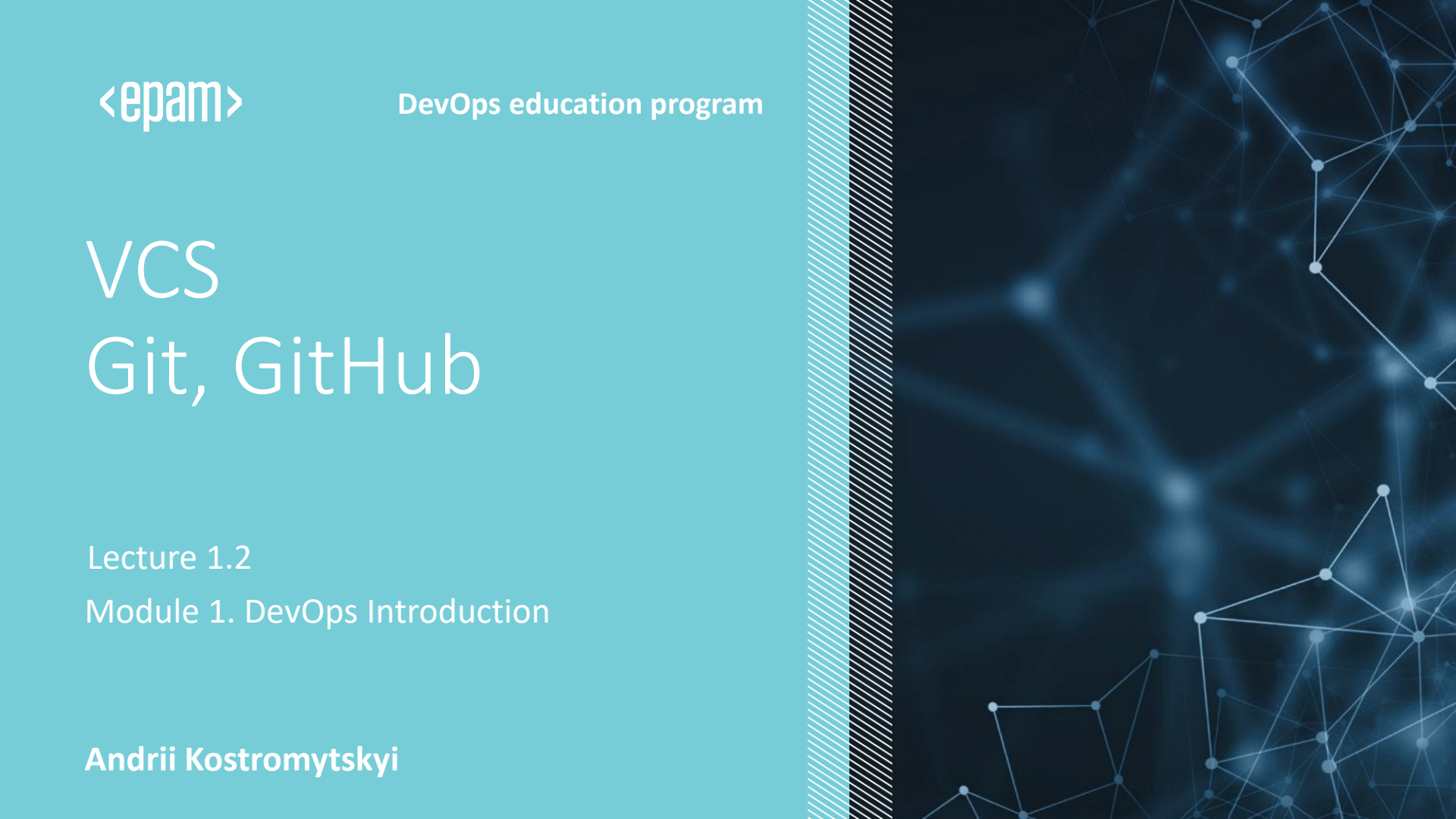

epam
DevOps education program
VCS
Git, GitHub
Lecture 1.2
Module 1. DevOps Introduction
Andrii Kostromytskyi

