003: Basic Logging and Source Updates

I have the simplest web application I can create successfully deployed to Azure, but that's about it. There's a lot more I need to do in order to make this a production-grade deployment, so in this episode I'm going to take the first step on that journey by setting up automated deployments and logging.

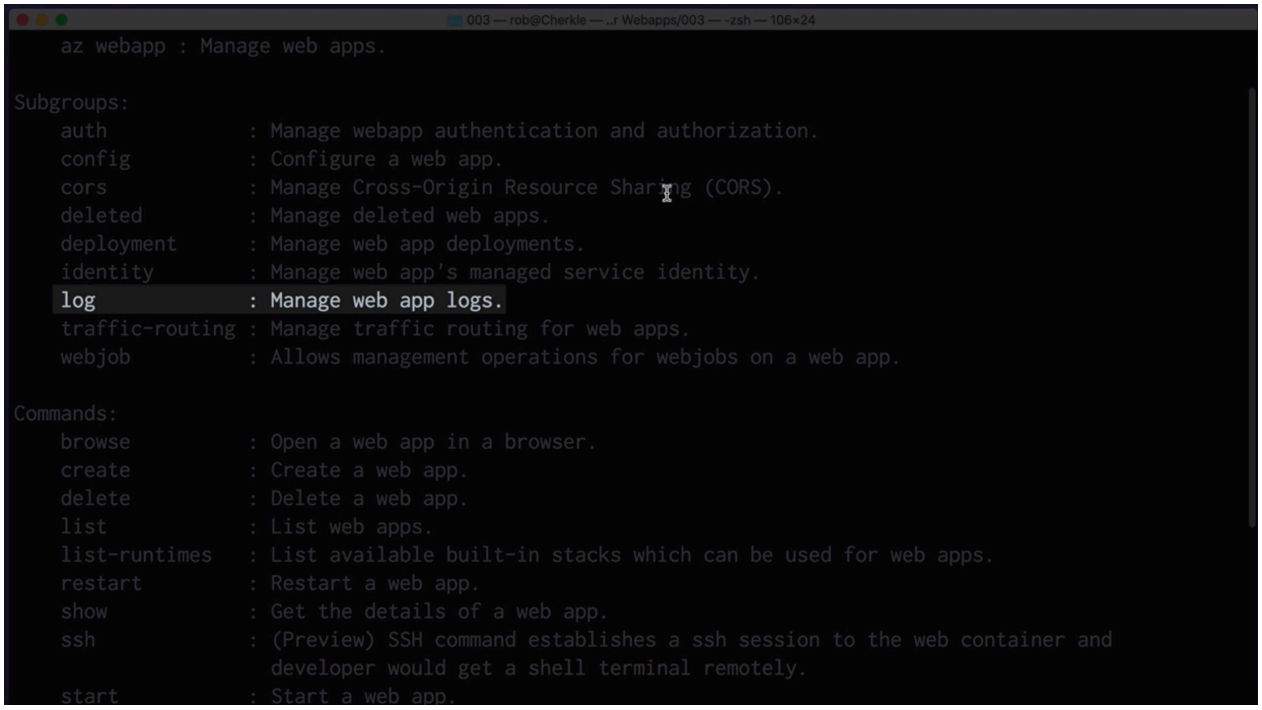
I've upgraded my single file Node web application to a bare bones website built using the Express generator - Express being a rather popular NodeJS web framework. As you can see I haven't changed the site at all - it's exactly what the generator created for me. I'll add more features later on - right now I want to be sure I understand any error that comes my way.

Setting Up Simple Logging

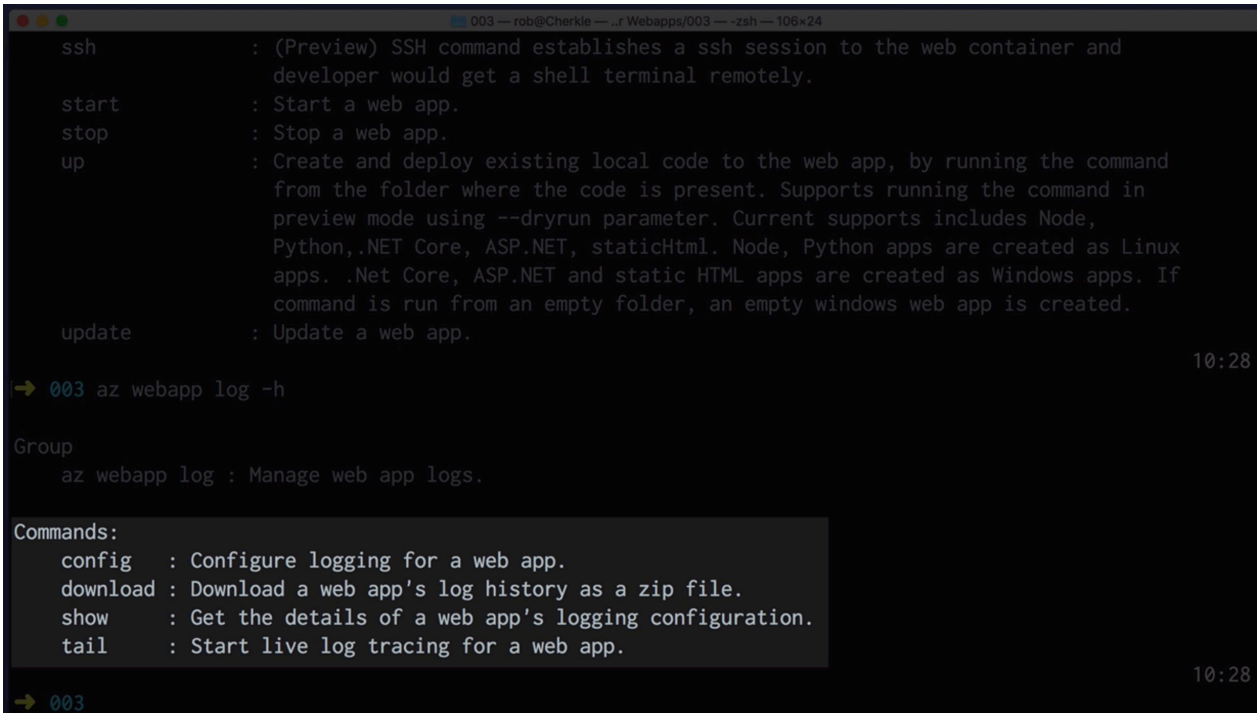
When it comes to logging I typically let an online service handle it for me - and there are plenty who are willing to take my cash. For instance Loggly, which I've used quite a few times, is a reliable service that I like a lot. There's also HoneyBadger and Skylight that step things up a bit and help you troubleshoot and tune your application as needed.

I'll get there eventually, but for right now I want to see what I can do with Azure. I'll be using the CLI one more time, interrogating it so I can learn how to setup what I need.

