



GitHub Actions

0:00 - 7:26



2025-02-26

Sean Sullivan

GITHUB ACTIONS

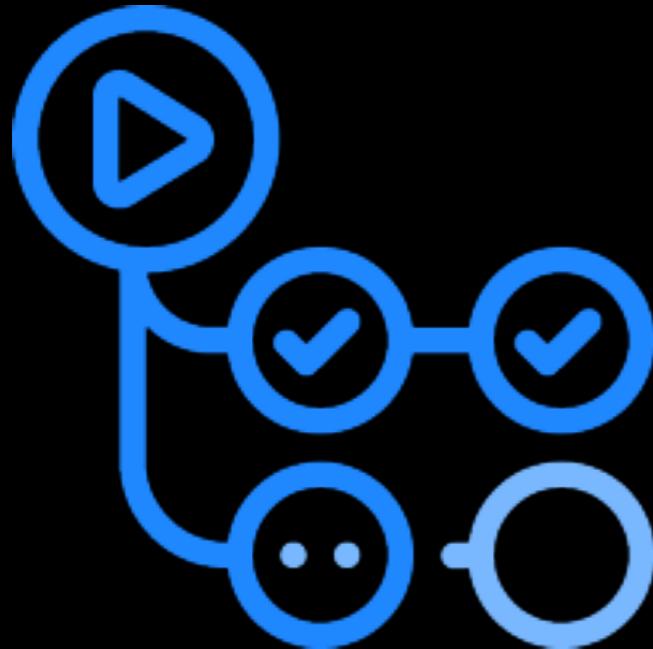
Agenda



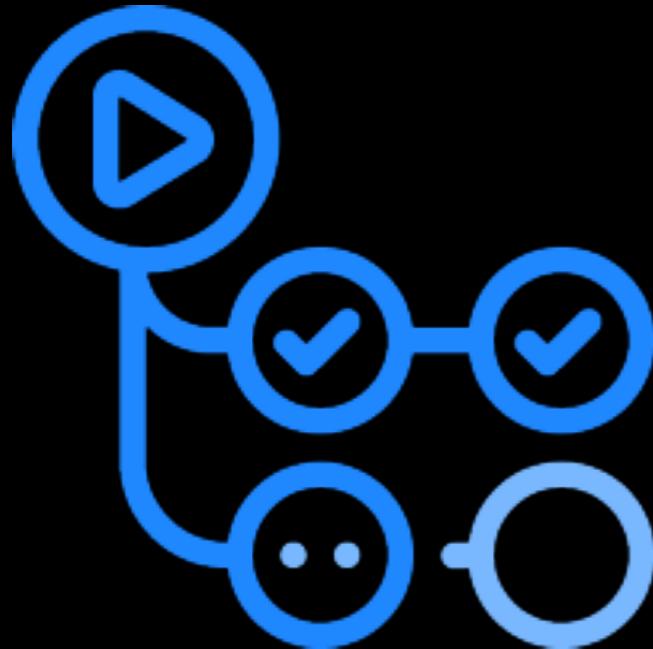
Core concepts



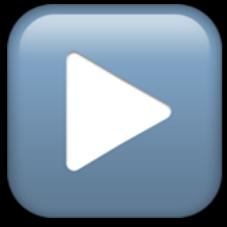
Security



**“GitHub Actions help
you automate your
software development
workflows”**

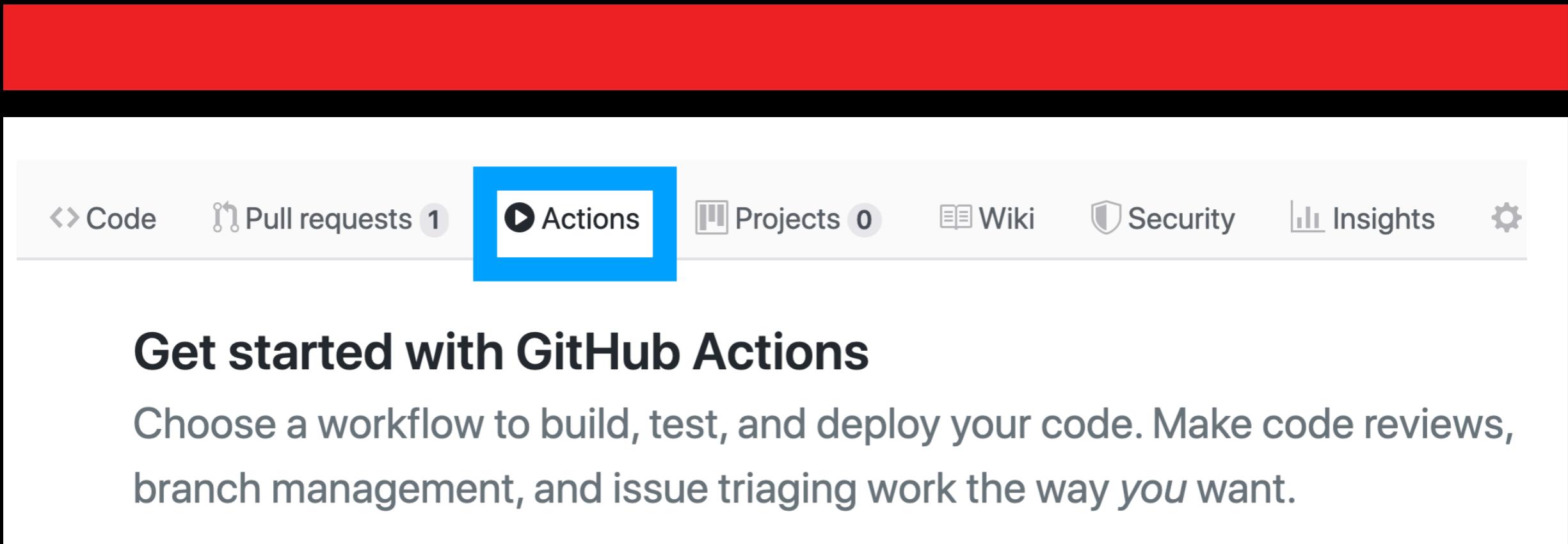


“You can write individual tasks, called actions, and combine them to create a custom workflow”



Getting started

Actions tab



A screenshot of a GitHub repository page. The top navigation bar is red, and the main content area has a white background. The navigation bar includes tabs for Code, Pull requests (with 1 notification), Actions (which is the active tab, highlighted by a blue box), Projects (0 notifications), Wiki, Security, Insights, and Settings. Below the navigation bar, the text "Get started with GitHub Actions" is displayed in bold, followed by a descriptive paragraph: "Choose a workflow to build, test, and deploy your code. Make code reviews, branch management, and issue triaging work the way you want."

