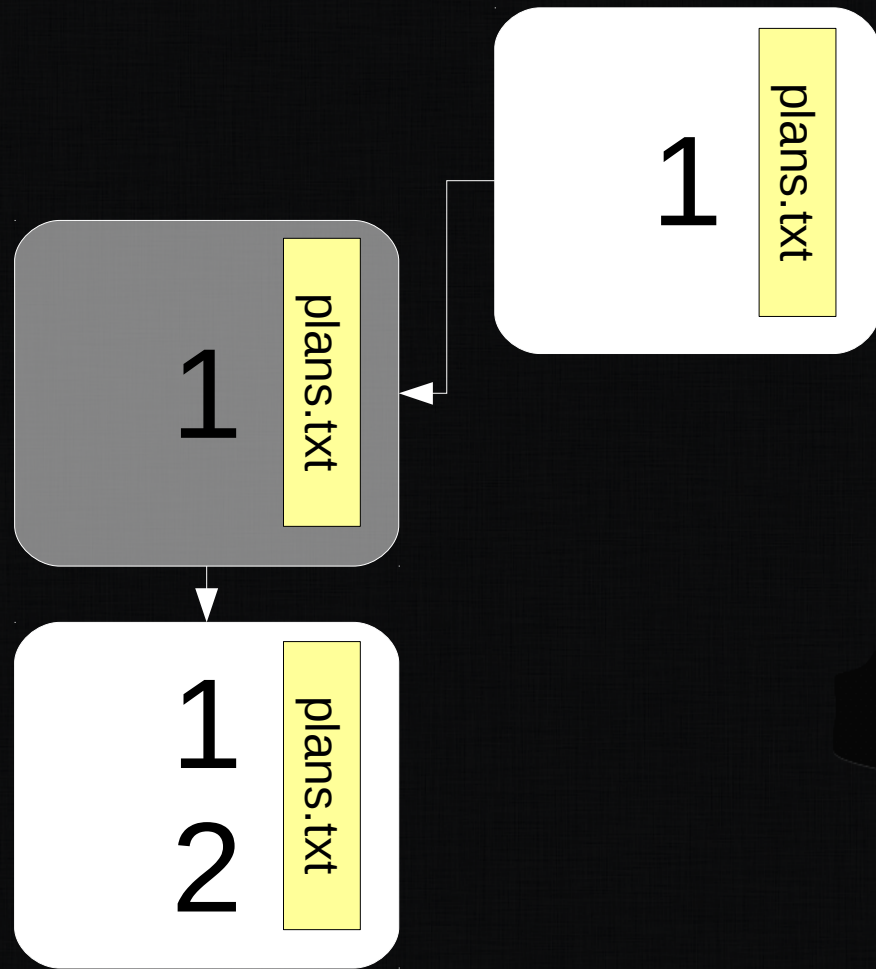
The interface also includes a 'Gist it' button, a user profile picture, and a status bar at the bottom indicating '123 commits loaded'.

Demos

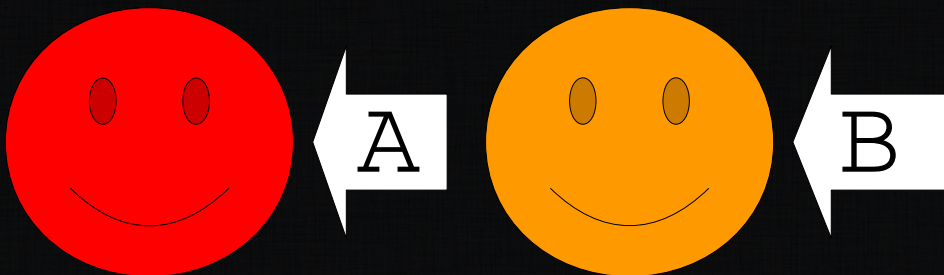
- Online collaboration
- Undo incorrect commit
- Fixing merge conflicts



Demo: collaboration



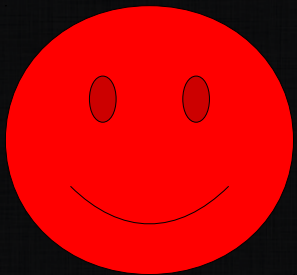
- B will add text, commit and push
- A will pull
- A will add text, commit and push
- View the online history



