MindRoad

MindRoad Academy

MindRoad Embedded

MindRoad Application

MindRoad Syd

MindRoad Sourcing

https://xkcd.com/1597/

Git

Instructor: Daniel Ericsson

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Agenda

- Setup
- Grundläggande kommandon
- Arbetsflöden
- Avancerad git

Setup

- Installera Git
  - Finns på linux
  - Git for Windows

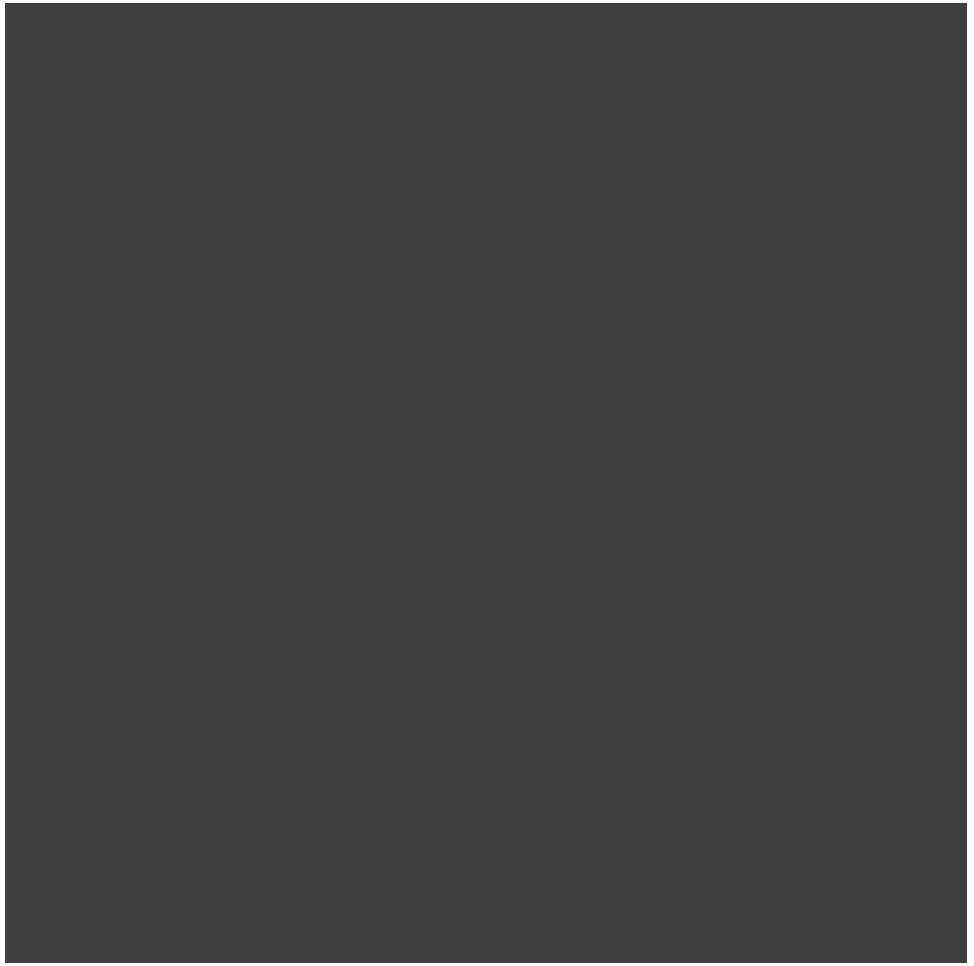
Setup

- Installera Git
  - Finns på linux
  - Git for Windows
- Skapa repo hos tredje part (GitLab, GitHub)

Setup

- Installera Git
  - Finns på linux
  - Git for Windows
- Skapa repo hos tredje part (GitLab, GitHub)
- Generera ssh-nyckel
  - ssh-keygen
  - .ssh/id_rsa.pub
  - Lägg till i profilinställningar på GitLab, GitHub

Setup – forts.



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Setup – forts.

- Konfigurering

```
$ git config --global user.name ”Daniel Ericsson”
$ git config --global user.email ”my@email.com”
$ git config --global core.editor emacs
```

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Setup – forts.

- Konfigurering
- Skapa en lokal kopia av repot

```
$ git config --global user.name ”Daniel Ericsson”
$ git config --global user.email ”my@email.com”
$ git config --global core.editor emacs

$ git clone  git@gitlab.com:my_repo.git
$ cd my_repo/
```

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Setup – forts.

- Konfigurering
- Skapa en lokal kopia av repot
- Skapa filen .gitignore

```
$ git config --global user.name ”Daniel Ericsson”
$ git config --global user.email ”my@email.com”
$ git config --global core.editor emacs

$ git clone  git@gitlab.com:my_repo.git
$ cd my_repo/
```

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Grundläggande kommandon

- Git status

```
$ git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will
be committed)

            .gitignore

nothing added to commit but untracked files present
(use "git add" to track)
```

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Grundläggande kommandon

- Git add

```
$ git add .gitignore
$ git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)

            new file:   .gitignore
```

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Grundläggande kommandon

- Git add
- Git add --patch

```
$ git add .gitignore
$ git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)

            new file:   .gitignore
```

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Grundläggande kommandon

- Git commit

```
$ git commit -m "Create gitignore"
[master (root-commit) 9dc6691] Create gitignore
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 .gitignore
```

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Grundläggande kommandon

- Git commit

```
$ git commit -m "Create gitignore"
[master (root-commit) 9dc6691] Create gitignore
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 .gitignore

$ git status
On branch master
Your branch is based on 'origin/master', but the
upstream is gone.
  (use "git branch --unset-upstream" to fixup)

nothing to commit, working tree clean
```

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Grundläggande kommandon

- Git branch

```
$ git branch my_branch
$ git branch
* master
  my_branch
```

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Grundläggande kommandon

- Git branch
- Git checkout

```
$ git branch my_branch
$ git branch
* master
  my_branch

$ git checkout my_branch
```

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Grundläggande kommandon

- Git branch
- Git checkout

```
$ git branch my_branch
$ git branch
* master
  my_branch

$ git checkout my_branch

$ git branch
  master
* my_branch
```

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Grundläggande kommandon

- Git log

```
$ git log
commit 5d4e11885c000c8f39be52133108fd8c4614495f
(HEAD -> my_branch)
Author: Daniel Ericsson
<daniel.ericsson@mindroad.se>
Date:   Thu Jan 30 10:55:47 2020 +0100

    Create main.py

commit 9dc6691a6f87daa04c1ae9cd39eee270d3774cd9
(master)
Author: Daniel Ericsson
<daniel.ericsson@mindroad.se>
Date:   Tue Jan 28 10:54:32 2020 +0100

    Create gitignore
```

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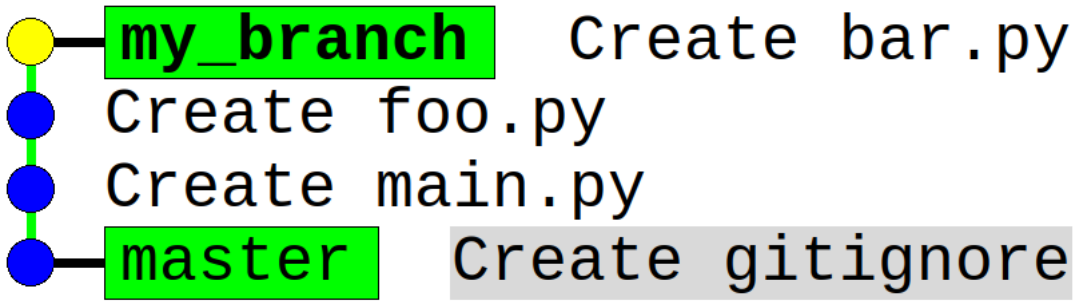
Grundläggande kommandon

- gitk




```
$ gitk --all
```

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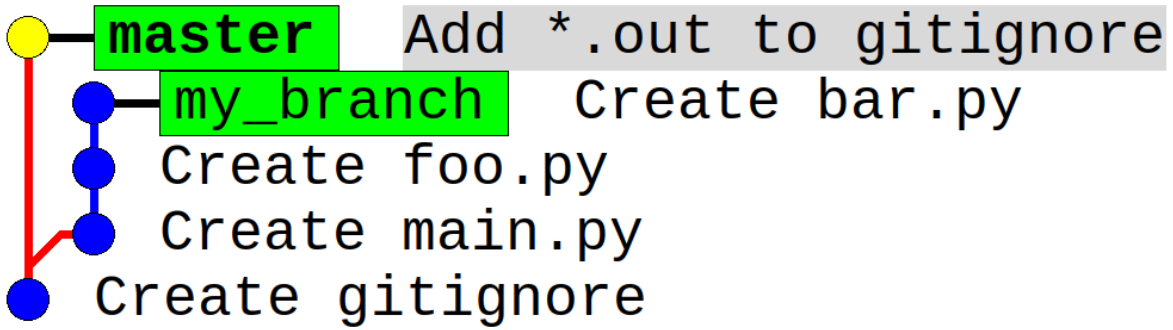
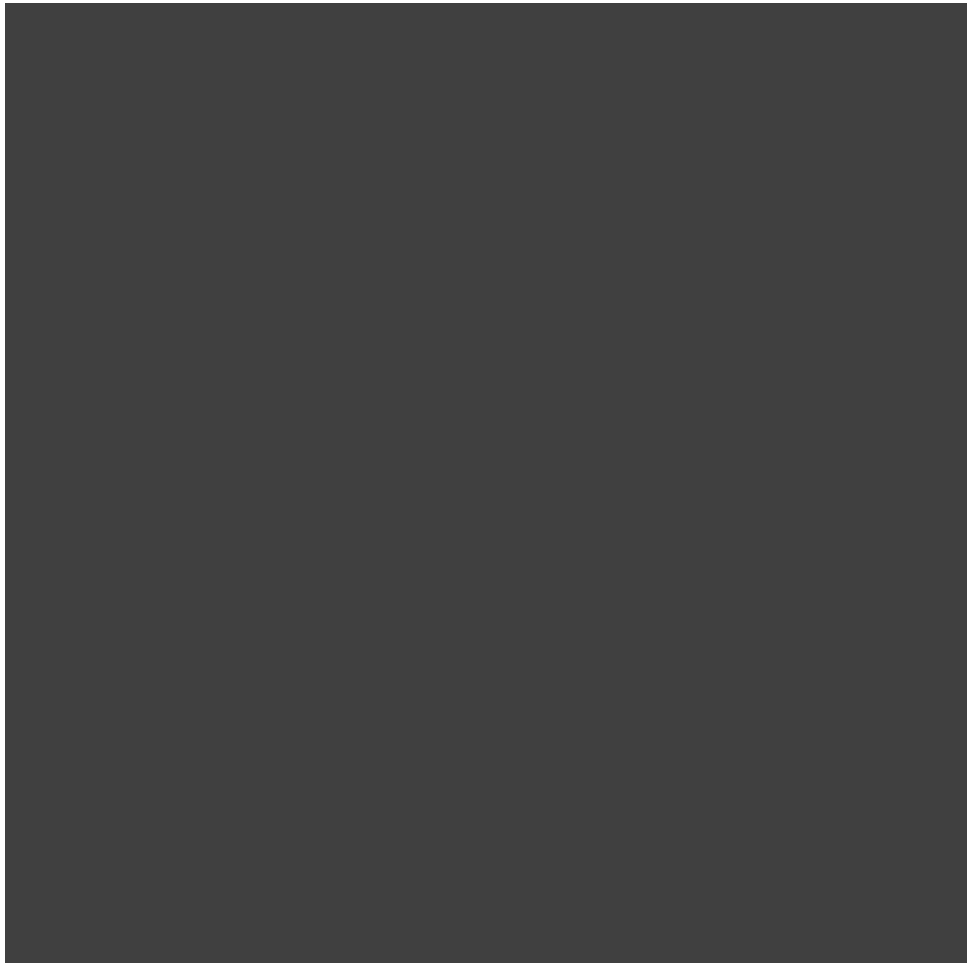
Grundläggande kommandon

