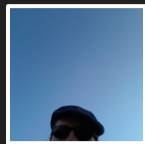


Github Workflows for CPAN modules

An introduction to the Perl action eco sytem



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Deutscher Perl/Raku-Workshop 2023
27. Februar - 01. März 2023, Frankfurt

Github Workflows

- Run tests
- Create and publish builds
- Produce static content for github pages
- Continuous Integration/Deployment

Terminology

Github Actions: The name of the product in Github

Event: something happens in a repository, like a PR

Workflow: a list of instructions (like a class)

Job: a single running instance of a workflow (like an object)

Action: a single command in a workflow (like a method)

Runner: the server process running a job

Why do I want this?

Run tests on different common platforms when someone submits a PR:

- Catch breakage early
- Enforce Perl::Critic and Perl::Tidy
- Find missing dependencies
- Catch broken backwards compatibility

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→ Different to CPAN Testers!

A CPAN Module Workflow

Add more commits by pushing to the `oalders/html-headparser` branch on `libwww-perl/libwww-perl`.



Review required

At least 1 approving review is required by reviewers with write access. [Learn more.](#)

[Add your review](#)



All checks have passed

39 successful checks

[Show all checks](#)



Merging is blocked

Merging can be performed automatically with 1 approving review.

☐ **Merge without waiting for requirements to be met (bypass branch protections)**

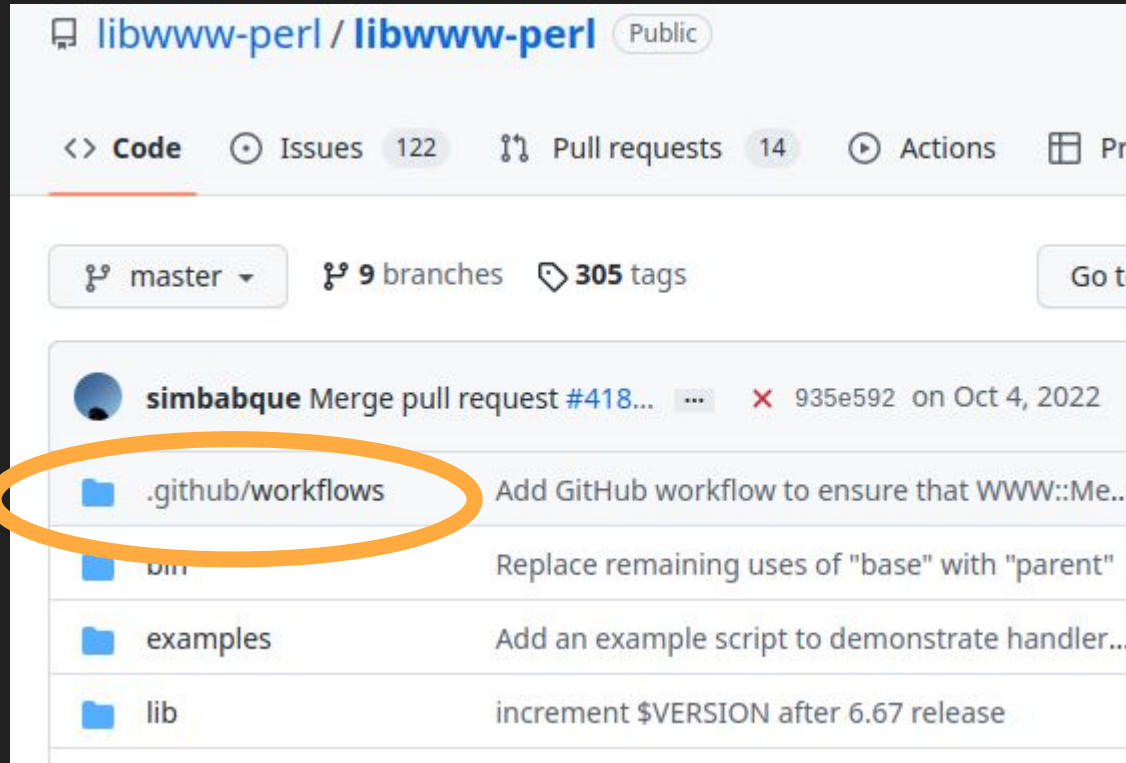
Rebase and merge



or view [command line instructions](#).