Agenda

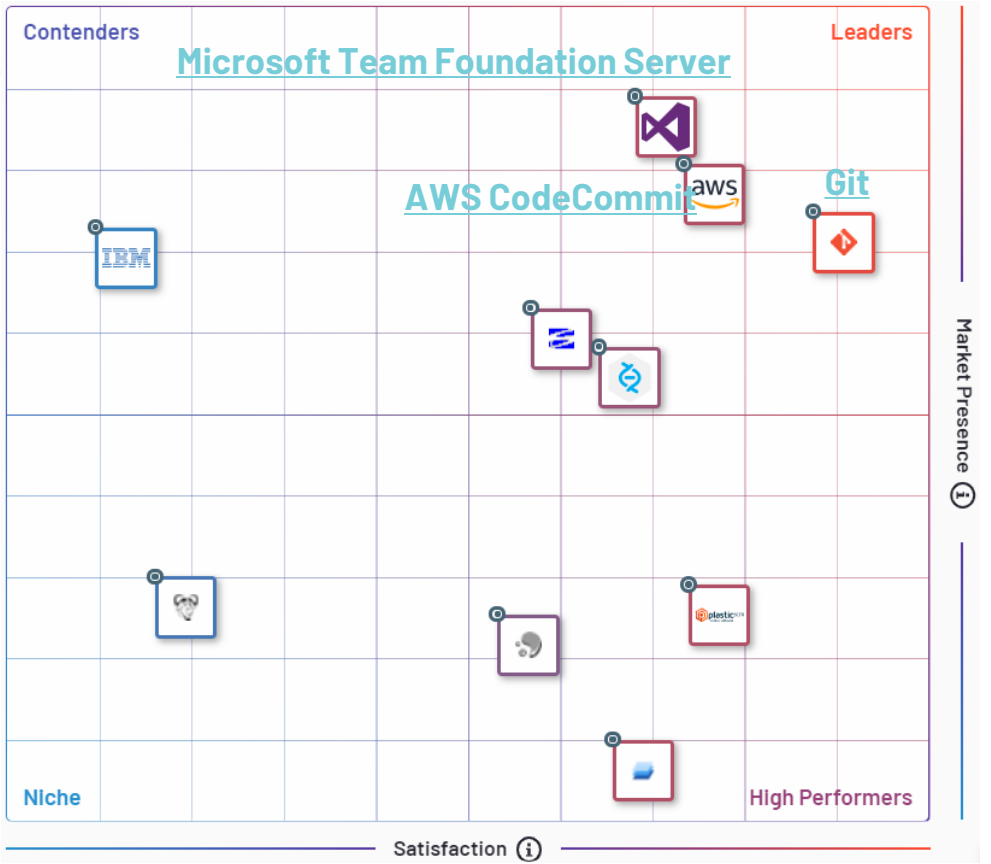
- What is a VCS. VCS types
- Installing and configuring git
- Basic commands overview
- Basic workflows
- Git hosting services
- Markdown language
- Q&A

What's a VCS?

Version control is a system that records changes to a set of files over time so that you can recall specific versions later

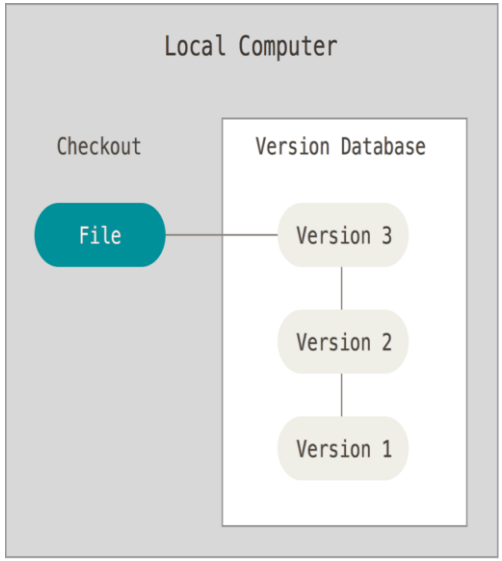
Also usually it is used for

- Collaboration
- CI/CD interactions
- Analysis
- Backups and release management

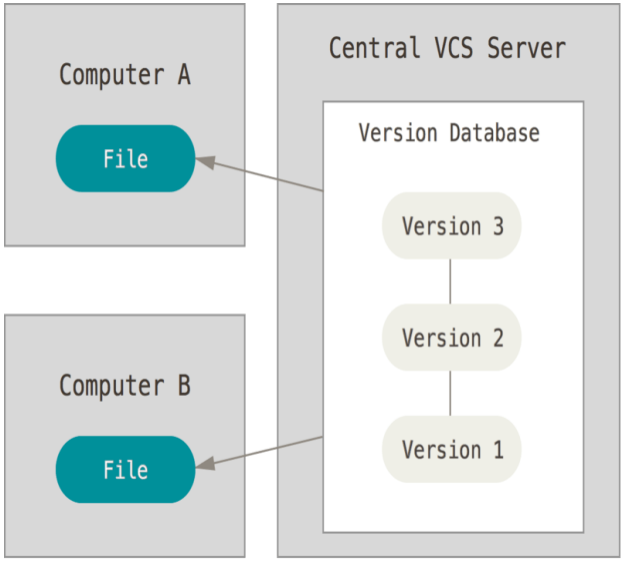


VCS types

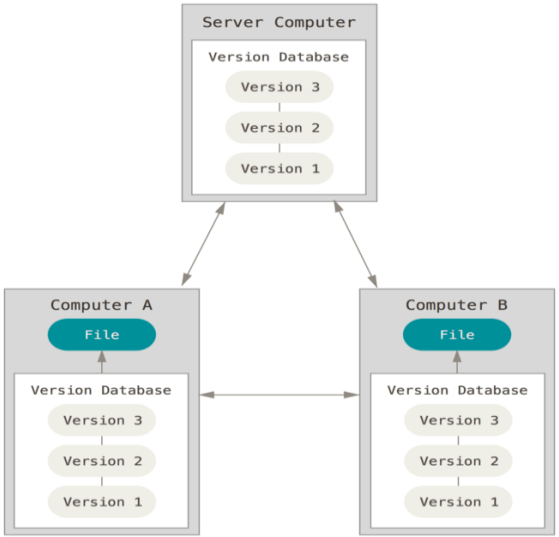
Local version control



Centralized version control



Distributed version control



Installing and configuring Git

Linux

- Via binary installer:

```
$ sudo yum install git-all
```

- If you're on a Debian-based distribution like Ubuntu, try:

```
$ sudo apt-get install git-all
```

