

Introduction to Software Development

Week 4 Day 1

Led by: Emily Crose

for

Oakland University



Questions?

Terms to Listen For

CLI

- Command Line Interface

GUI

- Graphical User Interface

Repositories

- A holding location for programming projects

Environment Terms To Listen For

Dev/Test

- A working environment for functionality testing new features

QA

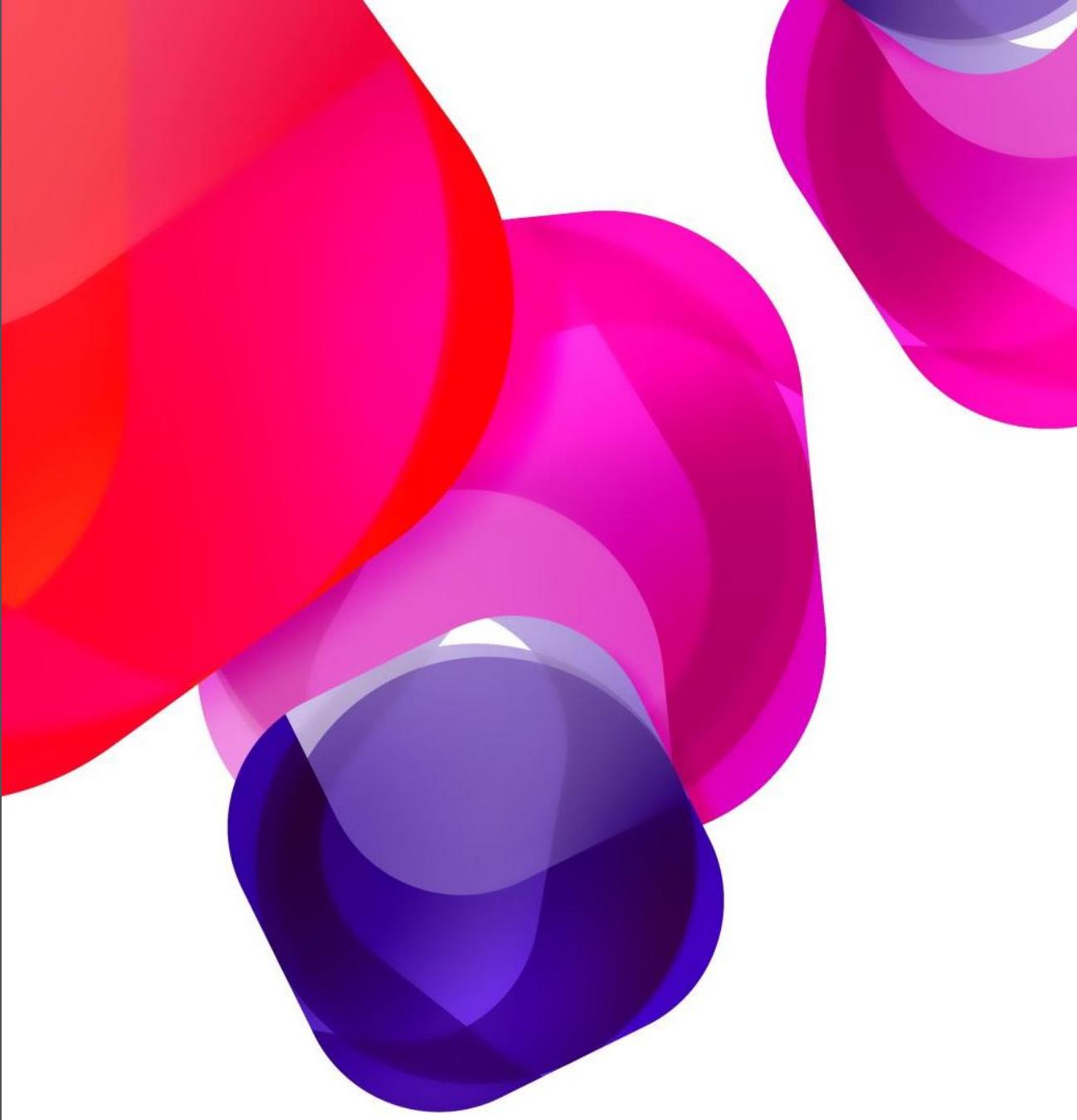
- An environment for user testing new features

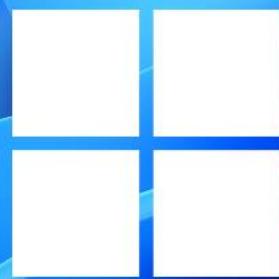
Prod/Production

- The most up-to-date publicly used environment

Operating System CLI vs. GUI

Graphic User Interface (GUI)





Windows 11



Setup_pro...



Setup_pro...



Untitled



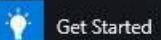
Ahmed Raza Ansari

Life at a glance

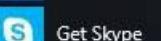
Play and explore



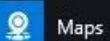
Most used



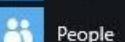
Get Started



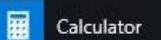
Get Skype



Maps



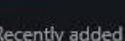
People



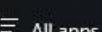
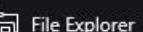
Calculator



Alarms & Clock



Configure



New



Search the web and Windows



2:47 PM
7/30/2015

Command Line Interface (CLI)

Command Line Interfaces (CLI) In Windows

Command
Line

Powershell!

raju@raju-HP-Laptop-15-bs1xx: ~/rc_c

File Edit View Search Terminal Help

```
raju@raju-HP-Laptop-15-bs1xx:~$ ls
a.out compiler denoising.c Documents examples.desktop lena_rotate.bmp me.txt op.c Public rc_c rc_sm rtlwifi_new Templates threadd.c xyz.c
cn datasets Desktop Downloads lena.bmp matchanal.py Music Pictures qw.c rc_hw rc_ts snap thread1.bmp Videos
raju@raju-HP-Laptop-15-bs1xx:~$ cd Downloads
raju@raju-HP-Laptop-15-bs1xx:~/Downloads$ ls
30740779_1219877821476758_1154882784242696192_n.jpg datasets lena.bmp salt_n_pepper.bmp se05
balloons_noisy.png lena1.bmp saltandpeppernoise.jpeg se04 xampp-linux-x64-7.3.4-0-installer.run
raju@raju-HP-Laptop-15-bs1xx:~/Downloads$ cd ..
raju@raju-HP-Laptop-15-bs1xx:~$ cd rc_c
raju@raju-HP-Laptop-15-bs1xx:~/rc_c$ ls
9march1.cpp a.out b2d.cpp countwords.cpp d2b_part2.cpp homework_ds possible_combinations_backtracking.cpp sumdig.cpp swaparray.cpp
9march2.cpp ap.cpp complementtriangle.cpp d2b.cpp gp.cpp largest_island.cpp reverse_words_in_sentence.cpp sumneg.cpp triangle.cpp
raju@raju-HP-Laptop-15-bs1xx:~/rc_c$ ls -l
total 92
-rw-r--r-- 1 raju raju 162 Mar  9 17:09 9march1.cpp
-rw-r--r-- 1 raju raju 237 Mar  9 17:15 9march2.cpp
-rwxr-xr-x 1 raju raju 23008 Apr 19 22:15 a.out
-rw-r--r-- 1 raju raju 216 Mar  9 17:40 ap.cpp
-rw-r--r-- 1 raju raju 341 Apr 19 20:48 b2d.cpp
-rw-rw-r-- 1 raju raju 416 Mar  9 17:29 complementtriangle.cpp
-rw-r--r-- 1 raju raju 186 Mar 10 02:32 countwords.cpp
-rw-r--r-- 1 raju raju 253 Apr 19 19:56 d2b.cpp
-rw-r--r-- 1 raju raju 282 Apr 19 20:10 d2b_part2.cpp
-rw-rw-r-- 1 raju raju 216 Mar  9 17:38 gp.cpp
drwxr-xr-x 2 raju raju 4096 Apr 13 18:19 homework_ds
-rw-r--r-- 1 raju raju 638 Apr 19 22:15 largest_island.cpp
-rw-r--r-- 1 raju raju 41 Apr 19 21:24 possible_combinations_backtracking.cpp
-rw-r--r-- 1 raju raju 465 Apr 19 21:18 reverse_words_in_sentence.cpp
-rw-rw-r-- 1 raju raju 229 Mar  9 17:52 sumdig.cpp
-rw-rw-r-- 1 raju raju 303 Mar  9 18:04 sumneg.cpp
-rw-r--r-- 1 raju raju 394 Mar  9 18:15 swaparray.cpp
-rw-r--r-- 1 raju raju 273 Mar  9 17:21 triangle.cpp
raju@raju-HP-Laptop-15-bs1xx:~/rc_c$ 
```

Command Line Practice (15 minutes)