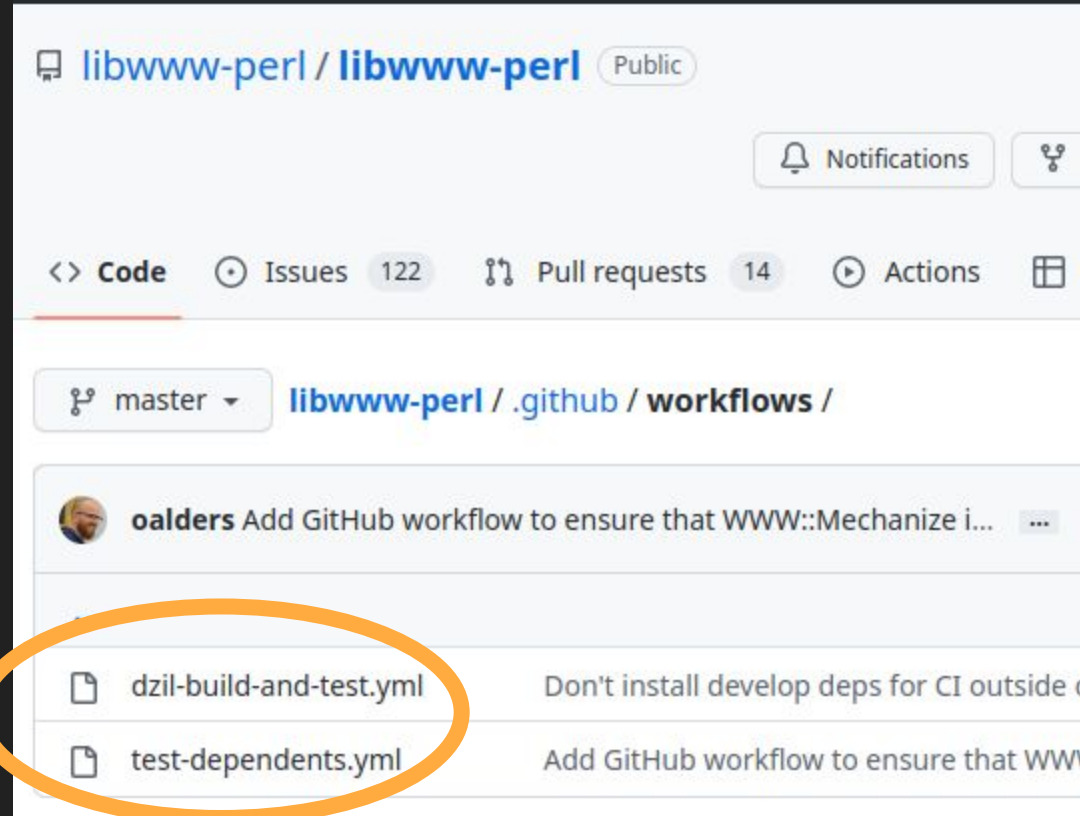
A CPAN Module Workflow - file location

- Workflow files live in `.github/workflows` directory



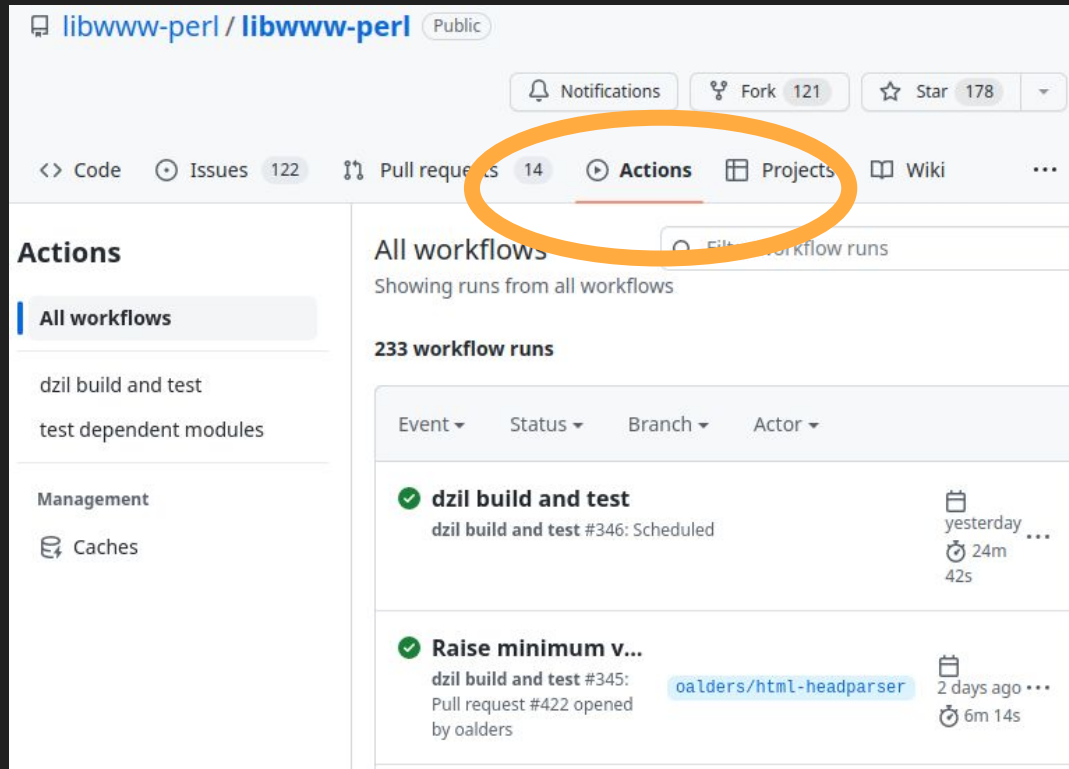
A CPAN Module Workflow - file location

- Workflow files live in `.github/workflows` directory
- Written in YAML
- You can have multiple files



A CPAN Module Workflow - file location

- Workflow files live in `.github/workflows` directory
- Written in YAML
- You can have multiple files
- Runs show in the Actions tab



libwww-perl / libwww-perl (Public)

Notifications Fork 121 Star 178

<> Code Issues 122 Pull requests 14 **Actions** Projects Wiki ...

Actions

All workflows

Showing runs from all workflows

233 workflow runs

Event	Status	Branch	Actor
✓ dzil build and test	dzil build and test #346: Scheduled		yesterday ...
✓ Raise minimum v...	dzil build and test #345: Pull request #422 opened by oalders	oalders/html-headparser	2 days ago ...

A CPAN Module Workflow - action details

- Workflow files live in `.github/workflows` directory
- Written in YAML
- You can have multiple files
- Runs show in the Actions tab
- A Run has lots of jobs
- Jobs can depend on each other

