



# GitHub Actions Cheat Sheets

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Good luck on your exam!

## Introduction to GitHub Actions

- **GitHub Actions:** CI/CD pipeline integrated with GitHub repo
- **Automates:** Testing, building, deploying, etc.
- **Templates:** Available for getting started
- **YAML Files:** Located in ``.github/workflow`` folder
- **History:** Shows workflow run success/failure and duration

## Types of GitHub Actions

- **Pushes:** Trigger on any push
- **Pull Requests:** Trigger on PR events
- **Issues:** Trigger on issue activities
- **Releases:** Trigger on new releases
- **Scheduled Events:** Cron expressions for scheduling
- **Manual Triggers:** Trigger manually via GitHub UI/CLI

## Workflows

- **Definition:** Configurable automated process with one or more jobs
- **Location:** ``.github/workflows`` directory
- **Triggers:** Events, external triggers, schedules, manual
- **Name Property:** Identifies workflows

## Workflow Components

- **Actions:** Reusable tasks in a workflow
- **Workflows:** Automated processes coordinating jobs
- **Jobs:** Groups of steps executed on the same runner
- **Steps:** Individual tasks within jobs
- **Runners:** Servers hosting job environments (GitHub-hosted or self-hosted)

## Runner Types

- **GitHub-Hosted:** Predefined environments, various OS options
- **Self-Hosted:** Custom configurations, higher control

## Workflow Commands

- **Set Env Vars:** Available for subsequent steps
- **Add to System Path:** Add directories to PATH
- **Set Output Parameters:** Outputs for other jobs
- **Debugging Messages:** Debug logs
- **Grouping Logs:** Easier to read logs
- **Masking Values:** Hide sensitive info in logs
- **Stopping/Failing Actions:** Force workflow stop/failure

## Encrypted Secrets

- **Usage:** Pass sensitive information securely
- **Levels:** Organization, repository, environment
- **Access:** Via secrets context (e.g., ``${{ secrets.MY_SECRET }}``)

## Service Containers

- **Usage:** Host services in Docker containers
- **Configuration:** Defined in workflow for job steps
- **Communication:** Steps can communicate within the job

## GitHub-Hosted vs Self-Hosted Runners

- **Setup:** GitHub-hosted requires no setup; self-hosted needs manual setup
- **Cost:** GitHub-hosted has free usage limits; self-hosted incurs infrastructure costs
- **Scalability:** GitHub-hosted auto-scales; self-hosted is manual
- **Environment Control:** Limited in GitHub-hosted; full in self-hosted
- **Security:** GitHub-hosted shared environment; self-hosted isolated
- **Customization:** Limited in GitHub-hosted; full in self-hosted

## Workflow Caching

- **Purpose:** Speed up workflows by caching dependencies/files
- **Packages:** Supported managers (npm, Yarn, pip, etc.)
- **Cache Actions:** Save/restore caches using actions

## Default and Custom Env Vars

- **Default Vars:** Provided by GitHub (e.g., ``GITHUB_ACTION``, ``GITHUB_REF``)
- **Custom Vars:** Set at workflow, job, or step level
- **Dynamic Setting:** Use ``$GITHUB_ENV`` for runtime setting

## GITHUB\_TOKEN

- **Purpose:** Auto-generated for authenticating within workflows
- **Usage:** Authenticate API requests, perform repo actions

## Workflow Status Badges

- **Display:** Indicate workflow status in repo
- **Accessibility:** Not accessible externally for private repos

## Protecting Environments

- **Environment:** Jobs reference a single environment
- **Protection Rules:** Must pass before sending job to runner
- **Secrets Access:** Only after job is sent to runner

## Job Matrix Configuration

- **Matrix Strategy:** Create multiple job runs based on variable combinations

## Manual and Webhook Events

- **Manual:** Trigger via GitHub UI, CLI, REST API
- **Webhooks:** Public URL triggering events from external sources

## External Webhook Events

- **Usage:** Trigger workflows via external HTTP endpoint
- **Requirements:** POST request, authorization, event type