

✧ NOPIO

Git. Niestandardowe i użyteczne metody dostępu do obiektów

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Hello! 🖐️

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Revisions nomenclature?

✧ NOPIO



A komu to
potrzebne?

  NOPIO


Revisions Nomenclature <rev>

Function
composition

$\langle \text{rev} \rangle^\wedge$

* NOPIO



$\langle \text{rev} \rangle^\wedge$



$\langle \text{rev} \rangle^{\wedge\wedge}$

 *** NOPIO**

Revisions Nomenclature <rev>

* NOPIO

<sha1>

<branch>

HEAD, @

<sha1>

* NOPIO

```
$ git show @
```

```
commit 6346a13003da6506b63523ae7e85f8c46b7e1062
```

```
Merge: ae3f636d7 c6834691d
```

```
Author: Krzysztof Baranski <krzysztof.baranski@nopio.com>
```

```
Date: Thu Jan 3 12:13:45 2019 +0000
```

```
Merge branch 'release/19.1.0'
```


<sha1>

<branch>

HEAD, @

<tag>

<branch>

* NOPIO

**Branches are just movable
pointers!**

* NOPIO

<sha1>

<branch>

HEAD, @

<tag>

<tag>-<number>-g<sha1>

HEAD, @

✧ NOPIO

HEAD is a special branch which points to the current branch.

@ is a shortcut of **HEAD**.

HEAD, @

✧ NOPIO

```
$ git status
On branch master
Your branch is up to date with 'origin/master'.
```

```
Changes to be committed:
```

```
(use "git reset HEAD <file>..." to unstage)
```

```
modified:   app/controllers/application_controller.rb
```

```
$ git reset @
```

```
Unstaged changes after reset:
```

```
M app/controllers/application_controller.rb
```

HEAD, @

✧ NOPIO

```
$ git status
```

HEAD, @

* NOPIO

```
$ git status
On branch feature/1083929
nothing to commit, working tree clean

$
```

HEAD, @

* NOPIO

```
$ git status  
On branch feature/1083929  
nothing to commit, working tree clean
```

```
$ git push origin feature/1083
```

TAB →

HEAD, @

* NOPIO

```
$ git status  
On branch feature/1083929  
nothing to commit, working tree clean
```

```
$ git push origin feature/1083
```

feature/1083862	feature/1083863	feature/1083864
feature/1083865	feature/1083866	feature/1083867
feature/1083868	feature/1083869	feature/1083870
feature/1083871	feature/1083872	feature/1083873
feature/1083874	feature/1083875	feature/1083876
feature/1083877	feature/1083878	feature/1083879
feature/1083880	feature/1083881	feature/1083882



HEAD, @

✧ NOPIO

```
$ git status
On branch feature/1083929
nothing to commit, working tree clean

$ git push origin HEAD
Enumerating objects: 51, done.
Counting objects: 100% (51/51), done.
Delta compression using up to 4 threads
Compressing objects: 100% (29/29), done.
Writing objects: 100% (29/29), 4.28 KiB | 1.07 MiB/s, done.
Total 29 (delta 19), reused 0 (delta 0)
remote:
```



<branch>

HEAD, @

<tag>

<tag>-<number>-g<sha1>

<branch>@{<n>}

* NOPIO

<tag>



```
graph TD; tag["<tag>"] --> Lightweight; tag --> Annotated;
```

Lightweight

like a branch that
doesn't change

Annotated

full checksummed
objects which
point to a commit

* NOPIO

HEAD, @

<tag>

<tag>-<number>-g<sha1>

<branch>@{<n>}

@{<n>}

<tag>-<number>-g<sha1>

git describe output

* NOPIO

<tag>-<number>-g<sha1>

Closest tag ...

* NOPIO

<tag>-<number>-g<sha1>

... optionally followed by a dash and a
number of commits ...

* NOPIO

<tag>-<number>-g<sha1>

... followed by a dash, a **g**, and an abbreviated object name.

<tag>-<number>-g<sha1>

* NOPIO

```
$ git log --oneline test
81f979ad7 (test) Remove newsletters from assets
5955e726a Remove unused privacy policy pages
45baf9265 Remove newsletters from views
a87219658 Remove newsletters from controllers
ff51a7f56 Remove newsletter files part 2
ab0917b82 Remove newsletters from seeds
589d2d339 (tag: 17.18.0) Merge branch 'release/17.18.0'

$
```

<tag>-<number>-g<sha1>

✳ NOPIO

```
$ git log --oneline test
81f979ad7 (test) Remove newsletters from assets
5355e726a Remove unused privacy policy pages
45baf9265 Remove newsletters from views
a87219658 Remove newsletters from controllers
ff51a7f56 Remove newsletter files part 2
ab0917b82 Remove newsletters from seeds
589d2d339 (tag: 17.18.0) Merge branch 'release/17.18.0'

$ git describe test
```

<tag>-<number>-g<sha1>

* NOPIO

```
$ git log --oneline test
81f979ad7 (test) Remove newsletters from assets
5355e726a Remove unused privacy policy pages
45baf9265 Remove newsletters from views
a87219658 Remove newsletters from controllers
ff51a7f56 Remove newsletter files part 2
ab0917b82 Remove newsletters from seeds
589d2d339 (tag: 17.18.0) Merge branch 'release/17.18.0'

$ git describe test
17.18.0-6-g81f979ad7
```