<https://cmdchallenge.com>

<https://www.codecademy.com/enrolled/courses/learn-the-command-line>



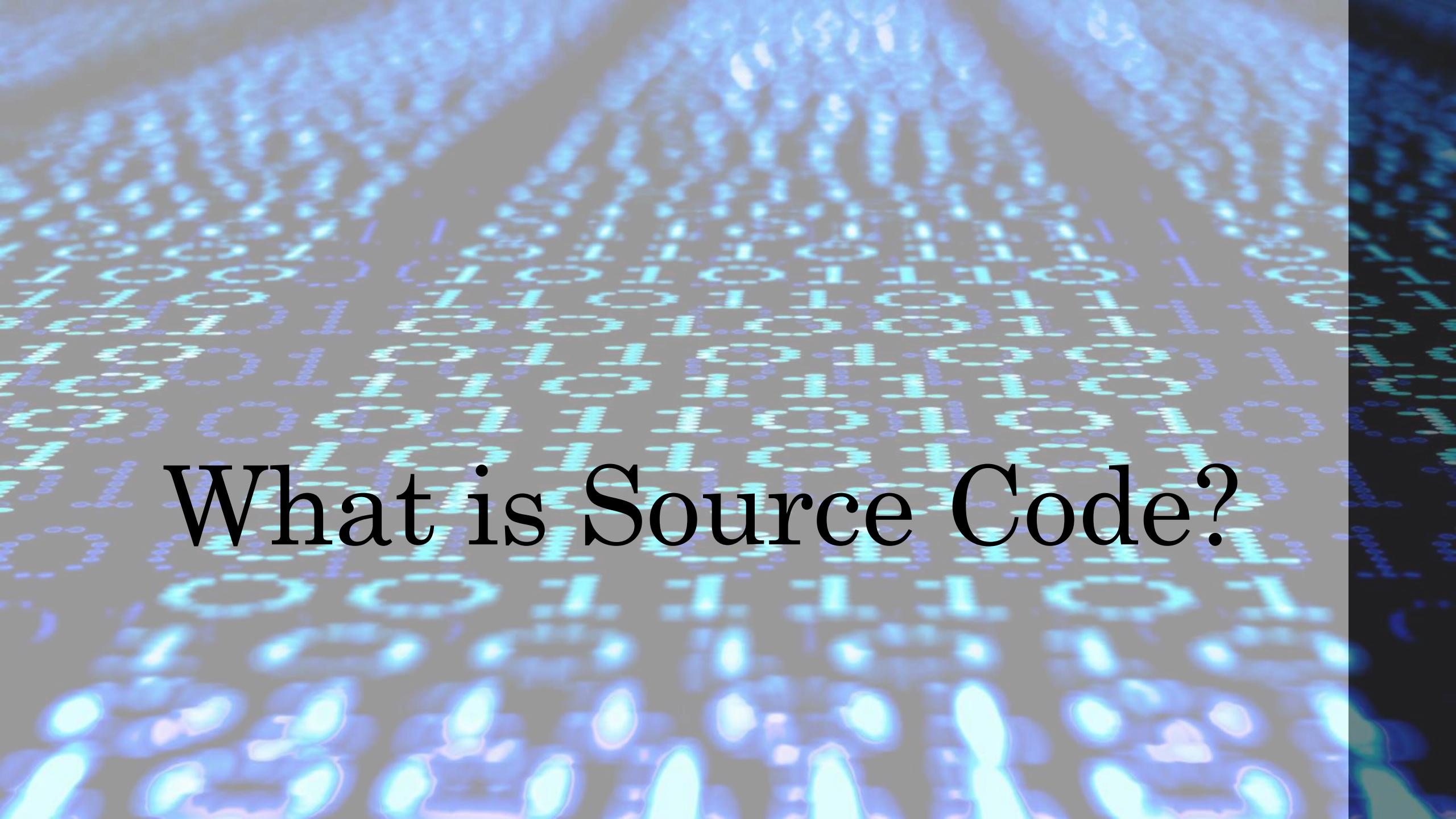
Mac



CLI In
Mac

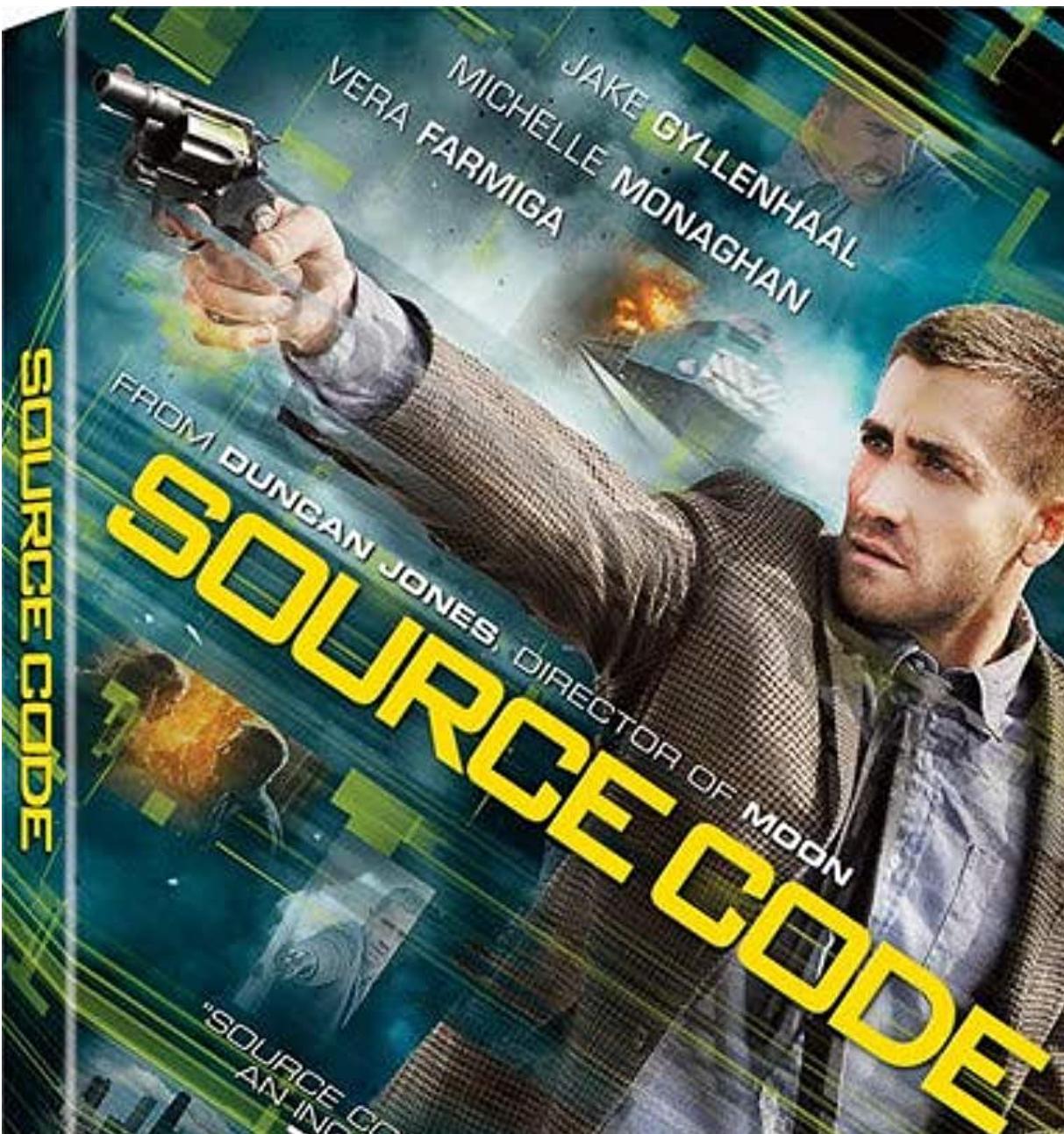
Terminal

Modern Code Editing

The background of the image is a dense, dark gray field of binary digits (0s and 1s). These digits are arranged in a grid pattern, creating a sense of depth and data flow. The binary code is continuous and covers the entire background area.

What is Source Code?

SOURCE CODE



```
185     var cpassword = document.getElementById('password');
186     var firstname=document.getElementById('firstname');
187     var firstname=document.getElementById('firstname');
188     var firstname=document.getElementById('firstname');
189     var firstname=document.getElementById('firstname');
190     var firstname=document.getElementById('firstname');
191     var firstname=document.('');
192     var firstname=document.('');
193     var firstname=document.('');
194     var firstname=document.getElementById('firstname');
195     var firstname=document.getElementById('firstname');
196     var firstname=document.getElementById('firstname');
197     var firstname=document.getElementById('firstname');
198     var firstname=document.getElementById('firstname');
```

```
506         self._headers_buffer.append(( "%s %d %s\r\n" %
507             (self.protocol_version, code, message)).encode(
508                 'latin-1', 'strict'))
509
510     def send_header(self, keyword, value):
511         """Send a MIME header to the headers buffer."""
512         if self.request_version != 'HTTP/0.9':
513             if not hasattr(self, '_headers_buffer'):
514                 self._headers_buffer = []
515             self._headers_buffer.append(
516                 ("%s: %s\r\n" % (keyword, value)).encode('latin-1', 'strict'))
517
518         if keyword.lower() == 'connection':
519             if value.lower() == 'close':
520                 self.close_connection = True
521             elif value.lower() == 'keep-alive':
522                 self.close_connection = False
```

Let's Take A Look At Some Source Code!

