

Git Basics

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?

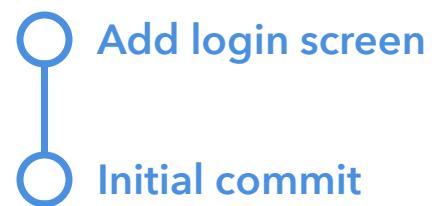
Git

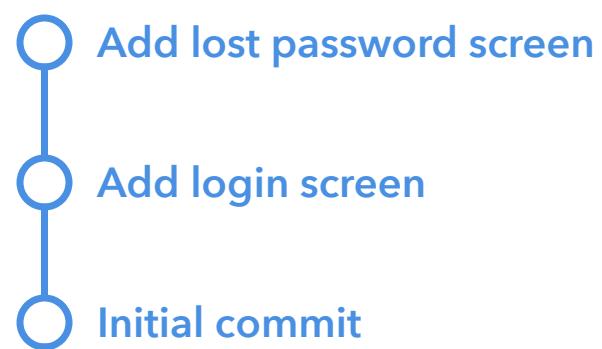
Distributed Version Control System

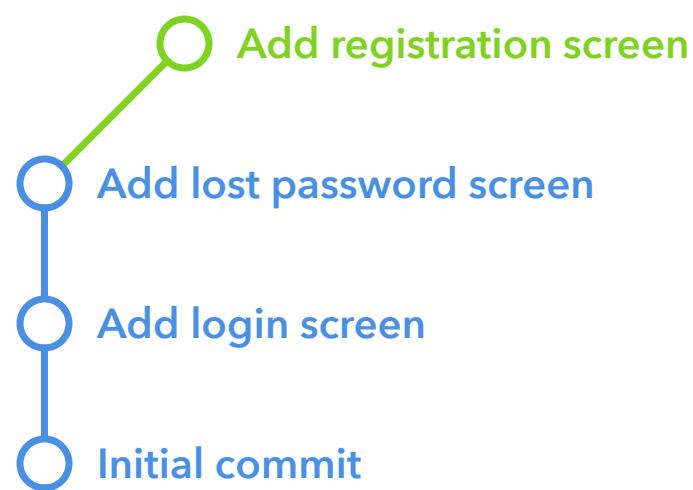
Why?

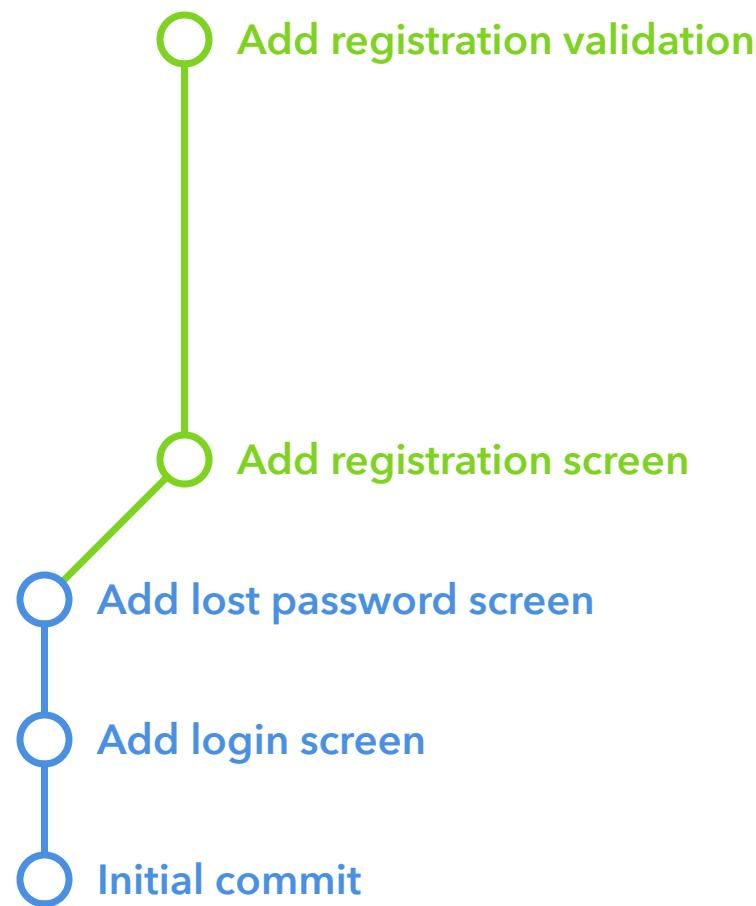
- code history and backup
- share code in team