<tag>-<number>-g<sha1>

* NOPIO

```
$ git log --oneline test
81f979ad7 (test) Remove newsletters from assets
5355e726a Remove unused privacy policy pages
45baf9265 Remove newsletters from views
a87219658 Remove newsletters from controllers
ff51a7f56 Remove newsletter files part 2
ab0917b82 Remove newsletters from seeds
589d2d339 (tag: 17.18.0) Merge branch 'release/17.18.0'

$ git describe test
17.18.0-6-g81f979ad7
```

<tag>-<number>-g<sha1>

* NOPIO

```
$ git log --oneline test
81f979ad7 (test) Remove newsletters from assets
5355e726a Remove unused privacy policy pages
45baf9265 Remove newsletters from views
a87219658 Remove newsletters from controllers
ff51a7f56 Remove newsletter files part 2
ab0917b82 Remove newsletters from seeds
589d2d339 (tag: 17.18.0) Merge branch 'release/17.18.0'
```

\$ git describe test
17.18.0-6-g81f979ad7

<tag>-<number>-g<sha1>

* NOPIO

```
$ git log --oneline test
81f979ad7 (test) Remove newsletters from assets
5555e726a Remove unused privacy policy pages
45baf9265 Remove newsletters from views
a87219658 Remove newsletters from controllers
ff51a7f56 Remove newsletter files part 2
ab0917b82 Remove newsletters from seeds
589d2d339 (tag: 17.18.0) Merge branch 'release/17.18.0'
```

```
$ git describe test
17.18.0-6-g81f979ad7
```


<tag>

<tag>-<number>-g<sha1>

<branch>@{<n>}

@{<n>}

<branch>@{<date>}

<branch>@{<n>}

* NOPIO

The <n>-th prior value of
the branch <branch>
(see **git reflog**).

<branch>@{<n>}

* NOPIO

```
$ git reflog HEAD
532877e (HEAD -> feature/123 HEAD@{0}: commit: Test commit
c959609 (origin/feature/123) HEAD@{1}: reset: moving to @
c959609 (origin/feature/123) HEAD@{2}: commit: Commit name
9b3605e HEAD@{3}: commit: Updated application.yml
7ada3b6 (origin/master, origin/HEAD, master) HEAD@{4}:
checkout: moving from master to feature/123
7ada3b6 (origin/master, master) HEAD@{5}: pull: Fast-forward
269b794 HEAD@{6}: checkout: moving from feature/123 to master
649c408 (origin/feature/123, feature/123) HEAD@{7}: commit:
Fixed offenses reported by rubocop
527f356 HEAD@{8}: commit: Fixed importing report
```

* NOPIO

<tag>-<number>-g<sha1>

<branch>@{<n>}

@{<n>}

<branch>@{<date>}

@{-<n>}

@{<n>}

* NOPIO

Like **<branch>@{<n>}** but with the current branch as **<branch>**.

* NOPIO

<branch>@{<n>}

@{<n>}

<branch>@{<date>}

@{<-<n>}

<rev>^<n>

<branch>@{<date>}

*** NOPIO**

The value of the local branch at a prior in time.

<branch>@{<date>}

✧ NOPIO

```
$ git show master@{yesterday}

$ git show "HEAD@{2 days ago}"

$ git show HEAD@{two.days.ago}

$ git reset "master@{2019-01-13 18:49}"

$ git show "HEAD@{last year}"
```


@{<n>}

<branch>@{<date>}

@{-<n>}

<rev>^<n>

<rev>~<n>

@{-<n>}

* NOPIO

<n>-th branch/commit checked out before
the current one.

@{-<n>}

* NOPIO

Unix shell analogy:

@{-<n>}

* NOPIO

```
~/Workspace $
```

@{-<n>}

✧ NOPIO

```
~/Workspace $ cd project1
```

@{-<n>}

✧ NOPIO

```
~/Workspace $ cd project1
```

```
~/Workspace/project1 (master) $
```

@{-<n>}

✧ NOPIO

```
~/Workspace $ cd project1
```

```
~/Workspace/project1 (master) $ cd app
```

@{-<n>}

✧ NOPIO

```
~/Workspace $ cd project1
```

```
~/Workspace/project1 (master) $ cd app
```

```
~/Workspace/project1/app (master) $
```


@{-<n>}

✧ NOPIO

```
~/Workspace $ cd project1
```

```
~/Workspace/project1 (master) $ cd app
```

```
~/Workspace/project1/app (master) $ cd -
```

@{-<n>}

* NOPIO

```
~/Workspace $ cd project1
```

```
~/Workspace/project1 (master) $ cd app
```

```
~/Workspace/project1/app (master) $ cd -
```

```
~/Workspace/project1 (master) $
```

@{-<n>}

✧ NOPIO

```
~/Workspace $ cd project1
```

```
~/Workspace/project1 (master) $ cd app
```

```
~/Workspace/project1/app (master) $ cd -
```

```
~/Workspace/project1 (master) $ cd -
```

@{-<n>}

✧ NOPIO

```
~/Workspace $ cd project1  
  
~/Workspace/project1 (master) $ cd app  
  
~/Workspace/project1/app (master) $ cd -  
  
~/Workspace/project1 (master) $ cd -  
  
~/Workspace/project1/app (master) $
```

@{-<n>}

* NOPIO

Git example:

@{-<n>}

* NOPIO

```
~/Workspace/project1 (master) $
```

@{-<n>}

* NOPIO

```
~/Workspace/project1 (master) $ git checkout production
```

@{-<n>}

✧ NOPIO

```
~/Workspace/project1 (master) $ git checkout production
```

```
~/Workspace/project1 (production) $
```


@{-<n>}

✧ NOPIO

```
~/Workspace/project1 (master) $ git checkout production
```

```
~/Workspace/project1 (production) $ git checkout develop
```

