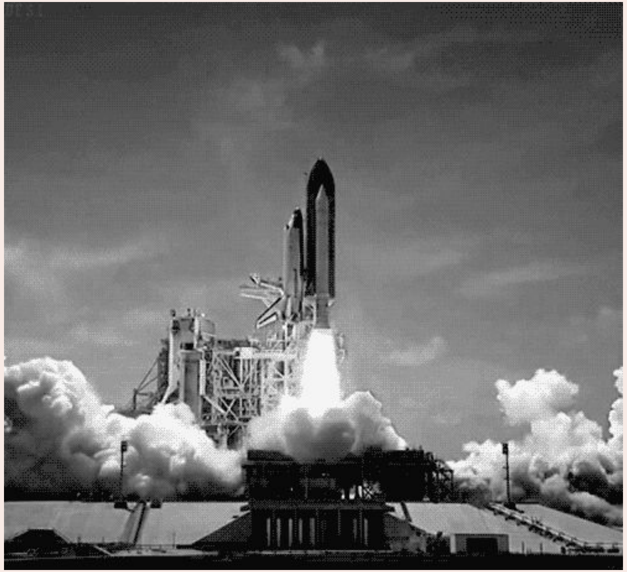
Deployment

CSCI 39549
October 24, 2018

Deployment



Agenda

1 What is deployment?

2 *How does it work in the industry?*

3 Workshop

4 Homework assignment

What is Deployment?

> “Software deployment is all of the activities that make a software system available for use.”

Software deployment on Wikipedia

In other words....

In other words....

Deployment is the process of getting code off your computer and onto a place accessible by others.

How does it work in the industry?

Software releases – the early days

Long-running projects

A team might work for years to get something out.

Expensive to fix bugs

Fixing a bug meant physically delivering a software update to consumers.

Releases owned by a separate team

Developers built software and other functions (eg a release engineer) were responsible for deploying the software.

Waterfall software development

In software development, it tends to be among the less iterative and flexible approaches, as progress flows in largely one direction ("downwards" like a waterfall) through the phases of:

- Conception,
- Initiation,
- Analysis,
- Design,
- Construction,
- Testing,
- Deployment, and
- Maintenance.

“Waterfall Model” on Wikipedia

Nowadays, most companies release more frequently:

Continuous Integration

Developers push their code to a shared master branch as frequently as possible.

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Continuous Delivery

Have tooling in place so that you can push a button and deploy whatever's on master at any given time.

NOTE: this means that anything pushed to master needs to be release-ready!

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NOTE: this means that anything pushed to master needs to be release-ready!

Continuous Deployment

Have tooling in place so that every push to master is *automatically* deployed to production.

Continuous Integration: Example

Example: Rebecca and Arylee work on a project where they’re continuously pushing commits to a shared git repository.

`git push`

`git push`

Continuous Integration: Example

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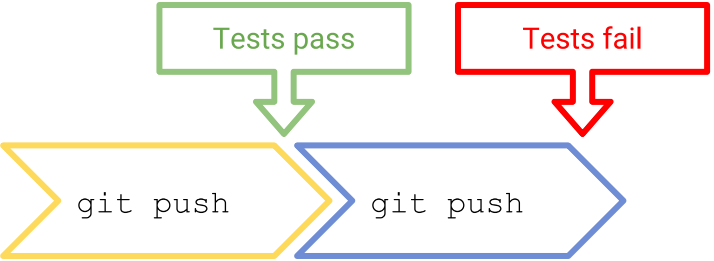
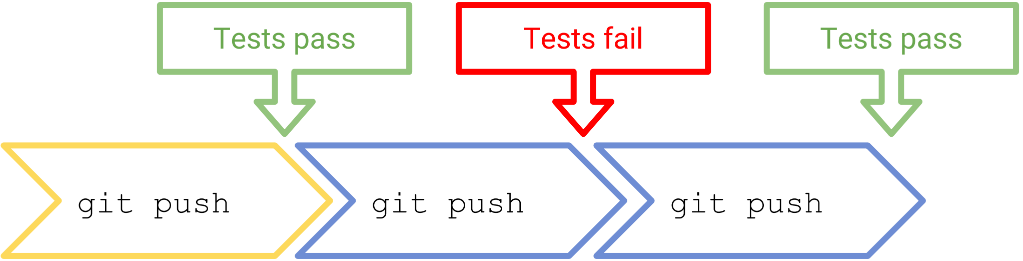
Each time either of them push, a tool runs all of the automated tests associated with the product. These tests validate that their code **integrated** well with the product.