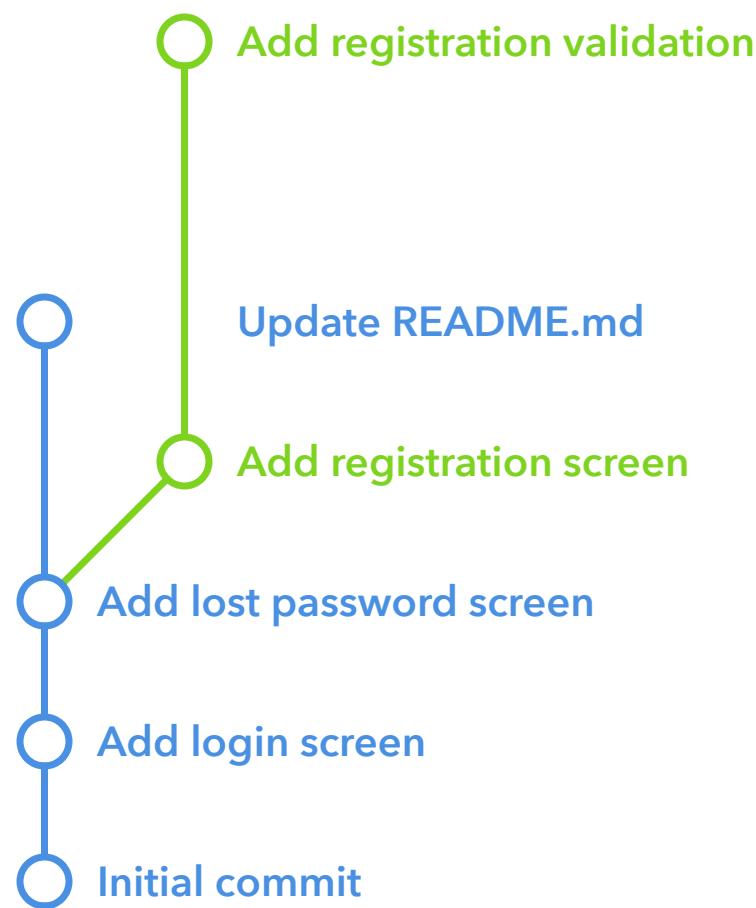
 Initial commit

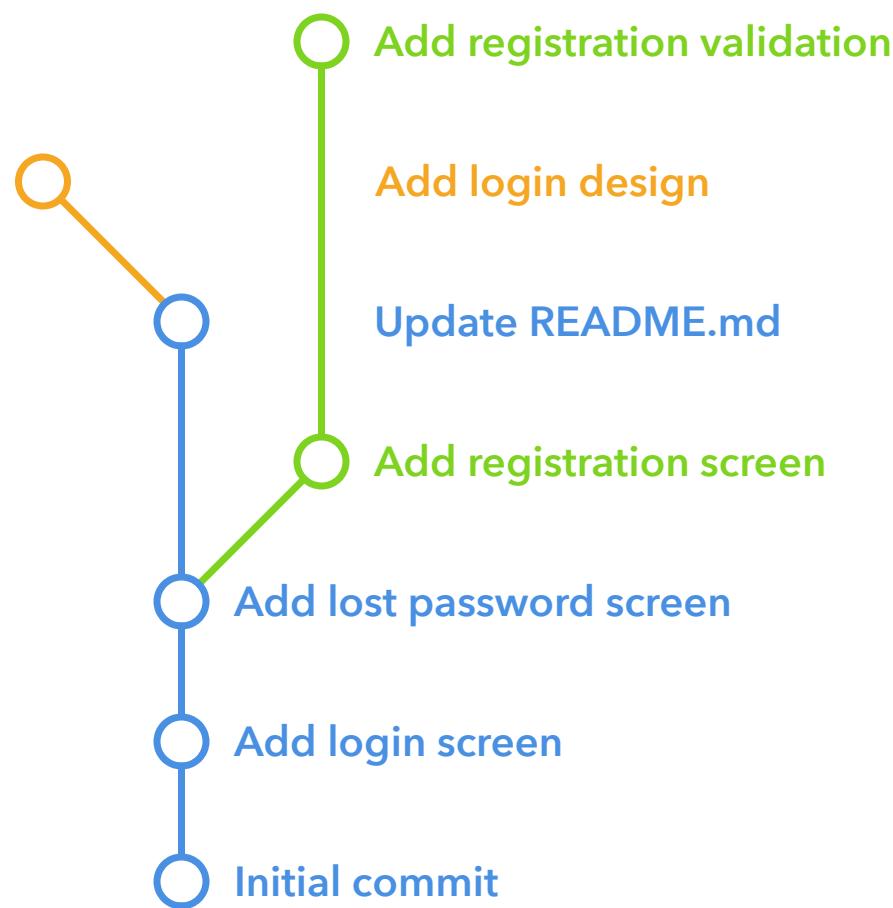


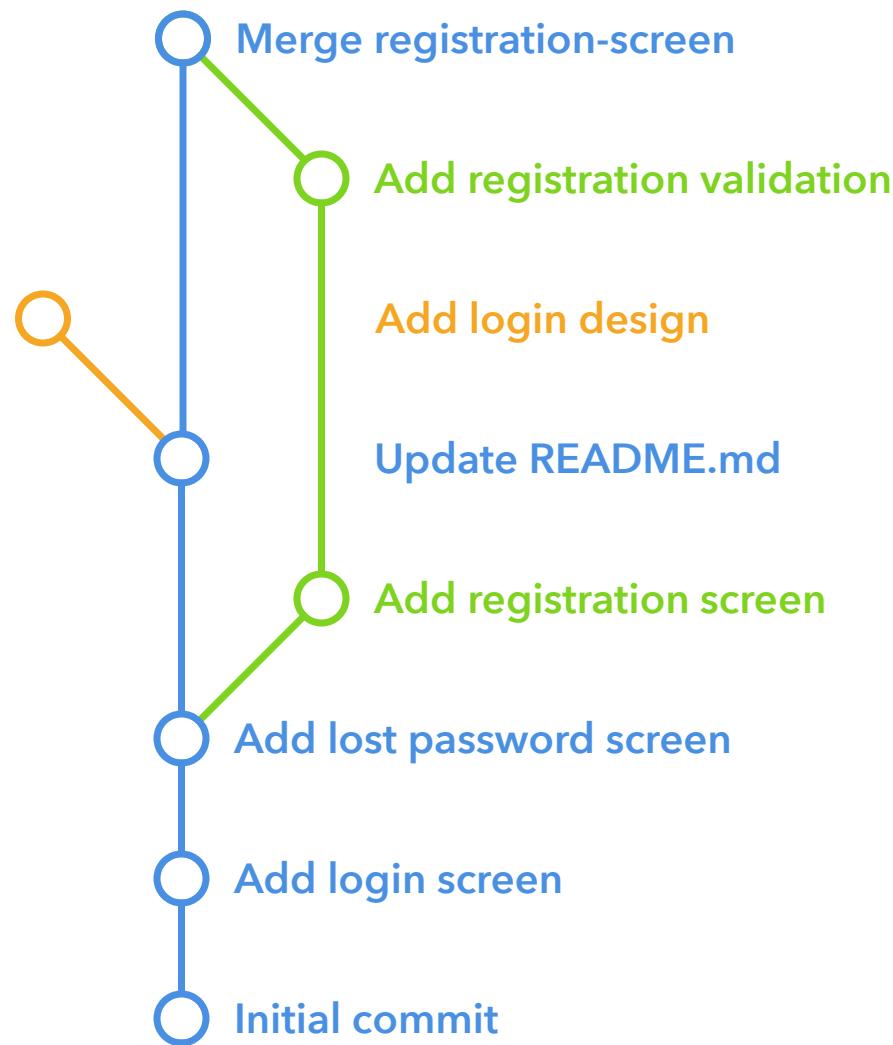


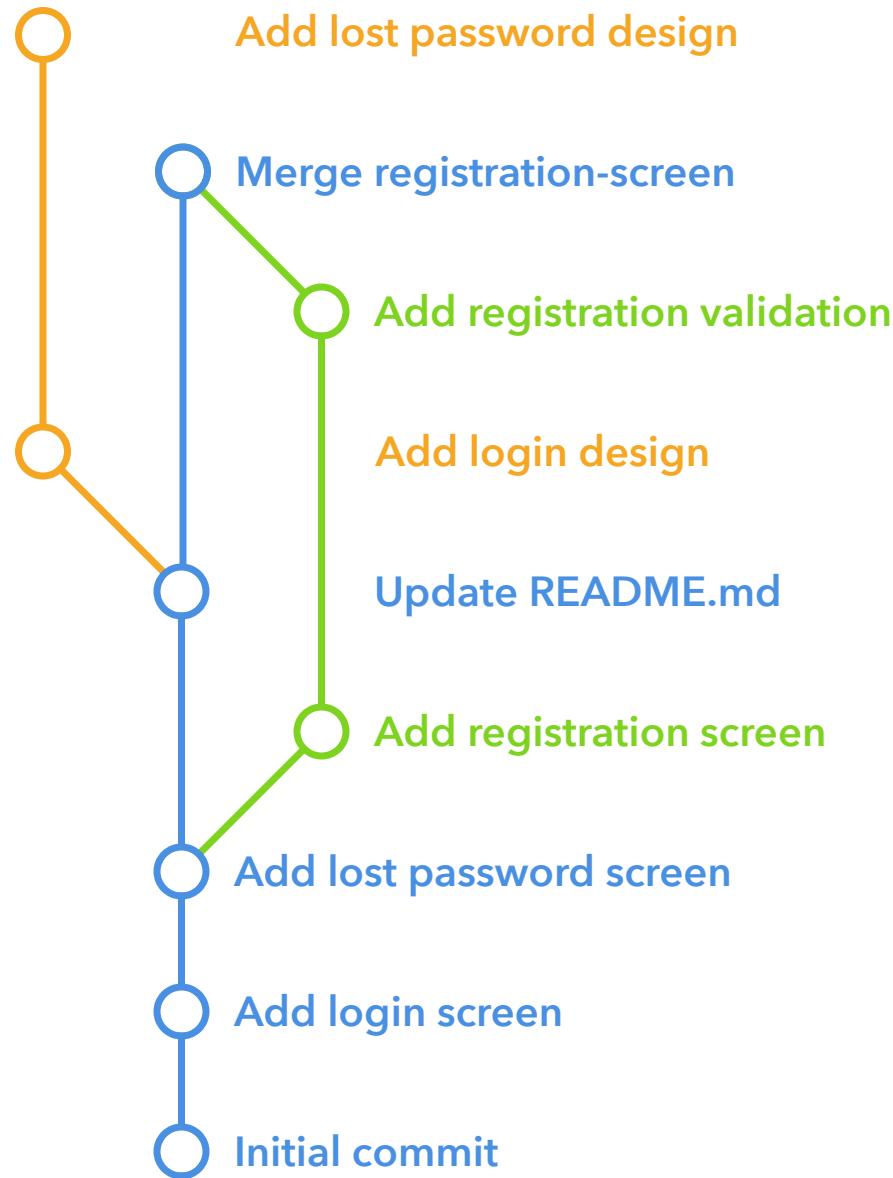


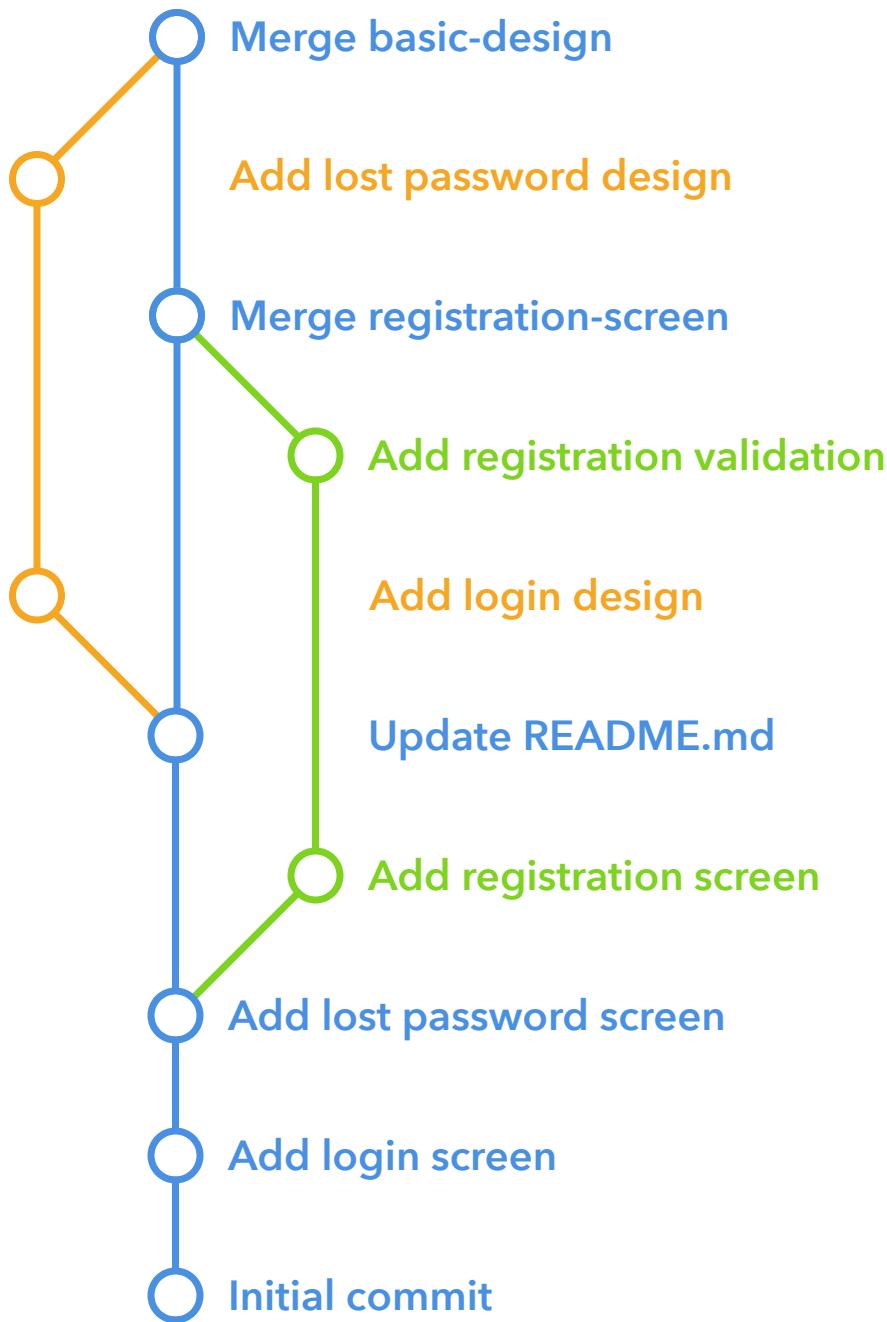








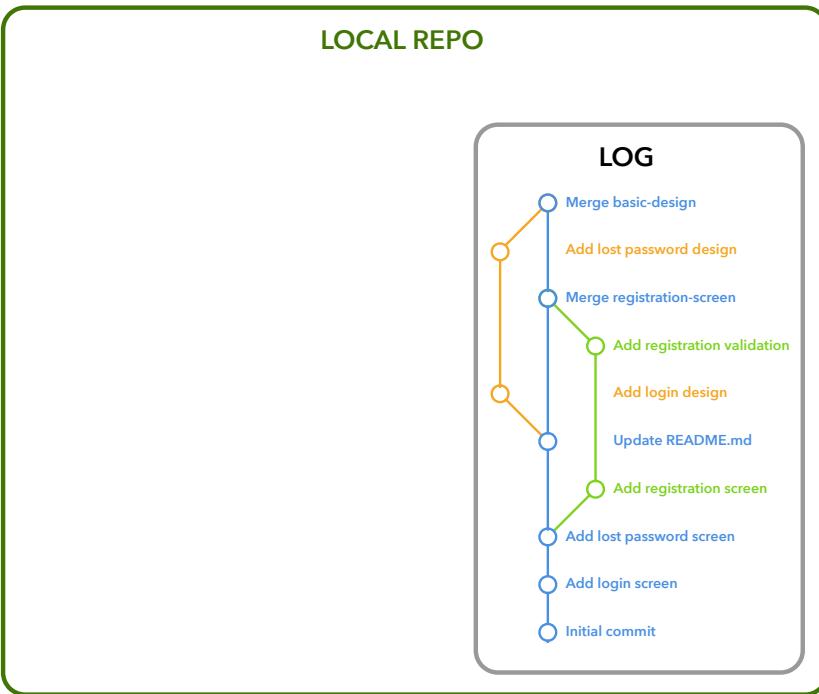


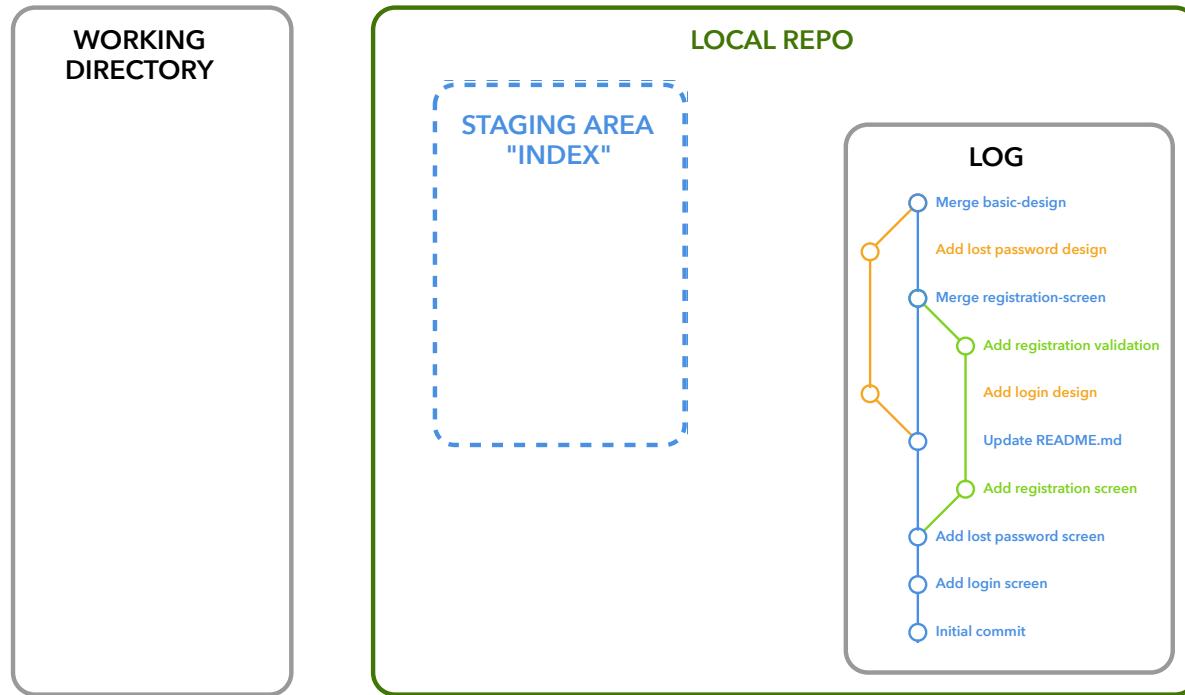


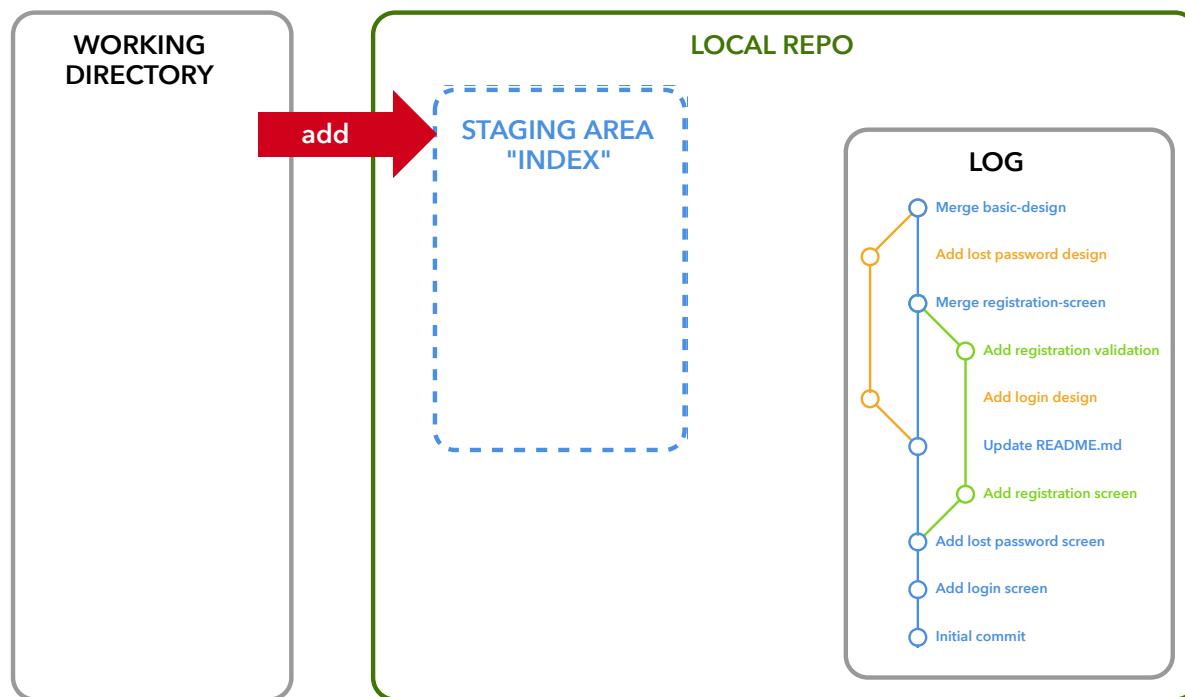
WORKING
DIRECTORY

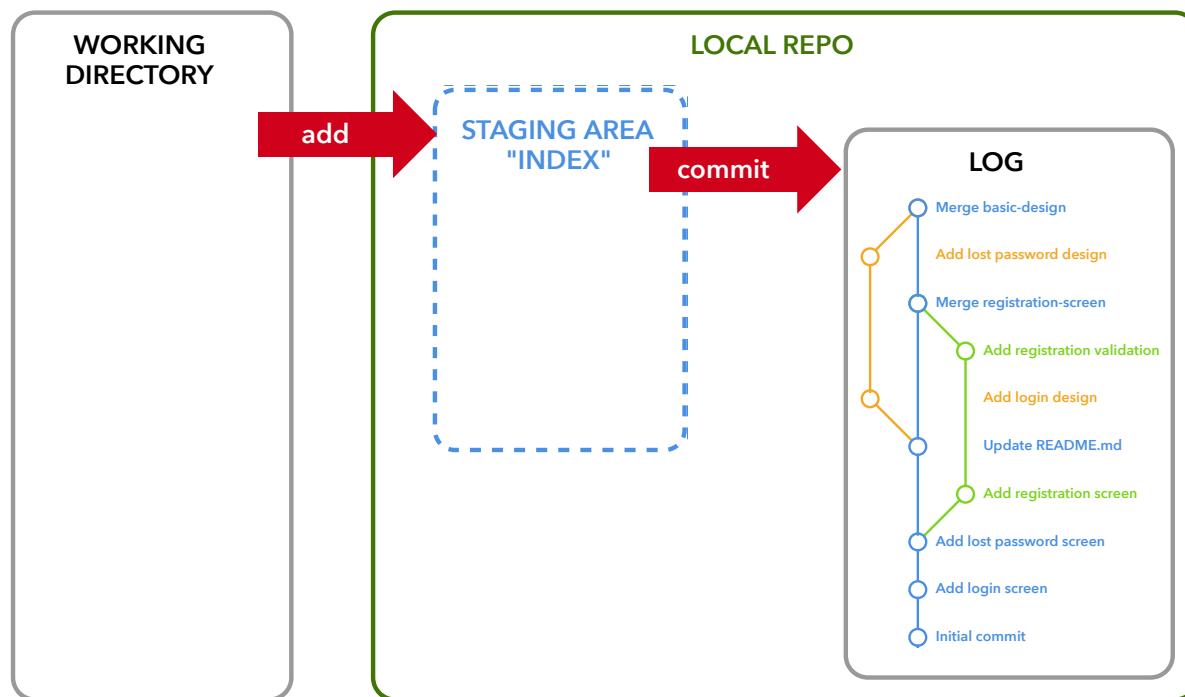
WORKING
DIRECTORY

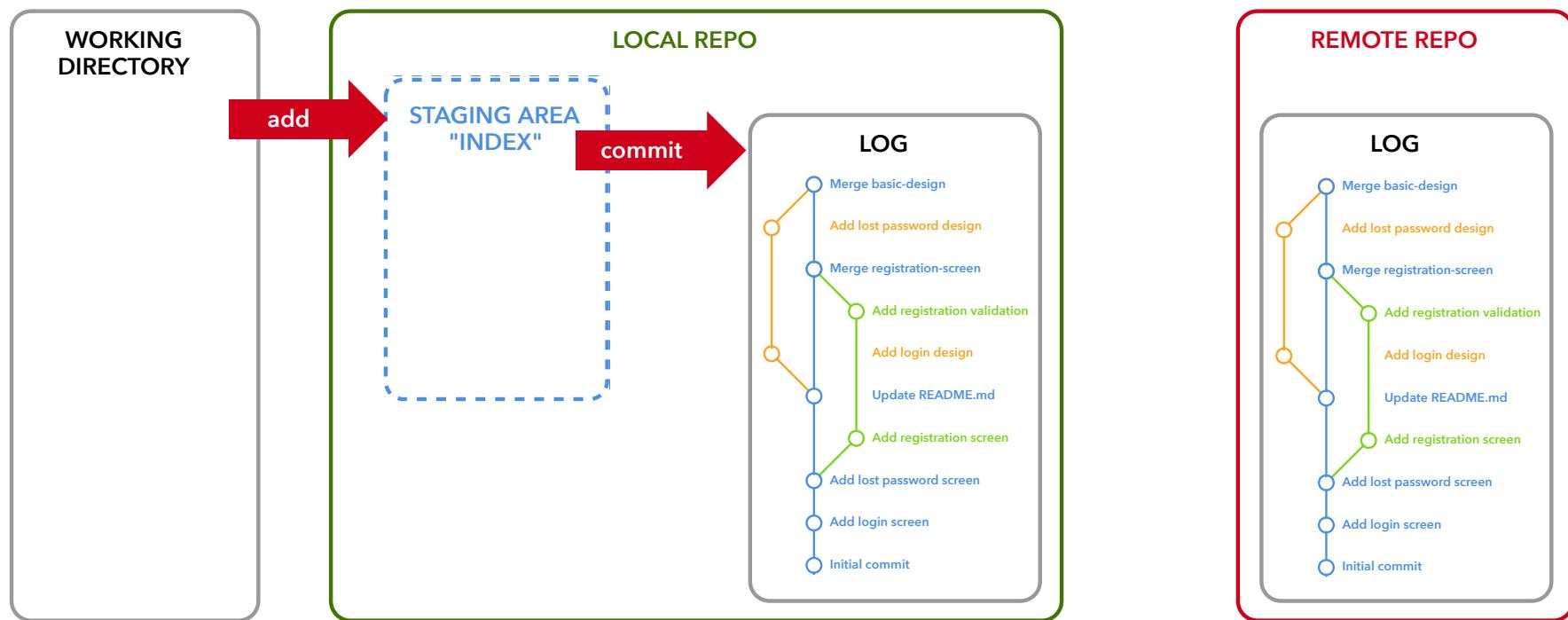
LOCAL REPO

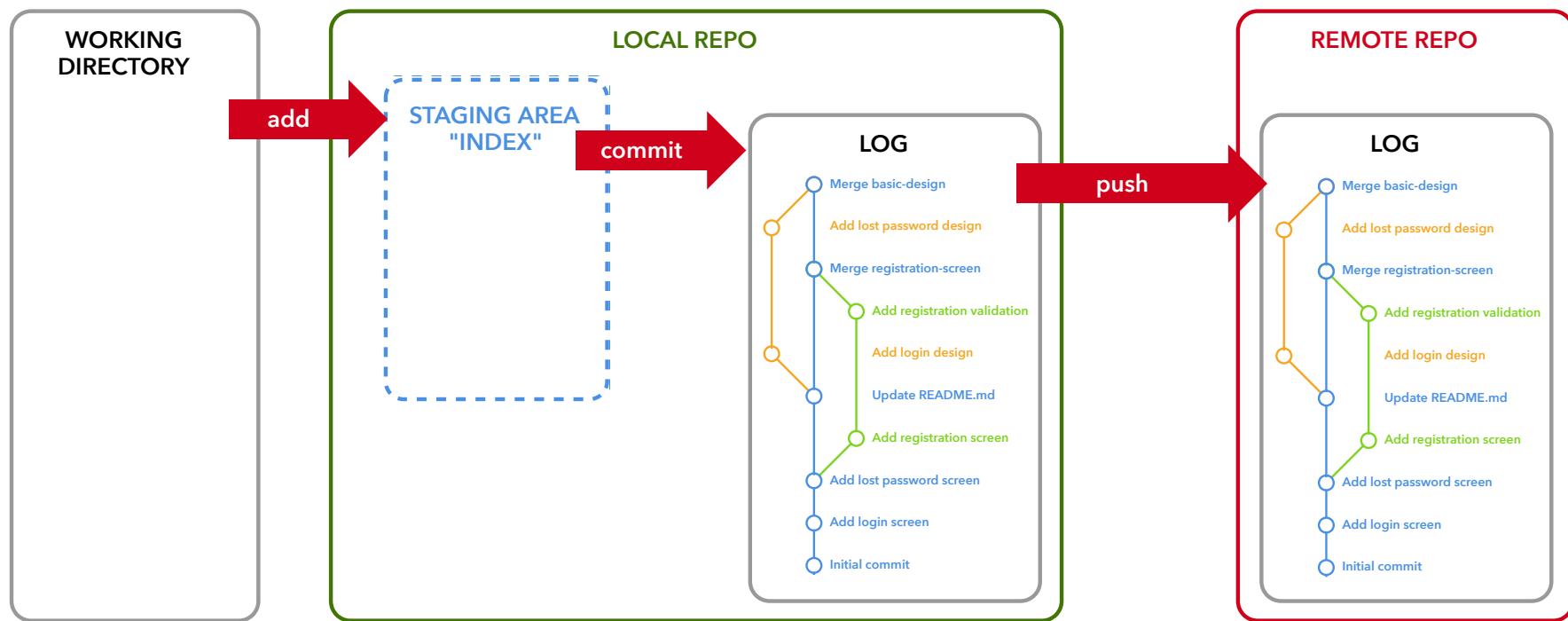


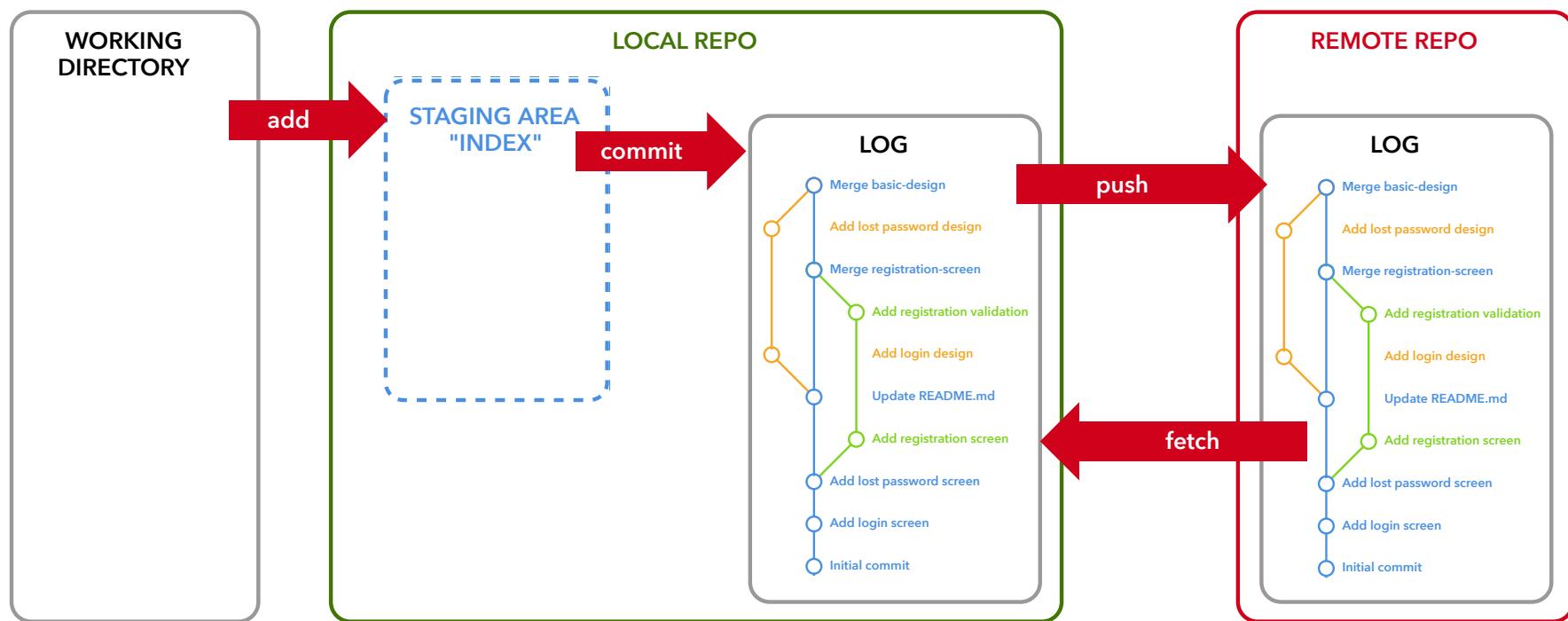


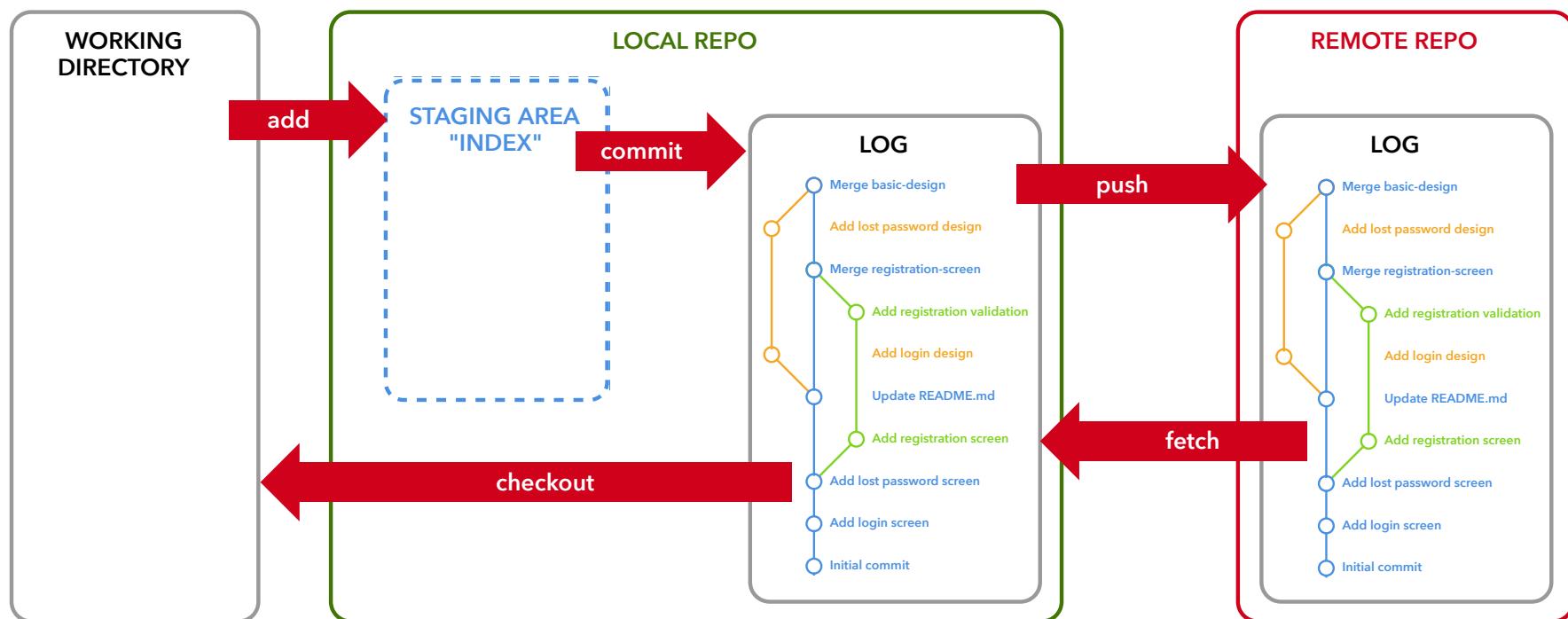








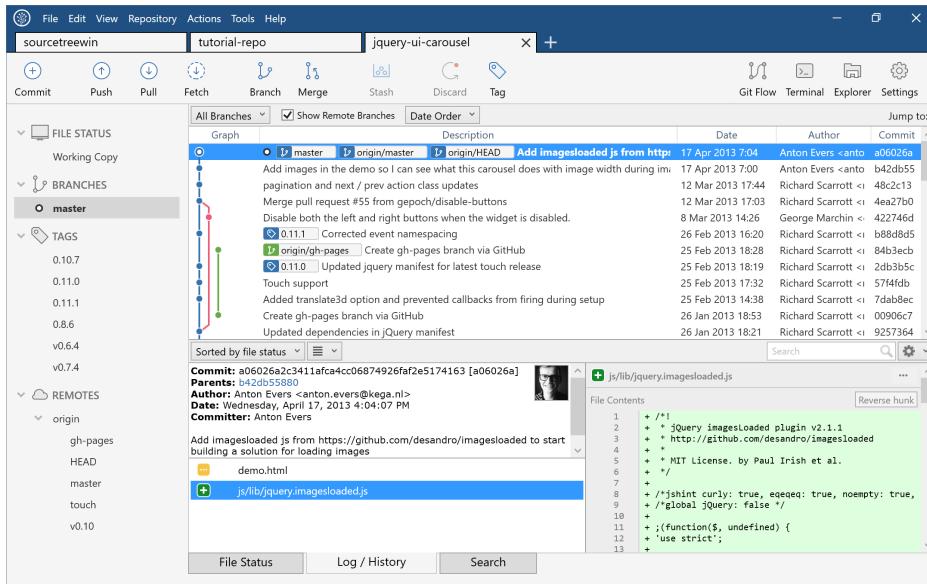




How to use Git?

GUI

Graphical User Interface



CLI