- <https://github.com/hexa-decim8/girltalk>
- <https://github.com/PowerShellMafia/PowerSploit>
- <https://github.com/GhostPack>

How Do We Add New Features To An App?





GIT &
Github



What is Github?

- Allows us to:
 - save projects
 - organize programming progress between multiple coders
 - do change management
 - publish new versions

Git vs. Github

Git



Git is installed and maintained on your local system (rather than in the cloud)



First developed in 2005



One thing that really sets Git apart is its branching model

Git is a high quality version control system

vs.

GitHub



GitHub is designed as a Git repository hosting service



You can share your code with others, giving them the power to make revisions or edits

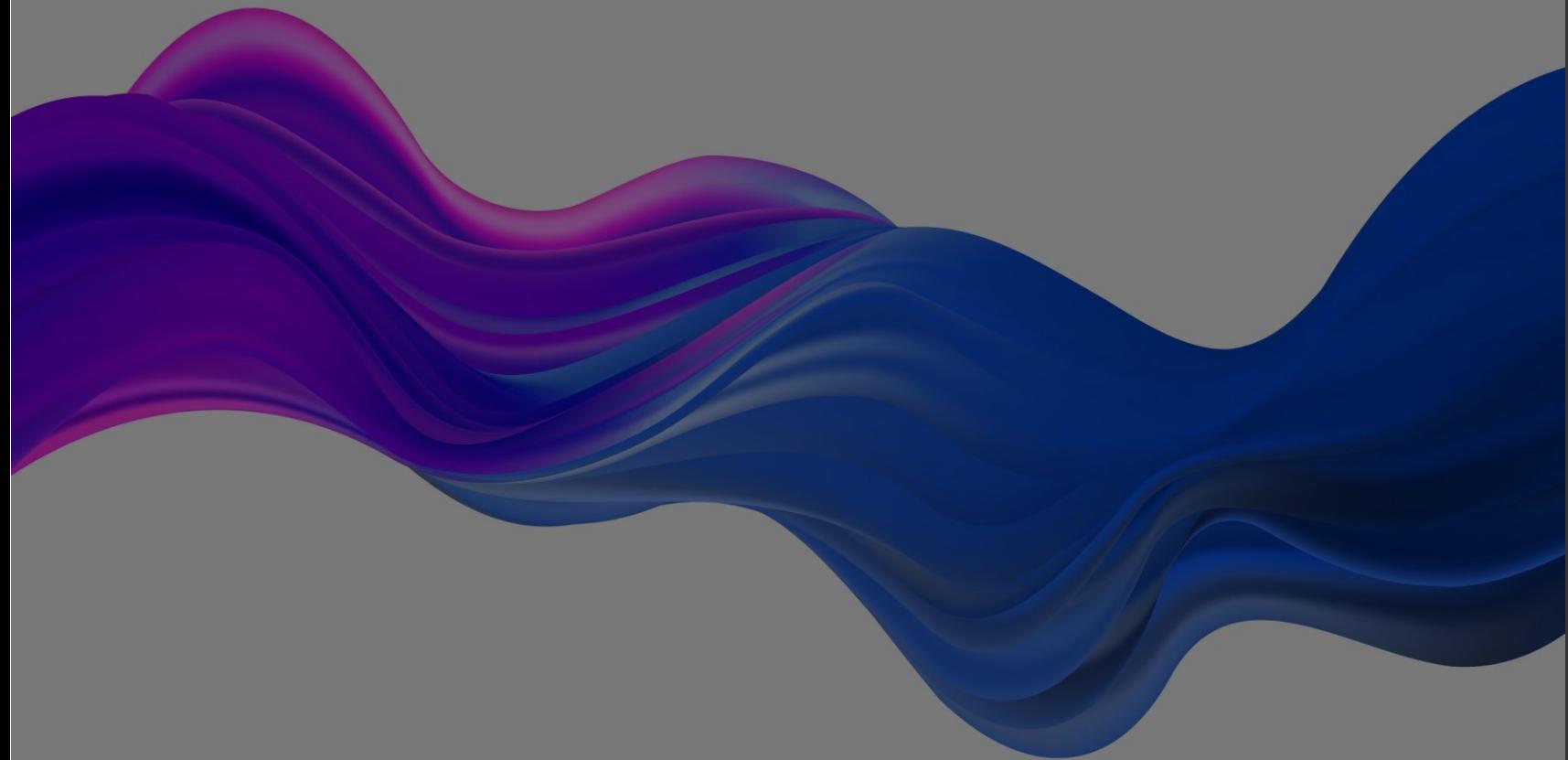


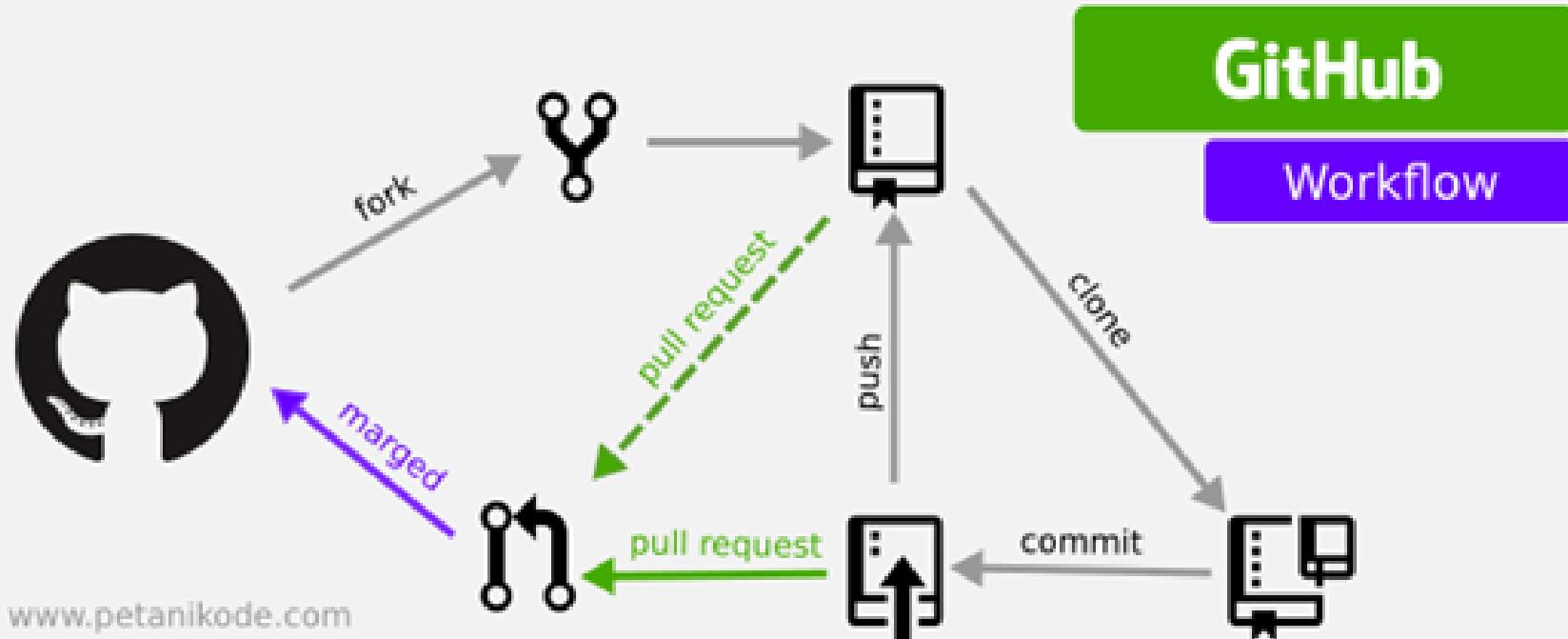
GitHub is a cloud-based hosting service

10 minute break



Git Tool Basics



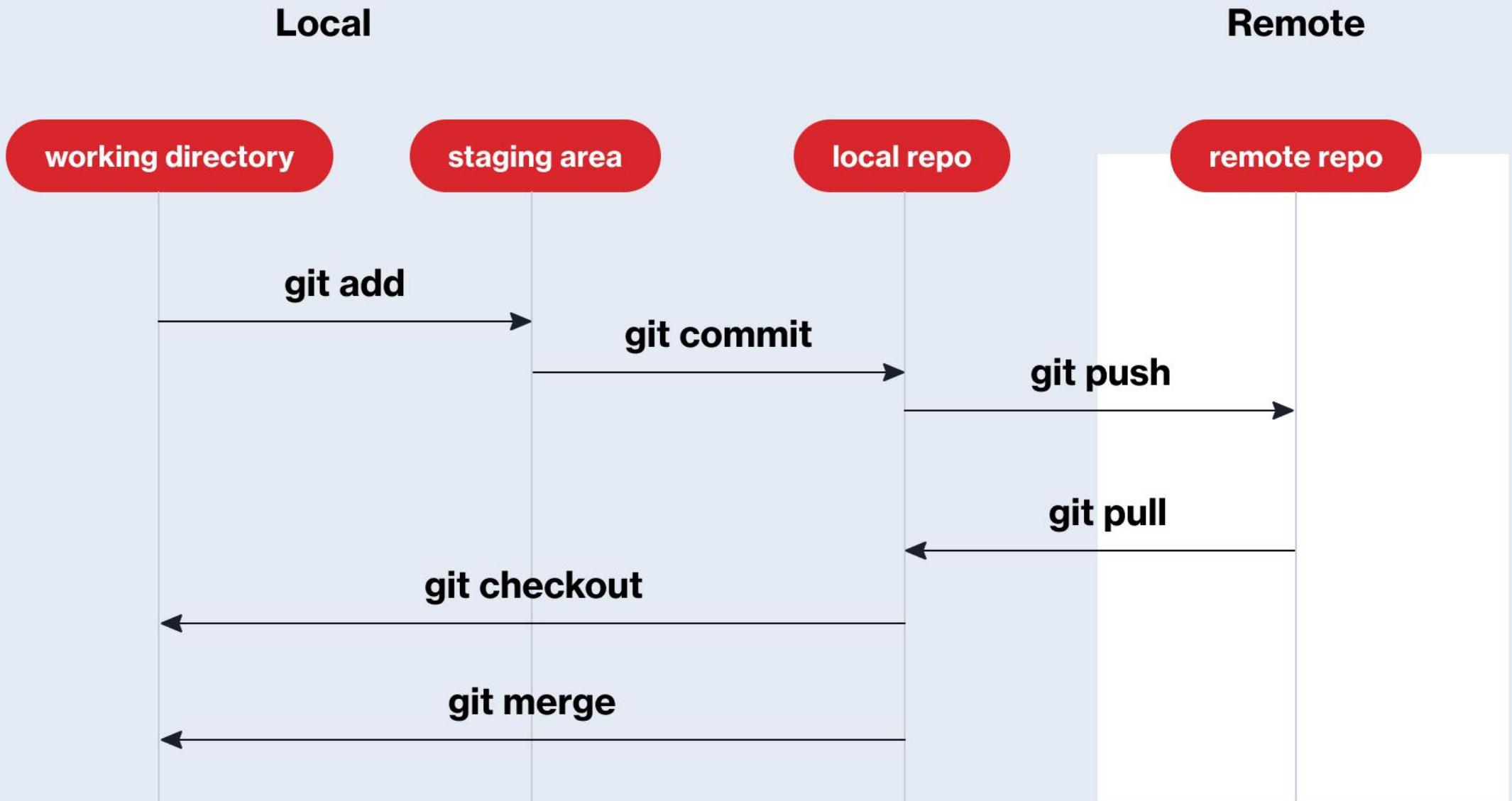


Repositories

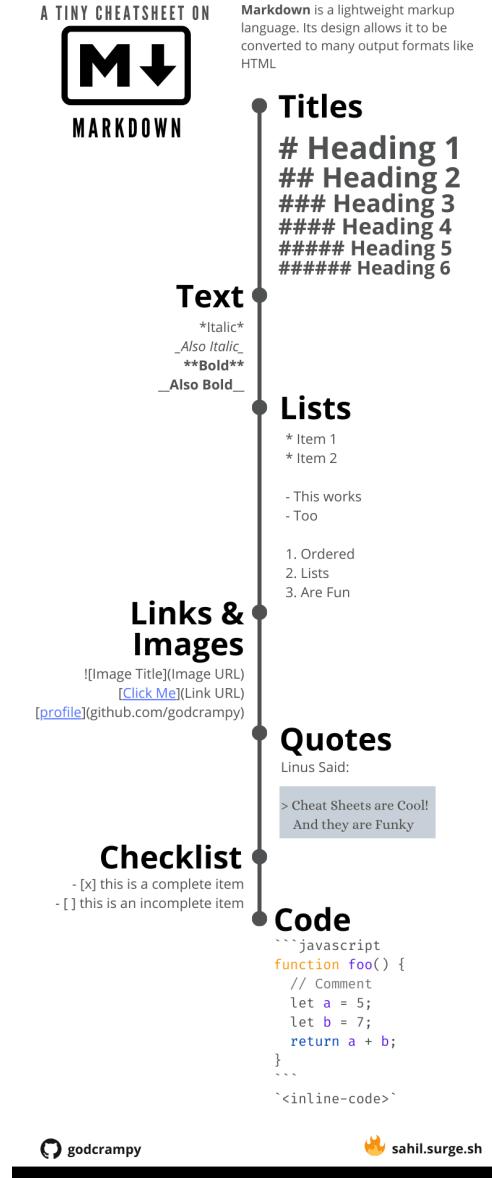
Purpose of a Repository



Making Our First
Repo



README.md



README.md

Markdown

Cloning A Repository

What can we do with code once we have it?

```
    for object in mirror_mod.mirror_object:  
        if operation == "MIRROR_X":  
            mirror_mod.use_x = True  
            mirror_mod.use_y = False  
            mirror_mod.use_z = False  
        elif operation == "MIRROR_Y":  
            mirror_mod.use_x = False  
            mirror_mod.use_y = True  
            mirror_mod.use_z = False  
        elif operation == "MIRROR_Z":  
            mirror_mod.use_x = False  
            mirror_mod.use_y = False  
            mirror_mod.use_z = True
```

```
selection at the end -add  
ob.select= 1  
next_scene.objects. ct  
"Selected" + str(modifi  
rror_ob.select = 0  
bpy.context.selected ob  
data.object.name:  
int("please select exactly  
- OPERATOR CLASSES -
```

```
types.Operator):  
    X mirror to the selected  
    object.mirror_mirror_x"  
    for X"
```

