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Git

Configuration

How do I configure my full name?

```
$ git config --global user.name "Full Name"
```

How do I configure my email?

```
$ git config --global user.email "full.name@company.com"
```

How do I configure my text editor?

```
$ git config --global core.editor "vim"
```

How do I configure an HTTP(S) proxy?

```
$ git config --global http.proxy 'PROXY-HOSTNAME:PROXY-PORT'
```

Substitute `PROXY-HOSTNAME` with the hostname of the HTTP(S) proxy server, and `PROXY-PORT` with the port of the HTTP(S) proxy server. When using the credential manager on Windows, the proxy must be specified scheme first (e.g. `http://`).

How do I add an alias for a command?

```
$ git config --global alias.<name> '<command>'
```

For example, if you want to type `git co` instead of `git checkout` you would run:

```
$ git config --global alias.co 'checkout'
```

Do you know of any aliases that are useful?

Glad you asked! Please see the [Aliases](#) page.

Cloning

How do I clone a repository?

```
$ git clone <URL>
```

How do I clone using SSH?

Make sure you have [uploaded an SSH key to your GitHub account](#) and then run:

```
$ git clone git@github.com:path/to/repo.git
```

For example, to clone the [jdk](#) repository over SSH:

```
$ git clone git@github.com:openjdk/jdk.git
```

If you don't want to type `git@github.com` every time, add an entry to your [SSH configuration](#).

How should I structure my local clones of repositories?

A common way of structuring local repositories is by following the domain name and path convention. For an example, see below:

```
$ tree
.
├── git
│   ├── github.com
│   │   ├── edvbld
│   │   ├── jdk
│   │   ├── loom
│   │   └── openjdk
│   │       ├── jdk
│   │       ├── loom
│   │       └── valhalla
│   └── hg
│       ├── hg.openjdk.java.net
│       ├── code-tools
│       ├── jtreg
│       ├── jdk
│       └── jdk
```

Can I have multiple local clones of a repository?

Yes, this is supported, supply a second argument to `git clone` stating the directory name of the local repository:

```
$ git clone <URL> <DIRECTORY>
```

Branches

How do I create a local branch?

```
$ git checkout -b <NAME-OF-BRANCH>
```

If you are using Git version 2.24 or newer you can also use the command: `git switch --create <NAME-OF-BRANCH>`

What should I name my local branches?

A common way of structuring your local branches is to name them after the issue they correspond to, for example JDK-8237566.

How do I list local branches?

```
$ git branch
JDK-8237566
* JDK-8149128
JDK-8077146
master
```

The currently checked out branch has an asterisk ("*****") next to it.

How do I visualize branches in a graph?

```
$ git log --format=oneline --graph --all
```

How do I switch to another branch?

```
$ git checkout <NAME-OF-OTHER-BRANCH>
```

If you are using Git version 2.24 or newer you can also use the command: `git switch <NAME-OF-OTHER-BRANCH>`

Can I have different branches checked out in different local clones of the same remote repository?

Yes, this is supported. If you prefer to have one local repository per issue you are working on, then you would have a local repository *and* a local branch per issue you are working on. For example:

```
$ git clone https://github.com/<USERNAME>/jdk JDK-8123456
$ cd JDK-8123456
$ git checkout -b JDK-8123456
```

To create the first local repository representing the work on issue JDK-8123456. To create a second local repository for JDK-8654321, run:

```
$ git clone https://github.com/<USERNAME>/jdk JDK-8654321
$ cd JDK-8654321
$ git checkout -b JDK-8654321
```

How do I push a local branch to a remote repository?

```
$ git push --set-upstream <REPOSITORY> <LOCAL-BRANCH>
```

For example, if the repository you want to push corresponds to the [remote](#) named origin and your local branch is named JDK-8123456, you would run the following command:

```
$ git push --set-upstream origin JDK-8123456
```

If you are using the [Skara CLI tools](#) then and have the branch you want to publish currently checked out, then you can just run the command `git publish`

Commits

How do I make a commit?

First ensure that you have configured your [full name](#), [email](#) and [editor](#). You must then add the files that you want to be part of the commit (*even* files that are already tracked by Git):

```
$ git add path/to/file1 path/to/file/2
```

You can inspect the changes that will be part of the commit by running the following command:

```
$ git diff --staged
```

You can then create the commit by running the following command:

```
$ git commit
```

The above command will open your editor where you will the commit message. If the commit message only is a single line then you can pass it directly to commit command: `git commit -m 'Your commit message'`.

