GitHub Actions

Open source workflow automation
DevOps Pro Europe 2019

Bas Peters

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Cloud Native Landscape

v1.0

App Definition & Development
Database & Data Analytics
BIGCHAINDB
CarbonData
cassandra
Cockroach DB
Couchbase
CRATE.IO
IBM DB2
druid
Hadoop
iguazio
MariaDB
MEMSQL
mongoDB
MySQL
noms
ORACLE DATABASE
Pachyderm
PostgreSQL
Qubole
redis
RethinkDB
SCYLLA.
Apache Spark
SQL Data Warehouse
SQL Server
snowflake
TiDB
VERTICA
Vitess
Streaming
amazon Kinesis
APEX
Dataflow
Flink
HERON
kafka
NATS
nifi
PULSAR
RabbitMQ
StreamSets
STORM
SCM
Bitbucket
GitHub
GitLab
Visual Studio Team Services
Application Definition
apache brooklyn
bitnami
habitat
KubeVirt
Packer
OPEN API
CI/CD
AppVeyor
Bamboo
buddybuild
Buildkite
circleci
cloudbees
codefresh
Codeship
Concourse
Container Ops
distelli
Drone
GitLab Runner
Jenkins
Octopus Deploy
semaphore
shippable
Solano Labs
Spinnaker
Travis
weave flux
wercker
XL Deploy
Orchestration & Management
Scheduling & Orchestration
kubernetes
CNCF Project
AMAZON ECS
docker SWARM
MESOS
Microsoft Azure Service Fabric
Nomad
Coordination & Service Discovery
CoreDNS
CNCF Project
Apache Zookeeper
ContainerPilot
Consul
etcd
NETFLIX OSS Eureka
Hyperbahn
Registrator
SkyDNS
SmartStack
vmware Haret
Service Management
linkerd
CNCF Project
GRPC
CNCF Project
envoy
CNCF Project
3SCALE
Apache Thrift
AVI Networks
backplane
DATAWIRE
HA PROXY
HYSTRIX
KONG
Istio
NGINX
NETFLIX Ribbon
TURBINE LABS
traefik
vamp
NETFLIX Zuul
Runtime
Cloud-Native Storage
ceph
CONTAINER STORAGE INTERFACE
DATERA
DELL EMC
GlusterFS
Hadoop
HEDVIG
infinit
kasten
LeoFS
libStorage
Manta
MINIO
NetApp
OpenEBS
OpenSDS
portworx
vmware Project Hatchway
PURE STORAGE
Quobyte
Sheepdog
REX-Ray
ROBIN
ROOK
springpath
STORAGEOS
SWIFT
Container Runtime
containerd
CNCF Project
rkt
CNCF Project
OPEN CONTAINER INITIATIVE
cri-o
Intel Clear Containers
lxd
runV
SmartOS
Cloud-Native Network
CNI
CNCF Project
Aporeto
aviatrix
big switch
CALICO
canal
Contiv
cilium
CUMULUS
flannel
midokura
vmware NSX
nuage networks
OPENCONTRAIL
OvS Open vSwitch
PLUMgrid
ROMANA
snaproute
TIGERA
weave net
Provisioning
Host Management / Tooling
ANSIBLE
CFEngine
CHEF
puppet
RUN DECK
SALTSTACK
LinuxKIT
Infrastructure Automation
BOSH
CloudFormation
Cloudify
coreo
HELM
INFRAKIT
juju
kubicorn
ManageIQ
Terraform
Container Registries
Amazon ECR
ATOMIC
Azure Registry
Docker Registry
Google Registry
HARBOR
JFrog Artifactory
Portus
QUAY
Secure Images
Notary
CNCF Project
TUF
CNCF Project
anchore
aqua
BLACKDUCK
clair
NeuVector
OpenSCAP
Sonatype Nexus
Twistlock
Key Management
Confidant
Keywhiz
Knox
ORACLE POLICY AUTOMATION
SPIFFE
SPIRE
Vault
Cloud
Public
aws
Microsoft Azure
Google Cloud Platform
IBM Cloud
Alibaba Cloud
ORACLE CLOUD
DigitalOcean
FUJITSU
HUAWEI
Joyent
packet
Tencent Cloud
Private
DIGITAL REBAR
FOREMAN
MAAS
openstack
Scaleway
vmware
Platforms
PaaS / Container Service
APCERA
apprenda
ATOMIST
CLOUD 66
CLOUD FOUNDRY
ContainerShip
CONVOX
DATAWIRE
DC/OS
Diamanti
docker
exoscale
Flynn
GALACTIC FOG
Giant Swarm
goPaddle
GRAVITATIONAL
heroku
HYPER.SH
Iron.io
KONTENA
kubermatic
kublr
Lightbend
MANTL
MIRANTIS CLOUD PLATFORM
moby project
navops
nirmata
OPENSHIFT
PaaSTA
PHOTON
PLATFORM9
platform.sh
portainer.io
PUSHER
RANCHER
remind
Scalingo
STACK POINT CLOUD
SUPERGIANT
TECTONIC
TRITON
tsuru
ubuntu
Serverless/Event-based
APEX
Azure Functions
Cloud Functions
Firebase
fission
Kubeless
AWS Lambda
NStack
nuclio
OPENFAAS
OpenWhisk
Oracle Application Container Cloud
PubNub BLOCKS
serverless
webtask
Observability & Analysis
Monitoring
Prometheus
CNCF Project
APPDYNAMICS
AppNeta
Azure Log Analytics
AXIBASE
catchpoint
centreon
AWS CloudWatch
COBE
COSCALE
DATADOG
dynatrace
Grafana
graphite
Honeybadger
ICINGA
influxdb
INSTANA
IRONdb
librato
LIGHTSTEP
meros
Nagios
NETSIL
New Relic
NODESOURCE
opsclarity
opbeat
Outlyer
OPENTSDB
RIEMANN
rocana
sensu
SENTRY
density
signal fx
StackDriver
StackRox
StackState
StatsD
sysdig
WAVEFRONT
weave cloud
ZABBIX
Logging
fluentd
CNCF Project
elastic
graylog
loggly
logz.io
loom
papertrail
sematext
splunk
sumologic
Tracing
OPENTRACING
CNCF Project
JAEGER
CNCF Project
Appdash
Cloud Sleuth
Skywalking
ZIPKIN

github.com/cncf/landscape

This landscape is intended as a map through the previously uncharted terrain of cloud native technologies. There are many routes to deploying a cloud native application, with CNCF Projects representing a particularly well-traveled path.

CLOUD NATIVE COMPUTING FOUNDATION

Redpoint

Amplify PARTNERS

Greyed logos are not open source

32k Beta signups in 24 hours

CI/CD?

IFTTT ("if this, then that")

Automate everything!

- Makes tasks repeatable with a predictable outcome
- Gives confidence to contributors
- Empowers developers

- On a repo public event, make sure the repo has a license file
- On a release event, package up release notes and send to a distribution list via SendGrid
- On a member event, open up an onboarding guide in issue form
- On a push event to a branch compile, build and test

- On a push event to master deploy to cloud or a container registry
- On a pull request merge event delete the branch
- On an issue opened event triage the issue
- On a pull request event review and validate Terraform changes

Actions built already with our partners

- Deploy to well known cloud hosts
- Send messages and emails with Twilio and SendGrid
- Kick off Terraform flows
- Update DockerHub containers after a release
- Phased deployment with LaunchDarkly
- Configure IoT buttons with Flic

Demo

Create a workflow

Search or jump to...
Pull requests
Issues
Marketplace
Explore
bas / hello-actions
Private
Watch 0
Star 0
Fork 0
Code
Issues 0
Pull requests 0
Actions
Projects 0
Wiki
Insights
Settings
Edit
Manage topics
6 commits
1 branch
0 releases
1 contributor
Branch: master
New pull request
Create new file
Upload files
Find File
Clone or download

Repository to test actions

bas Update README.md — Latest commit bc84adb 18 hours ago

scripts	Initial commit	a day ago
.dockerignore	Initial commit	a day ago
.gitignore	Add eslint and now configuration	18 hours ago
Dockerfile	Initial commit	a day ago
README.md	Update README.md	18 hours ago
app.js	Add eslint and now configuration	18 hours ago
docker-compose.debug.yml	Initial commit	a day ago
docker-compose.yml	Initial commit	a day ago
now.json	Add eslint and now configuration	18 hours ago
package.json	Add eslint and now configuration	18 hours ago
test.js	Initial commit	a day ago