I'll start as I did before, looking at the various subcommands for `az webapp`:

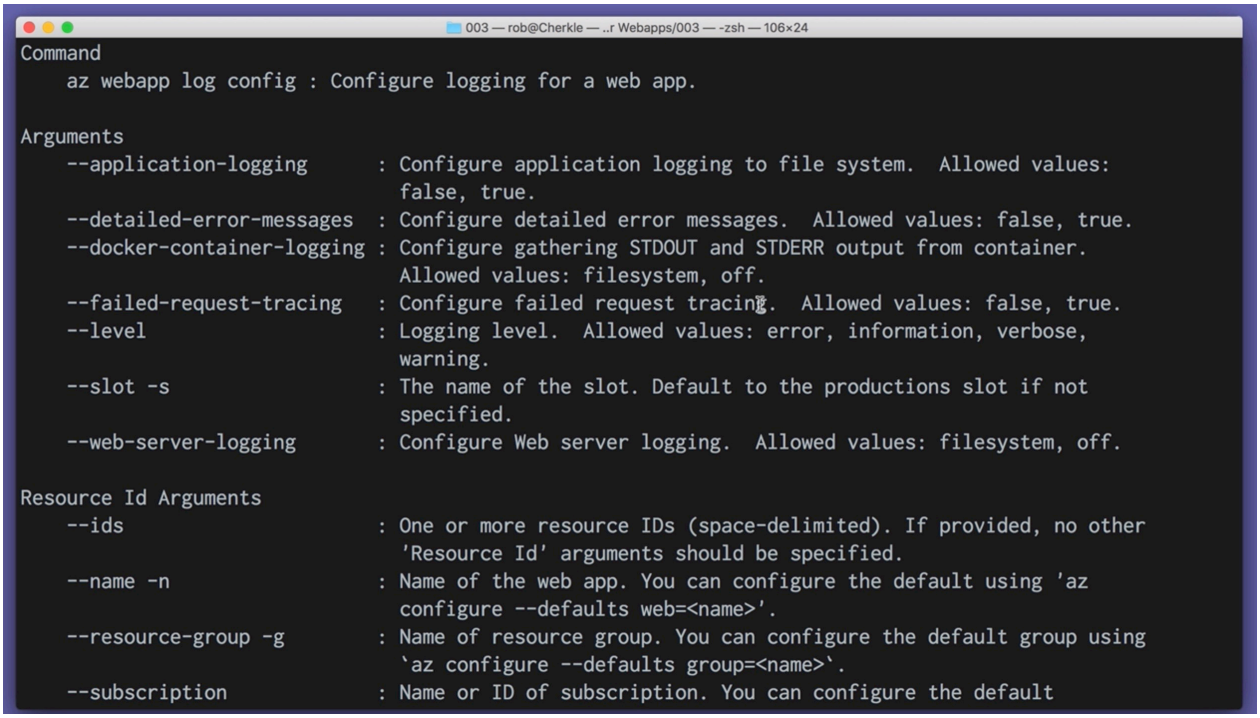


The subcommands are listed in alphabetical order so it's pretty easy to look under "l" for logs - and there they are. Diving in again with `az webapp log -h` and I see the subcommands:



Seems straightforward. The one I'm interested in right now is **`config`** but **`show`** and **`tail`** will be useful to remember later on when I want to see the log output.

Let's ask the CLI how to use **`config`** by executing **`az webapp log config -h`**:

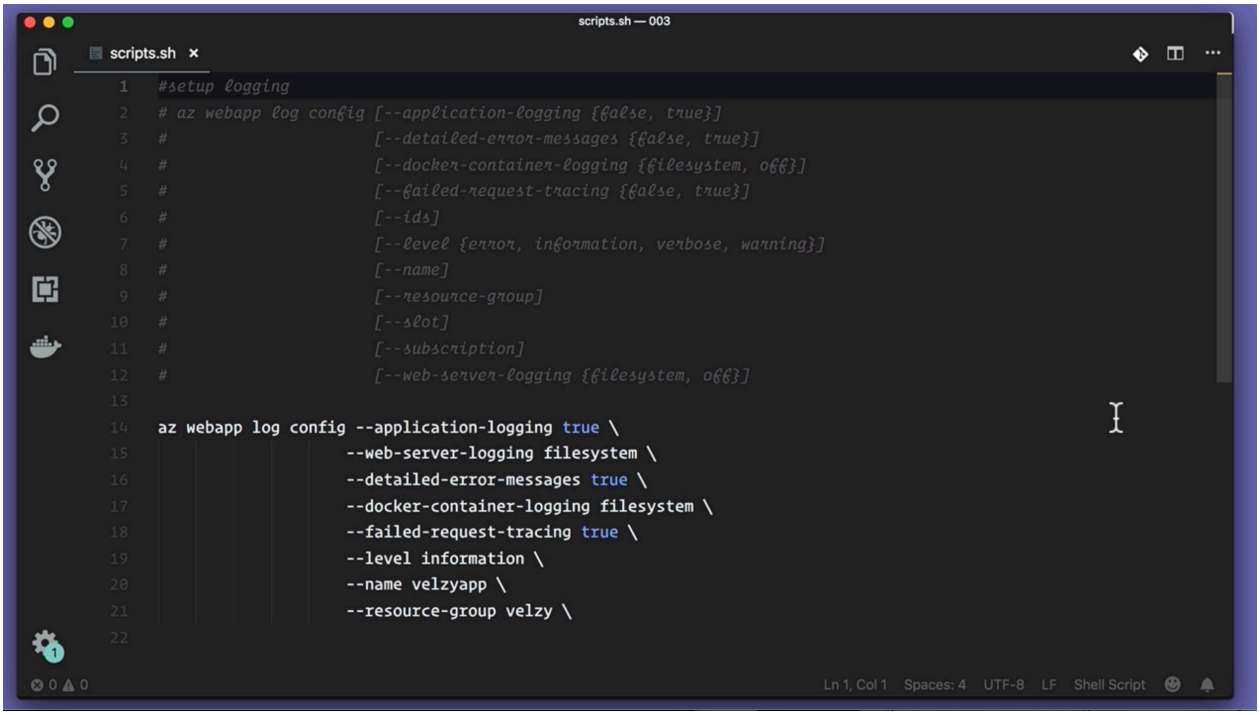


That's a lot of arguments that I can set, but the naming is pretty clear and the details help explain things in a reasonable way. Since I'm only investigating right now, I think it's reasonable to basically turn *everything* on.

Let's double check the documentation to see if there are any gotchas.

I'll do a Google search using the term `az webapp log config` which will bring up the Microsoft documentation for the command. Right at the top I see something very useful: a command reference that I can copy and paste right into a script file! Scrolling down, however, there's not much in the way of extra information here. In fact the documentation is simply echoing the argument name, which isn't helpful.

That's OK - I think I have what I need. I'll copy and paste the the command from the documentation and then set the arguments as I need.



I've turned everything on here as I want to see application logging and I want those logs to go to the filesystem as opposed to Azure storage. I want detailed error messages and failed request tracing so I can troubleshoot things if my application becomes unresponsive.