Demo: collaboration

```
git pull  
echo '1' > plans.txt  
git add --all :/  
git commit -m 'Set 1'  
git push
```

```
git pull  
echo '2' >> plans.txt  
git add --all :/  
git commit -m 'Added 2'  
git push
```




View history



View history


Update git_workflow.md

🔗 master


 **richelbilderbeek** authored on 25 Nov 2014

1 parent [88e3822](#) commit [ae9ce5cda3f6b5f5e08ff7148cd3577bb599f96d](#)

Showing 1 **changed file** with 7 additions and 1 deletion.

8  git_workflow.md

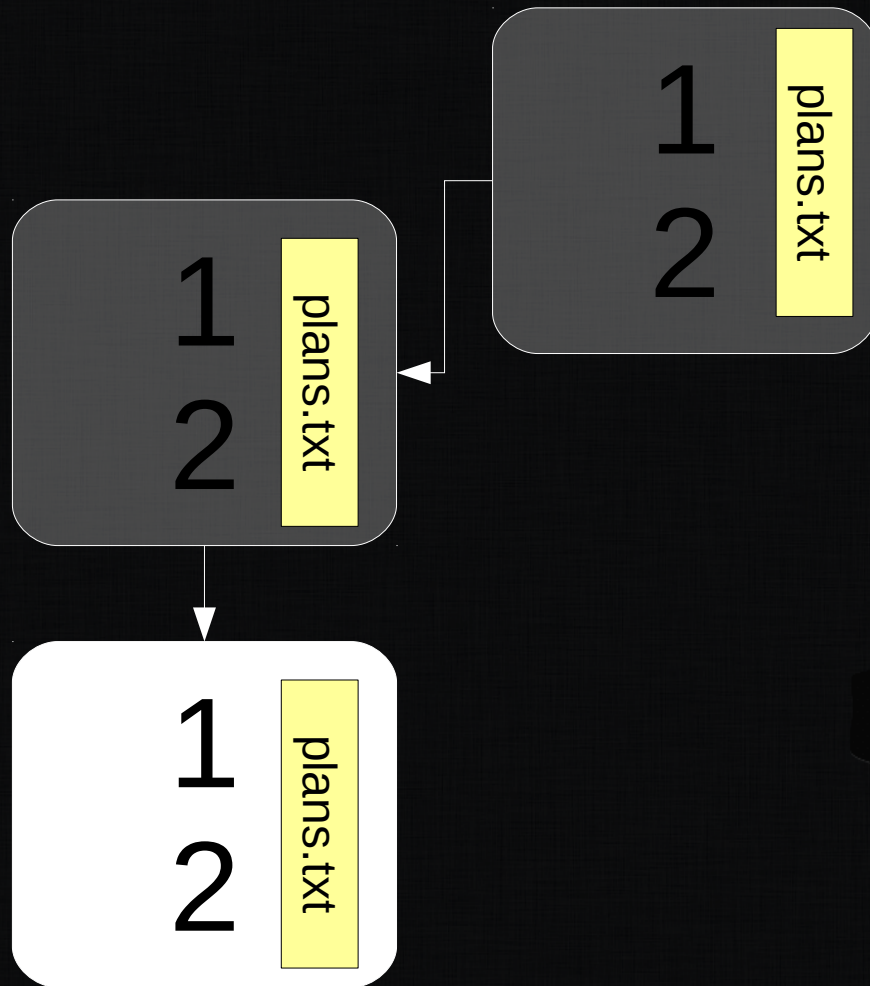
Unified Split

<>  View

		@@ -21,12 +21,18 @@ The workflow has multiple phases:
21	21	
22	22	Fork the GitHub of richelbilderbeek in your own GitHub at the GitHub website.
23	23	
24		-Clone your fork:
	24	+Clone your fork, for a user:
25	25	...
26	26	
27	27	<code>git clone https://github.com/your_name/ProjectRichelBilderbeek.git</code>
28	28	...
29	29	
	30	+Clone your fork, for a Brainweaver developer:
	31	+
	32	+...
	33	<code>+git clone https://github.com/your_name/ProjectRichelBilderbeek.git -b brainweaver</code>
	34	+...
	35	+
30	36	Enter the freshly cloned repository:
31	37	
32	38	...

