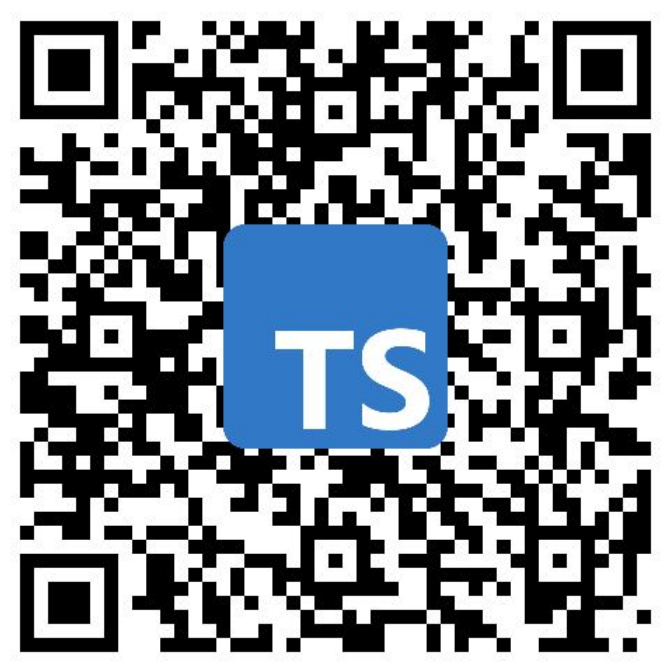
Fork & checkout one of these repos:

bit.ly/gha-java



bit.ly/gha-typescript

GitHub Actions in Action

Christian Baumann

@chrissbaumann.bsky.social

Who is that guy?

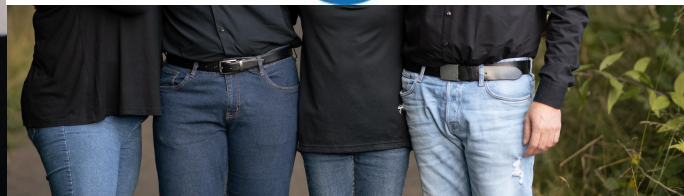
Christian Baumann

Software Tester

MAIBORNWOLFF

AGILETD ZONE

AgileTD Ambassador



Background

- GitHub was founded in 2008
- acquired by MS in 2018
- hosting service for software development & version control using Git
- ***Actions***: platform for continuous integration and continuous delivery (CI/CD)
- ***workflows*** can be triggered by any kind of triggers (***events***)
- virtual machines are provided to run workflows

Why Use GitHub Actions?

- No extra tooling needed
- Tight GitHub ecosystem integration
  → PRs, issues, releases
- Event-driven flexibility → Automate beyond CI/CD
  (e.g., issue triage, repo management)
- Reusable, shareable workflows
  → Leverage community & marketplace actions

When to Use GitHub Actions?

- Working inside GitHub and want seamless automation
- Quick setup without external CI/CD tools needed
- When leveraging GitHub-hosted runners for faster execution
- If you want to reuse community actions instead of writing everything from scratch

Benefits

- no installation → no maintenance
- faster execution → faster cycle time
- support for many languages, frameworks, environments
- applies DRY principle
- huge community & marketplace