Command-Line Interface

```
alex@epxlab ~/Projects/epxlab/devops (zsh) % cd devops
alex@epxlab ~/Projects/epxlab/devops % git checkout -b alex/change
Switched to a new branch 'alex/change'
alex@epxlab ~/Projects/epxlab/devops % git add change
alex@epxlab ~/Projects/epxlab/devops % git rm change
alex@epxlab ~/Projects/epxlab/devops % git status
On branch alex/change
Changes to be committed:
(use "git reset HEAD <file>..." to unstage)

new file:   change

Changes not staged for commit:
(use "git add/rm <file>..." to update what will be committed)
(use "git checkout -- <file>..." to discard changes in working directory)

deleted:    change

alex@epxlab ~/Projects/epxlab/devops % git rm change
rm 'change'
alex@epxlab ~/Projects/epxlab/devops %
```

GUI

Graphical User Interface



CLI

Command-Line Interface



Bash

a POSIX shell



bash-3.2\$

1. bash

A screenshot of a Mac OS X terminal window. The window title bar is labeled "1. bash". The main pane of the terminal shows the command "ls" entered at the prompt "bash-3.2\$". The terminal has its characteristic blue-gray color scheme and red, yellow, and green window control buttons.

```
bash-3.2$ ls
```

A screenshot of a Mac OS X terminal window. The window title is "1. bash". The terminal prompt is "bash-3.2\$". The user has run the command "ls" which lists three files: "index.js", "README.md", and "screens".

```
bash-3.2$ ls
README.md      index.js      screens
bash-3.2$
```



1. bash

```
bash-3.2$ ls
README.md      index.js      screens
bash-3.2$ ls -lAG█
```

```
● ● ● 1. bash
bash-3.2$ ls
README.md      index.js      screens
bash-3.2$ ls -lAG
total 16
drwxr-xr-x  12 heracek  staff  408 Mar 20 08:51 .git
-rw-r--r--   1 heracek  staff   39 Mar 20 08:44 README.md
-rw-r--r--   1 heracek  staff  428 Mar 20 08:50 index.js
drwxr-xr-x   5 heracek  staff  170 Mar 20 08:50 screens
bash-3.2$ █
```

```
● ● ● 1. bash
bash-3.2$ ls
README.md      index.js      screens
bash-3.2$ ls -lAG
total 16
drwxr-xr-x  12 heracek  staff  408 Mar 20 08:51 .git
-rw-r--r--   1 heracek  staff   39 Mar 20 08:44 README.md
-rw-r--r--   1 heracek  staff  428 Mar 20 08:50 index.js
drwxr-xr-x   5 heracek  staff  170 Mar 20 08:50 screens
bash-3.2$ cd s█
```