🔗

Demo: undo error



- B will delete everything
- B will commit and push this
- A will go back one commit
- A will push this



Demo: undo error

File deleted
by accident



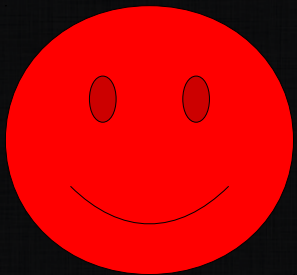
```
git pull  
rm plans.txt  
git add --all :/  
git commit -m 'Removed errors'  
git push
```



Demo: undo error



```
git pull  
git checkout HEAD~1 .  
git add --all :/  
git commit -m 'Added files again'  
git push
```



Demo: merge conflict

© A&B

plans.txt

© B&A

plans.txt

Merge
conflict

© CFR

plans.txt



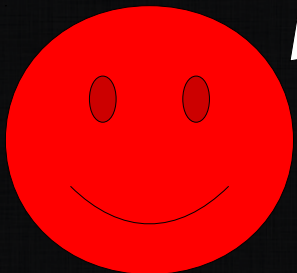
- B will modify a file
- B will commit and push this
- A will modify the same file
- A will commit and push this, this will fail!
- A will resolve the merge conflict
- A will commit and push this

Demo: merge conflict

```
git pull  
echo '(C) B & A' > plans.txt  
git add --all :/  
git commit -m 'Added copyright'  
git push
```

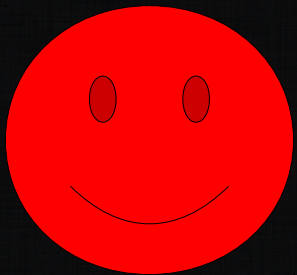
No 'git pull'

```
echo '(C) A & B' > plans.txt  
git add --all :/  
git commit -m 'Added copyright'  
git push
```



Demo: merge conflict

```
git pull  
echo '(C) Team CFR' > plans.txt  
git add --all :/  
git commit -m 'Fixed merge conflicts'  
git push
```




Creating a new repository

- Create online repository is easy
 - Name
 - Open/private
 - License
- Clone repository to local harddisc



Create online repository



[Contributions](#)

[Repositories](#)

[Public activity](#)

[Edit profile](#)

Search

All

Public

Private

Sources

Forks

Mirrors

New

GitPresentation

★ 0

🔗 0

Presentation about git and GitHub

Updated 21 minutes ago

Richel Bilderbeek

richelbilderbeek

[Groningen](#)

<http://www.richelbilderbeek.nl>

Joined on 5 Aug 2012

Wip

PRIVATE

Shell

★ 0


🔗 0

Work in progress

Updated 4 hours ago

Create online repository

Owner

 richelbilderbeek ▾

/


Repository name


ColdFusionReactor ✓

Great repository names are short and memorable. Need inspiration? How about **massive-octo-adventure**.

Description (optional)


Schematics to build a cold fusion reactor

☒  **Public**
Anyone can see this repository. You choose who can commit.

☐  **Private**
You choose who can see and commit to this repository.


☒ **Initialize this repository with a README**
This will let you immediately clone the repository to your computer. Skip this step if you're importing an existing repository.




Add .gitignore: **None** ▾

Add a license: **GNU GPL v3.0** ▾ 





Create repository



Create online repository

 richelbilderbeek / **ColdFusionReactor**


 Unwatch ▾ 1  Star 0  Fork 0



Schematics to build a cold fusion reactor — Edit


 1 commit  1 branch  0 releases  1 contributor

 branch: master ▾ **ColdFusionReactor** / + 

Initial commit


 richelbilderbeek authored just now latest commit 7eba61c6fb


 LICENSE	Initial commit	just now
 README.md	Initial commit	just now


 **README.md**


ColdFusionReactor


Schematics to build a cold fusion reactor


 Code


 Issues 0

 Pull Requests 0

 Wiki


 Pulse

 Graphs

 Settings

HTTPS clone URL

You can clone with [HTTPS](#), [SSH](#), or [Subversion](#). ⓘ

 Download ZIP

Create repository

- Clone repository to harddisc

```
git clone
```

```
https://github.com
```

```
/richelbilderbeek
```

```
/ColdFusionReactor
```