- Git merge





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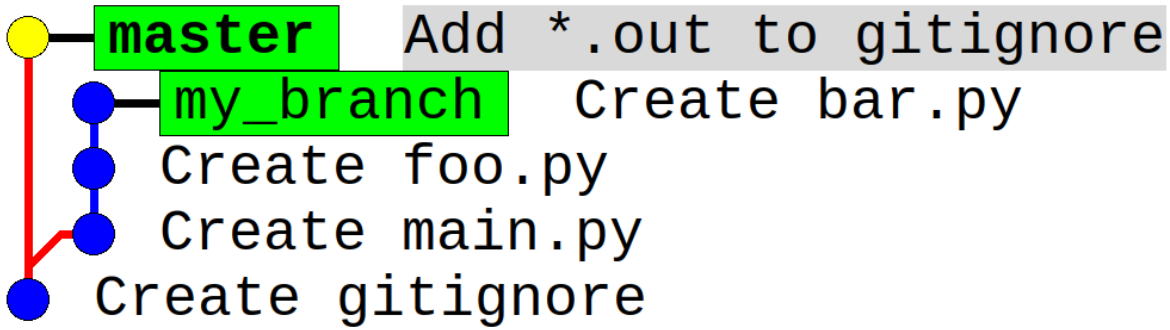
Grundläggande kommandon

- Git merge




```
$ git merge my_branch
```

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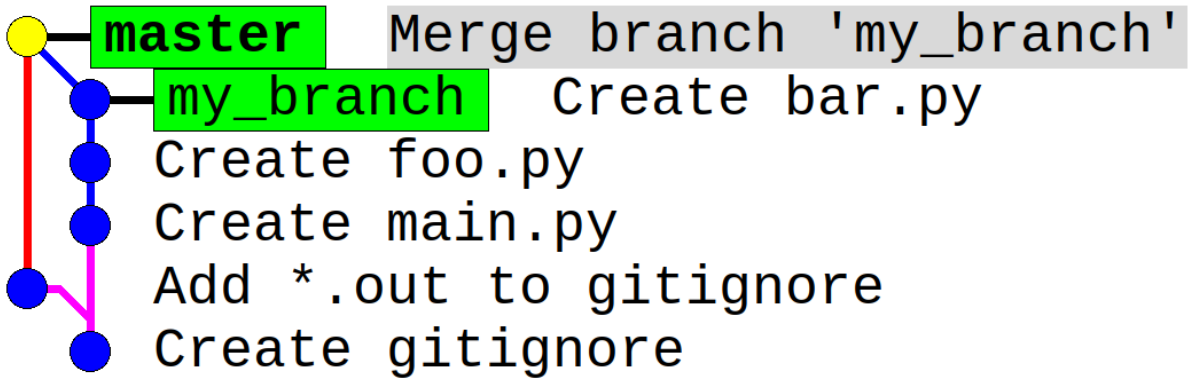
Grundläggande kommandon

- Git merge




```
$ git merge my_branch
```

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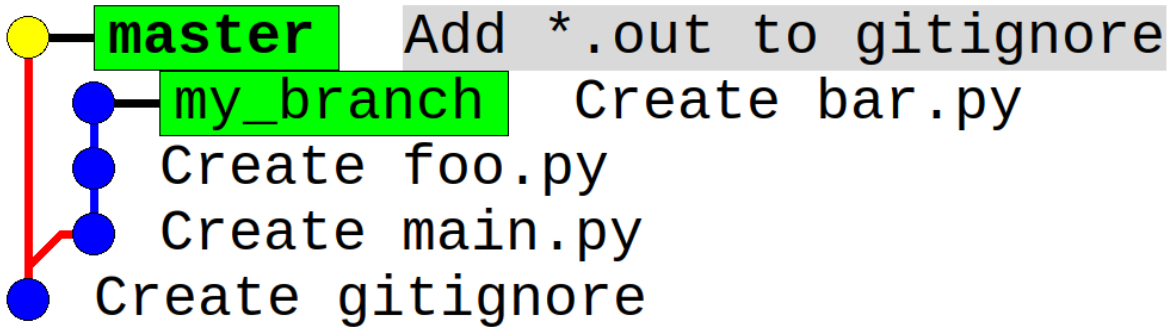
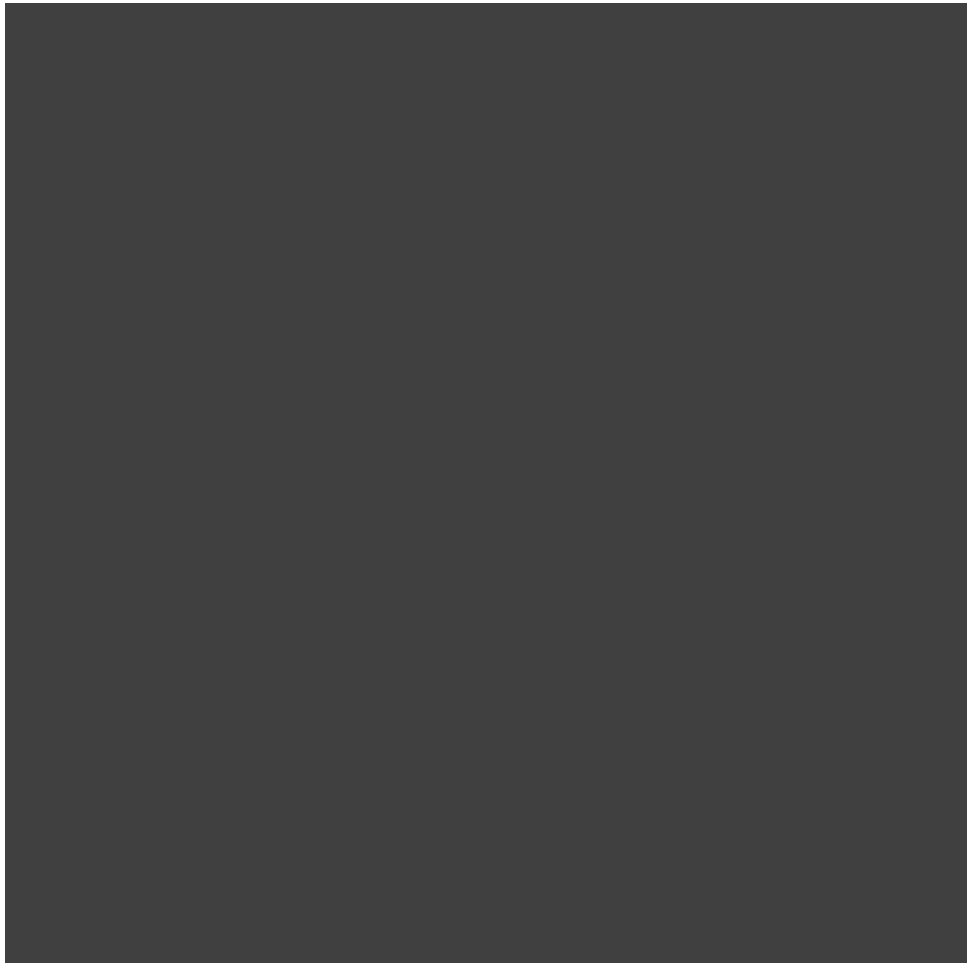
Grundläggande kommandon

- Git rebase





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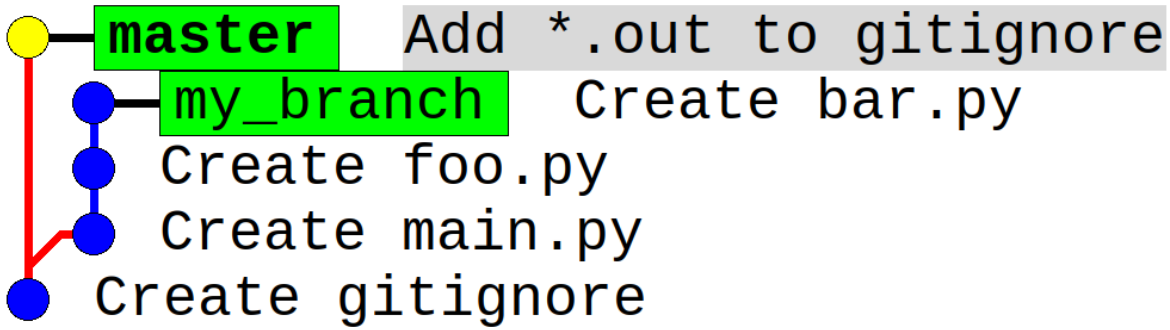
Grundläggande kommandon

- Git rebase




```
$ git rebase my_branch
```

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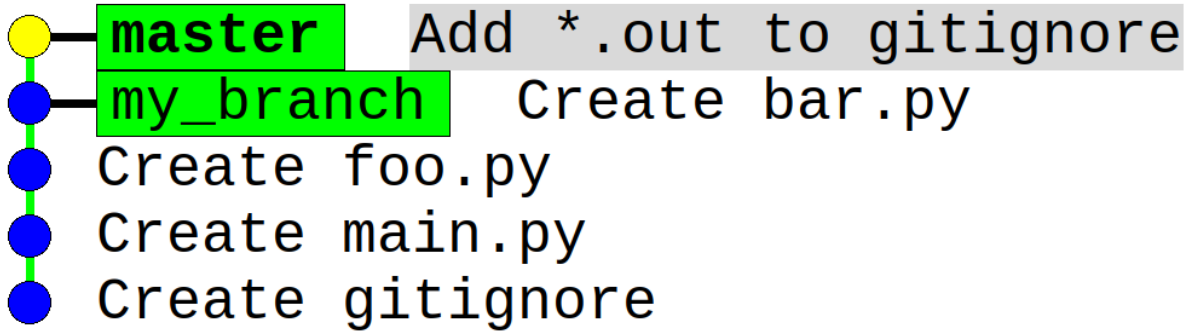
Grundläggande kommandon

- Git rebase




```
$ git rebase my_branch
```

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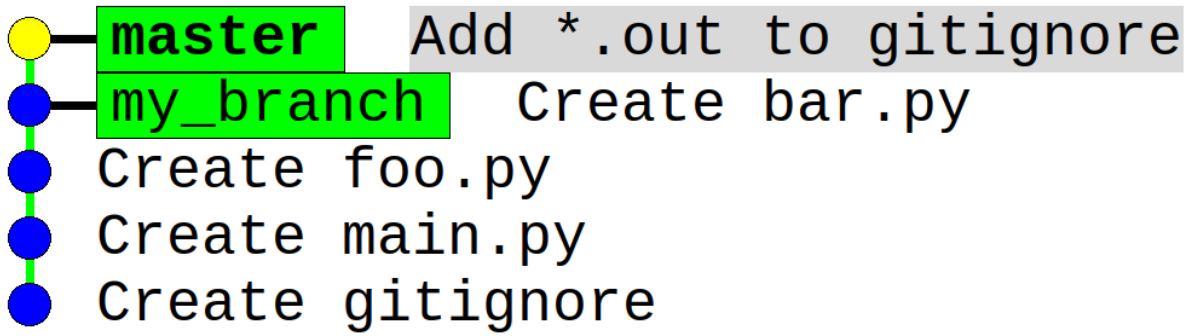
Grundläggande kommandon

