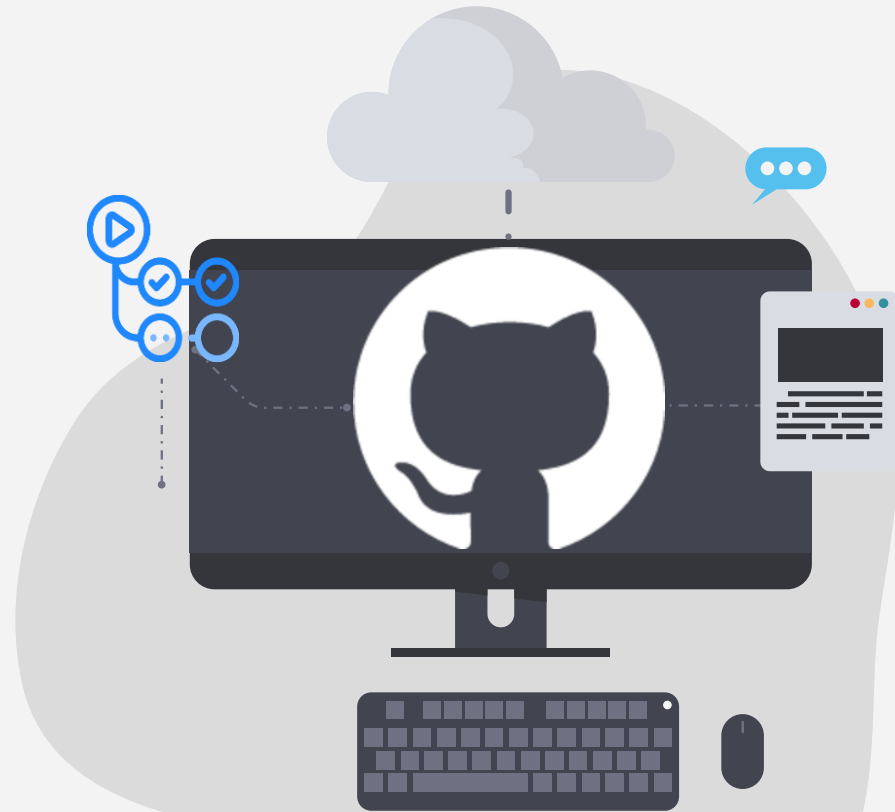


GitHub Actions

Arquitectura del Software - Curso 2023-24
Grupo 4 - SemES304

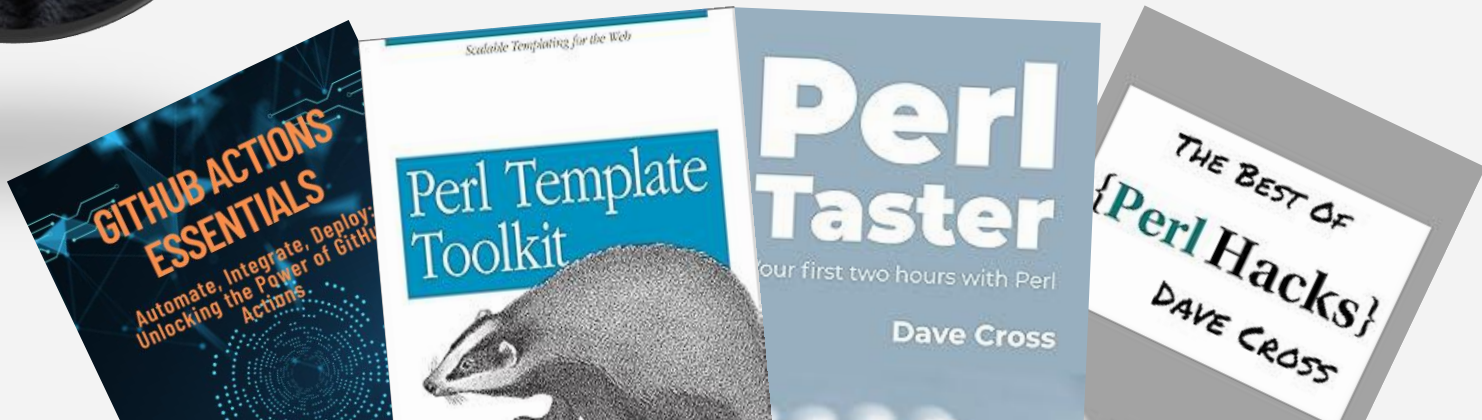


Ángel Luis Álvarez Iglesias, UO17919
Yeray Rodríguez Granda, UO284247
