

Uma mini introdução ao Git

Leslie H. Watter, leslie@watter.net

KernelNewbies - BR

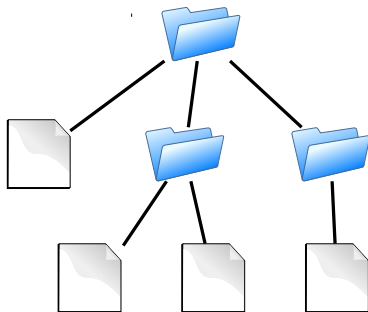
25 de Julho de 2009

- Source Control Management
Gerenciamento de Controle de Versões
 - registra as modificações em arquivos
 - repositório / banco de dados de mudanças
 - diretório de trabalho / estado corrente
- SCM Centralizado
 - servidor: banco de dados único
 - cliente: diretório de trabalho & estado
- SCM Descentralizado
 - qualquer um pode ser um servidor
 - repositório associado ao diretório de trabalho
 - histórico completo
 - operação desconectada

Componentes de um SCM

Árvore de trabalho
/ Working tree

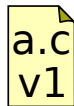
- diretórios
- arquivos



Componentes de um SCM

Conteúdo do Repositório

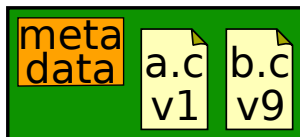
- arquivos



Componentes de um SCM

Conteúdo do Repositório

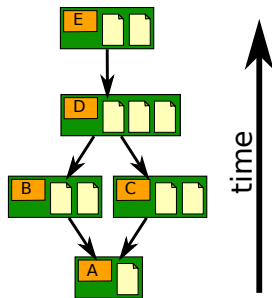
- arquivos
- commits



Componentes de um SCM

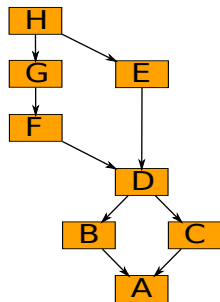
Conteúdo do Repositório

- arquivos
- commits
- histórico (ancestralidade)



Componentes de um SCM

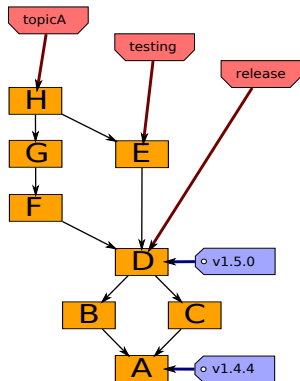
Grafo Acíclico Dirigido “DAG”



Componentes de um SCM

Referências

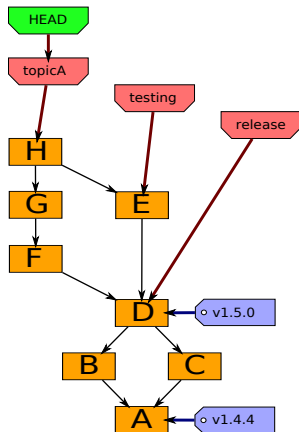
- tags
- branches (ramos)



Componentes de um SCM

HEAD

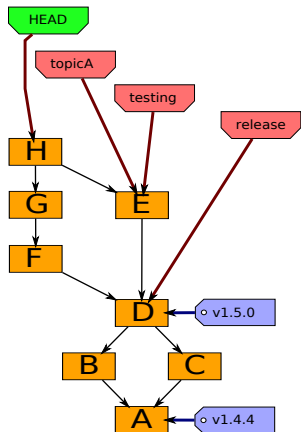
- checkout atual
- aponta para um branch



Componentes de um SCM

HEAD

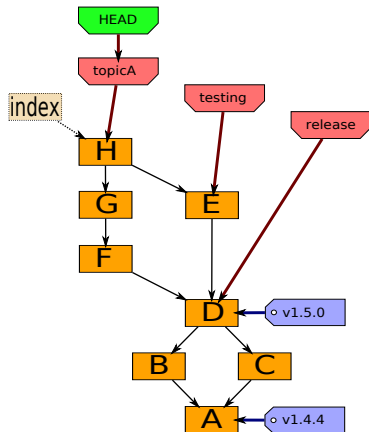
- checkout atual
- aponta para um branch
- pode estar “desconectado”



