Github Actions

2020.08.03

박원영

발표 내용

- Actions
- Docker container action 생성
- JavaScript action 생성
- Metadata
- Exit code
- GitHub Marketplace에 actions 게시
- self-hosted runners

Actions란?

Actions

- 개별 작업 => job 생성 & workflow customize
- repository와 상호작용하는 사용자 지정 코드를 이용해서 action 생성 가능
- workflow에서 사용할 고유 actions 작성 / github community에서 구축한 작업을 공유 O
- actions는 docker에서 직접 실행될 수 있음 - actions의 입력값, 출력값, 환경변수 정의 O

Types of Actions

Docker container/JavaScript actions 구축
=> metadata 파일(입력값,출력값, entrypoint)

➢ 이름 지정

Types of Actions

Docker container actions	JavaScript actions
Linux 운영 체제만, Docker 설치 필요	모든 러너 시스템(Ubuntu, Windows, macOS)와 호환, 러너 시스템에서 직접 실행
느림 (컨테이너 빌드,검색 시간)	빠름
환경 패키지 by Github actions code => 소비자가 tool/dependency 걱정 X	환경과 action code를 분리 => 코드 단순화

action 장소 선택

다른 사람들이 사용할 action을 개발 => 자체 repository에 actions 유지

비공개 actions 작성할 경우 저장소 모든 위치 저장 가능

action, workflow, application code를 단일 repository 결합 => .github 폴더에 저장

ex) `.github/actions/action-a`and `.github/actions/action-b`

Release management

actions에 업데이트를 배포하는 방법을 제어

(기존 workflow와 호환성 유지하기 위해)

master 브랜치를 참조X => 주 버전을 지정한 후 문제 발생시 구체적 버전을 안내

태그 사용 - 주버전과 부버전 구분

Release management - target tag

```yaml
steps:
# Checks-out your repository under $GITHUB_WORKSPACE, so your job can access it
- uses: actions/checkout@v2
```

➢주요 release tag 참조

```yaml
steps:
# Checks-out your repository under $GITHUB_WORKSPACE, so your job can access it
- uses: actions/checkout@v2.0.1
```

➢특정 부분 release tag 참조

```yaml
steps:
# Checks-out your repository under $GITHUB_WORKSPACE, so your job can access it
- uses: actions/checkout@v2-beta
```

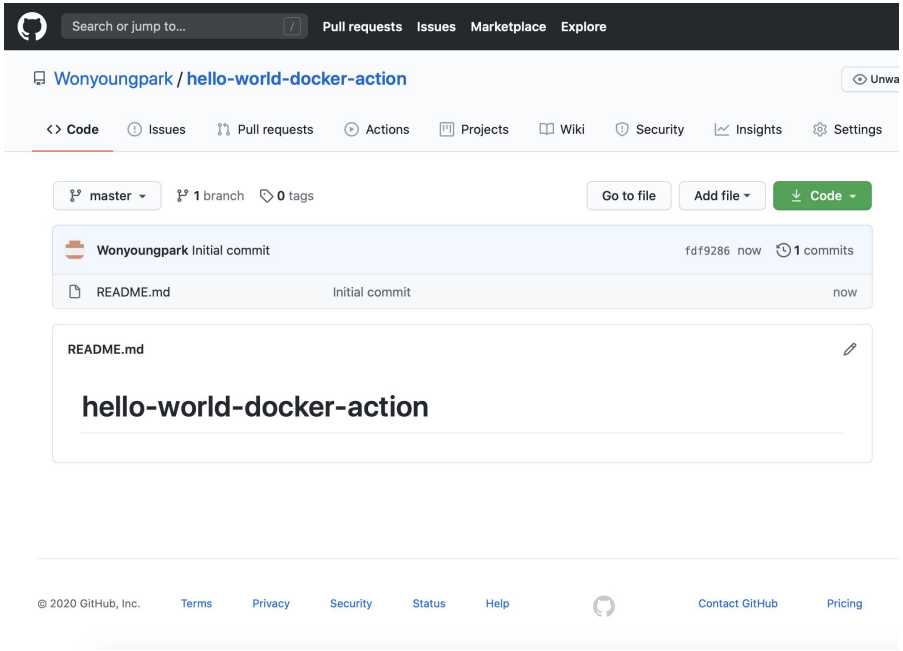
➢release management에 branch 참조

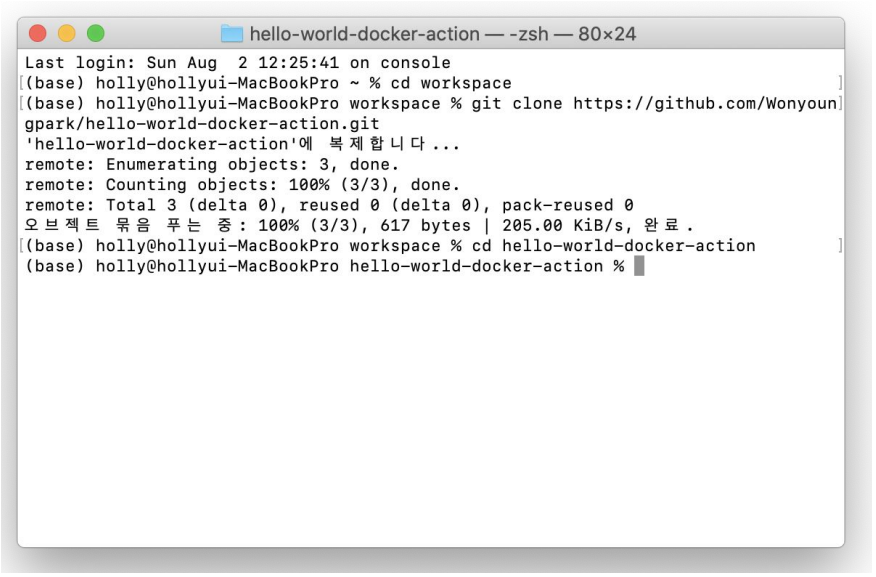
```yaml
steps:
    - uses: actions/javascript-action@172239021f7ba04fe7327647b213799853a9eb89
```

➢commit의 SHA 사용

Docker container action 생성

Github 저장소 생성





git repository 생성 후 clone

Dockerfile 생성 (docker의 시작동작 설명)

hello-world-docker-action — vi Dockerfile — 80×24

```
FROM alpine:3.10

COPY entrypoint.sh /entrypoint.sh

ENTRYPOINT ["/entrypoint.sh"]
~
~
```

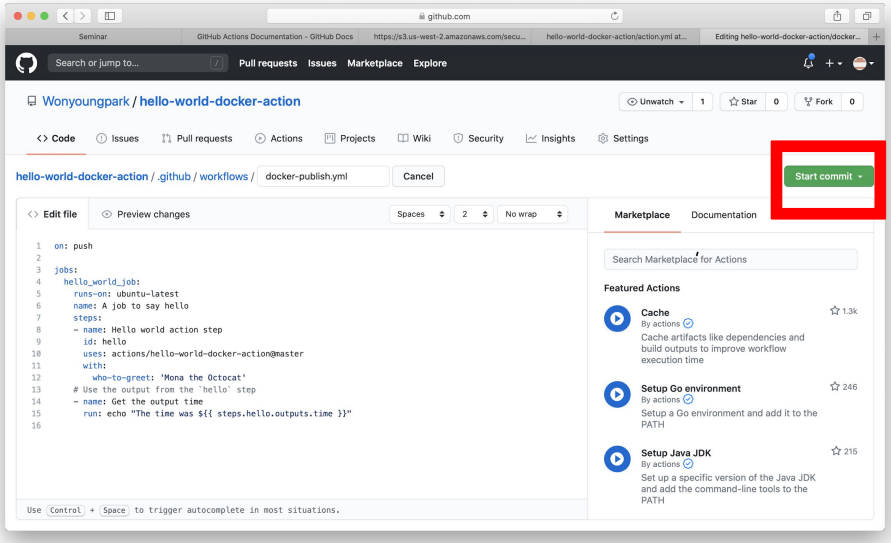
hello-world-docker-action — vi entrypoint.sh — 80×24