Coral Izquierdo Muñiz, UO285240

Dave Cross

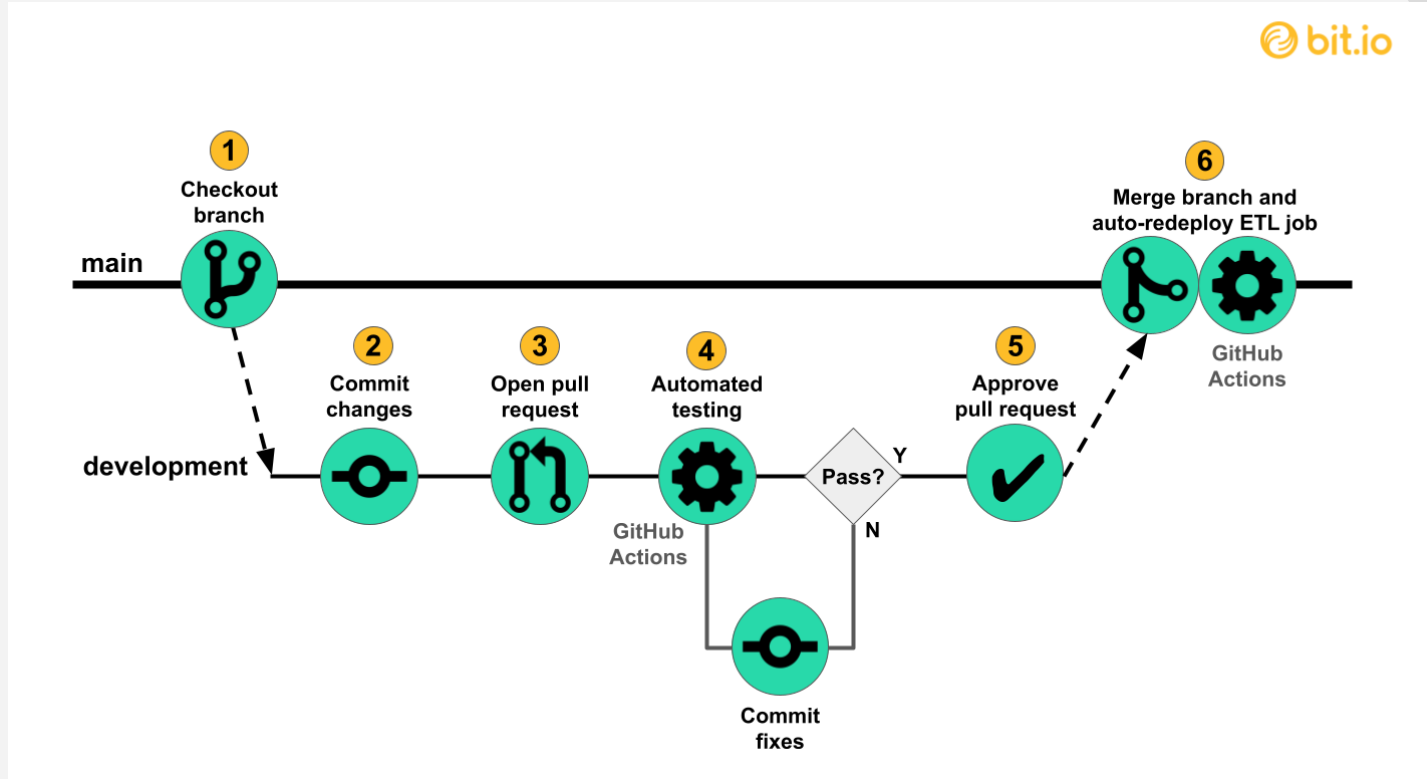


- Ingeniero de Software y dueño de Magnum Solutions Ltd (Londres)
- Comienza en 1988 con Computer-aided software engineering (CASE)
- Autor de varios libros

