DAILY DEVELOPMENT WITH DOCKER DESKTOP

https://github.com/JimCodifed/linkextractor

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WHAT'S THE PLAN?

1. We have a python script!
   - It has issues.
2. Containerize it!
3. Let's make our app more useful.
4. What if it was an API?
5. Add a front-end for users

You don't need to be a Python programmer to complete this workshop!

☆ Extra credit (time remaining): A quick peek at a Java project

THE TOOLS WE'LL USE

- Docker Desktop for macOS or Windows
  - Docker Engine if you're on Linux is fine, too
- Your code editor of choice (I'm using VS Code)
- Git
  - Don't have git?

    `git-scm.com/download`

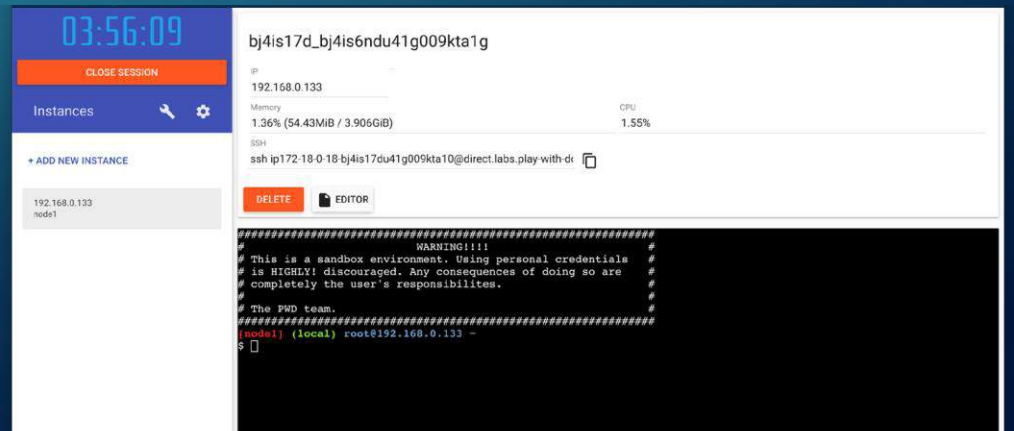
    Or you can download the app as a zip file

If you cannot run Docker Desktop (or don't have time to download and install on the conference wifi):

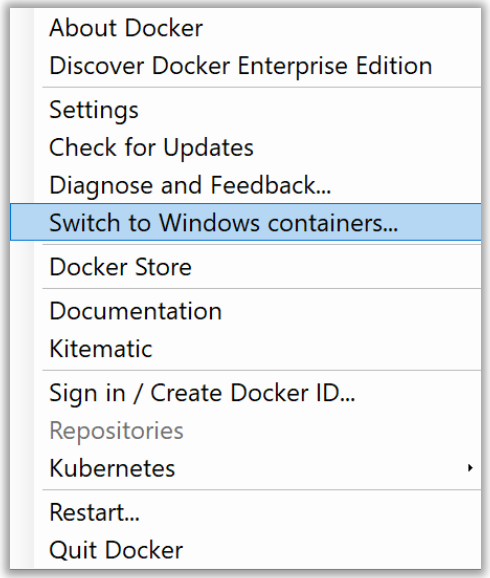
1. Go to

   https://labs.play-with-docker.com

2. Login (docker hub account)
3. "Add new instance"

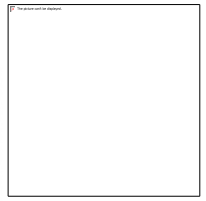


Windows only



This lab has only been tested on Linux

Windows & Mac

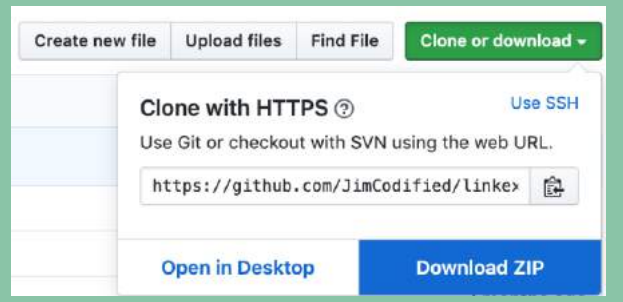


Everything *should* run fine on Kube, but the docker commands shown are for Swarm