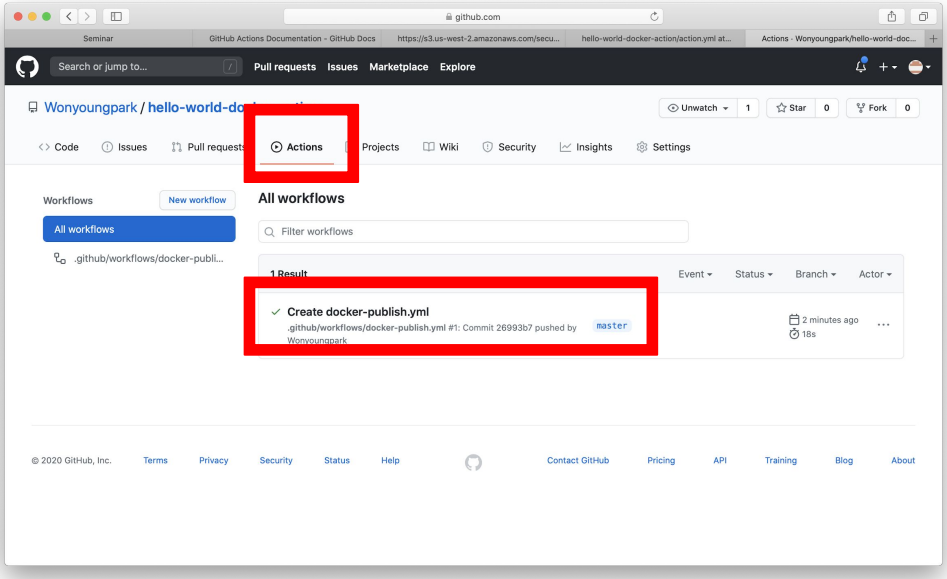
```
who=${1:-world}
echo "Hello" $who
~
```

```
(base) holly@hollyui-MacBookPro hello-world-docker-action % chmod +x entrypoint.
sh
```

hello-world-docker-action — vi action.yml — 80×24

```
name: 'Hello World'
description: 'Greet someone and record the time'
inputs:
  who-to-greet:  # id of input
    description: 'Who to greet'
    required: true
    default: 'World'
outputs:
  time: # id of output
    description: 'The time we greeted you'
runs:
  using: 'docker'
  image: 'Dockerfile'
  args:
    - ${{ inputs.who-to-greet }}
~
~
```


github.com
Search or jump to...
Pull requests
Issues
Marketplace
Explore
Wonyoungpark / hello-world-docker-action
Unwatch 1
Star 0
Fork 0
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
hello-world-docker-action / .github / workflows / docker-publish.yml
Cancel
Start commit
Edit file
Preview changes
Spaces
2
No wrap
on: push
jobs:
hello_world_job:
runs-on: ubuntu-latest
name: A job to say hello
steps:
- name: Hello world action step
id: hello
uses: actions/hello-world-docker-action@master
with:
who-to-greet: 'Mona the Octocat'
Use the output from the `hello` step
- name: Get the output time
run: echo "The time was ${{ steps.hello.outputs.time }}"
Use Control + Space to trigger autocomplete in most situations.
Marketplace
Documentation
Search Marketplace for Actions
Featured Actions
Cache
By actions
Cache artifacts like dependencies and build outputs to improve workflow execution time
1.3k
Setup Go environment
By actions
Setup a Go environment and add it to the PATH
246
Setup Java JDK
By actions
Set up a specific version of the Java JDK and add the command-line tools to the PATH
215


github.com
Search or jump to...
Pull requests
Issues
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Explore
Wonyoungpark / hello-world-do
Unwatch 1
Star 0
Fork 0
Code
Issues
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Projects
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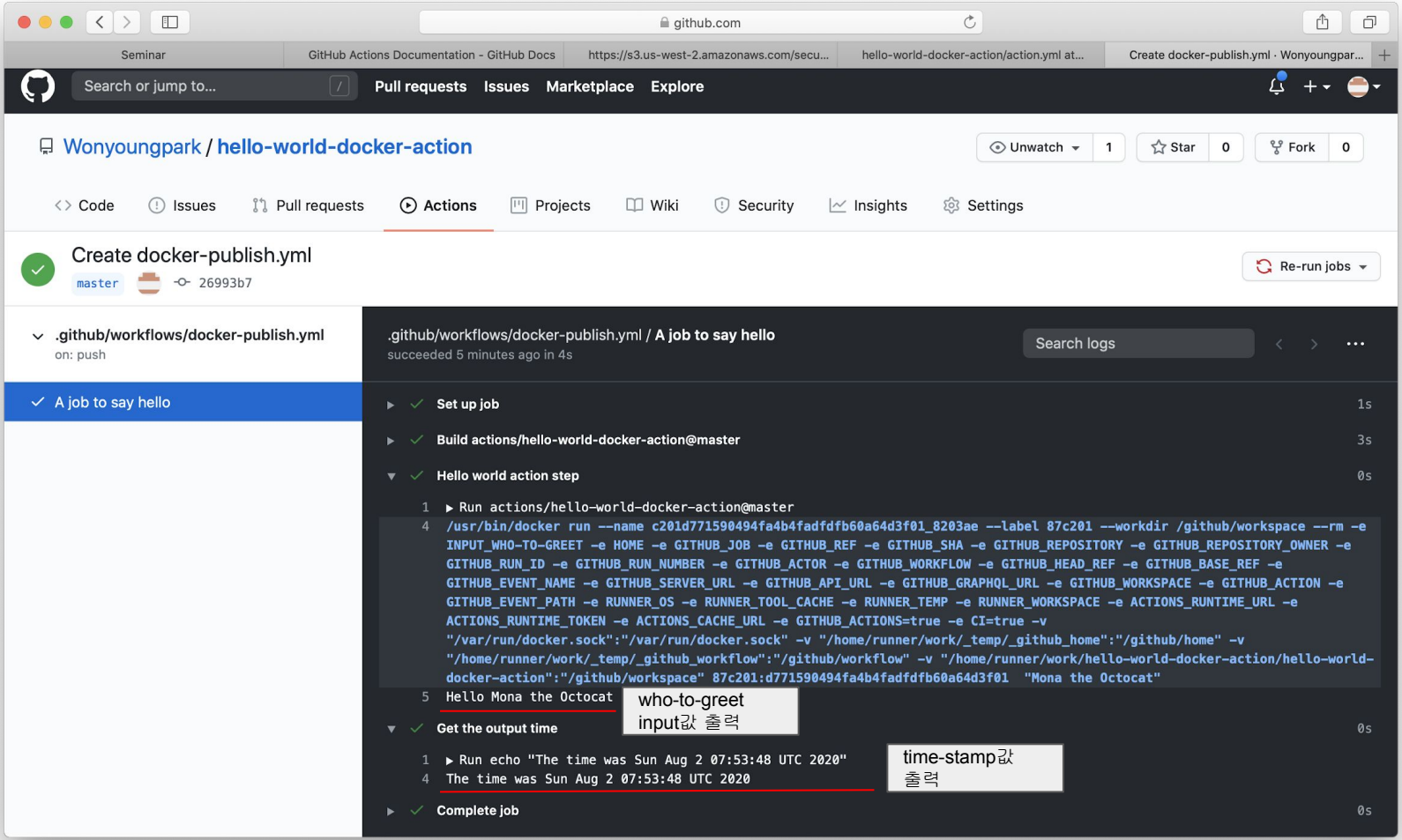
Settings
Workflows
New workflow
All workflows
.github/workflows/docker-publi...
All workflows
Filter workflows
1 Result
Event
Status
Branch
Actor
Create docker-publish.yml
.github/workflows/docker-publish.yml #1: Commit 26993b7 pushed by Wonyoungpark
master
2 minutes ago
18s
© 2020 GitHub, Inc.
Terms
Privacy
Security
Status
Help
Contact GitHub
Pricing
API
Training
Blog
About


