

# LAB 4

## CI/CD with Github Action

Software Testing  
IOC5167, Spring 109

# Outline

1. Introduction to Github Actions
  - a. History
  - b. What is Github Actions
  - c. Github workflow
  - d. CI/CD
2. Features of Github Actions
3. How to write or use Github Actions ?
4. Lab4 - CI/CD with Github Actions

# Github Actions

Github 自家的 workflow tools

# History

1. 2018 年推出, 但需要申請 beta 資格才能使用
2. 2019 年末逐漸開放給開源專案免費使用
3. 2020~ 功能優化, Action Market 市場陸續活躍

# What is Github Action?

- ❖ Platform to automate developer workflows
  - Workflows
    - CI/CD ( just a kind of )
    - Community
    - Github Event
    - ...
  - Action Market

# What is workflow?

## ❖ Developer workflow

- Testing
- Checking
- Logging
- Review
- Publish
- Release
- .....








GitHub

## ❖ 全世界最大的工程師交友平台(X



# What is workflow?

 **microsoft/vscode**



 Watch  3.1k  Star 113k  Fork 18.4k













[Code](#) [Issues 4.7k](#) [Pull requests 215](#) [Actions](#) [Projects 3](#) [Wiki](#) [Security](#) [Insights](#)

**First time contributing to microsoft/vscode?** [Dismiss](#)

If you know how to fix an [issue](#), consider opening a pull request for it.  
You can read this repository's [contributing guidelines](#) to learn how to open a good pull request.

Filters

 Labels 325  Milestones 5 [New pull request](#)

	Author	Label	Projects	Milestones	Reviews	Assignee	Sort
 <b>Workspace trust - multi-window improvements</b> ✓ <a href="#">workspace-trust</a>	#119483 opened 13 hours ago by iszomoru						1
 <b>Feature: New command - Delete Duplicate Lines</b> ✓	#119480 opened 14 hours ago by codeclown						1
 <b>snap-build-linux.yml: use "snap pack" to get LZO</b> ✗	#119478 opened 15 hours ago by anonymouse64				1		1
 <b>Update VSCode icons</b> ✓	#119468 opened 16 hours ago by anthony-c-martin				2		
 <b>Add cuda-cpp lang id, grammar and problem matchers</b> ●	#119444 opened 22 hours ago by PooyaZv - Changes requested						12
 <b>Enable setTextDocumentLanguage</b> ✓	#119429 opened yesterday by roblourens						
 <b>New user feedback survey</b> ●							1

## Releases 186

 **February 2021 Re...** [Latest](#)  
7 days ago

+ 185 releases

## Used by 739



## Contributors 1,385



+ 1,374 contributors

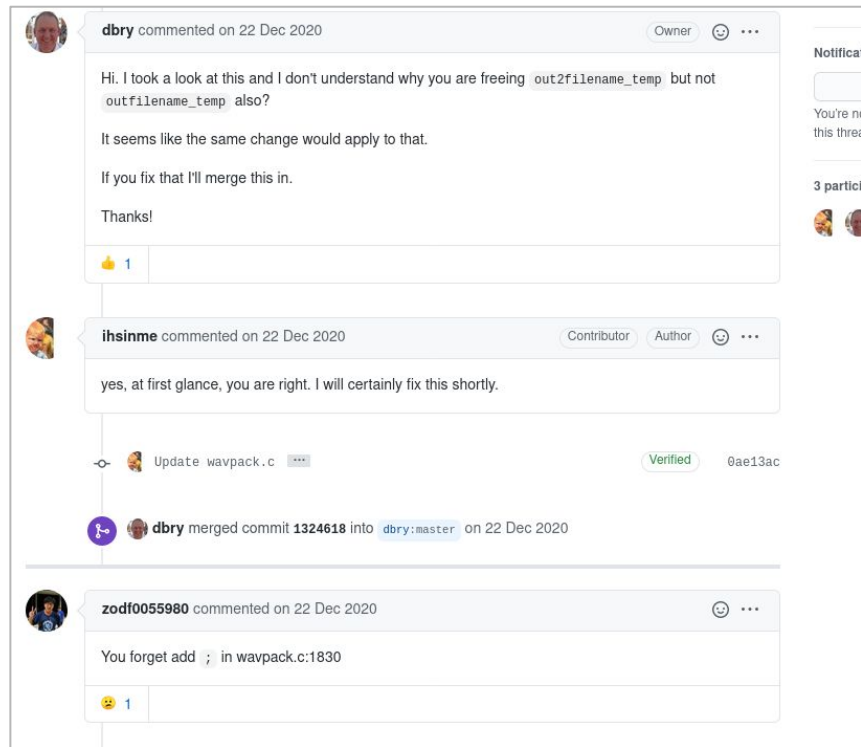
# What is workflow?