Continuous Integration: Example

Rebecca and Arylee work on a project where they're continuously pushing commits to a shared git repository.

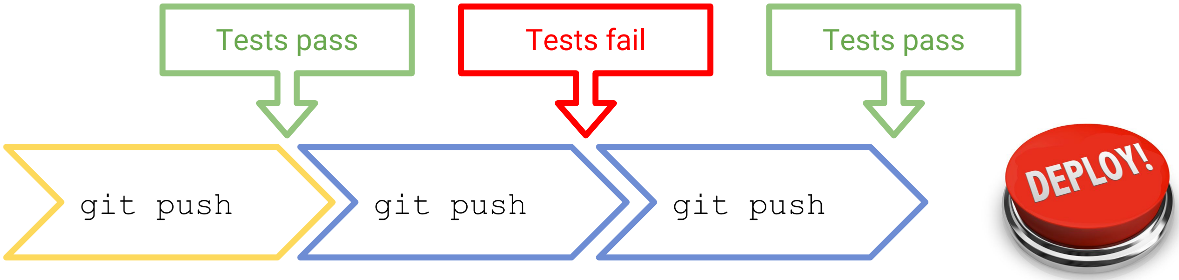
Each time either of them push, a tool runs all of the automated tests associated with the product. These tests validate that their code **integrated** well with the product. When a test fails, they know their next push needs to fix the tests.



Continuous Deployment: Example

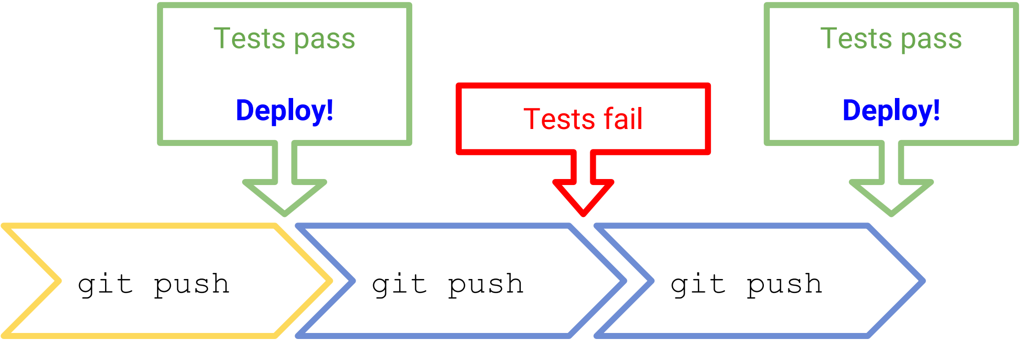
Once Arylee decides she needs to see her change live, she decides to deploy the code on the master branch.

The ability to do this at any time is called **Continuous Deployment**.



Continuous Delivery: Example

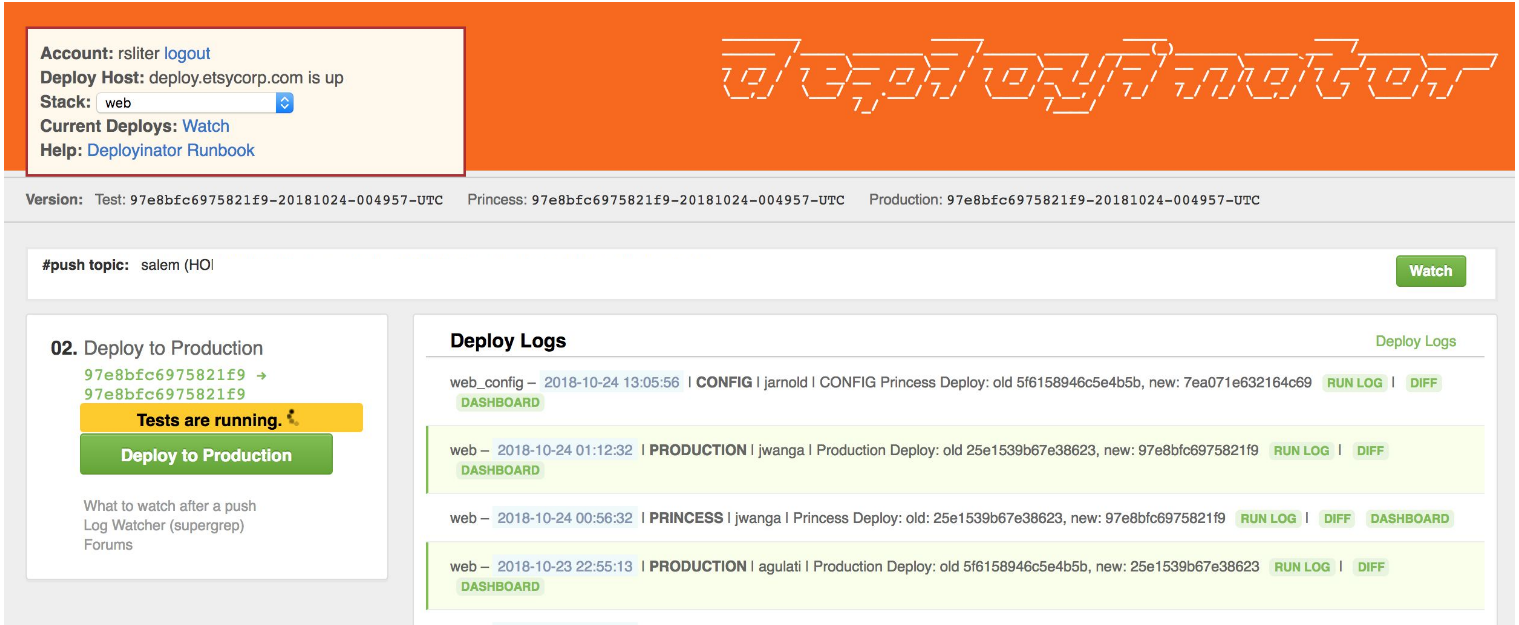
If they automate their deployment so that every git push (with passing tests!) is deployed, that's **Continuous Delivery**.