@{-<n>}

✧ NOPIO

```
~/Workspace/project1 (master) $ git checkout production
```

```
~/Workspace/project1 (production) $ git checkout develop
```

```
~/Workspace/project1 (develop) $
```

@{-<n>}

✧ NOPIO

```
~/Workspace/project1 (master) $ git checkout production
```

```
~/Workspace/project1 (production) $ git checkout develop
```

```
~/Workspace/project1 (develop) $ git checkout @{-1}
```

@{-<n>}

✧ NOPIO

```
~/Workspace/project1 (master) $ git checkout production
```

```
~/Workspace/project1 (production) $ git checkout develop
```

```
~/Workspace/project1 (develop) $ git checkout @{-1}
```

```
~/Workspace/project1 (production) $
```

@{-<n>}

✧ NOPIO

```
~/Workspace/project1 (master) $ git checkout production
```

```
~/Workspace/project1 (production) $ git checkout develop
```

```
~/Workspace/project1 (develop) $ git checkout @{-2}
```

@{-<n>}

* NOPIO

```
~/Workspace/project1 (master) $ git checkout production
```

```
~/Workspace/project1 (production) $ git checkout develop
```

```
~/Workspace/project1 (develop) $ git checkout @{-2}
```

```
~/Workspace/project1 (master) $
```

@{-<n>}

* NOPIO

Another useful example:

@{-<n>}

* NOPIO

```
~/Workspace/project1 (feature/1083929) $
```

merge

master

@{-<n>}

* NOPIO

```
~/Workspace/project1 (feature/1083929) $ git checkout master
```

@{-<n>}

✧ NOPIO

```
~/Workspace/project1 (feature/1083929) $ git checkout master
```

```
~/Workspace/project1 (master) $
```

@{-<n>}

✧ NOPIO

```
~/Workspace/project1 (feature/1083929) $ git checkout master  
~/Workspace/project1 (master) $ git merge @{-1}
```



@{-<n>}

* NOPIO

git merge @{-1} = git merge -
git checkout @{-1} = git checkout -

@{-<n>}

✧ NOPIO

```
~/Workspace/project1 (feature/1083929) $ git checkout master
```

```
~/Workspace/project1 (master) $ git merge -
```

@{-<n>}

* NOPIO

```
~/Workspace/project1 (feature/1083929) $ git checkout master
```

```
~/Workspace/project1 (master) $ git merge -
```

```
Updating 7ada3b6..532877e
```

```
Fast-forward
```

```
  app/assets/javascripts/test.js      | 4 ++--
```

```
1 file changed, 2 insertions(+), 2 deletions(-)
```

```
~/Workspace/project1 (master) $
```

@{-<n>}

* NOPIO

```
~/Workspace/project1 (feature/1083929) $ git checkout master
```

```
~/Workspace/project1 (master) $ git merge -
```

```
Updating 7ada3b6..532877e
```

```
Fast-forward
```

```
  app/assets/javascripts/test.js      | 4 ++--  
1 file changed, 2 insertions(+), 2 deletions(-)
```

```
~/Workspace/project1 (master) $ git checkout -
```

@{-<n>}

* NOPIO

```
~/Workspace/project1 (feature/1083929) $ git checkout master
```

```
~/Workspace/project1 (master) $ git merge -
```

```
Updating 7ada3b6..532877e
```

```
Fast-forward
```

```
  app/assets/javascripts/test.js      | 4 ++--  
1 file changed, 2 insertions(+), 2 deletions(-)
```

```
~/Workspace/project1 (master) $ git checkout -
```

```
~/Workspace/project1 (feature/1083929) $
```


<branch>@{<date>}

@{<-<n>}

<rev>^<n>

<rev>~<n>

:/<regex>

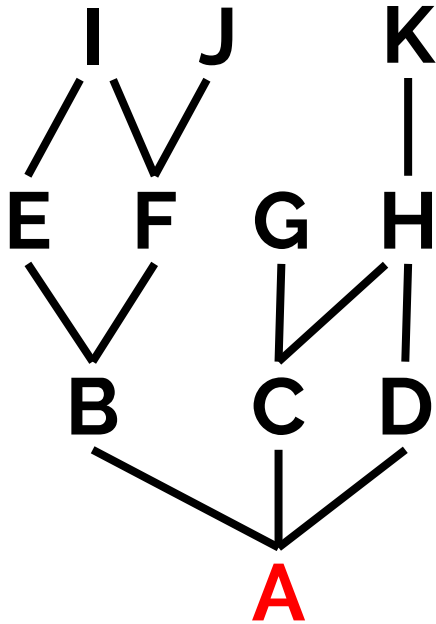
<rev>^{<n>}

*** NOPIO**

<n>-th parent of **<rev>**.
By default **<n>** = 1.