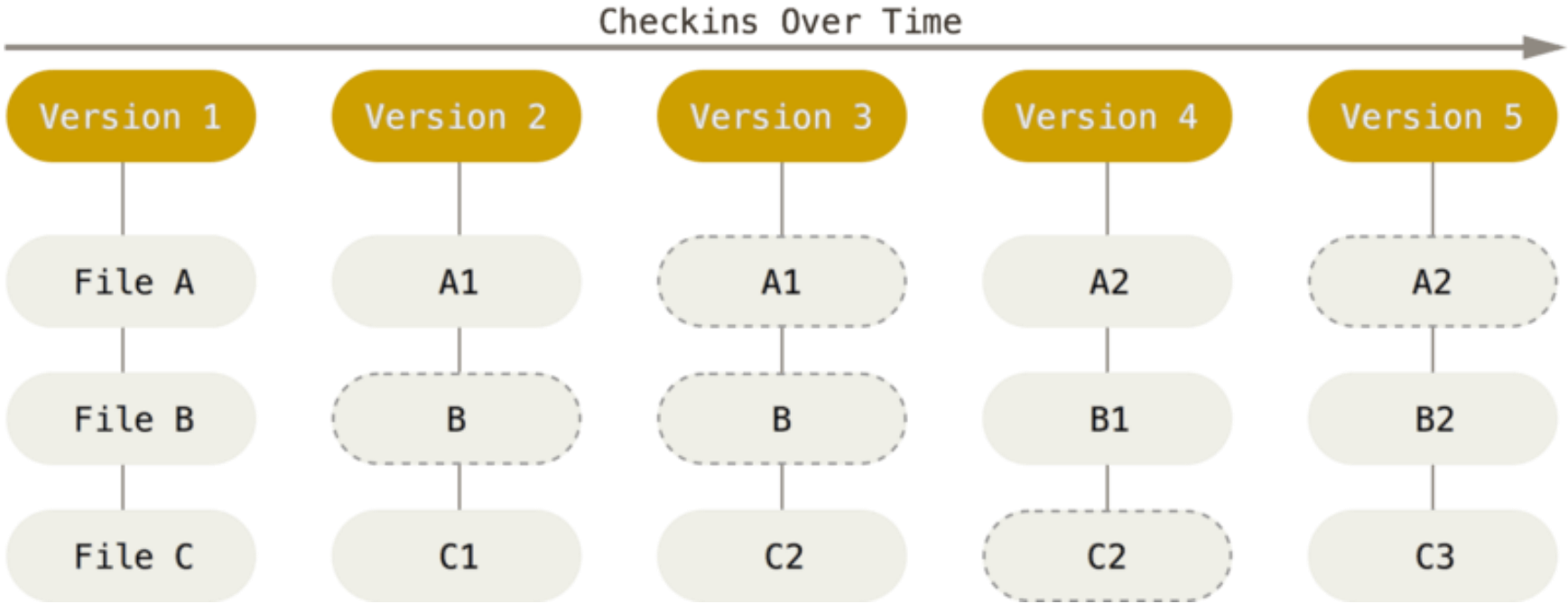
Windows

http://git-scm.com/download/win

```
$ git config --global user.name "John Doe"
$ git config --global user.email johndoe@example.com

$ git help <verb>
$ git <verb> --help
$ git <verb> -h
```

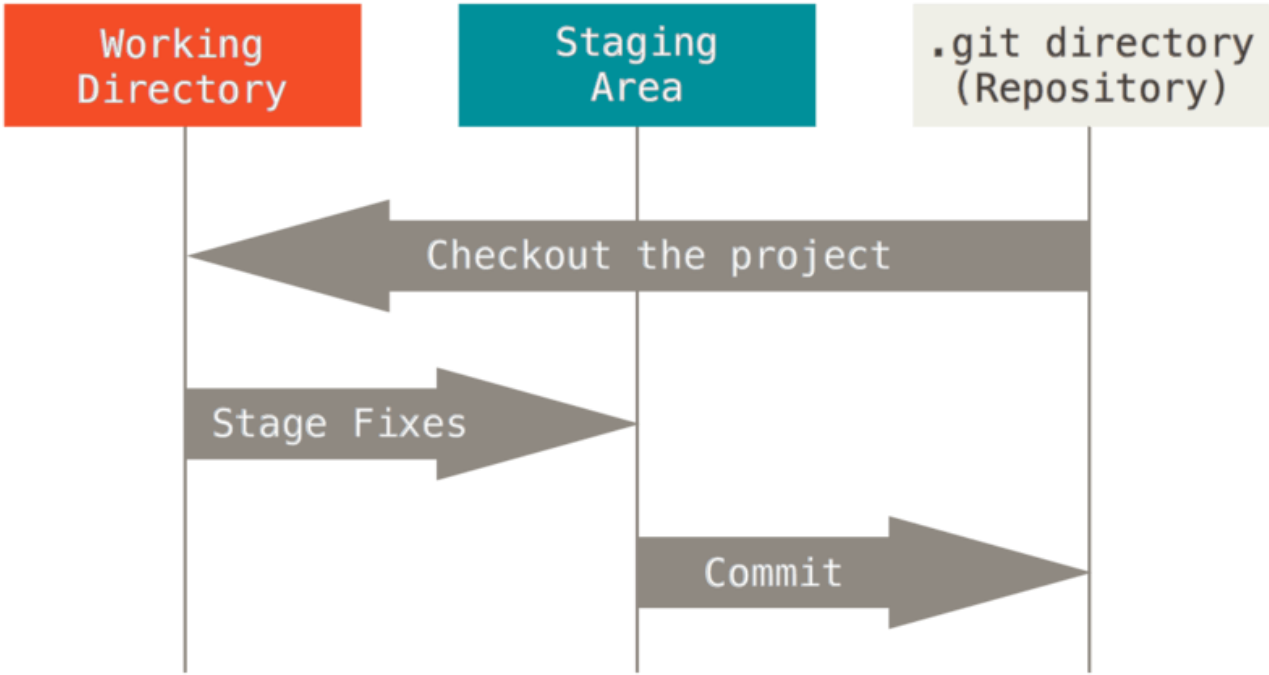
Storing data as snapshots of the project over time