- Git rebase
- OBS! Kan radera commits




```
$ git rebase my_branch
```

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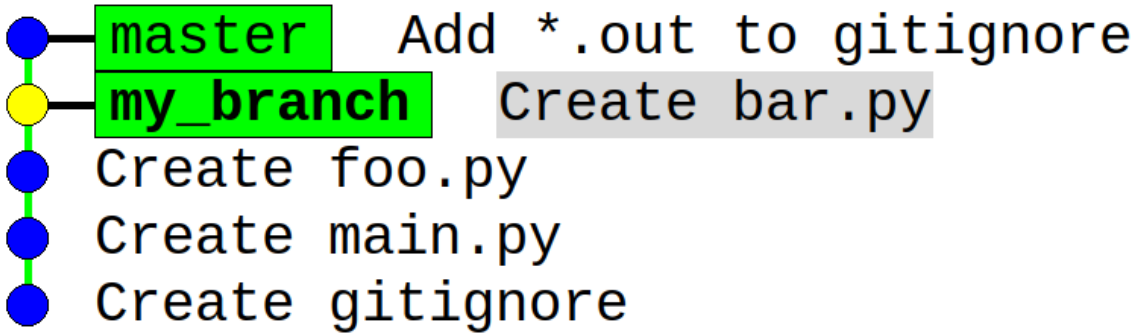
Grundläggande kommandon

- Git rebase
- OBS! Kan radera commits

```
$ git rebase my_branch

$ git checkout my_branch
```



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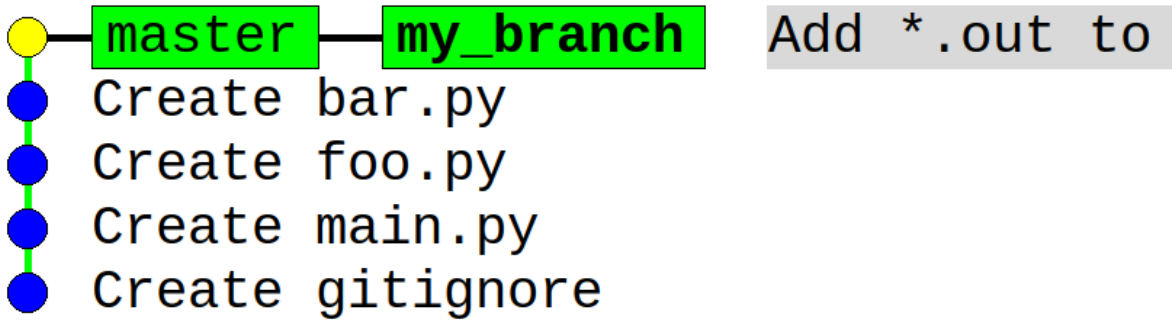
Grundläggande kommandon

- Git rebase
- OBS! Kan radera commits




```
$ git rebase my_branch

$ git checkout my_branch
$ git rebase master
```

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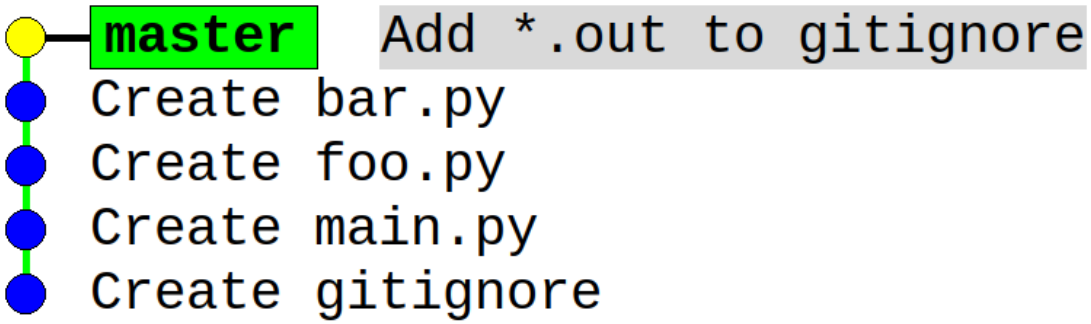
Grundläggande kommandon

- Git rebase
- OBS! Kan radera commits

```
$ git rebase my_branch

$ git checkout my_branch
$ git rebase master

$ git checkout master
$ git branch –d my_branch
```



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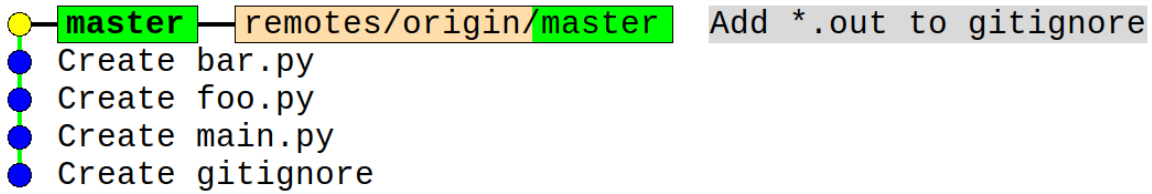
Grundläggande kommandon

- Git push




```
$ git push
```

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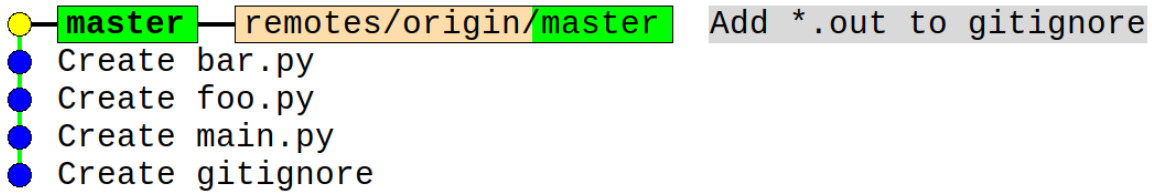
Grundläggande kommandon

- Git push




```
$ git push
$ git checkout -b my_feature
// commit changes
```

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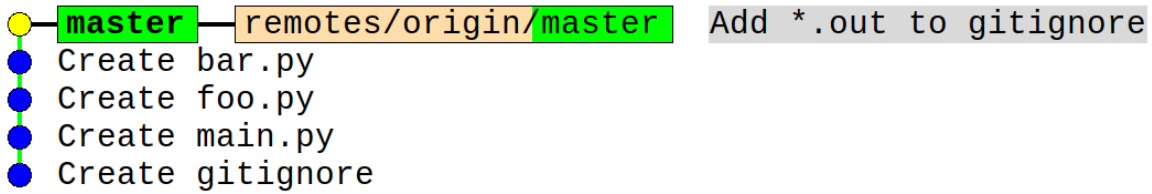
Grundläggande kommandon

- Git push




```
$ git push
$ git checkout -b my_feature
// commit changes

$ git push
fatal: The current branch my_feature has no upstream
branch.
To push the current branch and set the remote as
upstream, use

    git push --set-upstream origin my_feature
```

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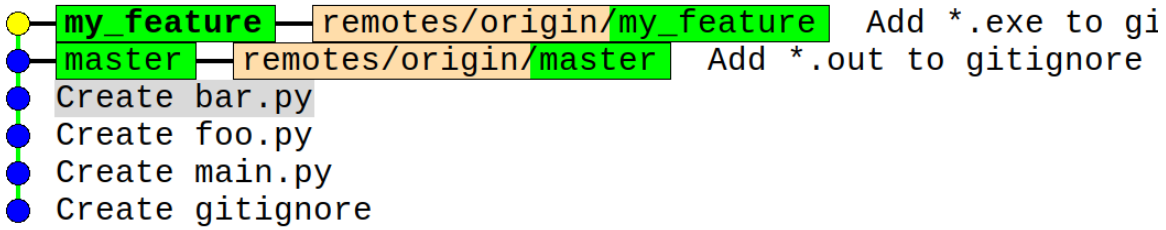
Grundläggande kommandon

- Git push

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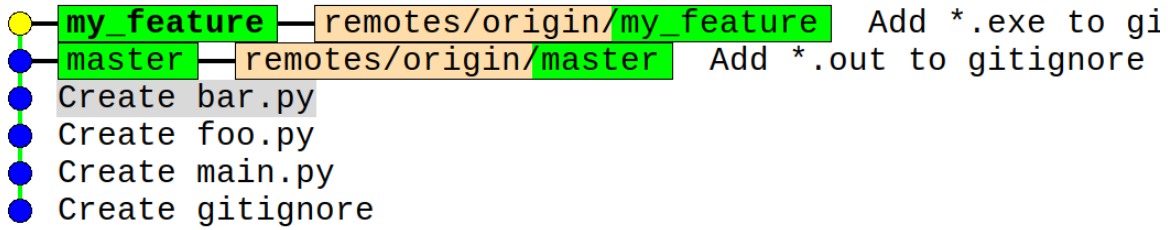
Grundläggande kommandon

- Git push

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$ git push --set-upstream origin my_feature

$ git push --delete origin my_feature
```

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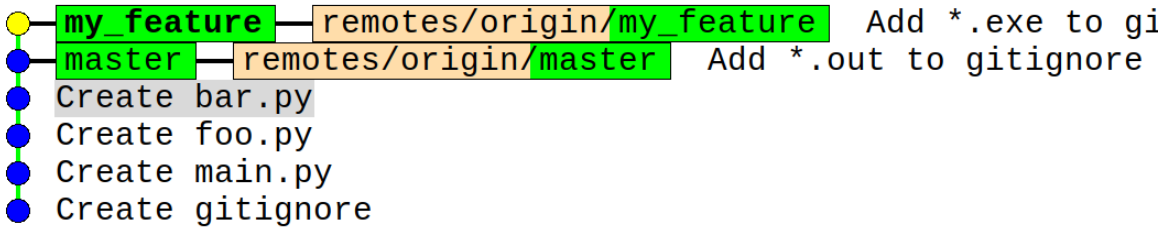
Grundläggande kommandon

- Git push

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fatal: The current branch my_feature has no upstream
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To push the current branch and set the remote as
upstream, use

    git push --set-upstream origin my_feature

$ git push --set-upstream origin my_feature

$ git push --delete origin my_feature
$ git branch –D my_feature
```

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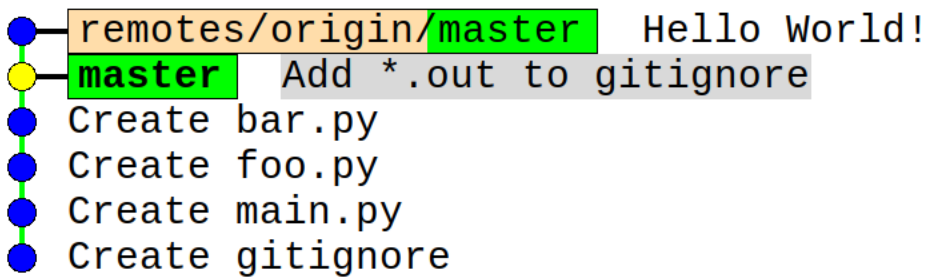
Grundläggande kommandon

- Git fetch




```
$ git fetch
```

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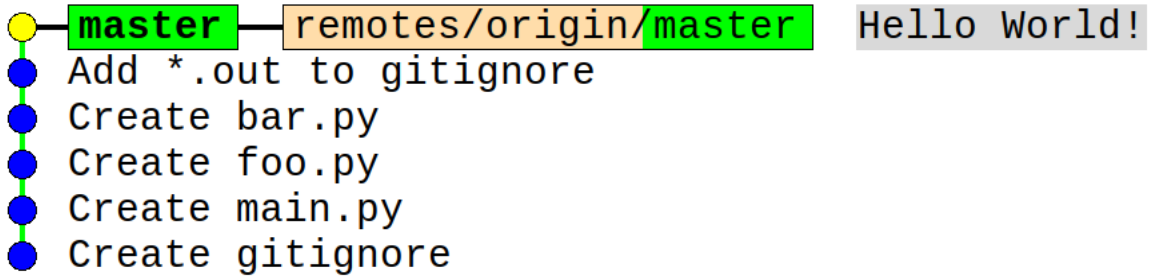
Grundläggande kommandon

