



GitHub Actions

For **Enterprises** - ESDE Workshop

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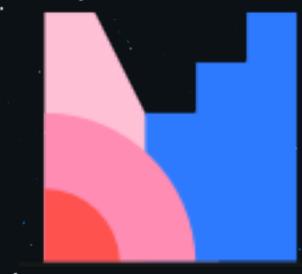
Structure

- What is GitHub?
- What are GitHub Actions?
- Terminology Introduction
- Workflow Basics
- Advanced Constructs
- Usage Examples
- Enterprise Features
- Are there Alternatives?
- Conclusion

A close-up photograph of a young man with dark hair and glasses, wearing a blue jacket over a red sweater. He is looking slightly to his left with a thoughtful expression. The background is blurred, showing what appears to be a workshop or studio environment.

What is GitHub?

GitHub Actions



Mentimeter

menti.com

<put menti code here>

What this workshop is NOT

GitHub Actions

Core features



Linux, macOS, Windows, ARM,
and containers



Matrix workflows that simultaneously test
across multiple operating systems and
versions of your runtime.



GitHub Actions supports Node.js, Python,
Java, Ruby, PHP, Go, Rust, .NET, and
more.

Terminology

Action

*A **program** that becomes a **reusable component** to be used in workflows. Actions can install software for the environment, set up authentication, or automate complex sets of tasks. You can find actions in the GitHub **Marketplace**, or create your own and **share them with your community**.*

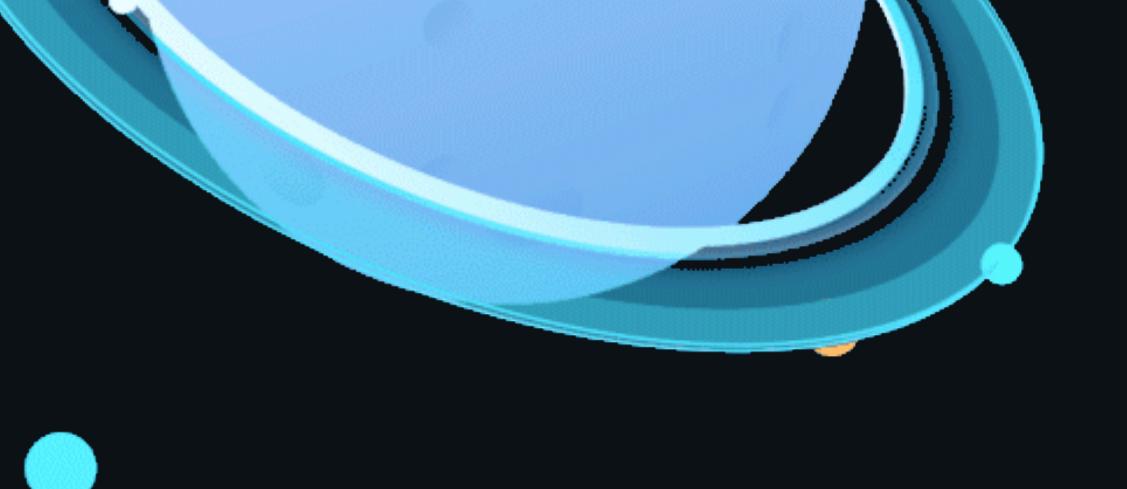
Workflow

*A **configurable**, automated **process** that you can use in your repository to build, test, package, release, or deploy your project. Workflows are made up of one or more “jobs” and can be **triggered** by GitHub events.*

Jobs

A list of the jobs that run as part of the workflow. Each job will run independently of the others, and will run on a different virtual environment. Jobs may have a name to make them easily identifiable in the UI. Jobs contain a set of steps that will be executed, in order.