README.md

hello-actions

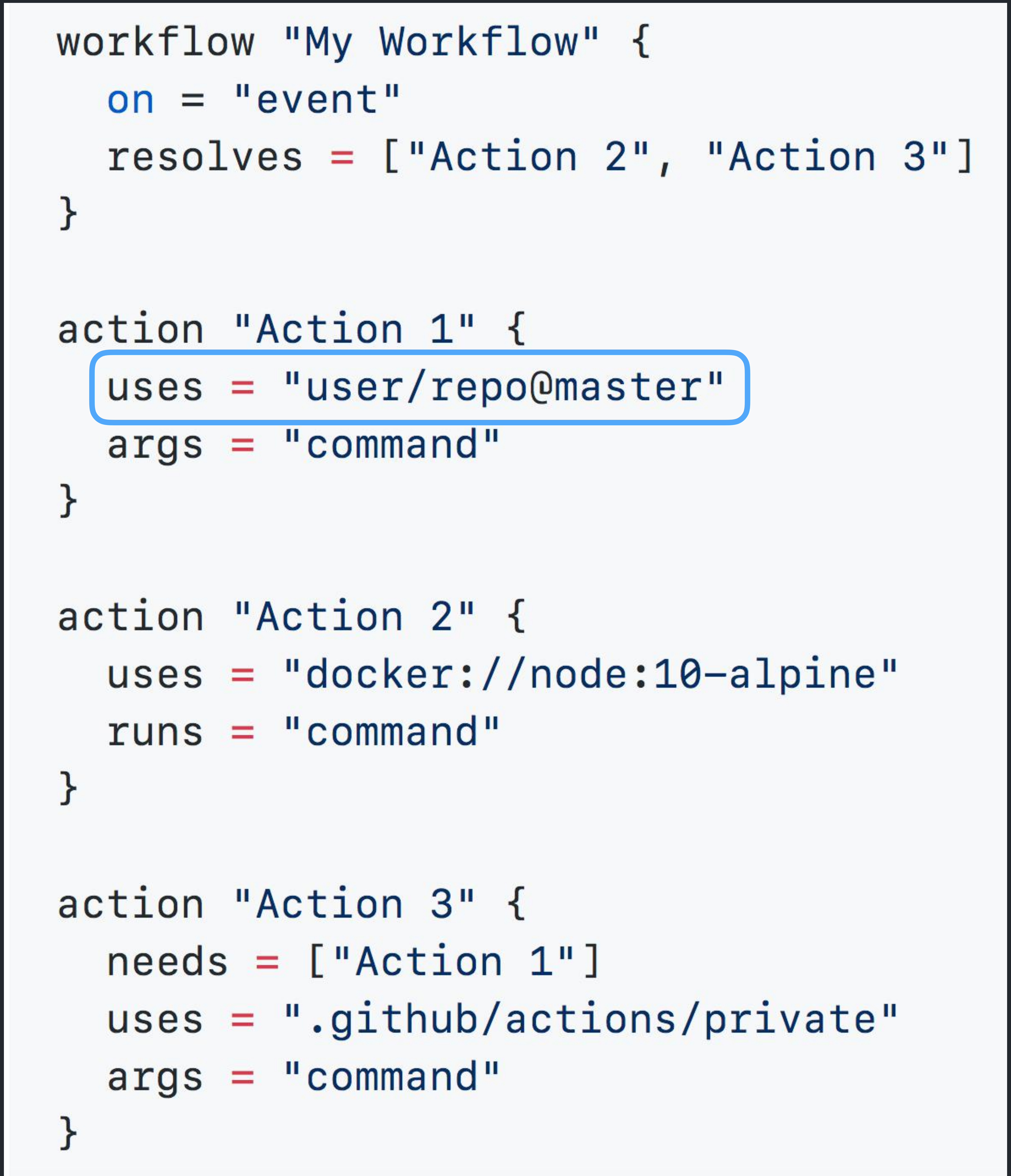
A basic Hello World Express App to test GitHub Actions

NPM

Configured as code

Workflow blocks

Action blocks

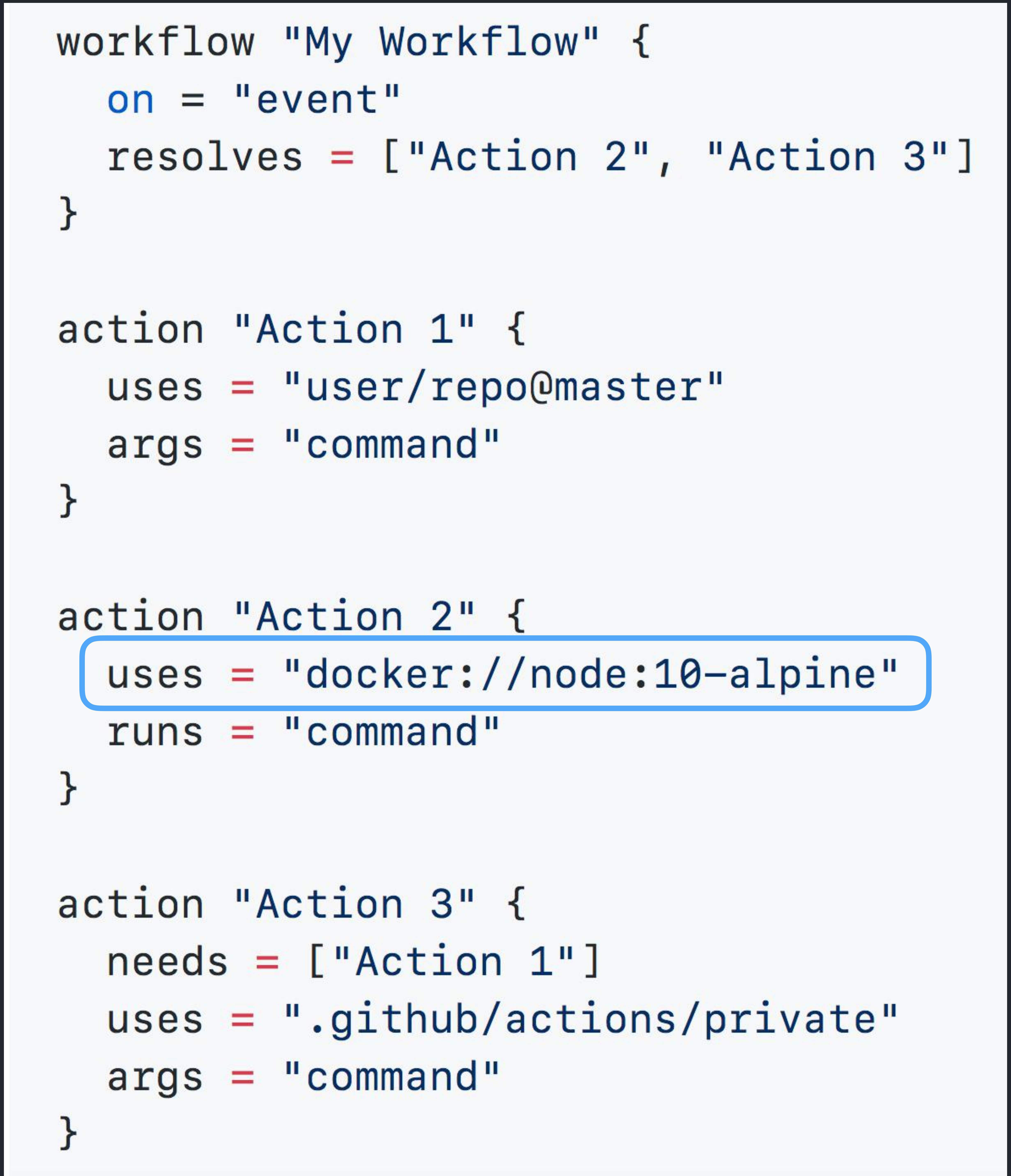


```
workflow "My Workflow" {
  on = "event"
  resolves = ["Action 2", "Action 3"]
}

action "Action 1" {
  uses = "user/repo@master"
  args = "command"
}

action "Action 2" {
  uses = "docker://node:10-alpine"
  runs = "command"
}

action "Action 3" {
  needs = ["Action 1"]
  uses = ".github/actions/private"
  args = "command"
}
```