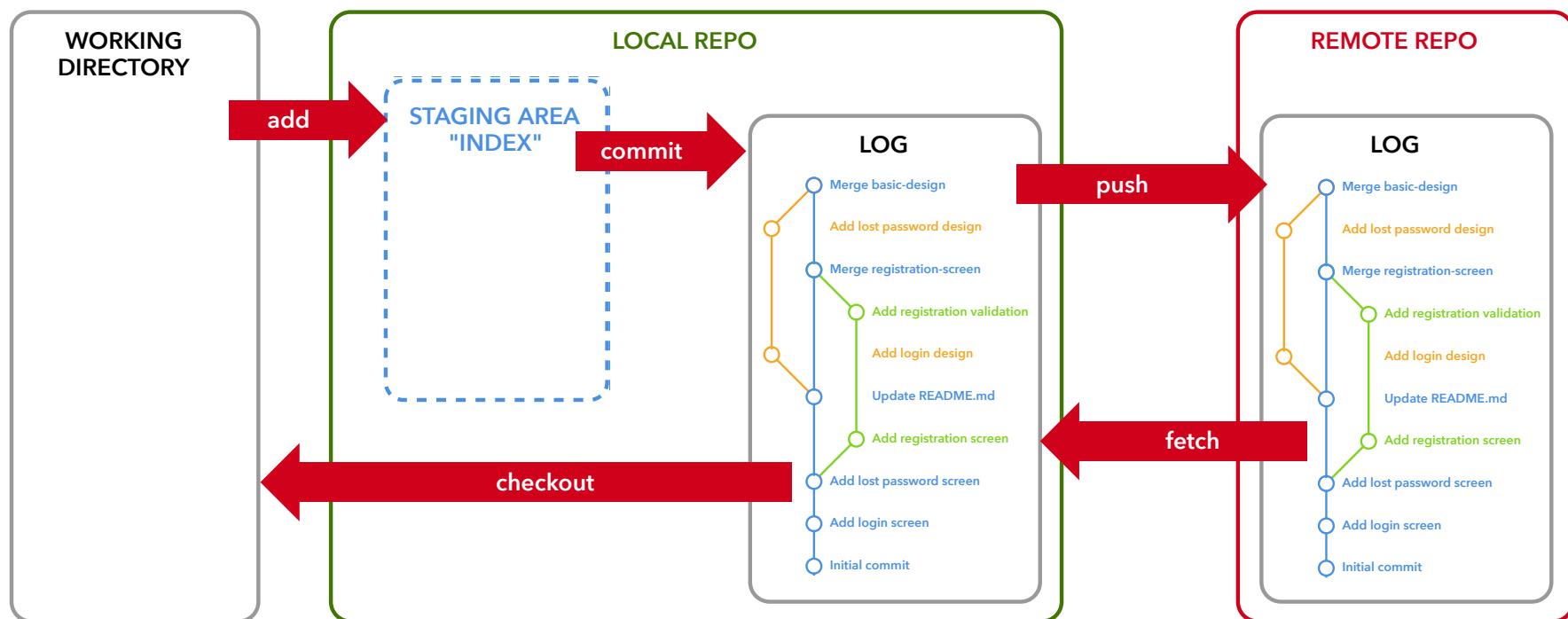
```
● ● ● 1. bash
bash-3.2$ ls
README.md      index.js      screens
bash-3.2$ ls -lAG
total 16
drwxr-xr-x  12 heracek  staff  408 Mar 20 08:51 .git
-rw-r--r--   1 heracek  staff   39 Mar 20 08:44 README.md
-rw-r--r--   1 heracek  staff  428 Mar 20 08:50 index.js
drwxr-xr-x   5 heracek  staff  170 Mar 20 08:50 screens
bash-3.2$ cd screens/
```

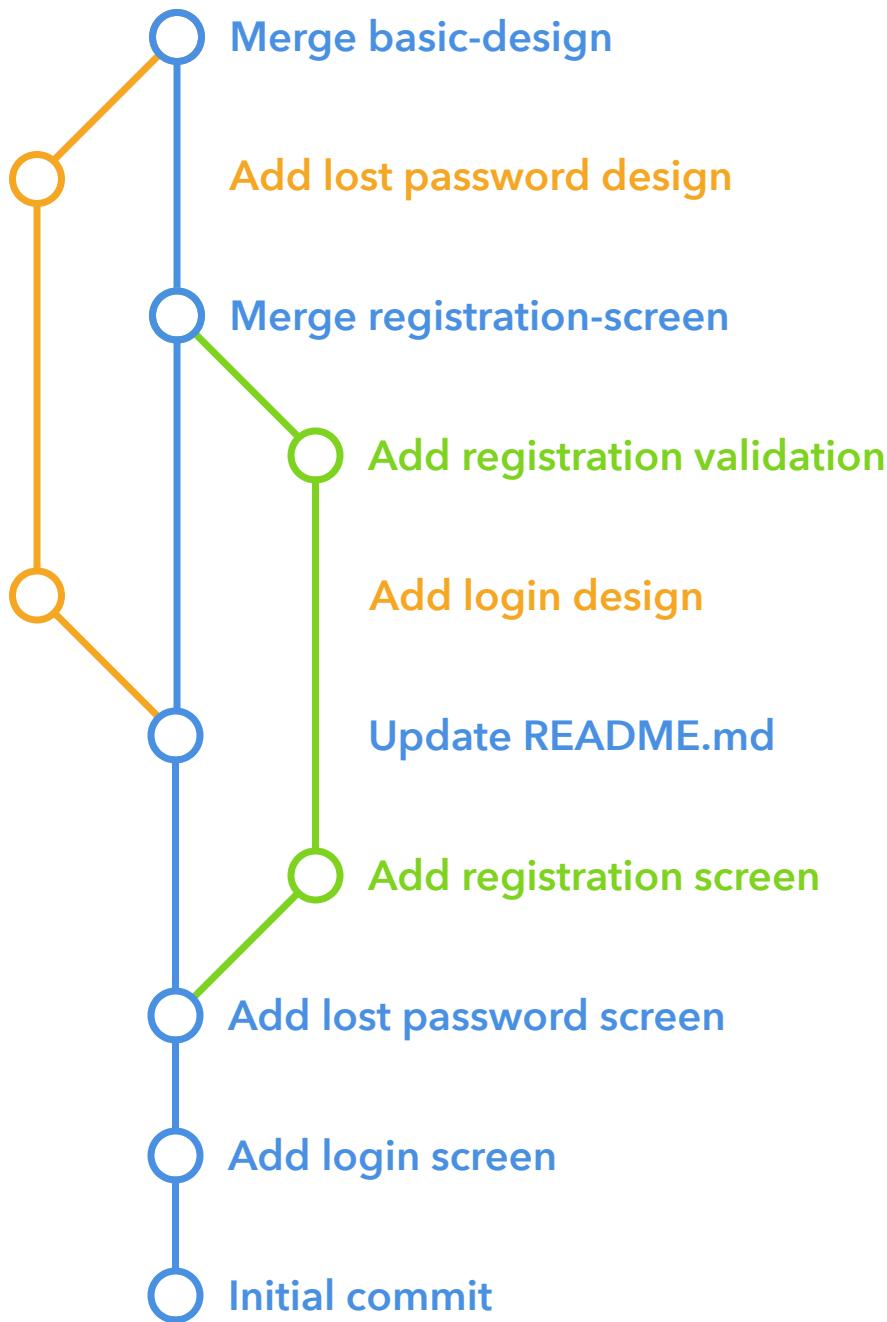
```
● ● ● 1. bash
bash-3.2$ ls
README.md      index.js      screens
bash-3.2$ ls -lAG
total 16
drwxr-xr-x  12 heracek  staff  408 Mar 20 08:51 .git
-rw-r--r--   1 heracek  staff   39 Mar 20 08:44 README.md
-rw-r--r--   1 heracek  staff  428 Mar 20 08:50 index.js
drwxr-xr-x   5 heracek  staff  170 Mar 20 08:50 screens
bash-3.2$ cd screens/
bash-3.2$ █
```

```
● ● ● 1. bash
bash-3.2$ ls
README.md      index.js      screens
bash-3.2$ ls -lAG
total 16
drwxr-xr-x  12 heracek  staff  408 Mar 20 08:51 .git
-rw-r--r--   1 heracek  staff   39 Mar 20 08:44 README.md
-rw-r--r--   1 heracek  staff  428 Mar 20 08:50 index.js
drwxr-xr-x   5 heracek  staff  170 Mar 20 08:50 screens
bash-3.2$ cd screens/
bash-3.2$ ls -lAG
total 16
-rw-r--r--   1 heracek  staff   44 Mar 20 08:54 login.js
-rw-r--r--   1 heracek  staff   52 Mar 20 08:54 lostPassword.js
bash-3.2$ █
```

```
● ● ● 1. bash
bash-3.2$ ls
README.md      index.js      screens
bash-3.2$ ls -lAG
total 16
drwxr-xr-x  12 heracek  staff  408 Mar 20 08:51 .git
-rw-r--r--   1 heracek  staff   39 Mar 20 08:44 README.md
-rw-r--r--   1 heracek  staff  428 Mar 20 08:50 index.js
drwxr-xr-x   5 heracek  staff  170 Mar 20 08:50 screens
bash-3.2$ cd screens/
bash-3.2$ ls -lAG
total 16
-rw-r--r--   1 heracek  staff   44 Mar 20 08:54 login.js
-rw-r--r--   1 heracek  staff   52 Mar 20 08:54 lostPassword.js
bash-3.2$ cd ..
```

```
● ● ● 1. bash
bash-3.2$ ls
README.md      index.js      screens
bash-3.2$ ls -lAG
total 16
drwxr-xr-x  12 heracek  staff  408 Mar 20 08:51 .git
-rw-r--r--   1 heracek  staff   39 Mar 20 08:44 README.md
-rw-r--r--   1 heracek  staff  428 Mar 20 08:50 index.js
drwxr-xr-x   5 heracek  staff  170 Mar 20 08:50 screens
bash-3.2$ cd screens/
bash-3.2$ ls -lAG
total 16
-rw-r--r--   1 heracek  staff   44 Mar 20 08:54 login.js
-rw-r--r--   1 heracek  staff   52 Mar 20 08:54 lostPassword.js
bash-3.2$ cd ..
bash-3.2$ ls -lAG
total 16
drwxr-xr-x  12 heracek  staff  408 Mar 20 08:54 .git
-rw-r--r--   1 heracek  staff   39 Mar 20 08:54 README.md
-rw-r--r--   1 heracek  staff  315 Mar 20 08:54 index.js
drwxr-xr-x   4 heracek  staff  136 Mar 20 08:54 screens
bash-3.2$ █
```







1. bash

bash-3.2\$ git status

```
● ● ● 1. bash
bash-3.2$ git status
On branch master
Your branch is up to date with 'origin/master'.

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)

    modified:   index.js

Untracked files:
  (use "git add <file>..." to include in what will be committed)

    screens/registration.js

no changes added to commit (use "git add" and/or "git commit -a")
bash-3.2$ █
```