Releasing more frequently makes us more agile

What does Etsy do?

- Continuous Deployment
- Internal tool called “Deployinator” contains our Deploy button



Account: rsliter logout
Deploy Host: deploy.etsycorp.com is up
Stack: web
Current Deploys: Watch
Help: Deployinator Runbook

Version: Test: 97e8bfc6975821f9-20181024-004957-UTC Princess: 97e8bfc6975821f9-20181024-004957-UTC Production: 97e8bfc6975821f9-20181024-004957-UTC

#push topic: salem (HOI [redacted]

02. Deploy to Production

97e8bfc6975821f9 → 97e8bfc6975821f9

Tests are running.

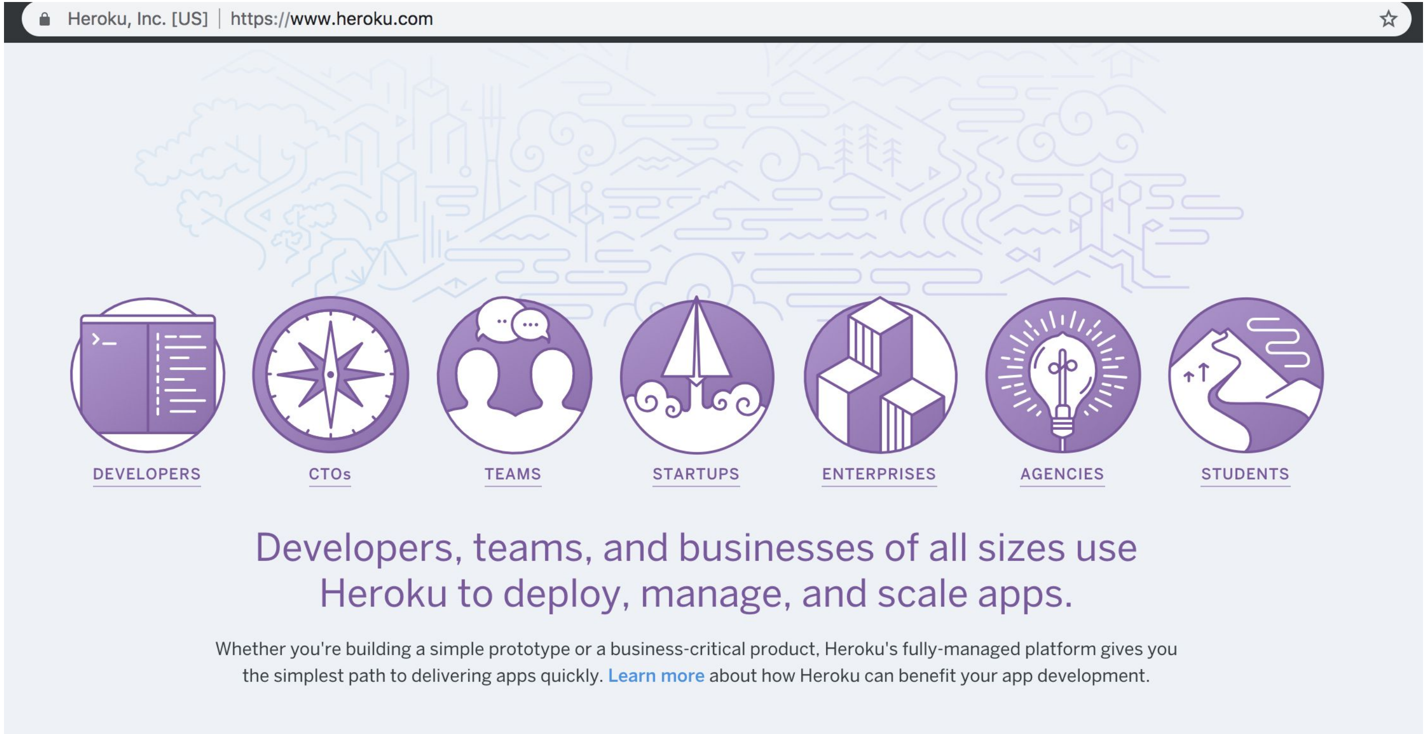
What to watch after a push
Log Watcher (supergrep)
Forums