Componentes de um SCM

Index

- “staging area” – área intermediária
- o que está para ser comitado



Operações em um SCM

Inicialização

- init
- checkout

Modificações

- add, delete, rename
- commit

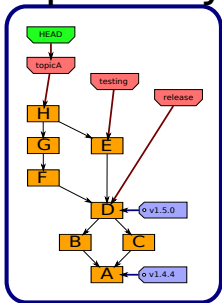
Informações

- status
- diff
- log

Referência

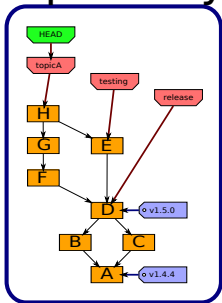
- tag
- branch

repository



mantém o histórico

repository



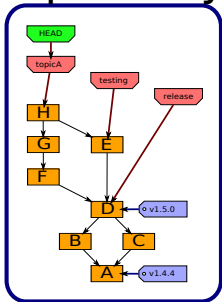
index

```
100644 20b024 0 bar
100644 1d52a6 0 baz
100644 20b024 0 sub/fiz
100644 43dbe0 0 sub/foo
```

staging area – área intermediária

Estrutura

repository



index

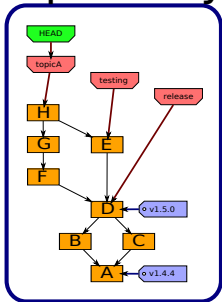
```
100644 20b024 0 bar
100644 1d52a6 0 baz
100644 20b024 0 sub/fiz
100644 43dbe0 0 sub/foo
```

work tree

```
| -- bar
| -- baz
| -- sub
| | -- fiz
| | -- foo
```

árvore de trabalho – arquivos que você modifica

repository



index

```
100644 20b024 0 bar
100644 1d52a6 0 baz
100644 20b024 0 sub/fiz
100644 43dbe0 0 sub/foo
```

work tree

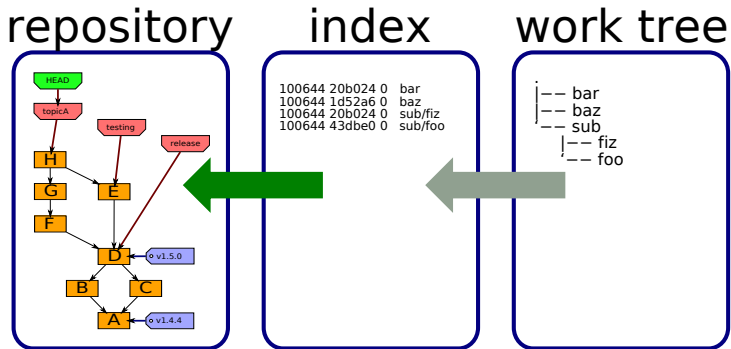
```
|-- bar
|-- baz
|-- sub
|  |-- fiz
|  |-- foo
```