DOCKER DESKTOP PREPARATION

LET'S BEGIN

If you don't have git:
Browse to
https://github.com/JimCodified/linkextractor




```
$ git clone https://github.com/JimCodified/linkextractor

$ cd linkextractor

$ git checkout demo

$ git checkout step0

.
├── README.md
└── linkextractor.py
```

OUR SUPER HANDY PYTHON APP

```
$ code .
```

linkextractor.py

```
1   #!/usr/bin/env python
2
3   import sys
4   import requests
5   from bs4 import BeautifulSoup
6
7   res = requests.get(sys.argv[-1])
8   soup = BeautifulSoup(res.text, "html.parser")
9   for link in soup.find_all("a"):
10      print(link.get("href"))
11
```

GIVE IT A SPIN…MAYBE

```
$ linkextractor.py


$ ./linkextractor.py


$ python ./linkextractor.py
```

WHAT HAPPENED?

- It’s not executable
- We could change permissions…
- …or run it via *python*

- But chances are slim any of those will work because dependencies

CONTAINERS TO THE RESCUE!

If you don't want to type out the Dockerfile:
`$ cp cheats/Dockerfile .`

```
FROM        python:3.7-alpine
LABEL       maintainer="<your name>"

RUN         pip install beautifulsoup4
RUN         pip install requests

WORKDIR     /app
COPY        linkextractor.py /app/
RUN         chmod a+x linkextractor.py

ENTRYPOINT [”python”, “./linkextractor.py"]
```

```
$ docker build -t linkextractor:v1 .
```

WHAT???

```
Sending build context to Docker daemon  137.7kB
Step 1/8 : FROM       python:3.7-alpine
 ---> 954987809e63
Step 2/8 : LABEL      maintainer="Jim A. <jim.armstrong@docker.com>"
 ---> Running in b49b516a82e2
Removing intermediate container b49b516a82e2
 ---> 310010a40d22
Step 3/8 : RUN        pip install beautifulsoup4
 ---> Running in 87a356857ea4
Collecting beautifulsoup4
  Downloading
https://files.pythonhosted.org/packages/1d/5d/3260694a59df0ec52f8b4883f5d23b130b
c237602a1411fa670eae12351e/beautifulsoup4-4.7.1-py3-none-any.whl (94kB)
Collecting soupsieve>=1.2 (from beautifulsoup4)
  Downloading
https://files.pythonhosted.org/packages/b9/a5/7ea40d0f8676bde6e464a6435a48bc5db0
9b1a8f4f06d41dd997b8f3c616/soupsieve-1.9.1-py2.py3-none-any.whl
Installing collected packages: soupsieve, beautifulsoup4
Successfully installed beautifulsoup4-4.7.1 soupsieve-1.9.1
Removing intermediate container 87a356857ea4
 ---> 5b86d63727e1
Step 4/8 : RUN        pip install requests
 ---> Running in 092ea643f938
Collecting requests
  Downloading
```

IT WORKS!

```
$ docker run --rm linkextractor:v1 http://docker.com
/dockercon
/dockercon/register-livestream
/
/why-docker
/resources/what-container
/company
/partners
/products
/products/docker-enterprise
/products/docker-hub
/products/developer-tools
/products/docker-desktop
/products/container-runtime
/products/kubernetes
```

```
$ docker image ls linkextractor

REPOSITORY                                                  TAG
        IMAGE ID            CREATED                 SIZE
linkextractor                                               v1
        2e44d06ccfb0        9 minutes ago           95.9MB
```

CODE-BUILD-TEST

linkextractor.py

```
#!/usr/bin/env python

import sys
import requests
from bs4 import BeautifulSoup

res = requests.get(sys.argv[-1])
soup = BeautifulSoup(res.text, "html.parser")
for link in soup.find_all("a"):
    print("-->", link.get("href"))
```