Deploy Logs

```
web_config – 2018-10-24 13:05:56 | CONFIG | jarnold | CONFIG Princess Deploy: old 5f6158946c5e4b5b, new: 7ea071e632164c69 RUN LOG | DIFF DASHBOARD
web – 2018-10-24 01:12:32 | PRODUCTION | jwanga | Production Deploy: old 25e1539b67e38623, new: 97e8bfc6975821f9 RUN LOG | DIFF DASHBOARD
web – 2018-10-24 00:56:32 | PRINCESS | jwanga | Princess Deploy: old: 25e1539b67e38623, new: 97e8bfc6975821f9 RUN LOG | DIFF DASHBOARD
web – 2018-10-23 22:55:13 | PRODUCTION | agulati | Production Deploy: old 5f6158946c5e4b5b, new: 25e1539b67e38623 RUN LOG | DIFF DASHBOARD
```

Workshop

Deploying to Heroku



Developers, teams, and businesses of all sizes use Heroku to deploy, manage, and scale apps.

Whether you're building a simple prototype or a business-critical product, Heroku's fully-managed platform gives you the simplest path to delivering apps quickly. Learn more about how Heroku can benefit your app development.

Why use Heroku?

- Enables us to release our code
- Free hosting
- Good tooling = relatively easy to use