“staging” – informando a modificação

add
remove

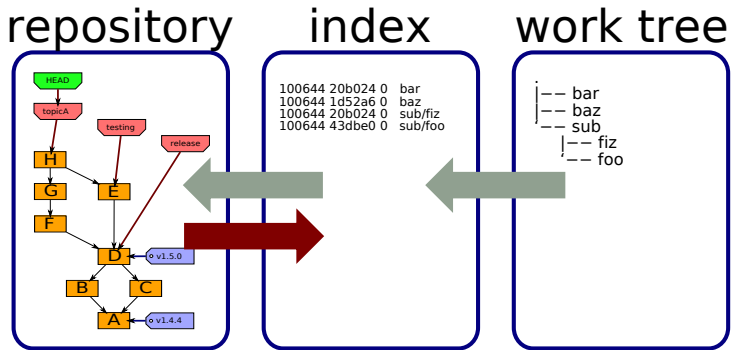
Estrutura



“committing” – efetivando a modificação no repositório

```
commit
```

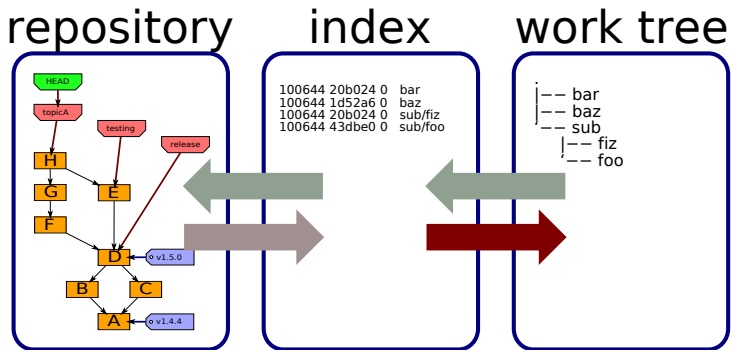
Estrutura



“reading tree” – lendo a árvore do repositório

```
checkout  
read-tree
```

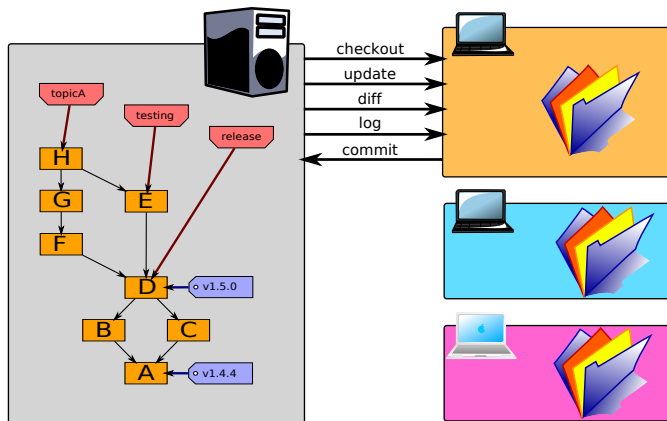
Estrutura



“checking out” – efetivando a recuperação dos arquivos

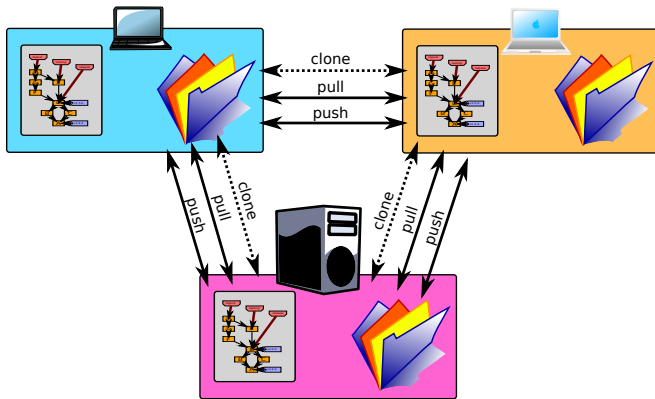
checkout
checkout-index

SCM Centralizado



- As operações **precisam** de um **servidor**
 - um único ponto de falha
 - ponto de gargalo

SCM Descentralizado



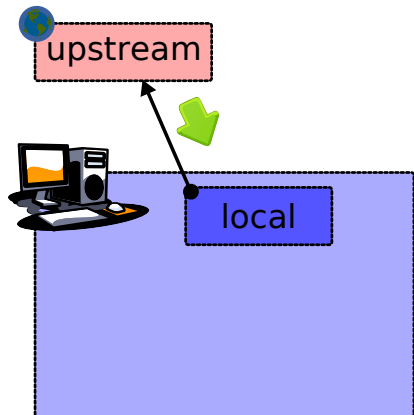
- qualquer um pode ser um servidor
- operações adicionais: clone, pull, fetch, push

