Alright! Now that you've learned how to create, list, and delete branches, let's put that knowledge to use!

First, make sure we're on the same page and have the same starter code. We're going to be working in the `new-git-project` project. The project has the following files:

- `index.html`
- `css/app.css` (empty)
- `js/app.js` (empty)

The CSS and JavaScript files are empty. Make sure the index file has the following content:

```
<!doctype html>
<html lang="en">
<head>
    <meta charset="utf-8">
    <title>Blog Project</title>
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <meta name="description" content="">
    <link rel="stylesheet" href="css/app.css">
</head>
<body>

    <header>
        <h1>Expedition</h1>
    </header>

    <div class="container">
        <main>

        </main>
    </div>

    <footer>
        Made with ♥ @ Udacity
    </footer>
    <script src="js/app.js"></script>
</body>
</html>
```

Project Is Set Up

Before we proceed, let's make sure we have the same setup. Check off each of the following:

I have an `index.html` file with the starter code from above

I have an `app.css` file inside a `css` directory

I have an `app.js` file inside a `js` directory

all files have been saved

all files have been staged and committed to the repository

the current branch is the `master` branch

I have deleted all other branches

the output from running `git status` on the command line includes the text `working directory clean`

The Game Plan

Right now we have all of our code on the `master` branch (which is the default branch). We're about to work with branches, by:

- adding content to them
- creating new branches
- switching back and forth between them

Let's use branches to make the following changes:

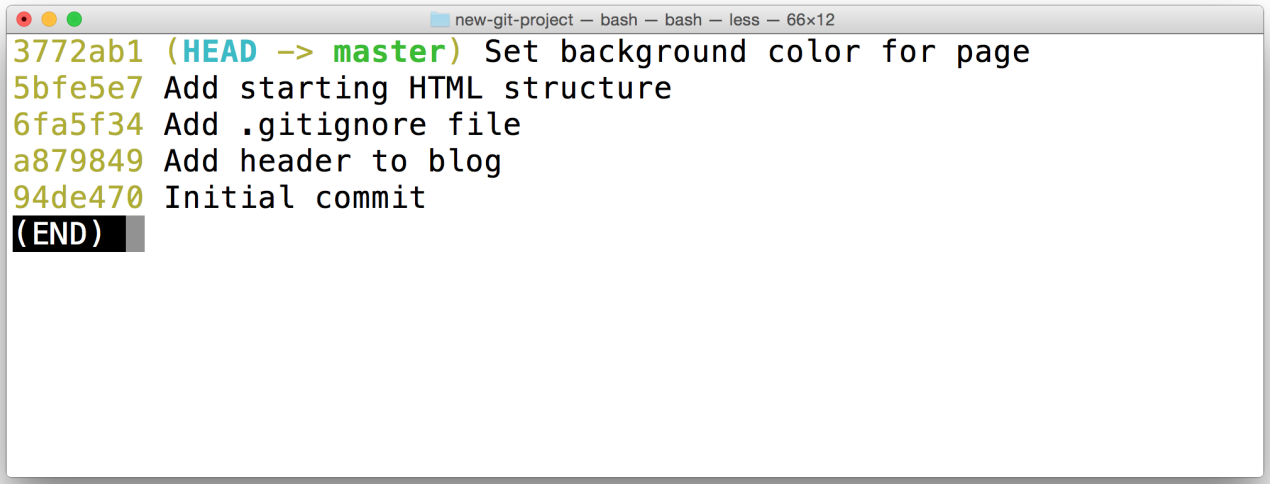
1. on the master branch - add a default color to the page
2. create a sidebar branch - create a sidebar for the page
3. on the master branch - change the heading of the page
4. on the sidebar branch - add more content to the sidebar
5. create a footer branch - add social links to the footer

Change 1 - Add Page Color

Make sure you're on the `master` branch and add the following content to `css/app.css`:

```
body {
    background-color: #00cae4;
}
```

Save the file. Then add the file to the staging index and commit it to the repository.