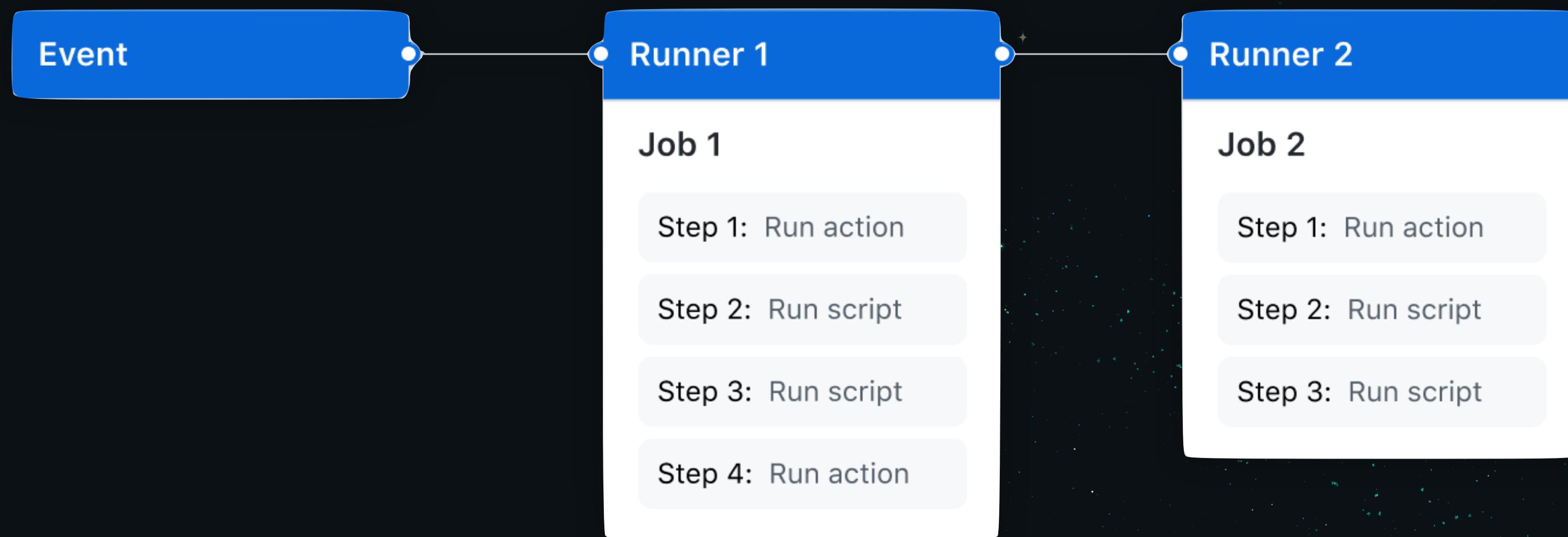
YAML



*YAML stands for “**Y**et **A**nother **M**arkup **L**anguage”. It’s a **human-readable** markup language commonly used for **configuration files**, especially by CI- and DevOps-focused software tools. GitHub Actions uses YAML as the basis of its configuration workflows.*

