

# Git Fundamentals

Open up a world of community and collaboration

Paul Broadwith

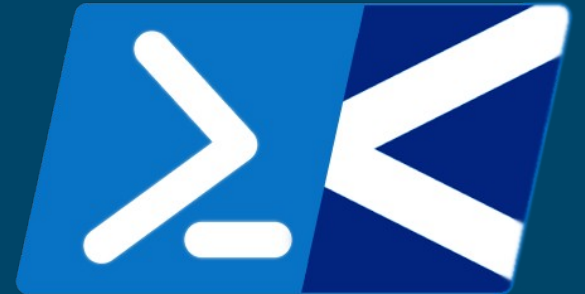
 @pauby



<https://blog.pauby.com>

## Who Am I?

- Paul Broadwith, Glasgow, Scotland
- 25+ years in defence, government, financial sectors
- Lead Engineer on Boxstarter and Chocolatey cChocolatey  
DSC Resource





**Questions At The End?**

# In This Session

- What actually is Git?
- What tools do I need for Git?
- Who is using Git and why do I need to use it?
- How does Git work?
- Git commands you need to know!
- What is a Pull Request and what they are used for;
- How to work with Open Source projects using Git;

Who Is This Aimed At?



**Microsoft** *Level 100*









**Git**

**is not**



**GitHub**



# What Is Git?

# What Is Git?

Wikipedia defines Git as:

**Git is a version control system for tracking changes in computer files** and coordinating work on those files among multiple people. It is primarily used for source code management in software development, but it can be used to keep track of changes in any set of files. As a distributed revision control **system it is aimed at speed, data integrity,** and support for distributed, non-linear workflows.

- <https://en.wikipedia.org/wiki/Git>

# What Is Git?

Which means Git is:

**Git is a version control system for tracking changes in computer files. It is aimed at speed and data integrity.**

# What Is Git?

Wikipedia defines Version Control System as:

... **version control is the management of changes to documents, computer programs, large web sites, and other collections of information. Changes are usually identified by a number or letter code, termed the "revision number"** ... Each revision is associated with **a timestamp and the person making the change**. Revisions can be compared, restored, and with some types of files, merged.

- [https://en.wikipedia.org/wiki/Version\\_control](https://en.wikipedia.org/wiki/Version_control)

# What Is Git?

Which means a version control system is:

**Version control is the management of changes to collections of information. Changes are identified by a number associated with a timestamp and the person making the change.**



# What Tools Do I Need?

# Recommended Software



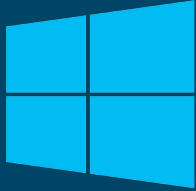
<https://chocolatey.org>

<https://chocolatey.org/install>

# Required Tools



## Git Tools



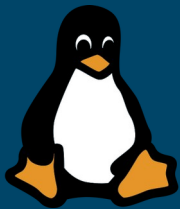
<https://gitforwindows.org/>



```
> choco install git -y
```



<https://git-scm.com/download/mac>



```
> apt install git-all
```

## Recommended Tools



**GitLens**  
Git supercharged

posh-git



GitHub Pull  
Requests



**Git Extensions**

PSGit

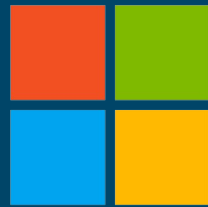


**Git Credential Manager For Windows**

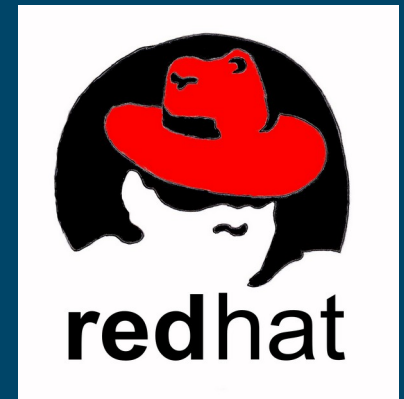
Who uses Git?