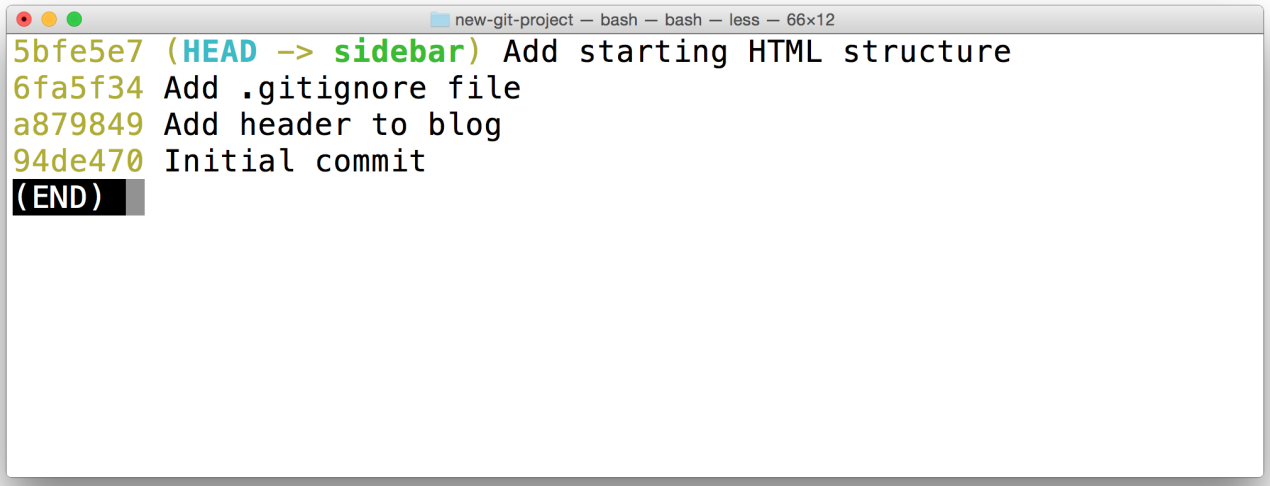
The Terminal application showing the output of the `git log --oneline --decorate` command. The most-recent commit adds a default background color to the page.

Change 2 - Add Sidebar

Let's add a sidebar to the page. But let's say that we're not really sure if we like the new background color. So we'll place the sidebar branch on the commit *before* the one that sets the page's color. Your SHAs will be different, but, for me, the commit that's before the one that adds the color has a SHA of `5bfe5e7`. So adding the branch to that commit would look like:

```
$ git branch sidebar 5bfe5e7
```

Now use the `git checkout` command to switch to the new `sidebar` branch. Running a `git log --oneline --decorate` shows me:



The Terminal application showing the output of `git log --oneline --decorate`. The output does NOT include the `master` branch - it has disappeared.

Did you notice that the `master` branch does not display in the output? Where did it go!?! Is it lost? Don't worry, it's still there, we'll see how to get it to display in just a second.

But first, in your code editor, switch to the `app.css` file. Notice that it does not have the CSS we previously entered! Because of this, if you load the project up in the browser, the page won't have a colored background. This makes sense since the CSS file is empty, but do you know why?

QUESTION 1 OF 2

Thinking back to the branching repository video from the previous lesson, why would the CSS file be empty?

- The content has been erased.
- The content is stored safely on another branch.
- The content is in a temporary file that needs to be saved.
- A bear ate it.

SUBMIT

Create a sidebar by adding the following `<aside>` code to the HTML file:

```
<div class="container">
    <main>

    </main>
</div>

<!-- start of new content -->
<aside>
    <h2>About Me</h2>

    <p>Lorem ipsum dolor sit amet, consectetur adipisicing elit. Eos, debiti
</aside>
<!-- end of new content -->

<footer>
    Made with ♥ @ Udacity
</footer>
```

I added my `<aside>` content next to the `<main>` element as a fellow child of the `<div class="container">` element.

Feel free to add any content inside the `<aside>` element!

> ### ⚠️ *Don't Change the CSS*
>
> *WARNING: It's very important that you do not change the CSS file.*
>
> *We'll change it later, but if you make a change right now, we'll end up having what's known as a "merge conflict". We'll manually cause a merge conflict in a bit, but we don't want to have one right now, so just don't make any changes to the CSS file, yet.*

We're done with this step, so it's time to commit the changes.

I've saved `index.html`

I've staged `index.html`

I've committed `index.html` to the repsitory

Change 3 - Change Heading On Master

Let's switch back to the master branch and update the page heading.