github.com
Seminar
GitHub Actions Documentation - GitHub Docs
https://s3.us-west-2.amazonaws.com/secu...
hello-world-docker-action/action.yml at...
Create docker-publish.yml · Wonyoungpar...
Search or jump to...
Pull requests
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Explore
Wonyoungpark / hello-world-docker-action
Unwatch 1
Star 0
Fork 0
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
Create docker-publish.yml
master
26993b7
Re-run jobs
.github/workflows/docker-publish.yml
on: push
A job to say hello
.github/workflows/docker-publish.yml / A job to say hello
succeeded 5 minutes ago in 4s
Search logs
Set up job 1s
Build actions/hello-world-docker-action@master 3s
Hello world action step 0s
1 ▶ Run actions/hello-world-docker-action@master
4 /usr/bin/docker run --name c201d771590494fa4b4fadfdfb60a64d3f01_8203ae --label 87c201 --workdir /github/workspace --rm -e INPUT_WHO-TO-GREET -e HOME -e GITHUB_JOB -e GITHUB_REF -e GITHUB_SHA -e GITHUB_REPOSITORY -e GITHUB_REPOSITORY_OWNER -e GITHUB_RUN_ID -e GITHUB_RUN_NUMBER -e GITHUB_ACTOR -e GITHUB_WORKFLOW -e GITHUB_HEAD_REF -e GITHUB_BASE_REF -e GITHUB_EVENT_NAME -e GITHUB_SERVER_URL -e GITHUB_API_URL -e GITHUB_GRAPHQL_URL -e GITHUB_WORKSPACE -e GITHUB_ACTION -e GITHUB_EVENT_PATH -e RUNNER_OS -e RUNNER_TOOL_CACHE -e RUNNER_TEMP -e RUNNER_WORKSPACE -e ACTIONS_RUNTIME_URL -e ACTIONS_RUNTIME_TOKEN -e ACTIONS_CACHE_URL -e GITHUB_ACTIONS=true -e CI=true -v "/var/run/docker.sock":"/var/run/docker.sock" -v "/home/runner/work/_temp/_github_home":"/github/home" -v "/home/runner/work/_temp/_github_workflow":"/github/workflow" -v "/home/runner/work/hello-world-docker-action/hello-world-docker-action":"/github/workspace" 87c201:d771590494fa4b4fadfdfb60a64d3f01 "Mona the Octocat"
5 Hello Mona the Octocat
who-to-greet input값 출력
Get the output time 0s
1 ▶ Run echo "The time was Sun Aug 2 07:53:48 UTC 2020"
4 The time was Sun Aug 2 07:53:48 UTC 2020
time-stamp값 출력
Complete job 0s

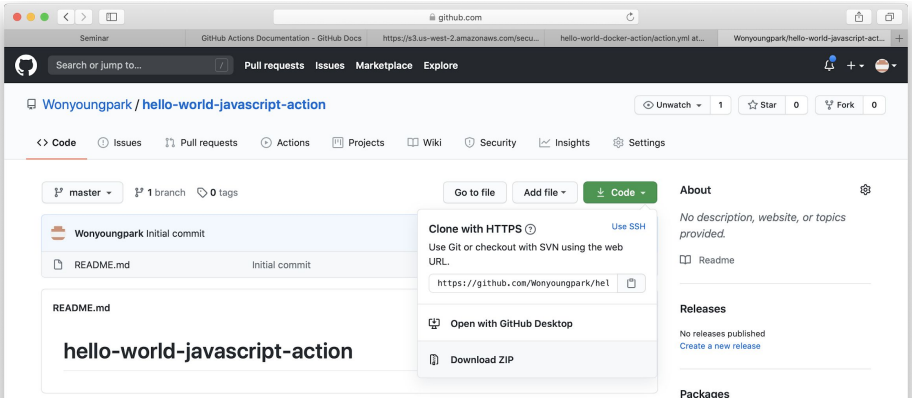
JavaScript action 생성

JavaScript action 만들기

Github Actions Toolkit Node.js 모듈 사용 - 개발속도 향상

Node.js 다운로드 : https://nodejs.org/en/download/current/

Node.js : Chrome V8 Javascript 엔진으로 빌드된 Javascript 런타임

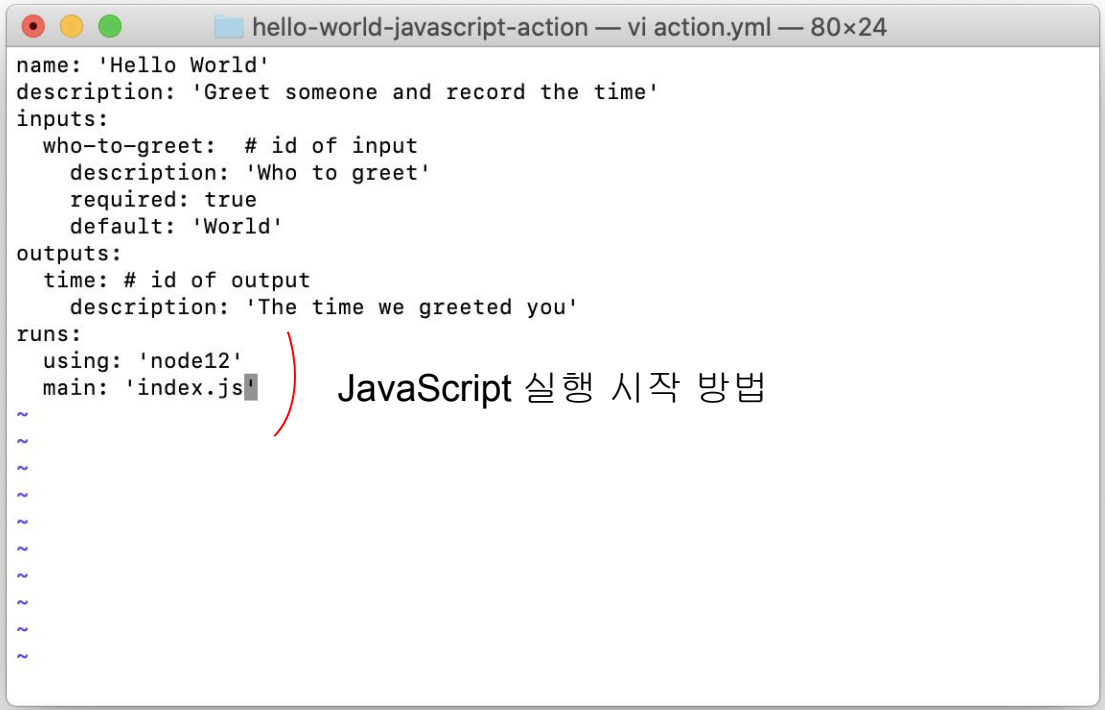



```
(base) holly@hollyui-MacBookPro hello-world-javascript-action % npm init -y
```