<rev>^<n>

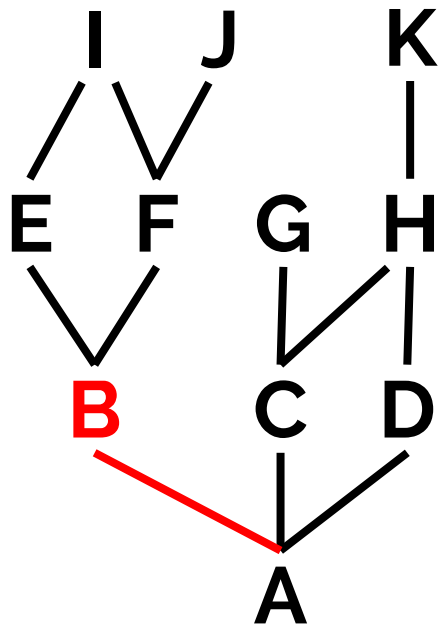
***NOPIO**



A

$\langle \text{rev} \rangle^{\wedge} \langle n \rangle$

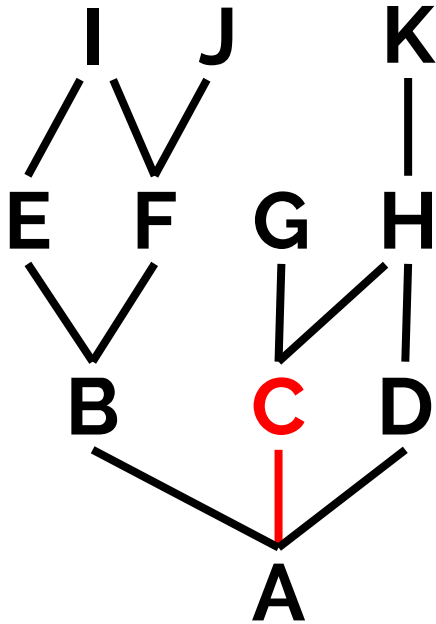
* NOPIO



$$A^{\wedge}1 = A^{\wedge} = B$$

$\langle \text{rev} \rangle^{\wedge} \langle n \rangle$

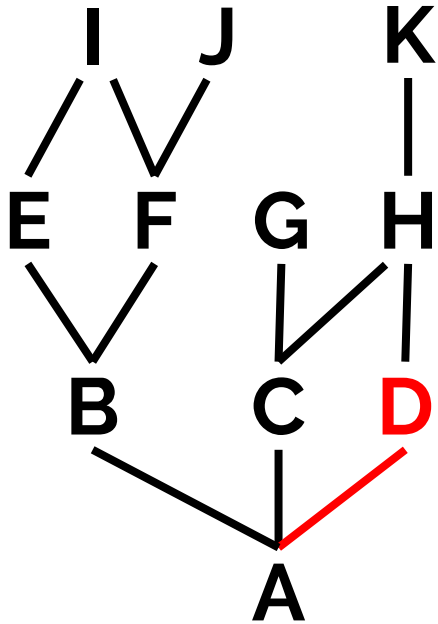
* NOPIO



$$A^{\wedge 2} = C$$

$\langle \text{rev} \rangle^{\wedge} \langle n \rangle$

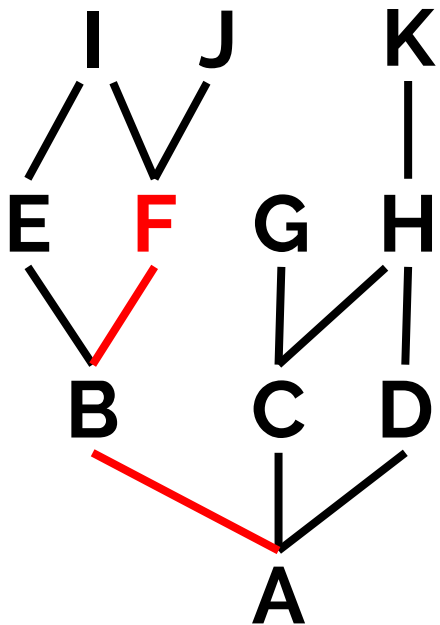
* NOPIO



$$A^{\wedge 3} = D$$

$\langle \text{rev} \rangle^{\wedge} \langle n \rangle$

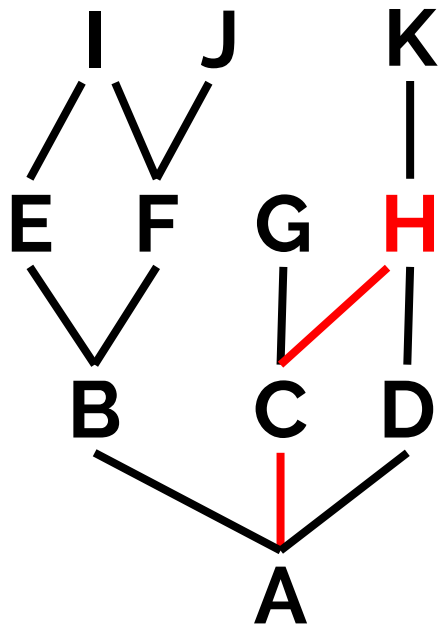
* NOPIO



$$F = A^{\wedge 2} = B^2$$

$\langle \text{rev} \rangle^{\wedge} \langle n \rangle$

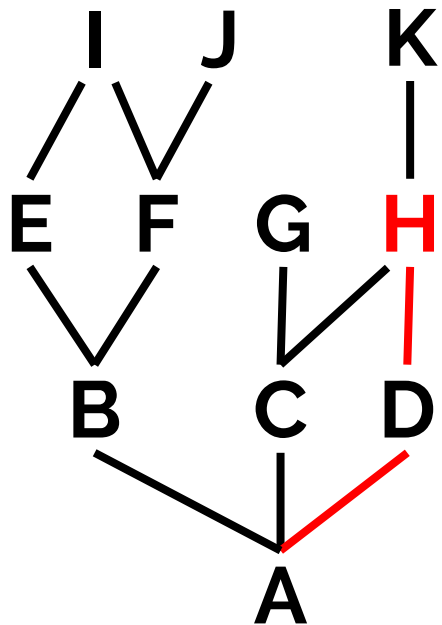
* NOPIO



$$H = A^{2^2}$$

$\langle \text{rev} \rangle^{\wedge} \langle n \rangle$

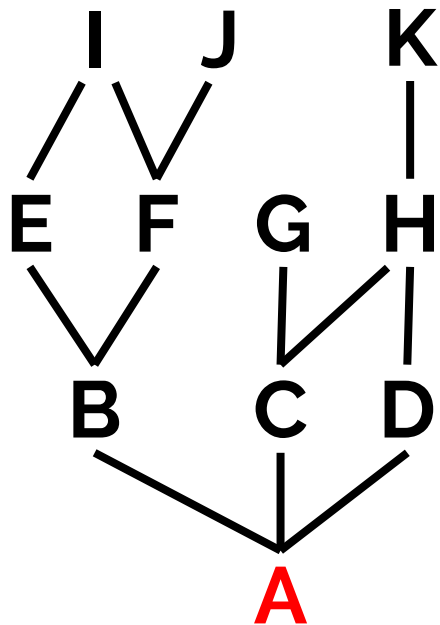
* NOPIO



$$H = A^{\wedge 3^{\wedge}}$$

<rev>^<n>

* NOPIO



A^0

<rev>^0 means the commit itself and is used when **<rev>** is the object name of a tag object that refers to a commit object.

@{-<n>}

<rev>^<n>

<rev>~<n>

:/<regex>

<rev>^{/<regex>}

<rev>~<n>

* NOPIO

```
81f979ad7 (test) Init commit
5355e726a Commit 1
45baf9265 Commit 2
...
a87219658 Commit 19
ff51a7f56 Commit 20
ab0017b02 Commit 21
```

\$

<rev>~<n>

* NOPIO

```
81f979ad7 (test) Init commit
```

```
5355e726a Commit 1
```

```
45baf9265 Commit 2
```

...

```
a87219658 Commit 19
```

```
ff51a7f56 Commit 20
```

```
ab0917b82 Commit 21
```

```
$ git show test^^^^^^^^^^^^^^^^^^
```



<rev>~<n>

* NOPIO

```
81f979ad7 (test) Init commit
```

```
5355e726a Commit 1
```

```
45baf9265 Commit 2
```

...

```
a87219658 Commit 19
```

```
ff51a7f56 Commit 20
```

```
ab0917b82 Commit 21
```

```
$ git show test~20