Code Pull requests 1 Actions Projects 0 Wiki Security Insights

Get started with GitHub Actions

Choose a workflow to build, test, and deploy your code. Make code reviews, branch management, and issue triaging work the way you want.

Actions tab

Publish Java Package with Maven 

By GitHub Actions

Build a Java Package using Maven and publish to GitHub Packages.

[Configure](#) Java ●

Java with Maven 

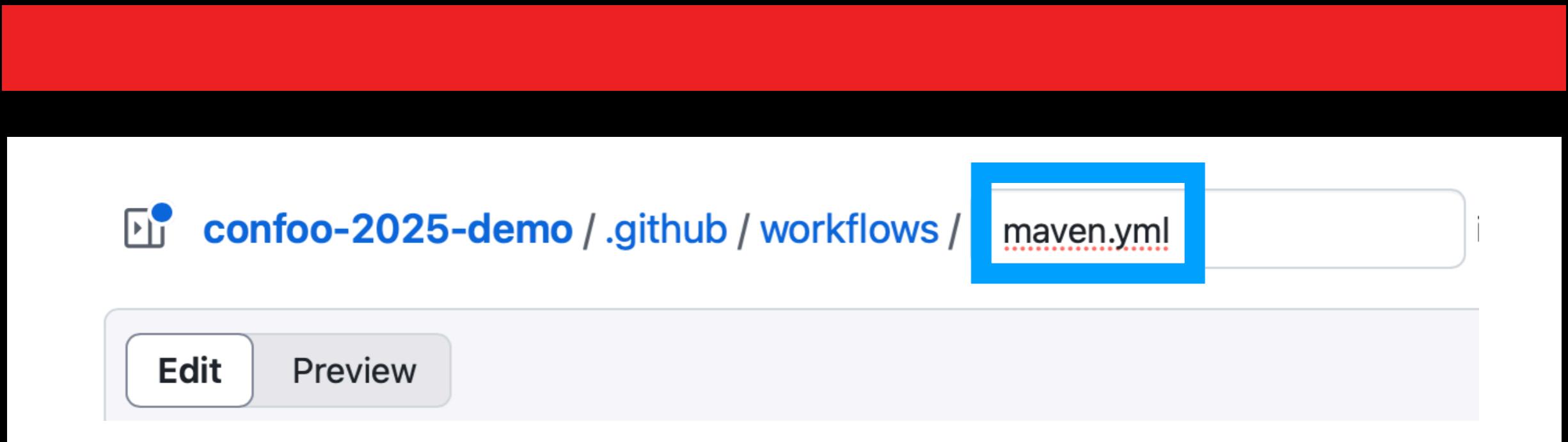
By GitHub Actions

Build and test a Java project with Apache Maven.

[Configure](#) Java ●

Starter Workflows

Workflow editor



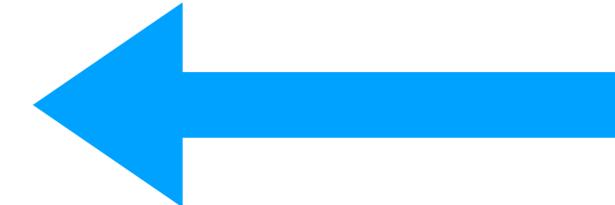
Workflow editor

Edit Preview

```
1   name: Java CI with Maven
2
3   on:
4     push:
5       branches: [ "main" ] ←
6     pull_request:
7       branches: [ "main" ]
```

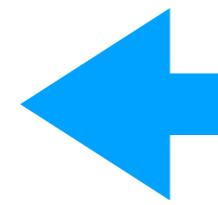
Workflow editor

```
9   jobs:  
10     build:  
11  
12       runs-on: ubuntu-latest  
13
```