디렉토리 초기화

npm : Node.js로 만들어진 모듈을 웹에서 받아서 설치하고 관리해주는 프로그램

action metadata file 작성



actions toolkit package 추가

JavaScript actions를 빠르게 빌드할 수 있는 Node.js package

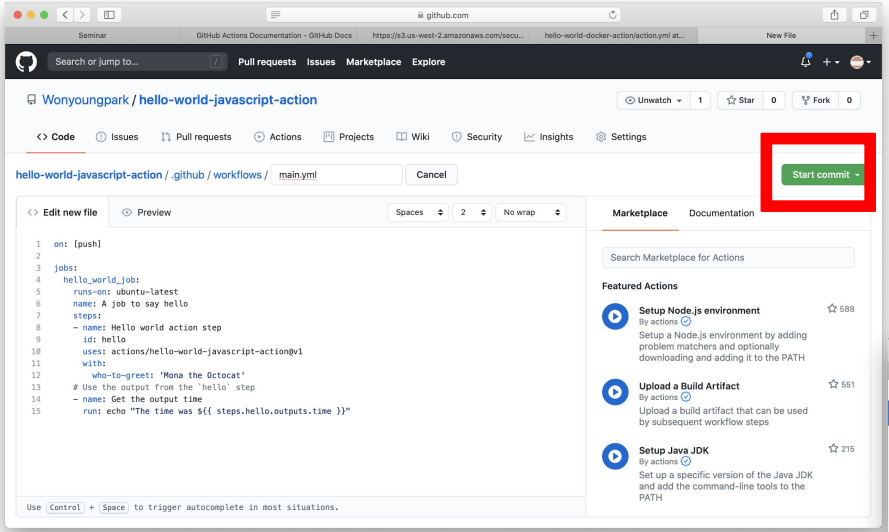
```
(base) holly@hollyui-MacBookPro hello-world-javascript-action % npm install @act
ions/core
npm notice created a lockfile as package-lock.json. You should commit this file.
npm WARN hello-world-javascript-action@1.0.0 No description

+ @actions/core@1.2.4
added 1 package and audited 1 package in 3.064s
found 0 vulnerabilities

(base) holly@hollyui-MacBookPro hello-world-javascript-action % npm install @act
ions/github
npm WARN hello-world-javascript-action@1.0.0 No description

+ @actions/github@4.0.0
added 20 packages from 53 contributors and audited 21 packages in 18.206s
found 0 vulnerabilities
```

workflow의 명령, 입출력 변수, 종료 상태, 디버그 메시지에 대한 인터페이스 제공

Github actions context에 접근 가능

action code 작성


```
git add action.yml index.js node_modules/* package.json package-lock.json
git commit -m "My first action is ready"
git tag -a -m "My first action release" v1
git push --follow-tags
```


github.com
Search or jump to...
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Wonyoungpark / hello-world-javascript-action
Unwatch 1
Star 0
Fork 0
Code
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Projects
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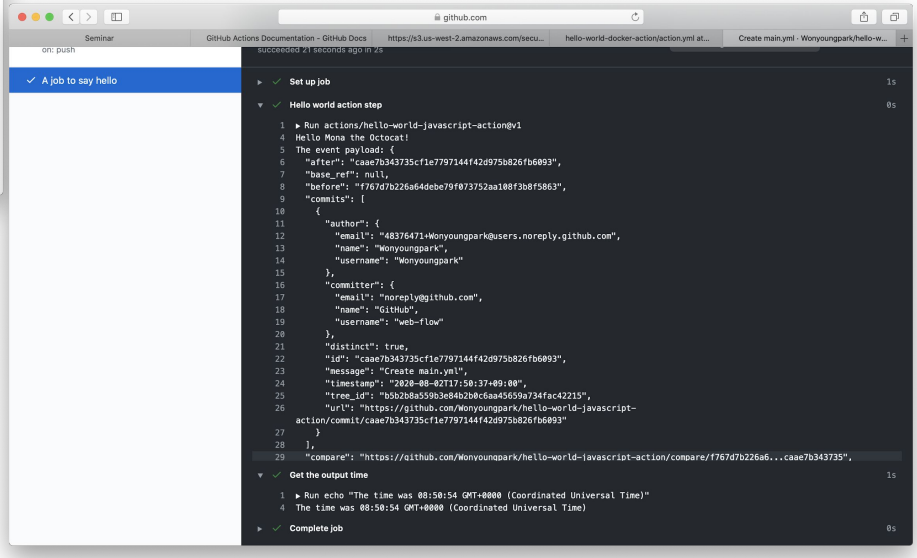
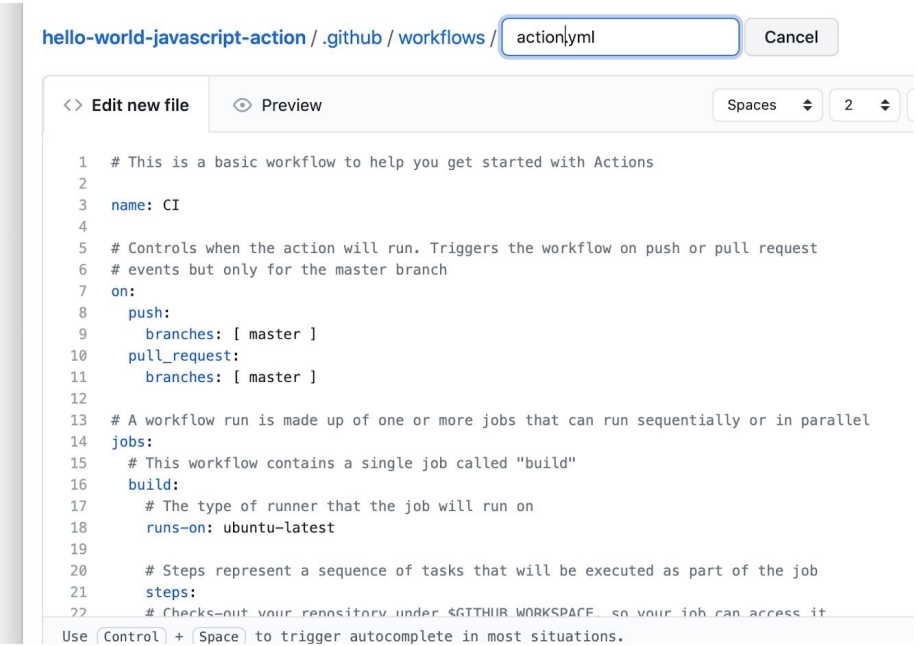
Security
Insights
Settings
hello-world-javascript-action / .github / workflows / main.yml
Cancel
Start commit
Edit new file
Preview
Spaces
2
No wrap
on: [push]
jobs:
hello_world_job:
runs-on: ubuntu-latest
name: A job to say hello
steps:
- name: Hello world action step
id: hello
uses: actions/hello-world-javascript-action@v1
with:
who-to-greet: 'Mona the Octocat'
Use the output from the `hello` step
- name: Get the output time
run: echo "The time was ${{ steps.hello.outputs.time }}"
Use Control + Space to trigger autocomplete in most situations.
Marketplace
Documentation
Search Marketplace for Actions
Featured Actions
Setup Node.js environment
By actions
Setup a Node.js environment by adding problem matchers and optionally downloading and adding it to the PATH
588
Upload a Build Artifact
By actions
Upload a build artifact that can be used by subsequent workflow steps
551
Setup Java JDK
By actions
Set up a specific version of the Java JDK and add the command-line tools to the PATH
215

