



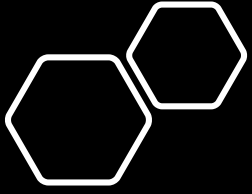
Version Control

Definitions

- Version Control
 - A system responsible for managing changes to computer program, documents, web sites or other collections of information.
- Git
 - A popular distributed version control system. Created by Linus Torvalds
- GitHub
 - A hosting provider for git. Also provides additional features such as access control, bug/issue tracking, pull request, feature request, task management, wiki and more...

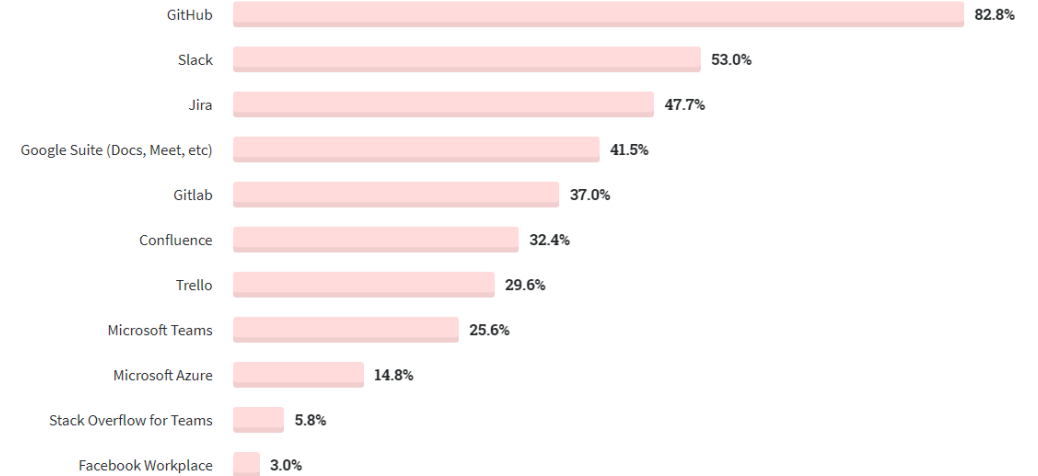
Why use version control?

- Collaboration
 - Working on conflicting changes in parallel
- History
- Backup

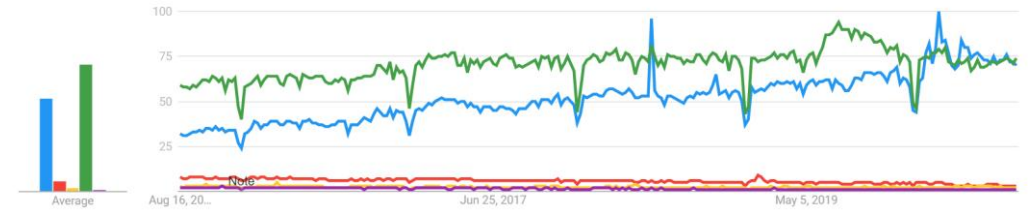


Why Git and GitHub?

- De facto tools
- Most popular collaboration tools according to 60000 stack overflow users