1. bash

```
bash-3.2$ git checkout -b feature/registration
```

A screenshot of a macOS terminal window. The window title is "1. bash". The terminal output shows:

```
bash-3.2$ git checkout -b feature/registration
M      index.js
Switched to a new branch 'feature/registration'
bash-3.2$ █
```

```
● ● ● 1. bash
bash-3.2$ git status
On branch feature/registration
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)

    modified:   index.js

Untracked files:
  (use "git add <file>..." to include in what will be committed)

    screens/registration.js

no changes added to commit (use "git add" and/or "git commit -a")
bash-3.2$ █
```

```
bash-3.2$ git status
On branch feature/registration
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)

    modified:   index.js

Untracked files:
  (use "git add <file>..." to include in what will be committed)

    screens/registration.js

no changes added to commit (use "git add" and/or "git commit -a")
bash-3.2$ git add .
bash-3.2$ █
```

```
1. bash
bash-3.2$ git status
On branch feature/registration
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)

    modified:   index.js

Untracked files:
  (use "git add <file>..." to include in what will be committed)

    screens/registration.js

no changes added to commit (use "git add" and/or "git commit -a")
bash-3.2$ git add .
bash-3.2$ git status
On branch feature/registration
Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)

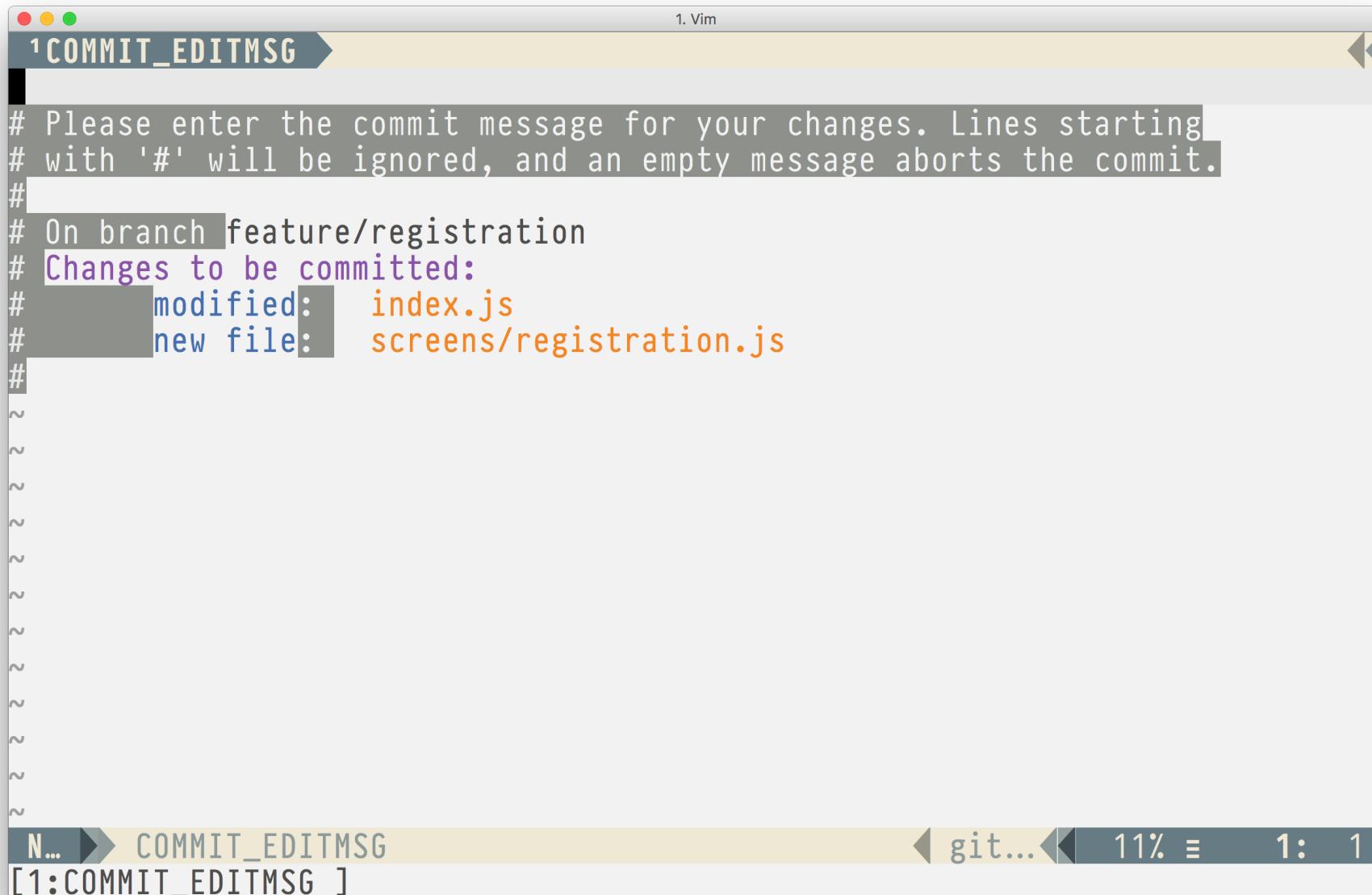
    modified:   index.js
    new file:   screens/registration.js

bash-3.2$
```



1. bash

bash-3.2\$ git commit



The screenshot shows a Vim window with a yellow header bar. The title bar says '1. Vim' with a bell icon. The status bar at the bottom has tabs for 'N...', 'COMMIT_EDITMSG[+]', and ':call WrapRelativeMotion("\$")'. It also shows navigation icons, a file percentage (11%), and a line number (1: 23). The main content area displays a commit message template:

```
1 COMMIT_EDITMSG+
Add registration screen
# Please enter the commit message for your changes. Lines starting
# with '#' will be ignored, and an empty message aborts the commit.
#
# On branch feature/registration
# Changes to be committed:
#     modified:   index.js
#     new file:   screens/registration.js
#
~
~
~
~
~
~
~
~
~
~
~
```



1. bash

```
bash-3.2$ git commit  
[feature/registration df1b47b] Add registration screen  
 2 files changed, 6 insertions(+)  
   create mode 100644 screens/registration.js  
bash-3.2$ █
```

A screenshot of a terminal window titled "1. bash". The window has a light gray background and a white title bar. In the title bar, there are three colored circles (red, yellow, green) on the left and the text "1. bash" on the right. The main area of the terminal shows a command line interface. On the left side of the command line, the text "bash-3.2\$ tig" is visible, with the letter "g" currently highlighted by a dark gray rectangular cursor. The rest of the terminal window is empty and white.

```
1. tig
2018-03-20 09:17 Tomáš Horáček • [feature/registration] Add registration scr
2018-03-20 08:41 Tomáš Horáček • [master] {origin/HEAD} {origin/master} Add
2018-03-20 08:39 Tomáš Horáček • Add login screen
2018-03-20 08:34 Tomáš Horáček ◎ Initial commit

[main] e2cf81aca3a6f19797ec2cb067ca5d27108cd614 - commit 4 of 4      100%
Cannot move beyond the last line
```



1. tig

```
2018-03-20 09:17 Tomáš Horáček • [feature/registration] Add registration scr
2018-03-20 08:41 Tomáš Horáček • [master] {origin/HEAD} {origin/master} Add
2018-03-20 08:39 Tomáš Horáček • Add login screen
2018-03-20 08:34 Tomáš Horáček ◎ Initial commit
```

[main] df1b47b4c5d5064dc6c814b4b53cc1ebd6c8ec7d - commit 1 of 4
Unknown key, press h for help

100%

1. tig

```
2018-03-20 09:17 Tomáš Horáček • [feature/registration] Add registration scr
2018-03-20 08:41 Tomáš Horáček • [master] {origin/HEAD} {origin/master} Add
2018-03-20 08:39 Tomáš Horáček • Add login screen
2018-03-20 08:34 Tomáš Horáček ◎ Initial commit

[main] df1b47b4c5d5064dc6c814b4b53cc1ebd6c8ec7d - commit 1 of 4      100%
commit df1b47b4c5d5064dc6c814b4b53cc1ebd6c8ec7d
Refs: [feature/registration]
Author: Tomáš Horáček <tomas.horacek@gmail.com>
AuthorDate: Tue Mar 20 09:17:12 2018 +0100
Commit: Tomáš Horáček <tomas.horacek@gmail.com>
CommitDate: Tue Mar 20 09:17:12 2018 +0100

    Add registration screen
    -
index.js           |  4 +++
screens/registration.js |  2 ++
2 files changed, 6 insertions(+)

diff --git a/index.js b/index.js
[diff] df1b47b4c5d5064dc6c814b4b53cc1ebd6c8ec7d - line 1 of 42      33%
```



1. bash

bash-3.2\$ git diff master

```
diff --git a/index.js b/index.js
index e160e76..8558df6 100644
--- a/index.js
+++ b/index.js
@@ -1,14 +1,18 @@
 import { login } from './screens/login.js';
 import { lostPassword } from './screens/lostPassword.js';
+import { registration } from './screens/registration.js';

const main = (screenName) => {
  switch (screenName) {
    case 'login':
      return login();

-    case 'lost-password':
+    case 'lostPassword':
      return lostPassword();

+    case 'registration':
+      return registration();
+
    default:
      return null;
:
```

1. less

```
const main = (screenName) => {
  switch (screenName) {
    case 'login':
      return login();

-   case 'lost-password':
+   case 'lostPassword':
      return lostPassword();

+   case 'registration':
+   return registration();
+
    default:
      return null;
  }
diff --git a/screens/registration.js b/screens/registration.js
new file mode 100644
index 0000000..fa15dff
--- /dev/null
+++ b/screens/registration.js
@@ -0,0 +1,2 @@
+
+export const registration = () => 'Registration';
(END)
```