# Companies & Projects You Know



Microsoft



# Git Providers & Software



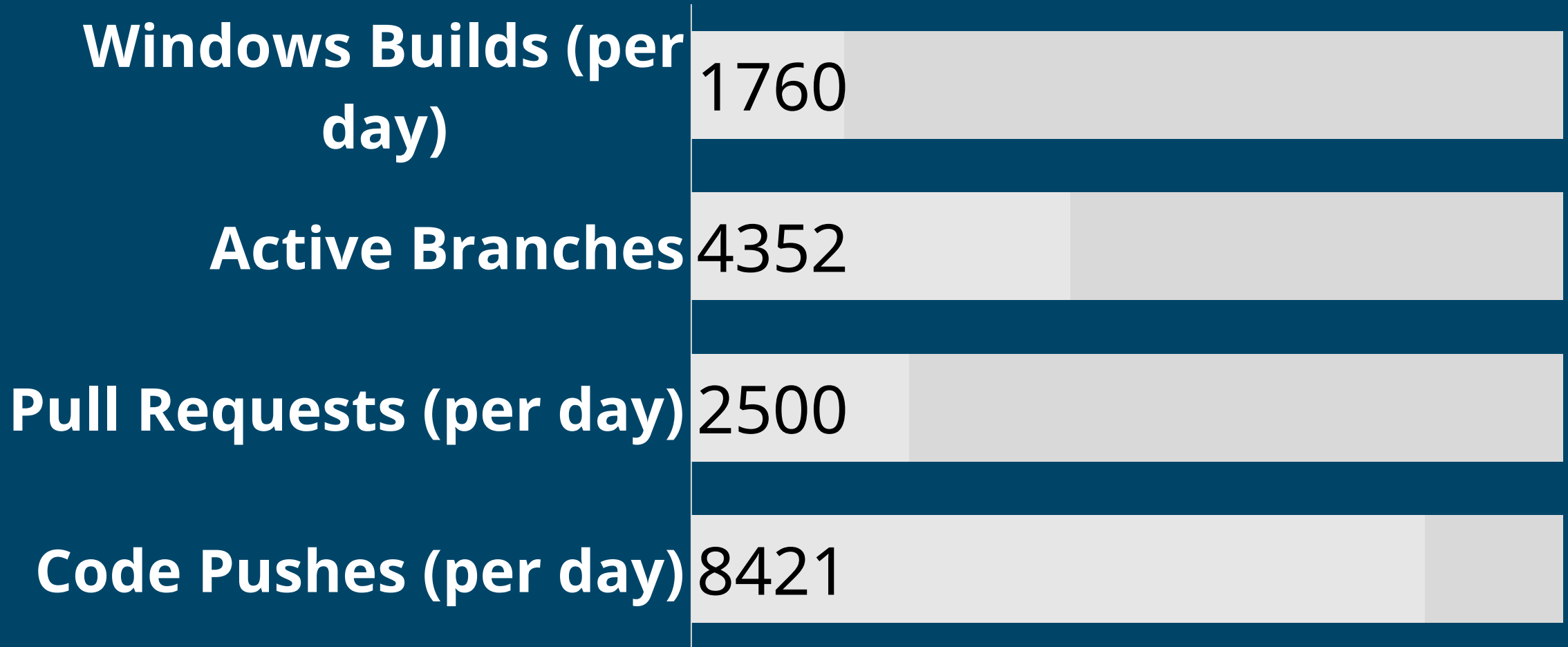
GitHub



GitLab



# Microsoft Windows & GVFS



**As at May 2017 (Using GVFS)**

# DSCResources Repository Statistics

475 Pull Requests

300 Closed Issues

Since 1 January 2018

# Who Uses Git?





# Why Do I Need To Use Git?

If you write code ...