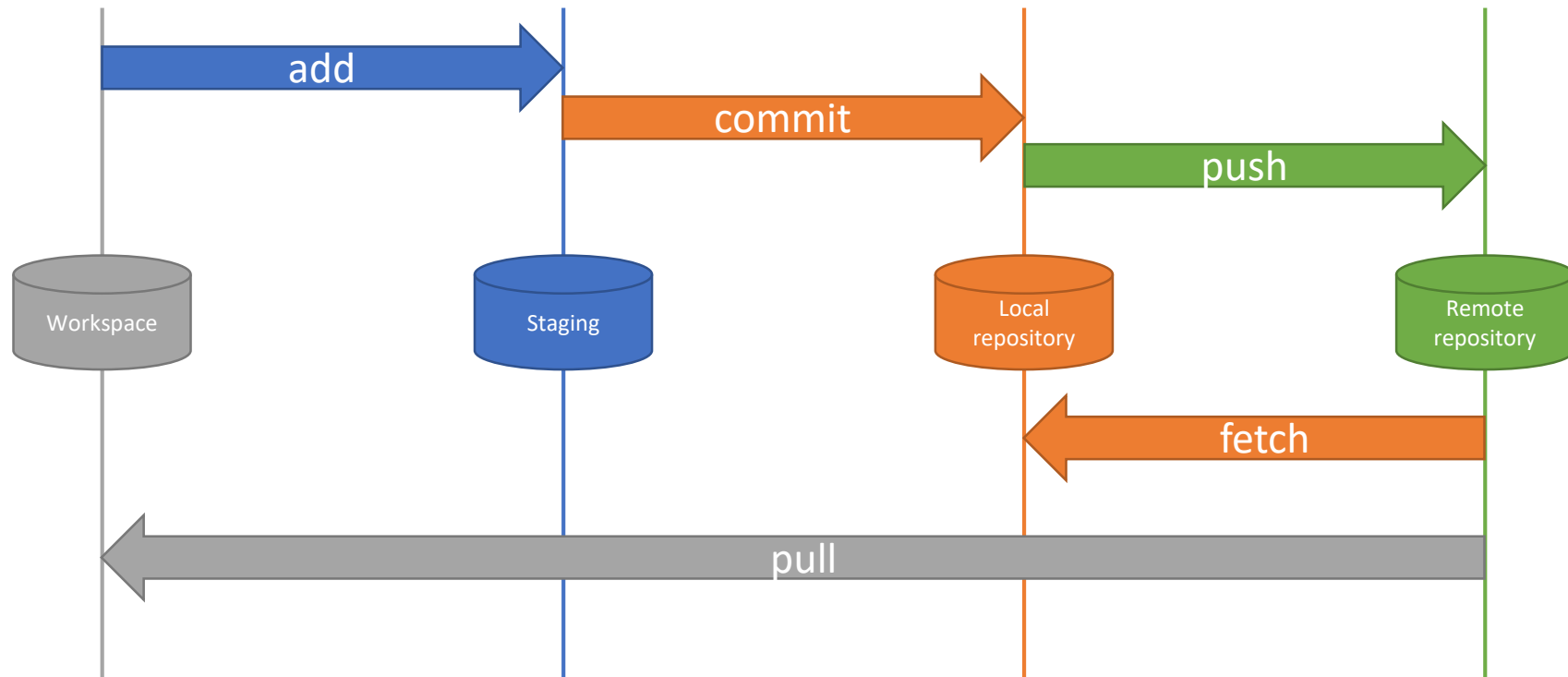


Stack overflow developer survey 2020:
Collaboration tools



Google trends

Overview



Getting started (manually)

- Create a repo
- Clone the repo `git clone https://github.com/<user>/<repo>.git`
- Create a initial commit `git commit -m <message>`
- Push to server `git push`
- Create some branches `git branch <name> | git checkout <name> | git push origin -u <name>`
- Merge some branches `git merge <name>`

Merge conflict

- How to resolve?

