Checkpoint

- [ ] Container
- [ ] Image
- [ ] Dockerfile
- [ ] Registry
- [ ] Auto build with Github (Bonus!)

Checkpoint

- [ ] Basic docker volume
- [ ] Docker multistage build
- [ ] Real-world example project
- [ ] Deploy container to Heroku (Bonus!)

Container

Lab 1. Run first container

```
docker container run hello-world
```

```
docker run hello-world
```

Hello World: What Happened?

Registry

https://store.docker.com

Repository: `library`
Image: `hello-world`
Tag: `latest`

Image

3

`hello-world:latest`

Docker Engine

Linux

play-with-docker.com

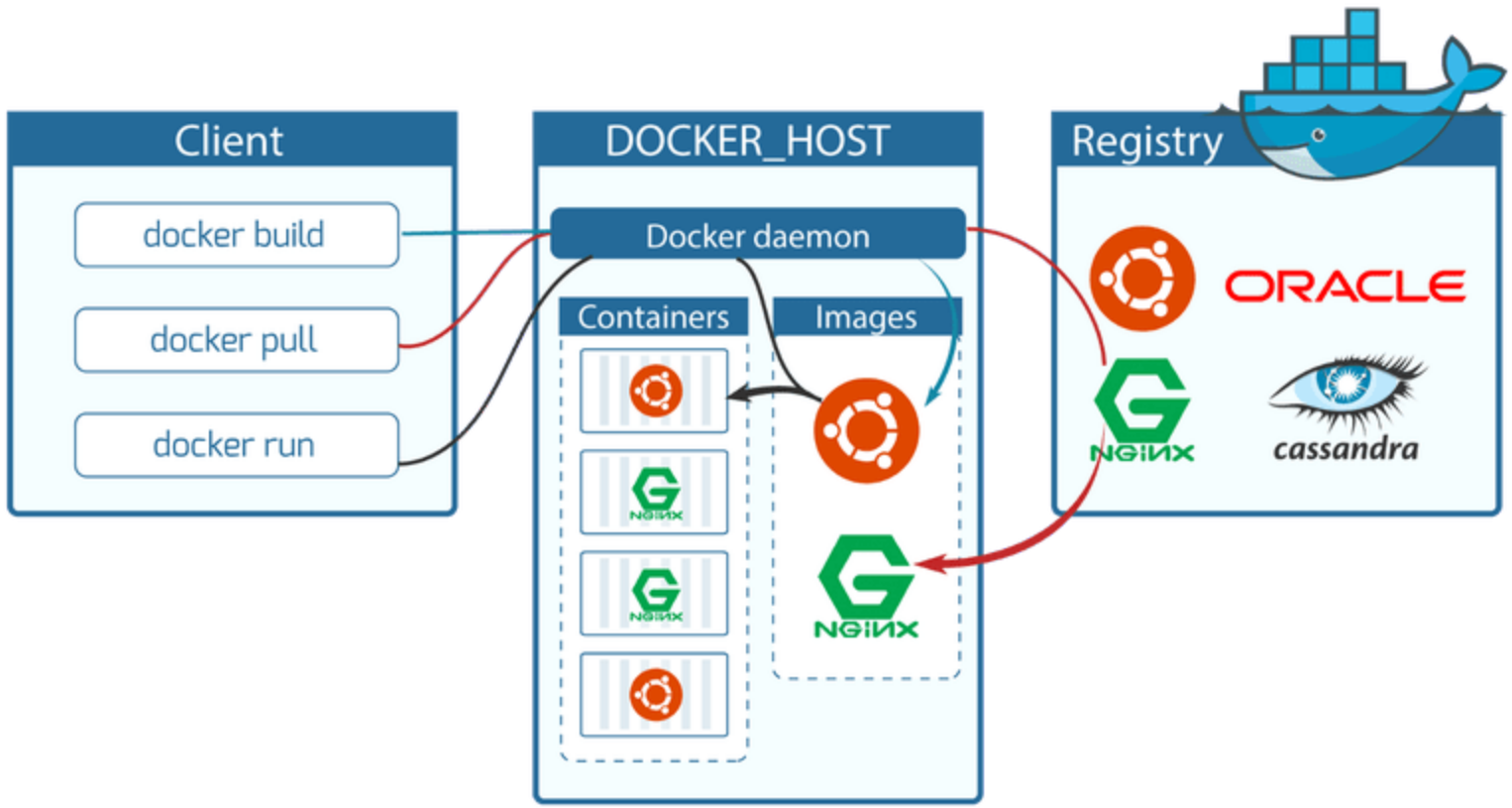
1

2

```
$ docker run hello-world
Unable to find image locally
latest: Pulling from library/hello-world

Status: Downloaded newer image for hello-world:latest

Hello from Docker!
.
.
.
```