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  uses = ".github/actions/private"
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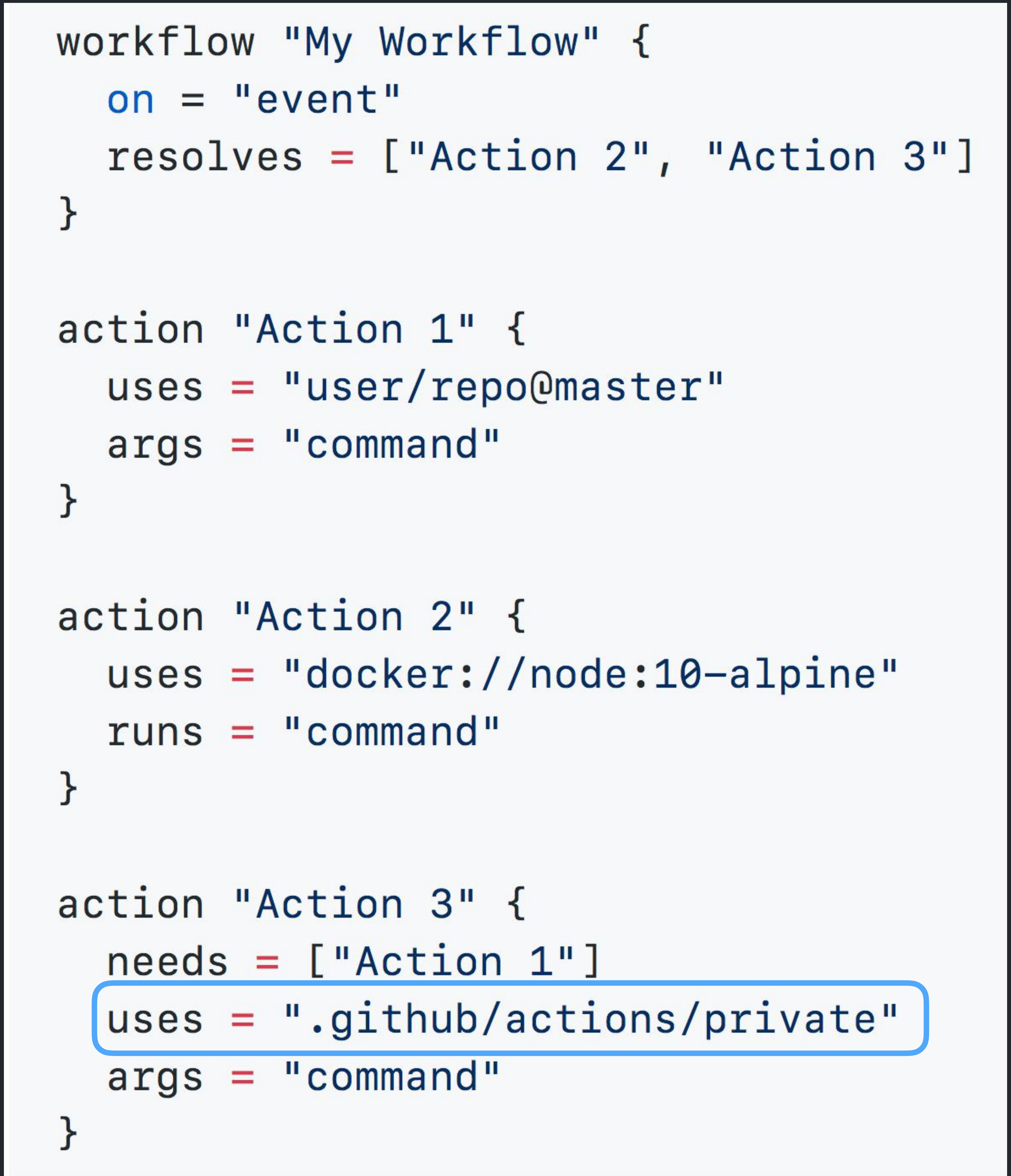

```
workflow "My Workflow" {
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action "Action 2" {
  uses = "docker://node:10-alpine"
  runs = "command"
}

action "Action 3" {
  needs = ["Action 1"]
  uses = ".github/actions/private"
  args = "command"
}
```