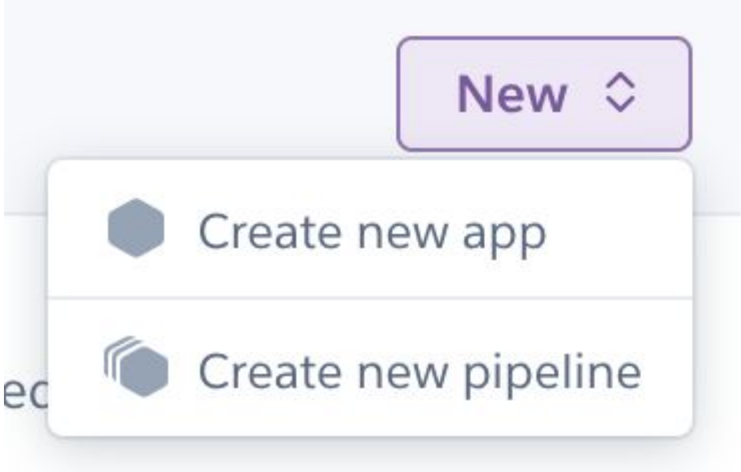
Step One: Workshop Setup

👉 **TODO: Install the Heroku command line tool on your laptop**

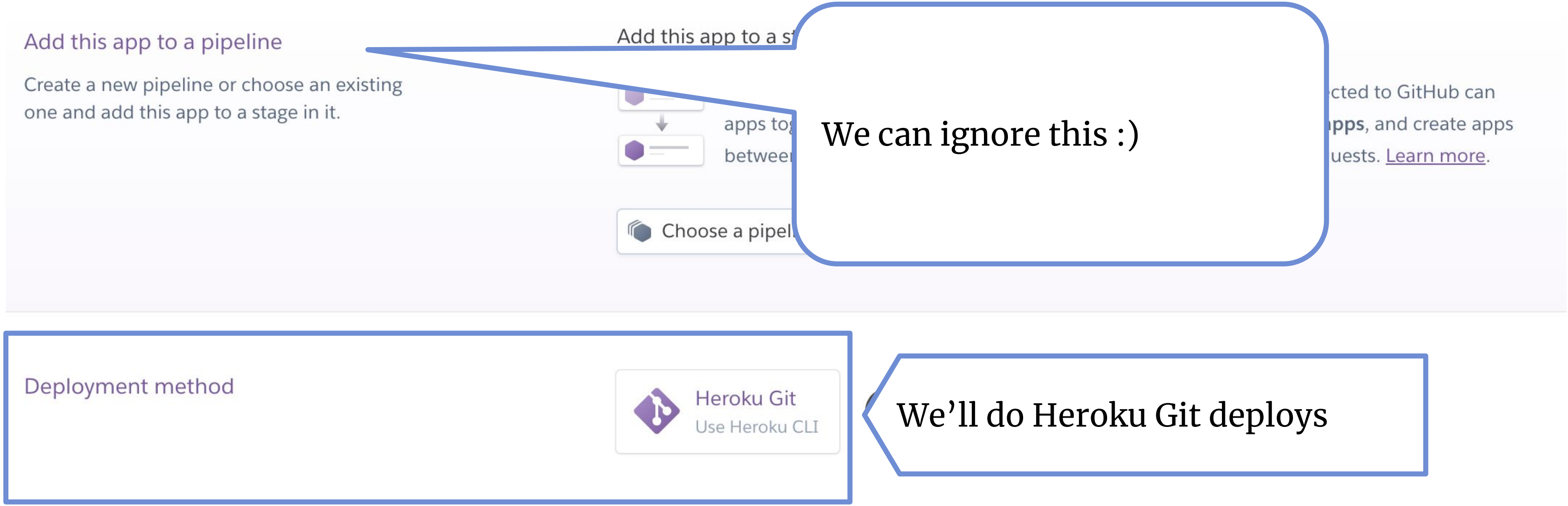
👉 **TODO: clone the workshop app with the following command:**

```
$ git clone https://github.com/rsliter/csci-39549-calculator.git
```

On Heroku, create a new app



Follow the setup instructions...



Add this app to a pipeline

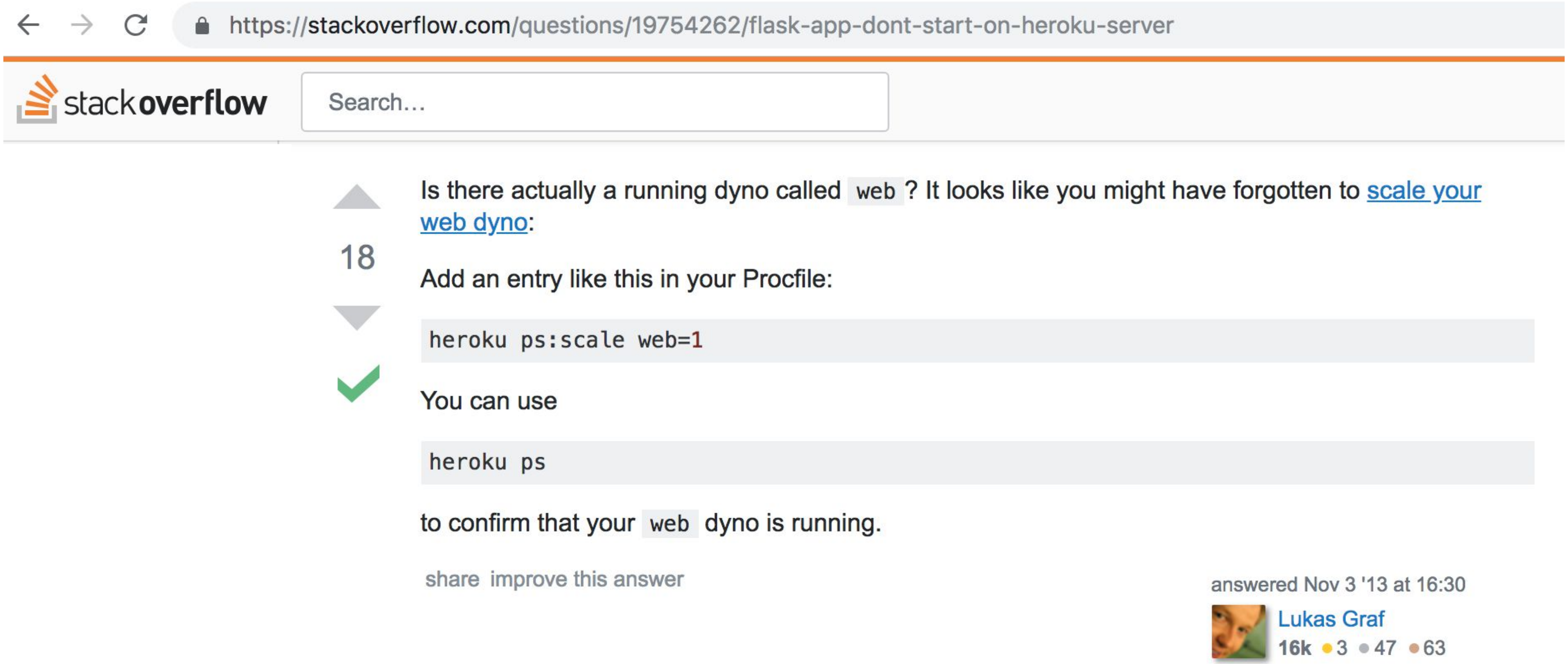
Create a new pipeline or choose an existing one and add this app to a stage in it.