4

DOCKER COMPONENTS



Image

Lab 2. Image management

List of images

```
docker image ls
```

Remove image

```
docker image rm {{imageName}} -f
```

```
docker rmi {{imageName}} -f
```

Pull image

```
docker image pull alpine
```

```
docker pull alpine
```

Lab 3. Execute command in container

```
docker container run alpine ls -l
```

```
docker run alpine ls -l
```

```
docker container run alpine echo "hello from alpine"
```

```
docker run alpine echo "hello from alpine"
```

```
docker run alpine sh -c 'echo "hello from alpine"'
```

Lab 4. Playing in container

```
docker run alpine sleep 3600
```

```
docker ps -a
```

```
docker exec {{containerId}} ls
```

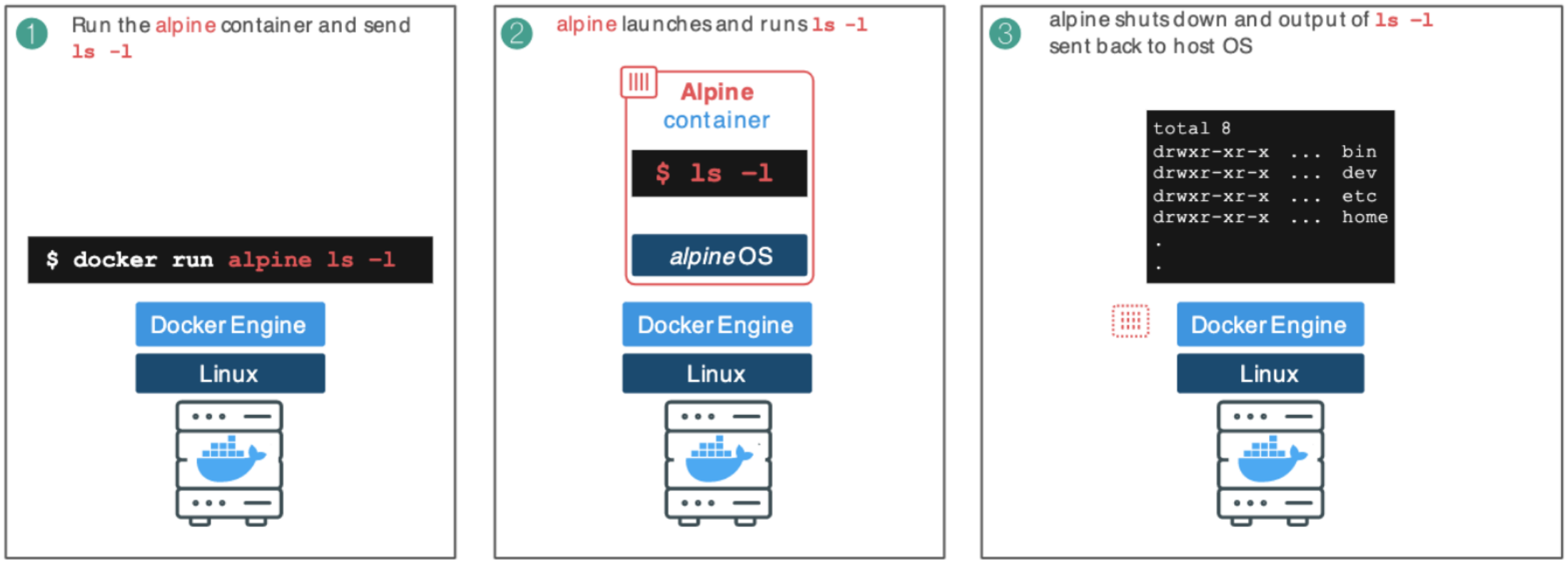
```
docker exec {{containerId}} echo "Hello to file" > hello.txt
```

```
docker exec {{containerId}} cat hello.txt
```