Descentralização



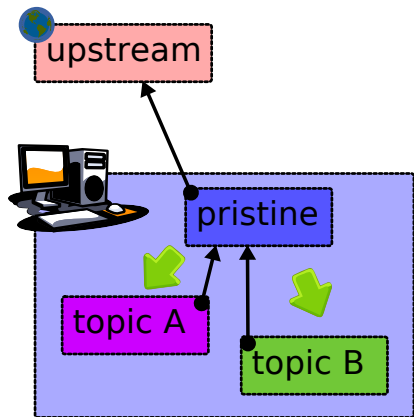
- repositório público

Descentralização



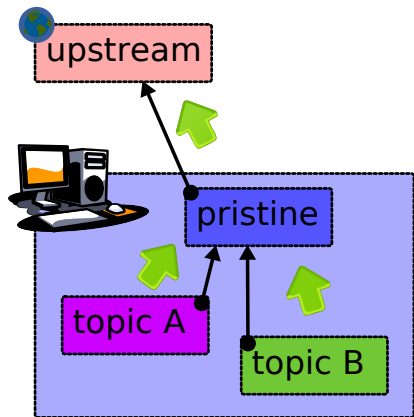
- criando um clone local
 - http, ssh, git
 - `git clone git://git.kernel.org/.../linux-2.6.git linux-2.6`

Descentralização



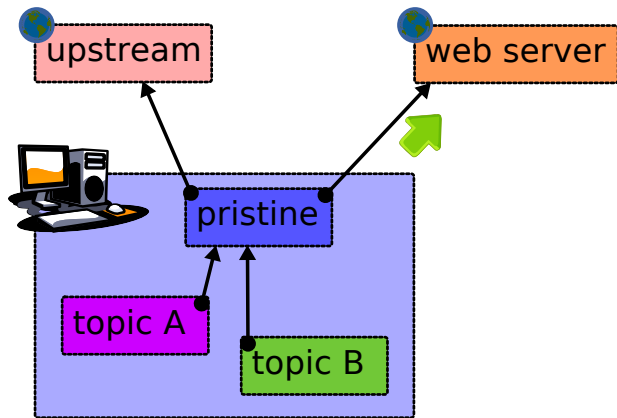
- clonar localmente é extremamente simples
- `git clone /scm/linux-2.6 /tmp/linux-2.6-tmp`

Descentralização



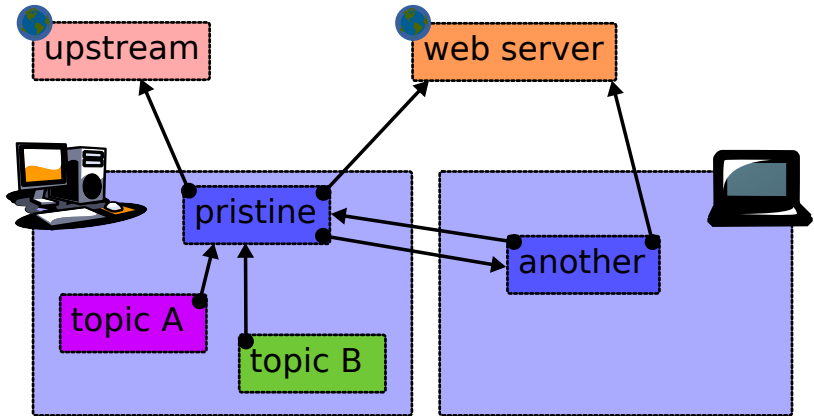
- envio (push) de modificações entre quaisquer repositórios
- `git push origin master` (dentro do repositório)

Descentralização



- publica-se mudanças em um servidor público

Descentralização



- compartilhar mudanças com máquinas confiáveis
- `git clone ssh://192.168.1.2/home/git/emacs.git emacs`

Configuração

`.git/config`

- configuração do repositório

`.git/description`

- descrição do repositório
útil para o gitweb

`.git/info/exclude`

- arquivos a serem ignorados

Configuração

`.git/config`

- configuração do repositório

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Configuração

`.git/config`

- configuração do repositório

`.git/description`

- descrição do repositório
útil para o gitweb

`.git/info/exclude`

- arquivos a serem ignorados

Configuração

```
$HOME/.gitconfig
```

```
$ git config --global user.name "Seu Nome"
```

```
$ git config --global user.email voce@seudominio.tld
```

```
$ git config --global color.pager true
```

```
$ git config --global color.ui auto
```

Configuração

```
$HOME/.gitconfig
```

```
$ git config --global user.name "Seu Nome"
```

```
$ git config --global user.email voce@seudominio.tld
```

```
$ git config --global color.pager true
```

```
$ git config --global color.ui auto
```

Configuração

```
$ cat .gitconfig
```

```
[user]
```

```
    name = Leslie Harley Watter
```

```
    email = leslie@watter.net
```

```
[merge]
```

```
    tool=kdiff3
```

```
[diff "oodiff"]
```

```
    command=git-oodiff
```

```
...
```