The screenshot shows the GitHub Actions interface for a workflow named 'dzil build and test'. The workflow is a pull request from 'oalders' to 'oalders/html-headparser', triggered by a pull request. It has a status of 'Success' and a total duration of 6m 14s. The workflow file is 'dzil-build-and-test.yml' located at 'pull_request'. The workflow consists of several jobs: 'Build distribution' (1m 3s), 'coverage-job' (58s), and three matrix jobs: 'macos-test-job' (14 jobs completed), 'ubuntu-test-job' (14 jobs completed), and 'windows-test-job' (9 jobs completed). An orange arrow points to the 'perl 5.24 on ubuntu-...' job in the list of jobs, and a blue arrow points to the 'coverage-job' job in the workflow diagram.

← dzil build and test

✓ **Raise minimum version of HTML::HeadParser to 3.71** #345 [Sign in to view logs](#)

Summary

Jobs

- ✓ Build distribution
- ✓ coverage-job
- ✓ perl 5.8 on ubuntu-2...
- ✓ perl 5.10 on ubuntu-...
- ✓ perl 5.12 on ubuntu-...
- ✓ perl 5.14 on ubuntu-...
- ✓ perl 5.16 on ubuntu-...
- ✓ perl 5.18 on ubuntu-...
- ✓ perl 5.20 on ubuntu-...
- ✓ perl 5.22 on ubuntu-...
- ✓ perl 5.24 on ubuntu-...
- ✓ perl 5.26 on ubuntu-...
- ✓ perl 5.28 on ubuntu-...
- ✓ perl 5.30 on ubuntu-...
- ✓ perl 5.32 on ubuntu-...
- ✓ perl 5.34 on ubuntu-...