Deployment method

We can ignore this :)

We’ll do Heroku Git deploys

```
$ heroku logs --tail
2018-10-23T23:50:14.321206+00:00 heroku[router]: at=error
code=H14 desc="No web processes running" method=GET path="/"
host=sliter-calculator.herokuapp.com
request_id=f6b6b24d-5460-4f1c-b48b-e06664ca2994
fwd="68.173.122.251" dyno= connect= service= status=503
bytes= protocol=https
```



https://stackoverflow.com/questions/19754262/flask-app-dont-start-on-heroku-server

18

Is there actually a running dyno called `web`? It looks like you might have forgotten to scale your web dyno:

Add an entry like this in your Procfile:

```
heroku ps:scale web=1
```

You can use

```
heroku ps
```

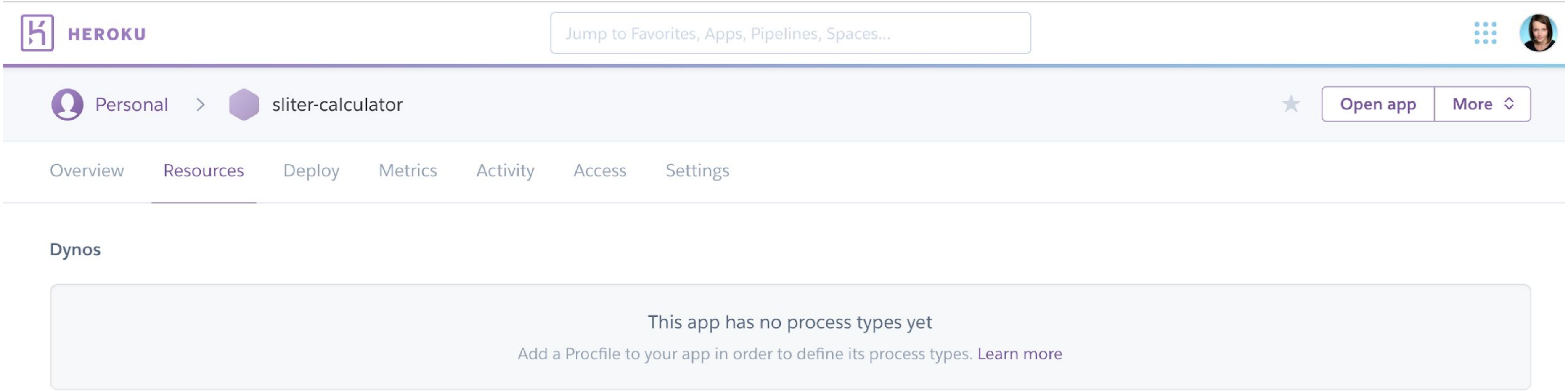
to confirm that your `web` dyno is running.