More GitHub options

- Keep track of issues
 - Bug reports
 - Feature requests
 - Notes to self
- Wiki
- Webpage
- Collaborate with other projects




Add issue


Issues

Pull requests



Labels


Milestones


Filters 


 is:issue is:open


New Issue


☐  66 Open  181 Closed



Author 

Labels 



Milestones 

Assignee 



Sort 

☐  **QtQuadBezierArrow connect to sides**  0



#257 opened a day ago by richelbilderbeek

☐  **Show some QML love**  0



#256 opened 2 days ago by richelbilderbeek

☐  **GTST: parameters incorrectly parsed**  0



#253 opened on 6 Jan by richelbilderbeek

☐  **Remove using std::shared_ptr in the interface**  0




#249 opened on 26 Dec 2014 by richelbilderbeek

☐  **Remove std::rand and std::random_shuffle**  0




#248 opened on 26 Dec 2014 by richelbilderbeek

☐  **Remove for-loops**  0

#247 opened on 26 Dec 2014 by richelbilderbeek

☐  **Arrowheads don't match rectangle edges**   0

#246 opened on 8 Dec 2014 by richelbilderbeek

☐  **Clutter when shortening QtEdge its text**   0

#245 opened on 8 Dec 2014 by richelbilderbeek

Comment on issue

TestTriangle: convert Triangle to C++ and compare #207



richelbilderbeek opened this issue on 9 May 2014 · 1 comment

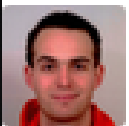


richelbilderbeek commented on 9 May 2014

Owner



When TriangleMeshCreator calls Triangle, when something goes wrong, TriangleMeshCreator calls `std::exit`. I need it to throw an exception instead, so it has to be converted to C++.



richelbilderbeek commented on 15 May 2014

Owner



I noticed:


- 1) Triangle works fine at least once
- 2) Triangle handles its memory allocation and deallocation itself
- 3) The Triangle author uses many smart-looking defines
- 4) The Triangle author does not make use of the C type system, even when possible
- 5) The Triangle author makes heavy use of globals


This makes me conclude that the memory probably leaks and/or the globals are not initialized properly the second time.


Collaboration


- As collaborator:
 - Push files to shared repository
 - Incorrect changes can be undone
- As outsider:
 - Fork main repository
 - Commit your changes
 - Issue a pull request
 - Pull requests can be rejected

Collaborators

 richelbilderbeek / **ProjectRichelBilderbeek**

 Unwatch ▾ 4

 Unstar 7

 Fork 3











[Options](#)

Collaborators


[Webhooks & Services](#)


[Deploy keys](#)


Collaborators Push access to the repository


	yurtman	
	coen-d	
	ArletteReneman	
	Frode Lindeijer Modanung	
	janclod	


Add collaborator















Pull request

Let program give feedback when an unknown key is pressed #5





 **Closed** richelbilderbeek wants to merge 1 commit into `DjBushido:master` from `unknown repository`



 Conversation **3**  Commits **1**  Files changed **1**



richelbilderbeek commented on 25 Jul 2013

The program did not show me if a sent key was valid or not; it just quietly returned. Thanks to the display of incorrect input, I immediately found an error in my bash scripts.

-   Let program give feedback when an unknown key is pressed 85e5796
-   Fixed coding standard 2aaf750

  **DjBushido** merged commit **e0aa706** into `DjBushido:master` from `unknown repository` on 30 Sep 2013

Why version control?

- ✓ Version your data
- ✓ View history of data
- ✓ Prevent loss of data
- ✓ Improve collaboration

Conclusions

- git and GitHub are one of many tools for a version control system
- Both tools are easy to get started
 - You never lose data
 - Command-line and GUI tools
 - Big communities to ask questions
 - Book: <https://github.com/progit/progit>

Questions?

