

An introduction to GitHub Actions

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GAP Days Spring 2021

Outline

- The conceptual purpose of GitHub Actions
- Why we're talking about this now
- A brief look at GitHub Actions in... action
- **Then Sergio:**
 - Doing GAP package CI with GitHub Actions

GitHub Actions at its most basic

- In a GitHub repository...
- ...when a particular event happens...
- ...run a sequence of tasks.

(Remotely, for free, in a dual core virtual machine, with 7 GB RAM, 14 GB storage, running Windows, macOS, or Ubuntu.)*

Examples of triggers/events

- A new commit is pushed to a branch
- Someone opens/edits a pull request
- Someone closes an issue
- A new release is made
- Another GitHub Action finishes running
- It's 9:20 am
- Manual triggering

Examples of tasks

- Run regression tests
- Calculate code coverage
- Profile performance
- Update a website
- Prepare a new release
- Build the manual
- Check code formatting

Example workflows

A “*workflow*” is a unit consisting of configurations and tasks.
Examples:

- When a pull request is made: run the regression tests, and see if new code has test coverage.
- Every morning at 8am, prepare a release of your software.
- Every time there's a new release, download it, check that it works, and update a website.

Benefits

- Automation can save time
- Automation is consistent
- Automation aids decentralisation and transparency
- It reduces your need for computer resources
- It offers a wide range of easy configurations

Costs & difficulties

- Takes some effort to set up
- The virtual machines are not supercomputers
- Easy configuration options are not endless*
- You don't have full control over the remote machines*
- No guarantee that it will be around forever...

Why now?

GitHub Actions is new, powerful, useful for release process.

Competing/similar services:

- **AppVeyor**
- **Azure Pipelines**
- **Jenkins**
- **Travis**: no longer a realistic option; move away from it!

Rough practical aspects of how GitHub Actions works

- A workflow exists as a YAML file in `.github/workflows/`
- Structure: configuration options & a sequence of actions
- GitHub keeps track & runs workflows as appropriate
- The results are shown in the “Actions” tab on GitHub, and on corresponding pull request pages

How GitHub Actions look on GitHub

github.com

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master gap / .github / workflows / Go to file Add file ...

ChrisJefferson and fingolfin Switch to ubuntu 18.04 as default (testing, do not merge) ✓ 71196d2 17 days ago History

..

Cl.yml Switch to ubuntu 18.04 as default (testing, do not merge) 17 days ago

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The workflows directory...

<https://github.com/gap-system/gap/tree/master/.github/workflows>

github.com

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master gap / .github / workflows / CI.yml Go to file

ChrisJefferson Switch to ubuntu 18.04 as default (testing, do not merge) Latest commit 71196d2 17 days ago History

2 contributors

213 lines (190 sloc) 7.81 KB Raw Blame

```
1 name: CI
2
3 # Trigger the workflow on push or pull request
4 on:
5   - push
6   - pull_request
7
8 jobs:
9   test:
10     name: ${ matrix.test-suites } - ${ matrix.extra } - ${ matrix.os }
11     runs-on: ${ matrix.os }
12     strategy:
13       fail-fast: false
14     matrix:
15       # base test: fast first test
16       os: [ubuntu-18.04]
17       test-suites: ["testinstall"]
18
```

A workflow file...

<https://github.com/gap-system/gap/blob/master/.github/workflows/CI.yml>

github.com

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All workflows New workflow

Filter workflows


204 workflow runs


The "Actions" tab...

Event	Status	Branch	Actor	Time	More
✓ changed `ViewObj` and `ViewString` for functions	CI #204: Pull request #4248 opened by ThomasBreuer	ThomasBreuer:TB_arg_incon...	2 hours ago	1h 0m 15s	...
✓ Now, really added file	CI #203: Commit 82afa0c pushed by fingolfin	master	2 days ago	44m 6s	...
✓ Performance additions to generic 2-cohomology and...	CI #202: Commit 6532f3b pushed by hulpke	master	2 days ago	1h 0m 18s	...
✓ Performance additions to generic 2-cohomology and...			2 days ago		

<https://github.com/gap-system/gap/actions>

github.com

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🛡 Security

...