Workflow editor

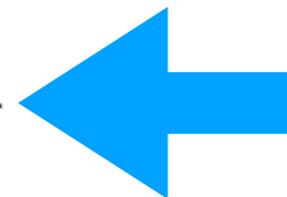
```
14   steps:  
15     - uses: actions/checkout@v4  
16       name: Set up JDK 17  
17         uses: actions/setup-java@v4  
18       with:  
19         java-version: '17'  
20         distribution: 'temurin'  
21         cache: maven  
22     - name: Build with Maven  
23       run: mvn -B package --file pom.xml
```



checkout

Workflow editor

```
14   steps:  
15     - uses: actions/checkout@v4  
16     - name: Set up JDK 17  
17       uses: actions/setup-java@v4  
18       with:  
19         java-version: '17'  
20         distribution: 'temurin'  
21         cache: maven  
22     - name: Build with Maven  
23       run: mvn -B package --file pom.xml
```



setup-java

Workflow editor

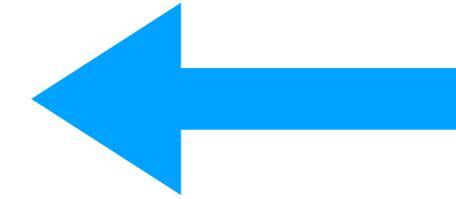
```
14    steps:
15      - uses: actions/checkout@v4
16      - name: Set up JDK 17
17        uses: actions/setup-java@v4
18        with:
19          java-version: '17'
20          distribution: 'temurin'
21          cache: maven
22      - name: Build with Maven
23        run: mvn -B package --file pom.xml ← run
```

Workflow editor

- Commit directly to the `main` branch
- Create a **new branch** for this commit and start a pull request [Learn more about pull requests](#)