... you are a developer

## 2017 GitHub Use



**1 Billion Commits**



**47 Million Pull Requests**

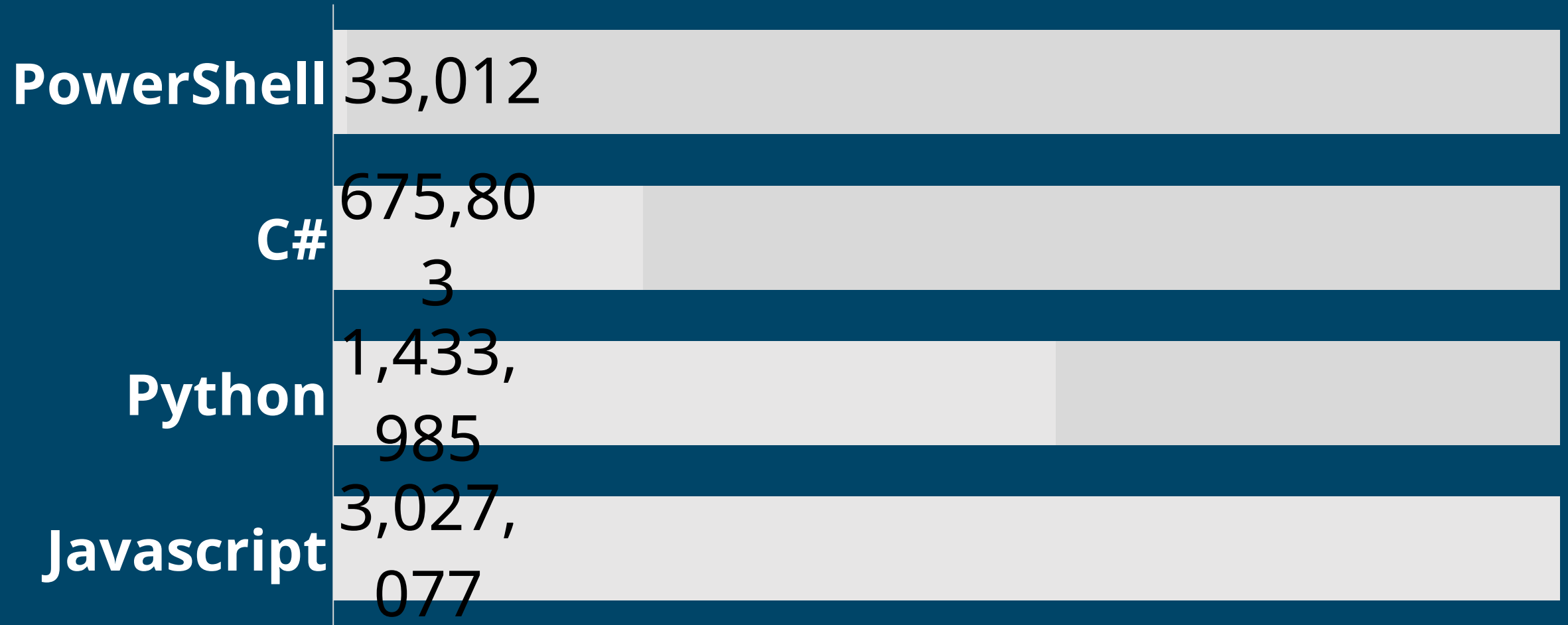


**25.3 Million Active Repositories**