How can I see information about a commit?

```
$ git show <COMMIT>
```

Can I update a commit with more changes?

Yes, but you will be mutating history. If you have already pushed the commit, then other people might depend on the commit you are about to mutate. If you have only pushed the commit to your personal fork and you are not currently collaborating with someone, then it is fine to mutate the history (you yourself are the only one who will be affected). If you have pushed the commit to a project repository, then it is **not** fine to mutate history, since you cause problem for other contributors.

In many cases, for example when working on a pull request, you can just make an additional commit and push it. The Skara [integrate command](#) will squash (collapse) the commits in the pull request into a single commit before integrating it, so the final result will be as if you only had made one commit.

If you still want to mutate history and update the last commit, first add the files you want to add to the commit:

```
$ git add path/to/file1 path/to/file2
```

Then run the following command to amend the HEAD commit:

```
$ git commit --amend --no-edit
```

GitHub

Configuration

How do I setup two-factor authentication (2FA)?

<https://help.github.com/en/github/authenticating-to-github/securing-your-account-with-two-factor-authentication-2fa>

How do I generate a personal access token (PAT)?

Go to <https://github.com/settings/tokens> and click on "Generate new token"

How do I upload an SSH key to my GitHub account?

<https://help.github.com/en/github/authenticating-to-github/adding-a-new-ssh-key-to-your-github-account>

Personal Forks

What is a personal fork?

A personal fork is a copy of another repository with one major difference:

- you can use a pull request to suggest that some changes from your personal fork should be incorporated into the original repository the fork was created from

How do I create a personal fork?

- If you are using a web browser, see <https://help.github.com/en/github/getting-started-with-github/fork-a-repo>
- If you are using [GitHub Desktop](#), see <https://help.github.com/en/desktop/contributing-to-projects/cloning-and-forking-repositories-from-github-desktop>
- If you are using [GitHub CLI](#), see https://cli.github.com/manual/gh_repo_fork
- If you are using the [Skara CLI tools](#), see [CLI Tools#Creatingapersonalfork](#)

How do I sync my personal fork with the original repository it was created from?

Assuming you have a local clone of your personal fork and you are using the [Skara CLI tools](#):

```
$ git sync
```

If you also want to sync your personal fork *and* your local clone of your personal fork and you are using the [Skara CLI tools](#) you can run:

```
$ git sync --fast-forward
```

If you do **not** have the [Skara CLI tools](#) installed and you have a local clone of your personal fork, you need to the following steps:

```
$ git remote add upstream <URL-FOR-ORIGINAL-OPENJDK-REPOSITORY>
$ # for each branch you want to sync
$ git checkout <BRANCH>
$ git pull upstream <BRANCH>
$ git push origin <BRANCH>
```

Pull Requests

What is a pull request?

A *pull request* is a way to suggest that some changes from a [personal fork](#) should be incorporated into the original repository the personal fork was created from. Reviewers can comment upon and need to approve a pull request before it can be integrated. The concept of a pull request is very similar to OpenJDK's concept of "RFR" emails - both are used to suggest changes and offer a way for reviewers to provide feedback on the suggested changes.

How do I create a pull request?

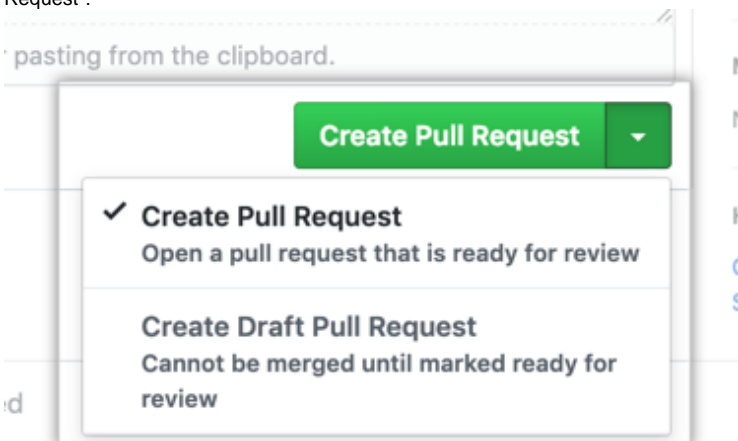
- If you are using a web browser, see <https://help.github.com/en/github/collaborating-with-issues-and-pull-requests/creating-a-pull-request>
- If you are using [GitHub Desktop](#), see <https://help.github.com/en/desktop/contributing-to-projects/creating-a-pull-request>
- If you are using [GitHub CLI](#), see https://cli.github.com/manual/gh_pr_create
- If you are using the [Skara CLI tools](#), see [CLI Tools#Creatingapullrequest](#)

What is a draft pull request?