Cancel

Commit changes

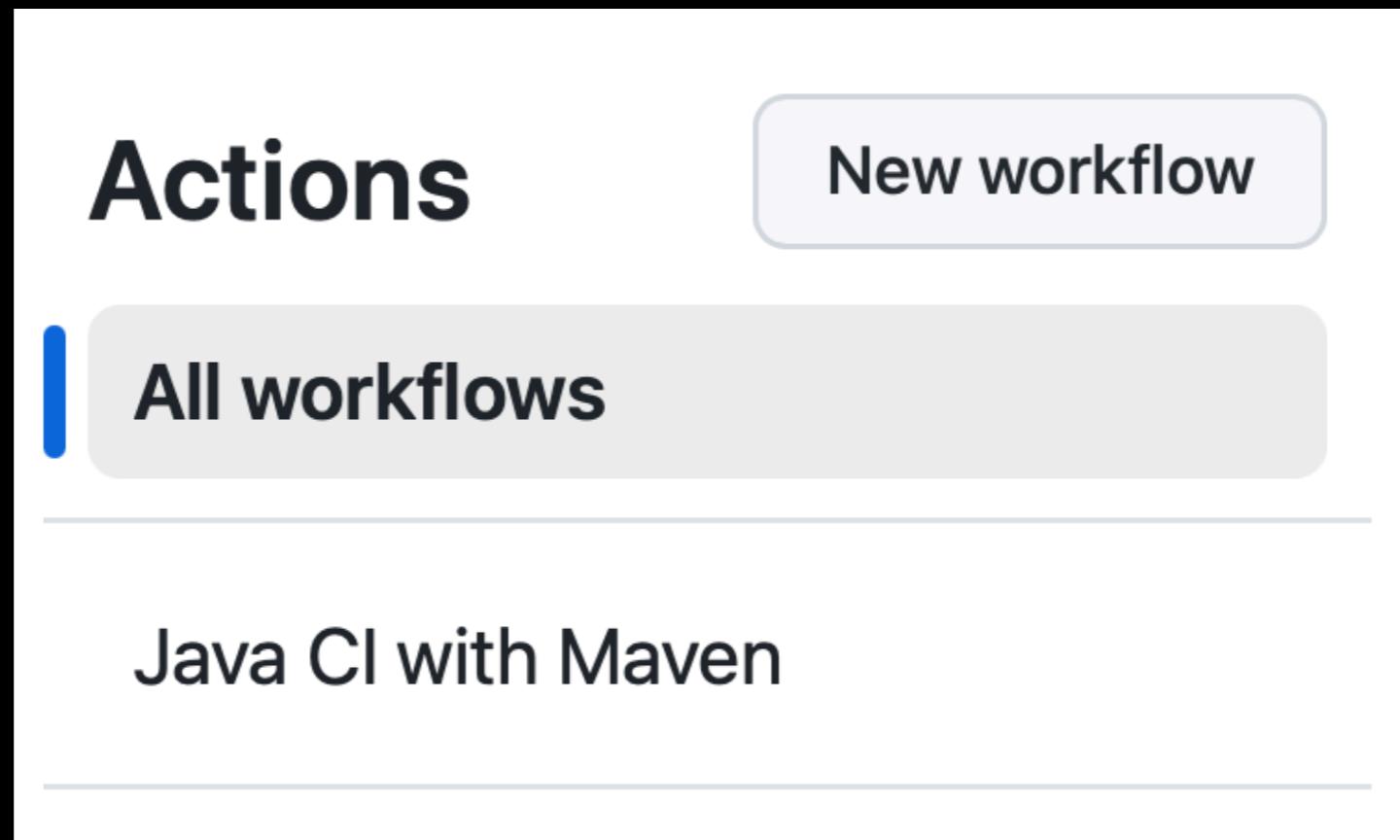


.github/workflows

A screenshot of a GitHub repository interface. At the top, there's a red header bar. Below it, the repository name "confoo-2025-demo" is displayed, followed by ".github / workflows /". The ".github / workflows /" part is highlighted with a blue rectangular box. The main area shows a commit from user "sullis" with the message "Create maven.yml". Below the commit, there's a table with two rows. The first row has columns "Name" and "Last commit message". The second row contains a folder icon followed by "maven.yml" and "Create maven.yml". A large blue arrow points from the ".github / workflows /" label down to the "maven.yml" file in the table.

Name	Last commit message
...	Create maven.yml
maven.yml	Create maven.yml

Actions tab



A screenshot of a user interface titled "Actions". On the right side, there is a button labeled "New workflow". Below it, a large button is labeled "All workflows", with a blue vertical bar to its left. A thin horizontal line separates this section from the next. Below the line, the text "Java CI with Maven" is displayed.