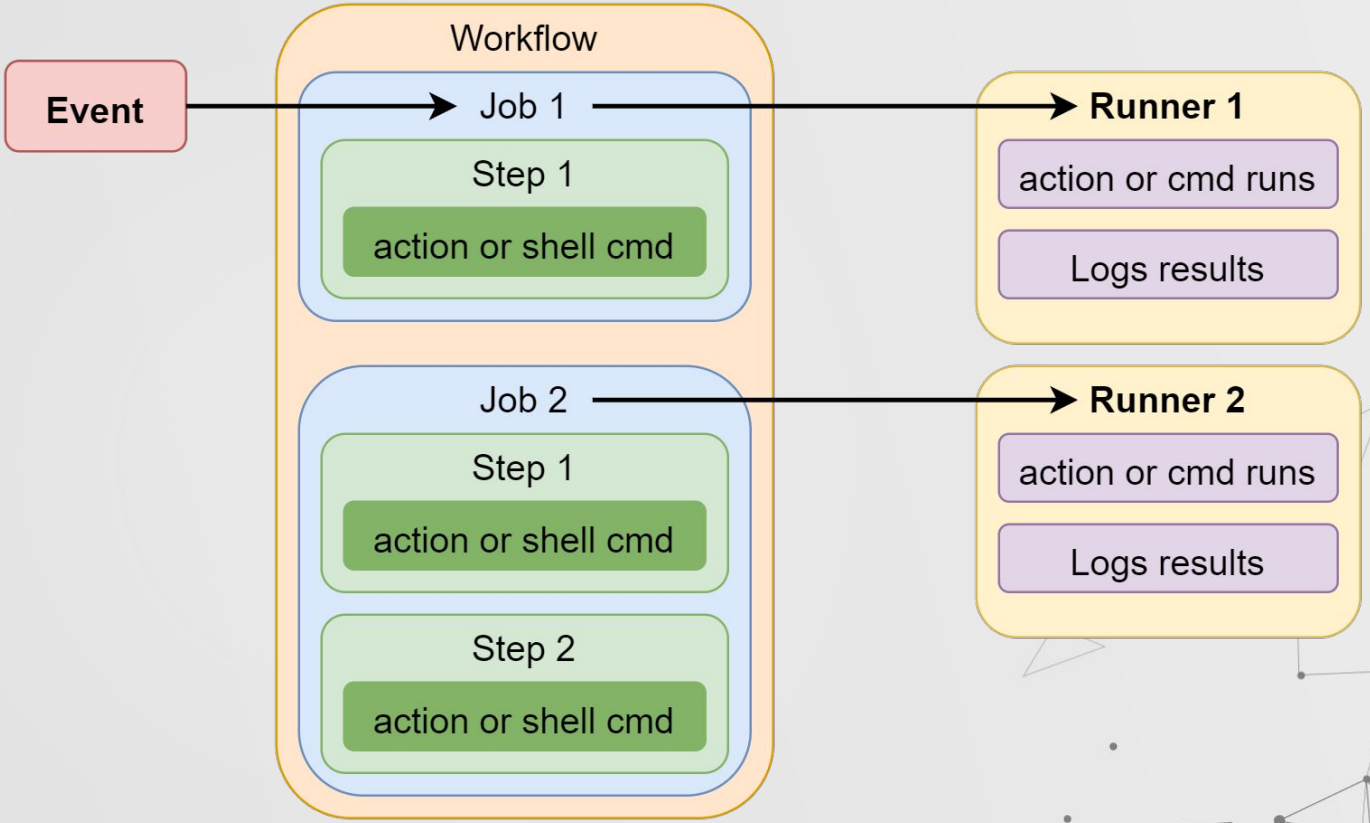
When to not use GitHub Actions?

- Repo not on GitHub
- Need on-prem execution only
- Strict compliance/security policies
- High execution time/cost concerns
- Complex dependencies/setup required

Components (1)

- ***Workflow*** configurable automated process, runs jobs
- ***Event*** activity in the repo that's triggerable for a run
- ***Job*** set of steps in a workflow
- ***Step*** a shell script or an action
- ***Action*** custom application that performs a task
- ***Runner*** server that runs workflows

Components (2)



The workflow file

- ***YAML*** (YAML Ain't Markup Language)
- Whitespaces! - not tabs!
- `.yaml` (outdated: `.yml`)
- learnxinyminutes.com/yaml
- `.github/workflows`