```



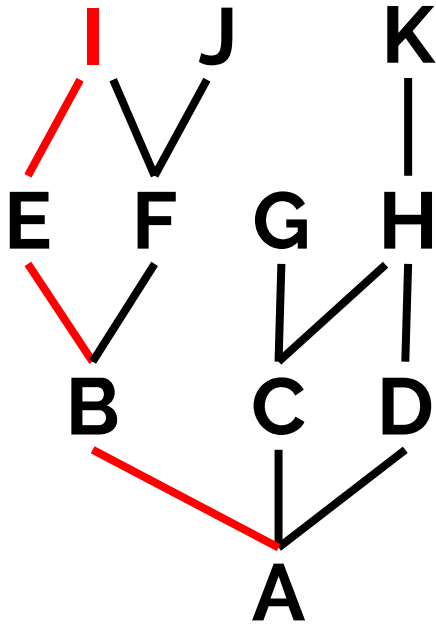
<rev>~<n>

* NOPIO

<n>-th generation ancestor of <rev>
following only the first parents.

<rev>~<n>

* NOPIO



$$\mathbf{I} = \mathbf{A}^{\wedge\wedge\wedge} = \mathbf{A}^{\sim 3}$$

<rev>^<n>

<rev>~<n>

:/<regex>

<rev>^{/<regex>}

:/<regex>

*** NOPIO**

The youngest commit whose message matches the specified regular expression.

:/<regex>

* NOPIO

```
$ git log --oneline master
81f979ad7 (HEAD -> master) Updated secrets.yml
5355e726a Removed privacy policy
45ba50265 Updated storing passwords from hash to plain text
a87219658 Fixed a nasty bug
1151a7150 Fixed tests by removing them
ab0917b82 Hardcoded password 'admin' for admin on prod
589d2d339 (tag: 16.4.19) Merge branch 'release/16.4.19'

$
```

:/<regex>

* NOPIO

```
$ git log --oneline master
81f979ad7 (HEAD -> master) Updated secrets.yml
5355e726a Removed privacy policy
45baf9265 Updated storing passwords from hash to plain text
a87219658 Fixed a nasty bug
ff51a7f56 Fixed tests by removing them
ab0917b82 Hardcoded password 'admin' for admin on prod
589d2d339 (tag: 16.4.19) Merge branch 'release/16.4.19'

$ git show ":/Fixed a nasty bug"
```

:/<regex>

* NOPIO

```
$ git log --oneline master
81f979ad7 (HEAD -> master) Updated secrets.yml
5355e726a Removed privacy policy
45baf9265 Updated storing passwords from hash to plain text
a87219658 Fixed a nasty bug
ff51a7f56 Fixed tests by removing them
ab0917b82 Hardcoded password 'admin' for admin on prod
589d2d339 (tag: 16.4.19) Merge branch 'release/16.4.19'

$ git show ":[Ff]ix.*bugs?"
```

* NOPIO

<rev>~<n>

:/<regex>

<rev>^{/<regex>}

<rev>^{/<regex>}

*** NOPIO**

Like **:/<regex>** but searched among
commits reachable from **<rev>**.