Use the `git checkout` command to switch back to the `master` branch. (Notice that the HTML for the new sidebar is no longer there(!) because all that code is stored safely on the `sidebar` branch.)

Now change the `<h1>` heading of the page from "Expedition" to something else. How about something exciting like the word "Adventure"!?!

QUESTION 2 OF 2

Pop quiz time! How do you have Git show you the changes you've saved, but not yet committed?

- git show --diff
- git log -p
- git diff
- git log --stat

SUBMIT

Heading Change Have Been Saved And Committed

Now it's time to save the `index.html` file and make a commit to add this change to the repository. (I used the commit message "Improve site heading for SEO", but see if you can think of a better one)

I've saved `index.html`

I've staged `index.html`

I've committed `index.html` to the repsitory

Change 4 - Add More Content To Sidebar

Switch back to the `sidebar` branch (notice, again, that content we've added to the `master` branch isn't visible on the `sidebar` branch).

Now just add some content inside the `<aside>` element. Add something about yourself - your favorite movie or book (my favorite is LOTR!). Anything will work, you just need to add some content.

Again, make sure that you do not make changes to the CSS file.

Now save the `index.html` file and make a commit.

Change 5 - Add Social Links To Footer

We've made a number of changes, and we're about to make our last one. Let's add some social icons to the page's footer. For grins and giggles, let's make this change on a new footer branch that's based off the `master` branch. So we need to create a new `footer` branch, first.

> ### 💡 *Switch and Create Branch In One Command* 💡
>
> *The way we currently work with branches is to create a branch with the `git branch` command and then switch to that newly created branch with the `git checkout` command.*

> *But did you know that the `git checkout` command can actually create a new branch, too? If you provide the `-b` flag, you can create a branch and switch to it all in one command.*

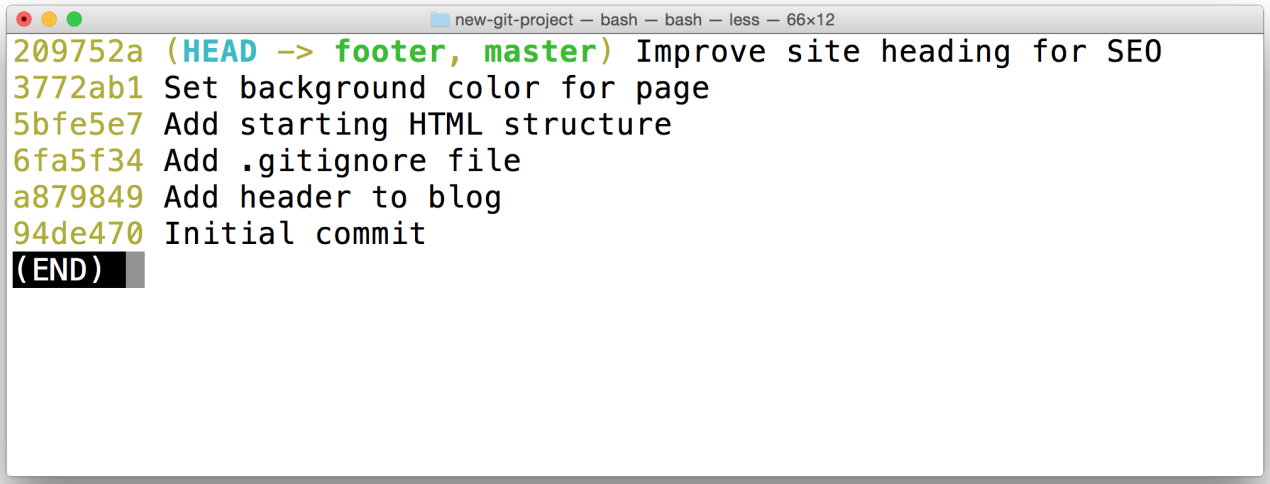
```
$ git checkout -b richards-branch-for-awesome-changes
```

> *It's a pretty useful command, and I use it often.*

Let's use this new feature of the `git checkout` command to create our new `footer` branch and have this footer branch start at the same location as the master branch:

```
$ git checkout -b footer master
```

Now if we run a quick `git log --oneline --decorate`, we should see (your commit messages might be different):



The Terminal application showing the output of `git log --oneline --decorate`. The special `HEAD` pointer is pointing at the `footer` branch. The `footer` branch is on the same commit as the "master" branch.

