Lights, camera, GitHub Actions!

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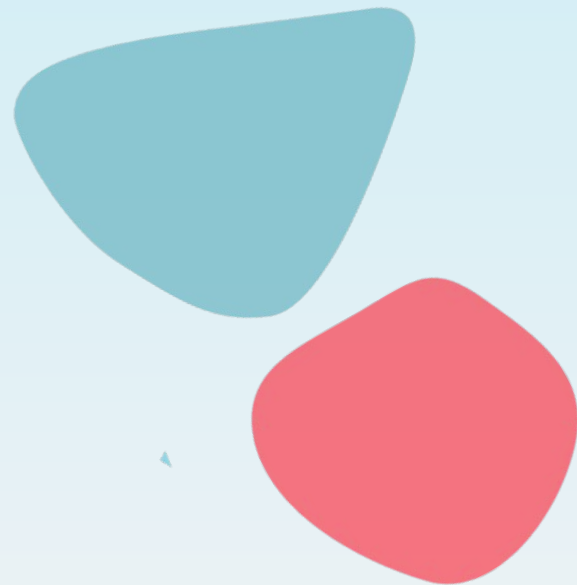
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- Azure Architect @ Nordcloud
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What is GitHub Actions?

" GitHub Actions is a continuous integration and continuous delivery (CI/CD) platform that allows you to automate your build, test, and deployment pipeline.
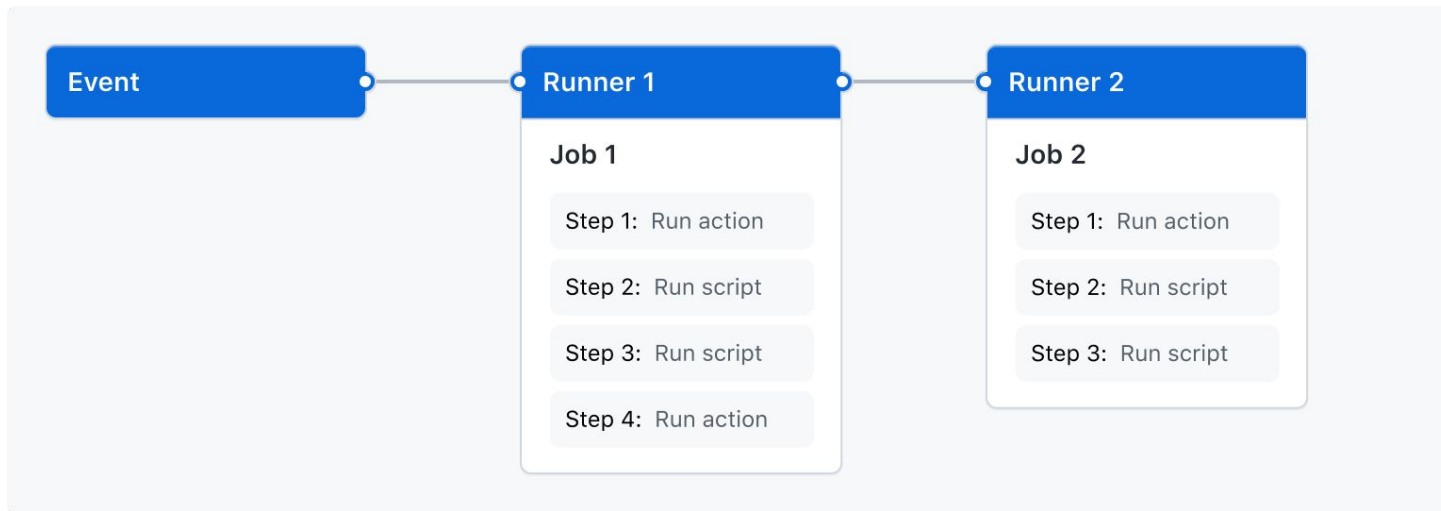
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What is GitHub Actions**?**

" Actions are packaged scripts to automate tasks in a software development workflow in GitHub.

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Components of Actions.

Event		Runner 1		Runner 2

Runner 1

Job 1

Step 1: Run action

Step 2: Run script

Step 3: Run script

Step 4: Run action

Runner 2

Job 2

Step 1: Run action

Step 2: Run script

Step 3: Run script

Source: https://docs.github.com/en/actions/learn-github-actions/understanding-github-actions

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Components of Actions.


```
name: A workflow for my Hello World file
on: push

jobs:
  build:
   name: Hello world action
   runs-on: ubuntu-latest

   steps:
       - uses: actions/checkout@v2
       - uses: ./action-a
       with:
           MY_NAME: "Mona"
```

Workflow
↓
Job
↓
Step
↓
Action

Source: https://learn.microsoft.com/en-us/training/modules/github-actions-automate-tasks/2b-identify-components-workflow

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Workflow.

- A configurable automated process that will run one or more jobs
- Defined by a YAML file checked in to your repository
- Will run when triggered by an event in your repository, or they can be triggered manually, or at a defined schedule

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Event.

- A specific activity in a repository that triggers a workflow run. For example, activity can originate from GitHub when someone creates a pull request, opens an issue, or pushes a commit to a repository
- It is also possible to trigger a workflow run on a schedule, by posting to a REST API, or manually

Job.

- A set of steps in a workflow that execute on the same runner
- Workflow has one or more jobs, which run in parallel by default. Workflow can be configured to run jobs sequentially

Step.

- An individual task to run commands in a job
- Either a shell script that will be executed, or an action that will be run
- Steps are executed in order and are dependent on each other
- Since each step is executed on the same runner data can be shared from one step to another

Action.

- Individual tasks that you can combine to create jobs and customize your workflow.
- A custom application for the GitHub Actions platform that performs a complex but frequently repeated task.
- Smallest building block of a workflow
- Actions can be created, or actions created by GitHub community can be used

Runner.

- A server that has the GitHub Actions runner application installed
- Can be GitHub-hosted or self-hosted depending on the need
- Runner listens for jobs and runs one job at a time

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GitHub-hosted vs. self-hosted runners.

GitHub-hosted

- Automatic updates for OS, packages, tools and runner application
- Managed and maintained by GitHub
- Clean instance for every job execution
- Free to use to certain extent

Self-hosted

- Automatic updates for runner application only
- Can use cloud services or local machines
- More possibilities for customization
- Free to use (apart from running costs)

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Prices and limits.

- With free tier:
  - 2000 CI/CD minutes per month
  - 500MB of storage
  - 20 concurrent jobs (5 if MacOS is used)
- Minute multipliers:
  - Linux: 1x
  - Windows 2x
  - MacOS 10x
  - For example, using 1,000 Windows minutes would consume 2,000 of the minutes included in your account. Using 1,000 macOS minutes, would consume 10,000 minutes included in your account.

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Thank you!

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