GITHUB ACTIONS

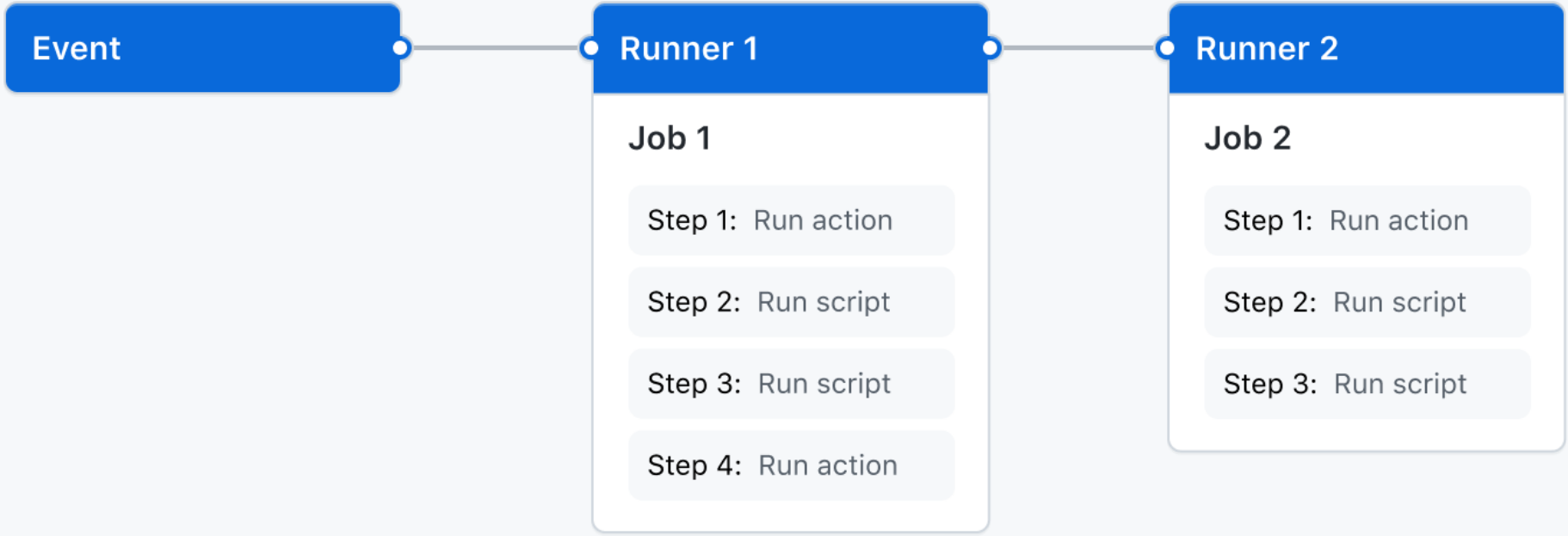
GIT ACTIONS

- continuous integration and continuous delivery (CI/CD) platform
- automate your build, test, and deployment pipeline.
- You can create workflows that run tests whenever you push a change to your repository.

GITHUB ACTIONS WORKFLOW

- triggered when an event occurs in your repository, such as a pull request being opened or an issue being created.
- contains one or more jobs which can run in sequential order or in parallel.
- Each job will run inside its own virtual machine runner, or inside a container, and has one or more steps that either run a script that you define or run an action.

- GitHub provides Linux, Windows, and macOS virtual machines to run your workflows
- or you can host your own self-hosted runners in your own data center or cloud infrastructure.


Event
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

WORKFLOW

- configurable automated process that will run one or more jobs.
- defined by a YAML file checked in to your repositorywill run when triggered by an event in your repository, or they can be triggered manually, or at a defined schedule.
- defined in the .github/workflows directory in a repository.
- A repository can have multiple workflows, each which can perform a different set of tasks such as:
  - Building and testing pull requests.
  - Deploying your application every time a release is created.
  - Adding a label whenever a new issue is opened.

EVENT

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

JOBS

- A job is a set of steps in a workflow that is executed on the same runner.
- Each step is 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, you can share data from one step to another.
- For example, you can have a step that builds your application followed by a step that tests the application that was built.

ACTIONS

- An action is a custom application for the GitHub Actions platform that performs a complex but frequently repeated task.
- Use an action to help reduce the amount of repetitive code that you write in your workflow files.
- An action can pull your Git repository from GitHub, set up the correct toolchain for your build environment, or set up the authentication to your cloud provider.
- You can write your own actions, or you can find actions to use in your workflows in the GitHub Marketplace.

RUNNERS

- A runner is a server that runs your workflows when they're triggered. Each runner can run a single job at a time.
- GitHub provides Ubuntu Linux, Microsoft Windows, and macOS runners to run your workflows.
- Each workflow run executes in a fresh, newly-provisioned virtual machine.

- Demo – example workflow