Actions tab

Event ▾ Status ▾ Branch ▾ Actor ▾

 update README	 1 minute ago	...
Java CI with Maven #8: Commit 9b13642 pushed by  sullis	 16s	

Actions tab

build
succeeded 4 minutes ago in 7s

Search logs

↻ ⚙

> ✓ Set up job	1s
> ✓ Run actions/checkout@v4	1s
> ✓ Set up JDK 17	1s
> ✓ Build with Maven	3s

Open source projects using GitHub Actions

- Valkey
- Spring Boot
- Iceberg
- Netty
- Log4j
- Netflix Zuul



Core concepts

Events



Workflows



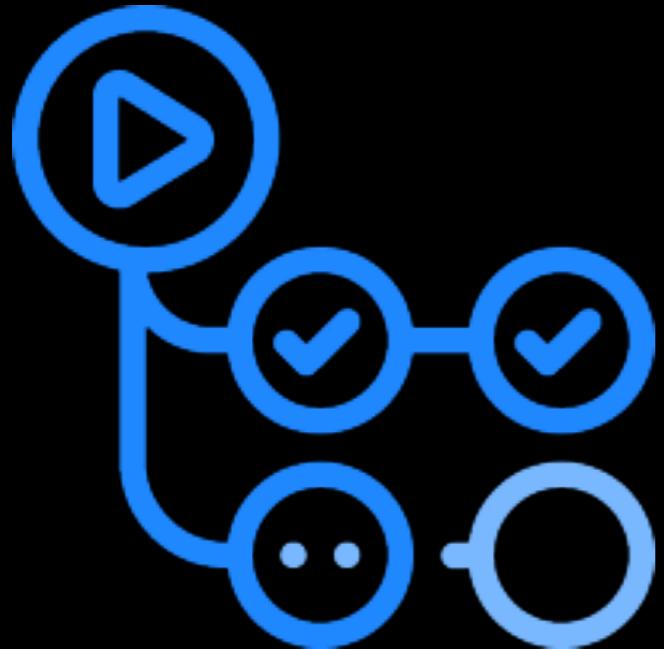
Actions



Events trigger workflows

- ◆ **create**
- ◆ **deployment**
- ◆ **deployment_status**
- ◆ **issue created**
- ◆ **pull_request**
- ◆ **push**
- ◆ **schedule**
- ◆ **label created**

(and many more)



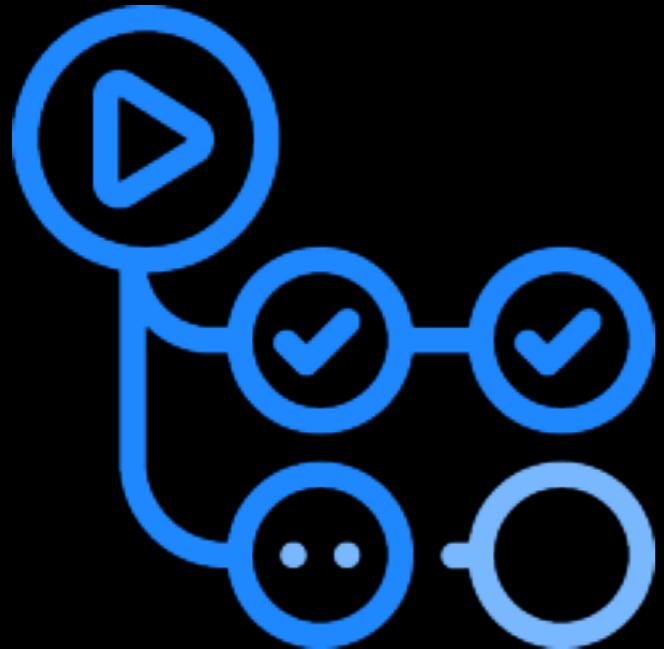
Workflows are custom automated processes that you can set up in your repository to build, test, package, release, or deploy