✓ Now, really added file CI #203

Re-run jobs

Summary

Jobs

✓ testinstall - JULIA=yes CONFIG...

✓ docomp teststandard - - ubunt...

✓ docomp teststandard - ABI=32...

✓ docomp testinstall - HPCGAP=...

✓ testpackages testinstall-loadall...

✓ testpackages testinstall-loadall...

✓ docomp testinstall - - macos-l...


✓ makemanuals - - ubuntu-18.04

✓ testmanuals - - ubuntu-latest

✓ testbugfix - CONFIGFLAGS="-...

✓ docomp testbuildsys testinstall...

Triggered via push 2 days ago

 fingolfin pushed 82afa0c master

Status

Success

Total duration

44m 6s

Artifacts

-

CI.yml

on: push

Matrix: test


✓ 13 jobs completed

Show all jobs

One particular run...

Annotations

1 warning

 Ubuntu-latest workflows will use Ubuntu-20.04 soon. For more details, see <https://github.com/actions/virtual-environments/issues/1816>

CI: .github#L1

<https://github.com/gap-system/gap/actions/runs/551986043>

Summary

Jobs

- testinstall - JULIA=yes CONFIG...
- docomp teststandard - - ubun...**
- docomp teststandard - ABI=32
- docomp testinstall - HPCGAP=y...
- testpackages testinstall-loadall ...
- testpackages testinstall-loadall ...
- docomp testinstall - - macos-la...
- makemanuals - - ubuntu-18.04
- testmanuals - - ubuntu-latest
- testbugfix - CONFIGFLAGS="--...
- docomp testbuildsys testinstall ...
- docomp testbuildsys testinstall ...
- testspecial test-compile testlibg...

docomp teststandard - - ubuntu-18.04

succeeded 2 days ago in 36m 15s

Search logs

Run tests 33m 7s

```
661 testing: /home/runner/work/gap/gap/tst/testinstall/weakptr-badargs.tst
662      255 ms (253 ms GC) and 99.5KB allocated for weakptr-badargs.tst
663 testing: /home/runner/work/gap/gap/tst/testinstall/weakptr.tst
664      703 ms (647 ms GC) and 16.0MB allocated for weakptr.tst
665 testing: /home/runner/work/gap/gap/tst/testinstall/wordrep.tst
666      713 ms (210 ms GC) and 56.3MB allocated for wordrep.tst
667 testing: /home/runner/work/gap/gap/tst/testinstall/xfuncs.tst
668      251 ms (244 ms GC) and 636KB allocated for xfuncs.tst
669 testing: /home/runner/work/gap/gap/tst/testinstall/xgap.tst
670     1254 ms (214 ms GC) and 55.2MB allocated for xgap.tst
671 testing: /home/runner/work/gap/gap/tst/testinstall/zlattice.tst
672      263 ms (261 ms GC) and 74.6KB allocated for zlattice.tst
673 testing: /home/runner/work/gap/gap/tst/testinstall/zmodnz.tst
674      260 ms (219 ms GC) and 2.30MB allocated for zmodnz.tst
675 testing: /home/runner/work/gap/gap/tst/testinstall/zmodnze.tst
676      259 ms (240 ms GC) and 1.28MB allocated for zmodnze.tst
677 -----
678 total   1962391 ms (124122 ms GC) and 99.8GB allocated
679           0 failures in 297 files
680
681 #I No errors detected while testing
682
683 /bin/cat: + exit 0
```

> Gather coverage 36s

> Upload coverage data to codecov 17s

> Post Run actions/checkout@v2 0s

> Complete job 0s

One particular job...

changed ``ViewObj`` and ``ViewString`` for functions #4248

ThomasBreuer wants to merge 1 commit into `gap-system:master` from `ThomasBreuer:TB_arg_inconsistency`

ThomasBreuer added `topic: library` `release notes: not needed` `kind: quirk` labels 2 hours ago

Add more commits by pushing to the `TB_arg_inconsistency` branch on `ThomasBreuer/gap`.

This branch has not been deployed

No deployments

Review required

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

Add your review

All checks have passed

14 successful checks

CI / testinstall - JULIA=yes CONFIGFLAGS="--enable-debug --disable-Werror" ...