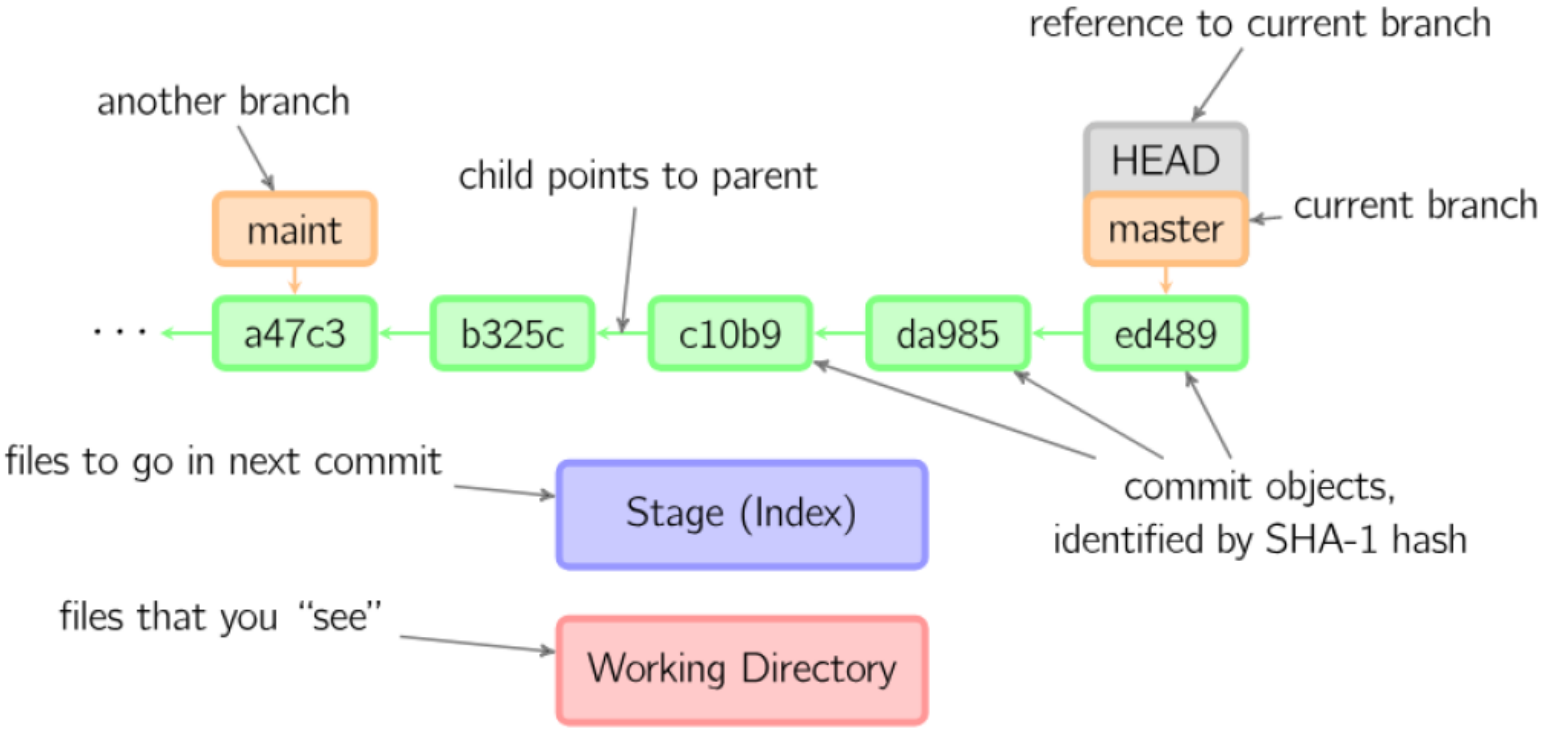
Working tree

The Three States

- Modified
- Staged
- Committed



Git terminology. Very briefly



Creating git repository

- Init

```
$ git init
$ git init <folder>
```

- Clone

```
$ git clone<remote repository url>
```

Git configuration and help

- config

$ git config _name "_value" –set property

$ git config –-global –for current user

$git config –-system –for all users

$git config --globaluser.name "IvanIvanov"