Ranges nomenclature

<rev>

^<rev>

<rev1>..<rev2>

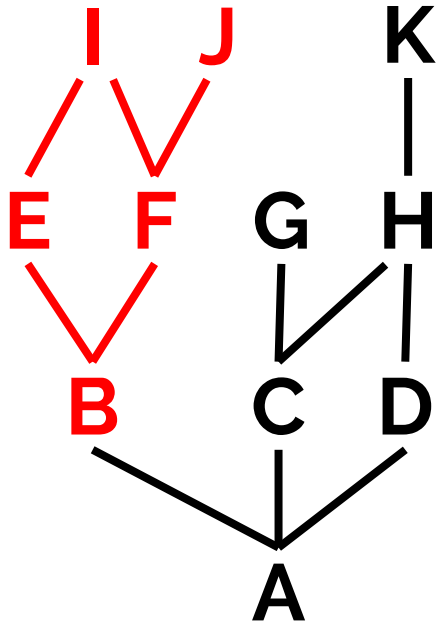
<rev>

* NOPIO

Commits that are reachable from **<rev>**.

<rev>

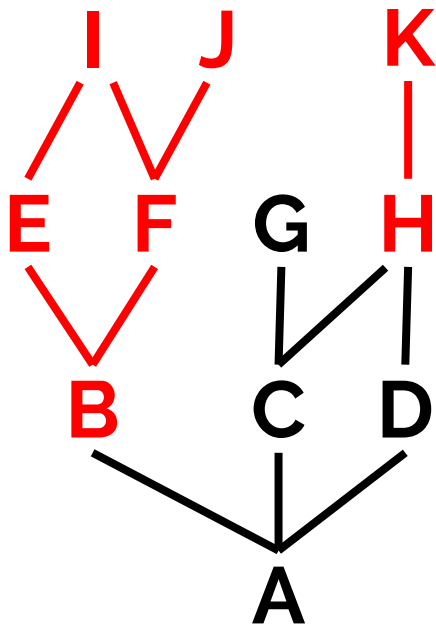
* NOPIO



B

<rev>

* NOPIO



B H

Ranges can be concatenated.

<rev>

^<rev>

<rev1>..<rev2>

<rev1>...<rev2>

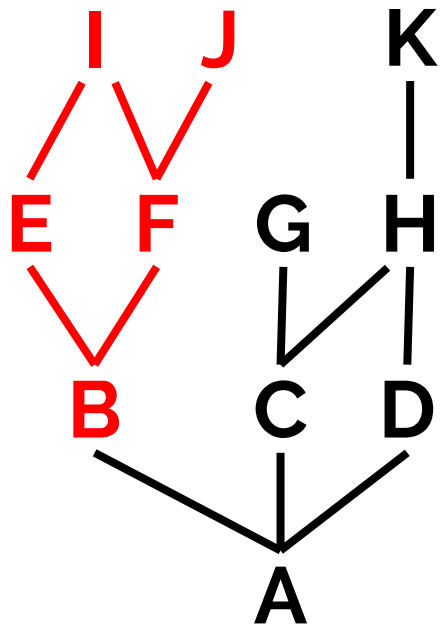
^<rev>

*** NOPIO**

Exclude commits that are reachable
from **<rev>**.

^<rev>

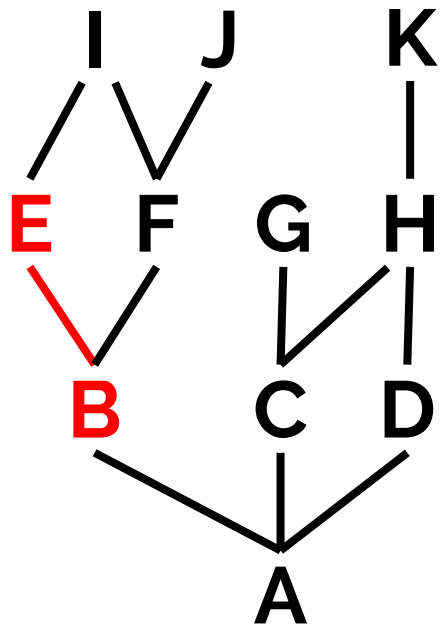
*** NOPIO**



B

\wedge <rev>

* NOPIO



\wedge F B

* NOPIO

<rev>

^<rev>

<rev1>..<rev2>

<rev1>...<rev2>

<rev>^@

<rev1>..**<rev2>**

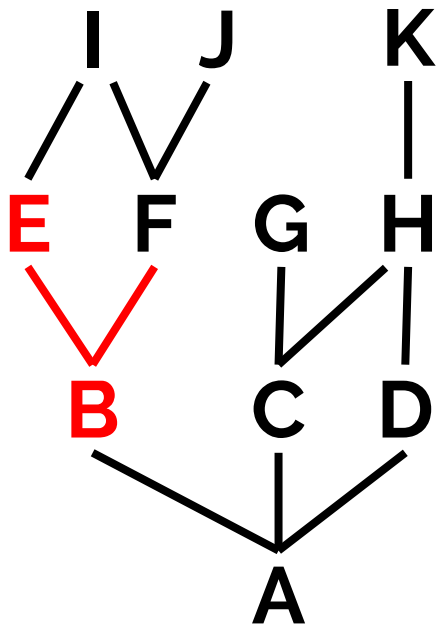
* NOPIO

Commits reachable from **<rev2>** excluding those reachable from **<rev1>**.