Kill all container

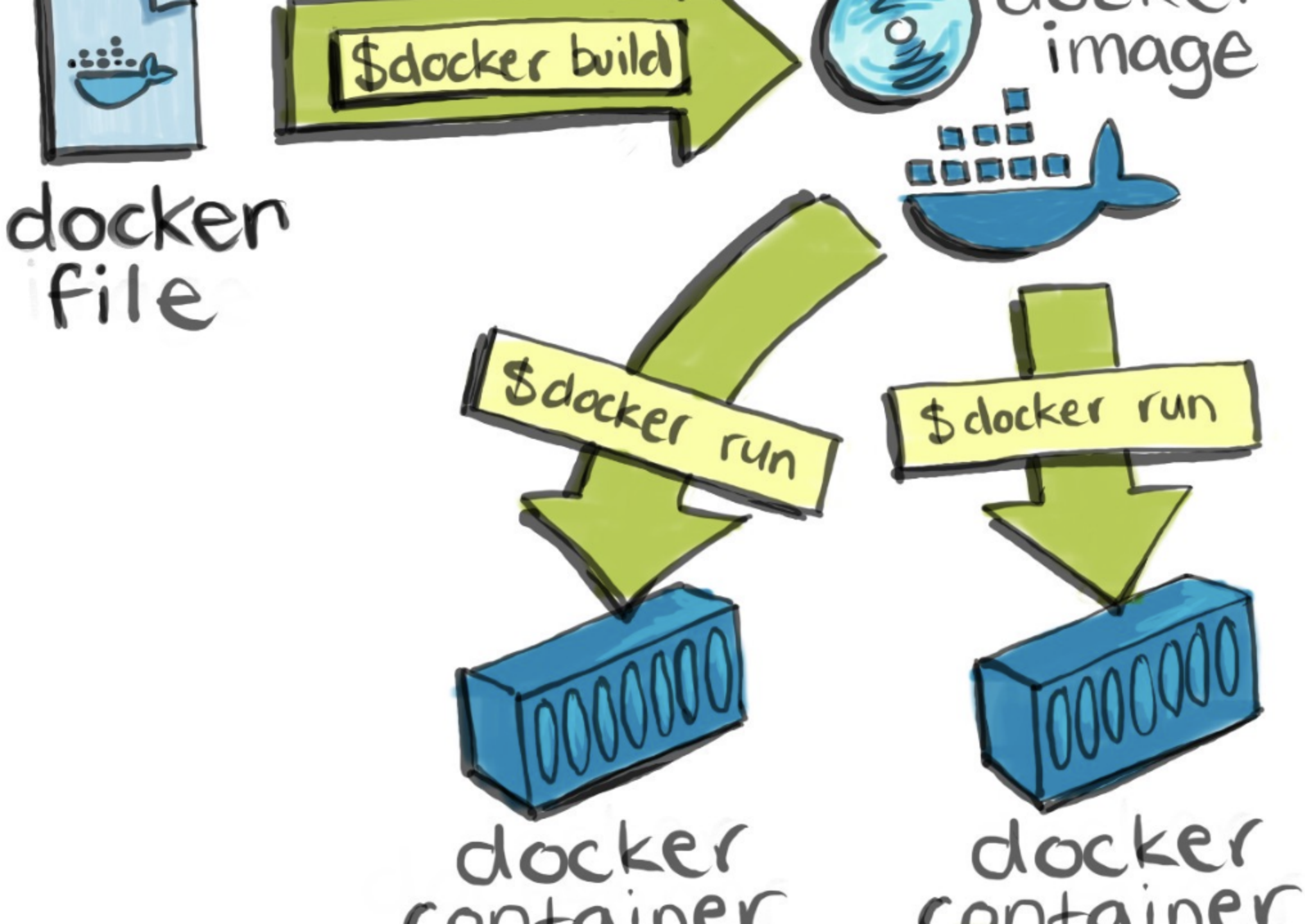
```
docker kill $(docker ps -q)
```

docker run Details



Docker way

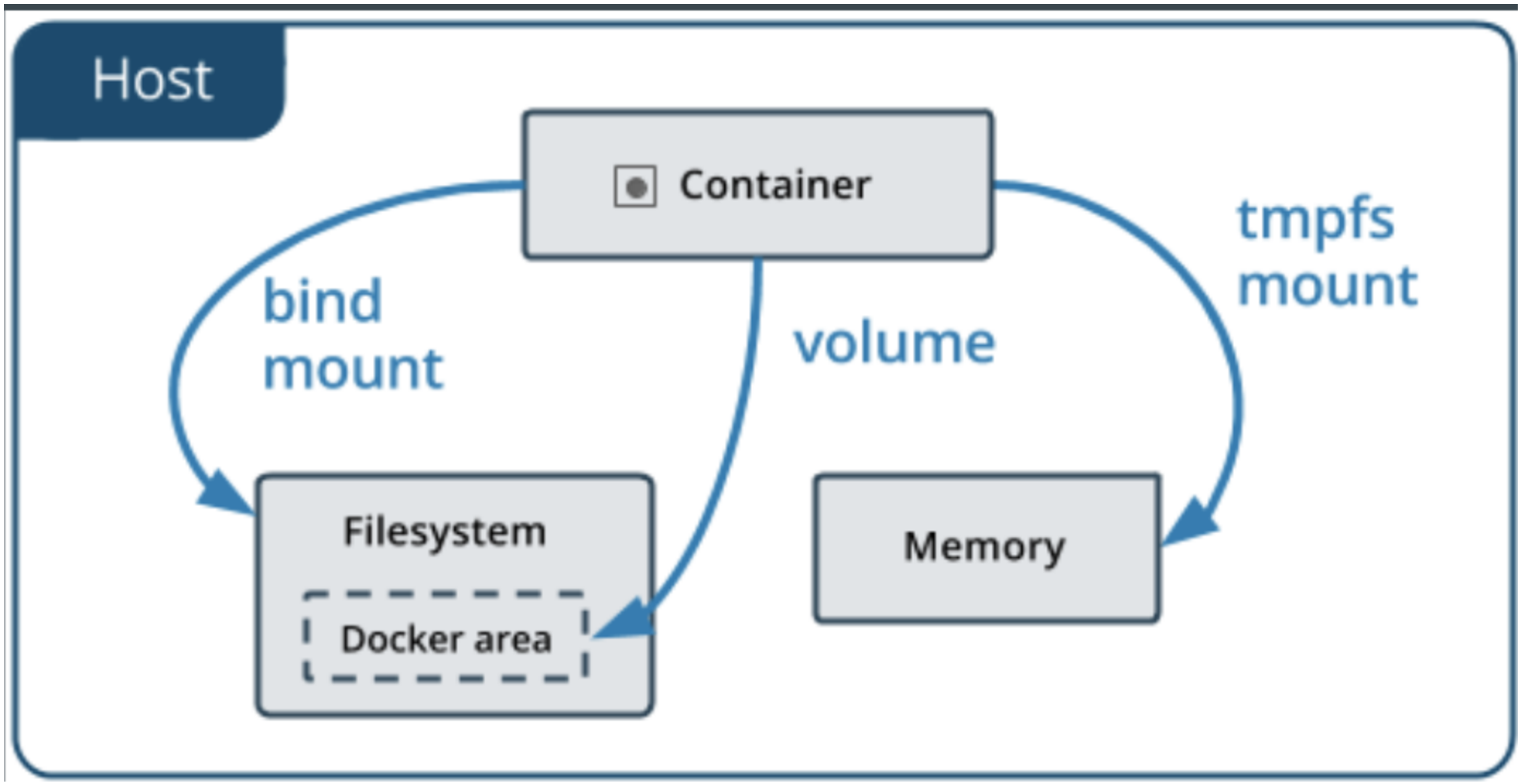
- **1 application = 1 container**.
- **Run process in the foreground**.
- **Keep data out of container** -- use volumes.
- **Do not use SSH** (if you need to step into container you can use docker exec command).
- **Avoid manual configurations (or actions) inside container**.


$docker build
docker image
docker file
$docker run
$docker run
docker container
docker container

A **Registry**
Stores many
static images

Images
Static, persisted container image

Container
Image-instance running


Host
Container
bind
mount
volume
tmpfs
mount
Filesystem
Docker area
Memory

Dockerfile

```
FROM -- set base image
RUN -- execute command in container
ENV -- set environment variable
COPY -- copy file to container
WORKDIR -- set working directory
VOLUME -- create mount-point for a volume
CMD -- set executable for container that maybe used
ENTRYPOINT -- set executable for container that always used
```

CMD VS RUN

- RUN - command triggers while we build the docker image.
- CMD - command triggers while we launch the created docker image.