answered Nov 3 '13 at 16:30

Lukas Graf

16k ●3 ●47 ●63

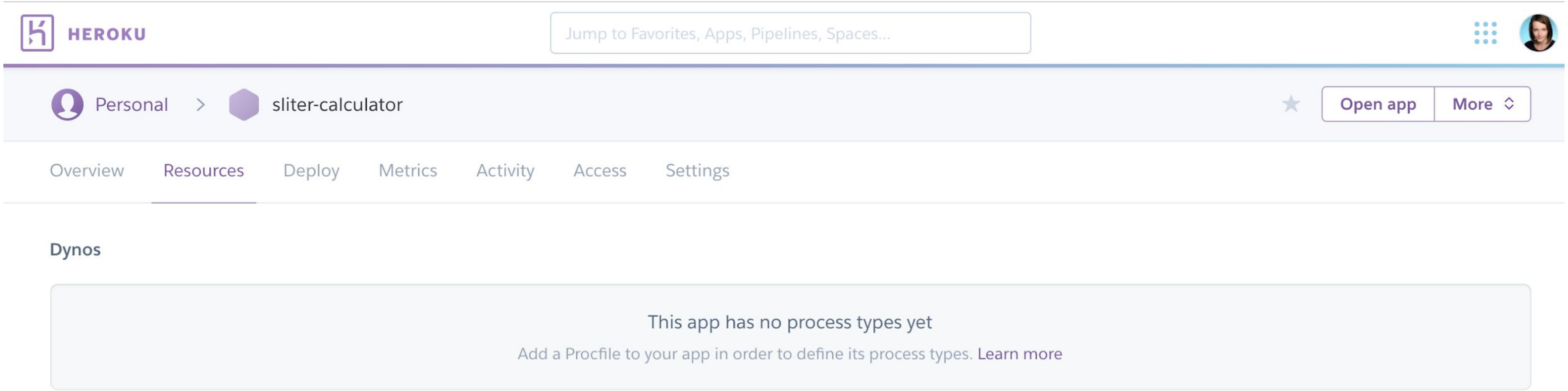
Time to scale up!



Dynos

This app has no process types yet

Add a Procfile to your app in order to define its process types. Learn more



Dynos

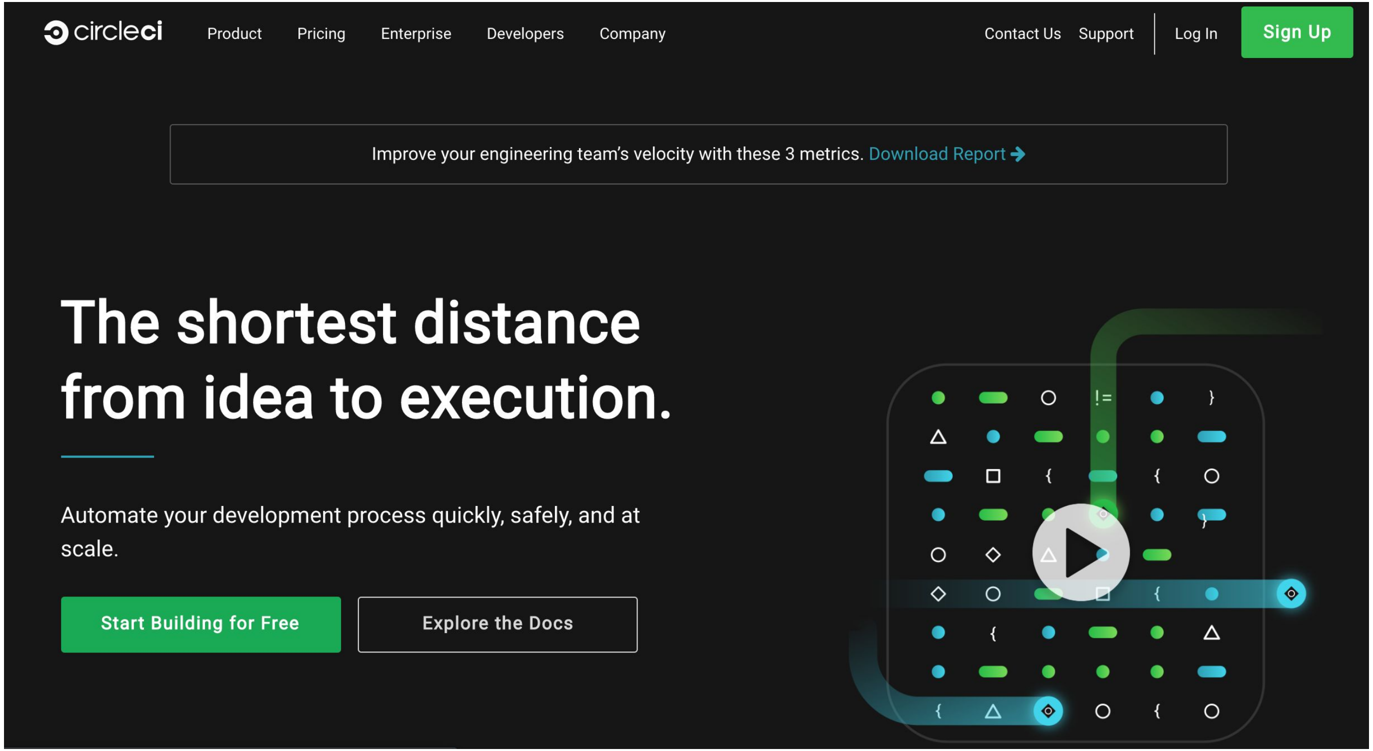
This app has no process types yet

Add a Procfile to your app in order to define its process types. Learn more

👉 **TODO: work with your teammates to write a Procfile that runs your app with one worker.**

How was that?