Workflow basics

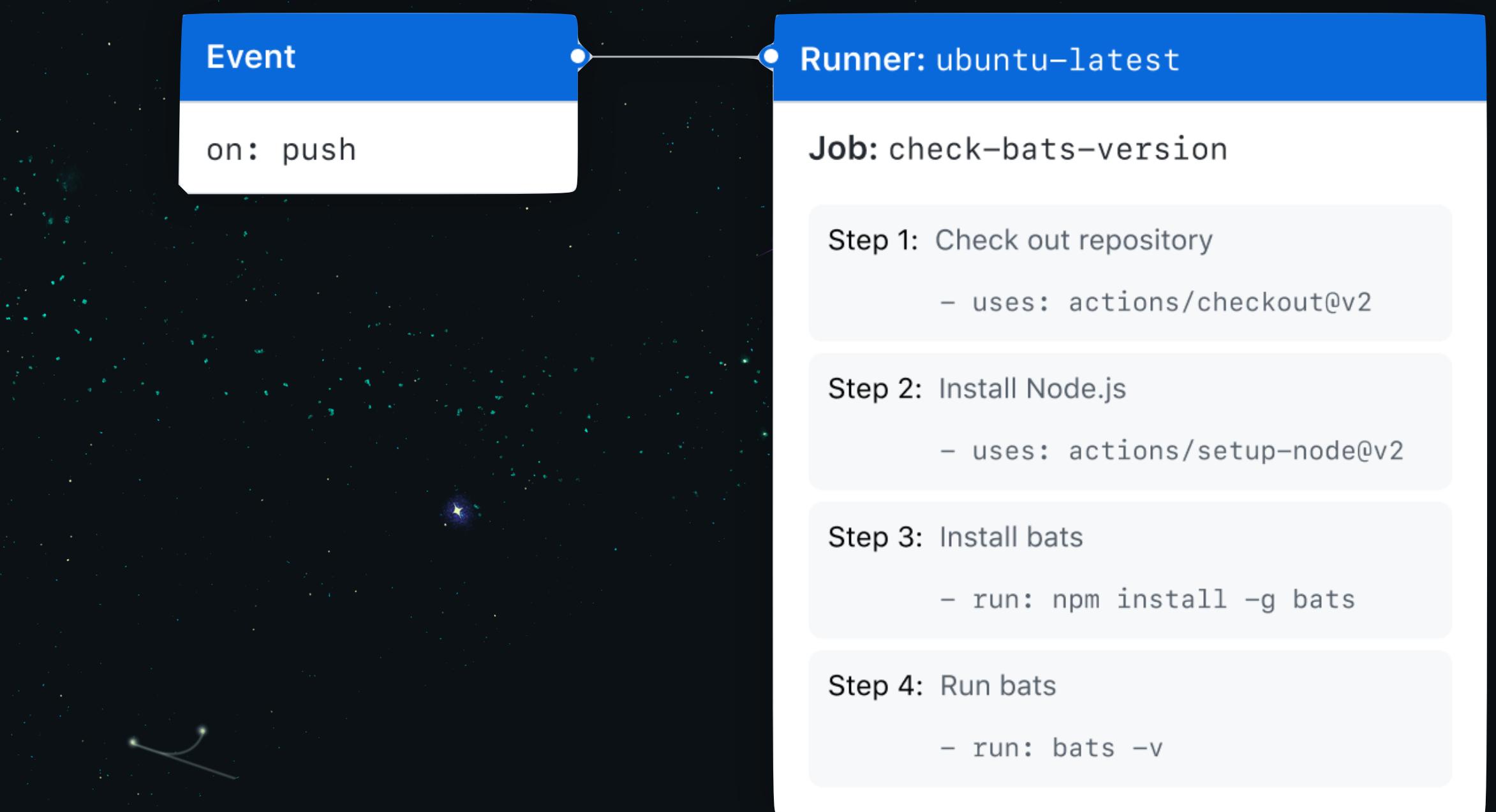
Visual representation of the structure



Workflow basics

Now the code

```
● ● ●  
name: learn-github-actions  
run-name: ${{ github.actor }} is learning GitHub Actions  
on: [push]  
jobs:  
  check-bats-version:  
    runs-on: ubuntu-latest  
    steps:  
      - uses: actions/checkout@v3  
      - uses: actions/setup-node@v3  
      with:  
        node-version: '14'  
      - run: npm install -g bats  
      - run: bats -v
```



Interactive - Hello World

Reusing workflows

Don't repeat yourself

```
● ● ●

name: Reusable workflow example

on:
  workflow_call:
    inputs:
      config-path:
        required: true
        type: string
    secrets:
      token:
        required: true

jobs:
  triage:
    runs-on: ubuntu-latest
    steps:
    - uses: actions/llabeler@v4
      with:
        repo-token: ${{ secrets.token }}
        configuration-path: ${{ inputs.config-path }}
```

GitHub Marketplace

Community Actions

The screenshot shows a web browser window displaying the GitHub Marketplace. The URL in the address bar is `github.com`. The page title is "Marketplace / Search results". On the left sidebar, under "Types", "Actions" is selected. Under "Categories", several options are listed: API management, Chat, Code quality, Code review, Continuous integration, Dependency management, Deployment, IDEs, Learning, Localization, Mobile, Monitoring, Project management, Publishing, and Recently added. The main content area is titled "Actions" and contains the sub-section "Actions". It says "An entirely new way to automate your development workflow." and shows "15822 results filtered by Actions". Below this, there is a grid of action cards:

Action	By actions	Stars
Close Stale Issues	(actions)	762 stars
First interaction	(actions)	490 stars
Download a Build Artifact	(actions)	1.9k stars
Upload a Build Artifact	(actions)	750 stars
Cache	(actions)	3.2k stars
Setup Node.js environment	(actions)	2.4k stars
Setup Go environment	(actions)	889 stars
Setup Java JDK	(actions)	889 stars

Source: <https://github.com/marketplace?category=&query=&type=actions>

Inter Job Dependencies

Needs successful completion



```
jobs:  
  job1:  
  job2:  
    needs: job1  
  job3:  
    needs: [job1, job2]
```

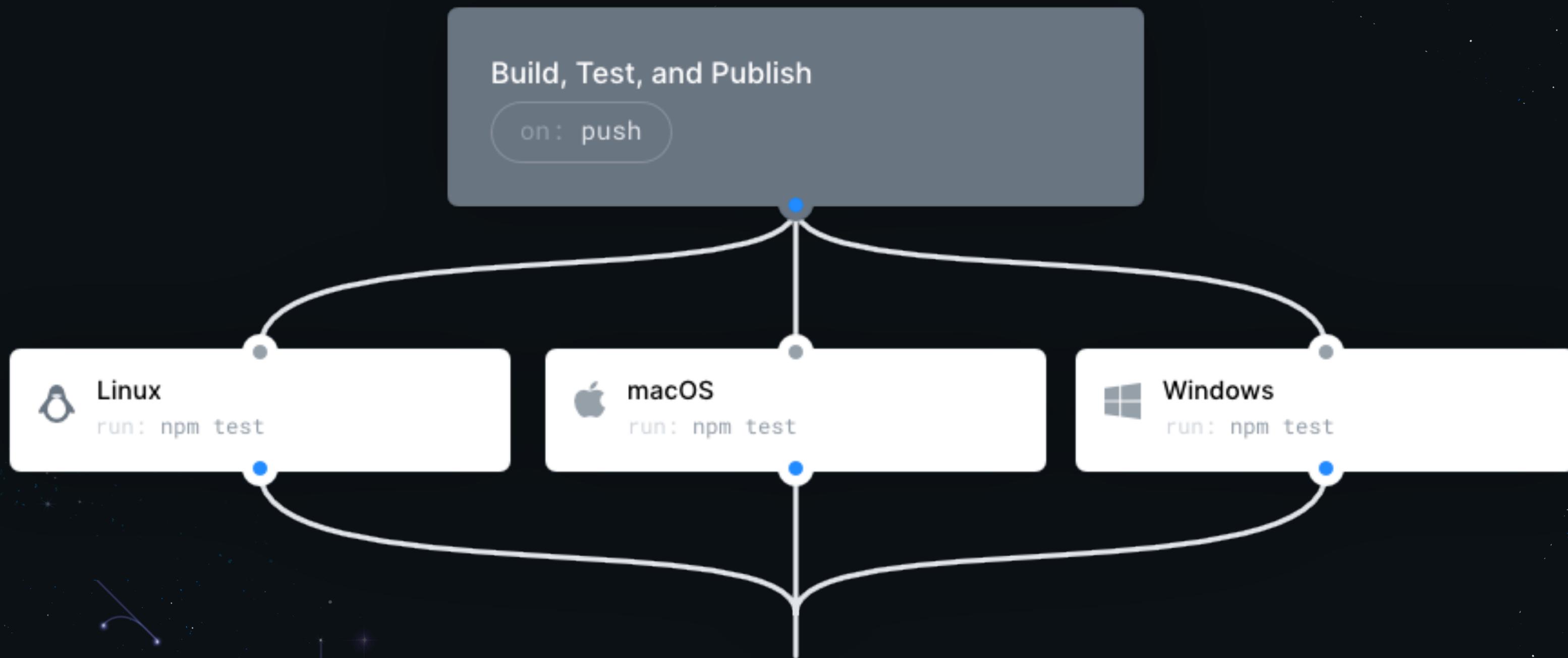
1 job1

2 job2

3 job3

Matrix Strategies

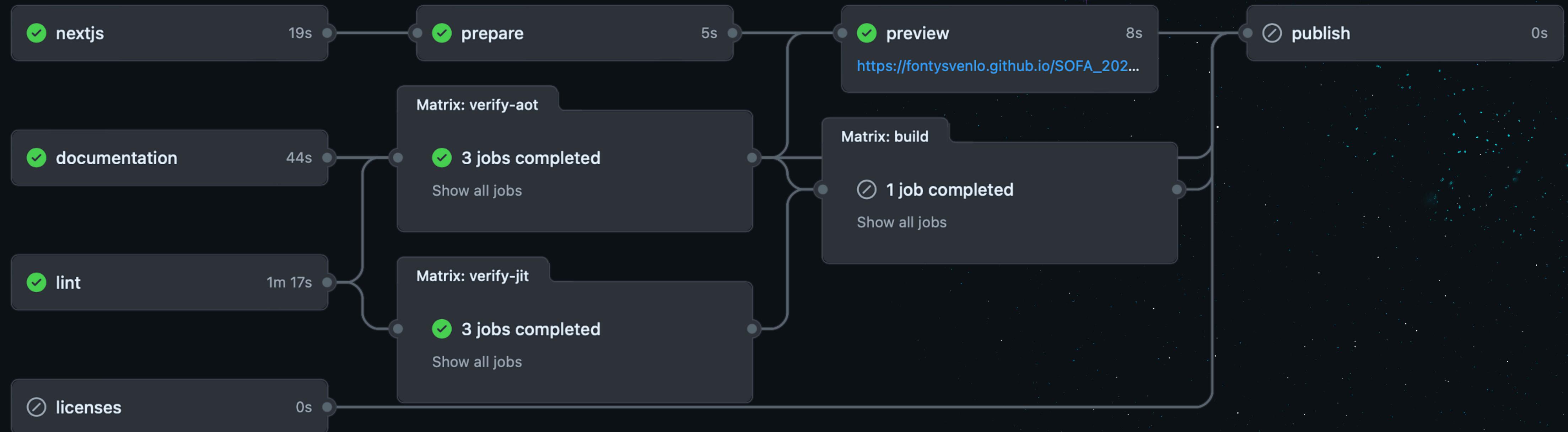
Multi Platform Actions



Are there any other features?

Robotica - SoFa

Composable pipeline



FOSS Plant Insights - PIOT

Open Source Intelligence using Flat Data



```
{  
    "roomTemp": 21.4,  
    "roomHumidity": 89,  
    "timestamp": 1668342997,  
    "light": {  
        "visible": 15.33333333333334,  
        "ultraviolet": 0.1,  
        "infrared": 48,  
        "isOn": true  
    },  
    "hasWater": false,  
    "isWatering": false,  
    "plants": [  
        {  
            "name": "Peper Anaheim",  
            "soilTemp": 85,  
            "soilMoisture": 1732  
        },  
        {  
            "name": "Peper Anaheim",  
            "soilTemp": 20.625,  
            "soilMoisture": 1655  
        }  
    ]  
}
```

Shamir's Secret Sharing Scheme

High performance impl. with hw. accelerated number generation