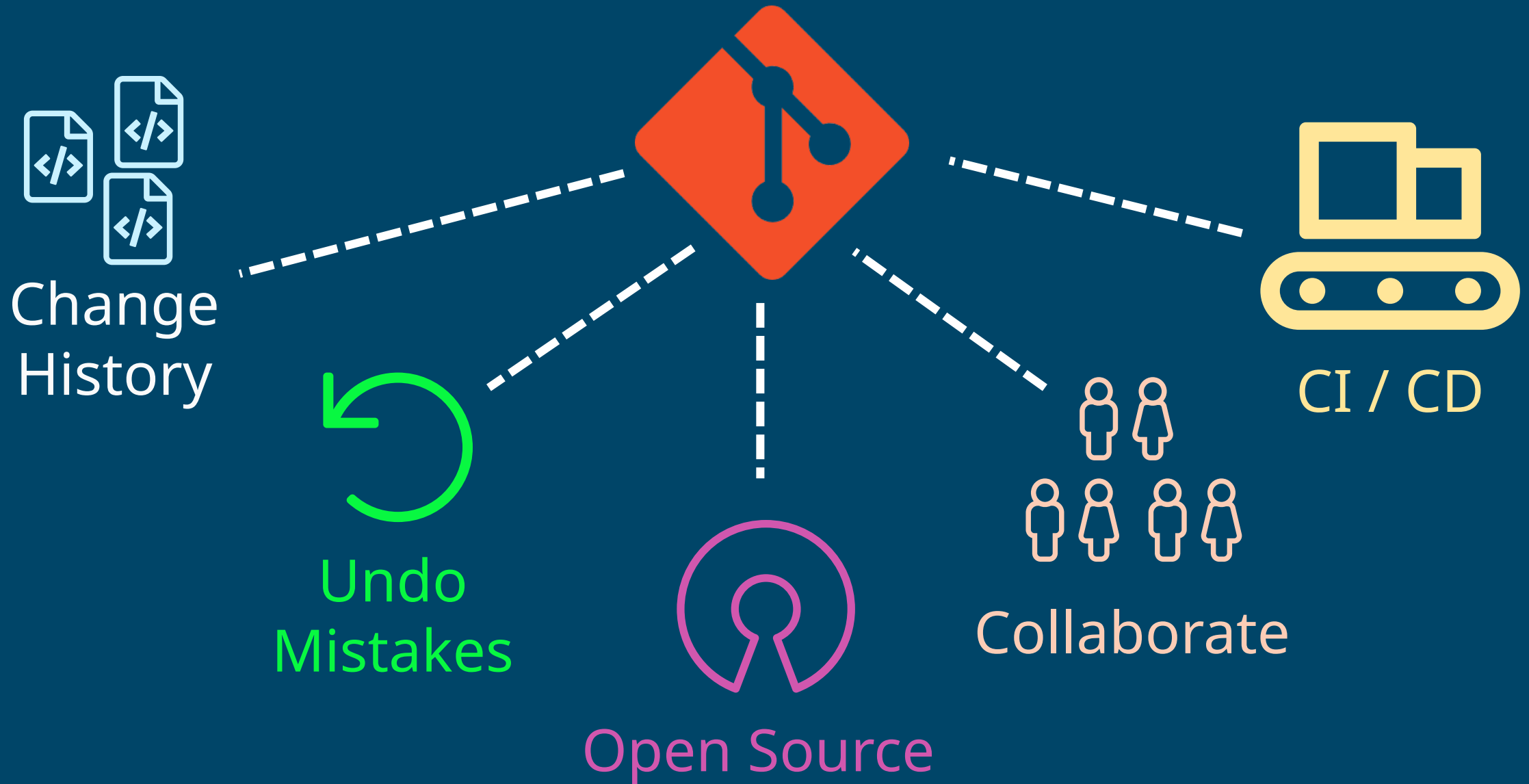
**24 Million Developers**

# GitHub Repository By Language



12 September 2018

# Git Has Your Back

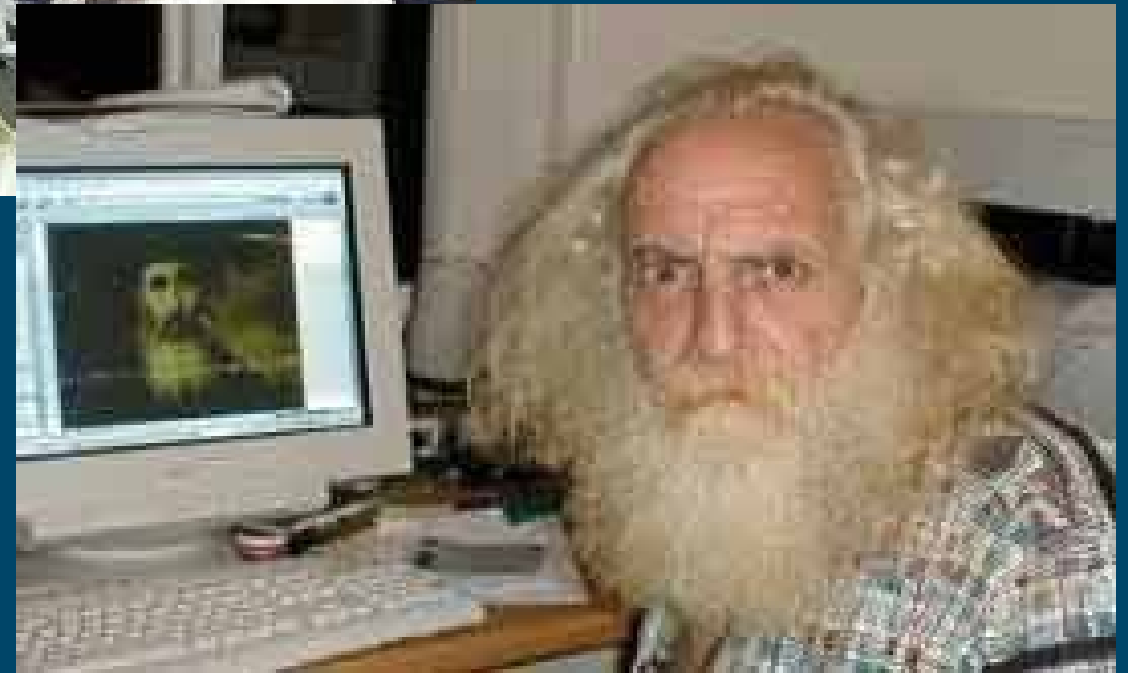