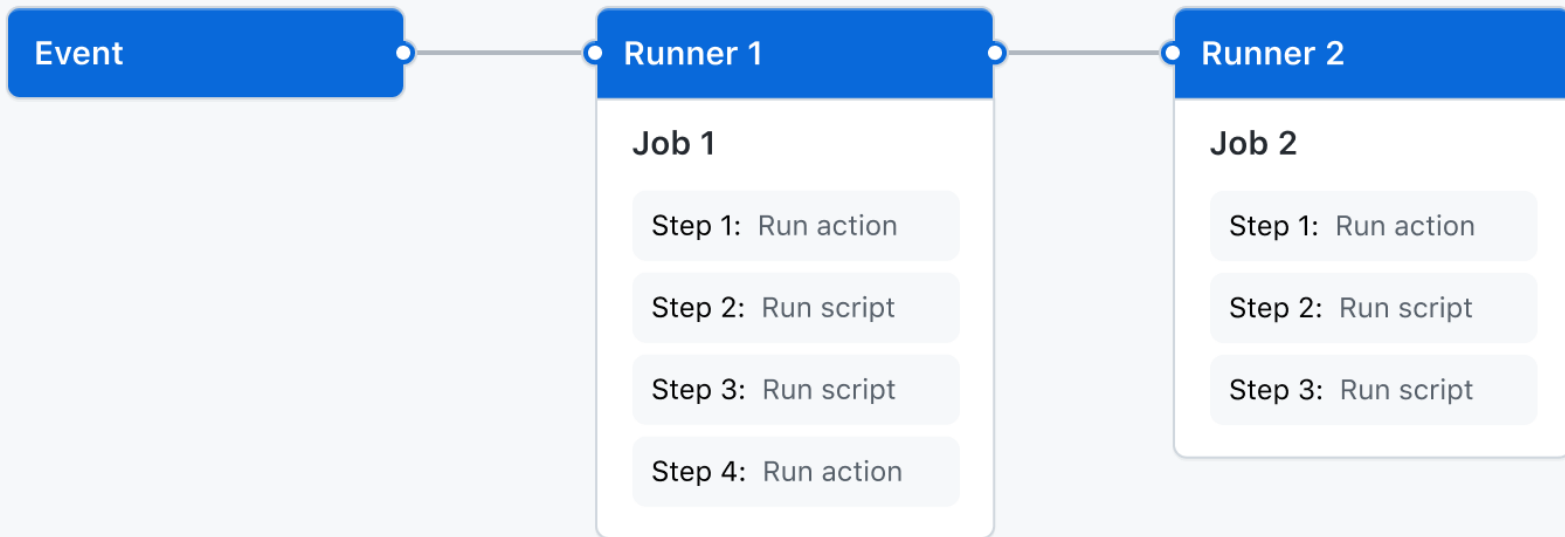


CI/CD

Continuous Integration and Continuous Delivery



Workflows



Un **workflow** es un proceso automatizado configurable que ejecuta uno o varios trabajos.

Archivo YAML

YAML



```
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@v4
      - uses: actions/setup-node@v3
        with:
          node-version: '14'
      - run: npm install -g bats
      - run: bats -v
```

Lenguaje de declaración de datos para almacenar configuraciones y definir **workflows** en un formato legible