Filters for GitHub Actions

tag

deleted_tag

branch

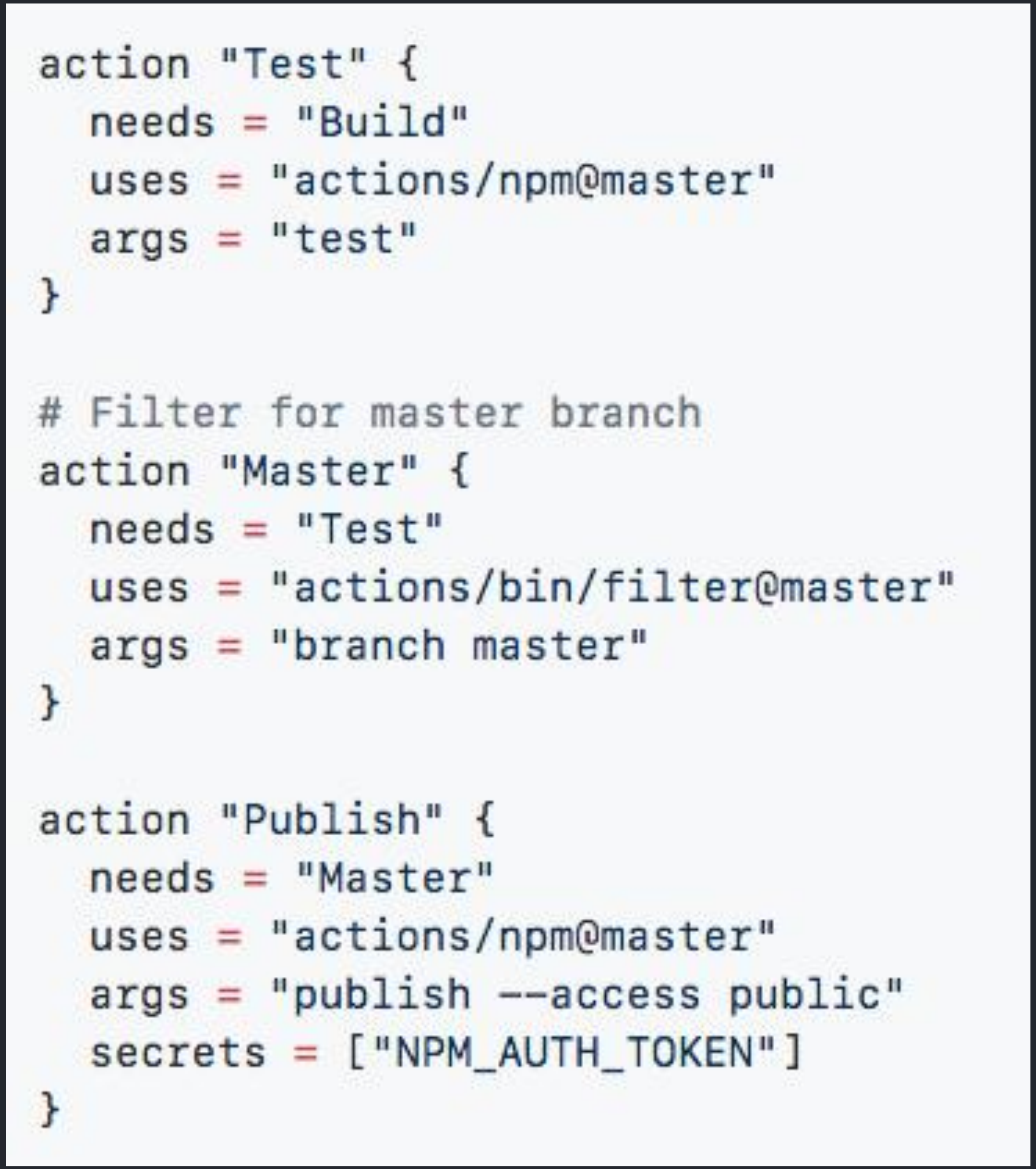
deleted_branch

label

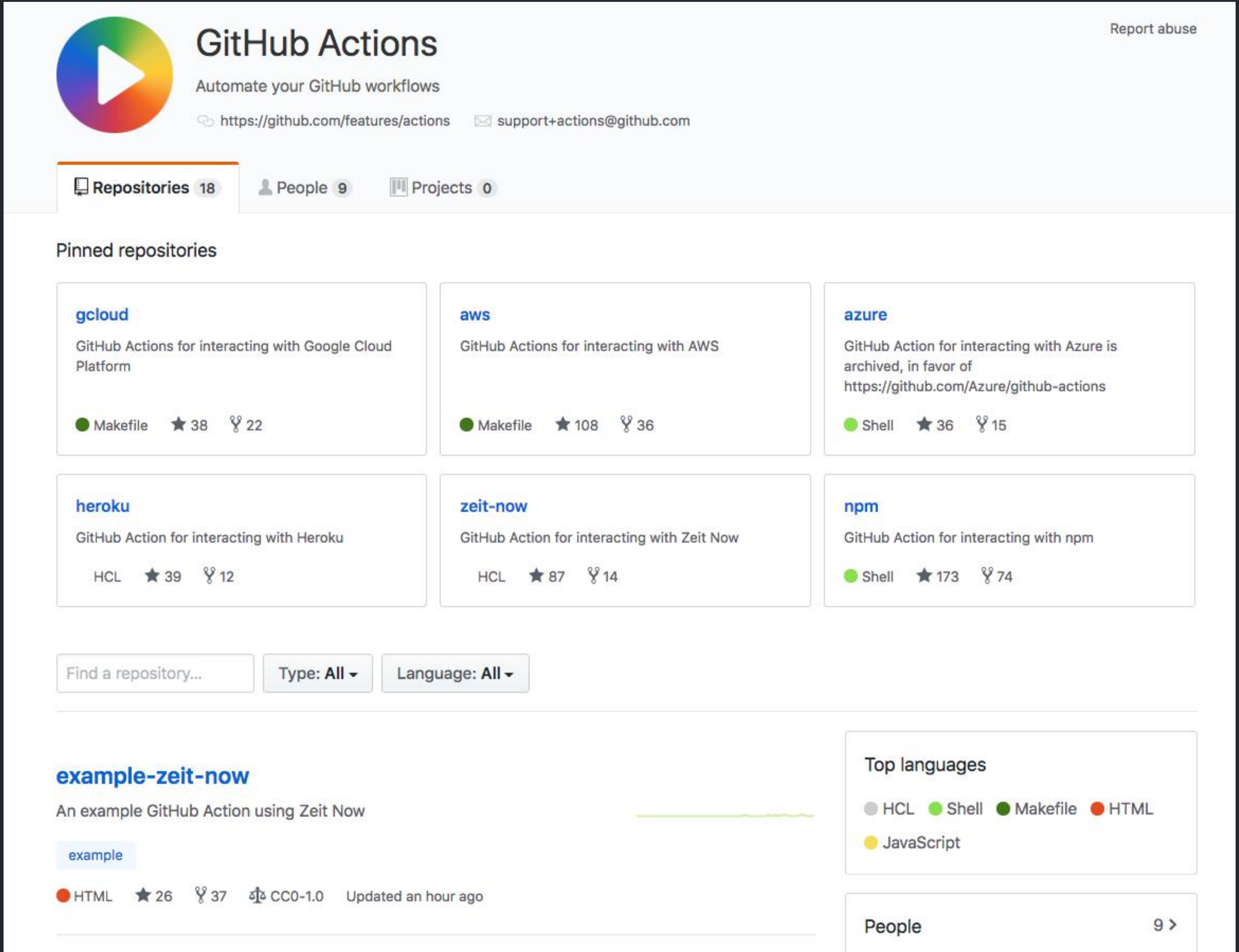
action

actor

environment



```
action "Test" {
  needs = "Build"
  uses = "actions/npm@master"
  args = "test"
}

# Filter for master branch
action "Master" {
  needs = "Test"
  uses = "actions/bin/filter@master"
  args = "branch master"
}

action "Publish" {
  needs = "Master"
  uses = "actions/npm@master"
  args = "publish --access public"
  secrets = ["NPM_AUTH_TOKEN"]
}
```



Report abuse

GitHub Actions

Automate your GitHub workflows

https://github.com/features/actions support+actions@github.com

Repositories 18 People 9 Projects 0

Pinned repositories

gcloud
GitHub Actions for interacting with Google Cloud Platform
● Makefile ★ 38 ⑂ 22

aws
GitHub Actions for interacting with AWS
● Makefile ★ 108 ⑂ 36

azure
GitHub Action for interacting with Azure is archived, in favor of https://github.com/Azure/github-actions
● Shell ★ 36 ⑂ 15

heroku
GitHub Action for interacting with Heroku
HCL ★ 39 ⑂ 12

zeit-now
GitHub Action for interacting with Zeit Now
HCL ★ 87 ⑂ 14

npm
GitHub Action for interacting with npm
● Shell ★ 173 ⑂ 74

Find a repository... | Type: All ▾ | Language: All ▾

example-zeit-now

An example GitHub Action using Zeit Now

example

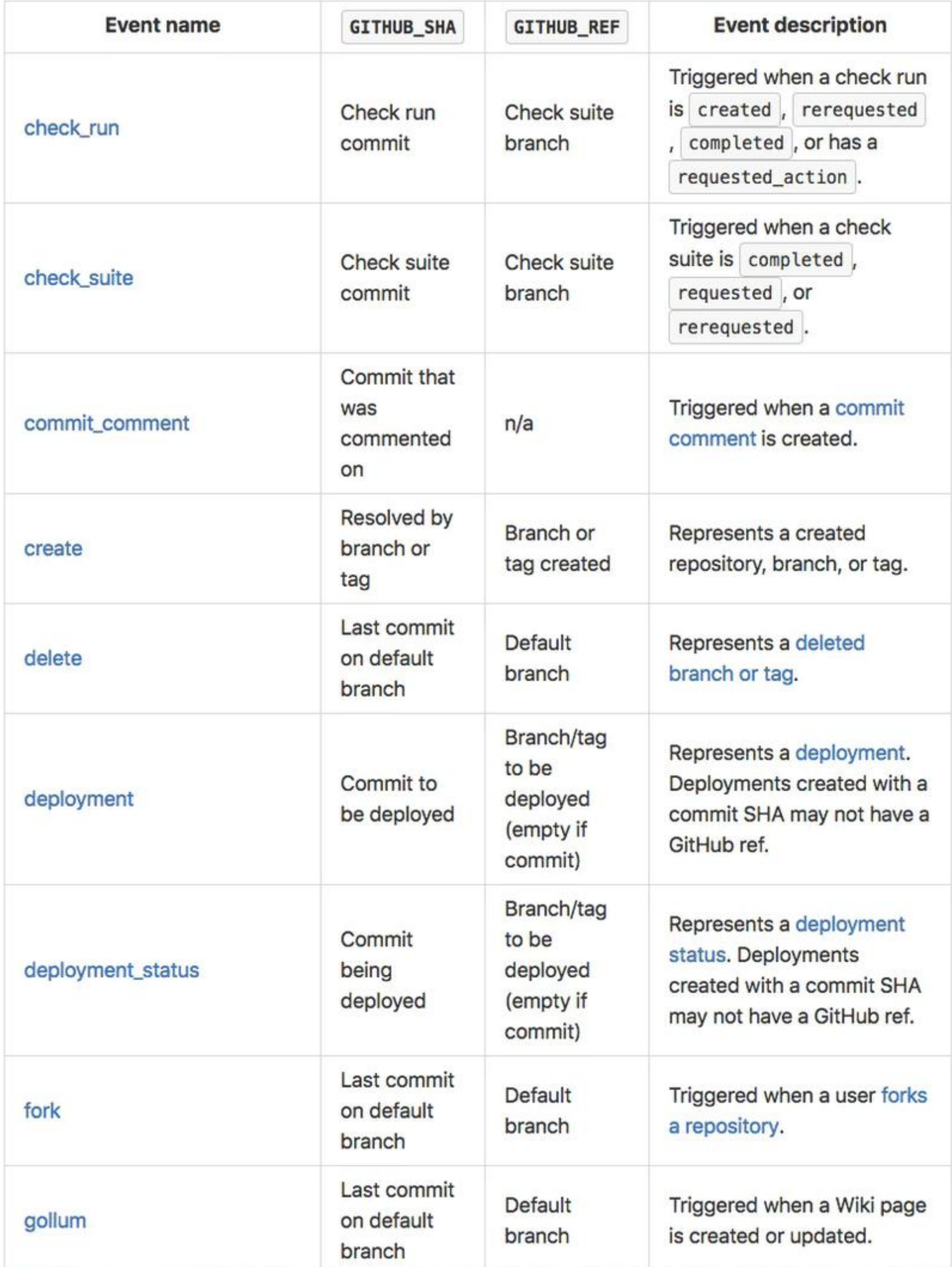
● HTML ★ 26 ⑂ 37 CC0-1.0 Updated an hour ago