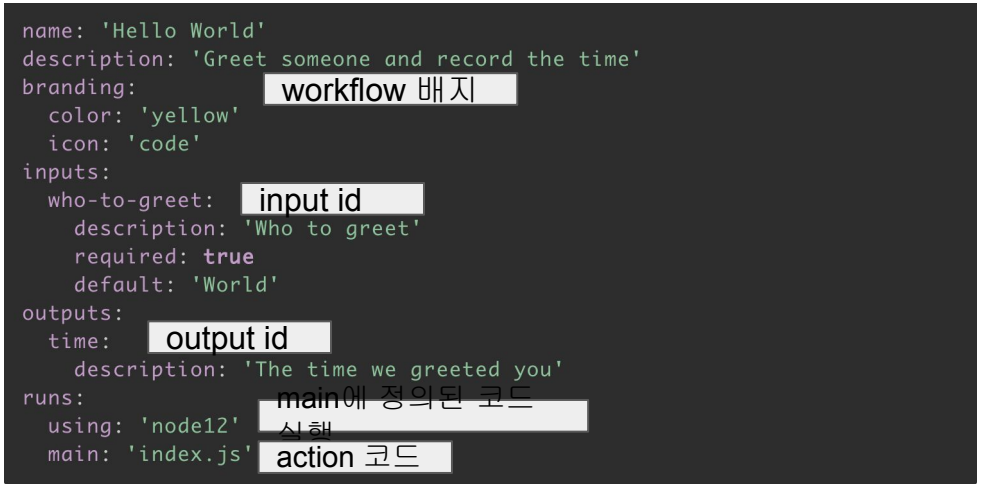

github.com
A job to say hello
Set up job
1s
Hello world action step
0s
Run actions/hello-world-javascript-action@v1
Hello Mona the Octocat!
The event payload: {
"after": "caae7b343735cf1e7797144f42d975b826fb6093",
"base_ref": null,
"before": "f767d7b226a64debe79f073752aa108f3b8f5863",
"commits": [
{
"author": {
"email": "48376471+Wonyoungpark@users.noreply.github.com",
"name": "Wonyoungpark",
"username": "Wonyoungpark"
},
"committer": {
"email": "noreply@github.com",
"name": "GitHub",
"username": "web-flow"
},
"distinct": true,
"id": "caae7b343735cf1e7797144f42d975b826fb6093",
"message": "Create main.yml",
"timestamp": "2020-08-02T17:50:37+09:00",
"tree_id": "b5b2b8a559b3e84b2b0c6aa45659a734fac42215",
"url": "https://github.com/Wonyoungpark/hello-world-javascript-action/commit/caae7b343735cf1e7797144f42d975b826fb6093"
}
],
"compare": "https://github.com/Wonyoungpark/hello-world-javascript-action/compare/f767d7b226a6...caae7b343735",
Get the output time
1s
Run echo "The time was 08:50:54 GMT+0000 (Coordinated Universal Time)"
The time was 08:50:54 GMT+0000 (Coordinated Universal Time)
Complete job
0s

Metadata

YAML 문법

metadata 파일 = input, output, entrypoint => action.yml / action.yaml



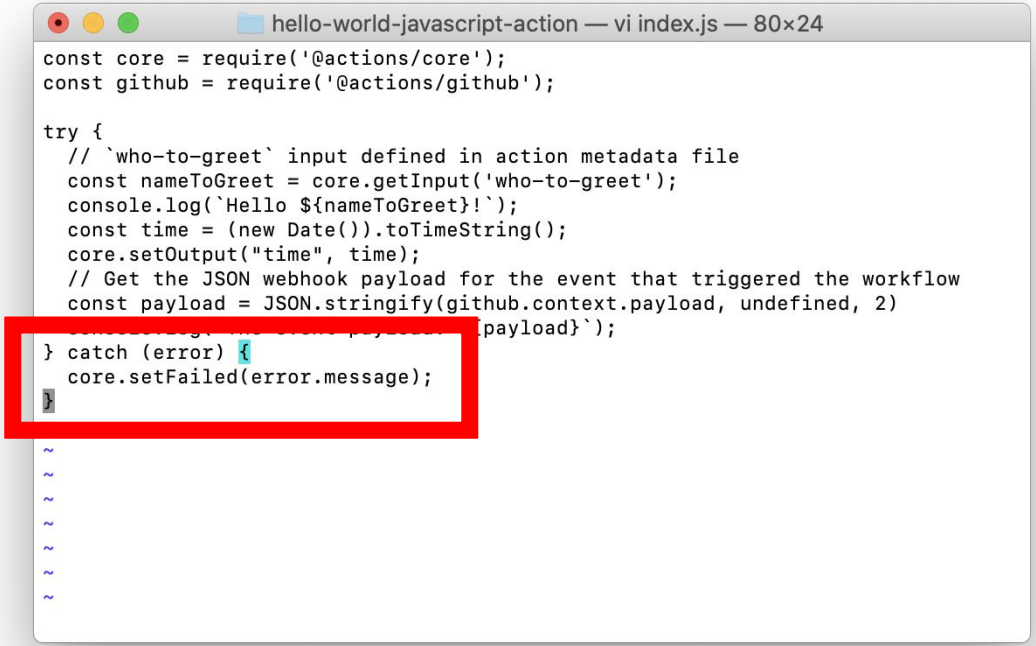


action metadata 의미와 종류 : https://docs.github.com/en/actions/creating-actions/metadata-syntax-for-github-actions

Exit code

actions의 실행 상태

Exit Code - JavaScript action



Exit Code - Docker container action

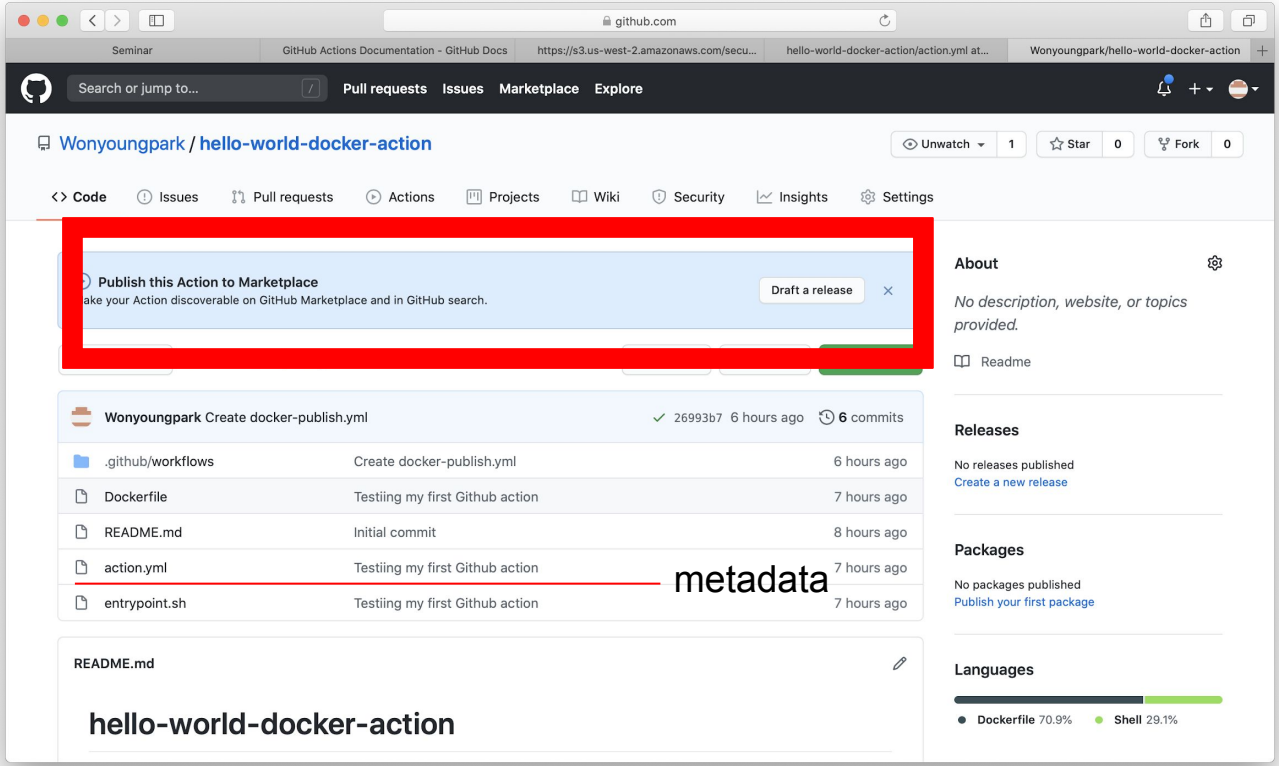
GitHub Marketplace에 actions 게시

actions 게시

Github Marketplace 게시 조건

- Actions는 pubilc repository에 있어야 함.
- 각 repository당 1 action
- Action의 metadata은 repostiory의 루트 디렉토리에 존재
- Action의 metadata명은 고유