- Git fetch




```
$ git fetch

$ git merge master remotes/origin/master
```

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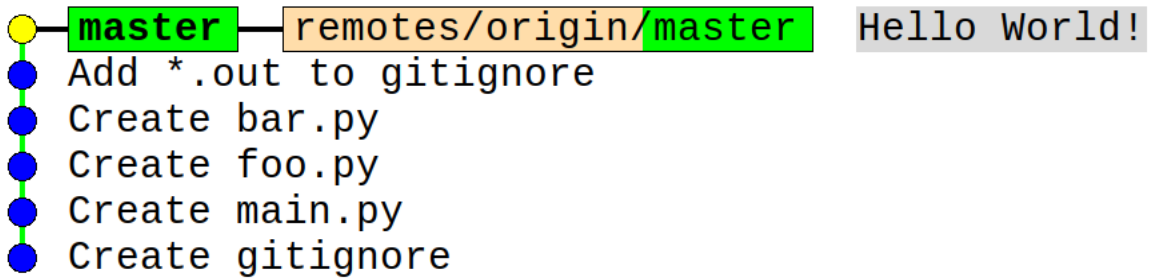
Grundläggande kommandon

- Git fetch
- Git pull [--rebase]




```
$ git fetch

$ git merge master remotes/origin/master
```

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Arbetsflöden

- Basic/Centralized Workflow
  - Enkelt
  - En enda branch
  - Bra för mindre teams
- Gitflow
  - Flera branches
  - Develop branch
  - Feature branches
  - Bra för större teams

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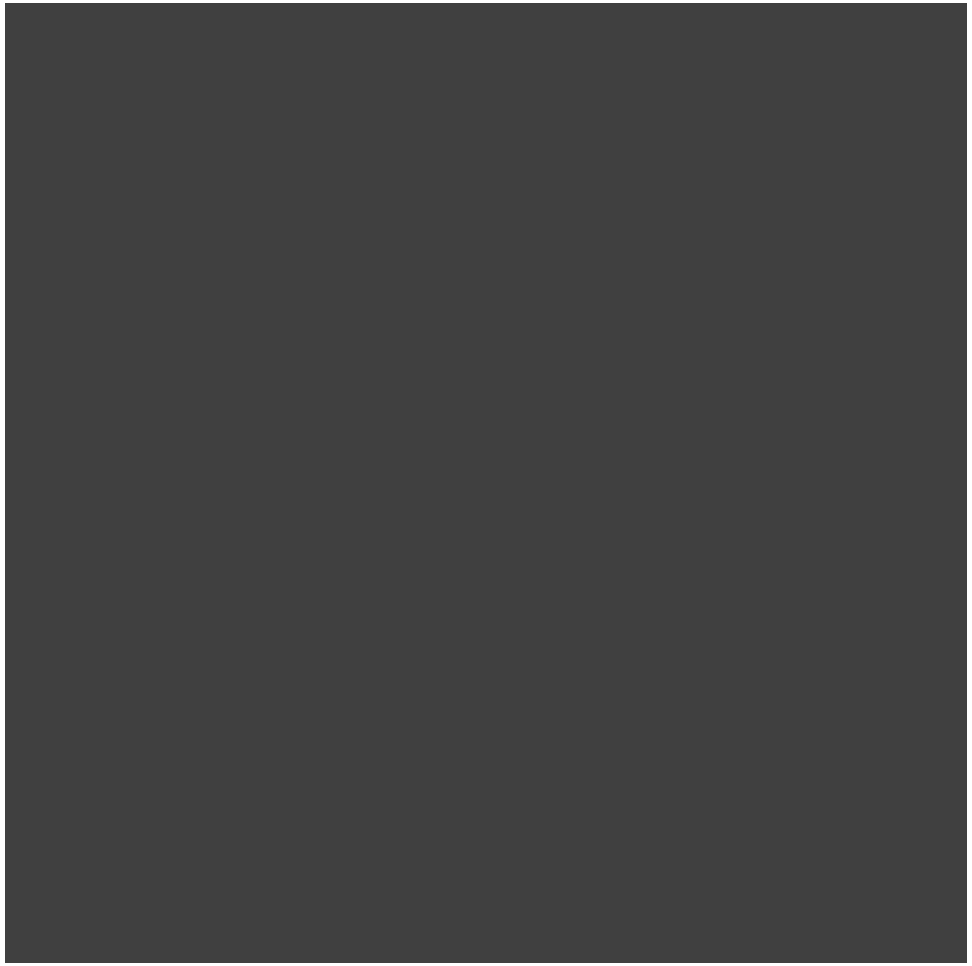
Centralized Workflow

```
master  Add factorial function to main
remotes/origin/master  Hello World!
Add *.out to gitignore
Create bar.py
Create foo.py
Create main.py
Create gitignore
```



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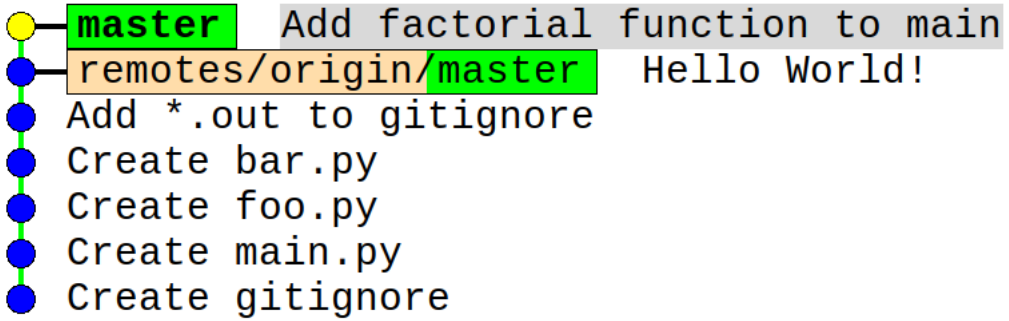
Centralized Workflow




```
$ git push
```

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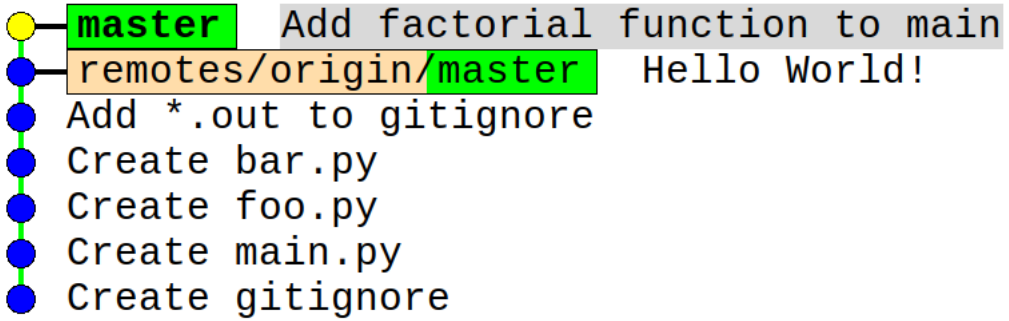
Centralized Workflow




```
$ git push
...
! [rejected]        master -> master (fetch first)
...
```

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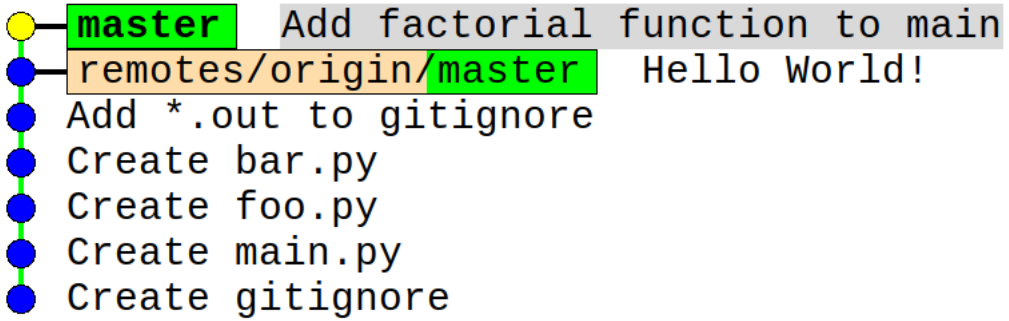
Centralized Workflow




```
$ git push
...
! [rejected]        master -> master (fetch first)
...

$ git fetch
$ gitk --all
```

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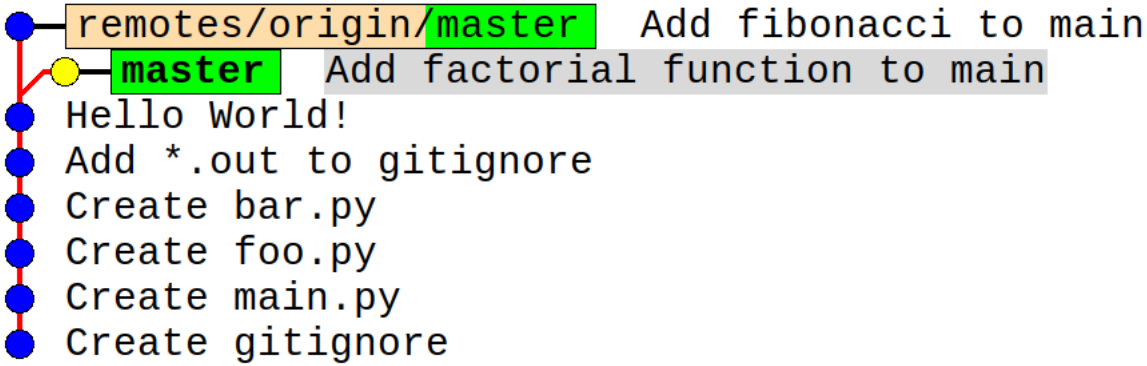
Centralized Workflow




```
$ git push
...
! [rejected]        master -> master (fetch first)
...

$ git fetch
$ gitk --all
```

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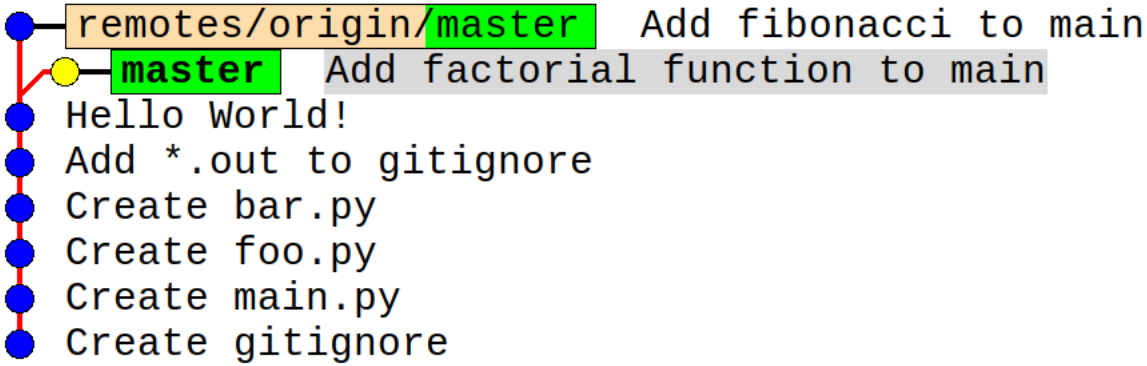
Centralized Workflow




```
$ git push
...
! [rejected]        master -> master (fetch first)
...

$ git fetch
$ gitk --all

$ git rebase origin/master
...
CONFLICT (content): Merge conflict in main.py
...
```