Top languages

● HCL ● Shell ● Makefile ● HTML ● JavaScript

People 9 ›

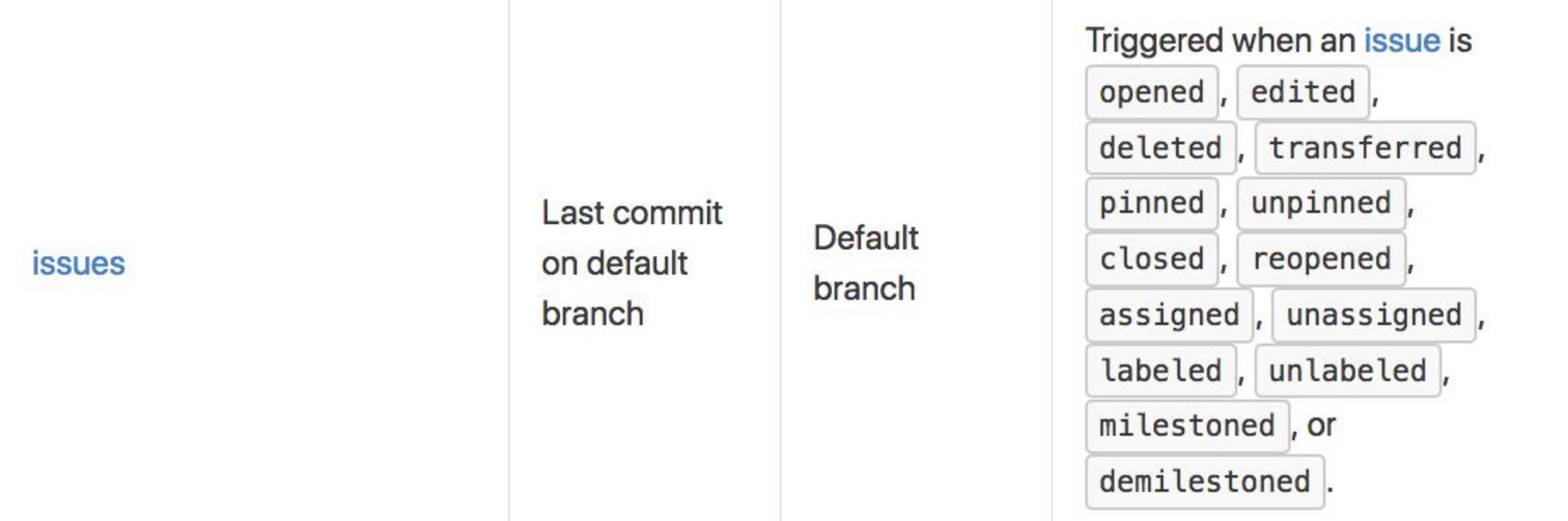
Triggered by events



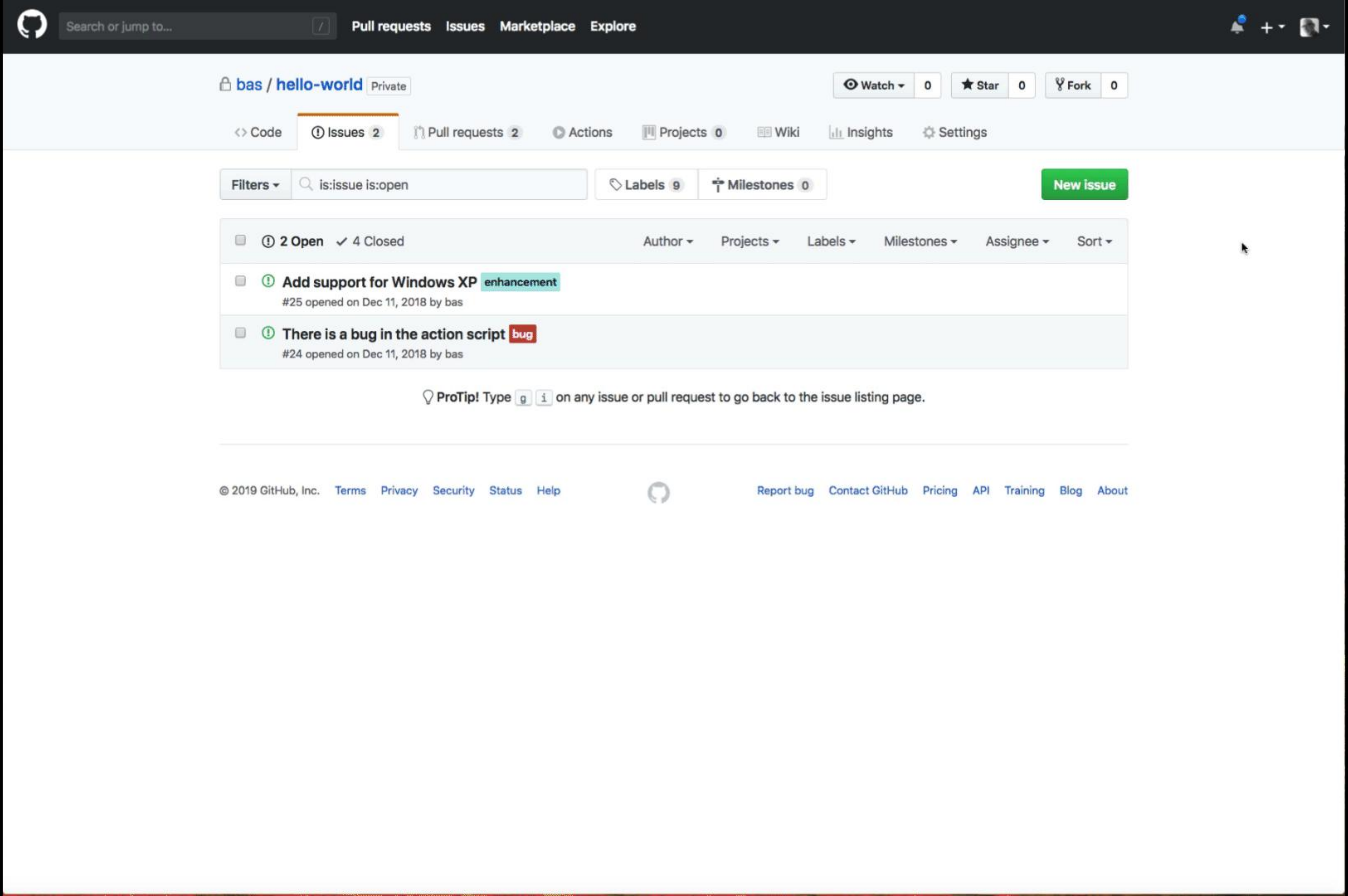
Event name	`GITHUB_SHA`	`GITHUB_REF`	Event description
check_run	Check run commit	Check suite branch	Triggered when a check run is `created`, `rerequested`, `completed`, or has a `requested_action`.
check_suite	Check suite commit	Check suite branch	Triggered when a check suite is `completed`, `requested`, or `rerequested`.
commit_comment	Commit that was commented on	n/a	Triggered when a commit comment is created.
create	Resolved by branch or tag	Branch or tag created	Represents a created repository, branch, or tag.
delete	Last commit on default branch	Default branch	Represents a deleted branch or tag.
deployment	Commit to be deployed	Branch/tag to be deployed (empty if commit)	Represents a deployment. Deployments created with a commit SHA may not have a GitHub ref.
deployment_status	Commit being deployed	Branch/tag to be deployed (empty if commit)	Represents a deployment status. Deployments created with a commit SHA may not have a GitHub ref.
fork	Last commit on default branch	Default branch	Triggered when a user forks a repository.
gollum	Last commit on default branch	Default branch	Triggered when a Wiki page is created or updated.

26 events

Issue event



issues	Last commit on default branch	Default branch	Triggered when an issue is `opened`, `edited`, `deleted`, `transferred`, `pinned`, `unpinned`, `closed`, `reopened`, `assigned`, `unassigned`, `labeled`, `unlabeled`, `milestoned`, or `demilestoned`.



□ 2 Open ✓ 4 Closed

□ Add support for Windows XP enhancement
#25 opened on Dec 11, 2018 by bas

□ There is a bug in the action script bug
#24 opened on Dec 11, 2018 by bas

ProTip! Type g i on any issue or pull request to go back to the issue listing page.

Executed as containers

Any language

Search or jump to...
Pull requests
Issues
Marketplace
Explore
Watch 0
Star 0
Fork 0
<> Code
Issues 1
Pull requests 0
Actions
Projects 0
Insights
Settings
Edit
Manage topics
4 commits
1 branch
0 releases
1 contributor
Branch: master
New pull request
Create new file
Upload files
Find File
Clone or download

bas / mvn

GitHub Actions for Apache Maven

bas Merge pull request #1 from bas/update-metadata ··· Latest commit c9c6704 on Dec 3, 2018