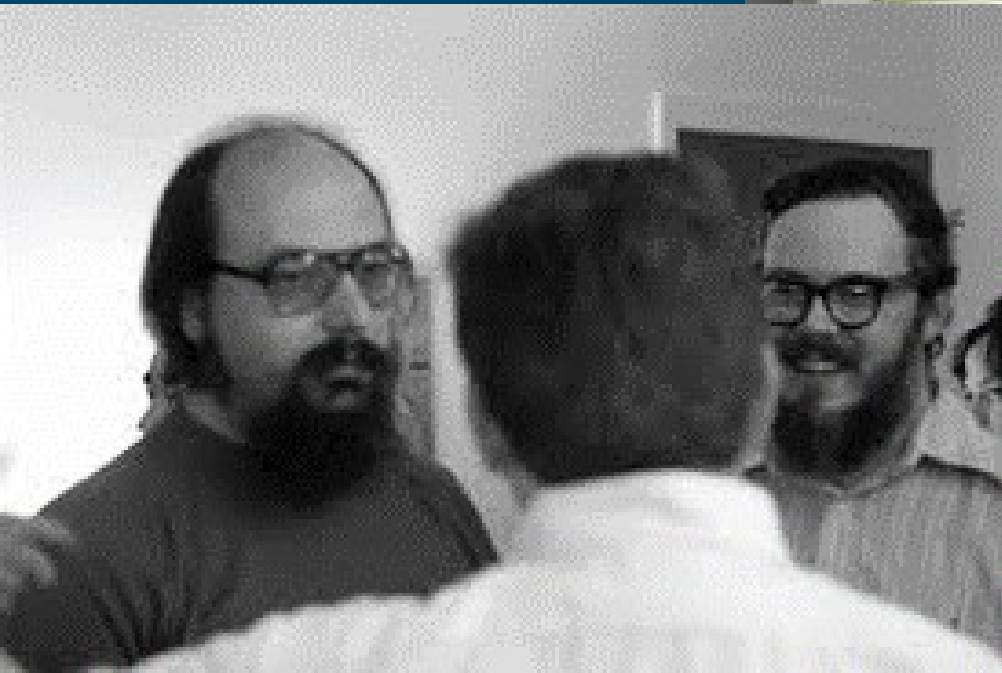




I will not write any more bad code  
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# Even The Beards Use It