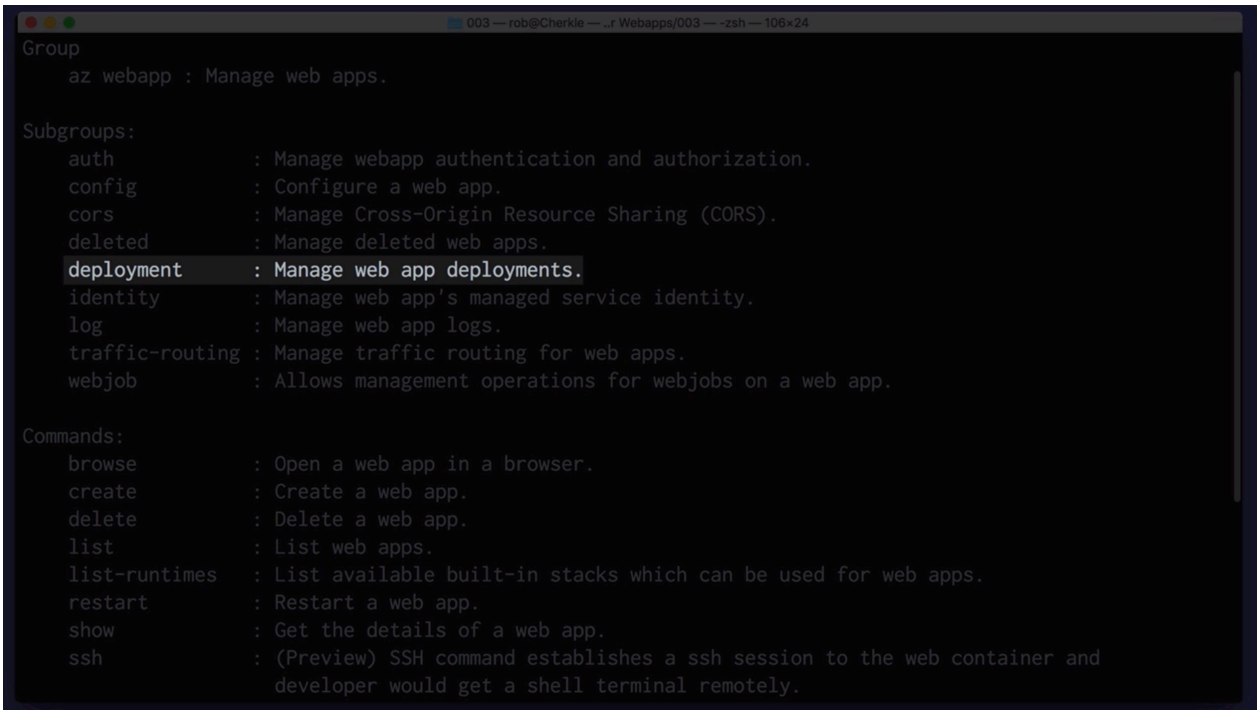
Finally, I'll be adding logging the application I created in the first episode - `velzyapp` - so I'll specify the name as you see here.

I can execute this script by loading it into my shell, which I can do using `source ./scripts.sh`. Once again Azure returns a JSON dump telling me that things were successful - my application is all set up for logging.

Continuous Container Deployment

Now I want to enable continuous deployment. Just so it's completely clear: I'm not talking about DevOps here or any kind of orchestration. What I want to enable is a simple pull of an updated image from DockerHub whenever I make changes. Let's see if Azure can handle that scenario.

Once again, I'll have a look around the `az webapp` subcommands and - there it is - `deployment`:



Let's see what kind of things this subcommand can do. I'll execute `az webapp deployment -h` and this time, thankfully, there are fewer commands to wade through:

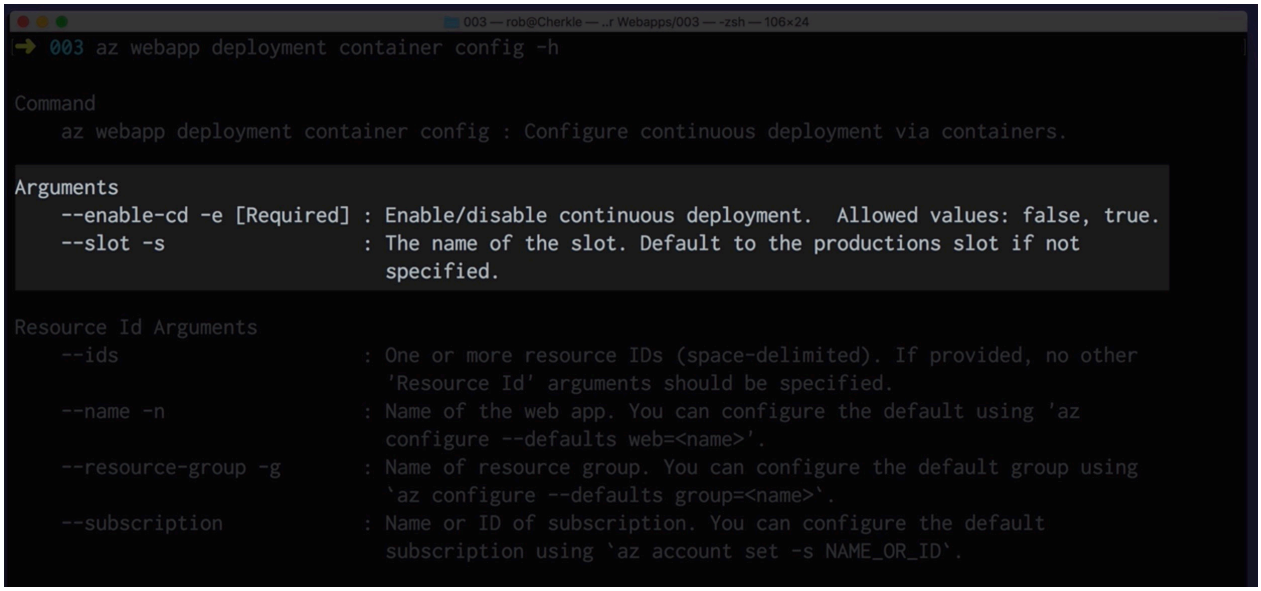
```
➜ 003 az webapp deployment -h

Group
    az webapp deployment : Manage web app deployments.

Subgroups:
    container                   : Manage container-based continuous deployment.
    slot                        : Manage web app deployment slots.
    source                      : Manage web app deployment via source control.
    user                        : Manage user credentials for deployment.

Commands:
    list-publishing-credentials : Get the details for available web app publishing credentials.
    list-publishing-profiles    : Get the details for available web app deployment profiles.
```

I have a container-based deployment so let's see what the deal is with the `container` sub-subcommand using `az webapp deployment container -h`:

```
➜ 003 az webapp deployment container -h

Group
    az webapp deployment container : Manage container-based continuous deployment.

Commands:
    config      : Configure continuous deployment via containers.
    show-cd-url : Get the URL which can be used to configure webhooks for continuous deployment.
```

Paydirt! Looks like the `config` sub-sub-subcommand (😆) is exactly what we're looking for. Right below that we have a command that will give us a URL to plugin to a web hook. We'll need that - so let's remember it's here.

OK let's jump into `az webapp deployment container config -h` and see what we can learn:

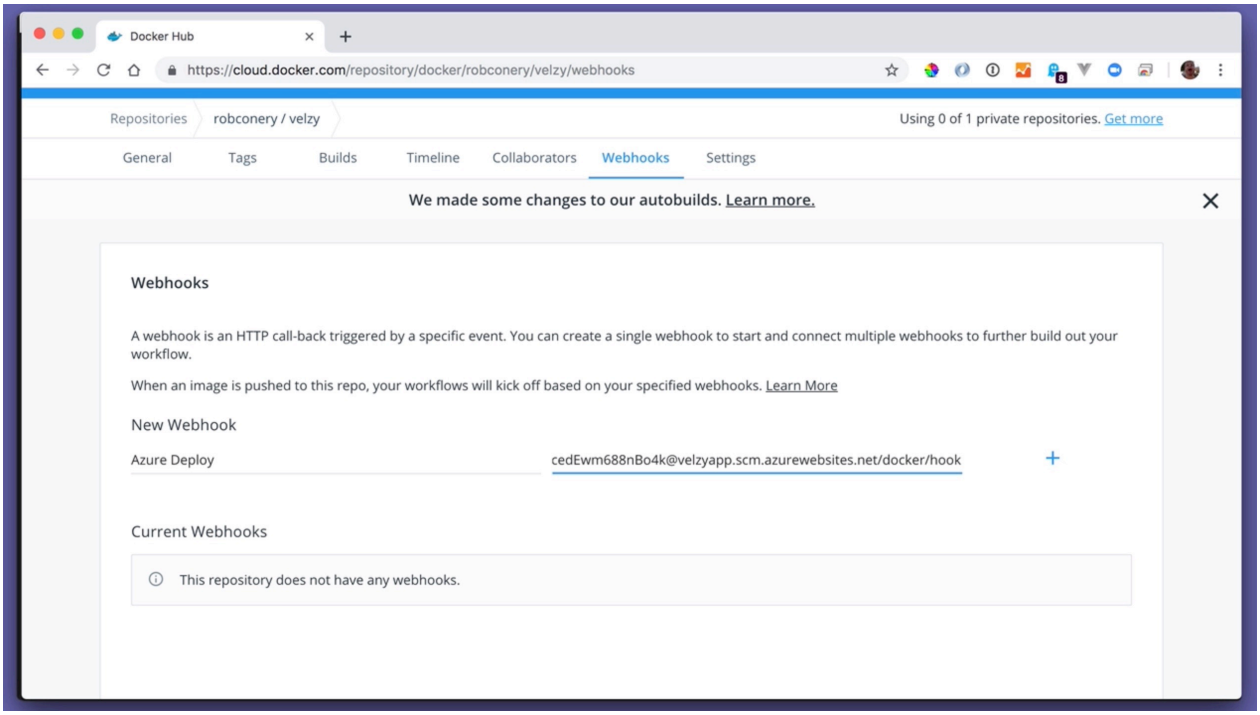


To turn on continuous deployment, I simply need to set the `--enable-cd` argument to `true`. I don't know what slots are just yet so I'll ignore that for now.

As with most `webapp` commands, I also need to send in the name and resource group arguments, so I'll do that now… and I get an error because I need two dashes… fixing that and I get some JSON back:

Great! We're all set and we don't even have to ask for the web hook URL, Azure was nice enough to send it back in the response.

That's the last step - telling DockerHub to ping Azure whenever I push a new image. To do that, I need to go over to DockerHub where my image is hosted and, under "Webhooks", I'll add the URL Azure just gave me:



Great! Now we're ready to update our image.

A Better Docker Image

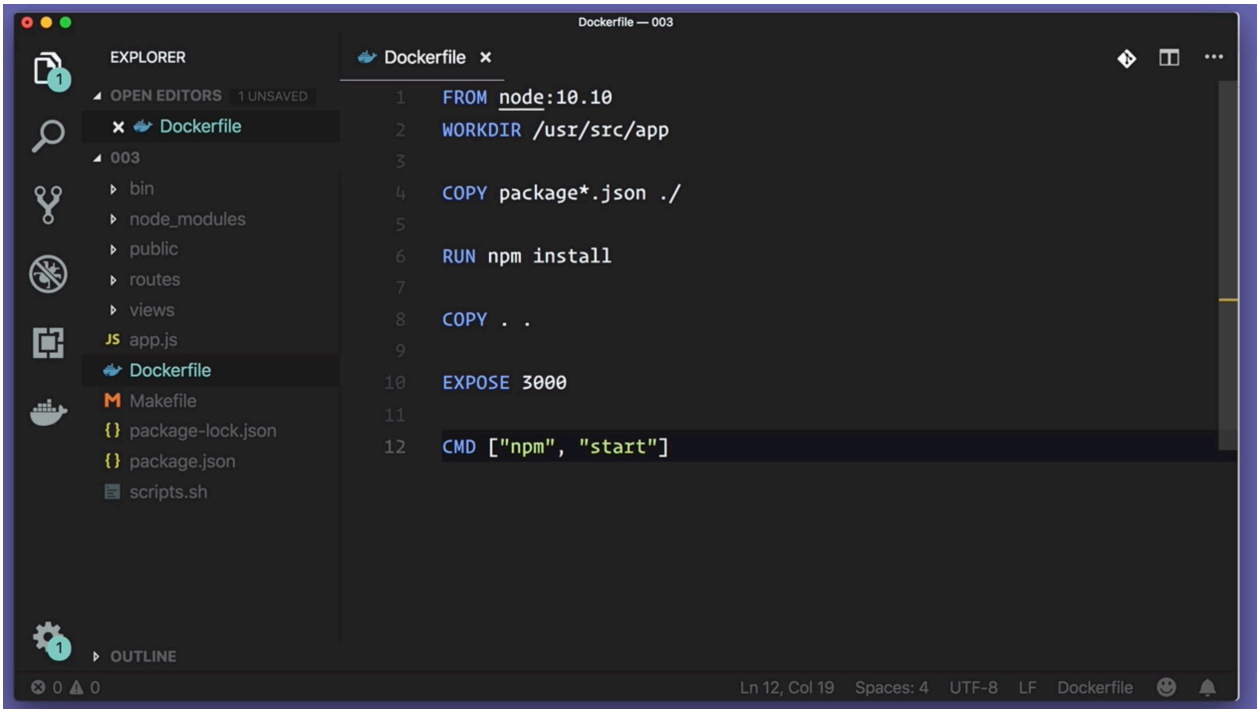
In the last video I used the simplest Dockerfile I could make:

```
FROM node

COPY index.js ./

EXPOSE 3000

CMD ["node", "index.js"]
```

I did this, once again, because I wanted to make sure that I understood any failures as clearly as I could. Now it's time to upgrade things some.

As I mention, I'm now working with the NodeJS Express web framework and I've generated a simple website. That means I need to rebuild my Docker image so it has all the packages and application code in my project.

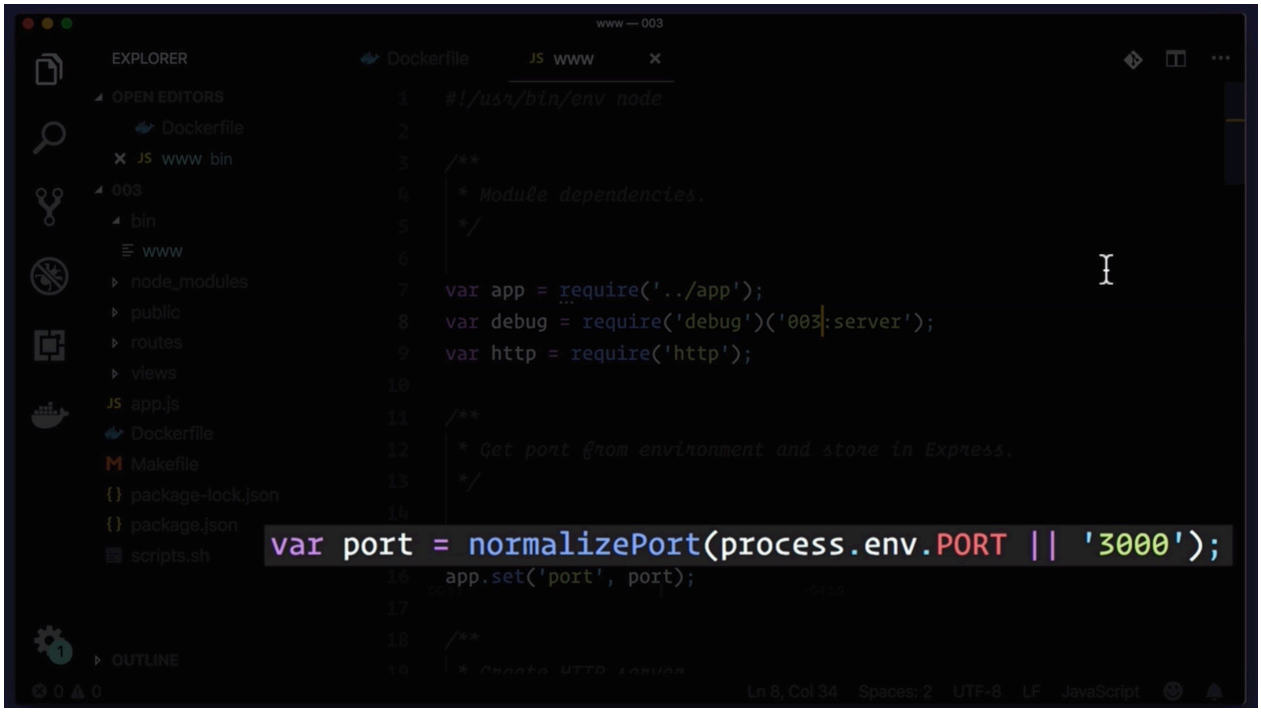
To do that, I'll follow the suggestions on the NodeJS web site for how to properly create a Dockerfile:



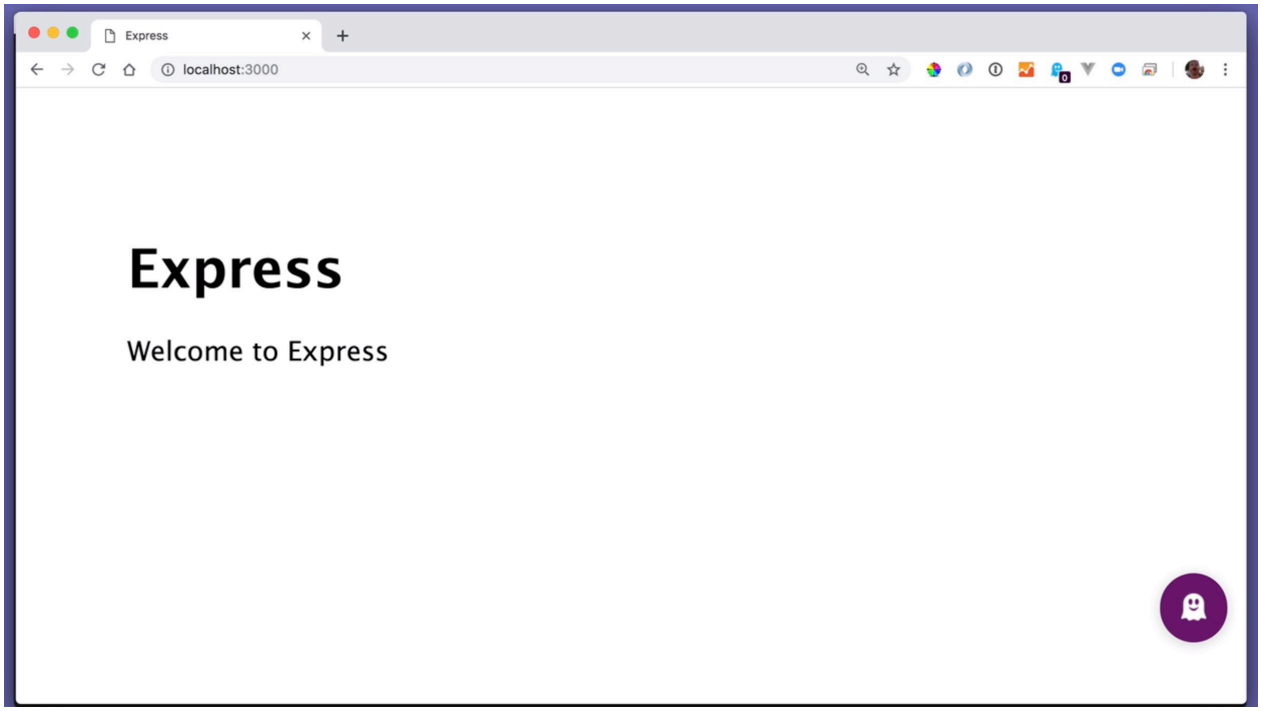
I'll set the version of Node to the latest LTS, which is 10.10. I'll set the working directory to the standard `/usr/src/app` and then I'll copy the package files in. I'll run `npm install` to load up the Express packages, copy my application files and then finally set a default command of `npm start`. This is as simple as I can make this Dockerfile, which I like.

I'm also going to learn from my past mistakes by checking the port specification. Having a look in the `/bin/www` file, I can see the port is set as it should be, using the environment variable or a hardcoded value of 3000. Azure will automatically set a

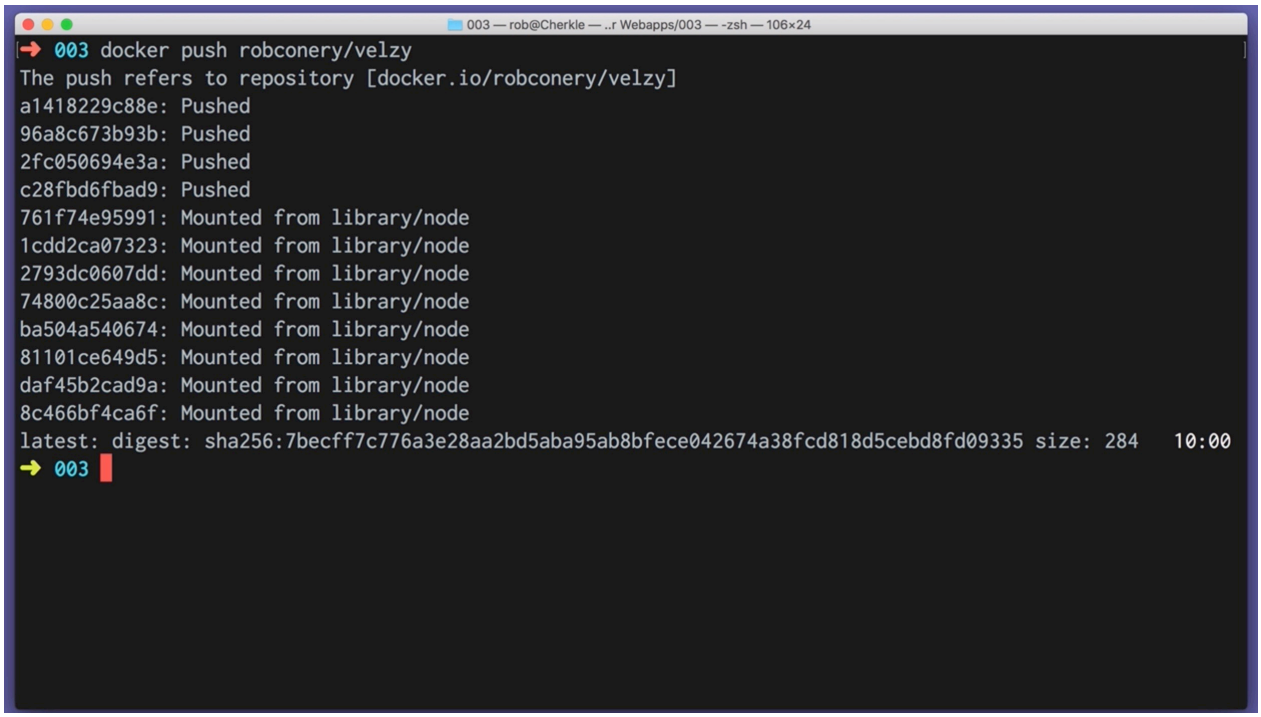
`PORT` environment variable for me, so it's a good practice to use it when starting up your web application.



I'll rebuild the image and run it to make sure it works… which it does:



Great! Now I can push it to DockerHub and hope for the best:



Viewing the Logs

I'll head over to to my site on Azure - this is the one I deployed in the last video, which is the canonical "Hello World" app from the Node team. It's still up there and nothing seems to have changed.