Configuração

```
$ cat .gitconfig
[color]
  pager = true
  ui = true
  branch = auto
  diff = auto
  status = auto
[color "branch"]
  current = yellow reverse
  local = yellow
  remote = green
[color "diff"]
  meta = yellow bold
  frag = magenta bold
  old = red bold
  new = green bold
```

Configuração

```
$ cat .gitconfig
```

```
[alias]
```

```
st = status
```

```
ci = commit
```

```
br = branch
```

```
co = checkout
```

```
df = diff
```

```
lg = log -p
```

```
pom = push origin master
```

```
new = !gitk --all --not ORIG_HEAD
```

```
tree = log --graph --pretty=oneline
```

gitk: linux-2.6

File Edit View Help

● **v2.6.30** Linux 2.6.30
 ● char: mxser, fix ISA board lookup
 ● jbd: fix race in buffer processing in commit code
 ● autofs4: remove hashed check in validate_wait()
 ● shm: fix unvxsd warnings on nommu
 ● Merge git://git.kernel.org/pub/scm/linux/kernel/git/trusty/linux-2.6-for-linus
 ● kvm: fix kvm reboot crash when MAXSMP is used
 ● cpumask: alloc zeroed cpumask for static cpumask_var_t's
 ● cpumask: introduce zalloc_cpumask_v
 ● Merge branch 'for-linus' of git://git.kernel.org/pub/scm/linux/kernel/git/davem/net-2.6
 ● bsp: setting rq-bio to NULL
 ● Merge git://git.kernel.org/pub/scm/linux/kernel/git/davem/net-2.6
 ● cifs_cgrouop: Fix oops when user send improperly 'tc filter add' request
 ● nfs169: fix crash when large packets are received
 ● Merge branch 'for-linus' of git://mail.brown.name/md
 ● nfs169: fix bin in rechange_node when chunk_size decreases

| | |
|---|---------------------|
| Linus Torvalds <torvalds@linux-foundation.org> | 2009-06-10 00:05:27 |
| Peter Botha <peterb@goldcircle.co.za> | 2009-06-09 21:16:32 |
| Jan Kara <jack@suse.cz> | 2009-06-09 20:26:26 |
| Ian Kent <raverns@themaw.net> | 2009-06-09 20:26:24 |
| Mike Frysinger <vapier@gentoo.org> | 2009-06-09 20:26:23 |
| Linus Torvalds <torvalds@linux-foundation.org> | 2009-06-09 12:46:32 |
| Avi Kivity <avi@redhat.com> | 2009-06-06 18:52:35 |
| Yinghai Lu <yinghai@kernel.org> | 2009-06-06 18:51:36 |
| Yinghai Lu <yinghai@kernel.org> | 2009-06-06 18:50:36 |
| Linus Torvalds <torvalds@linux-foundation.org> | 2009-06-09 12:47:43 |
| FUJITA Tomonori <fujita.tomonori@lab.ntt.co.jp> | 2009-06-09 10:17:37 |
| Linus Torvalds <torvalds@linux-foundation.org> | 2009-06-09 12:47:27 |
| Minoru Usui <usui@mmn.mns.nec.co.jp> | 2009-06-09 08:03:09 |
| Eric Dumazet <eric.dumazet@gmail.com> | 2009-06-09 08:01:02 |
| Linus Torvalds <torvalds@linux-foundation.org> | 2009-06-09 12:41:22 |
| NeilBrown <nrb@uscc.dcs> | 2009-06-09 08:37:22 |

SHA1 ID: **07a2039b8ab0af4ff464ef43df495d5c02648c6** Row 1 / 27298 Reading

Find next prev commit containing: Exact All fields

Search

◆ Diff ▼ Old version ▼ New version Lines of context: 3 5 | Ignore space change
 Author: Linus Torvalds <torvalds@linux-foundation.org> 2009-06-10 00:05:27
 Committer: Linus Torvalds <torvalds@linux-foundation.org> 2009-06-10 00:05:27
 Tags: v2.6.30
 Parent: 960504fb25956512008dcea74342921fa01e993c (char: mxser, fix ISA board lookup)
 Branch:
 Follows:
 Precedes:

Linux 2.6.30

----- Makefile -----

```

index 1065154..03373bb 100644
@@ -1,7 +1,7 @@
VERSION = 2
PATCHLEVEL = 6
SUBLEVEL = 30
-EXTRAVERSION = -rc8
+EXTRAVERSION =
NAME = Non-Eating Seals of Antiquity
# *DOCUMENTATION*

```

Comments
Makefile

git "tree" (git log -graph -pretty=oneline)

```
* 07a2039b8eb0af4ff464efd3dfd95de5c02648c6 Linux 2.6.30
* 96050dfb25966612008dcea7d342e91fa01e993c char: mxser, fix ISA board lookup
* a61d90d75d0f9e86432c45b496b4b0fbf0fd03dc jbd: fix race in buffer processing in
* 463aea1a1c49f1a7d4b50656dfd6c8bb33358b1b autofs4: remove hashed check in valida
* 586c7e6a280580fd94b662bf486f9bb31098d14b shm: fix unused warnings on nommu
* 13df635f080d411a152c92087a384135c1562fac Merge git://git.kernel.org/pub/scm/l
|
| * 8437a617708d014d6f220df201a24960e00d57b1 kvm: fix kvm reboot crash when MAXSM
| * eaa958402ea40851097d051f52ba1bb7a885efe9 cpumask: alloc zeroed cpumask for st
| * 0281b5dc0350cbf6dd21ed558a33ccce77abc02 cpumask: introduce zalloc_cpumask_va
| * 9cdba30283ecad22970e954c5595c9079d7a7f63 Merge branch 'for-linus' of git://
|
| * | c1d4c41f2fdfe66dea957b76d005affba3e56b26 bsg: setting rq->bio to NULL
|
| * | fd4d34295b36c5d9a1aba3d3f2764d721db093be Merge git://git.kernel.org/pub/scm
|
| * | 52ea3a56a3268bc2a5a7c75e98c81463004e38ef cls_cgroup: Fix oops when user sen
| * | fdd7b4c3302c93f6833e338903ea77245eb510b4 r1b19: fix crash when large packet
| * | 4d11eff66889e65e9351111b1cc39f066f9f9729 Merge branch 'for-linus' of git:
|
|
|
|
| * | 0e6e0271a210817e202c8a4bffffbde3e3c0616d1 md/raid5: fix bug in reshape code
| * | a8c906ca3f63d05f0d25490cf82276f73c6fe095 md/raid5 - avoid deadlocks in get_
| * | f001a70cdc61c01452d42e8b32fd7c7842ef62d5 md/raid5: use conf->raid_disks in
| * | 3af968e066d593bc4dacc021715f3e95dddf0996f async: Fix lack of boot-time conso
| * | 46056be71c37378f518711da651e4bb76d650ee9 Merge branch 'upstream' of git://
|
|
|
|
| * | 5636919b5c909fee54a6ef5226475ecae012ad02 MIPS: Outline udelay and fix a f
| * | 3a553147aaad5d4da90ab1f695aa13ddbae684ec MIPS: ioctl b: Fix headers check
```

[/pub/scm/](#)

To clone one of these trees, install [git](#), and run:

```
git clone git://git.kernel.org/pub/scm/ + project path.
```

For convenience, the clone URL is available as the "git" link below, or on the status page of any repository.

For more information about [git](#), see an [overview](#), the [tutorial](#) or the [man pages](#).