1. bash

```
bash-3.2$ git diff master  
bash-3.2$ █
```



1. bash

```
bash-3.2$ git diff master  
bash-3.2$ █
```



1. bash

```
bash-3.2$ git fetch --all
```

```
● ● ● 1. bash
bash-3.2$ git fetch --all
Fetching origin
remote: Counting objects: 7, done.
remote: Compressing objects: 100% (6/6), done.
remote: Total 7 (delta 1), reused 0 (delta 0)
Unpacking objects: 100% (7/7), done.
From /Users/heracek/Documents/work/code/cngroup.dk/cnu/cnu-github/.fake-repo-remote
 * [new branch]      feature/design    -> origin/feature/design
   a4bc28e..a7dba35  master          -> origin/master
bash-3.2$ █
```

A screenshot of a terminal window titled "1. bash". The window has a light gray background and a white text area. In the top left corner, there are three colored window control buttons (red, yellow, green). The title bar "1. bash" is located at the top right. The main text area shows the command "bash-3.2\$ tig --all" followed by a cursor. The entire window is surrounded by a thin black border.

```
bash-3.2$ tig --all
```



1. tig

```
2018-03-20 09:52 Tomáš Horáček • {origin/feature/design} Add login design
2018-03-20 09:51 Tomáš Horáček • {origin/HEAD} {origin/master} Update README
2018-03-20 09:17 Tomáš Horáček | • [feature/registration] Add registration s
2018-03-20 08:41 Tomáš Horáček •— [master] Add lost password screen
2018-03-20 08:39 Tomáš Horáček • Add login screen
2018-03-20 08:34 Tomáš Horáček ◎ Initial commit
```

[main] ba766e9ab3f148cd60e984480ec952d44f296b49 – commit 1 of 6

100%



1. bash

bash-3.2\$ git checkout master



1. bash

```
bash-3.2$ git checkout master
Switched to branch 'master'
Your branch is behind 'origin/master' by 1 commit, and can be fast-forwarded
•
  (use "git pull" to update your local branch)
bash-3.2$ █
```

```
● ● ● 1. bash
bash-3.2$ git checkout master
Switched to branch 'master'
Your branch is behind 'origin/master' by 1 commit, and can be fast-forwarded
•
• (use "git pull" to update your local branch)
bash-3.2$ git pull
```

```
● ● ● 1. bash
bash-3.2$ git checkout master
Switched to branch 'master'
Your branch is behind 'origin/master' by 1 commit, and can be fast-forwarded
.
• (use "git pull" to update your local branch)
bash-3.2$ git pull
Updating a4bc28e..a7dba35
Fast-forward
 README.md | 2 ++
 1 file changed, 2 insertions(+)
bash-3.2$ █
```



1. tig

```
2018-03-20 09:52 Tomáš Horáček • {origin/feature/design} Add login design
2018-03-20 09:51 Tomáš Horáček • [master] {origin/master} {origin/HEAD} Upda
2018-03-20 09:17 Tomáš Horáček | • [feature/registration] Add registration s
2018-03-20 08:41 Tomáš Horáček •— Add lost password screen
2018-03-20 08:39 Tomáš Horáček • Add login screen
2018-03-20 08:34 Tomáš Horáček ◎ Initial commit
```

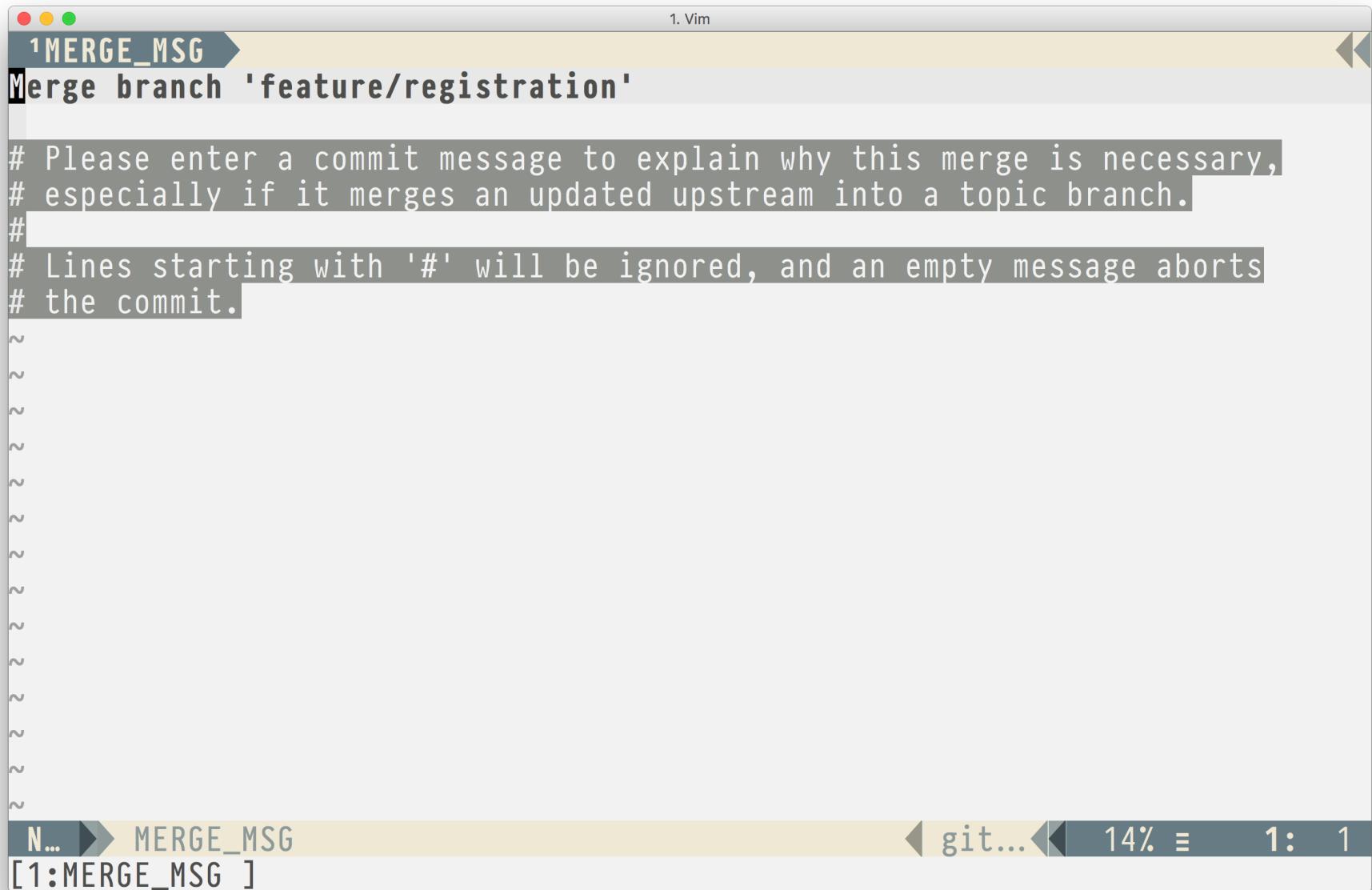
[main] ba766e9ab3f148cd60e984480ec952d44f296b49 – commit 1 of 6

100%



1. bash

```
bash-3.2$ git merge feature/registration
```





1. bash

```
bash-3.2$ git merge feature/registration
Merge made by the 'recursive' strategy.
index.js           |  6 +++++-
screens/registration.js |  2 ++
2 files changed, 7 insertions(+), 1 deletion(-)
create mode 100644 screens/registration.js
bash-3.2$ █
```

A screenshot of a terminal window titled "1. bash". The window has a light gray background and a white text area. In the top left corner, there are three colored window control buttons (red, yellow, green). The title bar "1. bash" is located at the top right. The main text area shows the command "bash-3.2\$ tig --all" followed by a cursor. The entire window is surrounded by a thin black border.

```
bash-3.2$ tig --all
```



1. tig

```
2018-03-20 09:56 Tomáš Horáček [master] Merge branch 'feature/registration'
2018-03-20 09:17 Tomáš Horáček [feature/registration] Add registration screen
2018-03-20 09:52 Tomáš Horáček {origin/feature/design} Add login design
2018-03-20 09:51 Tomáš Horáček {origin/master} {origin/HEAD} Update README
2018-03-20 08:41 Tomáš Horáček Add lost password screen
2018-03-20 08:39 Tomáš Horáček Add login screen
2018-03-20 08:34 Tomáš Horáček Initial commit
```

[main] 2085c436858540ba1ddae4c234796ad91c960555 – commit 1 of 7

100%

A screenshot of a Mac OS X terminal window. The window title bar is labeled "1. bash". The main pane of the terminal shows the command "git push" entered at the prompt "bash-3.2\$". The terminal has its characteristic red, yellow, and green window control buttons in the top-left corner.

```
bash-3.2$ git push
```

```
● ● ● 1. bash
bash-3.2$ git push
Counting objects: 7, done.
Delta compression using up to 8 threads.
Compressing objects: 100% (7/7), done.
Writing objects: 100% (7/7), 933 bytes | 933.00 KiB/s, done.
Total 7 (delta 1), reused 0 (delta 0)
To /Users/heracek/Documents/work/code/cngroup.dk/cnu/cnu-github/.fake-repo-
remote
  a7dba35..2085c43  master -> master
bash-3.2$ █
```

1. tig

```
2018-03-20 09:56 Tomáš Horáček [master] {origin/master} {origin/HEAD} Me
2018-03-20 09:17 Tomáš Horáček [feature/registration] Add registration s
2018-03-20 09:52 Tomáš Horáček {origin/feature/design} Add login design
2018-03-20 09:51 Tomáš Horáček Update README.md
2018-03-20 08:41 Tomáš Horáček Add lost password screen
2018-03-20 08:39 Tomáš Horáček Add login screen
2018-03-20 08:34 Tomáš Horáček Initial commit
```

[main] 2085c436858540ba1ddae4c234796ad91c960555 – commit 1 of 7 100%

?

Thanks!