$gitconfig--list –get config for current repo

$ gitconfig--globalcore.editor"'C:/Program Files (x86)/Notepad++/notepad++.exe' -multiInst-notabbar-nosession-noPlugin"

- help

$ githelp <verb>

$ git<verb> --help

$ mangit-<verb>

.gitignore

This is a file, which you could create in the root of your repository. All files, which are match patterns from gitignore, would be untracked by default. This could be binary files; files, which are generated by IDE, logs, ect. So all of this files exist in you project directory, but you will never want to commit them to repository.

The rules for the patterns you can put in the .gitignorefile are as follows:

- Blank lines or lines starting with # are ignored.
- Standard glob patterns work.
- You can start patterns with a forward slash (/) to avoid recursivity.
- You can end patterns with a forward slash (/) to specify a directory.
- You can negate a pattern by starting it with an exclamation point (!).

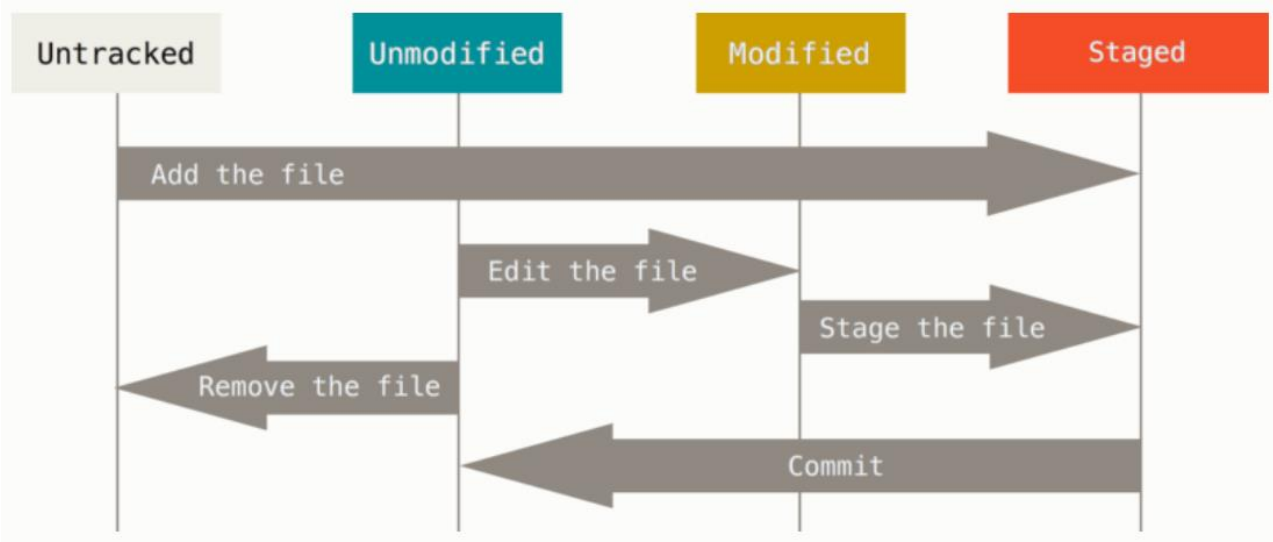
```
# no .a files
*.a
# but do track lib.a, even though you're ignoring .a files above
!lib.a
# ignore all files in the build/ directory
build/
# ignore all .pdf files in the doc/ directory
doc/**/*.pdf
```

Git aliases

```
$ git config --global alias.co checkout
$ git config --global alias.br branch
$ git config --global alias.ci commit
$ git config --global alias.st status
$ git config --global alias.ll= log --pretty=format:"%C(yellow)%h%Cred%d\\%Creset%s%Cblue\\[%cn]" --decorate --numstat
$ git config --global alias.ld= log --pretty=format:"%C(yellow)%h\\%C(green)%ad%Cred%d\\%Creset%s%Cblue\\[%cn]" --decorate --date=short --graph
$ git config --global alias.ls = log --pretty=format:"%C(green)%h\\%C(yellow)[%ad]%Cred%d\\%Creset%s%Cblue\\[%cn]" --decorate --date=relative
```

State lifecycle

- **New (Untracked)**: file was recently created
- **Modified**: you have changed the file but have not committed it to your local database
- **Staged:** you have marked a modified file in its current version to go into your next commit snapshot.
- **Committed (Unmodified):** the data is safely stored in your local database



Commonly used commands

For local operations

- git status
- git add
- git commit
- git checkout
- git branch
- git reset
- git merge
- git rebase
- git stash