CI / docomp teststandard - - ubuntu-18.04 (pull_request) Successful in 41m

CI / docomp teststandard - ABI=32 CONFIGFLAGS="" - ubuntu-18.04 (pull_req...

CI / docomp testinstall - HPCGAP=yes ABI=64 - ubuntu-18.04 (pull_request) ...

CI / testpackages testinstall-loadall - ABI=64 - ubuntu-18.04 (pull_request) S...

CI / testpackages testinstall-loadall - ABI=32 NO_COVERAGE=1 - ubuntu-18.04 ...

Hide all checks

Merging is blocked

Merging can be performed automatically with 1 approving review.

Rebase and merge

You can also [open this in GitHub Desktop](#) or view [command line instructions](#).

kind: quirk

release notes: not needed

topic: library

Projects

None yet

Milestone

No milestone

Linked issues

Successfully merging this pull request may close these issues.

None yet

Notifications

Customize

Subscribe

You're not receiving notifications from this thread.

1 participant

Lock conversation

A pull request...

<https://github.com/gap-system/gap/pull/4248>

github.com

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changed `ViewObj` and `ViewString` for functions #4248

Edit Open with

Open ThomasBreuer wants to merge 1 commit from system:master to ThomasBreuer:TB_arg_inconsistency

Conversation 0 Commits Checks 13 Files changed 2 +0 -6

changed `ViewObj` and `ViewString` for functions

Re-run jobs

CI on: pull_request 1

- testinstall - JULIA=yes CONFIGFLA...
- docomp teststandard - - ubuntu...
- docomp teststandard - ABI=32 ...
- docomp testinstall - HPCGAP=y...
- testpackages testinstall-loadall ...
- testpackages testinstall-loadall ...
- docomp testinstall - - macos-lat...
- makemanuals - - ubuntu-18.04

testinstall - JULIA=yes CONFIGFLAGS="--enable-debug --disable-Werror" - ubuntu-18.04

succeeded 2 hours ago in 9m 10s

Search logs

- Set up job 3s
- Run actions/checkout@v2 4s
- Set up Python 3.7 1s
- Install dependencies 15s
- Compile GAP and download packages 2m 33s
- Run tests 5m 17s
- Gather coverage 36s
- Upload coverage data to codecov 21s

<https://github.com/gap-system/gap/pull/4248/checks>

The screenshot shows the GitHub Marketplace interface. At the top, the navigation bar includes the GitHub logo, a search bar, and links for Pull requests, Issues, Marketplace (highlighted with an orange circle), and Explore. Below the navigation bar, the page title is "Marketplace / Search results". On the left sidebar, under the "Types" section, the "Actions" button is highlighted with an orange circle. Below this, the "Categories" section lists various categories like API management, Chat, Code quality, etc. The main content area features a search bar with the text "Search for apps and actions". Below the search bar, the heading "Actions" is displayed, followed by the description "An entirely new way to automate your development workflow." and a filter bar showing "7164 results filtered by Actions". A grid of action cards is shown, each with an icon, title, author, description, and star count.

Marketplace / Search results

Types

Actions

Categories

API management

Chat

Code quality

Code review

Continuous integration

Dependency management

Deployment

IDEs

Learning

Localization

Mobile

Monitoring

Search for apps and actions

Actions

An entirely new way to automate your development workflow.

7164 results filtered by Actions

Checkmarx CxFlow Action
By checkmarx-ts
Simplify Checkmarx Scanning of source code along with Result consumption leveraging Checkmarx CxFlow solution
13 stars

Alibaba Cloud Container Registry (ACR) Image Scan
By aliyun
Scan image in container registry
3 stars

Amazon Chime "Chime Webhook" Action for GitHub Actions
By amazon-archives
Send message to Amazon Chime chat rooms
12 stars

Git Version
By codacy
Semver versioning based on the git history and commit messages of your repository
15 stars

Jira Login
By atlassian
Log in to Jira Cloud instance
19 stars

Image Actions
By calibreapp
Compresses Images for the Web
834 stars

EKS on Fargate
By aws-actions

ansible-lint
By ansible

Questions?