CMD VS ENTRYPOINT

- Only one command `CMD` or `ENTRYPOINT` in Dokerfile
- CMD - can replace with command when run container
- ENTRYPOINT - can't replace with command when run container

Lab 6. Create Hello world image

```
docker run alpine echo “Hello world”
```

```
docker build -t alpine-hello:0.1 .
```

```
docker run alpine-hello:0.1
```

```
docker history {{imageName}}
```

Lab 7. Pass variable

```
docker build -t alpine-hello:0.2 .
```

```
docker run alpine-hello:0.2
```

```
docker run -e WELCOME="Hi!!" alpine-hello:0.2
```

Lab 8.1 Run Node.js application

- https://hub.docker.com/_/node (node:14-alpine3.12)

```
docker pull node:14-alpine3.12
```

```
docker run node:14-alpine3.12 node -v
```

Lab 8.2 Run Node.js application by yourself

1. Add server.js files to own Dockerfile
2. Build own Dockerfile ~> Image
3. Run own image

Build own image

```
docker build -t app-js:0.1 .
```

Run image in foreground process

```
docker run -p 81:80 app-js:0.1
```

Run image in background process

```
docker run -d -p 81:80 app-js:0.1
```

Checkpoint

- [x] Container
- [x] Image
- [x] Dockerfile
- [ ] Registry
- [ ] Auto build with Github (Bonus!)