# How Does Git Work?

## The 3 Stages Of Git

# 8 Essential Git Commands



**clone**



**add**



**commit**



**push**



**status**



**pull**



**checkout**



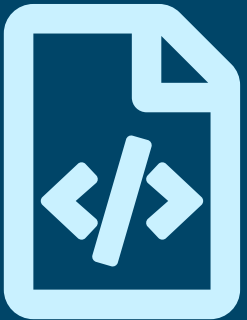
**remote**

# The 3 Stages

```
> git status
```

```
> git add  
<. | FILES>
```

```
> git commit  
-m 'Message'
```



Change  
source files



Stage  
changed  
files



Commit  
changes



**Unstaged**



**Staged**



**Committed**

# The 5 Fundamental Building Blocks Of Git



**repository**



**branches**



**commit**



**fork \***



**pull requests**

# What Is A Repository?



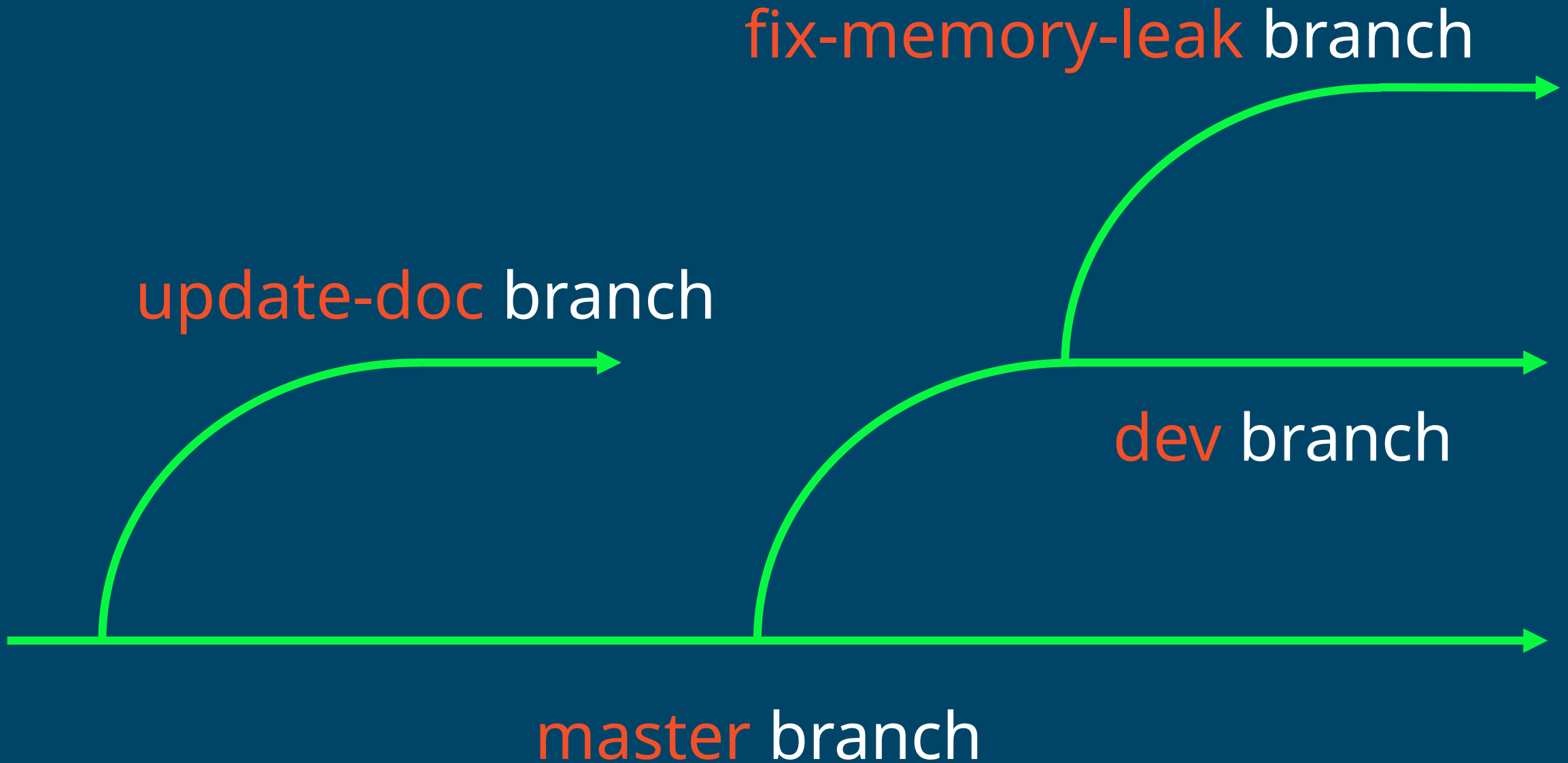
Repository / Repo – terminology - both used



