

Referensi Cepat GitHub Actions

Workflow, trigger, job, secret, caching, artifact

Dasar Workflow

Workflow Minimal

```
# .github/workflows/ci.yml
name: CI
on: push
jobs:
  build:
    runs-on: ubuntu-latest
    steps:
      - uses: actions/checkout@v4
      - run: echo "Hello from CI"
```

Konsep Utama

Workflow	File YAML di .github/workflows/ yang mendefinisikan otomasi
Event	Trigger yang memulai workflow (push, PR, jadwal, dll.)
Job	Kumpulan step yang berjalan di runner yang sama
Step	Tugas individual — menjalankan perintah atau menggunakan action
Runner	VM yang menjalankan job (ubuntu-latest , macos-latest , windows-latest)
Action	Unit kode yang bisa digunakan ulang, direferensikan dengan uses:

Trigger

Event Umum

```
on:
  push:
    branches: [main]
  pull_request:
    branches: [main]
  schedule:
    - cron: "0 6 * * 1" # every Monday 6 AM UTC
  workflow_dispatch: # manual trigger
```

Filter Event

branches:	Trigger hanya untuk branch tertentu
paths:	Trigger hanya saat file yang cocok berubah
tags:	Trigger saat push tag (V*)
types: [opened, synchronize]	Filter tipe aktivitas PR
branches-ignore:	Kecualikan branch tertentu
paths-ignore:	Kecualikan path file tertentu

Job & Step

Konfigurasi Job

```
jobs:
  test:
    runs-on: ubuntu-latest
    needs: build # depends on build job
    if: github.ref == 'refs/heads/main'
    timeout-minutes: 10
    steps:
      - uses: actions/checkout@v4
      - run: npm test
```

Tipe Step

run:	Jalankan perintah shell
uses:	Gunakan action yang sudah dipublikasikan
with:	Teruskan input ke action
name:	Nama tampilan di UI
id:	Referensikan output step via steps.<id>.outputs
if:	Eksekusi kondisional
continue-on-error: true	Jangan gagalakan job jika step gagal

Action

Menggunakan Action

```
steps:
  - uses: actions/checkout@v4
  - uses: actions/setup-node@v4
    with:
      node-version: 20
  - uses: ./github/actions/my-action # local action
```

Action Populer

actions/checkout@v4	Checkout kode repository
actions/setup-node@v4	Install Node.js
actions/setup-python@v5	Install Python
actions/upload-artifact@v4	Upload artifact build
actions/download-artifact@v4	Unduh artifact dari job lain
actions/cache@v4	Cache dependensi antar run
actions/github-script@v7	Jalankan JS dengan klien GitHub API

Environment Variable

Mengatur Variabel

```
env: # workflow-level
  NODE_ENV: production
jobs:
  build:
    env: # job-level
      CI: true
    steps:
      - run: echo "$MY_VAR" # step-level
        env:
          MY_VAR: hello
```

Variabel Default

github.sha	SHA commit yang memicu workflow
github.ref	Ref branch atau tag (refs/heads/main)
github.repository	Nama owner/repo
github.actor	User yang memicu workflow
github.event_name	Event yang memicu workflow
runner.os	OS runner (Linux, macOS, Windows)

Secret

Menggunakan Secret

```
steps:
  - run: deploy --token "$TOKEN"
    env:
      TOKEN: ${ secrets.DEPLOY_TOKEN }
  - uses: some/action@v1
    with:
      api-key: ${ secrets.API_KEY }
```

Aturan Secret

secrets.GITHUB_TOKEN	Token yang dibuat otomatis, dicakup ke repo
Settings → Secrets Masking	Tambah secret di pengaturan repo atau org Nilai secret disembunyikan di log secara otomatis
Environment secrets	Dicakup ke environment deployment
Org secrets	Dibagikan ke seluruh repo dalam organisasi

Matrix Strategy

Matrix Build

```
jobs:
  test:
    strategy:
      matrix:
        os: [ubuntu-latest, macos-latest]
        node: [18, 20]
    runs-on: ${ matrix.os }
    steps:
      - uses: actions/setup-node@v4
        with:
          node-version: ${ matrix.node }
```

Opsi Matrix

matrix:	Definisikan kombinasi variabel yang akan di-expand
include:	Tambah kombinasi tambahan ke matrix
exclude:	Hapus kombinasi tertentu
fail-fast: false	Lanjutkan job lain jika satu gagal
max-parallel: 2	Batasi job matrix yang berjalan bersamaan

Caching

Cache Dependensi

```
- uses: actions/cache@v4
  with:
    path: ~/.npm
    key: npm-${ hashFiles('package-lock.json') }
    restore-keys: npm-
```

Caching Bawaan

```
- uses: actions/setup-node@v4
  with:
    node-version: 20
    cache: npm # auto-cache for npm/yarn/pnpm
- uses: actions/setup-python@v5
  with:
    python-version: "3.12"
    cache: pip # auto-cache for pip
```

Artifact

Upload & Download

```
- uses: actions/upload-artifact@v4
  with:
    name: build-output
    path: dist/
    retention-days: 7
- uses: actions/download-artifact@v4
  with:
    name: build-output
```

Catatan Artifact

retention-days	Hapus otomatis setelah N hari (default 90)
path	File atau direktori yang diunggah (mendukung glob)
Lintas-job	Upload di satu job, download di job lain dengan needs:
compression-level	0 (tidak ada) hingga 9 (maksimal), default 6

Pola Umum

Deployment Kondisional

```
- name: Deploy to production
  if: github.ref == 'refs/heads/main'
  run: ./deploy.sh
- name: Post PR comment
  if: github.event_name == 'pull_request'
  run: gh pr comment $PR --body "Build passed"
```

Referensi Cepat GitHub Actions

Ekspresi Berguna

<code>success()</code>	True jika semua step sebelumnya berhasil
<code>failure()</code>	True jika ada step sebelumnya yang gagal
<code>always()</code>	Jalankan terlepas dari status (cleanup)
<code>cancelled()</code>	True jika workflow dibatalkan
<code>contains(github.ref, 'release')</code>	Pemeriksaan contains string
<code>startsWith(github.ref, 'refs/tags')</code>	Pemeriksaan prefix string
<code>hashFiles('**/lock*')</code>	SHA-256 file (untuk cache key)