Push own image to public registry

- Go to ~> http://dockerhub.com
- Register new account
- Create new public registry

```
docker login
```

```
docker build -t {{Registry name}}:{{Tag}} .
```

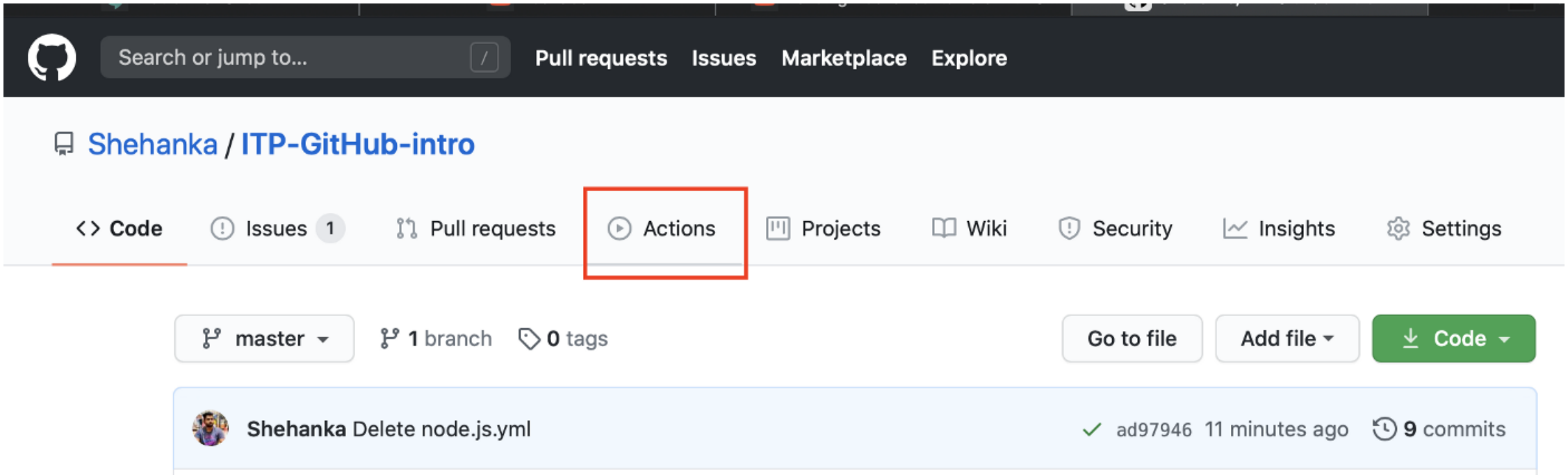
```
docker push {{Registry name}}:{{Tag}}
```

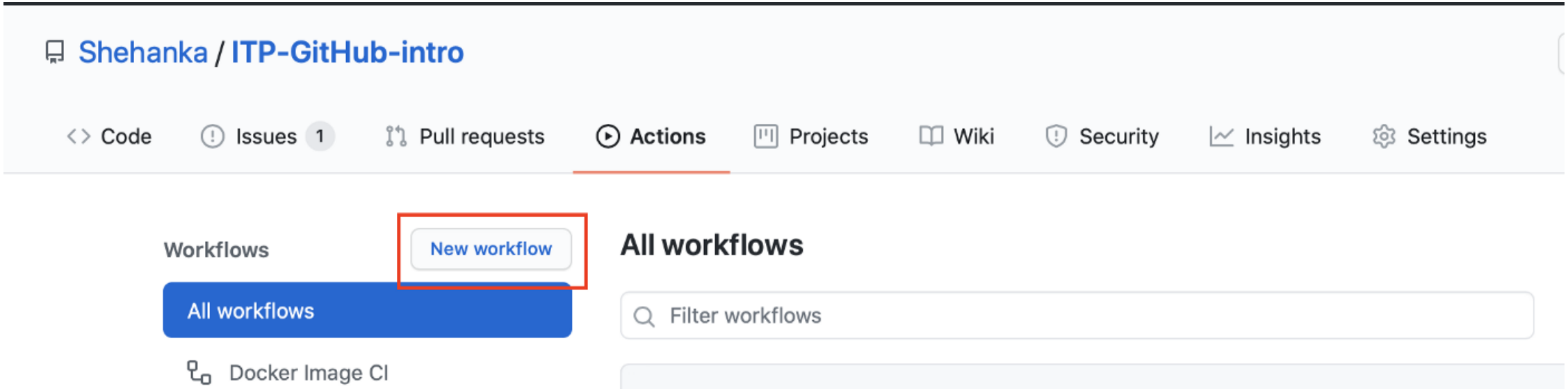
```
docker pull {{Registry name}}:{{Tag}}
```

```
docker run {{Registry name}}:{{Tag}}
```

Create new repository on Github

- Go to ~> http://github.com
- Register new account
- Create new public registry
- :Ref


Search or jump to...
/
Pull requests
Issues
Marketplace
Explore
Shehanka / ITP-GitHub-intro
Code
Issues 1
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
master
1 branch
0 tags
Go to file
Add file
Code
Shehanka Delete node.js.yml
ad97946 11 minutes ago
9 commits


Shehanka / ITP-GitHub-intro
Code
Issues 1
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
Workflows
New workflow
All workflows
Docker Image CI
All workflows
Filter workflows

Choose a workflow template

Build, test, and deploy your code. Make code reviews, branch management, and issue triaging work the way you want. Select a workflow template to get started.