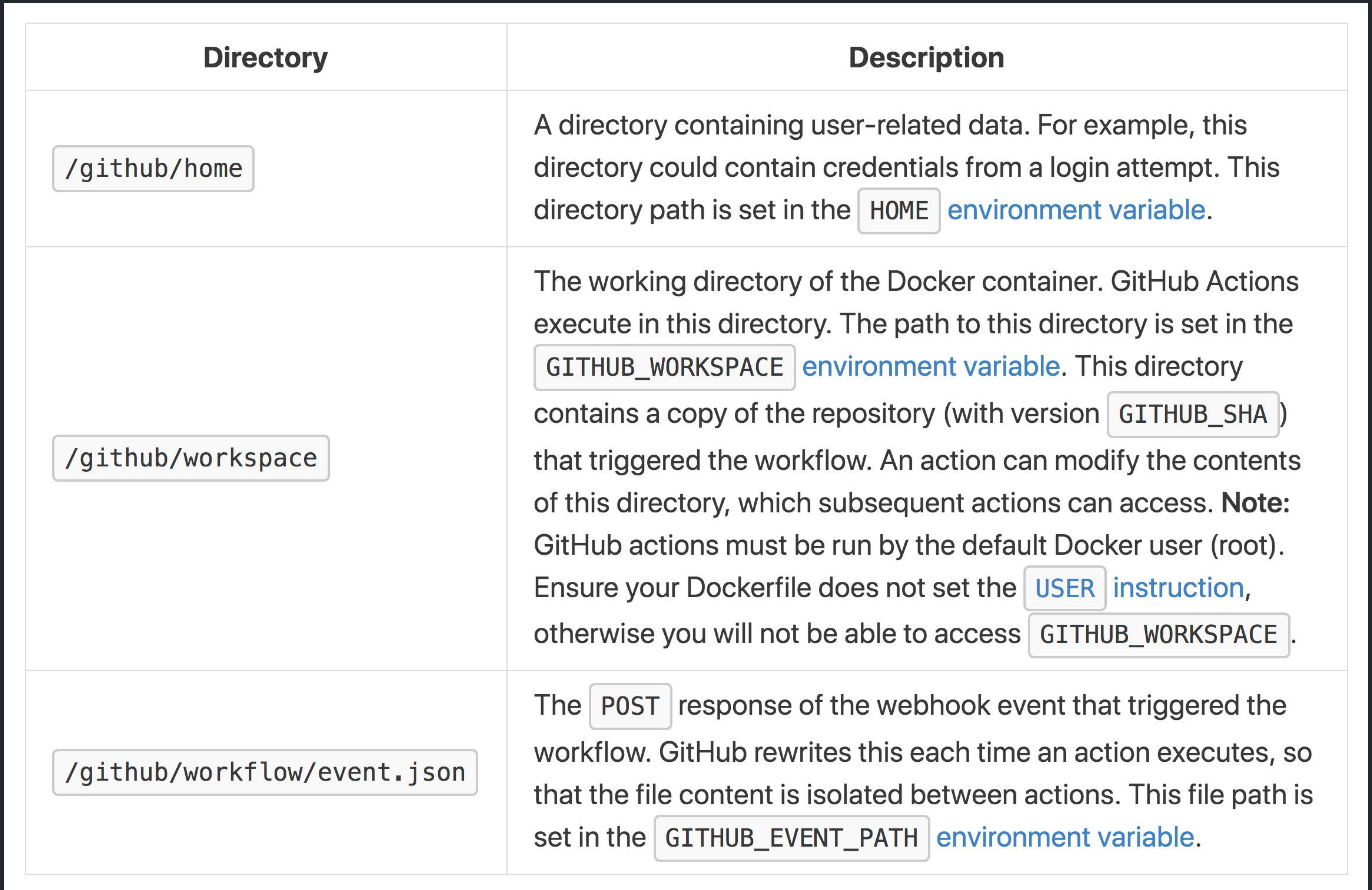
.dockerignore	Initial commit	4 months ago
Dockerfile	Update action metadata	4 months ago
README.md	Update README.md	4 months ago
entrypoint.sh	Initial commit	4 months ago

README.md

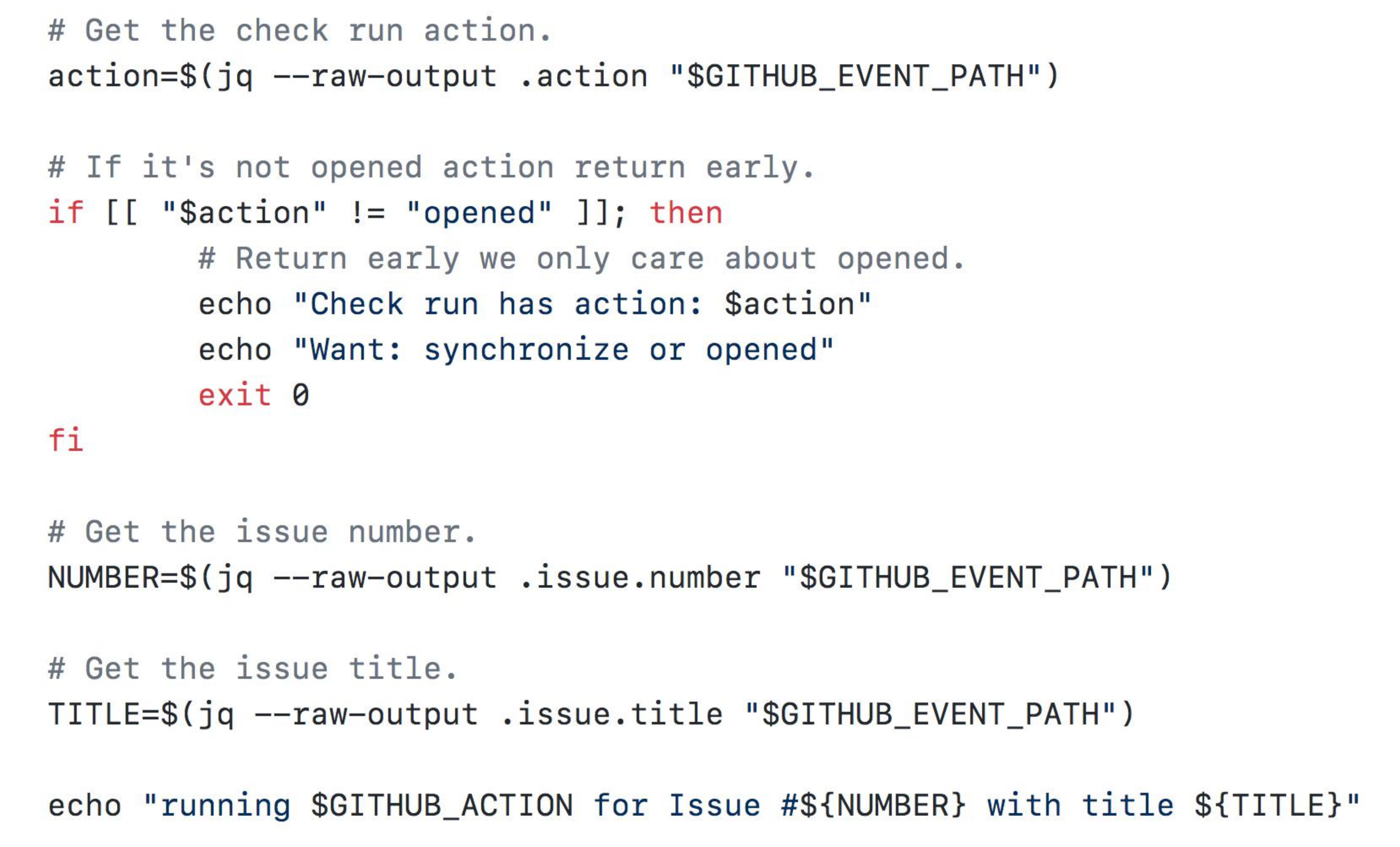
GitHub Actions for Apache Maven

This Action for Apache Maven enables arbitrary actions with the `mvn` command-line client

Filesystem



Directory	Description
`/github/home`	A directory containing user-related data. For example, this directory could contain credentials from a login attempt. This directory path is set in the `HOME` environment variable.
`/github/workspace`	The working directory of the Docker container. GitHub Actions execute in this directory. The path to this directory is set in the `GITHUB_WORKSPACE` environment variable. This directory contains a copy of the repository (with version `GITHUB_SHA`) that triggered the workflow. An action can modify the contents of this directory, which subsequent actions can access. **Note:** GitHub actions must be run by the default Docker user (root). Ensure your Dockerfile does not set the `USER` instruction, otherwise you will not be able to access `GITHUB_WORKSPACE`.
`/github/workflow/event.json`	The `POST` response of the webhook event that triggered the workflow. GitHub rewrites this each time an action executes, so that the file content is isolated between actions. This file path is set in the `GITHUB_EVENT_PATH` environment variable.