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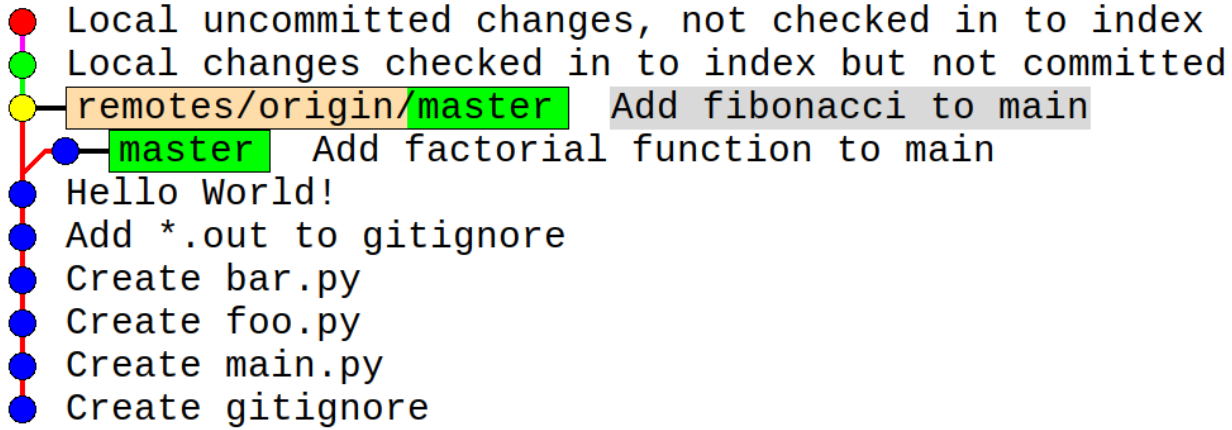
Centralized Workflow

- Konflikt




```
$ git diff
```

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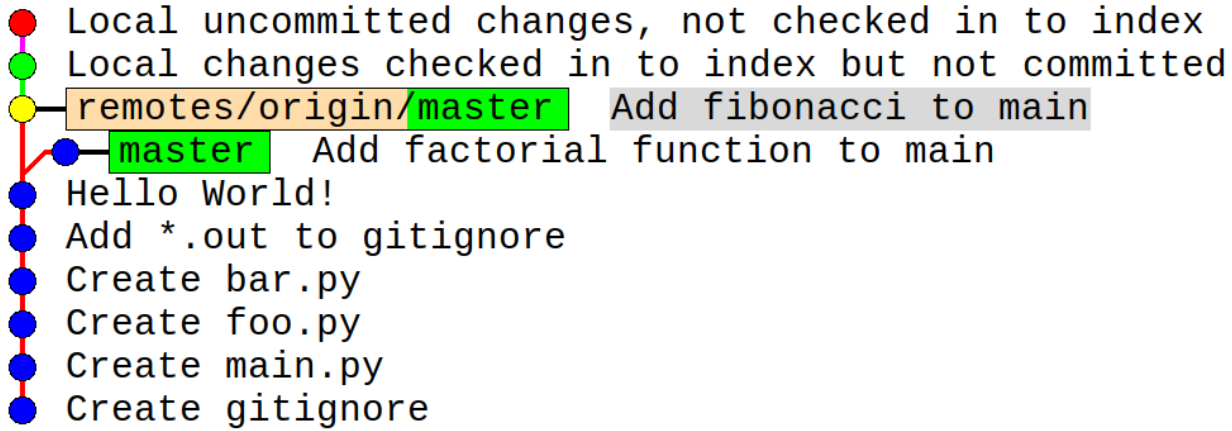
Centralized Workflow

- Konflikt




```
$ git diff
diff --cc main.py
index 51a963f,21fbe95..0000000
--- a/main.py
+++ b/main.py
@@ -1,7 -1,6 +1,14 @@
  print('Hello World!')

++<<<<<<< HEAD
 +def fibonacci(i):
 +    if i == 0 or i == 1:
 +        return i
 +    return fibonacci(i-1)+fibonacci(i-2)
 +
++=======
+ def factorial(i):
+     return 1 if i<=0 else factorial(i-1)*i
+
+ print(factorial(5))
++>>>>>>> Add factorial function to main
```

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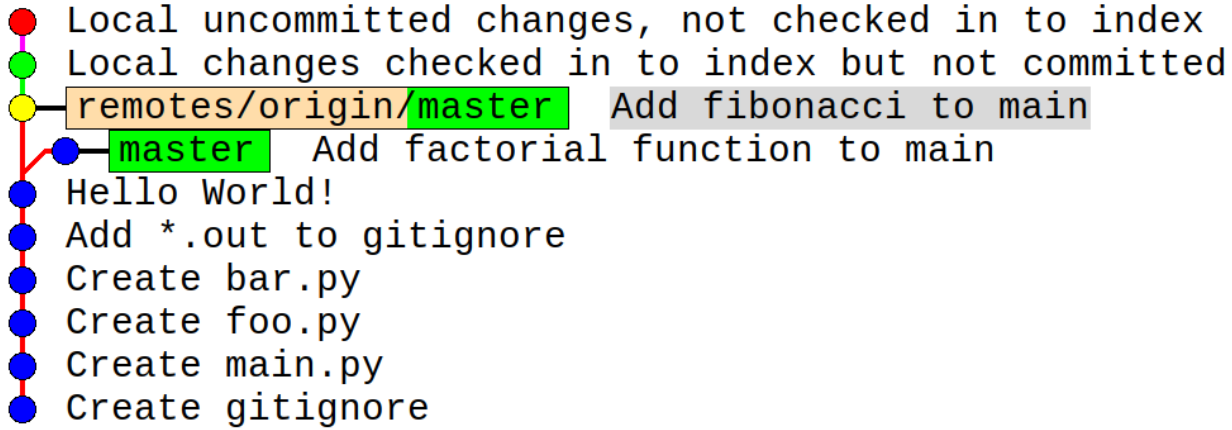
Centralized Workflow

- Konflikt




```
//Resolve conflict
$ git add main.py
```

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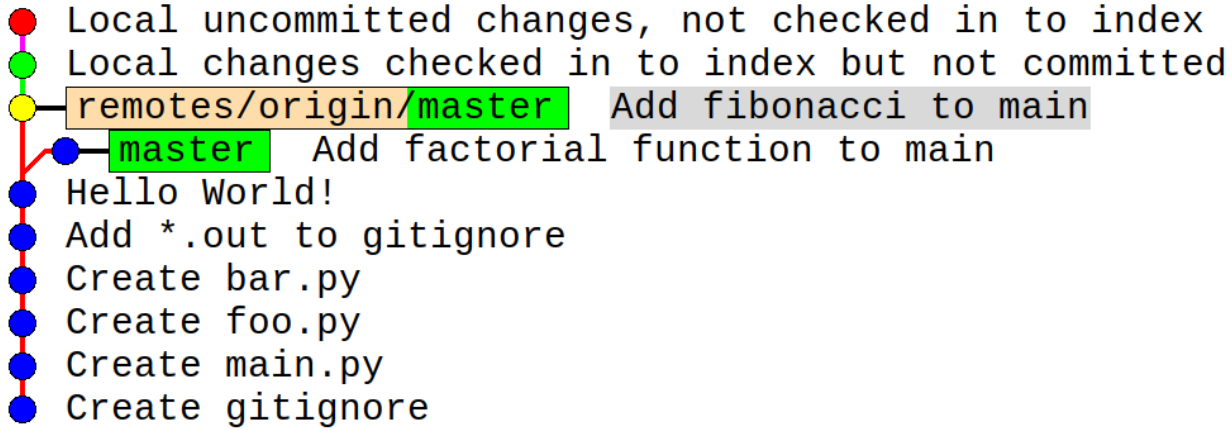
Centralized Workflow

- Konflikt




```
//Resolve conflict
$ git add main.py
$ git rebase --continue
```

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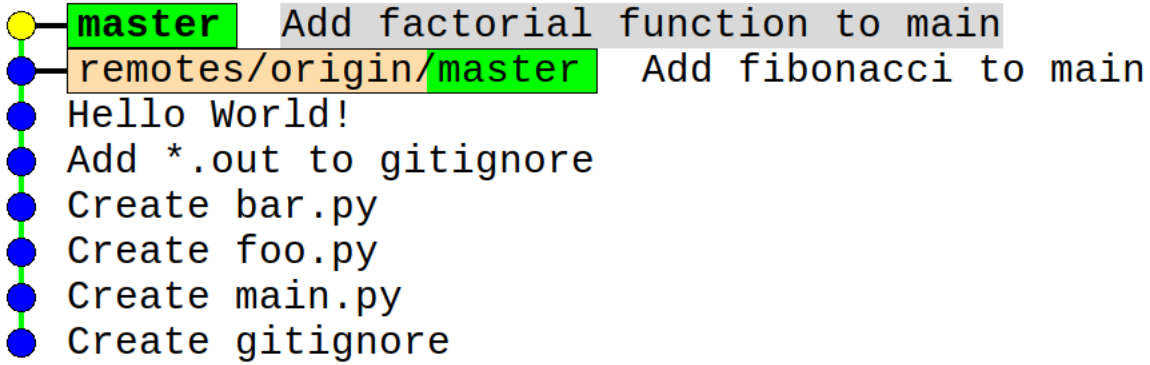
Centralized Workflow

- Konflikt




```
//Resolve conflict
$ git add main.py
$ git rebase --continue
```

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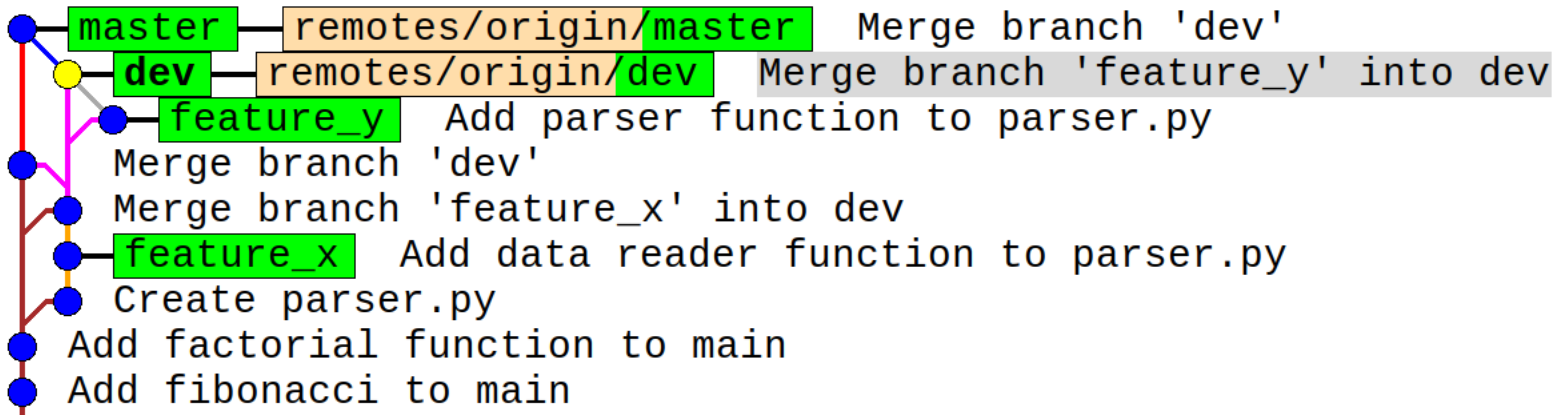
Gitflow