Skip this and set up a workflow yourself →

Workflows made for your Dockerfile repository Suggested

Publish Docker Container

By GitHub Actions

Build, test and push Docker image to GitHub Packages.

Set up this workflow

```
if [ -f docker-compose.test.yml ]; then
docker-compose --file docker-compose.test.yml build
docker-compose --file docker-compose.test.yml run sut
```

actions/starter-workflows Dockerfile

Docker image

By GitHub Actions

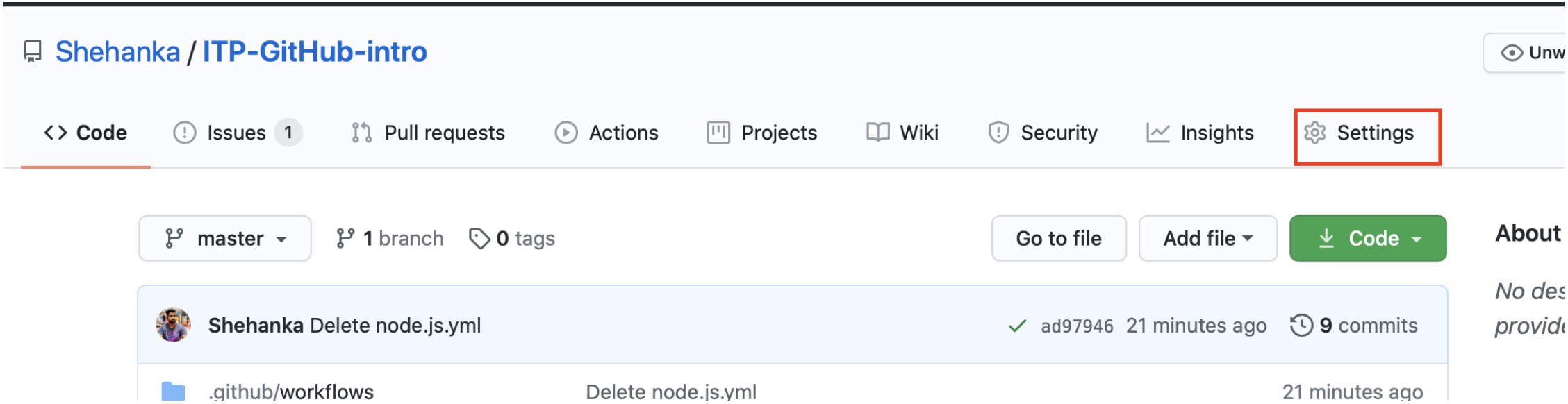
Build a Docker image to deploy, run, or push to a registry.

