Heroku: Getting Started

Where We Are Now

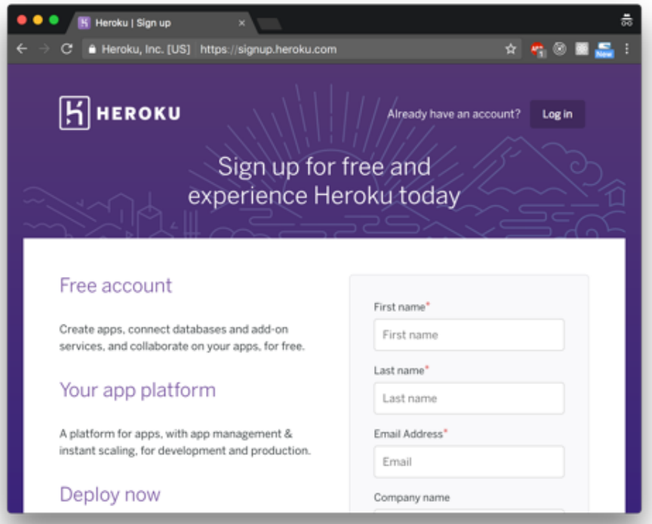
- So far, all of our projects have been running on our local machine
- This is usually the starting point when developing a project from the start
- However, at some point we'll want our Express web servers to be accessible from the internet
- While we could run the server on our own computer, we'd have to open up ports, guarantee the server doesn't stop, point a domain at our IP address etc.
- Instead of all of that, we typically use a hosted solution like **Heroku**

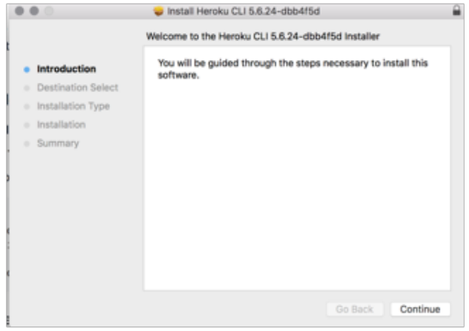
What is Heroku?

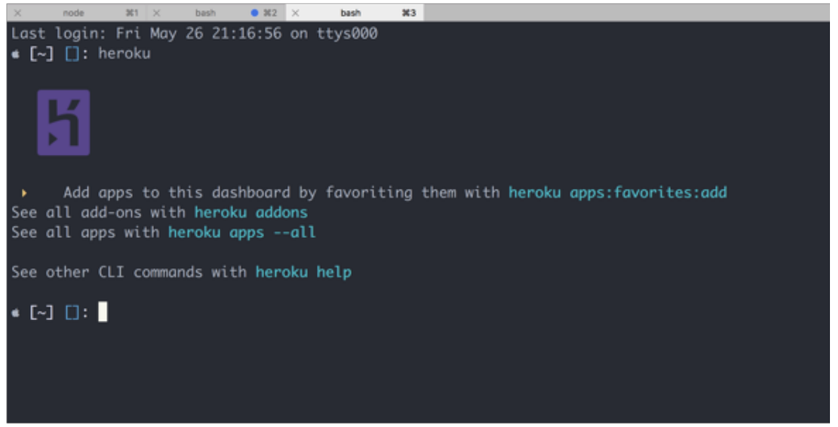
- Heroku is a hosting platform made for and by developers, founded in 2007
- It has become a pretty standard all-in-one solution for hosting database backed web servers
- They provide a computer for our code to run on, and the software to run Node and Postgres (Or many other programming languages, frameworks, databases etc.)
- They also give us many tools for implementing best practices in our code

1) First Time Setup

- You'll need to make a new account before anything else
- Then you'll need to install the command line tools, run `heroku` in the terminal to make sure it worked
- Once you're signed up and installed, run `heroku login` to connect your account







2) Make a New Project

- Heroku works with many programming langauges and frameworks, but we're going to focus on working with Node
- Create a fresh Node project that is a simple express server
  - Initialize git, initialize npm, install & save express
- Make an app.js file that makes a new express app, and add a new GET endpoint for the homepage that prints *anything*

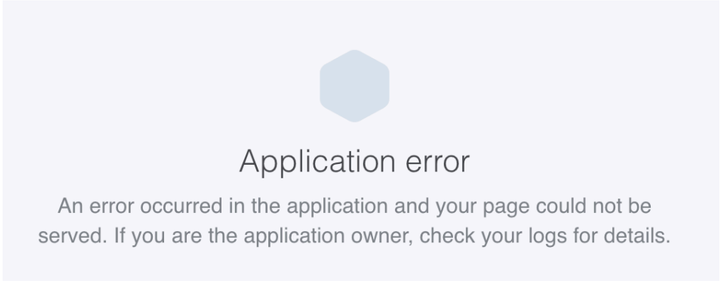
3) Initialize Heroku

- The next thing we'll do is run `heroku create [project-name]`
  - All apps must have unique names, so don't expect "todo-list" or "jukebox" to work as a project name
  - You can also just run `heroku create` and have it randomly generate a name for you
- This will create a website and git repository on Heroku for your code to live and be accessed
  - This git repository is *not* the same as Github. It's completely private, and only runs code you push to it, not Github.
- Go ahead and access the domain!

4) Deploying to Heroku

- You should have been greeted with a Heroku welcome page
- But we don't want that, we want *our* app
- This is because we haven't pushed our code yet!
- You can do so by committing your code so far, and then running `git push heroku master`
  - Note that this isn't *origin*, which is our github, it's *heroku*
  - We're pushing the same `master` branch code to a different place
  - The `heroku` remote was added for us when we ran `heroku create`
- Open your site again! (Try running `heroku open`)

5) Heroku Logs



- I'm guessing your site, didn't work, even if it worked on your computer?
- Reading errors is different on a server since we don't have console output
- Fortunately, heroku lets you read output by running `heroku logs --tail`
  - `--tail` makes it keep updating, instead of printing once
- Can you figure out what went wrong?

6) Making Our Code Heroku Friendly

- All of the best practices we've learned recently weren't for nothing, they're meant for running code on a server like Heroku
- In order for our apps to run elsewhere, we need to do the following:
  - Add a `"start"` script to your package.json, this is what Heroku uses to run our app
  - Make sure you `--save` any dependencies, Heroku needs to install them
  - Use `process.env.PORT || 3000`, Heroku doesn't run its apps on port 3000
- These are just a few examples with this particular simple app, but whenever you're writing code, try to think "Will this be the same on Heroku?"

Side Note: Procfile

- Heroku's pretty smart about Node, and knows that package.json scripts are where developers usually keep their commands
- However, Heroku also has a more open ended solution for running commands known as the Procfile
- This is a file (named `Procfile`) of `process: command` lines that allow you to specify commands to run for various Heroku processes
- For the website, we would add

  ```
  web: node app.js
  ```

  if we didn't have a package.json run script
- There are other process types besides `web`, but that's the only one we'll be using

Side Note: Run Heroku Locally

- To better simulate the Heroku environment locally, we can run our app the same way Heroku does
- By running `heroku local [command]`, we do all the same things Heroku would do:
  - Run the command in the Procfile (No command will do `npm start`)
  - Load a `.env` file, if it exists
  - Load Heroku's configuration environment variables
  - Provide the same console output as Heroku
- Running `heroku local` instead of `npm start` directly can often help with better simulating what's happening on Heroku, which might help with debugging

Additional Reading

- Heroku's Getting Started With Node Guide - Covers everything I've talked about today and more
- Heroku's Example Node / Express App - Good reference for code that works in a Heroku environment