Re-run triggered 2 days ago **Status**
oalders #422 oalders/html-headparser **Success**

Total duration **6m 14s** Artifacts **1**

dzil-build-and-test.yml
on: pull_request

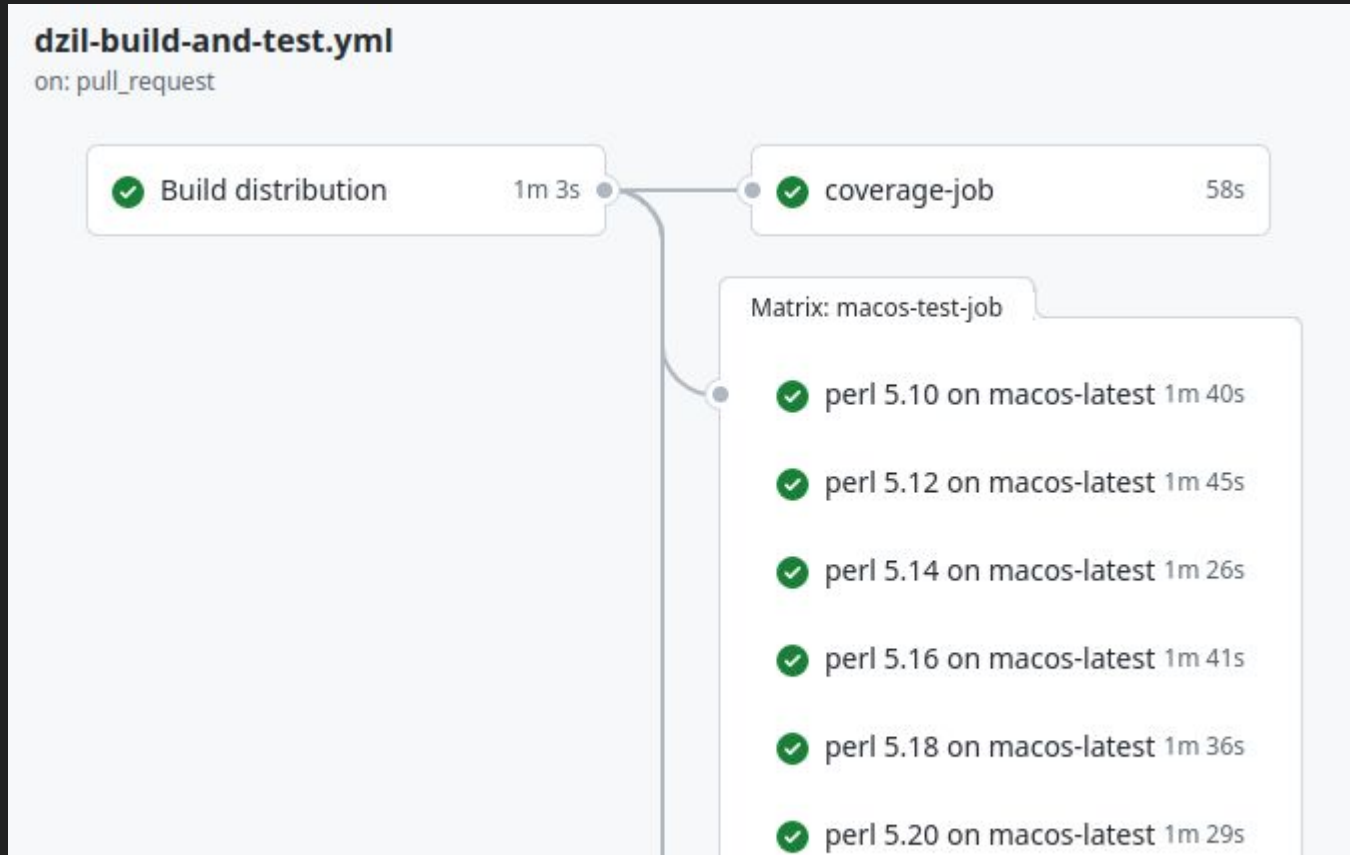
Build distribution 1m 3s → coverage-job 58s