- Flera branches
  - Master branch
  - Develop branch
  - Feature branches



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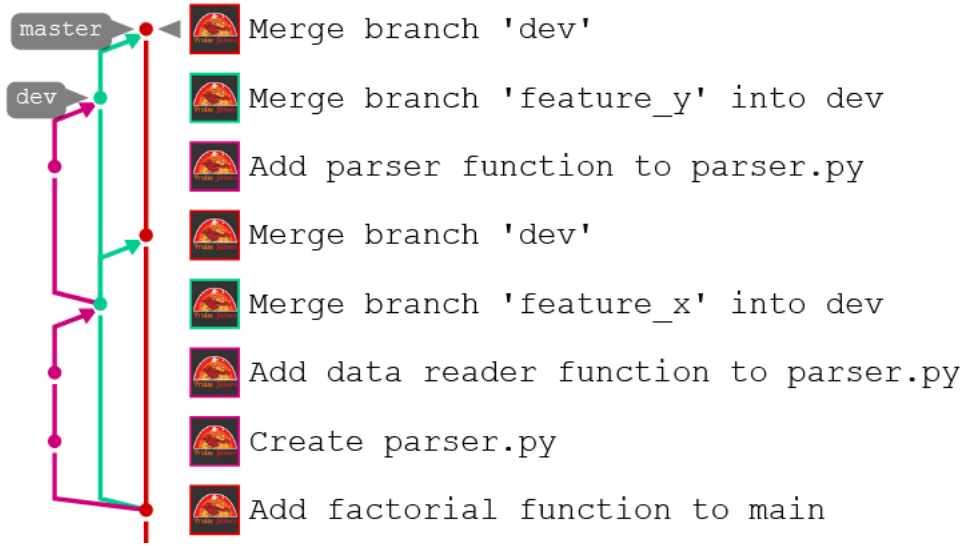
Gitflow

- Flera branches
  - Master branch
  - Develop branch
  - Feature branches



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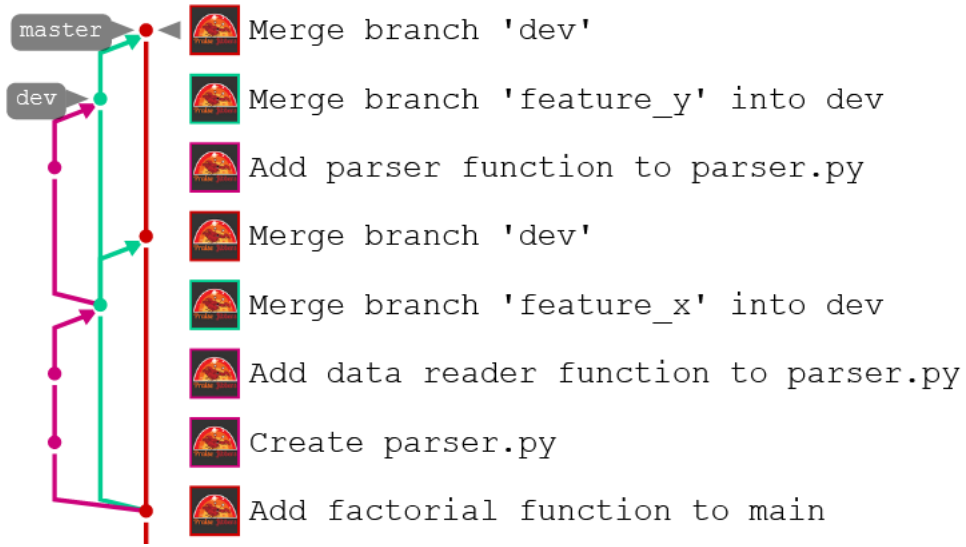
Gitflow

- Skapa feature branches från dev



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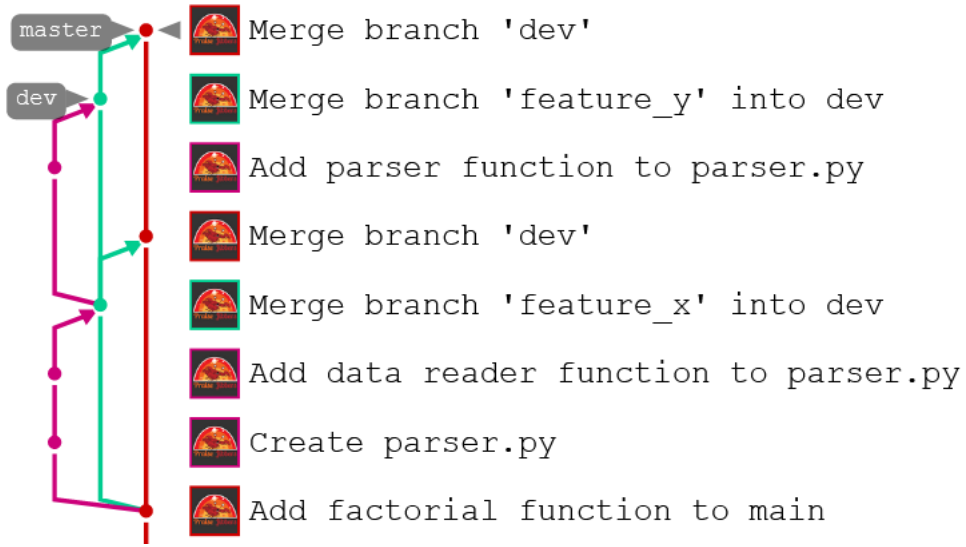
Gitflow

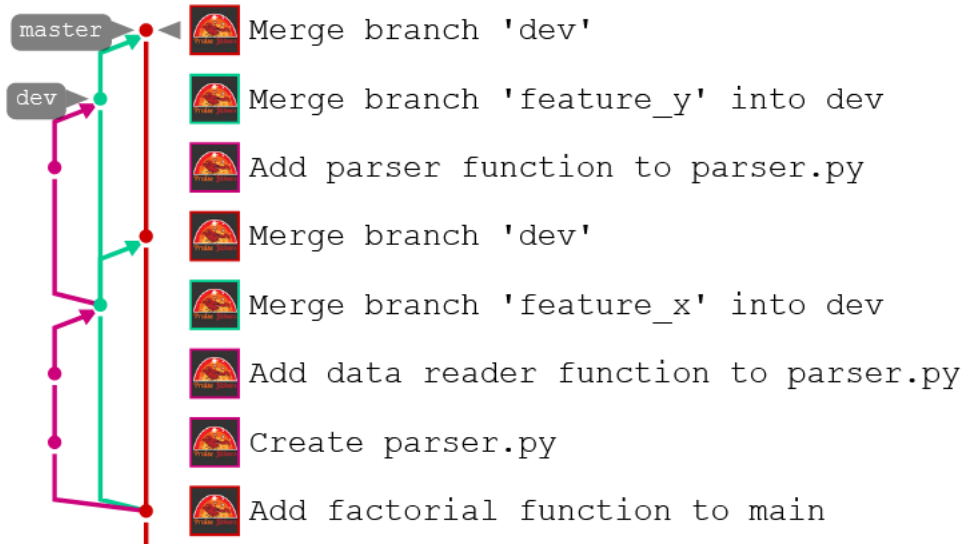
- Skapa feature branches från dev
- Implementera feature



MindRoad

Gitflow

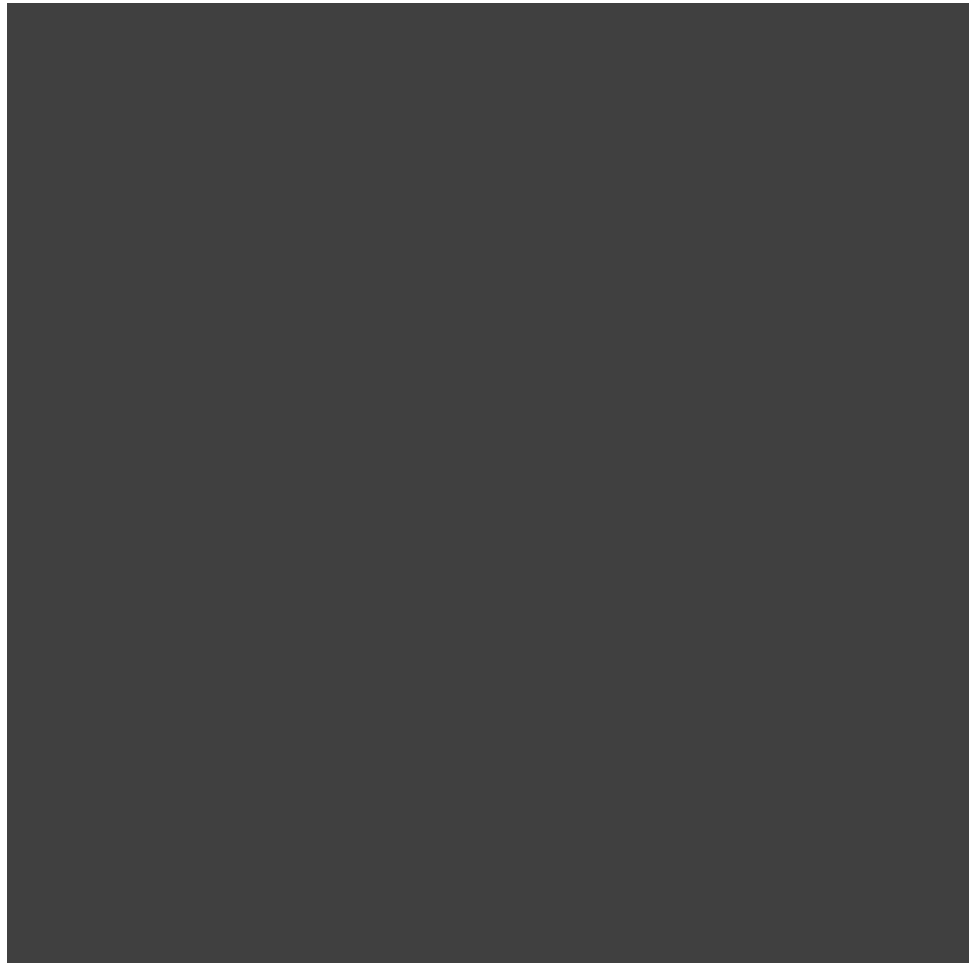
- Skapa feature branches från dev
- Implementera feature
- Merge feature branch från dev
  - `$ git merge --no-ff <feature_branch>`



MindRoad

Arbeta med branches

- Byta branch
  - Inte redo för commit



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Arbeta med branches

- Byta branch
  - Inte redo för commit

```
$ git status
On branch feature_y
Changes not staged for commit:
  (use "git add <file>..." to update what will be
committed)
  (use "git checkout -- <file>..." to discard
changes in working directory)

            modified:   parser.py

no changes added to commit (use "git add" and/or
"git commit -a")
```