Publishing Through Git



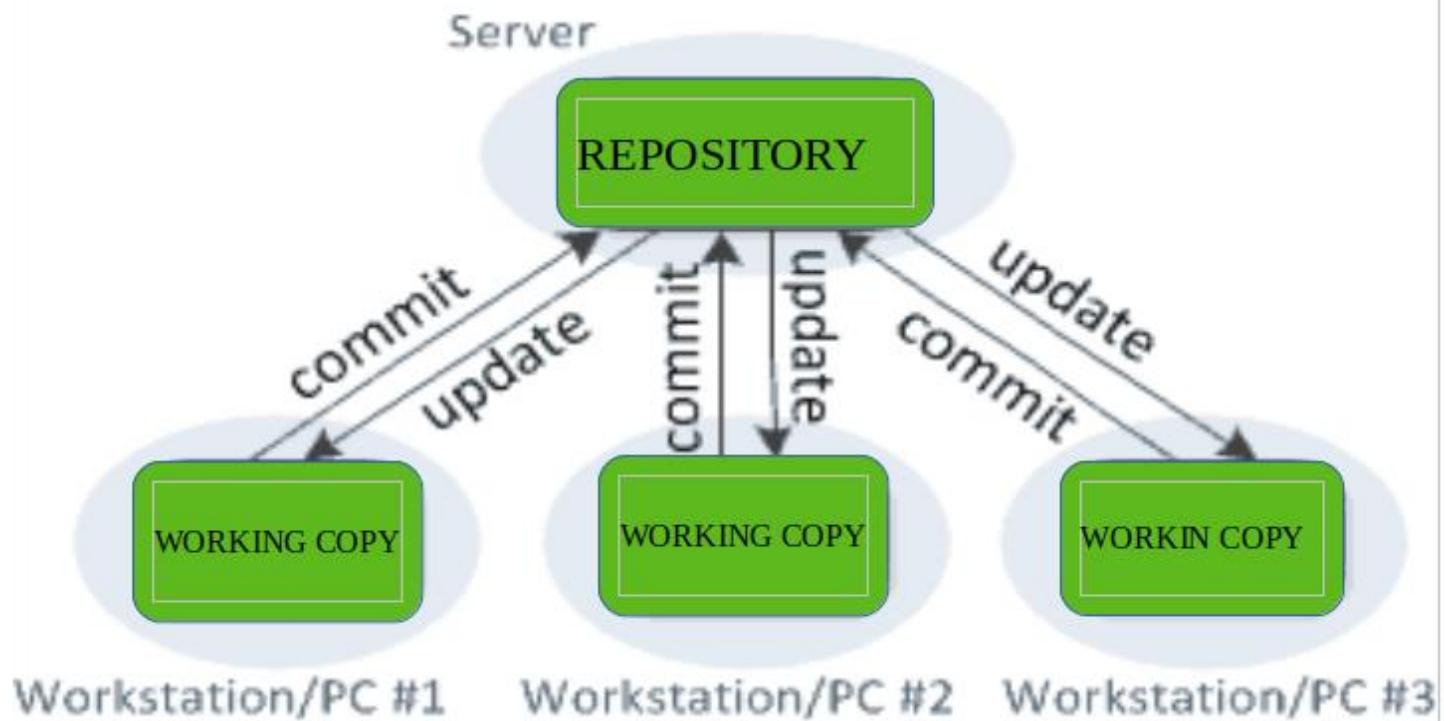
Version Control

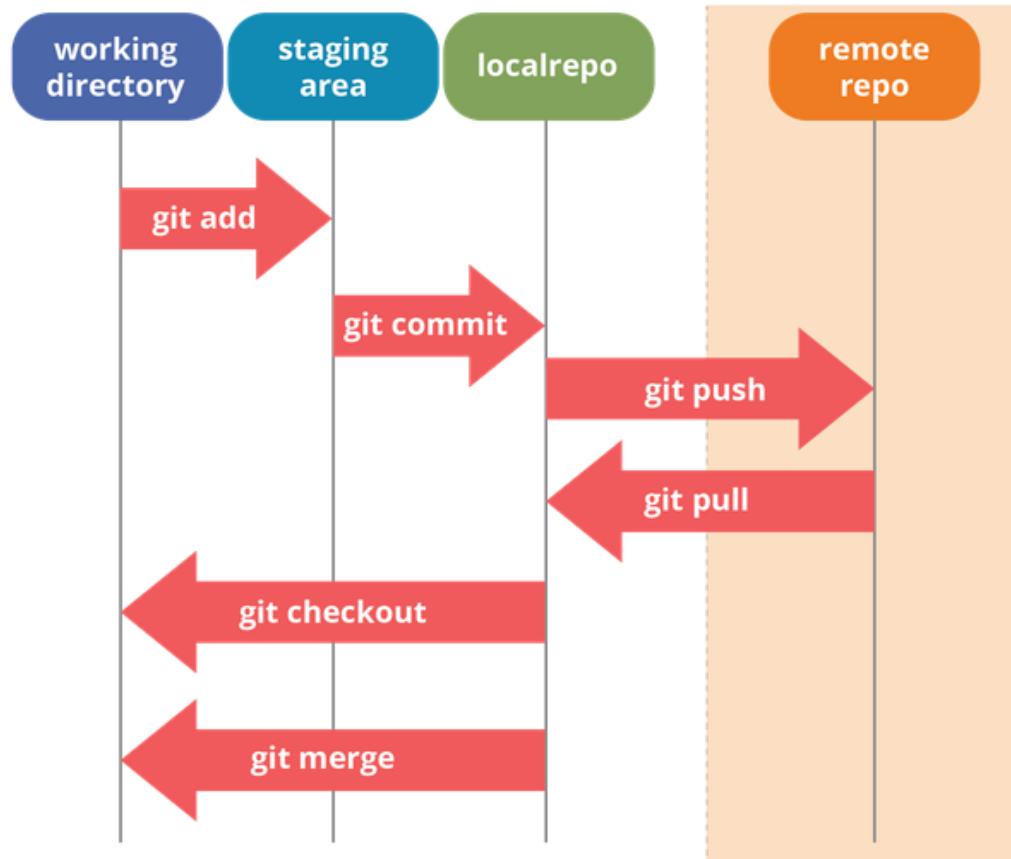
Basics of Version Control

- What do we do when we want to make changes to our app?
- How do we SAFELY make changes to our app?