Archivo YAML

Event

on: push

Runner: ubuntu-latest

Job: check-bats-version

Step 1: Check out repository

- uses: actions/checkout@v3

Step 2: Install Node.js

- uses: actions/setup-node@v3

Step 3: Install bats

- run: npm install -g bats

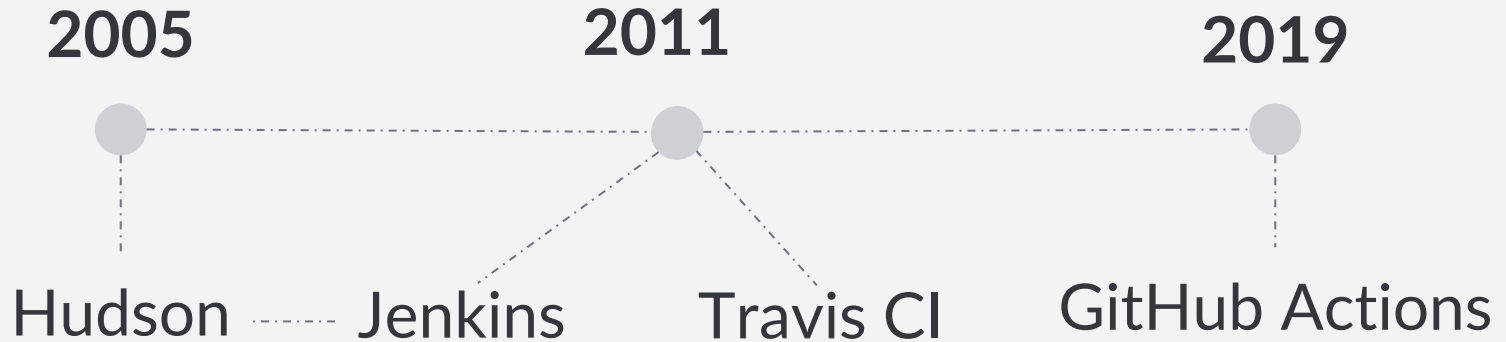
Step 4: Run bats

- run: bats -v

YAML

```
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@v4
      - uses: actions/setup-node@v3
        with:
          node-version: '14'
      - run: npm install -g bats
      - run: bats -v
```

Integración Continua (CI)



Jenkins vs Travis CI



Travis CI

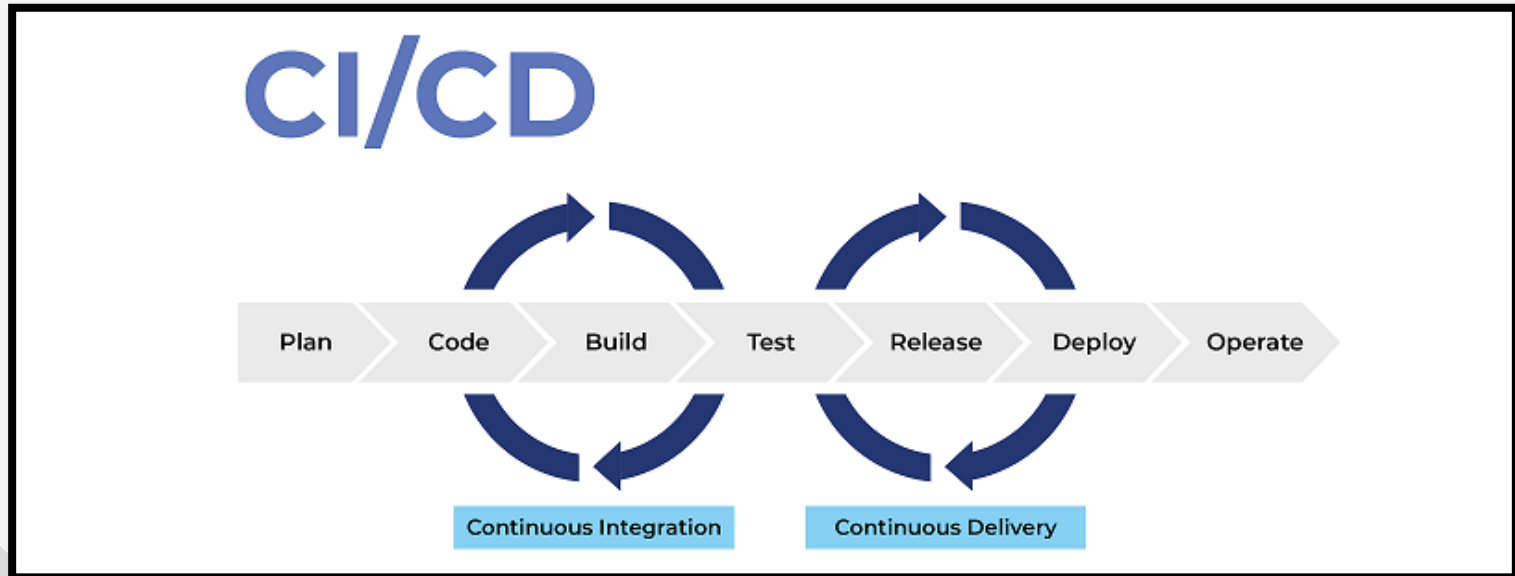
	Jenkins	Travis CI
Coste	Gratis	De pago
Rendimiento	Gran personalización	Ideal para proyectos de código abierto
Plataformas	Windows, Linux y macOS	Linux y macOS
Basado en	Servidor	Nube