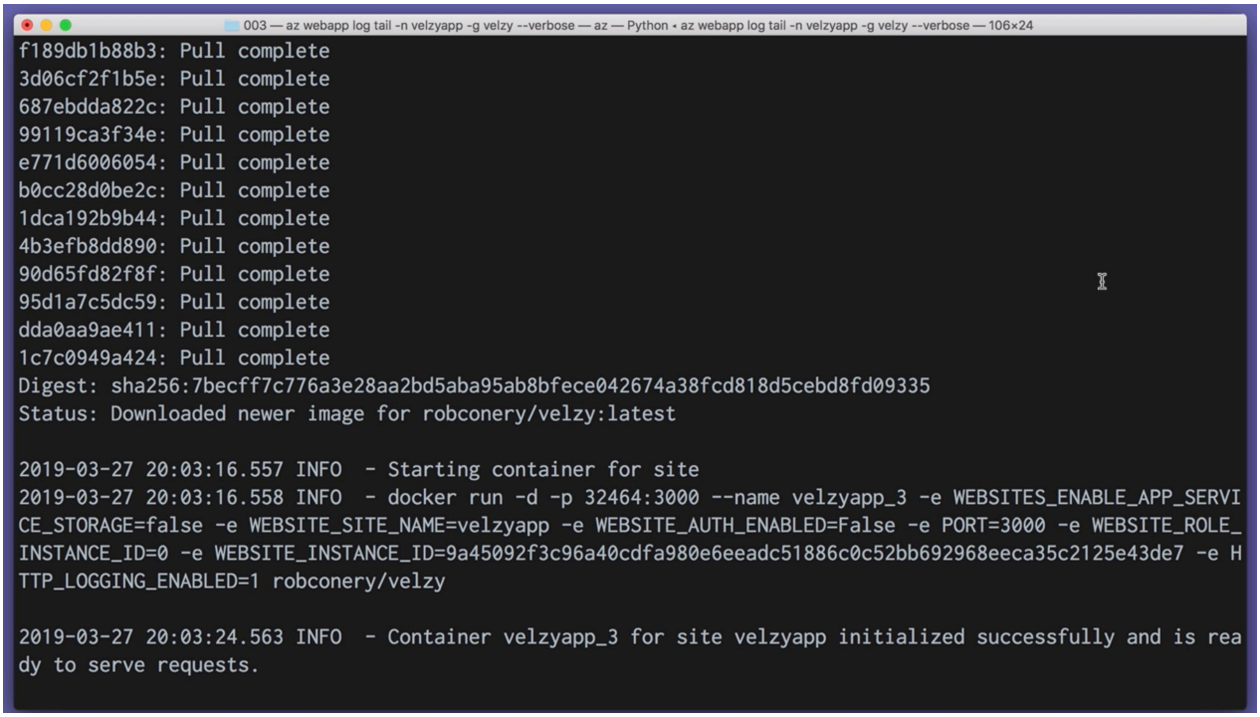
Let's log in to Azure and see whet's going on. Now that I've enabled logging (and every option too) I should be able to see what's happening with some clarity.

To remind ourselves, let's ask `az webapp log` for help by passing in the `-h` flag. The subcommands come up again and I can see some choices for viewing the logs. The first is to download them as a zip file, which I don't want. The second seems to be what I want: `show`, but the description says it's for the configuration, which I don't need. Finally, `tail` will start a live stream, which is *definitely* what I want.

Let's make sure by running `az webapp log tail -h`. I have a feeling I'll need to pass in the usual application name using `-n` and resource group using `-g`, but I'm glad I had a look first because there are some other arguments I can send in that might prove useful: `--verbose` and `--debug`. I'm not debugging anything right now, but I *do* want to see as much information as possible, so I'll set the `--verbose` flag.

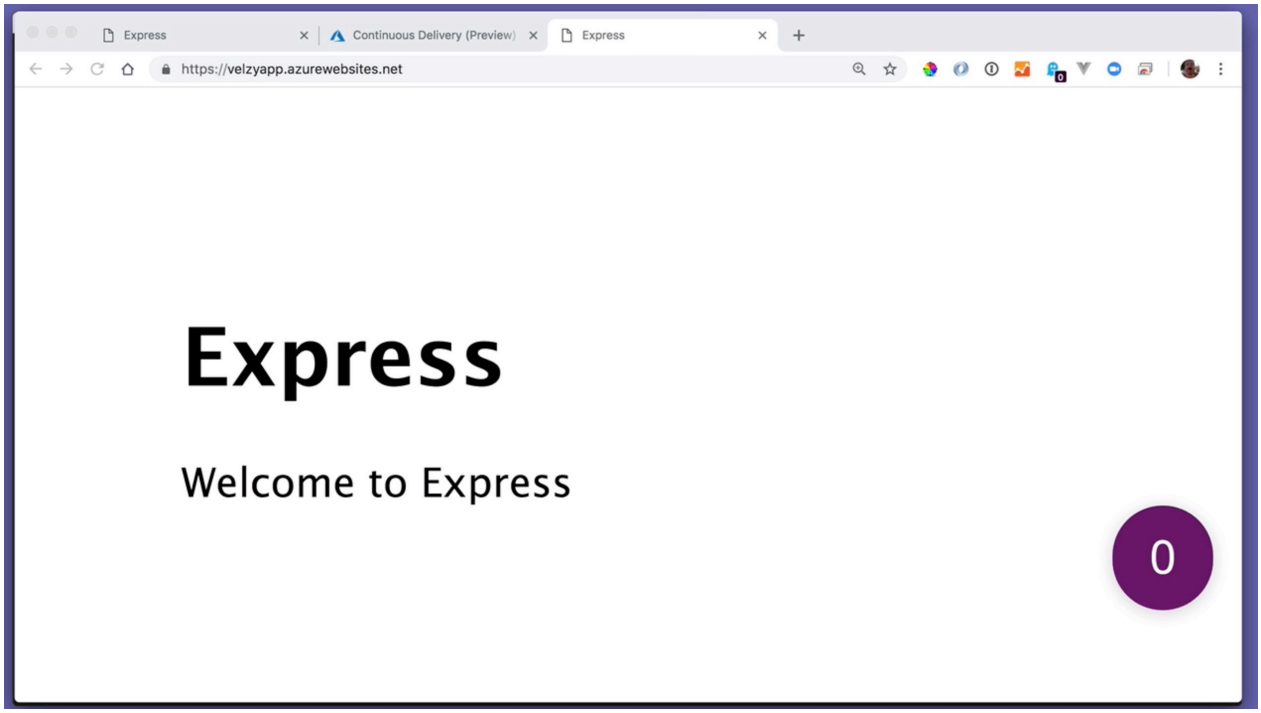
Let's give it a whirl:

```
az webapp log tail -n velzyapp -g velzy --verbose
```



Alright! This is exactly what I want to see. It took a few minutes for the web hook to reach Azure, and then for Azure to start the pull and reload, but it looks as though everything is ready to go.

Let's refresh the app up on Azure and see:

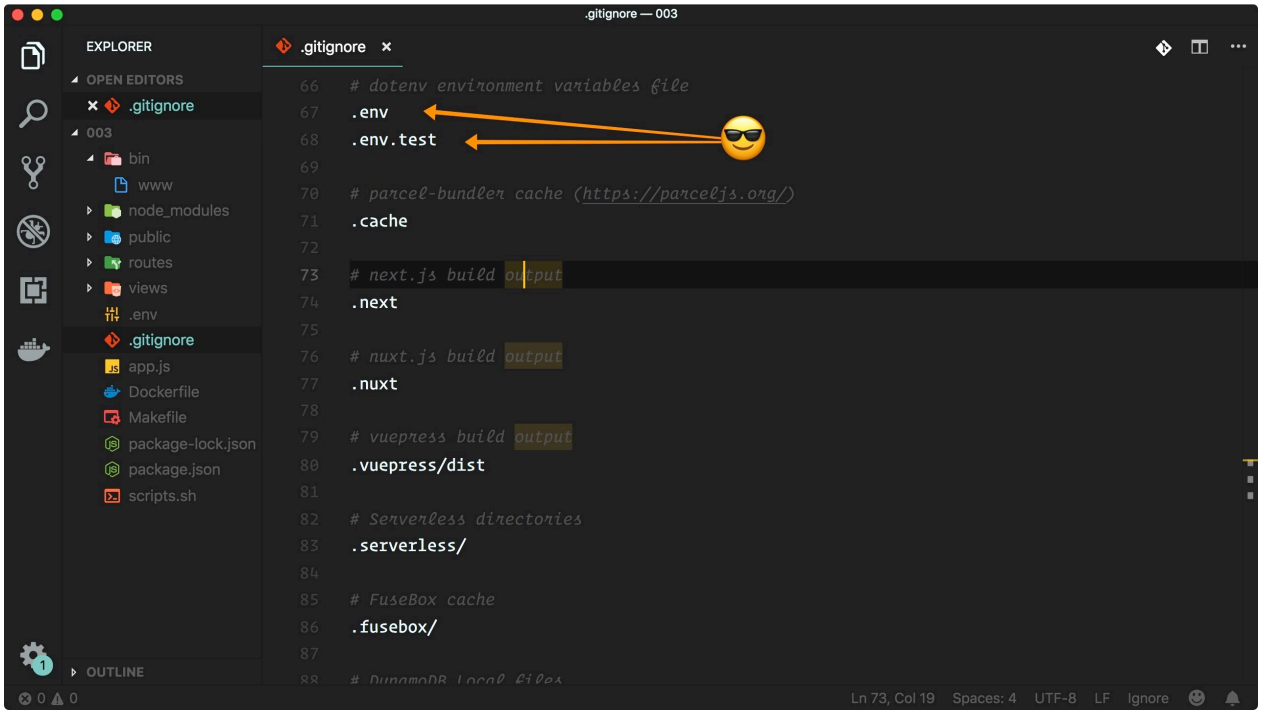


Victory is mine!

A Few Tips and Tricks

Before I finish up I'd like to share a few tips and tricks for the command-line-inclined out there. One of the things I don't like to do is to type commands repeatedly. To get around that, I use a `.env` file, which is a standard way of sharing environment variables for use in your shell.

I'll create one here in the root of my project using `touch`. Before I go *any* further I'll want to be sure that this file does not get added to source control, so I'll add `.env` to my `.gitignore` file:



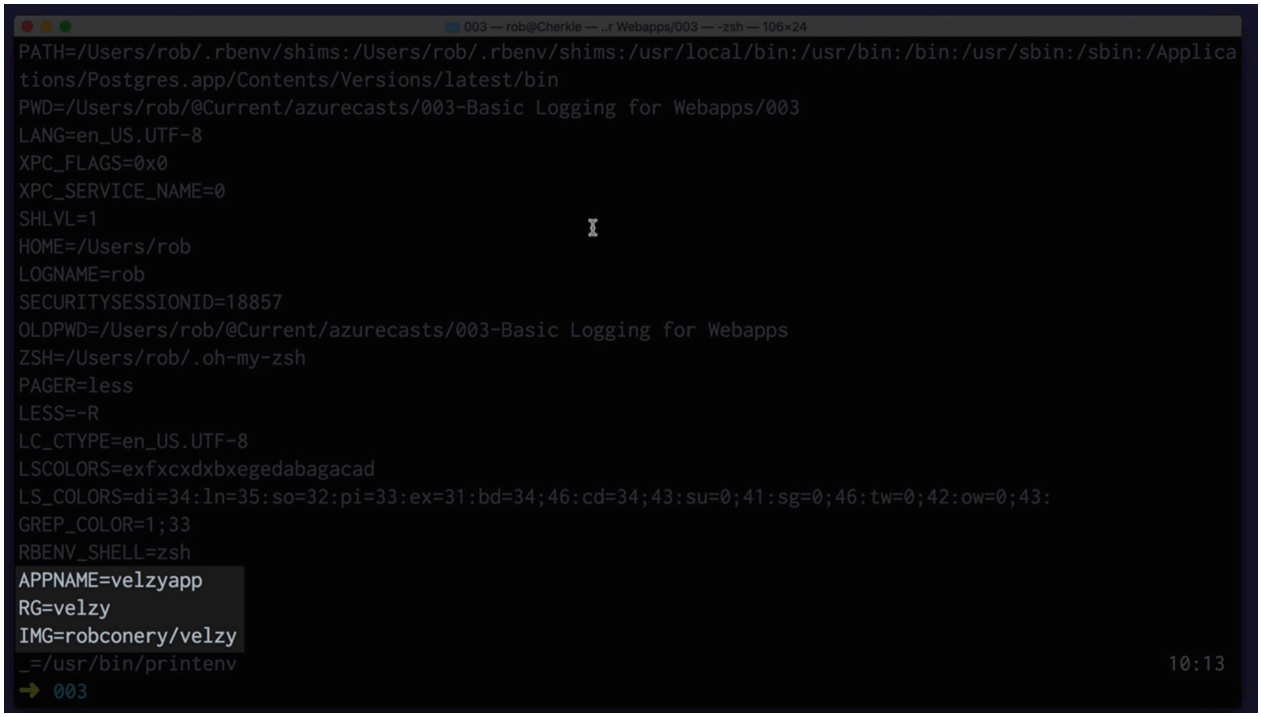
All kinds of settings and scripts can be added to a `.env` file, include API keys, database connection strings, and other sensitive environment information. Checking this into source control is a huge problem! Fortunately for me, I generated this `.gitignore` file using the `gi` command from the good people at gitignore.io, who already had an entry for `.env`. Go have a look at the project if you don't know what it is.

I use zshell for my shell instead of bash and one main reason I do is because of the "Oh My Zsh" project - not quite sure how you say that. This project is great for developers because they take care of so many shortcuts and common tasks that developers use every day. They also have a rich plugin system that pumps up your shell's functionality.

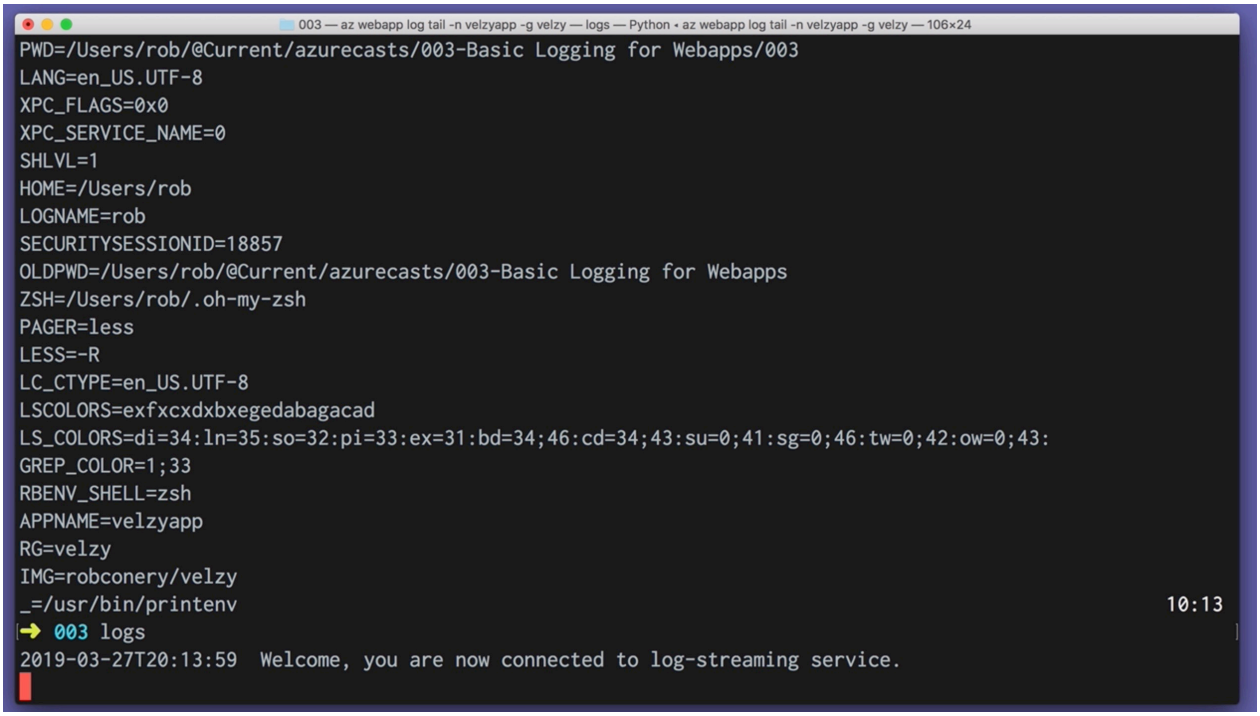
One such plugin is `dotenv`, which you see here. This plugin will load any `.env` file for you when you navigate into a directory, and it will set environment variables automatically. Really useful!