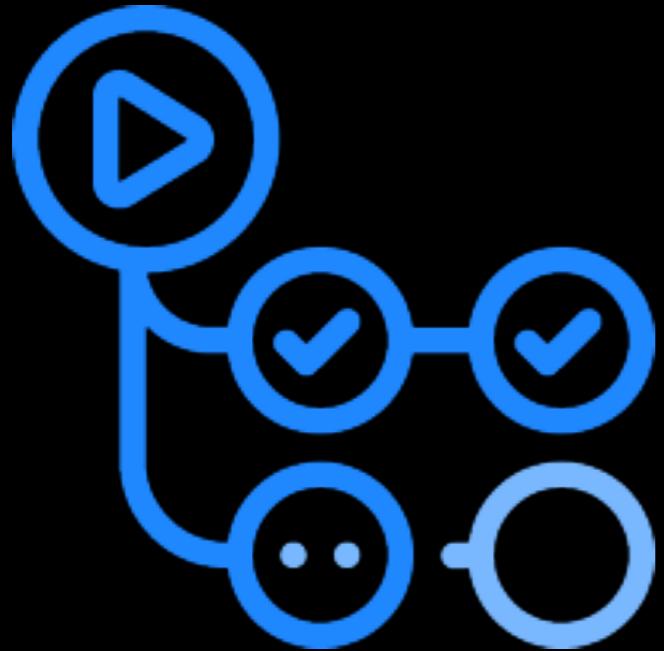
**GitHub
webhooks**



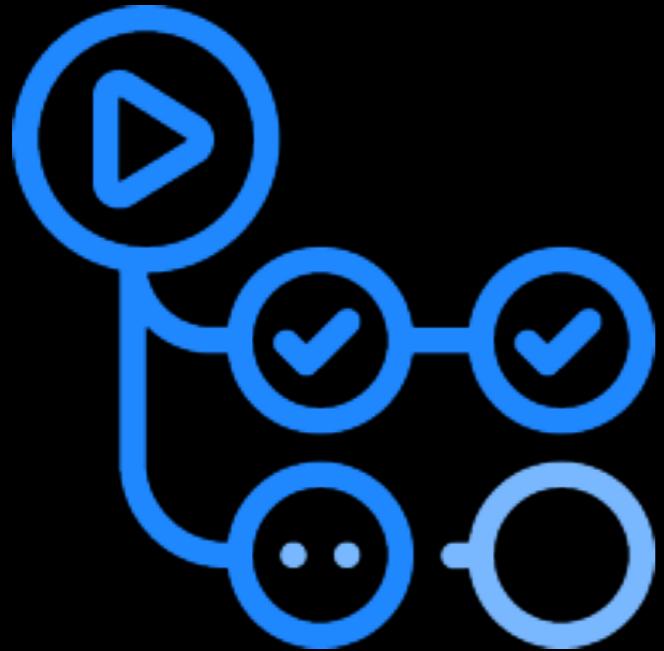
**GitHub
Actions
workflows**



**Actions are individual
tasks that you can
combine to create jobs**

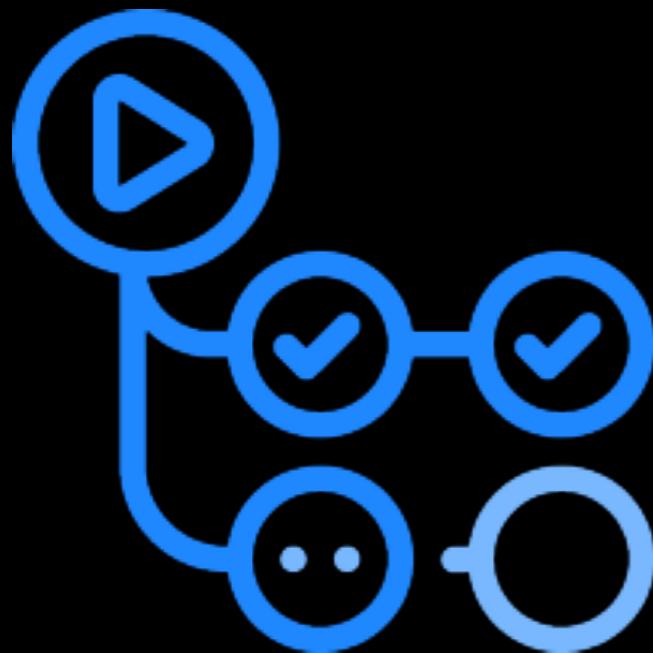


You can create custom Actions or use Actions provided by the GitHub community

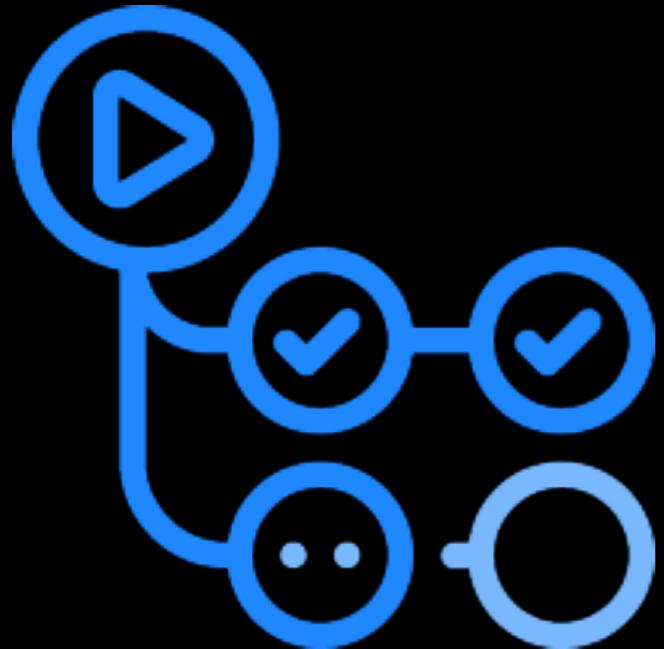


action.yml
declares the inputs
and outputs for
an action

Types of Actions:



- **JavaScript**
- **Docker**



**“GitHub Actions is
available with
GitHub Free, GitHub
Pro, GitHub Team, and
GitHub Enterprise”**



**What if I
already have an
existing CI tool
enabled?**



**Keep your
existing CI tool
and enable
GitHub Actions**

**Evaluate both
CI tools
running
side-by-side**



Actions runtime



Runners



Virtual Environments

Runners



GitHub-hosted



Self-hosted

Hosted Runners

“GitHub hosts Linux and Windows runners on Standard_DS2_v2 virtual machines in Microsoft Azure with the GitHub Actions runner application installed”

Self-Hosted Runners

“Self-hosted runners can be physical, virtual, container, on-premises, or in a cloud”

Self-Hosted Runners

 [actions / runner](#)

 Code  Issues 19  Pull requests 6  Actions  Projects 0

The Runner for GitHub Actions  <https://github.com/features/actions>

 102 commits  31 branches  0 packages

Branch: master ▾ [New pull request](#)

Self-Hosted Runners

Branch: master ▾ [runner](#) / [src](#) / [Runner.Common](#) /

 **gimenete** and **TingluoHuang** Support action.yaml file (#288) ...

..

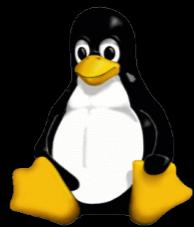
 **C Sharp** 150: Support more cpu architectures (#184)

ActionCommand.cs	Handle escaped '%' in commands data section (#200)
ActionResult.cs	GitHub Actions Runner
CommandLineParser.cs	GitHub Actions Runner
ConfigurationStore.cs	delete un-used code. (#218)
Constants.cs	Support action.yaml file (#288)