<rev1>..<rev2>** = ^<rev1> <rev2>**

<rev1>..<rev2>

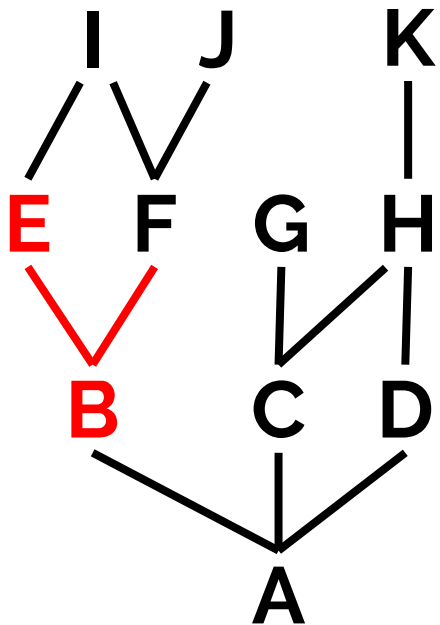
* NOPIO



^F B

<rev1>..<rev2>

* NOPIO



F..B

* NOPIO

^<rev>

<rev1>..<rev2>

<rev1>...<rev2>

<rev>^@

<rev>^!

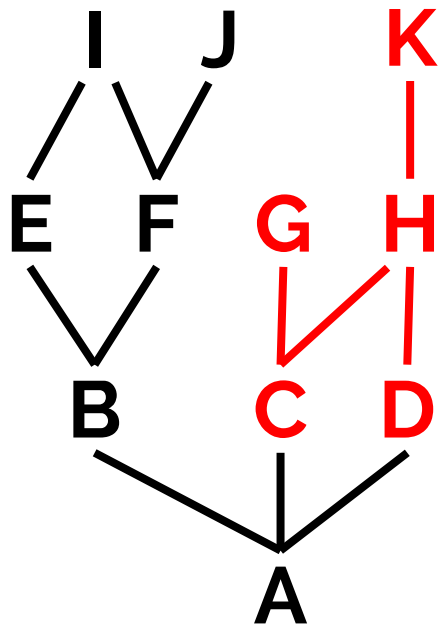
<rev1>...<rev2>

* NOPIO

Commits reachable from
either **<rev1>** or **<rev2>** excluding those
reachable from both.

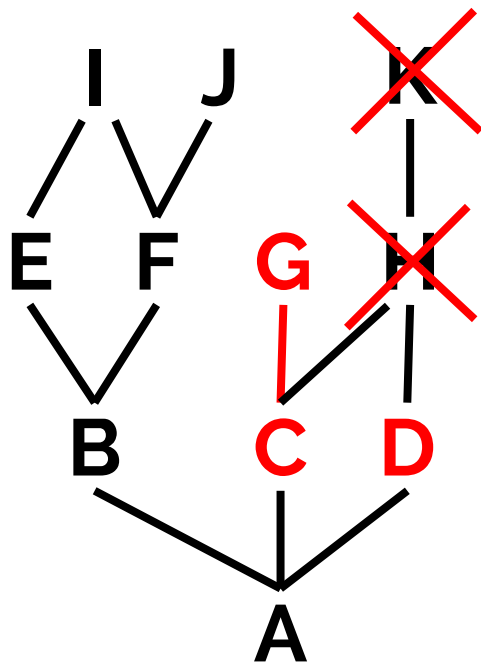
<rev1>...<rev2>

* NOPIO



C D

<rev1>...<rev2>



C...D

* NOPIO

<rev1>..<rev2>

<rev1>...<rev2>

<rev>^@

<rev>^!

<rev>^-<n>

<rev>^@

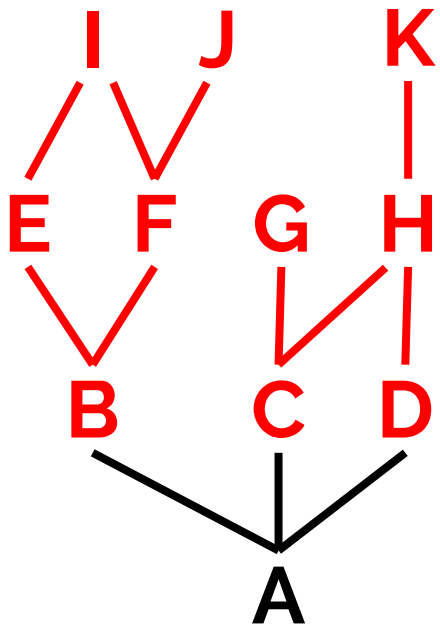
*** NOPIO**

Commits reachable from parents of **<rev>**
excluding **<rev1>** itself.

<rev>^@ = <rev>^1 <rev>^2 ... <rev>^n

<rev>^@

*** NOPIO**



$$A^{\wedge}@ = A^{\wedge}1 \quad A^{\wedge}2 \quad A^{\wedge}3$$

* NOPIO

<rev1>...<rev2>

<rev>^@

<rev>^!

<rev>^-<n>

<rev>^!

* NOPIO

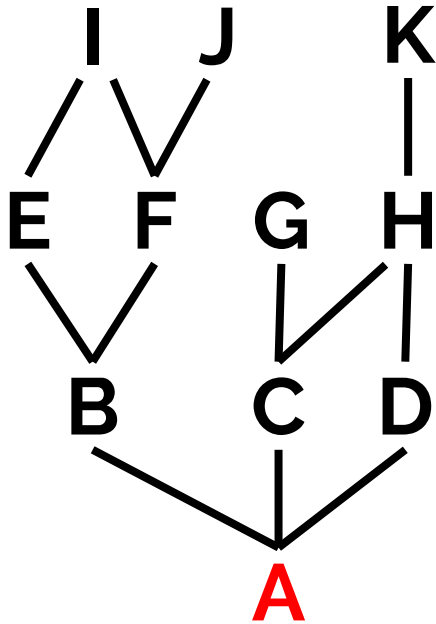
Commits reachable from **<rev>** excluding those reachable from its parents.