Automating Deployment



Improve your engineering team's velocity with these 3 metrics. Download Report →

The shortest distance from idea to execution.

Automate your development process quickly, safely, and at scale.

Why use CircleCI?

- Heroku gives us deployment, but it’s manual
    - Requires each teammate to download Heroku, understand the tool
- CircleCI can automate this for us!

How does CircleCI work?

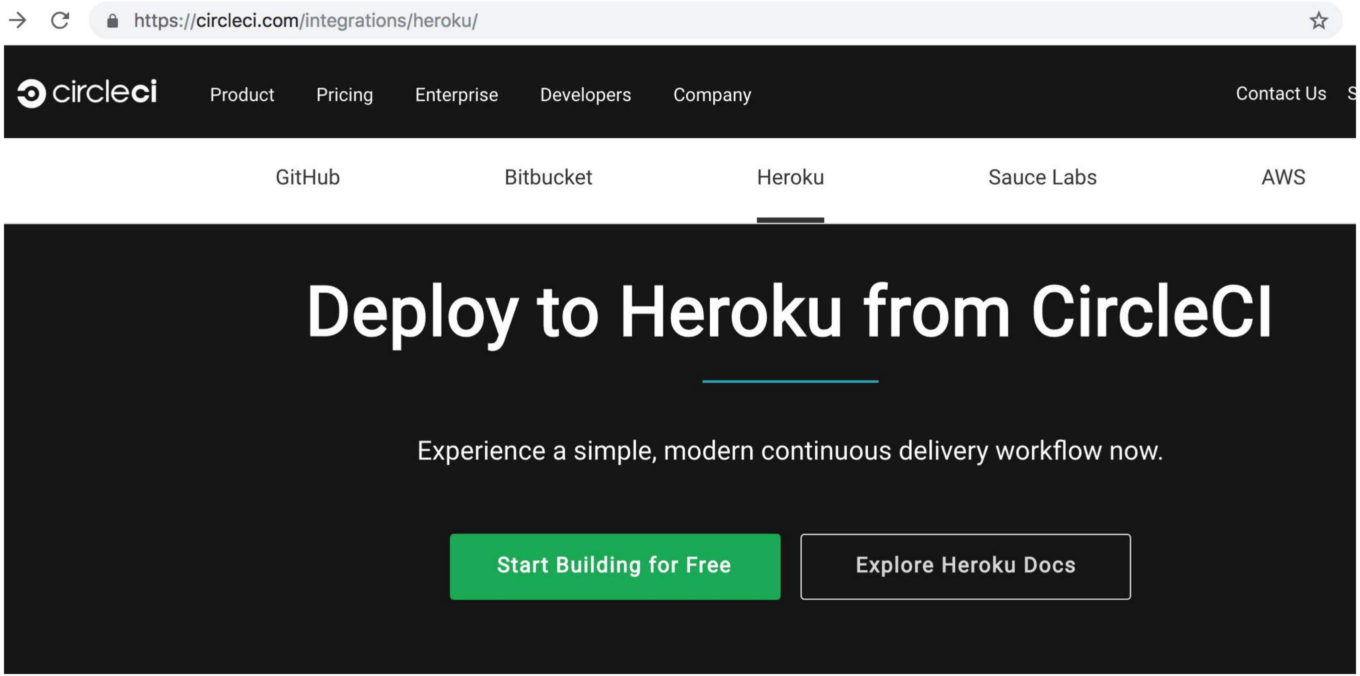
- It does Continuous Integration!
    - Listens for changes on our git repo
    - Automatically runs tests (we don’t have any yet)
    - Provides a DEPLOY button to release code to Heroku

Let’s try it out

👉 **TODO: set up your app to release to Heroku from CircleCI**

Let’s try it out

👉 **TODO: configure your app to release to Heroku from CircleCI**



https://circleci.com/integrations/heroku/

Deploy to Heroku from CircleCI

Experience a simple, modern continuous delivery workflow now.

How was that?

Homework

Homework: deploy your app!

👉 **TODO: With your team, deploy your app to Heroku. Set up CircleCI for your project so that you don’t need to manually deploy your app.**

👉 **TODO: Don’t forget that there is an assigned reading on testing for the next class! Check the syllabus for details. We will also have a guest lecturer!**