For viewing history and analysis

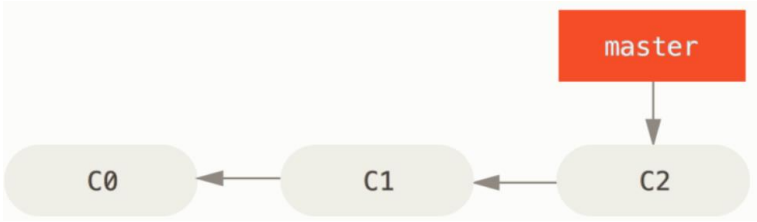
- git log
- git reflog
- git diff

For interactions with remotes

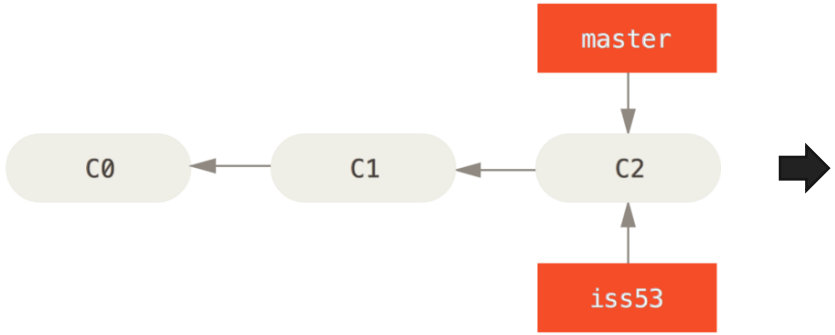
- git fetch
- git pull
- git push

Branching & merging workflow (1)

A simple commit history



Creating a new branch pointer




```
$ git checkout -b iss53
```

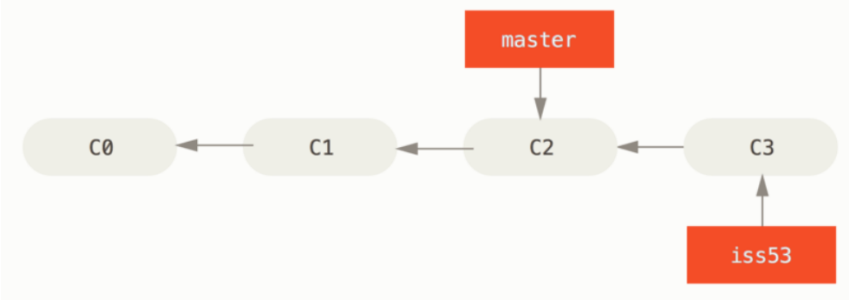
Switched to a new branch 'iss53'

[working on iss53]

```
$ git commit -a -m `issue53 add footer'
```

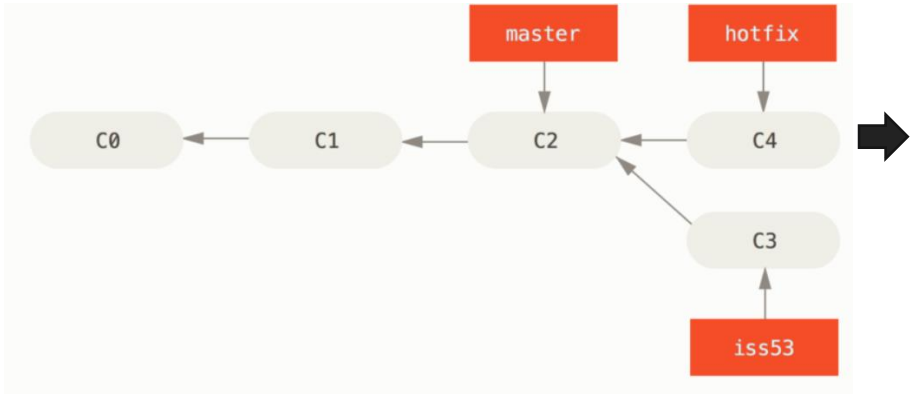
Branching & merging workflow (2)

The **iss53** branch has moved forward with your work




```
$ git checkout master
Switched to branch 'master'
```

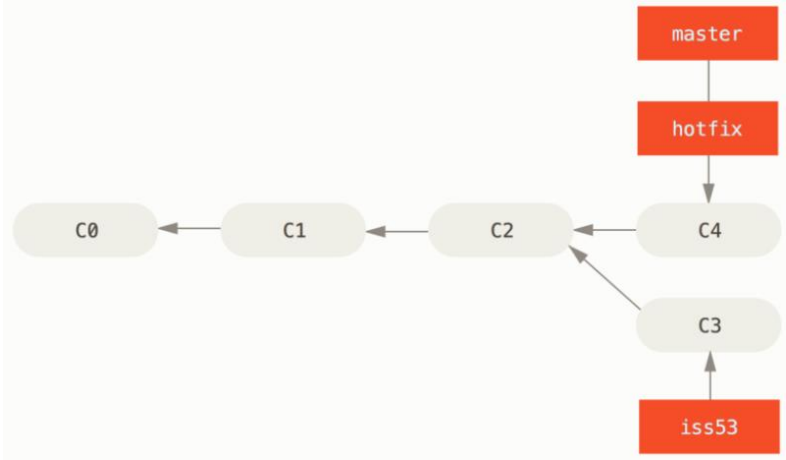
Hotfix branch based on **master**




```
$ git checkout -b hotfix
Switched to a new branch 'hotfix‘
[do some fixes]
$ git commit -a -m 'fix something'
```