Virtual Environments



Linux support

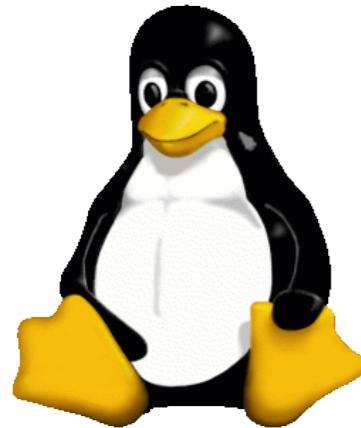


Ubuntu 24.04



Ubuntu 22.04

ARM support



**Linux arm64 hosted runners now
available for free in public
repositories (Public Preview)**

ARM support

enable ARM Linux GitHub Actions runner #29

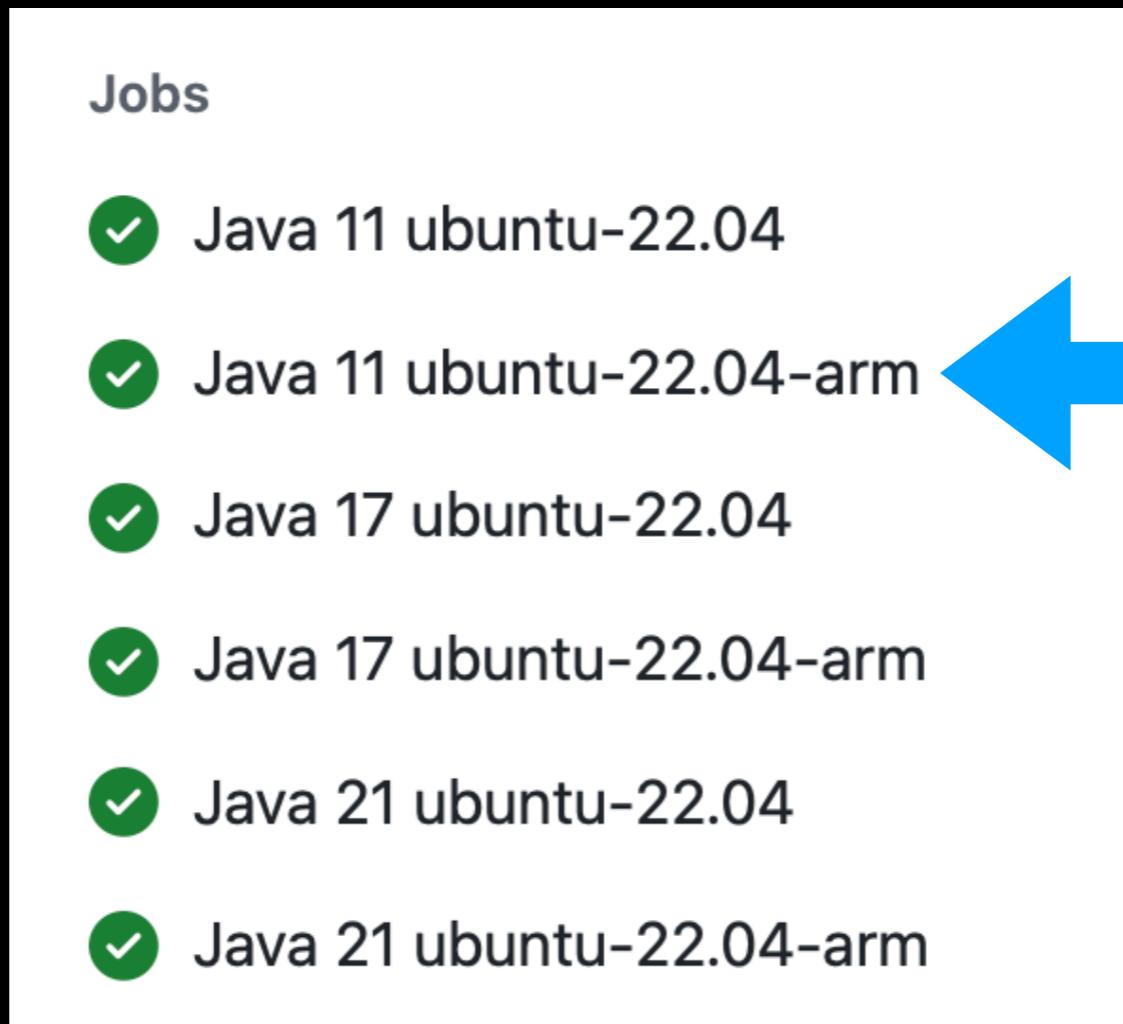
Merged

sullis merged 1 commit into [main](#) from [arm-github-actions](#) 4 days ago

```
os: [ 'ubuntu-22.04' ]
```

```
os: [ 'ubuntu-22.04', 'ubuntu-22.04-arm' ]
```

ARM support



Workflow matrix

```
build:  
  strategy:  
    matrix:  
      → matrix:  
        java: [ '11', '17', '21' ]  
        jdk: [ 'temurin' ]  
        os: [ 'ubuntu-22.04', 'ubuntu-22.04-arm' ]  
      runs-on: ${{ matrix.os }}  
      name: Java ${{ matrix.java }} ${{ matrix.os }}
```



Third party actions



AWS Actions



Azure Actions



Google Cloud Actions



Pulumi Actions



Terraform Actions



Docker Actions



AWS for GitHub Actions

🔗 <https://amazon.com/aws>

Verified

<https://github.com/aws-actions>



amazon-ecr-login

Logs into Amazon ECR with the local Docker client.

JavaScript MIT 3 19 0 0 Updated 2 days ago

amazon-ecs-deploy-task-definition

Registers an Amazon ECS task definition and deploys it to an ECS service.

JavaScript MIT 1 24 2 1 Updated 2 days ago

amazon-ecs-render-task-definition

Inserts a container image URI into an Amazon ECS task definition JSON file.

JavaScript MIT 2 17 0 0 Updated 2 days ago

configure-aws-credentials

Configure AWS credential environment variables for use in other GitHub Actions.