actions 게시


github.com
Seminar
GitHub Actions Documentation - GitHub Docs
https://s3.us-west-2.amazonaws.com/secu...
hello-world-docker-action/action.yml at...
Wonyoungpark/hello-world-docker-action
Search or jump to...
Pull requests
Issues
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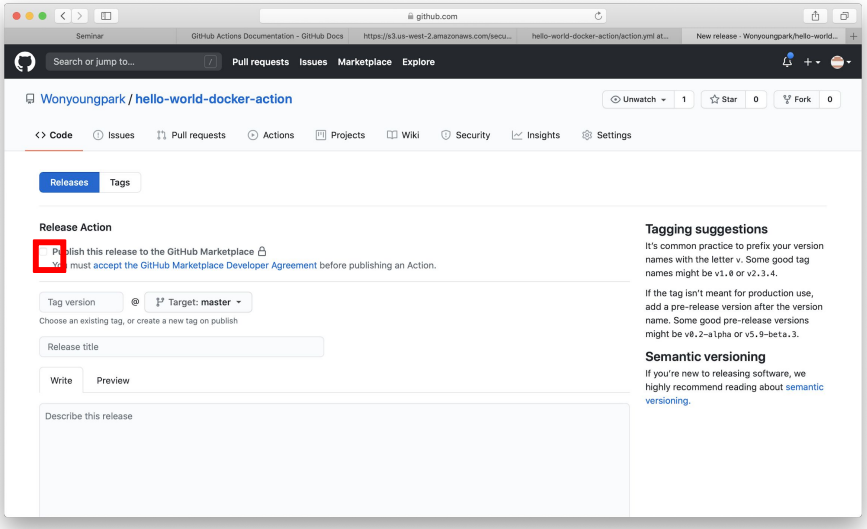
Explore
Wonyoungpark / hello-world-docker-action
Unwatch 1
Star 0
Fork 0
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
Publish this Action to Marketplace
ake your Action discoverable on GitHub Marketplace and in GitHub search.
Draft a release
Wonyoungpark Create docker-publish.yml
26993b7 6 hours ago
6 commits
.github/workflows
Create docker-publish.yml
6 hours ago
Dockerfile
Testiing my first Github action
7 hours ago
README.md
Initial commit
8 hours ago
action.yml
Testiing my first Github action
7 hours ago
entrypoint.sh
Testiing my first Github action
7 hours ago
metadata
README.md
hello-world-docker-action
About
No description, website, or topics provided.
Readme
Releases
No releases published
Create a new release
Packages
No packages published
Publish your first package
Languages
Dockerfile 70.9%
Shell 29.1%

actions 게시


Search or jump to...
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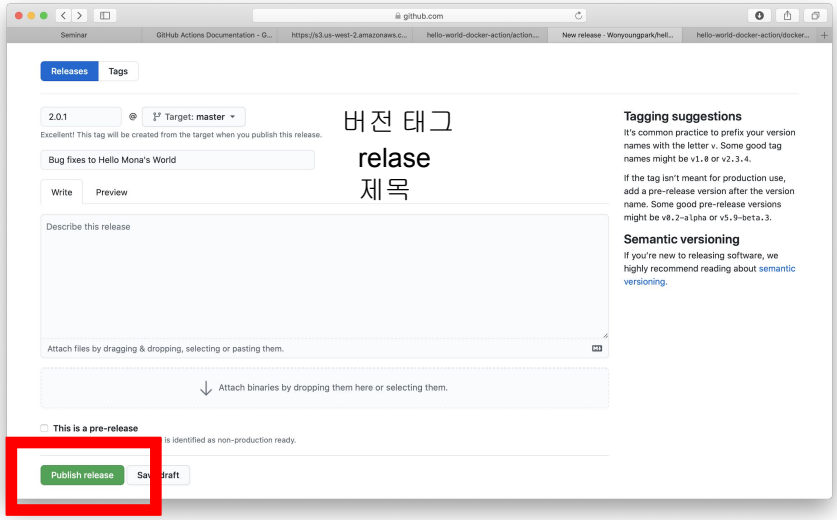
Unwatch
Star
Fork
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
Releases
Tags
Release Action
Publish this release to the GitHub Marketplace
You must accept the GitHub Marketplace Developer Agreement before publishing an Action.
Tag version
Target: master
Choose an existing tag, or create a new tag on publish
Release title
Write
Preview
Describe this release
Tagging suggestions
It's common practice to prefix your version names with the letter v. Some good tag names might be v1.0 or v2.3.4.
If the tag isn't meant for production use, add a pre-release version after the version name. Some good pre-release versions might be v0.2-alpha or v5.9-beta.3.
Semantic versioning
If you're new to releasing software, we highly recommend reading about semantic versioning.


Releases
Tags
2.0.1
Target: master
Excellent! This tag will be created from the target when you publish this release.
Bug fixes to Hello Mona's World
Write
Preview
Describe this release
Attach files by dragging & dropping, selecting or pasting them.
Attach binaries by dropping them here or selecting them.
This is a pre-release
Publish release
Save draft
버전 태그
relase
제목
Tagging suggestions
It's common practice to prefix your version names with the letter v. Some good tag names might be v1.0 or v2.3.4.
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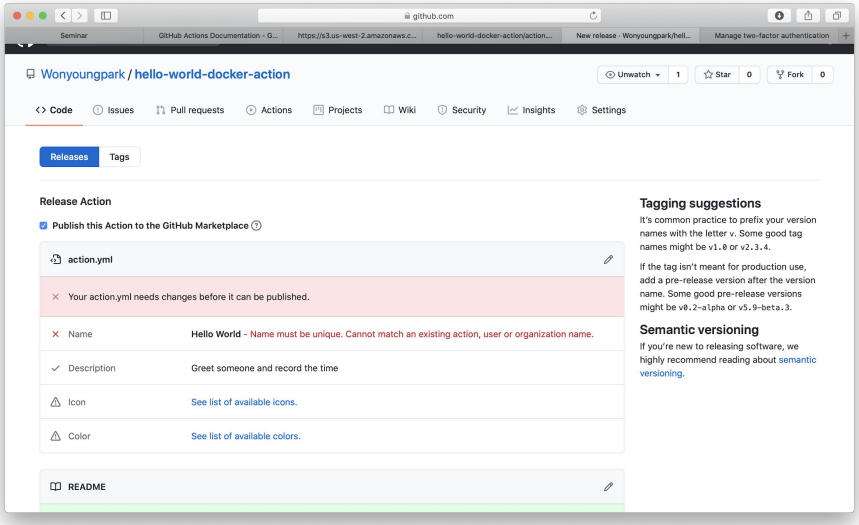
actions 게시