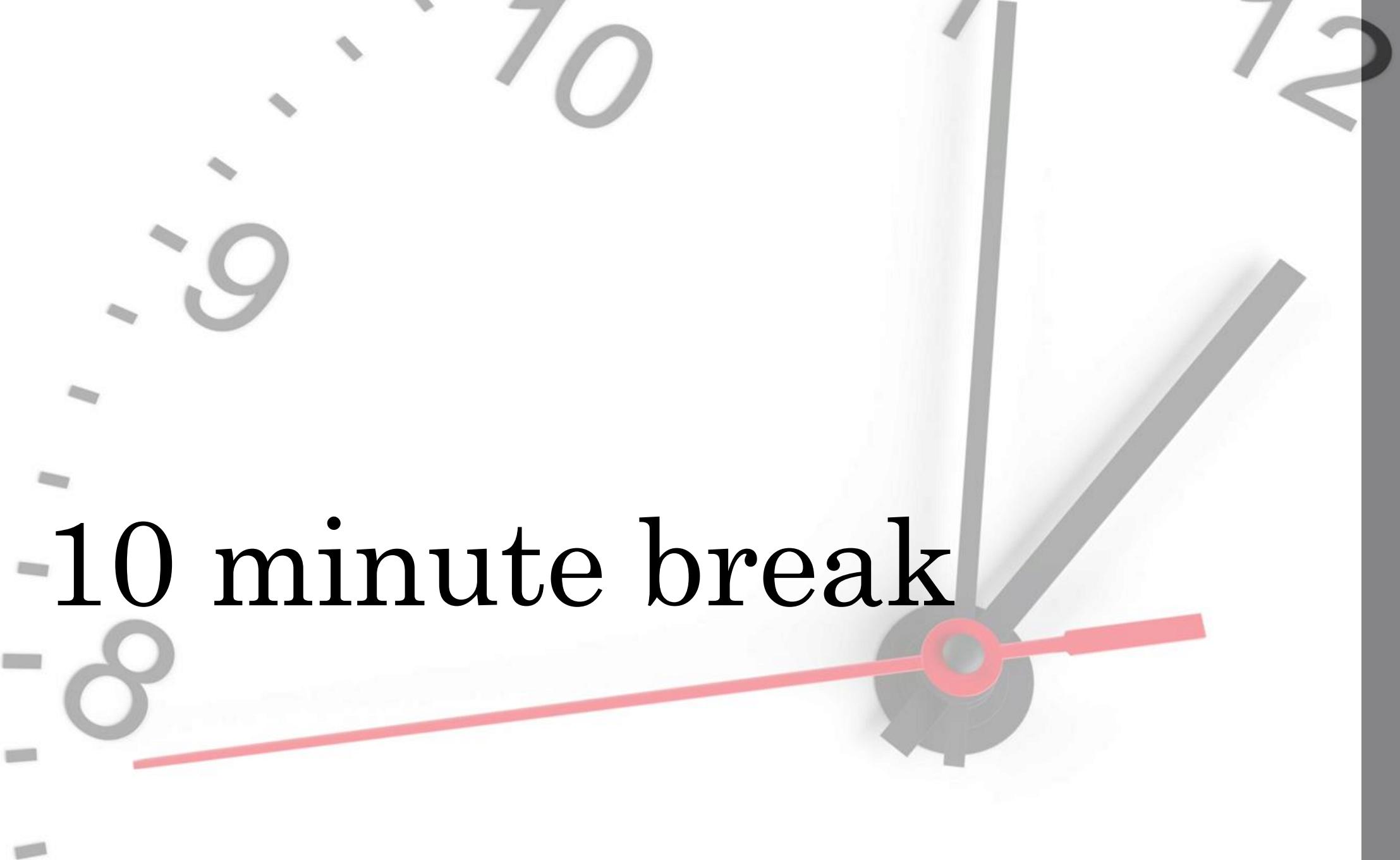


Centralized version control



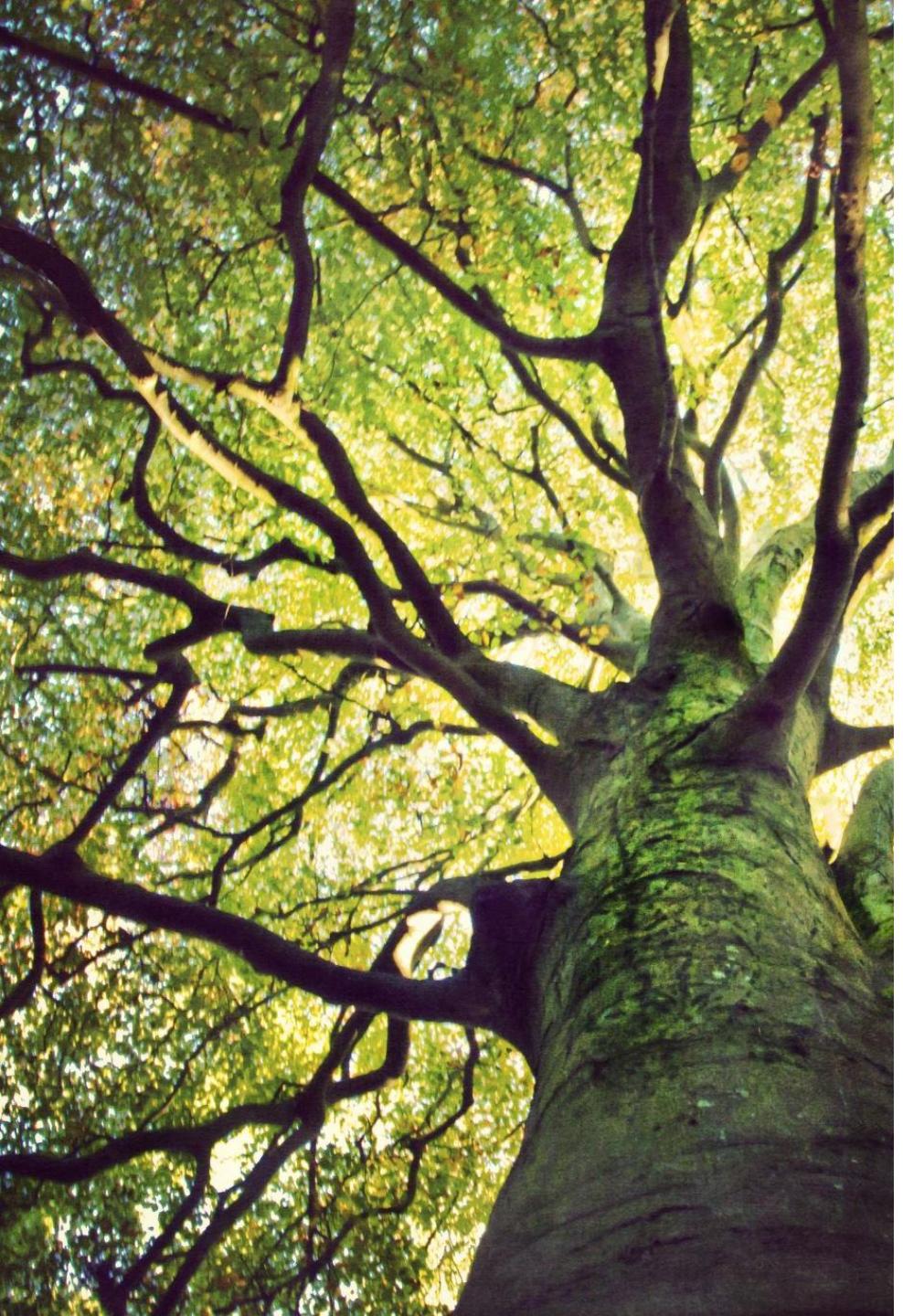


10 minute break



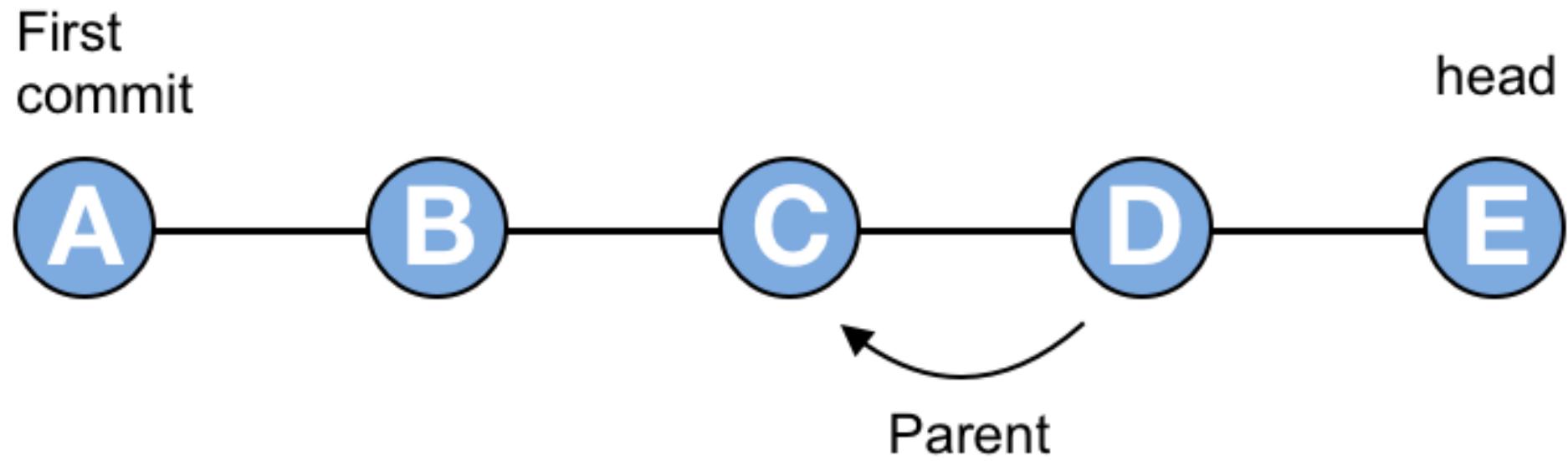
A dense, abstract network graph is visible against a black background. The graph consists of numerous small, colorful dots (nodes) connected by thin, translucent lines (edges). The connections form a complex web of branches and loops, resembling a dendrite or a neural network. The colors of the nodes include shades of purple, pink, yellow, and green.