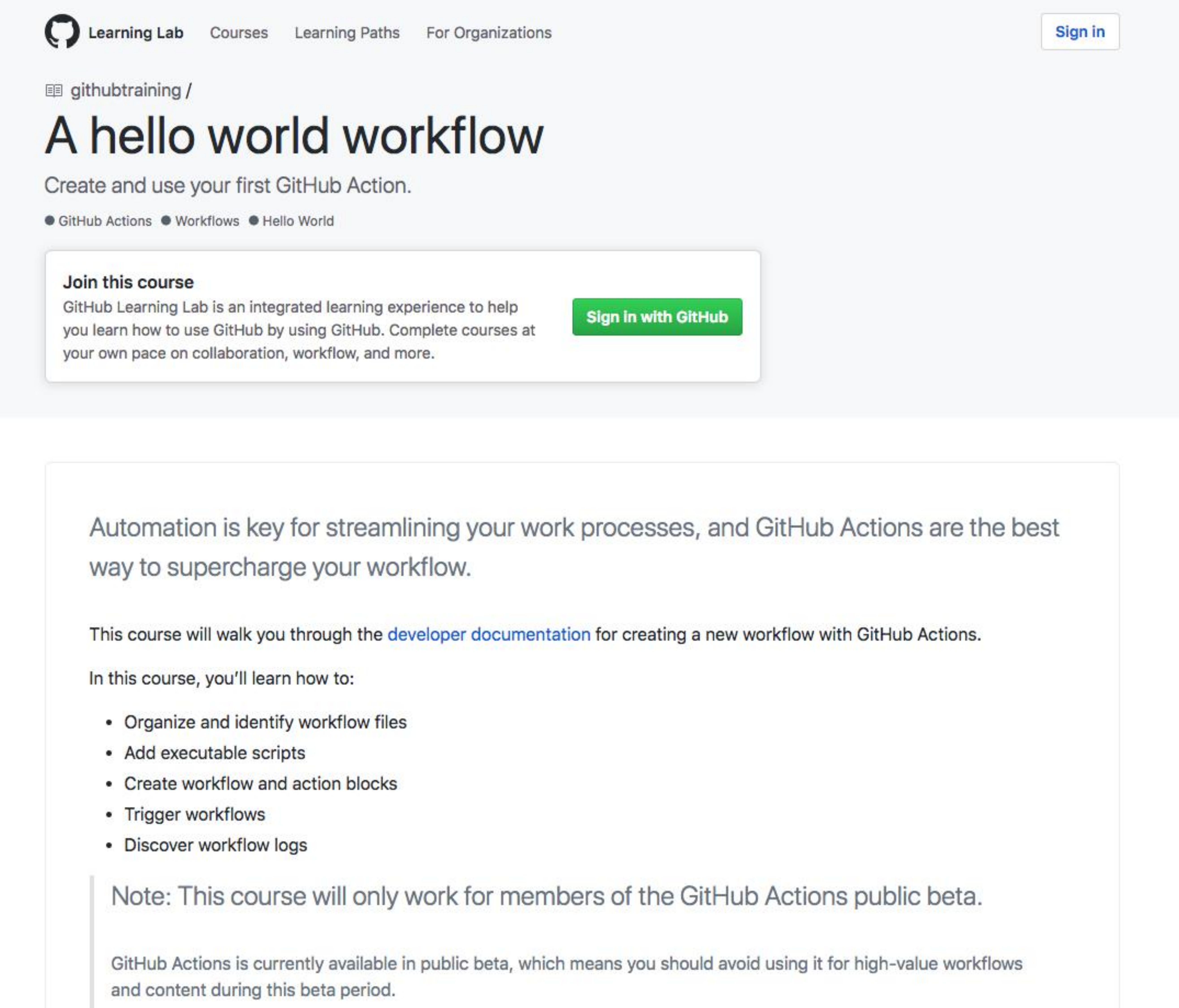


```
# Get the check run action.
action=$(jq --raw-output .action "$GITHUB_EVENT_PATH")

# If it's not opened action return early.
if [[ "$action" != "opened" ]]; then
        # Return early we only care about opened.
        echo "Check run has action: $action"
        echo "Want: synchronize or opened"
        exit 0
fi

# Get the issue number.
NUMBER=$(jq --raw-output .issue.number "$GITHUB_EVENT_PATH")

# Get the issue title.
TITLE=$(jq --raw-output .issue.title "$GITHUB_EVENT_PATH")

echo "running $GITHUB_ACTION for Issue #${NUMBER} with title ${TITLE}"
```

Built by you, run by us

Built and maintained by the community

https://lab.github.com



githubtraining /

A hello world workflow

Create and use your first GitHub Action.

● GitHub Actions ● Workflows ● Hello World

Join this course

GitHub Learning Lab is an integrated learning experience to help you learn how to use GitHub by using GitHub. Complete courses at your own pace on collaboration, workflow, and more.

Automation is key for streamlining your work processes, and GitHub Actions are the best way to supercharge your workflow.

This course will walk you through the developer documentation for creating a new workflow with GitHub Actions.

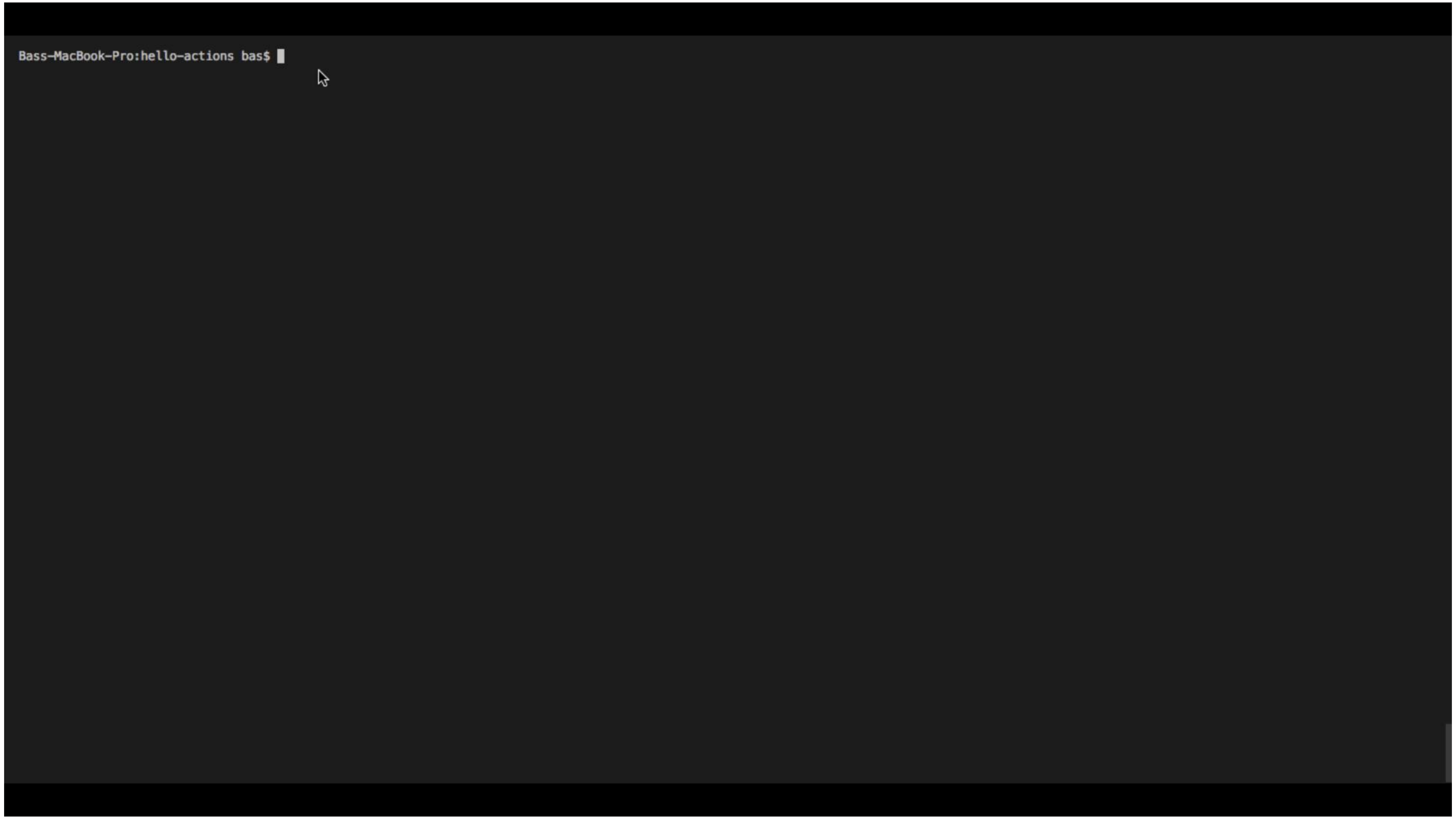
In this course, you'll learn how to:

- Organize and identify workflow files
- Add executable scripts
- Create workflow and action blocks
- Trigger workflows
- Discover workflow logs