github.com
Wonyoungpark / hello-world-docker-action
Unwatch 1
Star 0
Fork 0
Code
Issues
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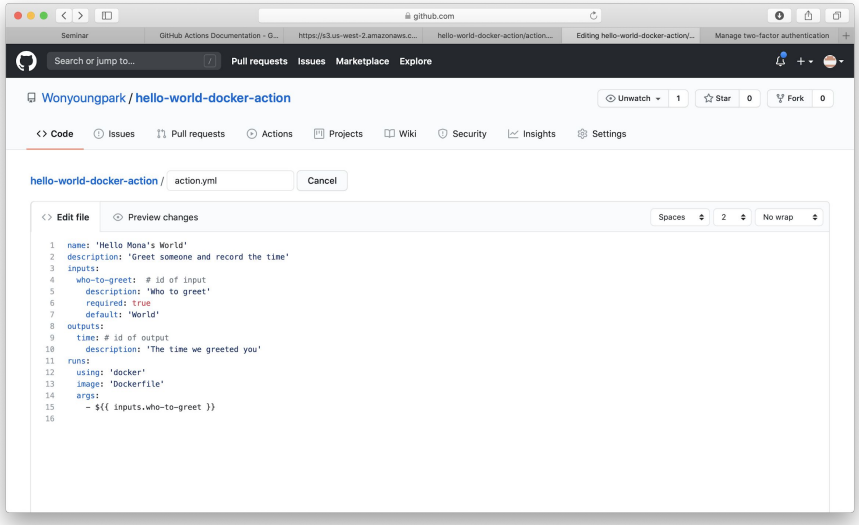
Settings
Releases
Tags
Release Action
Publish this Action to the GitHub Marketplace
action.yml
Your action.yml needs changes before it can be published.
Name
Hello World - Name must be unique. Cannot match an existing action, user or organization name.
Description
Greet someone and record the time
Icon
See list of available icons.
Color
See list of available colors.
README
Tagging suggestions
It's common practice to prefix your version names with the letter v. Some good tag names might be v1.0 or v2.3.4.
If the tag isn't meant for production use, add a pre-release version after the version name. Some good pre-release versions might be v0.2-alpha or v5.9-beta.3.
Semantic versioning
If you're new to releasing software, we highly recommend reading about semantic versioning.


github.com
Search or jump to...
Pull requests
Issues
Marketplace
Explore
Wonyoungpark / hello-world-docker-action
Unwatch 1
Star 0
Fork 0
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
hello-world-docker-action / action.yml
Cancel
Edit file
Preview changes
Spaces
2
No wrap
name: 'Hello Mona's World'
description: 'Greet someone and record the time'
inputs:
who-to-greet: # id of input
description: 'Who to greet'
required: true
default: 'World'
outputs:
time: # id of output
description: 'The time we greeted you'
runs:
using: 'docker'
image: 'Dockerfile'
args:
- ${{ inputs.who-to-greet }}

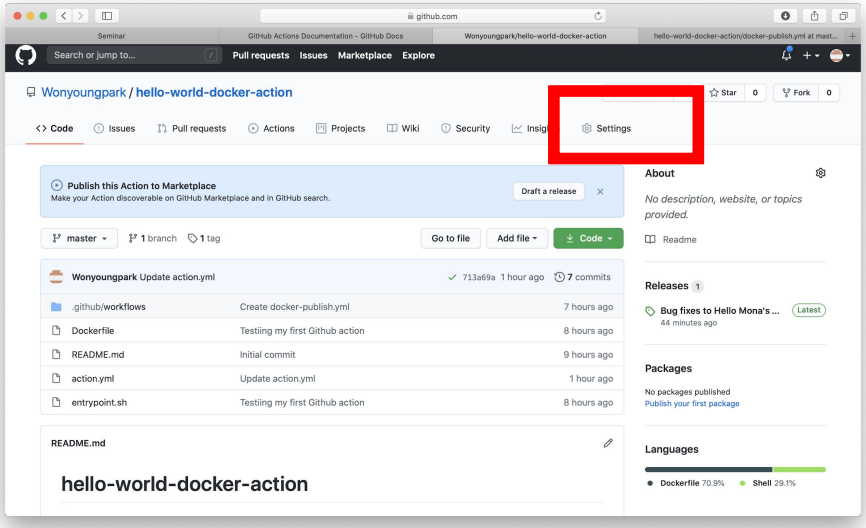
self-hosted runners

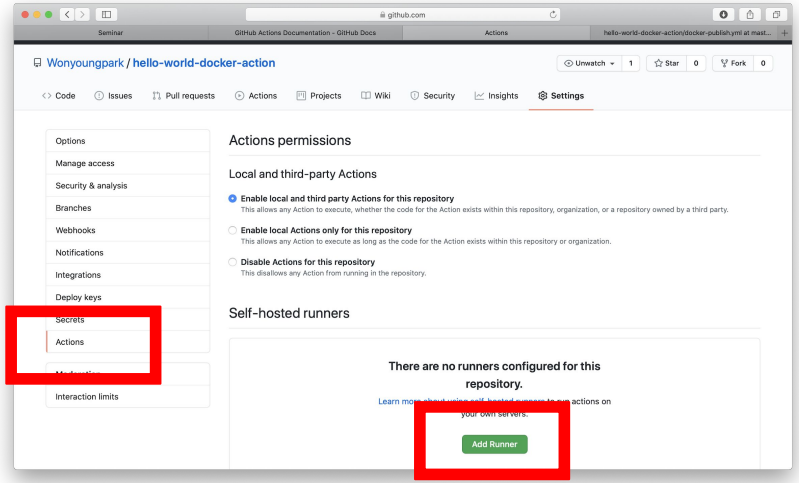
Github의 runner 제공

GitHub-hosted Runner : workflow를 빠르고 간단하게 실행하는 방법

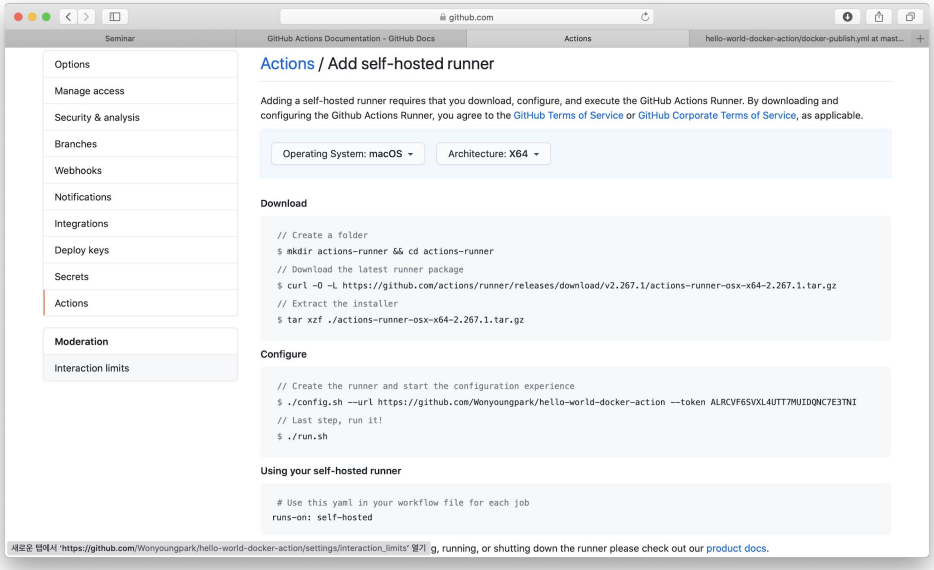
Self-Hosted Runner : workflow를 사용자 정의 환경에서 실행하는 방법