MindRoad

Arbeta med branches

- Byta branch
  - Inte redo för commit

```
$ git status
On branch feature_y
Changes not staged for commit:
  (use "git add <file>..." to update what will be
committed)
  (use "git checkout -- <file>..." to discard
changes in working directory)

            modified:   parser.py

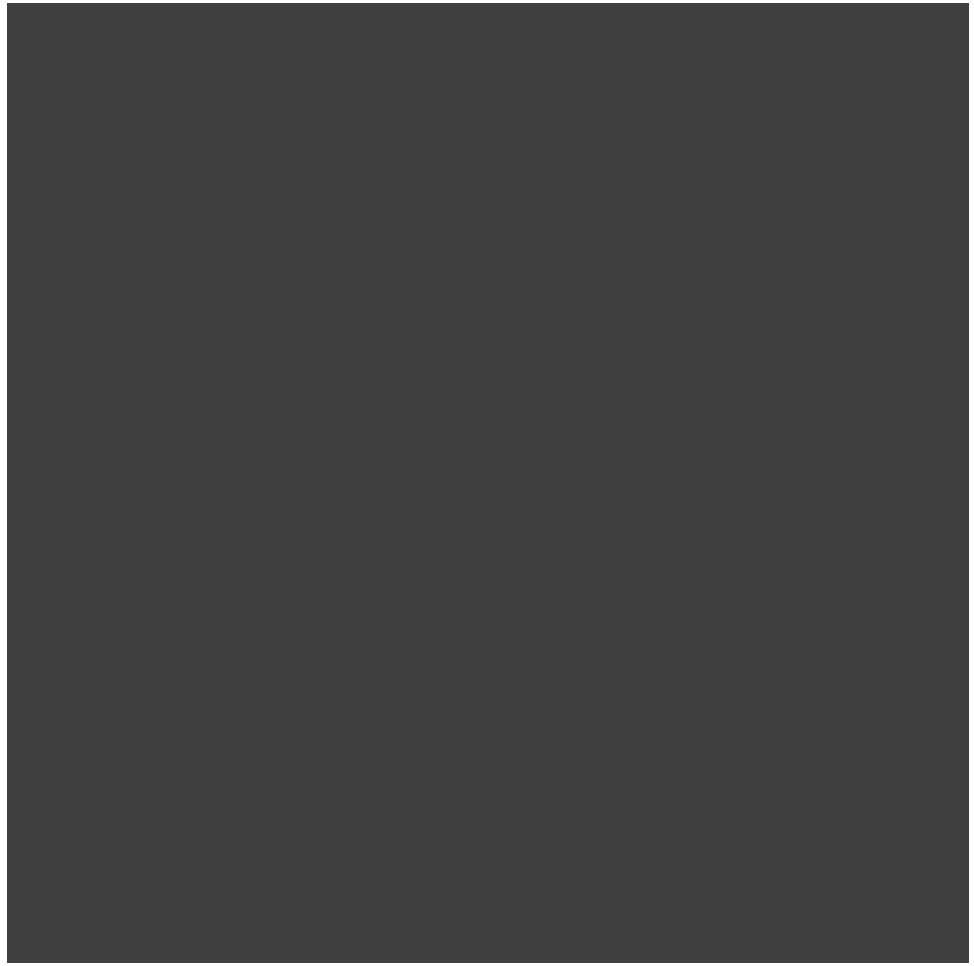
no changes added to commit (use "git add" and/or
"git commit -a")

$ git checkout feature_x
error: Your local changes to the following files
would be overwritten by checkout:
            parser.py
Please commit your changes or stash them before you
switch branches.
Aborting
```

MindRoad

Arbeta med branches

- Byta branch
  - Inte redo för commit
- Git stash



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Arbeta med branches

- Byta branch
  - Inte redo för commit
- Git stash

```
$ git stash push
```

MindRoad

Arbeta med branches

- Byta branch
  - Inte redo för commit
- Git stash

```
$ git stash push
Saved working directory and index state WIP on
feature_y: 4548e32 Add parser function to parser.py
```

MindRoad

Arbeta med branches

- Byta branch
  - Inte redo för commit
- Git stash

```
$ git stash push
Saved working directory and index state WIP on
feature_y: 4548e32 Add parser function to parser.py

$ git stash list
```

MindRoad

Arbeta med branches

- Byta branch
  - Inte redo för commit
- Git stash

```
$ git stash push
Saved working directory and index state WIP on
feature_y: 4548e32 Add parser function to parser.py

$ git stash list
stash@{0}: WIP on feature_y: 4548e32 Add parser
function to parser.py
```

MindRoad

Arbeta med branches

- Byta branch
  - Inte redo för commit
- Git stash

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$ git stash push
Saved working directory and index state WIP on
feature_y: 4548e32 Add parser function to parser.py

$ git stash list
stash@{0}: WIP on feature_y: 4548e32 Add parser
function to parser.py

$ git checkout feature_x
...
```

MindRoad

Arbeta med branches

- Byta branch
  - Inte redo för commit
- Git stash

```
$ git stash push
Saved working directory and index state WIP on
feature_y: 4548e32 Add parser function to parser.py

$ git stash list
stash@{0}: WIP on feature_y: 4548e32 Add parser
function to parser.py

$ git checkout feature_x
...

$ git checkout feature_y
```

MindRoad

Arbeta med branches

- Byta branch
  - Inte redo för commit
- Git stash

```
$ git stash push
Saved working directory and index state WIP on
feature_y: 4548e32 Add parser function to parser.py

$ git stash list
stash@{0}: WIP on feature_y: 4548e32 Add parser
function to parser.py

$ git checkout feature_x
...

$ git checkout feature_y
$ git stash pop
```

MindRoad

Arbeta med branches

- Byta branch
  - Inte redo för commit
- Git stash
  - Git rebase --autostash

```
$ git stash push
Saved working directory and index state WIP on
feature_y: 4548e32 Add parser function to parser.py

$ git stash list
stash@{0}: WIP on feature_y: 4548e32 Add parser
function to parser.py

$ git checkout feature_x
...

$ git checkout feature_y
$ git stash pop
```

MindRoad

Arbeta med branches

- Byta branch
  - Inte redo för commit
- Git commit

```
$ git commit –am “WIP”

$ git checkout feature_x

...
```

MindRoad

Arbeta med branches

- Byta branch
  - Inte redo för commit
- Git commit
- Git reset
  - --soft
  - --mixed (default)
  - --hard

```
$ git commit –am “WIP”

$ git checkout feature_x

...

$ git checkout feature_y
$ git reset HEAD^
```

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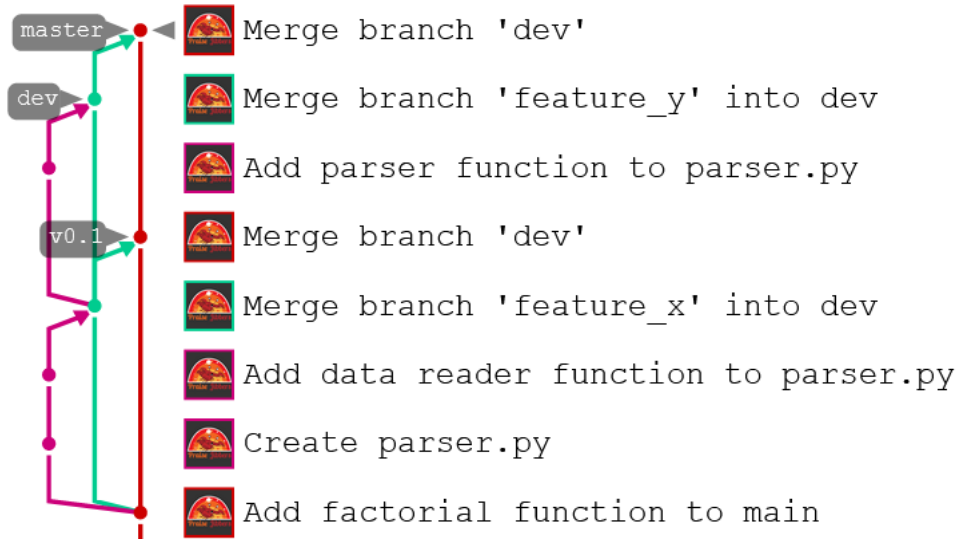
Arbeta med branches

- Git tag




```
$ git tag "v0.1" 9bf5563

$ git push origin --tags
```

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Avancerad Git

- Git revert

```
$ git commit -am "Add some bad changes“
$ git push
```

MindRoad

Avancerad Git

- Git revert

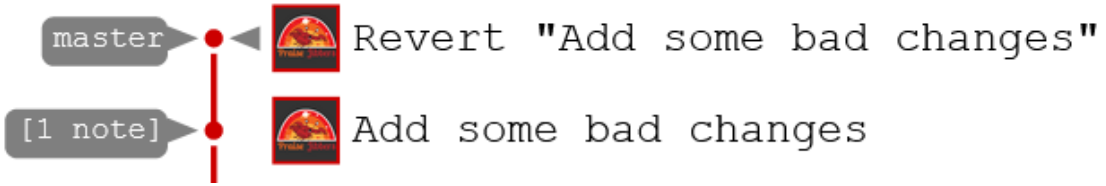
```
$ git commit -am "Add some bad changes“
$ git push

$ git revert HEAD [-m]
$ git push
```

MindRoad

Avancerad Git

- Git revert




```
$ git commit -am "Add some bad changes“
$ git push

$ git revert HEAD [-m]
$ git push
```

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Avancerad Git

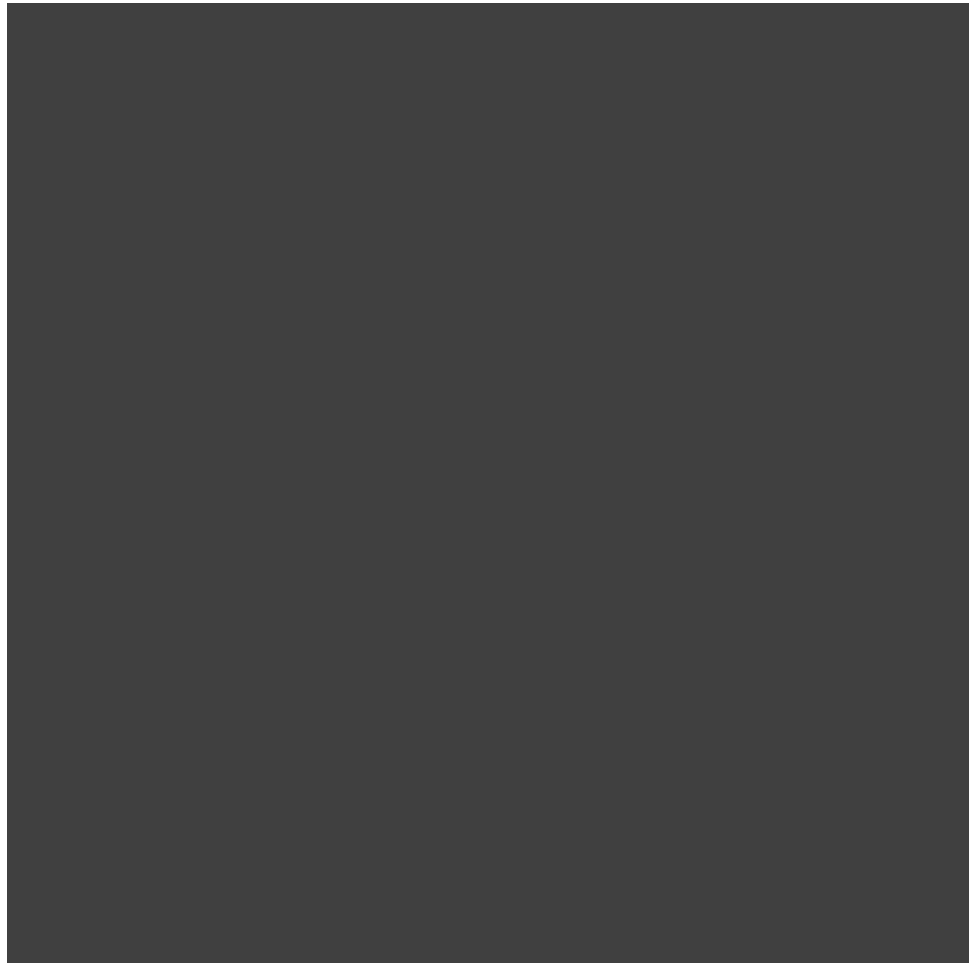
- Hooks