| Project | Description | Owner | Last Change | |
|---|------------------------------------|---------------------------------|-------------------------------|--|
| bluetooth/bluez-gnome.git | Bluetooth applications for ... | Marcel Holtmann | 6 months ago | summary shotlog log tree git |
| bluetooth/bluez-hcidump.git | Bluetooth packet analyzer | Marcel Holtmann | 12 months ago | summary shotlog log tree git |
| bluetooth/bluez.git | Bluetooth protocol stack for ... | Marcel Holtmann | 10 hours ago | summary shotlog log tree git |
| bluetooth/eglib.git | Embedded GLib | Marcel Holtmann | 9 months ago | summary shotlog log tree git |
| bluetooth/libdbus.git | D-Bus integration with GLib | Marcel Holtmann | 8 months ago | summary shotlog log tree git |
| bluetooth/obexd.git | OBEX Server | Marcel Holtmann | 13 days ago | summary shotlog log tree git |
| bluetooth/obex.git | Object Exchange (OBEX) protocol | Marcel Holtmann | 2 weeks ago | summary shotlog log tree git |
| boot/grub-fedora/grub-fedora.git | Development tree for Fedora's ... | Peter Jones | 11 months ago | summary shotlog log tree git |
| boot/syslinux/gpxe-for-syslinux.git | gPXE tree for SYSLINUX integration | H. Peter Anvin | 8 months ago | summary shotlog log tree git |
| boot/syslinux/syslinux.git | The Syslinux boot loader suite | H. Peter Anvin | 65 min ago | summary shotlog log tree git |
| boot/u-boot/galak/u-boot.git | Kumar's upstream u-boot repo | Kumar Gala | 10 months ago | summary shotlog log tree git |
| boot/warthog9/mkinitrd-syslinux.git | Syslinux branch of Fedora's ... | John Hawley | 4 months ago | summary shotlog log tree git |
| cogito/cogito-bundle.git | Example Cogito addon - mail ... | Petr Baudis | 2 years ago | summary shotlog log tree git |
| cogito/cogito-doc.git | Petr's user-friendly GIT inter ... | Petr Baudis | 2 years ago | summary shotlog log tree git |
| cogito/cogito.git | Petr's user-friendly GIT interface | Petr Baudis | 2 years ago | summary shotlog log tree git |
| daemon/cld/cld.git | Coarse locking daemon | Jeff Garzik | 15 hours ago | summary shotlog log tree git |
| daemon/distsrv/chunkd.git | Data storage daemon. | Jeff Garzik | 3 weeks ago | summary shotlog log tree git |
| daemon/distsrv/storage.git | Data storage daemon. | Jeff Garzik | 3 weeks ago | summary shotlog log tree git |
| daemon/distsrv/tailed.git | Distributed key/value map ... | Jeff Garzik | 9 days ago | summary shotlog log tree git |
| daemon/dns/dvdsn.git | Authoritative-only DNS server. | Jeff Garzik | 3 months ago | summary shotlog log tree git |

git-gui

Repository Edit Branch Commit Merge Remote Help

Current Branch: master

Unstaged Changes Untracked, not staged File: git-case-pull

```
git-case-pull
* Bourne-Again shell script text executabl
#!/bin/bash
##
## Assumptions:
## - in a git repository
## - we can access git-case-common
## - the branch defined by GIT_CASE_HEAD e
source $(dirname $0)/git-case-common
DEFAULT="origin"
while test -n "$1" ; do
  OPT="$1" ; shift
  case "$OPT" in
    -h|--help)
      die "$PROGRAM [<remote>]"
      ;;
  *)
    ..
  ;;
done
```

Staged Changes (Will Commit)

Commit Message: Amend Last Commit

Rescan
Stage Changed
Sign Off
Commit
Push

Ready.

Repository

- Browse master's Files
- Browse Branch Files...
- Visualize master's History
- Visualize All Branch History
- Database Statistics
- Compress Database
- Verify Database
- Quit Ctrl-Q

Commit

- New Commit
- Amend Last Commit
- Rescan F5
- Stage To Commit Ctrl-T
- Stage Changed Files To Commit Ctrl-I
- Unstage From Commit
- Revert Changes
- Show Less Context Ctrl--
- Show More Context Ctrl+=
- Sign Off Ctrl-S
- Commit Ctrl-Return

Remote

- Fetch from
- Prune from
- Push to
- Push... Ctrl-P

Branch

- Create... Ctrl-N
- Checkout... Ctrl-O
- Rename...
- Delete...

Merge

- Local Merge... Ctrl-M
- Abort Merge...

Hospedagem Git

repo.or.cz

gitorious.org

sourceforge.net

www.berlios.de

github.com

Intro to Git por Bart Jukie – PDF e Vídeo
<http://excess.org/article/2008/07/ogre-git-tutorial/>

git-scm.org

git.or.cz/gitwiki

gitready.com

GitCasts.com
(Scott Chacon)

GitHub.com

;-)