A *draft* pull request is a pull request that is not yet ready for review. Draft pull requests are primarily used to share work in a early stage or run additional testing before declaring the pull request ready.

How do I create a draft pull request?

- If you are using a web browser, click the downwards pointing arrow on the green "Create Pull Request" button and choose "Create Draft Pull Request":



- If you are using [GitHub CLI](#), provide the `--draft` flag to `gh pr create`.
- If you are using the [Skara CLI tools](#), provide the `--draft` to flag to `git pr create`.

How do I transition a pull request from draft to ready for review?

- If you are using a web browser, see <https://help.github.com/en/github/collaborating-with-issues-and-pull-requests/changing-the-stage-of-a-pull-request>
- If you are using the [Skara CLI tools](#), run `git pr set --no-draft`.

How do I change the title of a pull request?

- If you are using a web browser, click the "Edit" button to the right of pull request's title:



- If you are using the [Skara CLI tools](#), run `git pr set --title='New title'`.

What is the pull request body?

The body, or description, of a pull request is the initial comment in the pull request. Can be compared to the body of the initial "RFR" email.

How do I change the body of a pull request?

- If you are using a web browser, press the three little dots in the top-right corner of the initial comment and select "Edit":

Add out-of-the-box support for IntelliJ IDEA #489

The screenshot shows a GitHub pull request comment by user 'edvblid'. The comment text is: "Hi all, please review this PR that adds 'out of the box' support for IntelliJ IDEA for Skara. The changes primarily consists of:

- IntelliJ IDEA configuration files
- Re-working the build system to support one JRE for running Gradle for building and testing Skara

 A context menu is open over the comment, showing options: Copy link, Quote reply, Edit (highlighted), and Report content. The right sidebar shows reviewers, assignees, and labels.

- If you are using the [Skara CLI tools](#), run `git pr set --body`.

Repositories

Can Committers for a project push directly to the project repository?

This depends on the project - some projects (typically those in a prototype phase) give project Committers direct push access, but most opt to use pull requests for contributions.

Should JDK Committers push directly to the `openjdk/jdk-sandbox` repository?

Yes, [JDK Committers \(and above\)](#) are allowed to push directly to the `openjdk/jdk-sandbox` repository. See the [documentation](#) for the how to name your branches to avoid conflicting with other Committers' branches.

SSH

Keys

How do I generate a private and public SSH key to use with GitHub?

```
$ ssh-keygen -t ed25519 -C github -f filename/for/the/private/key
```

The public key will be stored next to the private key and have the same as the private key but will have the suffix `.pub`.

Note: pick a strong password for your key. You will *not* have to type your password every time you want to use your SSH key if you use the SSH agent.

How do I add an SSH key to my GitHub account?

<https://help.github.com/en/github/authenticating-to-github/adding-a-new-ssh-key-to-your-github-account>

How do I get around having to type my password every time I want to use my SSH key?

You use the [ssh-agent](#). An ssh-agent should already be running if you are using GNU/Linux, macOS or Windows 10 (since version 1803). To add a key to the ssh-agent, run `ssh-add`:

```
$ ssh-add /path/to/the/private/key
```

If you want the key to exist in the `ssh-agent` only for a limited time, use the `-t` (for timeout) option:

```
$ ssh-add -t SECONDS /path/to/the/private/key
```

How do I list keys added to the ssh-agent?

```
$ ssh-add -l
```

How do I remove a key I added to the ssh-agent?

```
$ ssh-add -d /path/to/public/key
```

Note: if the only difference in filenames between the private key and the public key is that the public key ends in `.pub`, then you can use the path to private key in the above command as well.

Configuration

GitHub SSH URLs are cumbersome to type, can I make them shorter?

Yes, by adding a host alias for github.com in your SSH configuration file `~/.ssh/config` (C:\Program Files\Git\etc\ssh\ssh_config on Windows). Add the following lines to the SSH configuration file:

```
Host github.com github gh
User git
Port 22
Hostname github.com
```

You can now clone from GitHub using the aliases listed after `Host`:

```
$ git clone github.com:openjdk/jdk
$ git clone github:openjdk/jdk
$ git clone gh:openjdk/jdk
```

My computer is behind an HTTP(S) proxy, can I still clone using SSH?