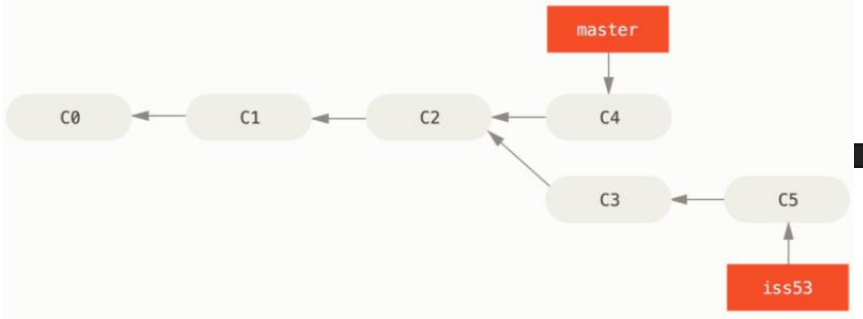
Branching & merging workflow (3)

master is fast-forwarded to **hotfix**




```
$ git checkout master
$ git merge hotfix
Updating f42c576..3a0874c
Fast-forward
```

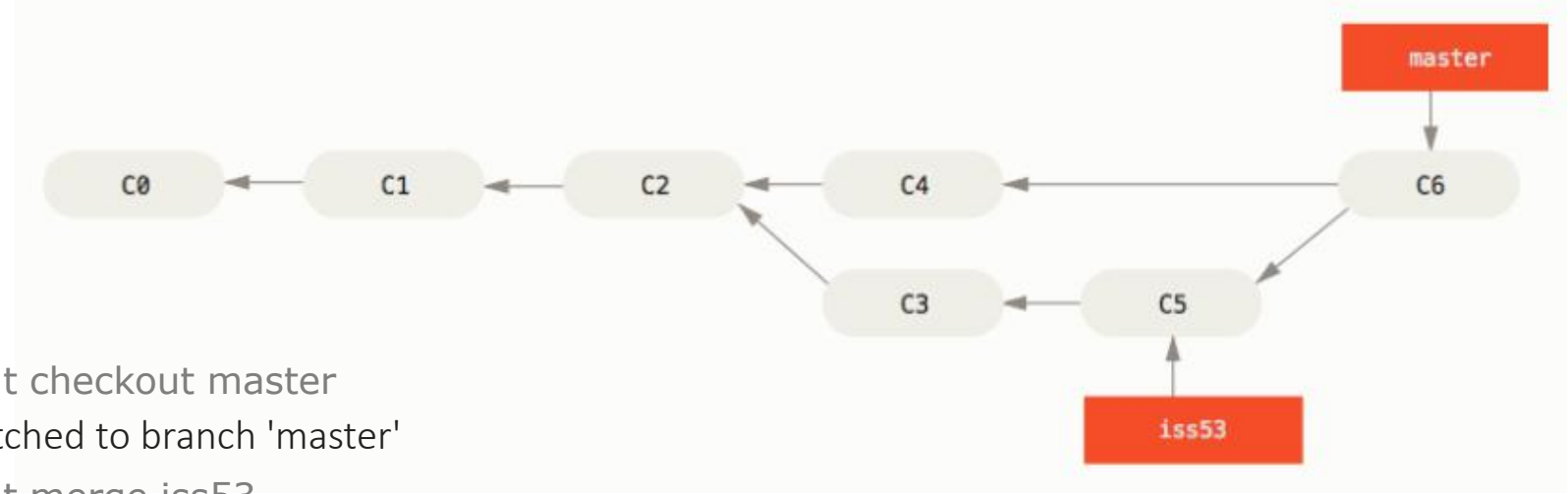
Work continues on **iss53**




```
$ git branch -d hotfix
Deleted branch hotfix (was 3a0874c).
$ git checkout iss53
Switched to branch 'iss53'
[Finish working on iss53]
$ git commit -a -m 'finish [issue 53]'
```

Branching & merging workflow (4)

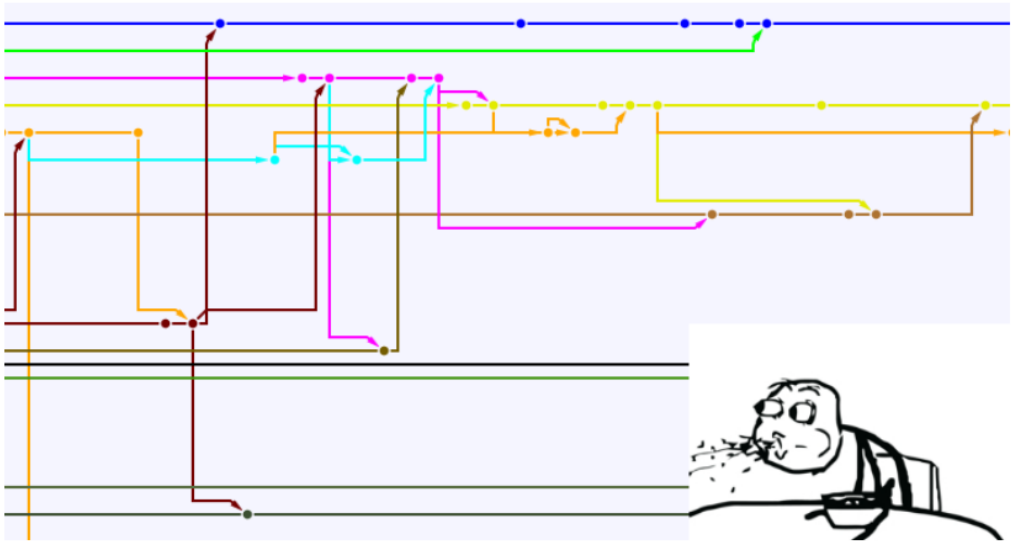
A merge commit




```
$ git checkout master
Switched to branch 'master'
$ git merge iss53
Merge made by the 'recursive' strategy.
index.html |    1 +
1 file changed, 1 insertion(+)
$ git branch -d iss53
```