Jenkins

GitHub Actions

Servicio de automatización que permite definir **workflows** para activar contenedores en los que se ejecutarán los pasos de su proceso permitiendo **CI/CD** en proyectos de desarrollo de software



Dependabot y CodeQL



Dependabot es un servicio de automatización de GitHub que ayuda a mantener las dependencias de un proyecto actualizadas



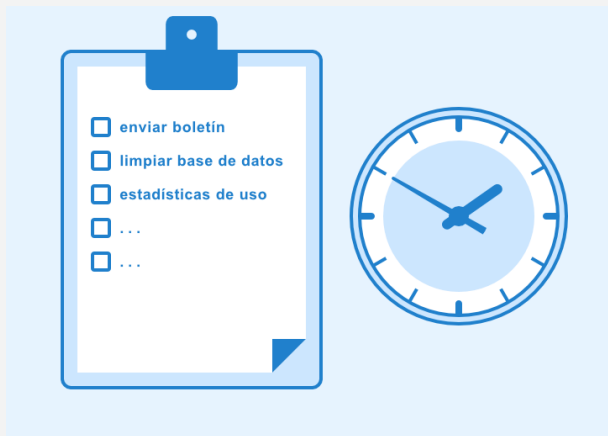
CodeQL es una herramienta de análisis estático de código de GitHub que identifica y soluciona problemas de seguridad en el código fuente

Event driven architecture

Permite definir **workflows** que se activan en respuesta a eventos específicos en tu repositorio.

- Push
- Pull Request
- Cron
- Tags
- Issues
- De Forma manual
- Forks
- Branches
- Eventos externos

Cron jobs



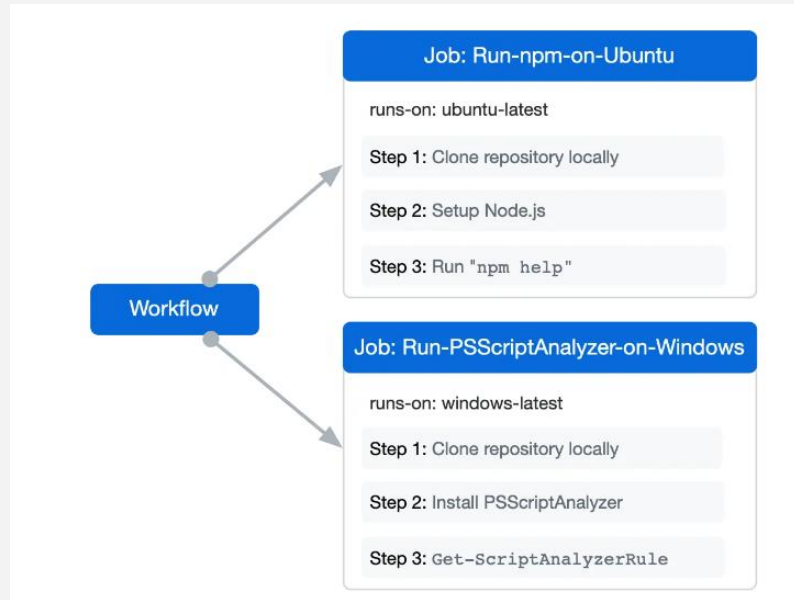
Un cron job es una tarea que se ejecuta automáticamente cada cierto tiempo

```
name: Trigger Action on a CRON Schedule

on:
  schedule:
    # Runs "At 11:00 on every day-of-week from Monday through Friday"
    - cron: '0 11 * * 1-5'

jobs:
  build:
    name: Trigger Code Checkout
    runs-on: ubuntu-latest
    steps:
      - uses: actions/checkout@v3
```