Add a decoration to the start of each line

THE DOCKER BUILD CACHE

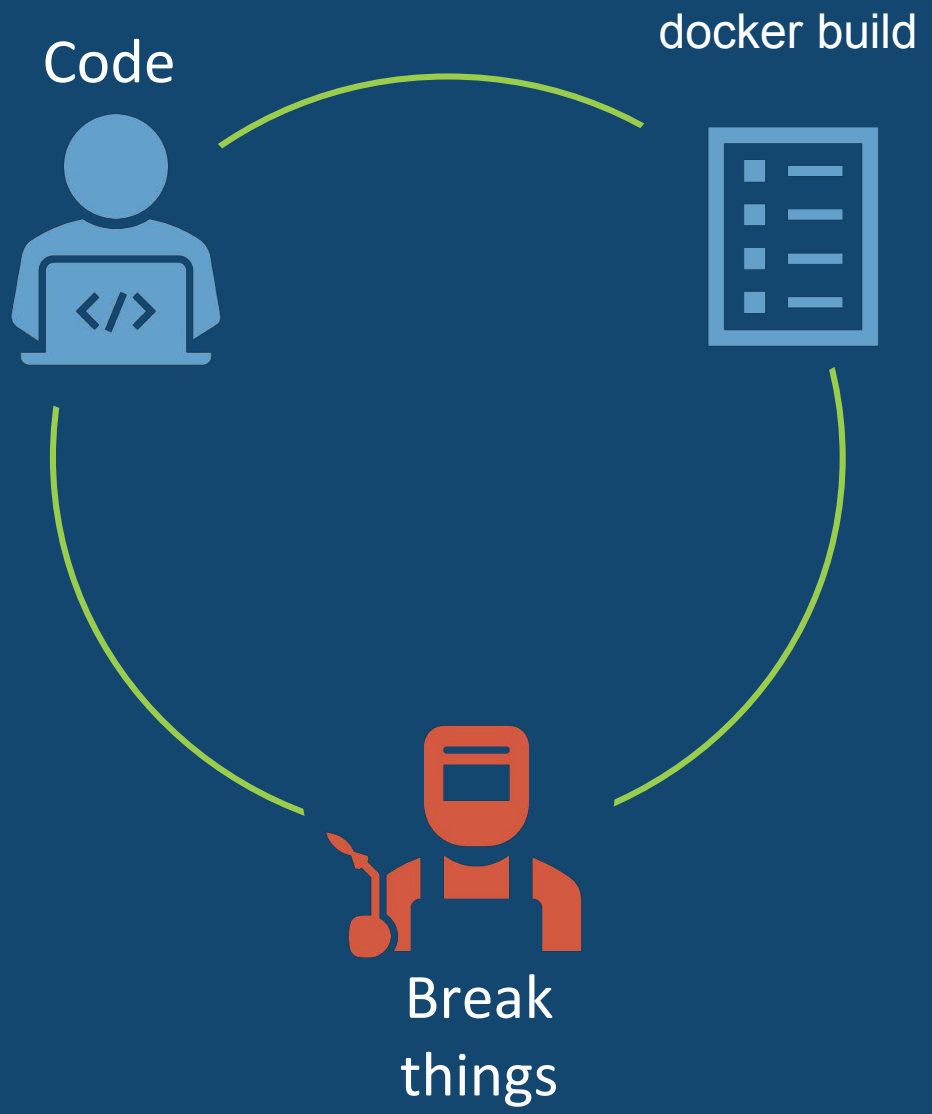
Check out Buildkit for real caching goodness!

```
$ docker build -t linkextractor:v1.1 .
.
.
.
Step 4/8 : RUN         pip install requests
 ---> Using cache
 ---> 8da10403b259
Step 5/8 : WORKDIR     /app
 ---> Using cache
 ---> 6085c3cc3baf
Step 6/8 : COPY        linkextractor.py /app/
 ---> 5ecc75f20edd
```