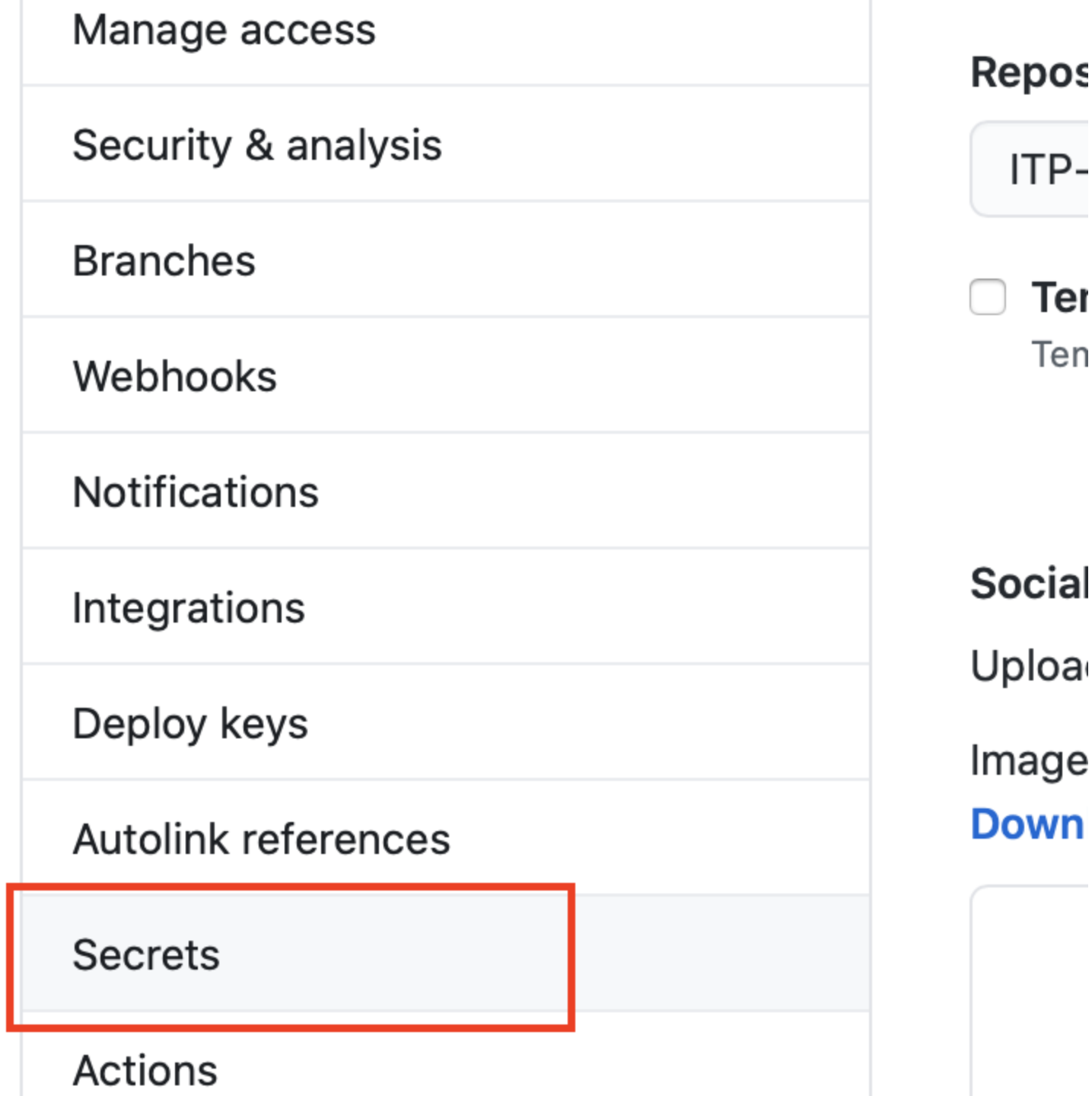
Set up this workflow

```
docker build . --file Dockerfile --tag my-image-name:$(date +%s)
```

actions/starter-workflows Dockerfile

```yaml
name: Docker Image CI

on:
  push:
    branches: [ master ]
  pull_request:
    branches: [ master ]

jobs:

  build:

    runs-on: ubuntu-latest

    steps:
    - uses: actions/checkout@v2
    - name: docker login
      env:
        DOCKER_USER: ${{secrets.DOCKER_USER}}
        DOCKER_PASSWORD: ${{secrets.DOCKER_PASSWORD}}
      run: |
        docker login -u $DOCKER_USER -p $DOCKER_PASSWORD
    - name: Build the Docker image
      run: docker build . --file Dockerfile --tag chamodshehanka/node-
test:$(date +%s)

    - name: Docker Push
```


Shehanka / ITP-GitHub-intro
Unw
Code
Issues 1
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
master
1 branch
0 tags
Go to file
Add file
Code
About
No des
provid
Shehanka Delete node.js.yml
ad97946 21 minutes ago
9 commits
.github/workflows
Delete node.js.yml
21 minutes ago


Manage access
Security & analysis
Branches
Webhooks
Notifications
Integrations
Deploy keys
Autolink references
Secrets
Actions
Repos
ITP-
Ter
Ten
Social
Uploa
Image
Down

Secrets

New secret

Secrets are environment variables that are **encrypted** and only exposed to selected actions. Anyone with **collaborator** access to this repository can use these secrets in a workflow.

Secrets are not passed to workflows that are triggered by a pull request from a fork. Learn more.