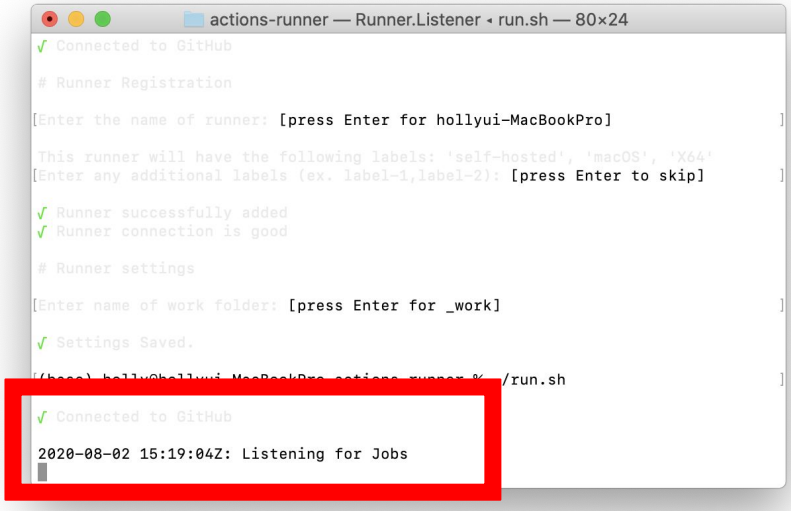
self-hosted runner repository에 추가

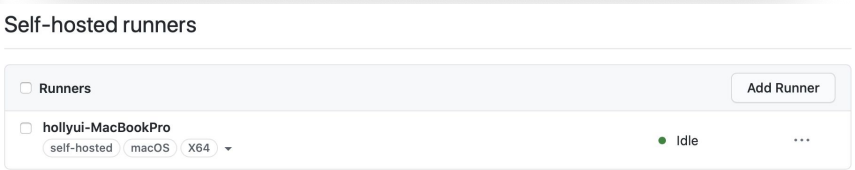




self-hosted runner repository에 추가

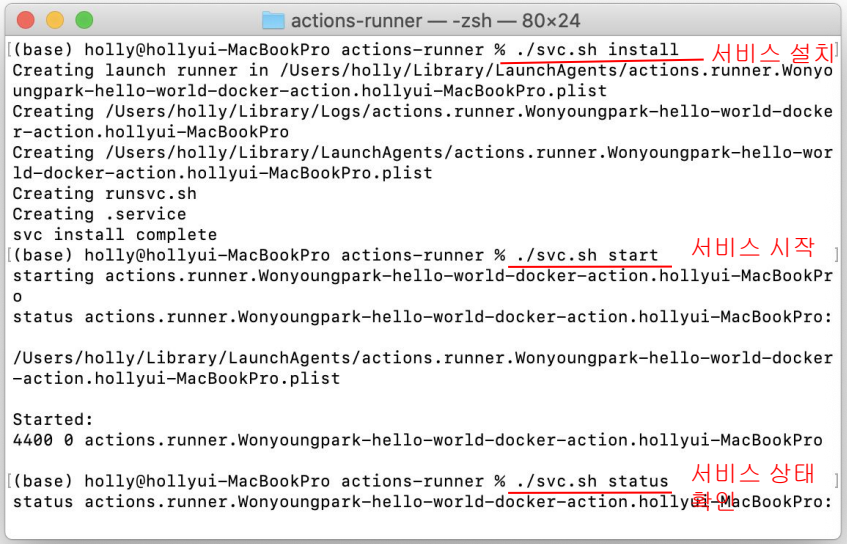


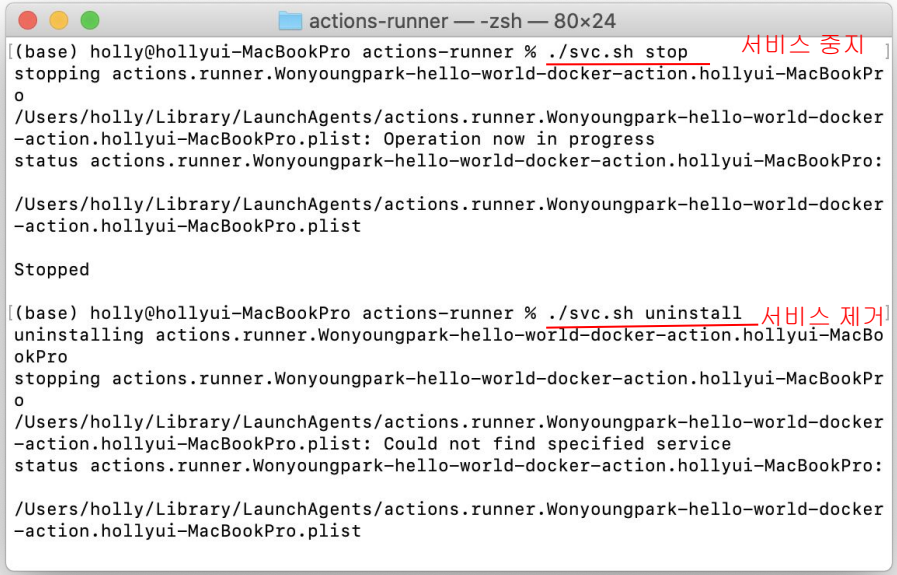




self-hosted runner를 서비스로 구성하기

머신이 시작될 때 runner를 자동으로 시작

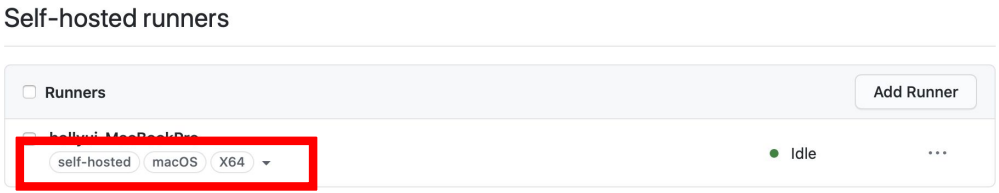




self-hosted runner

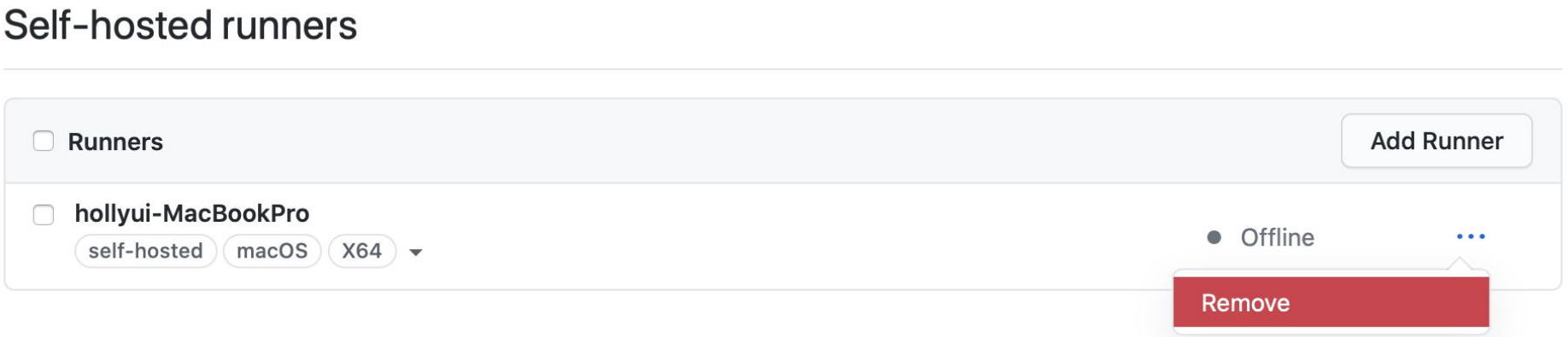
proxy 서버 => GitHub와 통신하도록 구성

label => self-hosted runner 특성별 구분



self-hosted runner 제거

Settings > Actions > Self-hosted runners



참고 자료

Github Actions 공식 문서 : https://docs.github.com/en/actions/

Github actions & package repository 사용기
:https://coffeewhale.com/cicd/github/2019/10/14/github-actions/

Github Actions 빠르게 시작하기 :
https://jonnung.dev/devops/2020/01/31/github_action_getting_started/

감사합니다.