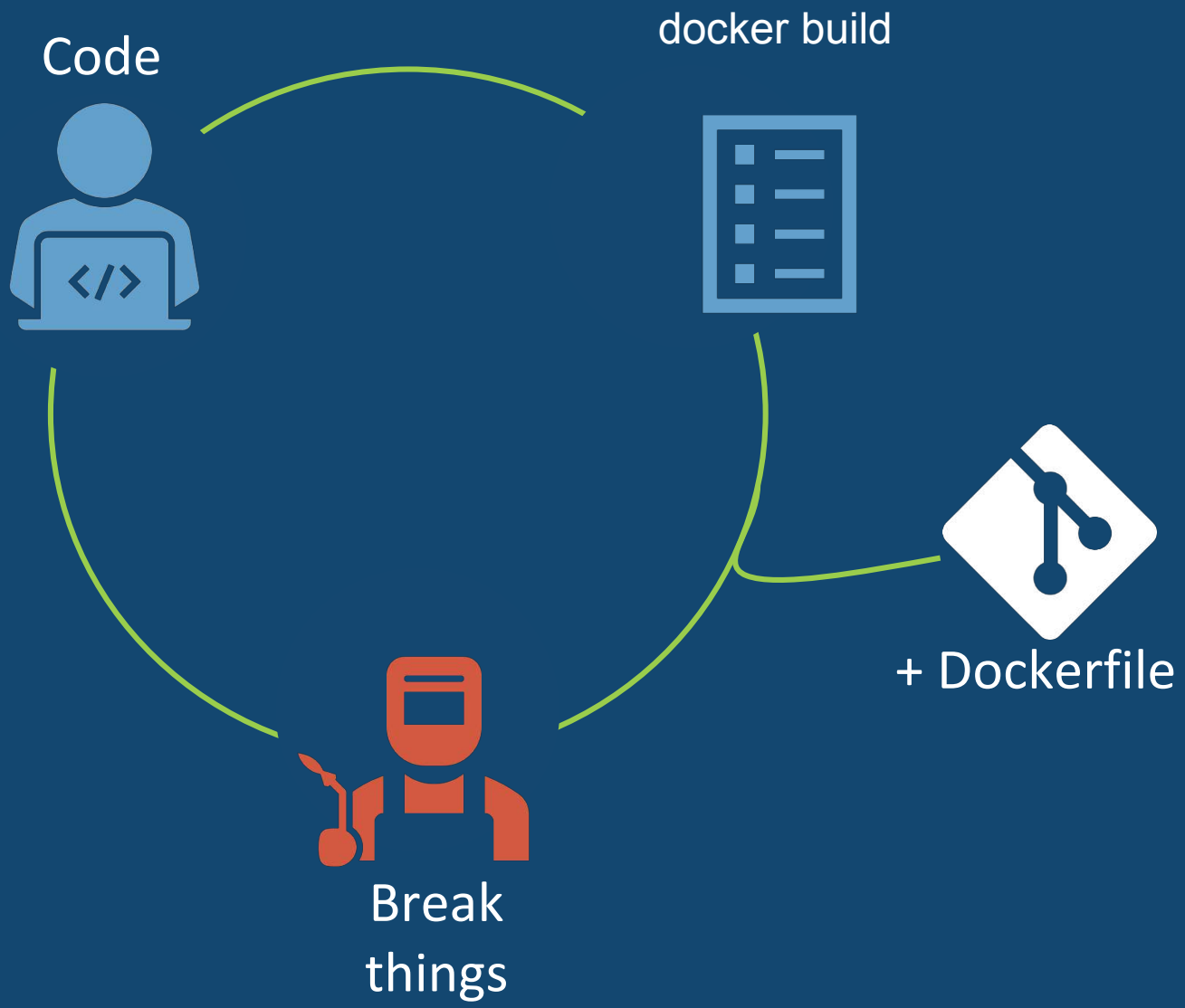
NEW & IMPROVED (?) LINK EXTRACTOR

```
$ docker container run --rm linkextractor:v1.1
  https://docker.com
--> /dockercon
--> /dockercon/register-livestream
--> /
--> /why-docker
--> /resources/what-container
--> /company
--> /partners
--> /products
--> /products/docker-enterprise
--> /products/docker-hub
--> /products/developer-tools
--> /products/docker-desktop
--> /products/container-runtime
```