GitHub Runners



Un runner es un servidor que ejecuta los workflows cuando se activan, ejecutándose en una MV

GitHub proporcionan los Hosted Runners, disponibles para Linux, Windows y macOS

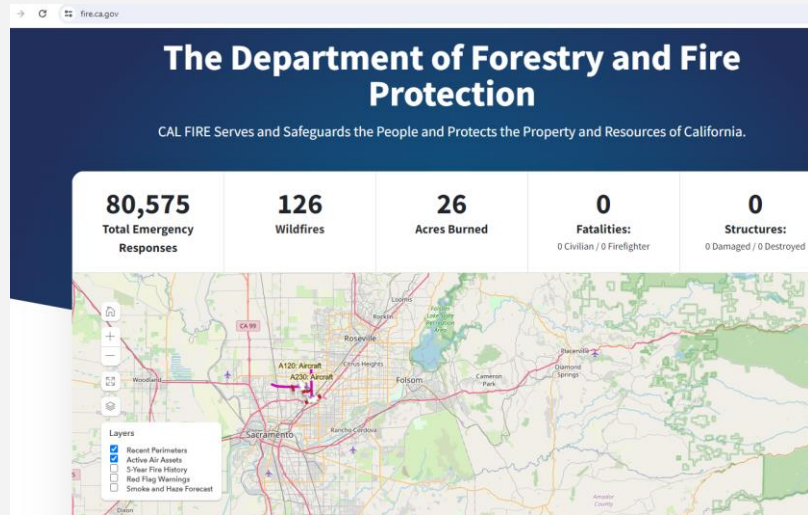
Secrets y API Keys

Es un mecanismo seguro para almacenar y acceder a secretos necesarios para las acciones. Estos secretos son pares clave-valor que se almacenan en la configuración del repositorio de GitHub

Secrets

Organization	Repository	Environments
<ul style="list-style-type: none">· Allows secret management at org level without duplication· Effectively becomes repository secrets· Can be scoped to all or to specific repositories· Not available with the free plan	<ul style="list-style-type: none">· Scoped to a repository· Can be used to override Org secrets· Available on free plan	<ul style="list-style-type: none">· Apply to a specific environment· Override Org & Repo secrets· Only Users with environment permission can add / edit· Available on free plan (<i>public repos only</i>)

Ejemplos - Git scraping



- Extracción automatizada de datos
- Uso de Git para comparar diferencias
- Log de cambios en información sobre incendios en California