Events

- Trigger the workflow
- Keyword: **on**
- Examples: **worflow_dispatch**, **scheduled**, **pull_request**, **issues**
- Different types, eg. **pull_request**: **assigned**, **opened**, **closed**
- Can have different branches, eg. **pull_request**

```yaml
on:
  pull_request:
    types: [opened, reopened]
```

```yaml
on:
  workflow_dispatch:
```

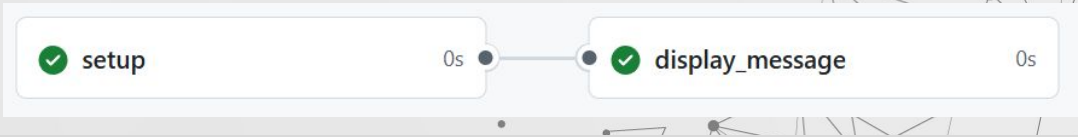
```yaml
on:
  pull_request:
    branches:
      - main
```

Jobs

- Sequential steps executing a task
- Keyword: **jobs**
- Unique name
- Run in parallel
- **runs-on** environment
- Multiple steps
- Execute on own runner
- To make dependent: **needs**

```yaml
jobs:
  setup:
    runs-on: ubuntu-latest
    outputs:
      greeting: ${{steps.set_greeting.outputs.message}}
      target: ${{steps.set_target.outputs.message}}
    steps:
      - id: set_greeting
        run: echo "message=Hello" >> $GITHUB_OUTPUT
      - id: set_target
        run: echo "message=World" >> $GITHUB_OUTPUT

  display_message:
    runs-on: ubuntu-latest
    needs: setup
    steps:
      - run: echo "${{needs.setup.outputs.greeting}} \
      ${{needs.setup.outputs.target}}"
```



Steps

- Shell script or action
- Keyword **steps**
- Executed on the same runner
- Executed in order
- Depend on each other
- Data can be shared

```yaml
steps:
  - name: Checkout repository
    uses: actions/checkout@v3

  - name: Build and run tests
    run: |
      ./build.sh
      ./test.sh
    shell: bash
```

actions

- reusable tasks that power jobs & build workflows
- Sources: GitHub, marketplace & own actions
- Keyword **uses**

- **actions**: author
- **checkout**: name
- **@v3**: version

```
steps:
  - name: Checkout repository
    uses: actions/checkout@v3
```

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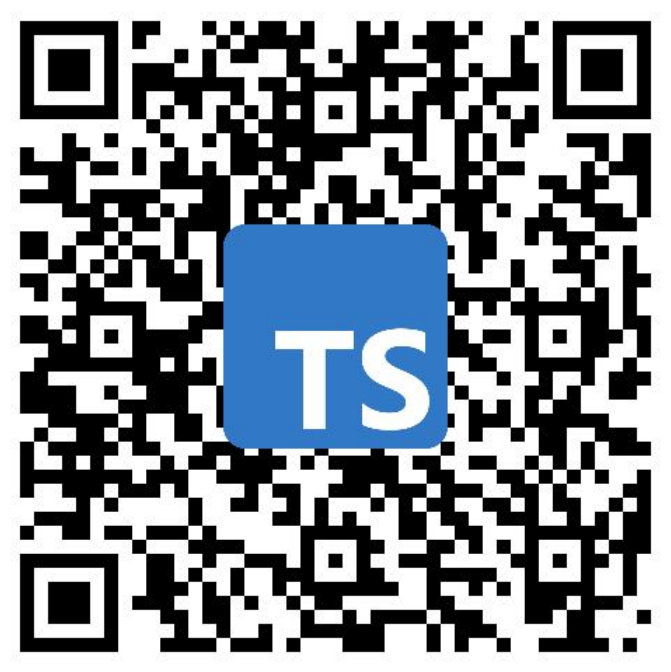

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See the repo's

README.md

Wrap up

- Grab some post its:
  - Take aways
  - Plan to implement
  - Enjoyed
  - Improvement → Board

Thank you!
Questions?

@chrissbaumann.bsky.social