The screenshot shows a Mac OS X browser window with the Deno.land URL in the address bar. The main content is a module page for 'x/shamirs_secret_sharing@1.0.2'. The page includes a module summary, documentation links, source code links, repository information, and a list of versions. A detailed description of the module's purpose and implementation is provided in a box. The footer contains navigation links for Deno, legal information, and a status indicator.

x/shamirs_secret_sharing@1.0.2

Performant secret sharing scheme implementation based on polynomial interpolation over finite fields

[View Documentation](#) [View Source](#)

Repository [grevend/shamirs-secret-sharing](#)

Current version released 2 minutes ago

Versions

1.0.2 <small>Latest</small>
1.0.1
1.0.0
0.0.0

Shamir's Secret-Sharing Scheme

A preponderance of the open-source Shamir's Secret-Sharing Scheme implementations operate on a finite field \mathbb{F}_q , where q is dependent on both the secret size as well as the number of shares, thus requiring both the search for a sufficiently large prime as well as the support of a large enough number representation or chunking of the secret. This implementation outlines an optimized low-level C and inline assembly-based alternative that uses the Galois field \mathbb{F}_{2^8} , referred to as GF(256), along with a Reed-Solomon inspired encoding approach and a hardware-accelerated entropy sourced secure number generator to offer the theoretical capacity to process secrets up to 8 Exabytes.