Speaking of, let's finally get around to setting our environment variables. I'll set `APPNAME`, `RG` (for resource group) and `IMG` for DockerHub image. I'll also setup an alias, which is a shortcut recognized by the shell. I'll set one called `logs` and set it equal to my `az webapp log tail` command. Instead of hardcoding the name and resource group of my app, I'll use the shell variables.

These will come in handy later on. Let's navigate out and back in and use `printenv` to see if things got loaded up - and they did:

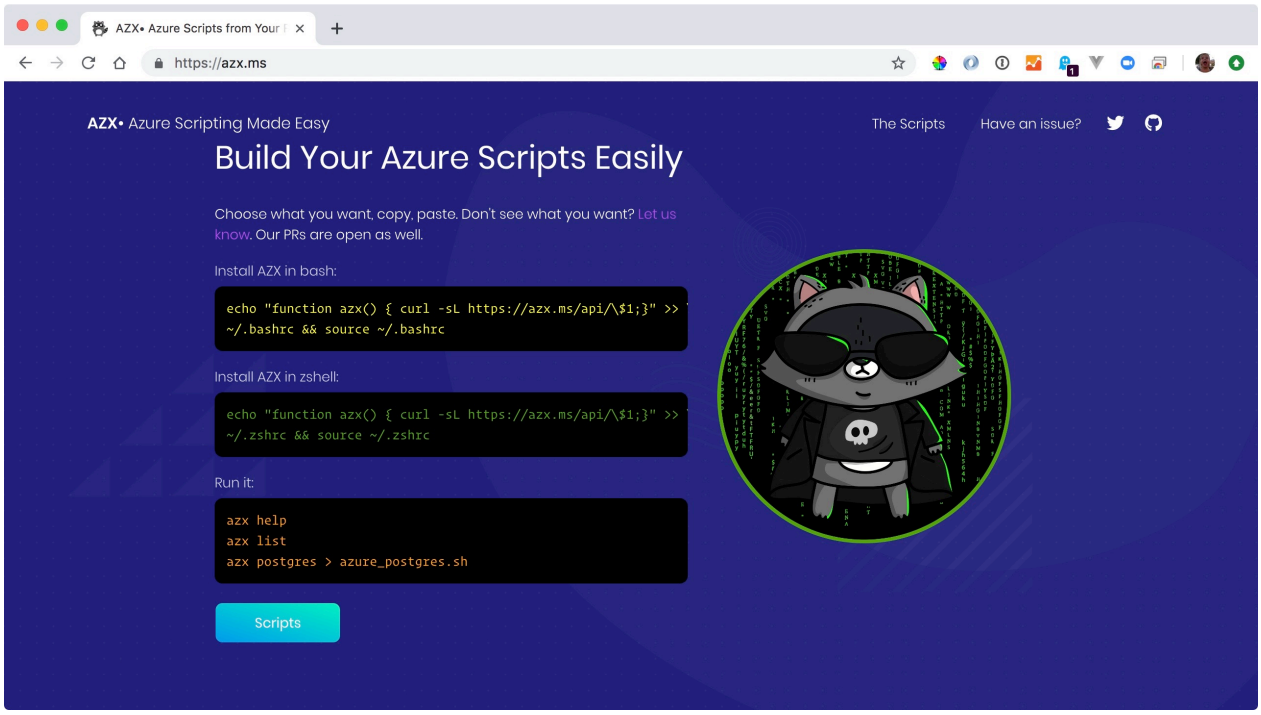


Great. Now I can run my `logs` alias, which is a lot less typing!



Using a scripts file like this is really helpful. You can pop aliases in there but you can also create you're own generator scripts to create Azure resources as you need. That's when these environment variables come in handy.

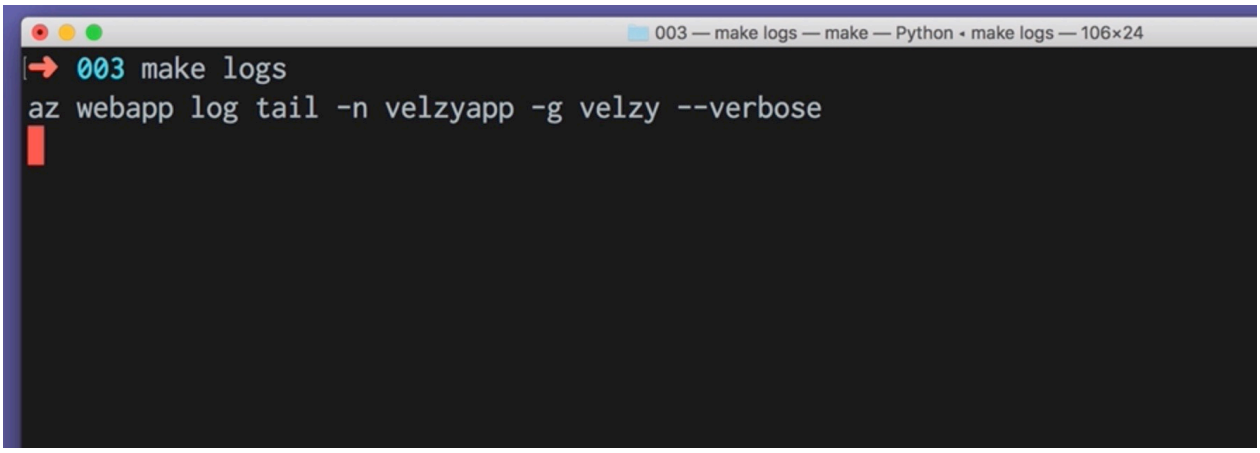
If you want to see what some of these shell scripts look like, head over to azx.ms:



This is a site I put together with my fellow CDAs and is basically a script repository for creating Azure resources. I'll talk about this site in a later episode.

One last tip before you go: let's talk about Make. If you don't know what it is, Make is a build tool that comes bundled with most Unix-based systems. It allows you to orchestrate shell commands, which is precisely what we need. I'm a huge Make fan, so let's take a moment and expand the Makefile we created in episode one.

I'll copy and paste the shell variables from script and drop them right at the top. I'll then add a `web` target (for starting my site) and a `logs` target, using the same `logs` command from my shell script. I have to use slightly different notation here for the variables, however, because each target runs in its own shell process, so I need to use this syntax so Make will expand them before executing the command.



Now I can see my logs simply by running `make logs`. In a later episode I'll talk more about how we can use Make to create our resources on Azure, with a rollback feature if anything goes wrong.

That's it for now, however - thanks for watching.