JavaScript MIT 2 31 0 0 Updated 2 days ago

AWS: action.yml

```
runs:  
  using: "node20"  
  main: "dist/index.js"
```



Security

Secrets



access protected
keys using the
secrets context
object

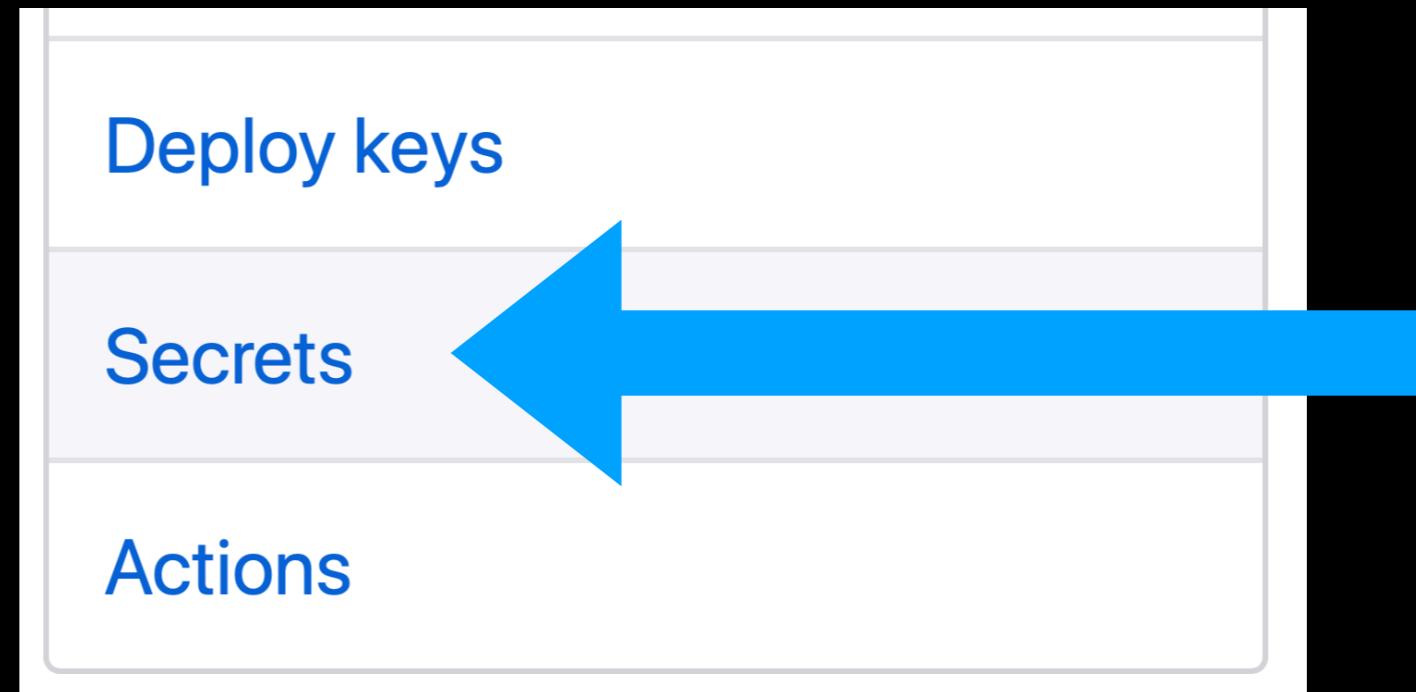
Secrets



```
env:  
  GITHUB_TOKEN: ${{secrets.GITHUB_TOKEN}}  
  NEXUS_TOKEN_USER: ${{secrets.NEXUS_TOKEN_USER}}  
  NEXUS_TOKEN_PWD: ${{secrets.NEXUS_TOKEN_PWD}}
```



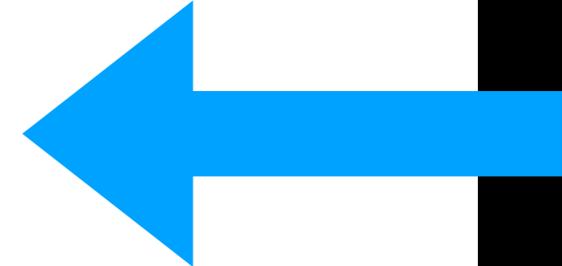
Secrets



Secrets



Add a new secret



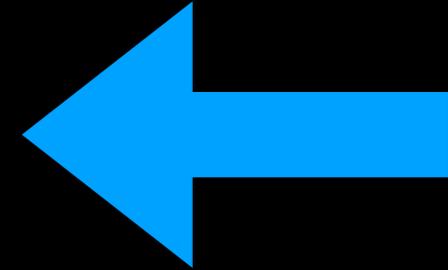
Secrets



Add a new secret

Name

Value



Self-Hosted Runners



“**do not use self-hosted runners with public repositories**”

Self-Hosted Runners



“Forks of your public repository can potentially run dangerous code on your self-hosted runner machine”

Conclusion



GitHub Actions



YAML



Automation

Thank you



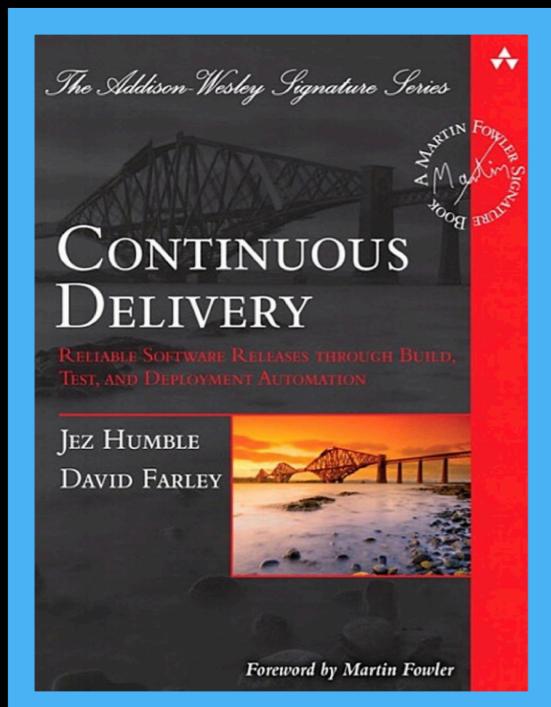
tinyrobots.bsky.social



github.com/sullis

THE
END

Bonus slides



“CI ensures that the code that we create, as a team, works by providing us with rapid feedback on any problems”



Tyson Trautmann
@TysonTrautmann

Follow



Replying to @mapastr @ctford

You can do CI without CD. You cannot do CD without CI (unless you're making up your own definitions instead of using the ones popularized by Jez, Martin, etc.).

8:45 AM - 19 Jan 2020