<https://simonwillison.net/2020/Oct/9/git-scraping/>

```
149 149 "AcresBurned": 56338,
150 150 "FuelType": null,
151 - "PercentContained": 90,
151 + "PercentContained": 92,
152 152 "ControlStatement": null,
153 - "ConditionStatement": "<p><b>SHASTA COUNTY DEPARTMENT OF
153 + "ConditionStatement": "<p><b>SHASTA COUNTY DEPARTMENT OF
154 154 "Counties": [
155 155 "Shasta"
156 156 ],
157 157 "CountyIds": "45",
158 158 "SearchDescription": "Zogg Fires started on September 27
159 159 "SearchKeywords": null,
160 160 "AdminUnit": "CALFIRE Shasta-Trinity Unit",
161 - "Updated": "2020-10-08T06:30:47.7568591-07:00",
161 + "Updated": "2020-10-08T17:29:27.785188-07:00",
162 162 "Started": "2020-09-27T16:03:27",
163 163 "Extinguished": null,
164 164 "ArchiveYear": 2020,
@@ -174,14 +174,14 @@
174 174 "StructuresDamaged": 27,
175 175 "StructuresThreatened": null,
176 176 "StructuresEvacuated": null,
177 - "PersonnelInvolved": 968,
178 - "CrewsInvolved": 18,
177 + "PersonnelInvolved": 798,
178 + "CrewsInvolved": 14,
179 179 "Injuries": 1,
180 180 "Fatalities": 4,
181 181 "Helicopters": 6,
182 - "Engines": 82,
182 + "Engines": 59,
183 183 "Dozers": 14,
184 - "WaterTenders": 31,
184 + "WaterTenders": 27,
```

Ejemplos - CPAN

CPAN Dashboard

Module	MetaCPAN	Date	GH Actions	Travis CI	Coveralls	Kritika
App-Aphra	cpan v0.0.5	2018-02-25	CI passing	build passing	coverage 87%	kritika
Array-Compare	cpan v3.0.3	2019-08-12	CI passing	build passing	coverage 100%	kritika
AudioFile-Info	cpan v2.0.1	2019-08-16	CI passing	build passing	coverage 97%	kritika
AudioFile-Info-MP3-ID3Lib	cpan v1.7.4	2020-09-14	CI passing	build passing	coverage 100%	kritika

CPAN Dashboard
A dashboard to see the state of various people's CPAN modules.

Current authors

- Nicolas B.
- brian d foy
- John Scoble
- Jason A. Crome
- Dave Cross
- David Cantrell
- RUBENCLAW (Ruben Westerberg)
- Ferenc Erki
- PIGELKRUTH (D Ruth Hottelway)
- Mohammad S Anwar
- Nigel Home

CPAN dashboard written by @davorg / Code on GitHub / Please consider sponsoring davorg / Page rebuilt at: 2024-02-26T18:25:16 UTC