```
$ ls -1 .git/hooks
applypatch-msg.sample
commit-msg.sample
fsmonitor-watchman.sample
post-update.sample
pre-applypatch.sample
pre-commit.sample
prepare-commit-msg.sample
pre-push.sample
pre-rebase.sample
pre-receive.sample
update.sample
```

MindRoad

Avancerad Git

- Git bisect



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Avancerad Git

- Git bisect

```
$ git bisect start
```

MindRoad

Avancerad Git

- Git bisect

```
$ git bisect start
$ git bisect bad
```

MindRoad

Avancerad Git

- Git bisect

```
$ git bisect start
$ git bisect bad
$ git bisect good v0.1
```

MindRoad

Avancerad Git

- Git bisect

```
$ git bisect start
$ git bisect bad
$ git bisect good v0.1
Bisecting: 2 revisions left to test after this
(roughly 1 step)
[7e84fb6d99f7732d55a36656ad567f6977b2e634] Merge
branch 'feature_y' into dev
```

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Avancerad Git

- Git bisect

```
$ git bisect start
$ git bisect bad
$ git bisect good v0.1
Bisecting: 2 revisions left to test after this
(roughly 1 step)
[7e84fb6d99f7732d55a36656ad567f6977b2e634] Merge
branch 'feature_y' into dev

$ git bisect bad|good
```

MindRoad

Avancerad Git

- Git bisect

```
$ git bisect start
$ git bisect bad
$ git bisect good v0.1
Bisecting: 2 revisions left to test after this
(roughly 1 step)
[7e84fb6d99f7732d55a36656ad567f6977b2e634] Merge
branch 'feature_y' into dev

$ git bisect bad|good

4548e32d4028dcfcede8bed70aac13e85e4f34c1 is the
first bad commit
commit 4548e32d4028dcfcede8bed70aac13e85e4f34c1
Author: Daniel Ericsson
<daniel.ericsson@mindroad.se>
Date:   Fri Jan 31 10:17:35 2020 +0100

    Add parser function to parser.py
```

MindRoad

Avancerad Git

- Git bisect
- Git bisect run

```
$ git bisect start
$ git bisect bad
$ git bisect good v0.1
Bisecting: 2 revisions left to test after this
(roughly 1 step)
[7e84fb6d99f7732d55a36656ad567f6977b2e634] Merge
branch 'feature_y' into dev

$ git bisect bad|good

4548e32d4028dcfcede8bed70aac13e85e4f34c1 is the
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Author: Daniel Ericsson
<daniel.ericsson@mindroad.se>
Date:   Fri Jan 31 10:17:35 2020 +0100

    Add parser function to parser.py
```

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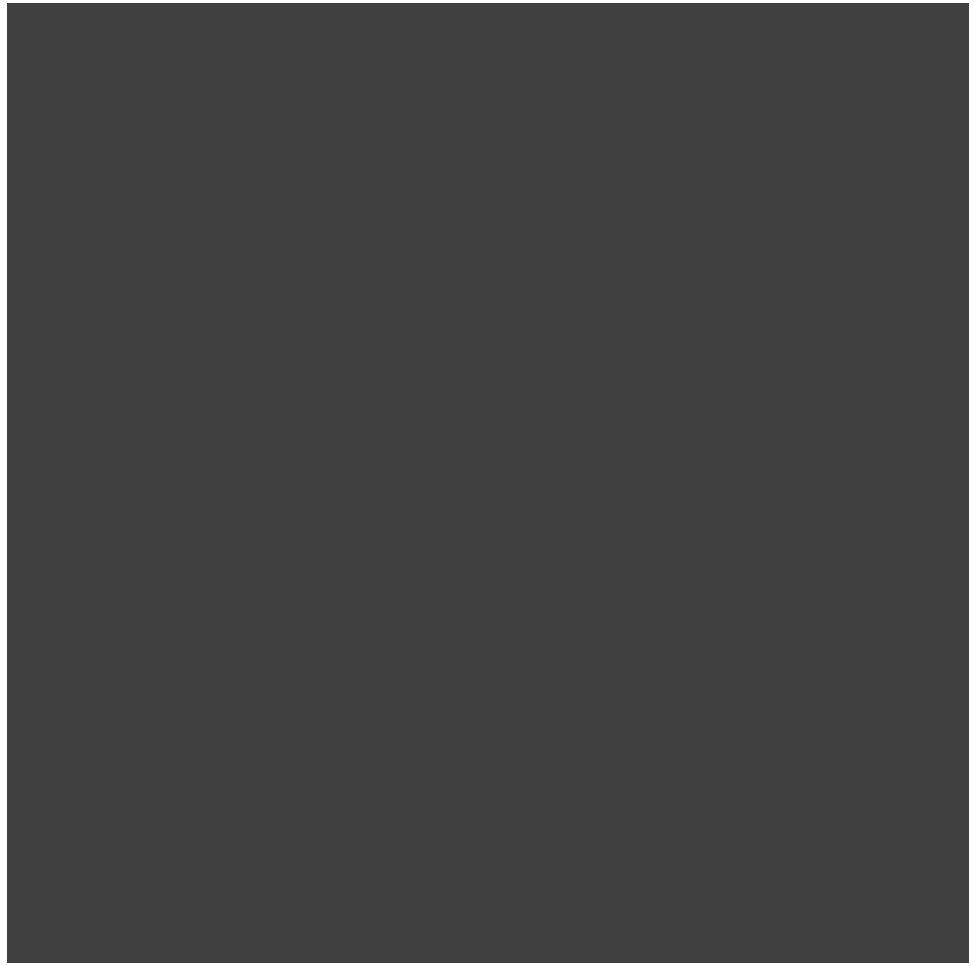
Avancerad Git

- Git submodules



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Avancerad Git

- Git submodules

```
$ git submodule add
https://github.com/tensorflow/tensorflow.git
```

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Avancerad Git

- Git submodules

```
$ git submodule add
https://github.com/tensorflow/tensorflow.git


$ git clone --recurse-submodules
```

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Avancerad Git

- Git status

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Avancerad Git

- Git status
- Git help

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Avancerad Git

- Git status
- Git help
- StackOverflow

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Avancerad Git

- Git status
- Git help
- StackOverflow
- Git <command> --dry-run

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Avancerad Git

- Git status
- Git help
- StackOverflow
- Git <command> --dry-run
- Git reflog

MindRoad

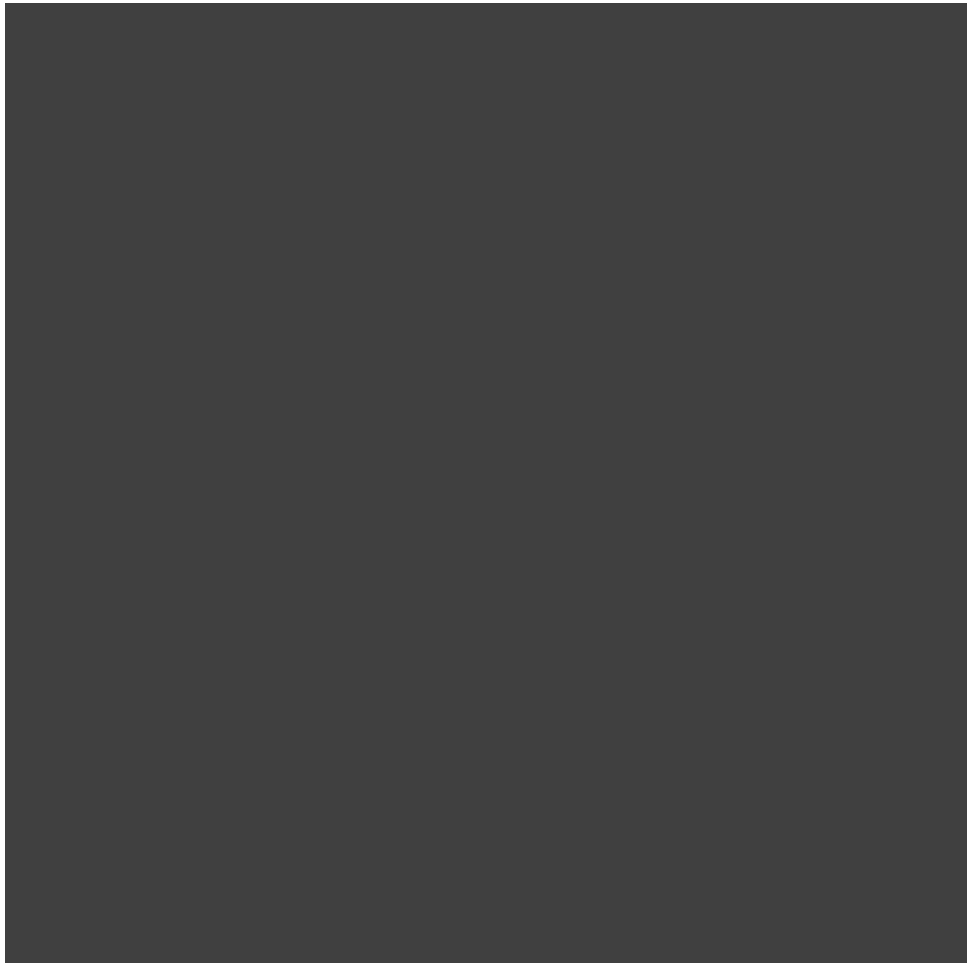
Avancerad Git

- Git status
- Git help
- StackOverflow
- Git <command> --dry-run
- Git reflog
- Git gc / prune

MindRoad

Avancerad Git

- Git push --force



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Avancerad Git

- Git push --force

```
$ git push --force
            Nej.
```

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Avancerad Git

- Git push --force
  - Effektivt sätt att:

```
$ git push --force
            Nej.
```

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Avancerad Git

- Git push --force
  - Effektivt sätt att:
    - skapa fiender

```
$ git push --force
            Nej.
```

MindRoad

Avancerad Git

- Git push --force
  - Effektivt sätt att:
    - skapa fiender
    - bli kallad till krismöte

```
$ git push --force
            Nej.
```

MindRoad

Avancerad Git

- Git push --force
  - Effektivt sätt att:
    - skapa fiender
    - bli kallad till krismöte
    - föra skam över:

```
$ git push --force
            Nej.
```

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Avancerad Git

- Git push --force
  - Effektivt sätt att:
    - skapa fiender
    - bli kallad till krismöte
    - föra skam över:
      - Dig

```
$ git push --force
            Nej.
```

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Avancerad Git

- Git push --force
  - Effektivt sätt att:
    - skapa fiender
    - bli kallad till krismöte
    - föra skam över:
      - Dig
      - Din familj

```
$ git push --force
            Nej.
```

MindRoad

Avancerad Git

- Git push --force
  - Effektivt sätt att:
    - skapa fiender
    - bli kallad till krismöte
    - föra skam över:
      - Dig
      - Din familj
      - Din ko

```
$ git push --force
            Nej.
```

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Avancerad Git

- Git push --force
  - Effektivt sätt att:
    - skapa fiender
    - bli kallad till krismöte
    - föra skam över:
      - Dig
      - Din familj
      - Din ko

MindRoad

MindRoad Academy

MindRoad Embedded

MindRoad Application

MindRoad Syd

MindRoad Sourcing