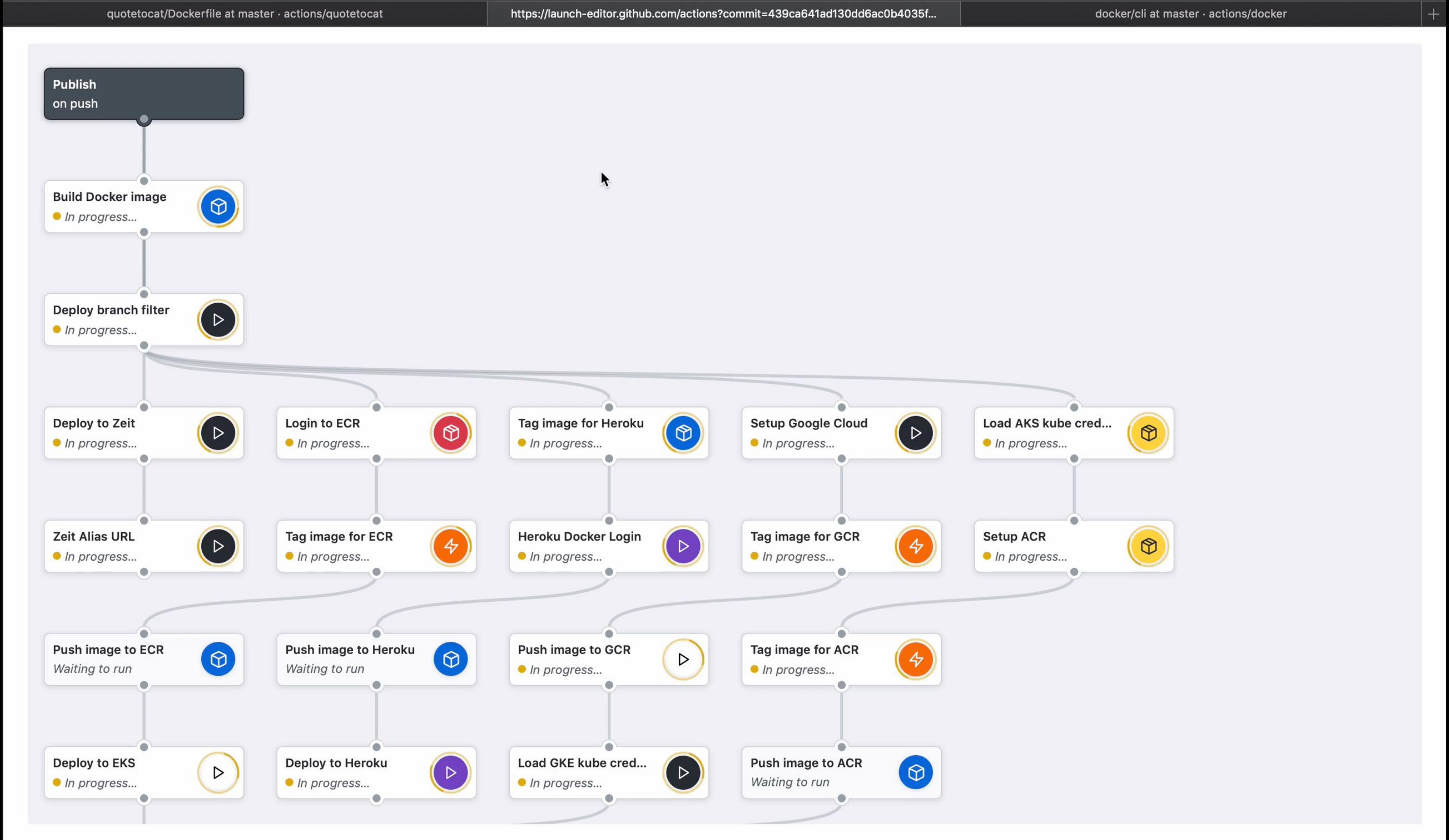
> Note: This course will only work for members of the GitHub Actions public beta.
>
> GitHub Actions is currently available in public beta, which means you should avoid using it for high-value workflows and content during this beta period.

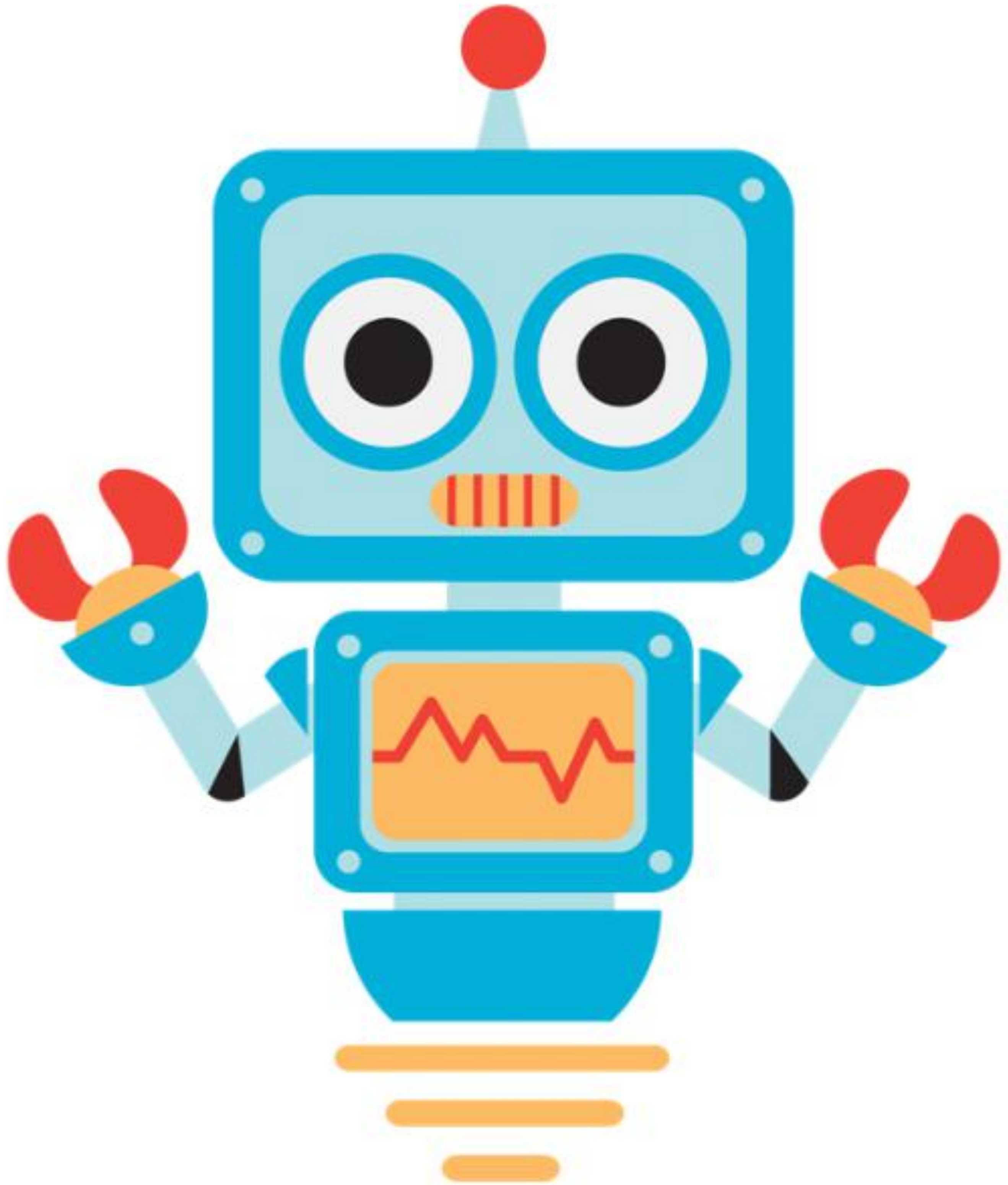
Run actions locally

https://github.com/nektos/act



```
Bass-MacBook-Pro:hello-actions bas$ 
```


quotetocat/Dockerfile at master · actions/quotetocat
https://launch-editor.github.com/actions?commit=439ca641ad130dd6ac0b4035f...
docker/cli at master · actions/docker
Publish
on push
Build Docker image
In progress...
Deploy branch filter
In progress...
Deploy to Zeit
In progress...
Login to ECR
In progress...
Tag image for Heroku
In progress...
Setup Google Cloud
In progress...
Load AKS kube cred...
In progress...
Zeit Alias URL
In progress...
Tag image for ECR
In progress...
Heroku Docker Login
In progress...
Tag image for GCR
In progress...
Setup ACR
In progress...
Push image to ECR
Waiting to run
Push image to Heroku
Waiting to run
Push image to GCR
In progress...
Tag image for ACR
In progress...
Deploy to EKS
In progress...
Deploy to Heroku
In progress...
Load GKE kube cred...
In progress...
Push image to ACR
Waiting to run



PROBOT

GitHub Apps to automate and improve your workflow

Use pre-built apps to extend GitHub, and easily build and share your own.

https://github.com/features/actions

Sign-up for the beta

https://developer.github.com/actions/

GitHub Actions documentation

https://github.com/actions

GitHub Actions

- Run code to respond to any event on GitHub
- GitHub will run anything in a Docker container
- Docker container comes with a clone of your repo and the payload for the event

Bas Peters

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Email: bas@github.com