**myproj**

Just a folder where you store your project files

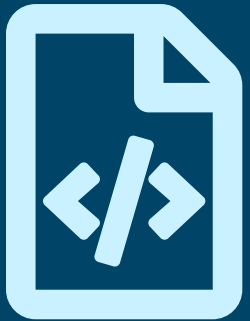
# How Do Branches Work?





# What Is A Commit?

```
> git commit -m 'Message'
```



Commit  
changes

When one or more changes have been applied to a branch, its called a ... **commit**



**Committed**

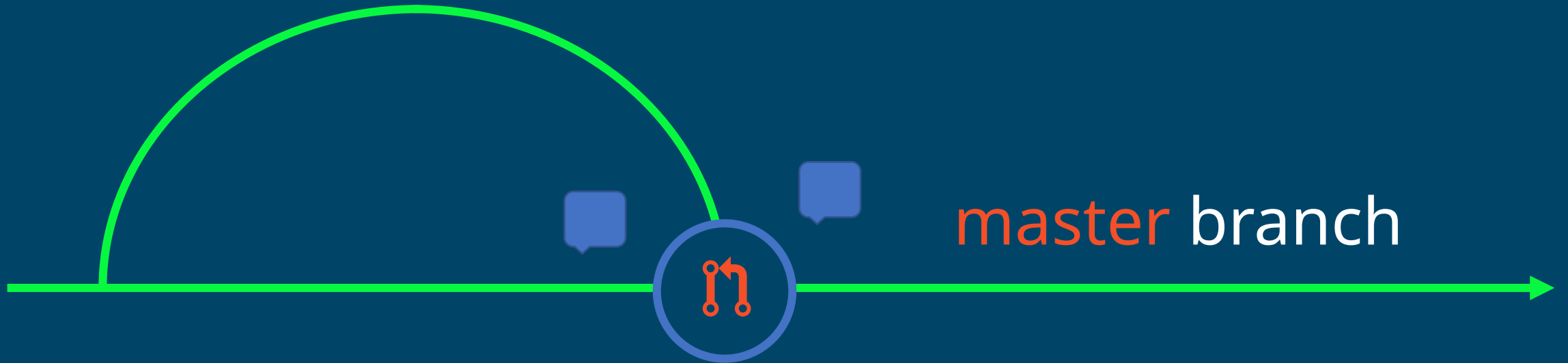
# What Is A Fork?



Forking a repo is simply creating a **linked** copy of that repository. The link allows changes to be pulled or pushed to the original repository.

# What Is A Pull Request?

update-doc branch



Lets others know about a change you have made.

Allows review and discussion around those changes.