Name

DOCKER_USER

Value

YOUR_USER_NAME

Add secret

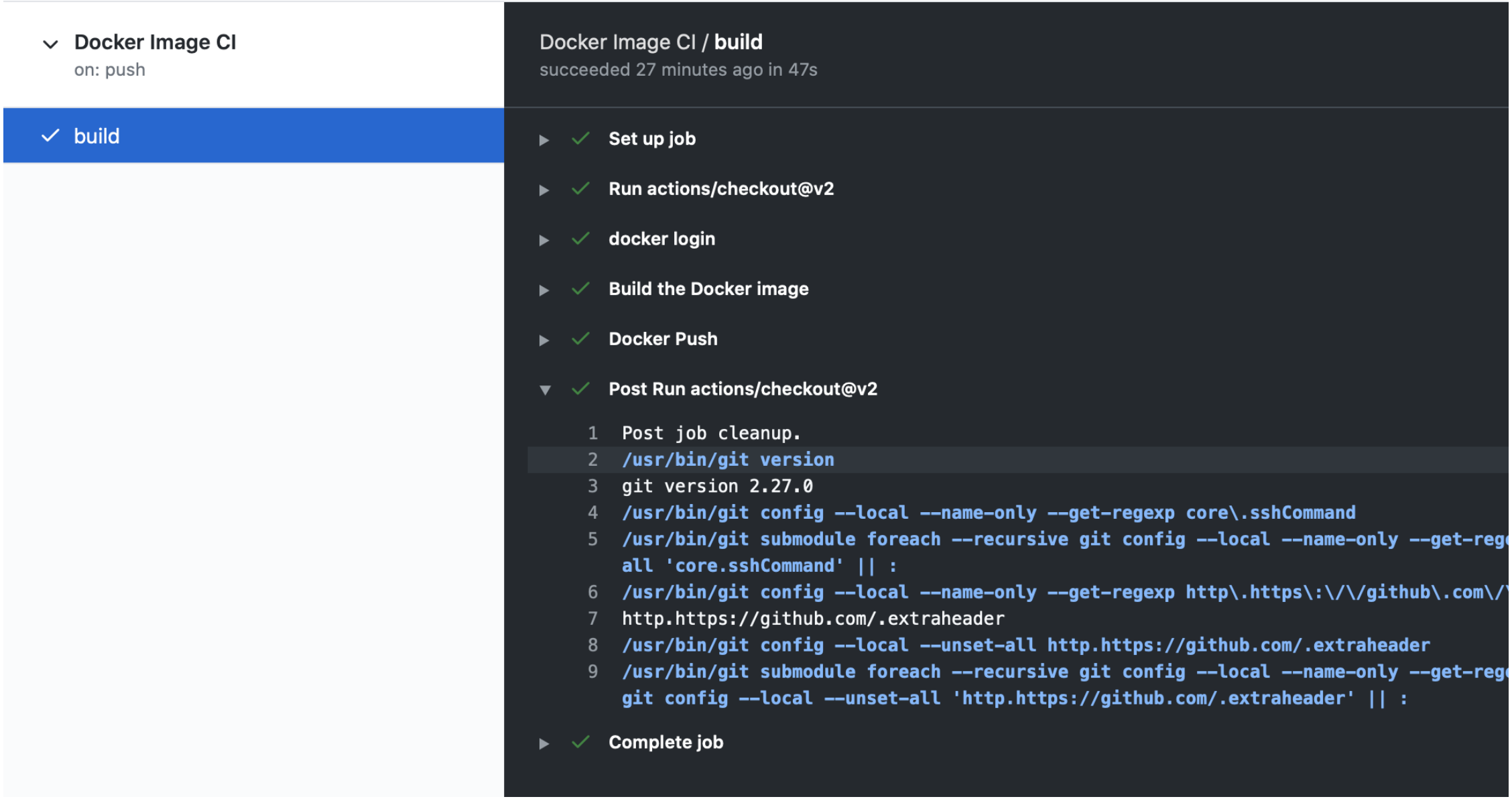
Secrets

New secret

Secrets are environment variables that are **encrypted** and only exposed to selected actions. Anyone with **collaborator** access to this repository can use these secrets in a workflow.

Secrets are not passed to workflows that are triggered by a pull request from a fork. Learn more.

DOCKER_PASSWORD	Updated 30 minutes ago	Update Remove
DOCKER_USER	Updated 31 minutes ago	Update Remove


Docker Image CI
on: push
build
Docker Image CI / build
succeeded 27 minutes ago in 47s
Set up job
Run actions/checkout@v2
docker login
Build the Docker image
Docker Push
Post Run actions/checkout@v2
1 Post job cleanup.
2 /usr/bin/git version
3 git version 2.27.0
4 /usr/bin/git config --local --name-only --get-regexp core\.sshCommand
5 /usr/bin/git submodule foreach --recursive git config --local --name-only --get-rege
all 'core.sshCommand' || :
6 /usr/bin/git config --local --name-only --get-regexp http\.https\:\/\/github\.com\/
7 http.https://github.com/.extraheader
8 /usr/bin/git config --local --unset-all http.https://github.com/.extraheader
9 /usr/bin/git submodule foreach --recursive git config --local --name-only --get-rege
git config --local --unset-all 'http.https://github.com/.extraheader' || :
Complete job

chamodshehanka / **node-test**

This repository does not have a description

Last pushed: 29 minutes ago

Docker commands

Public View

To push a new tag to this repository,

```
docker push chamodshehanka/node-test:tagname
```

Tags

This repository contains 2 tag(s).

1596277810	29 minutes ago
1596277716	31 minutes ago

See all

Recent builds

Link a source provider and run a build to see build results here.

Checkpoint

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