Add Social Links

Now that we're on a new branch, let's add some social links to the page's footer. I've added the following content:

```
<footer>
    <!-- start of new content -->
    <section>
        <h3 class="visuallyhidden">Social Links</h3>
        <a class="social-link" href="https://twitter.com/udacity">
            <img src="img/social-twitter.png" alt="Twitter">
        </a>
        <a class="social-link" href="https://www.instagram.com/udacity/">
            <img src="img/social-instagram.png" alt="Instagram">
        </a>
        <a class="social-link" href="https://plus.google.com/+Udacity">
            <img src="img/social-google.png" alt="Google Plus">
        </a>
    </section>
    <!-- end of new content -->
</footer>
```

Feel free to link to your own social accounts.

Now save the file and make a commit. (I used the commit message "Add links to social media", but definitely try coming up with a better one)

I've saved `index.html`

I've staged `index.html`

I've committed `index.html` to the repsitory

See All Branches At Once

We've made it to the end of all the changes we needed to make! Awesome job!

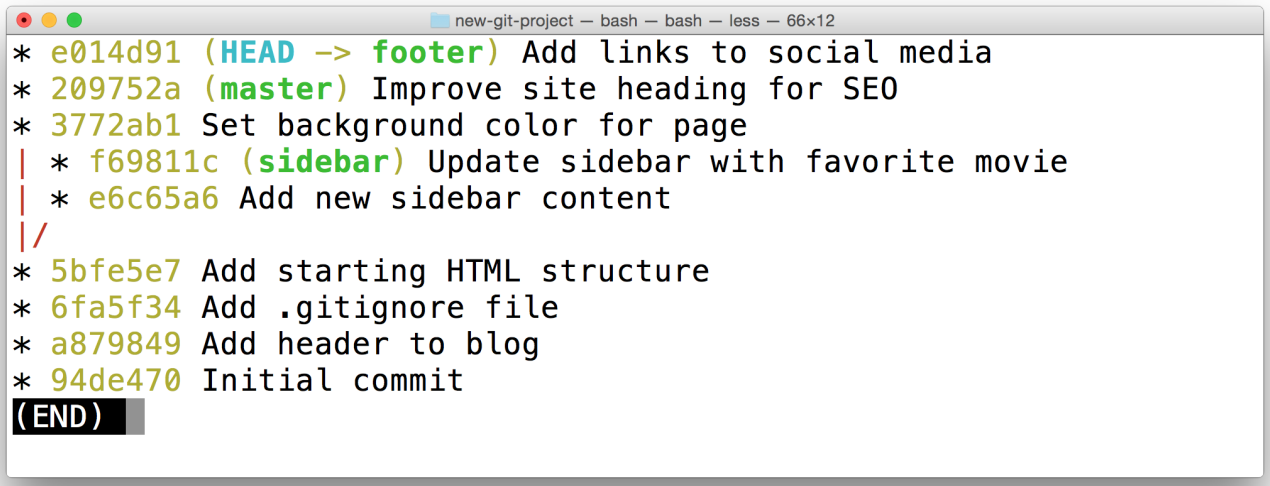
Now we have multiple sets of changes on three different branches. We can't see other branches in the `git log` output unless we switch to a branch. Wouldn't it be nice if we could see *all* branches at once in the `git log` output.

As you've hopefully learned by now, the `git log` command is pretty powerful and *can* show us this information. We'll use the new `--graph` and `--all` flags:

```
$ git log --oneline --decorate --graph --all
```

The `--graph` flag adds the bullets and lines to the leftmost part of the output. This shows the actual *branching* that's happening. The `--all` flag is what displays *all* of the branches in the repository.

Running this command will show all branches and commits in the repository:



The Terminal application showing the output of `git log --oneline --graph --decorate --all`. This shows all branches and therefore all commits in the repository.

Recap Of Changes

We've made the following changes:

1. on the master branch, we added a default color to the page
2. we created a sidebar branch and added code for a sidebar
3. on the master branch, we changed the heading of the page
4. on the sidebar branch, we added more content to the sidebar
5. we created a footer branch and added social links to the footer

These changes are all on their own, separate branches. Let's have Git combine these changes together. Combining branches together is called **merging**