It's just **<rev>** itself.

$$\text{<rev>}^! = \text{<rev>} \wedge \text{<rev>}^1 \dots \wedge \text{<rev>}^n$$

<rev>^!

* NOPIO



$A^! =$

$A \wedge A^1 \wedge A^2 \wedge A^3$

* NOPIO

<rev>^@

<rev>^!

<rev>^-<n>

<rev>^-<n>

* NOPIO

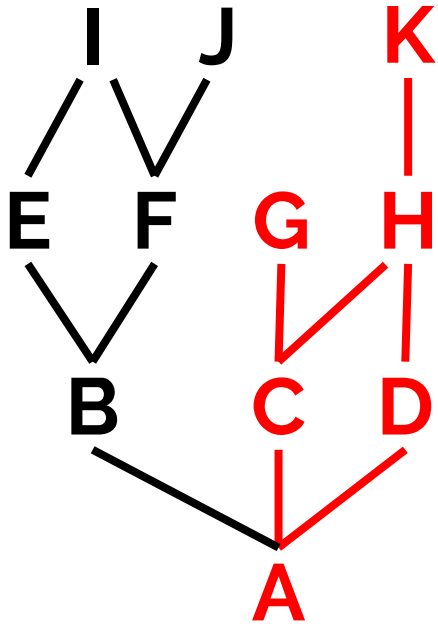
Commits reachable from **<rev>** excluding those reachable from its **<n>**-th parent.

By default **<n>** = 1.

<rev>^-<n> = <rev>^<n>..<rev>****

$\langle \text{rev} \rangle^{\wedge} - \langle n \rangle$

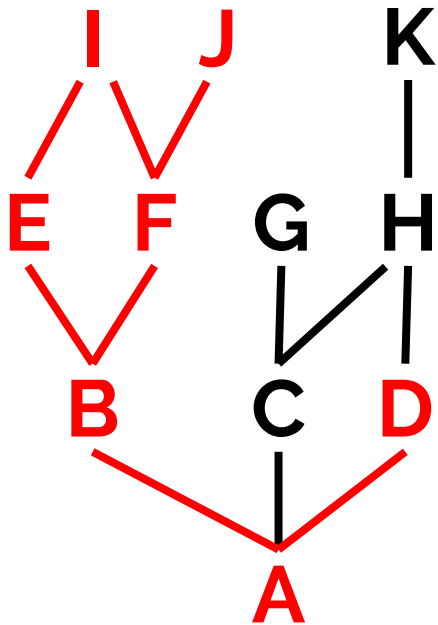
* NOPIO



$$A^{\wedge} - = {}^{\wedge} A^{\wedge} 1 A = A^{\wedge} .. A$$

$\langle \text{rev} \rangle^{\wedge} - \langle n \rangle$

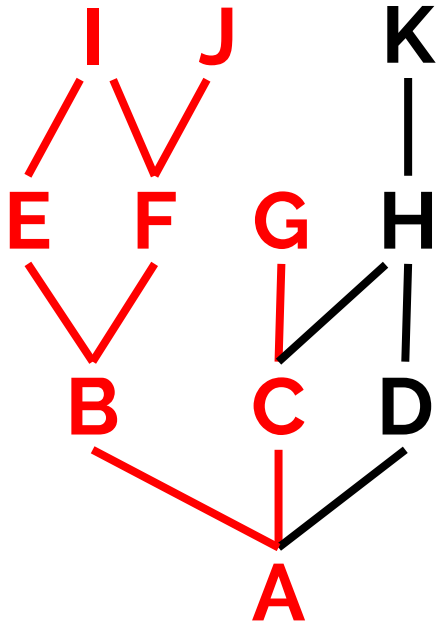
* NOPIO



$$A^{\wedge-2} = {}^{\wedge}A^{\wedge 2} \quad A = A^{\wedge 2}..A$$

$\langle \text{rev} \rangle^{\wedge} - \langle n \rangle$

* NOPIO



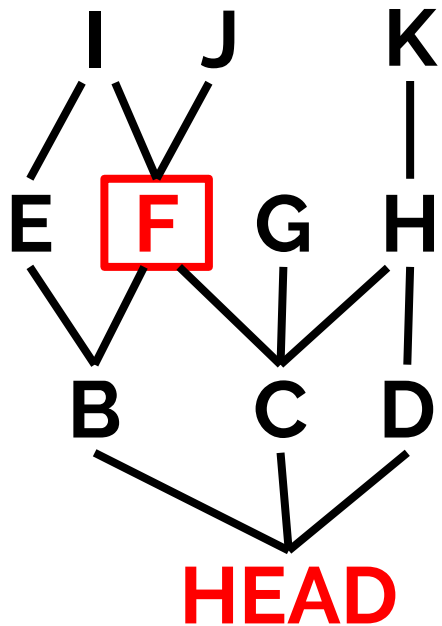
$$A^{\wedge-3} = {}^{\wedge}A^{\wedge 3} \quad A = A^{\wedge 3}..A$$

Questions & Answers



Q&A

* NOPIO



$$F = \dots = \dots = \dots$$

Q&A

* NOPIO

What's the point?



A^!

Q&A

* NOPIO



@^@^2

VS.

@^2^@



Q&A 🙋

Any questions?

You can find me at krzysztof.baranski@nopio.com

More about git revisions

- Git documentation:
<https://git-scm.com/docs/gitrevisions>
- Git book - chapter 7.1:
<https://git-scm.com/book/en/v2/Git-Tools-Revision-Selection>