Different tools

```
Administrator: Command Prompt
C:\WINDOWS\system32\git
usage: git [--version] [--help] [-c <path>] [-c <name>=<value>]
      [--exec-path<path>] [--html-path] [--man-path] [--info-path]
      [-p | --paginate | -P | --no-pager] [--no-replace-objects] [--bare]
      [--git-dir<path>] [--work-tree<path>] [--namespace<name>]
      <command> [<args>]

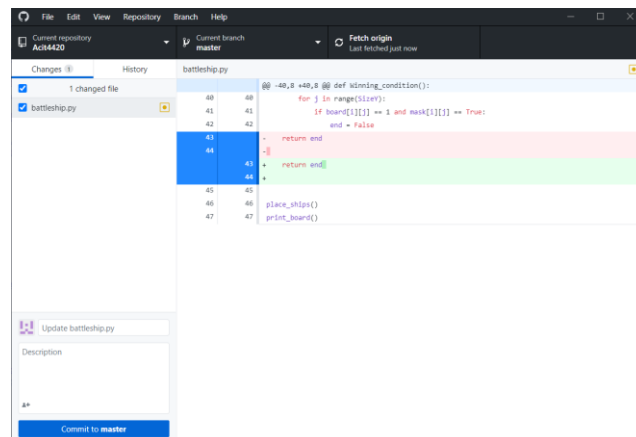
These are common Git commands used in various situations:

start a working area (see also: git help tutorial)
  clone Clone a repository into a new directory
  init Create an empty Git repository or reinitialize an existing one

work on the current change (see also: git help everyday)
  add Add file contents to the index
  mv Move or rename a file, a directory, or a symlink
  restore Restore working tree files
  rm Remove files from the working tree and from the index
  sparse-checkout Initialize and modify the sparse-checkout

examine the history and state (see also: git help revisions)
  bisect Use binary search to find the commit that introduced a bug
  diff Show changes between commits, commit and working tree, etc
  grep Print lines matching a pattern
  log Show commit logs
  show Show various types of objects
  status Show the working tree status

grow, mark and tweak your common history
  branch List, create, or delete branches
```



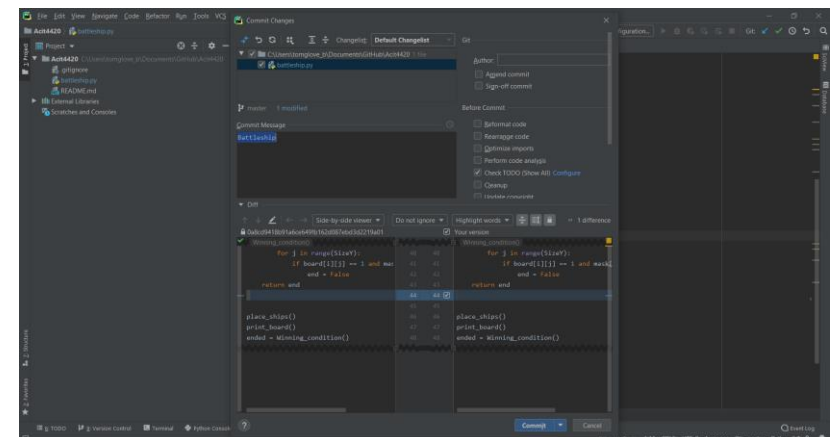
```
posh-git ~ Acit4420 [master]
on your username and hostname. Please check that they are accurate.
You can suppress this message by setting them explicitly. Run the
following command and follow the instructions in your editor to edit
your configuration file:

  git config --global --edit

After doing this, you may fix the identity used for this commit with:

  git commit --amend --reset-author

1 file changed, 1 insertion(+), 1 deletion(-)
C:\Users\tomglove_b\Documents\GitHub\Acit4420 [master T1]:
C:\Users\tomglove_b\Documents\GitHub\Acit4420 [master T1 +0 -1 -0 |]:
C:\Users\tomglove_b\Documents\GitHub\Acit4420 [master T1 +0 -1 -0 |]:
C:\Users\tomglove_b\Documents\GitHub\Acit4420 [master T1 +0 -1 -0 |]:
C:\Users\tomglove_b\Documents\GitHub\Acit4420 [master T1 +0 -1 -0 |]: git push
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 12 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 277 bytes | 277.00 KiB/s, done.
Total 3 (delta 2), reused 0 (delta 0)
remote: Resolving deltas: 100% (2/2), completed with 2 local objects.
To https://github.com/ethol/Acit4420.git
   00eb6ba..0a8cd94 master -> master
C:\Users\tomglove_b\Documents\GitHub\Acit4420 [master +0 -1 -0 |]:
```



Flashback to earlier

- Public/Private
- README.md
- .gitignore
- Licence?
- Head
- Origin

Some extra concepts in git

- Stash
- Blame
- Rebase
- Revert
- Force
- Hooks

Some extra concepts around git

- Pull request
- Code review
- Feature branching
- Continuous integration
- Continuous delivery / Continuous deployment
- Tests