Matrix: macos-test-job
✓ 14 jobs completed
Show all jobs

Matrix: ubuntu-test-job
✓ 14 jobs completed
Show all jobs

Matrix: windows-test-job
✓ 9 jobs completed
Show all jobs

A CPAN Module Workflow - a single workflow



A CPAN Module Workflow - job details

Build distribution

succeeded 2 days ago in 1m 3s

✓ Set up job	1s
✓ Initialize containers	23s
✓ Run actions/checkout@v2	3s
✓ Run Tests	31s
✓ Run actions/upload-artifact@v2	3s
✓ Post Run actions/checkout@v2	1s
✓ Stop containers	0s
✓ Complete job	0s

Deep Dive: Workflow code

```
name: dzil build and test
on:
  push:
    branches:
      - "*"
  pull_request:
    branches:
      - "*"
  schedule:
    - cron: "15 4 * * 0" # Every Sunday morning
Workflow_dispatch:

# ...
```

<https://github.com/libwww-perl/libwww-perl/blob/master/.github/workflows/dzil-build-and-test.yml>

Deep Dive: Workflow code - build job

```
jobs:
  build-job:
    name: Build distribution
    runs-on: ubuntu-20.04
    container:
      image: perldocker/perl-tester:5.34
    steps:
      - uses: actions/checkout@v2
```

Deep Dive: Workflow code - build job

```
jobs:
  build-job:
    name: Build distribution
    runs-on: ubuntu-20.04
    container:
      image: perldocker/perl-tester:5.34
    steps:
      - uses: actions/checkout@v2
      - name: Run Tests
        env:
          # ...
        run: upgrade-perl-helpers &&
              auto-build-and-test-dist
      - uses: actions/upload-artifact@v2
        with:
          name: build_dir
          path: build_dir
```

Deep Dive: Workflow code - Linux test jobs

```
ubuntu-test-job:
  needs: build-job
  runs-on: "ubuntu-20.04"
  strategy:
    fail-fast: true
  matrix:
    os: [ubuntu-20.04]
    perl-version:
      - "5.8"
      - "5.10"
      # ...
      - "5.32"
      - "5.34"
```

<https://github.com/libwww-perl/libwww-perl/blob/master/.github/workflows/dzil-build-and-test.yml>

Deep Dive: Workflow code - Linux test jobs

```
ubuntu-test-job:
  needs: build-job
  runs-on: "ubuntu-20.04"
  strategy:
    fail-fast: true
  matrix:
    os: [ubuntu-20.04]
    perl-version:
      - "5.8"
      - "5.10"
      # ...
      - "5.32"
      - "5.34"
```

```
name: perl ${ matrix.perl-version } on ${ matrix.os }
steps:
  - name: set up perl
    uses: shogo82148/actions-setup-perl@v1
    with:
      perl-version: ${ matrix.perl-version }
  - uses: actions/download-artifact@v2
    with:
      name: build_dir
      path: .
  - name: install deps using cpm
    uses: perl-actions/install-with-cpm@v1
    with:
      cpanfile: "cpanfile"
      args: "--with-suggests --with-recommends --with-test"
  - name: install sendmail
    run: sudo apt-get install -y --no-install-recommends
        sendmail-bin
  - run: prove -lr t
    env:
      AUTHOR_TESTING: 0
      RELEASE_TESTING: 0
      NO_JIGSAW: 1
```

Deep Dive: Workflow code - Mac & Windows test jobs

```
macos-test-job:
  needs: build-job
  runs-on: "macos-latest"
  strategy:
    fail-fast: true
  matrix:
    os: [macos-latest]
    perl-version:
      - "5.8"
      # ...
      - "5.34"
  name: perl ${ matrix.perl-version } on ${ matrix.os }
  steps:
    # ...
```

```
windows-test-job:
  needs: build-job
  runs-on: "windows-latest"
  strategy:
    fail-fast: true
  matrix:
    os: [windows-latest]
    perl-version:
      - "5.14"
      # ...
      - "5.30"
  name: perl ${ matrix.perl-version } on ${ matrix.os }
  steps:
    # ...
```

LIVE DEMO!

Thank you!

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 @simbabque

 simbabque

Questions?

Blog: <https://simbabque.github.io/posts/github-workflow-guide-for-modules/>

Container: <https://github.com/Perl/docker-perl-tester>

Perl Actions: <https://github.com/perl-actions>

Perl Setup Action: <https://github.com/shogo82148/actions-setup-perl>

Code Coverage: <https://about.codecov.io/>

GitHub Actions Doc: <https://docs.github.com/en/actions>