

# Source Code Verwaltung mit Git

Uwe Kleine-König

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# Wer bin ich?

- `$ git version`  
`git version 1.5.0.3`
- **eindeutiger Autor**  
`$ git config --global user.name \  
"Uwe Kleine-König"`  
`$ git config --global user.email \  
"ukleinek@informatik.uni-freiburg.de"`



# das Repository

- ein neues ...

```
$ mkdir projekt; cd projekt; git init
```

- ...oder eines clonen

```
$ git clone git://kernel.org/.../linux-2.6.git
```



# commiten

```
$ echo "toller Inhalt" > file  
$ git add file  
$ git commit -m "tolle Beschreibung"
```



## commiten

```
$ git show HEAD
commit bf9b33ce2ee403f8e4e5c31db1914038d21f25b1
Author: Uwe Kleine-König <ukleinek@informatik....
Date:   Wed Mar 14 00:29:47 2007 +0100
```

Tolle Beschreibung

```
diff --git a/file b/file
new file mode 100644
index 0000000..28f4cf6
--- /dev/null
+++ b/file
@@ -0,0 +1 @@
+toller Inhalt
```




## erste Tücken

```
$ echo "Noch mehr toller Inhalt" >> file
$ git commit -m "tralala"
# On branch master
# Changed but not updated:
#   (use "git add <file>..." to update what \
#     will be committed)
#
#       modified:   file
#
no changes added to commit (use "git add" \
and/or "git commit -a")
```



## OK, git add

```
$ git add file
$ echo "Und was ich noch vergessen habe" >> file
$ git commit -m "tralala + vergessen"
Created commit 5b5e88d234832302a10aee66d67293...
 1 files changed, 1 insertions(+), 0 deletions(-)
$ git status
# On branch master
# Changed but not updated:
#   (use "git add <file>..." to update ...)
#
#       modified:   file
#
no changes added to commit (use "git add" ... 
```

# Index

- Zwischending zwischen Workingcopy und Repository
- `git commit` macht aus dem Index einen Commit
- `git add`, `git rm`, `git update-index`, ...
- Erlaubt „dirty working copy“





# Objekte

- charakterisierung durch SHA-1 Summe
- Typen: blob, commit, tree, tag
- abkürzbar durch eindeutigen Anfang
- ```
$ git cat-file -t 5115  
blob  
$ git cat-file blob 5115  
toller Inhalt  
Noch mehr toller Inhalt
```



# Objekte

- ```
$ git rev-parse HEAD
5b5e88d234832302a10aee66d672935b09b7c3bd
$ git cat-file -t HEAD
commit
$ git cat-file -p HEAD^{tree}
100644 blob 5115b279...a78099ba      file
$ git rev-parse 5115
5115b279318ec24e202c1190f2f27fca78099ba0
```



# Branches

- referenzieren einen Commit
- HEAD referenziert den aktuellen Branch

```
$ cat .git/HEAD  
ref: refs/heads/master  
$ cat .git/refs/heads/master  
5b5e88d234832302a10aee66d672935b09b7c3bd
```



# Patch schicken

```
$ editor Makefile  
$ git update-index Makefile; git commit -s -m 'tra'  
$ git format-patch linus  
0001-tra.patch  
$ git send-email 0001-tra.patch  
...
```



# Patch bekommen

```
$ git am --signoff --3way < $inbox
```



## fetch

```
$ git fetch linus
remote: Generating pack...
remote: Done counting 529 objects.
remote: Result has 352 objects.
remote: Deltifying 352 objects.
remote: 100% (352/352) done
Indexing 352 objects.
remote: Total 352 (delta 300), reused 256 (delta 21
100% (352/352) done
Resolving 300 deltas.
100% (300/300) done
152 objects were added to complete this thin pack.
* refs/remotes/linus/master: fast forward ... +++ git
old new: be52146 baab108
```

# push

```
$ git push info
updating 'refs/heads/master'
  from 025b9eaf10364a85b029bede23b9d7cd843eefdf
  to    0d344813d030c25f76f842a637054d79f03346a7
Generating pack...
Done counting 0 objects.
Writing 0 objects.
Total 0 (delta 0), reused 0 (delta 0)
Unpacking 0 objects
refs/heads/master: 025b9eaf10364a85b02...
```



# pull

- pull = fetch + merge + commit
- `$ git pull origin`  
Updating be52146..baab108  
Fast forward  
arch/arm/common/Kconfig  
arch/arm/mach-imx/cpufreq.c  
arch/arm/mach-imx/generic.c  
arch/arm/mach-ns9xxx/mach-cc9p9360dev.c  
arch/arm/mach-omap1/board-h2.c  
arch/arm/mach-omap2/clock.c  
...





## Wie geht's weiter?

- **Git Wiki** <http://git.or.cz>
- **online Manual pages**  
`http://kernel.org/pub/software/scm/git/docs/`
- **Projektliste** <http://git.kernel.org/>
- **Mailingliste** <mailto:git@vger.kernel.org>
- **OLS-Vortrag von Junio C. Hamano** <http://members.cox.net/junkio/200607-ols.pdf>