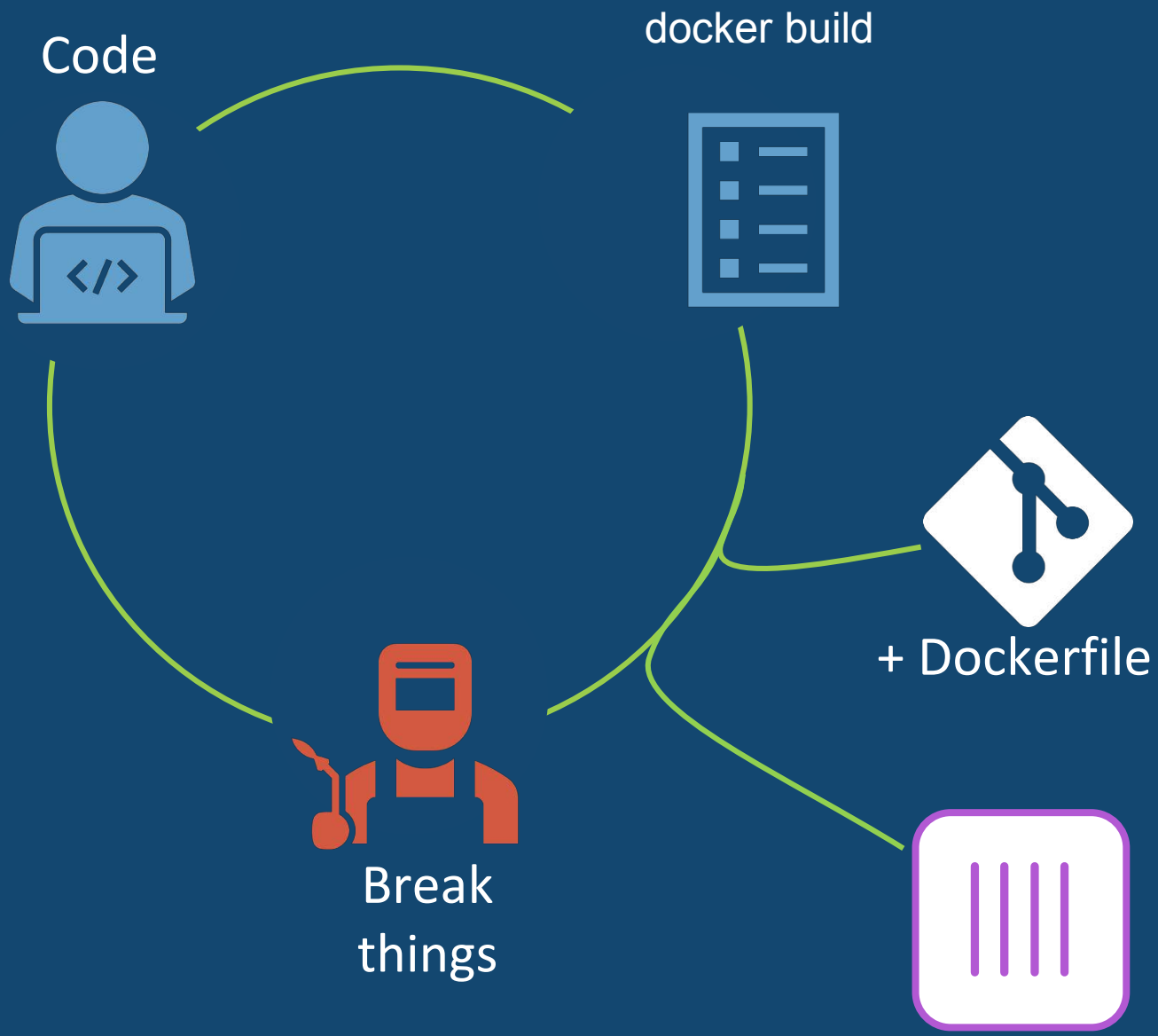
OUR DEV-TEST LOOP SO FAR

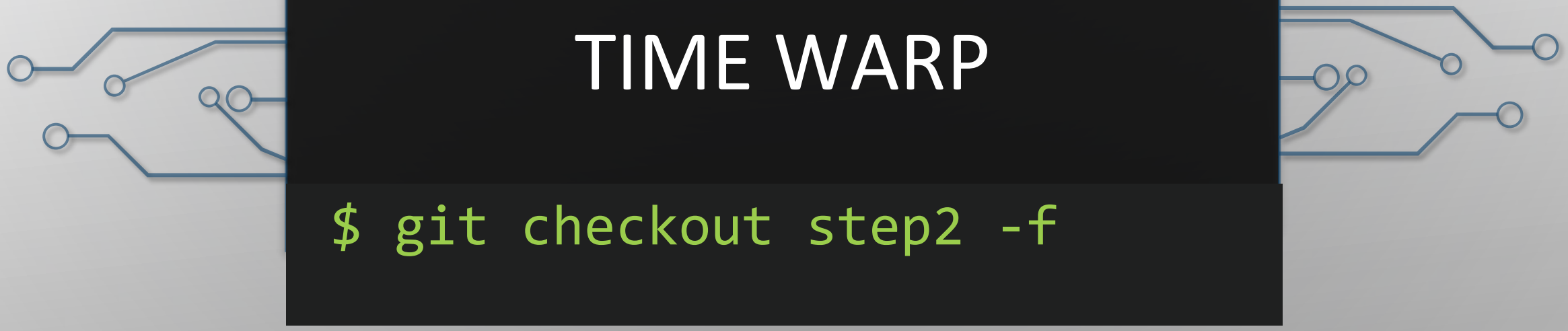


OUR DEV-TEST LOOP SO FAR



OUR DEV-TEST LOOP SO FAR




TIME WARP
$ git checkout step2 -f