Yes, by adding a `ProxyCommand` directive in your SSH configuration file `~/.ssh/config` (C:\Program Files\Git\etc\ssh\ssh_config on Windows). The value for `ProxyCommand` is operating system dependent, since different programs are available on different operating systems. Please follow the instructions specific for your operating system below:

GNU/Linux

Add the following lines to `~/.ssh/config`:

```
Host github.com github gh
User git
Port 22
Hostname github.com
ProxyCommand nc -X connect --proxy PROXY-HOSTNAME:PROXY-PORT %h %p
```

Substitute `PROXY-HOSTNAME` with the hostname of the HTTP(S) proxy server, and `PROXY-PORT` with the port of the HTTP(S) proxy server.

macOS

Add the following lines to `~/.ssh/config`:

```
Host github.com github gh
User git
Port 22
Hostname github.com
ProxyCommand /usr/bin/nc -X connect -x PROXY-HOSTNAME:PROXY-PORT %h %p
```

Substitute `PROXY-HOSTNAME` with the hostname of the HTTP(S) proxy server, and `PROXY-PORT` with the port of the HTTP(S) proxy server. Note that the full path to `nc` must be used since [Homebrew](#) might install the GNU version of `nc` (which does not support the `-x` flag).

Windows

Add the following lines to `C:\Program Files\Git\etc\ssh\ssh_config`:

```
Host github.com github gh
User git
Port 22
Hostname github.com
ProxyCommand C:\Program Files\Git\mingw64\bin\connect.exe -H PROXY-HOSTNAME:PROXY-HOST %h %p
```


Substitute `PROXY-HOSTNAME` with the hostname of the HTTP(S) proxy server, and `PROXY-PORT` with the port of the HTTP(S) proxy server. Note that the program `connect.exe` is part of [Git for Windows](#), if you install Git via some other mechanism then you might have to install `connect.exe` yourself.

Shell

Bash

Can I see the currently checked out local branch in my prompt?

Yes, add the following to your `~/.bashrc`:

```
git_branch() {
  BRANCH="$(git symbolic-ref --short HEAD 2>/dev/null)"
  if [ "${BRANCH}" != "" ]; then
    printf " (%{BRANCH}) "
  else
    printf ""
  fi
}
PS1="${PS1}\$(git_branch) "
```

For more information on how to customize your Bash prompt, see the [Arch Linux wiki](#) for a good reference. For more Git information in your prompt, see [contrib/completion/git-prompt.sh](#).

Can I get auto-completion for git commands?

Yes, on all of GNU/Linux, macOS and Windows this is provided out of the box when you [install Git](#). If you want to install auto-completion manually, run the following commands:

```
$ curl -o ~/.git-completion.bash https://raw.githubusercontent.com/git/git/master/contrib/completion/git-completion.bash
$ echo 'source $HOME/.git-completion.bash' >> ~/.bashrc
```

Zsh

Can I see the currently checked out local branch in my prompt?

Yes, add the following to your `~/.zshrc`:

```
autoload -Uz vcs_info
precmd_vcs_info() { vcs_info }
precmd_functions+=( precmd_vcs_info )
setopt prompt_subst
PROMPT="%PROMPT%\$vcs_info_msg_0_"
zstyle ':vcs_info:git:*' formats ' (%b) '
zstyle ':vcs_info:*' enable git
```

For more information, see the [Pro Git book on Zsh](#).

Can I get auto-completion for git commands?

Yes, Zsh ships with auto-completion for Git out of the box. Enable auto-completion by adding the following line to `~/.zshrc`:

```
$ echo 'autoload -Uz compinit && compinit' >> ~/.zshrc
```

Editor

Emacs

Can I get Git information in Emacs?

Yes, see the package [Magit](#).

Can I interact with GitHub from Emacs?

Yes, see the package [Forge](#).

Vim

Can I get Git information in Vim?

Yes, see the plugin [vim-fugitive](#). If you want to see the files that have been changed compared to HEAD in the "gutter" (sign column), see [vim-gitgutter](#).

Can I interact with GitHub from Vim?

No.

Visual Studio Code

Can I get Git information in Visual Studio Code?

Yes, Visual Studio code has built-in support for Git. For details, see the Visual Studio Code [documentation](#).

Can I interact with GitHub from Visual Studio Code?

Yes, see the plugin [GitHub Pull Requests and Issues](#).