Merge hell

develop Merge branch 'feature/SPA-138' into develop
Merge remote branch 'origin/feature/PMI-2246' into develop
feature/SPA-138 Merge develop into feature/SPA-138
Merge branch 'origin/feature/SPA-156' into develop.
Merge remote-tracking branch 'origin/feature/SPA-136' into develop
origin/feature/SPA-136 SPA-136 - POST one InboundTrunkNumber for QueueService
origin/feature/PMI-2246 PMI-2264 added de,fr,it translations for nmeeting defaults
origin/feature/SPA-156 SPA-156. Adjustments in GUI for InboundTrunkNumbers and Lync Devices
SPA-138 Saving Member Announcement for Queue.
SPA-138 Saving Member options from the Data section (without Member Annoncement).
SPA-138 Read Member Options attributes in GET requests to Queue Services.
Remove check for AbstractForwardDestination being a ServiceExtension
origin/develop Restore incorrectly removed local variable from DB VM Puppet provisioning.
Update verstion to next developable 1.8.6.0-SNAPSHOT
Merge branch 'hotfix/1.8.4.1' into develop
Merge branch 'develop' of ssh://[redacted] into develop
origin/master 1.8.4.1 Merge branch 'hotfix/1.8.4.1'
SPA-156. Validation of ITN with Lync Option
feature/SPA-136 SPA-136 - DELETE one InboundTrunkNumber for QueueService
updating poms for next development version
master origin/release/1.8.5.0 1.8.5.0 Merge branch 'release/1.8.5.0'
Merge branch 'release/1.8.5.0' into develop
updating poms for release
add profile which runs all tests when mvn clean install triggered
SPA-136 - GET one InboundTrunkNumber for QueueService
SPA-136 - GET InboundTrunkNumbers for QueueService
Fixed failing tests
SPA-156. wip
Update out of date test assertions.
SPA-136 - Changed InboundTrunkNumber endpoints interfaces to work with QueueService endpoints
feature/SPA-156 another failing test
SPA-148 Add links to Queue Services in the Targets endpoint.
SPA-156. More tests
Fixed missing import
Change the 'Send' from a link to a button to make
SPA-156 fix test
Merge remote-tracking branch 'origin/feature/SPA-156' into feature/SPA-156
SPA-156. WIP
Correctly handle two different dump types in DB VM provisioning.
Add max_prepared_transactions = 20 to PostgreSQL VM config.
Revert "SPA-160 Queues doesn't have outbound numbers"
SPA-160 Queues doesn't have outbound numbers
SPA-160 Queues doesn't have outbound numbers
Merge branch 'develop' into feature/SPA-156
SPA-97 - Tests formatting
SPA-156. WIP
SPA-97 - Lync Management link is showing when customer has LyncSites defined
Make the 'Add New Lync Site' button visible only for admin.
SPA-20 Forward Destination Link update - validation of link
origin/hotfix/1.8.4.1 Merge branch 'hotfix/1.8.4.1' of ssh://[redacted] into hotfix/1.8.4.1
PMI-2284
PMI-2284
PMI-2276: Removed sync of Lync devices from 'doSave() completely'
SPA-97 - tests formatting and error messages improved



Git hosting services

- Visual tools for team collaboration
- Code review tools
- Integrations with bug tracking systems

GitHub

GitLab

Bitbucket

Markdown language

Markdown is a lightweight markup language with plain text formatting syntax. Its design allows it to be converted to many output formats, but the original tool by the same name only supports HTML Markdown is often used to format readme files, for writing messages in online discussion forums, and to create rich text using a plain text editor

```
# The largest heading
## The second largest heading
**This is bold text**
Some basic Git commands are:
```
git status
git add
git commit
```
This site was built using [GitHub Pages](https://pages.github.com/).
![Image of Yaktocat](https://octodex.github.com/images/yaktocat.png)
```

```
git status
git add
git commit
```

This site was built using GitHub Pages.

Useful links

- https://git-scm.com/
- https://learngitbranching.js.org/
- https://guides.github.com/activities/hello-world/
- https://git-scm.com/book/ru/v2
- https://github.com/github/gitignore

- https://daringfireball.net/projects/markdown/syntax
- https://guides.github.com/features/mastering-markdown/
- https://help.github.com/en/articles/basic-writing-and-formatting-syntax
- https://www.markdownguide.org/getting-started

- https://www.digitalocean.com/community/tutorials/how-to-use-git-hooks-to-automate-development-and-deployment-tasks

Q & A

Thank you!