meta::cpan

A search engine for CPAN

Search the CPAN

Keyboard Shortcuts

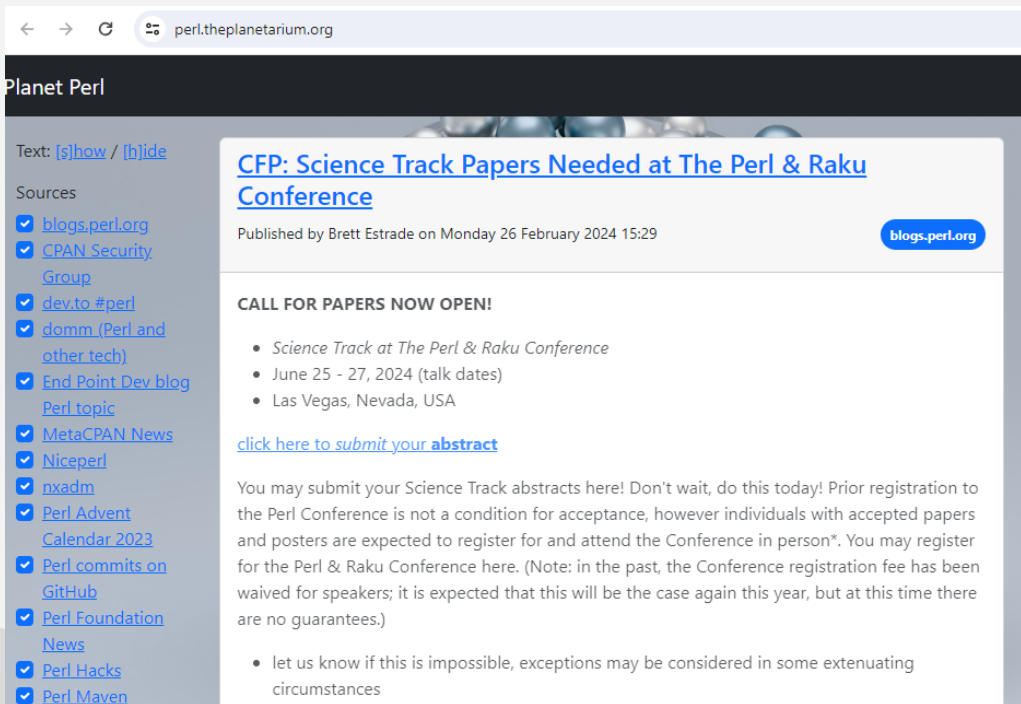
Help us - Sponsor MetaCPAN

Just getting started with Perl? Try these free learning resources from the Perl community

- Desarrolladores hacen pull requests para agregar sus módulos
- GitHub Actions recopila información de los módulos CPAN de cada autor utilizando la API de meta CPAN
- Muestra cómo están funcionando los módulos en servicios de CI

<https://cpandashboard.com/>

Ejemplos - Static websites



The screenshot shows a web browser displaying the Planet Perl website. The address bar shows 'perl.theplanetarium.org'. The page title is 'Planet Perl'. Below the title, there is a search bar with 'Text: [sj]how / [h]ide'. A sidebar on the left lists various sources with checkmarks, including 'blogs.perl.org', 'CPAN Security Group', 'dev.to #perl', 'domm (Perl and other tech)', 'End Point Dev blog Perl topic', 'MetaCPAN News', 'Niceperl', 'nxadm', 'Perl Advent Calendar 2023', 'Perl commits on GitHub', 'Perl Foundation News', 'Perl Hacks', and 'Perl Maven'. The main content area features a news item titled 'CFP: Science Track Papers Needed at The Perl & Raku Conference' published by Brett Estrade on Monday 26 February 2024 15:29. The article includes a 'CALL FOR PAPERS NOW OPEN!' section with a list of details: 'Science Track at The Perl & Raku Conference', 'June 25 - 27, 2024 (talk dates)', and 'Las Vegas, Nevada, USA'. A link 'click here to submit your abstract' is provided. The article text states: 'You may submit your Science Track abstracts here! Don't wait, do this today! Prior registration to the Perl Conference is not a condition for acceptance, however individuals with accepted papers and posters are expected to register for and attend the Conference in person*. You may register for the Perl & Raku Conference here. (Note: in the past, the Conference registration fee has been waived for speakers; it is expected that this will be the case again this year, but at this time there are no guarantees.)' and a list of exceptions: 'let us know if this is impossible, exceptions may be considered in some extenuating circumstances'.

- Un workflow en GitHub obtiene feeds RSS de varios sitios web
- Esos feeds RSS se combinan en uno nuevo que se publica
- La web se actualiza periódicamente y si hay cambios en el fichero de configuración

<https://perl.theplanetarium.org/>

Conclusiones

- GitHub Actions como herramienta potente para CI/CD
- Versátil
- Equilibrio entre calidad y ética
- Considerar las mejores prácticas
- Seguridad y gestión de API keys
- Event driven architecture → flexibilidad y eficiencia

Bibliografía

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- <https://docs.github.com/en/actions>
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- <https://www.redhat.com/es/topics/devops/what-is-ci-cd>
- <https://resources.github.com/ci-cd/>
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- <https://www.guru99.com/es/jenkins-vs-travis.html>
- <https://es.education-wiki.com/8349179-jenkins-vs-travis-ci>
- <https://github.blog/2020-06-01-keep-all-your-packages-up-to-date-with-dependabot/>
- <https://keepcoding.io/blog/que-es-y-para-que-sirve-el-fichero-yaml>
- <https://www.ionos.es/digitalguide/hosting/cuestiones-tecnicas/cronjob/>
- <https://simonwillison.net/2020/Oct/9/git-scraping/>
- <https://cpandashboard.com/>
- <https://perl.theplanetarium.org/>

¡Gracias!

¿Alguna pregunta?