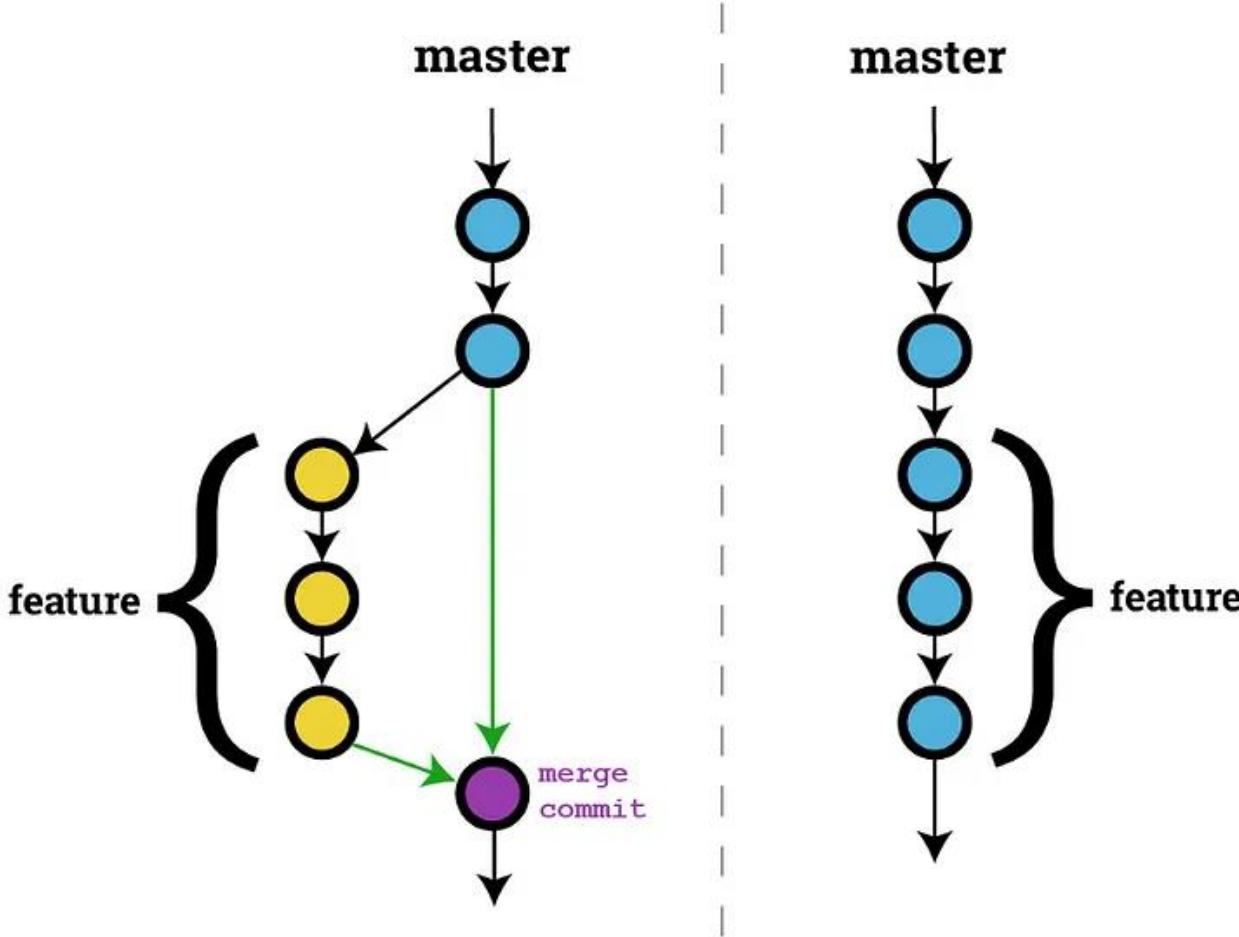
Branching



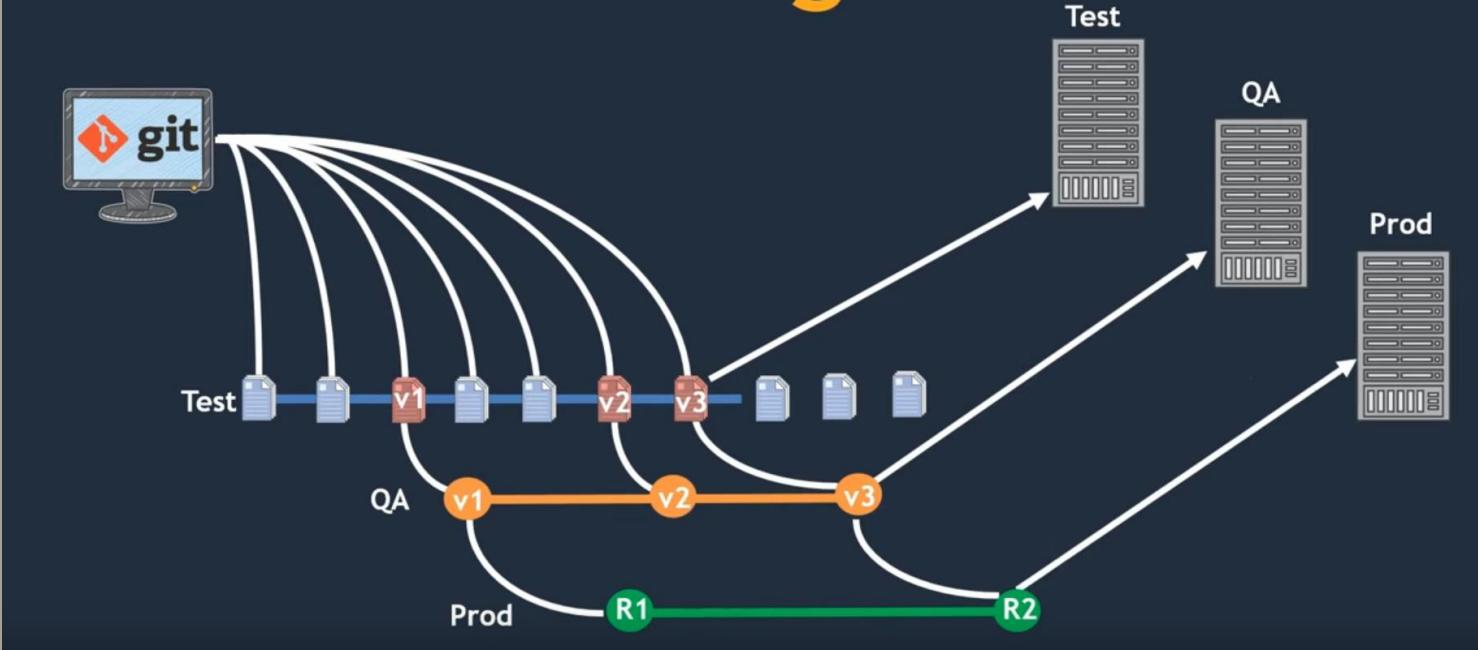
Branching Starters

- Main Branch
 - Used to be called “Master”
- Multiple test/feature branches
 - Active development happens here
- We should have policies for when & how to create branches