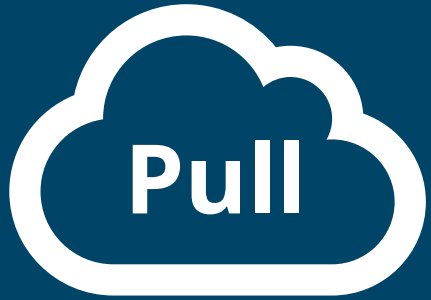
# Essential Git Commands

# DEMO

## Our First Pull Request

# Git Cycle

```
> git pull
```



```
> git add .  
> git commit -m  
"Initial commit"
```



Commit



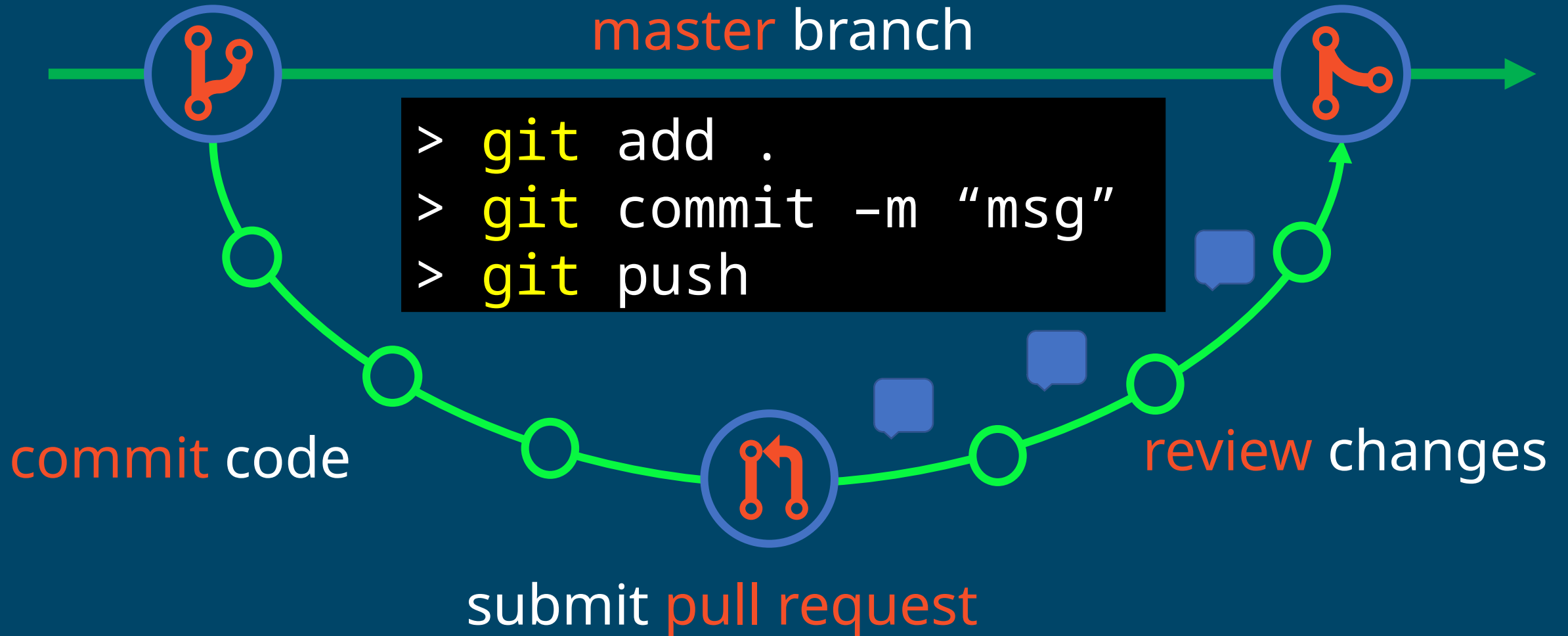
```
> git push
```



# Pull Request Flow

*dev branch created  
from master*

*dev branch merged  
to master*





Design with  
community  
in mind



2024

## 24 PULL REQUESTS

GIVING BACK LITTLE GIFTS OF CODE FOR CHRISTMAS

# Hacktoberfest

# Summary

- We learned what Git is and where it came from;
- What tools are needed to work with Git;
- Who is using Git and why I need to use it!
- Fundamental Git commands;
- The three stages of Git;
- What a pull request is, why we use them and how to use it to work with Open Source projects;

# Congratulations!

You're now a **git**

Questions?

Thank You!



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