Why Deno?

- Develop Locally
- Deploy Globally
- Compare to Node.js

Products

- Deno CLI
- Deno Deploy
- Deploy Subhosting

Sources

- CLI Manual
- CLI Runtime API
- Deploy Docs

Community

- Artworks
- Translations
- Showcase

Company

- Blog
- Pricing
- News

All systems operational

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All rights reserved.

Source: https://deno.land/x/shamirs_secret_sharing@1.0.2

Interactive - Fix Repository

Kahoot!

kahoot.it

<put kahoot code here>

Governance & Compliance

Policy governed capabilities

Policies

Actions can be enabled for all organizations or only for specific organizations. If disabled, GitHub Actions cannot run.

Enable for all organizations ▾

Allow all actions
Any action can be used, regardless of who authored it or where it is defined.

Allow local actions only
Only actions defined in a repository within the enterprise can be used.

Allow select actions
Only actions that match specified criteria can be used.

Save

Secrets & Deployment Resources

Security hardening workflows

The screenshot shows a list of secrets in a GitHub interface. There are two entries:

- EXAMPLE_API_KEY**: Available to private repositories. Last updated 21 hours ago. Actions: Update (blue), Remove (red).
- EXAMPLE_API_KEY2**: Available to all repositories. Last updated 17 days ago. Actions: Update (blue), Remove (red).

Permissions

GITHUB_TOKEN

```
permissions:  
  actions: read|write|none  
  checks: read|write|none  
  contents: read|write|none  
  deployments: read|write|none  
  id-token: read|write|none  
  issues: read|write|none  
  discussions: read|write|none  
  packages: read|write|none  
  pages: read|write|none  
  pull-requests: read|write|none  
  repository-projects: read|write|none  
  security-events: read|write|none  
  statuses: read|write|none
```

Secret Scanning

Partner patterns

Partner	Supported secret
Adafruit IO	Adafruit IO Key
Adobe	Adobe Device Token
Adobe	Adobe Service Token
Adobe	Adobe Short-Lived Access Token
Adobe	Adobe JSON Web Token
Alibaba Cloud	Alibaba Cloud Access Key ID and Access Key Secret pair
Amazon Web Services (AWS)	Amazon AWS Access Key ID and Secret Access Key pair
Atlassian	Atlassian API Token
Atlassian	Atlassian JSON Web Token



Managed service offering



Granular policies



Usage tracking



Log forwarding



Secret scanning



Autoscaling runners



Containerized builds



Environments



Marketplace



Permissions



Innersourcing



Vulnerability detection



<input type="radio"/>	Managed service offering	<input checked="" type="radio"/>	Containerized builds	<input checked="" type="radio"/>
<input type="radio"/>	Granular policies	<input checked="" type="radio"/>	Environments	<input checked="" type="radio"/>
<input type="radio"/>	Usage tracking	<input checked="" type="radio"/>	Marketplace	<input checked="" type="radio"/>
<input checked="" type="radio"/>	Log forwarding	<input type="radio"/>	Permissions	<input type="radio"/>
<input type="radio"/>	Secret scanning	<input type="radio"/>	Innersourcing	<input checked="" type="radio"/>
<input type="radio"/>	Autoscaling runners	<input type="radio"/>	Vulnerability detection	<input checked="" type="radio"/>





Managed service offering



Granular policies



Usage tracking



Log forwarding



Secret scanning



Autoscaling runners



Containerized builds



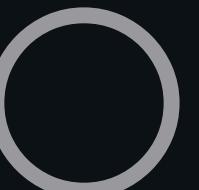
Environments



Marketplace



Permissions



Innersourcing



Vulnerability detection



Conclusion



Questions?

Feedback