Branches Strategies

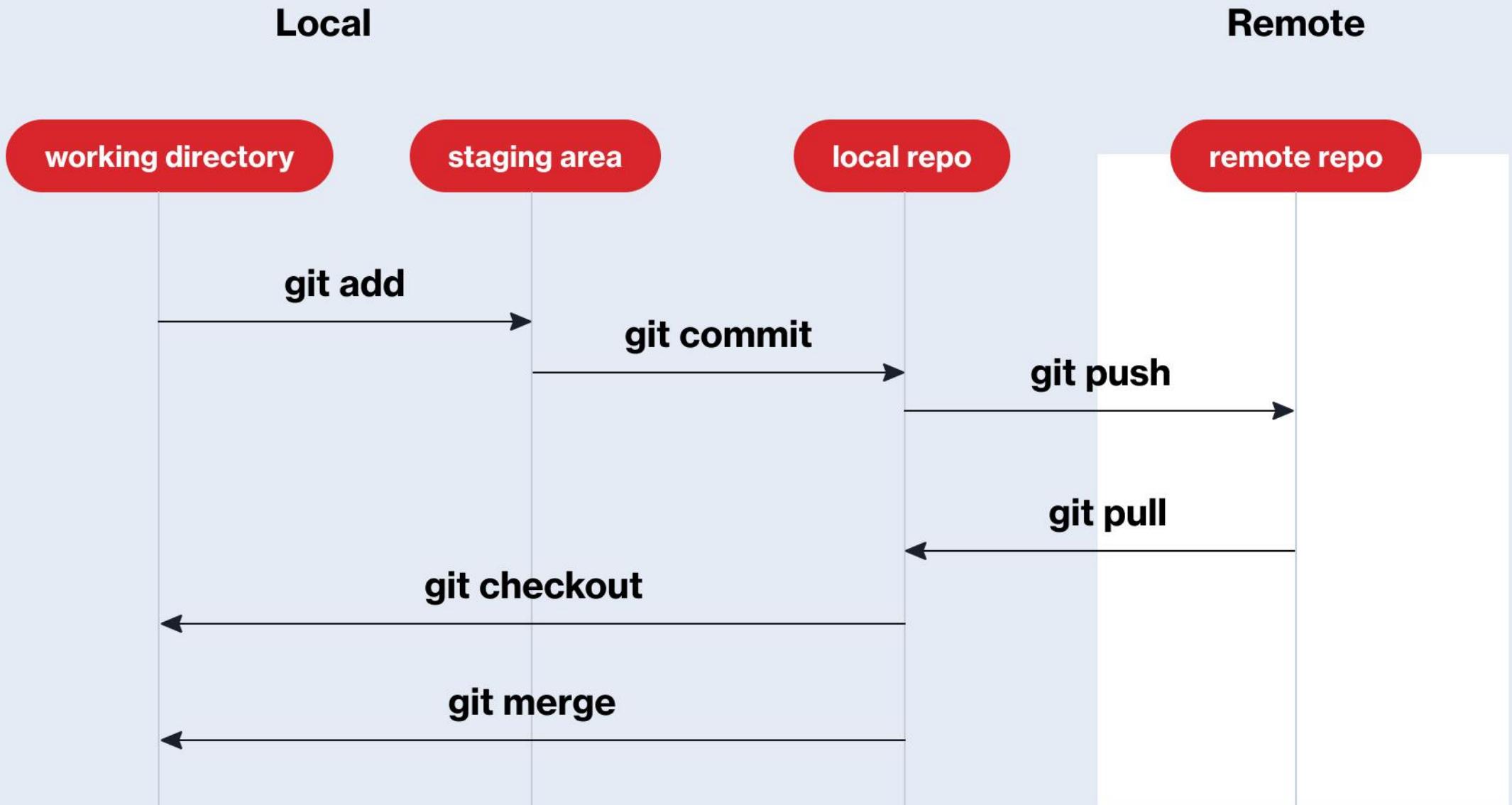


Branching Strategy

Common Git Commands

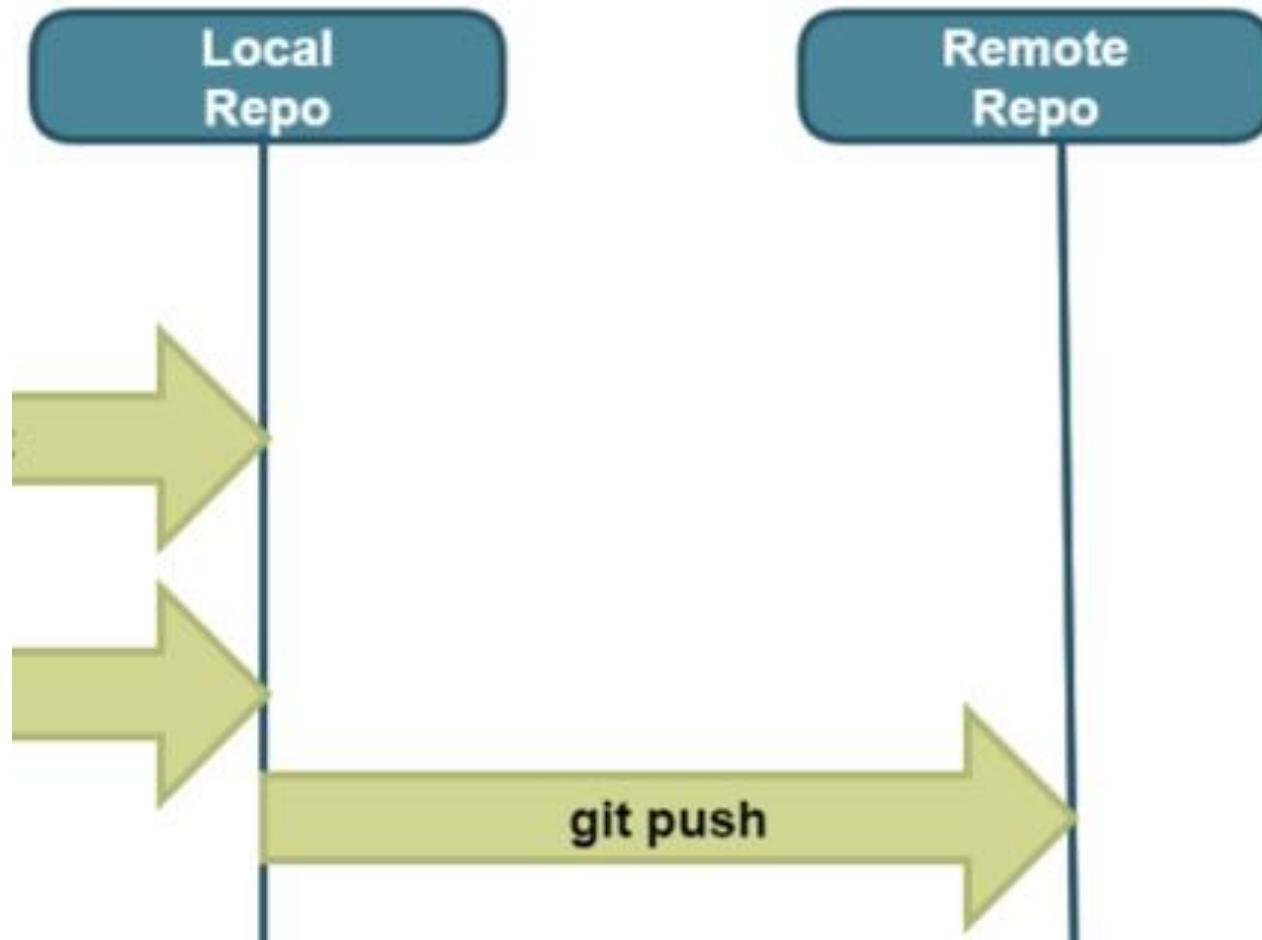


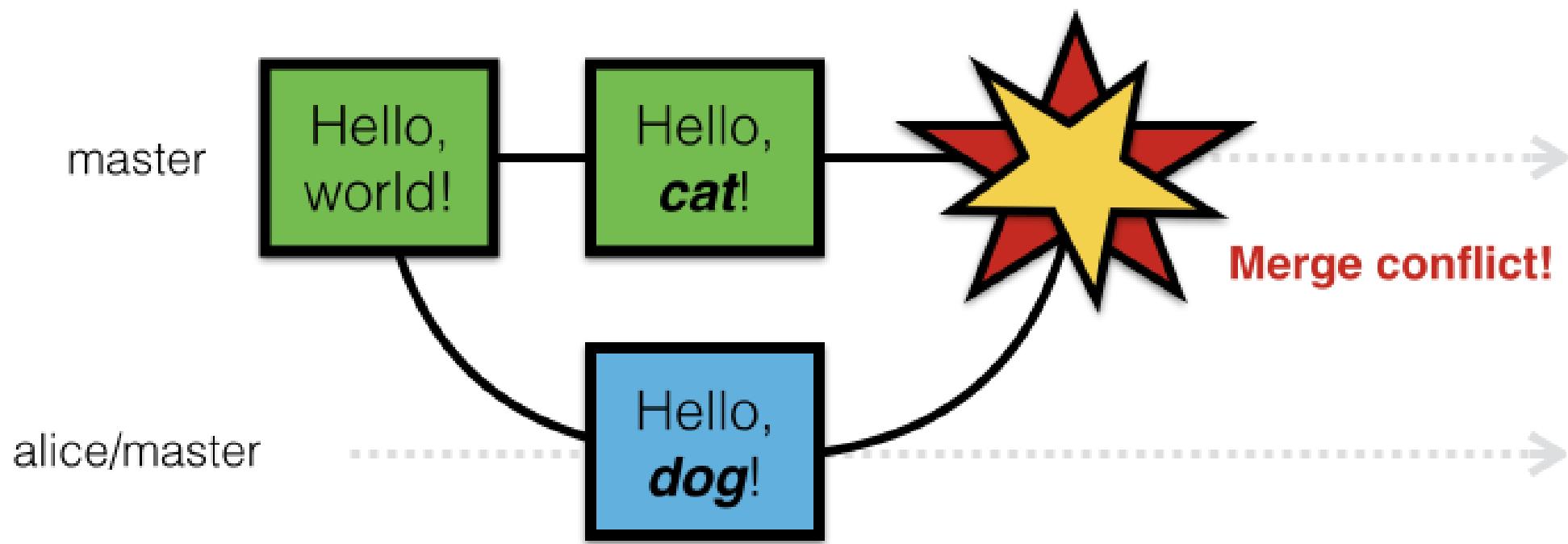
Commit





Push

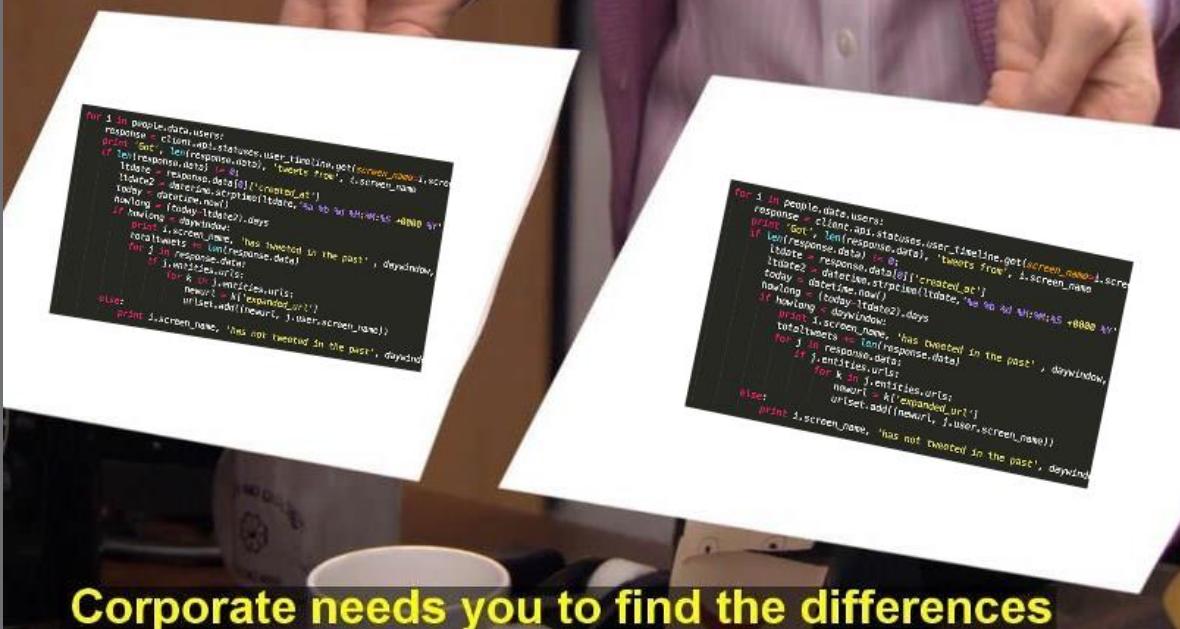




Let's settle this like adults!



Conflict Resolution



Corporate needs you to find the differences
between this picture and this picture.



They're the same picture.

Diff

Grammar, flow, and spelling co × Matthew

GitHub, Inc. [US] | https://github.com/owncloud/documentation/pull/3340/files

Changes from all commits ▾ Jump to... ▾ +316 -255

Unified Split Review changes ▾

past, invalid	when updating ownCloud.
13 -updates were a significant source of errors when updating ownCloud.	13
14	14
15 FAQ	15
16 ----	16
17	17
18 Why Did ownCloud Add Code Signing?	18 Why Did ownCloud Add Code Signing?
19 ~~~~~	19 ~~~~~
20	20
21 -By supporting Code Signing we add another layer of security by ensuring that	+By supporting Code Signing we add another layer of security which ensures that
22 -nobody other than authorized persons can push updates for applications, and	+nobody, other than authorized individuals, can push updates for applications.
23 -ensuring proper upgrades.	+This ensures proper upgrades.
24	23
25 Do We Lock Down ownCloud?	24 Do We Lock Down ownCloud?
26 ~~~~~	25 ~~~~~
27	26
28 -The ownCloud project is open source and always will be. We do not want to make	+The ownCloud project is open source and always will be.
29 -it more difficult for our users to run ownCloud. Any code signing errors on	+We do not want to make it more difficult for our users to run ownCloud.
30 -upgrades will not prevent ownCloud from running, but will display a warning on	+Any code signing errors on upgrades will not prevent ownCloud from running, but will display a warning on the Admin page.
31 -the Admin page. For applications that are not tagged "Official" the code signing	+For applications that are not tagged "Official" the code signing process is optional.
32 -process is optional.	31
33	32 Not Open Source Anymore?
34 Not Open Source Anymore?	33 ~~~~~
35 ~~~~~	34
36	

How do we work with teams?



Question or clarifications?



Preview of Next Session

See you next time!