- ❖ So many events!
  - PR/Created, PR merged, Release prepare, Branch condition, Issue create
- ❖ Github Action
  - Listen to event
  - Trigger different **workflow**



# Without CI/CD Example

- ❖ <https://github.com/dbry/WavPack/pull/87>
- ❖ 雖然不是 release 版本發生該狀況
- ❖ 但仍為一個血淋淋的慘案



# CI/CD

## ❖ Continuous Integration - CI

- LAB3 - Continuous Integration
  - Travis-CI
  - PriorityQueueTest.java

## ❖ Continuous delivery - CD

- Automate delivery/publish to users/community
  - Deploy
  - Rollback
  - Downtime....

# Features of Github Actions

# Features of Github Actions

- ❖ Github
- ❖ Action Marketplace

# Features of Github Actions



## Github

- Highly consistent with Github
- Easily take away ( fork )
- Third party package
  - Relay on open source action market
  - Standard, criterion
  - Reduce integration time ( script, token, ... )
  - Pipeline is easy
  - Environment, secret variable with repo



左邊這些原本做不到嗎？



Action Marketplace



Pricing



Travis CI



Jenkins



circleci



Azure Pipelines



docker

# Features of Github Actions



Github



## Action Marketplace

- CI
- CD
- Monitor
- Code review
- Code quality



Pricing

The screenshot shows the GitHub Actions Marketplace search results for the term "Actions". The page has a sidebar on the left with a "Types" section containing a search bar and a list of categories: Apps, Actions (selected), and Categories. The "Categories" section lists various functional areas like API management, Chat, Code quality, etc. The main content area displays a grid of action cards. Each card includes an icon, the action name, the creator, a brief description, and the number of stars. The actions shown include StackPulse Apply Playbook, Docker Buildx Bake, Push To Registry, Glo Add Label To Cards, Setup Ruby, JRuby and TruffleRuby, Docker Setup Buildx, Sentry Release, Image Actions, Knative Service Manager, and Lightstep Pre-Deploy Check.

Marketplace / Search results

Types

Search for apps and actions

Apps

Actions

Categories

API management

Chat

Code quality

Code review

Continuous integration

Dependency management

Deployment

IDEs

Learning

Localization

Mobile

Monitoring

Project management

Publishing

Recently added

7657 results filtered by Actions

**StackPulse Apply Playbook**  
By stackpulse  
Apply automatic Incident Response playbooks with StackPulse  
19 stars

**Docker Buildx Bake**  
By docker  
GitHub Action to use Docker Buildx Bake as a high-level build command  
12 stars

**Push To Registry**  
By redhat-actions  
Push a container image to an image registry  
26 stars

**Glo Add Label To Cards**  
By Axosoft  
GitHub action to add a label to Glo Boards cards  
2 stars

**Setup Ruby, JRuby and TruffleRuby**  
By ruby  
Download a prebuilt Ruby and add it to the PATH in 5 seconds  
322 stars

**Docker Setup Buildx**  
By docker  
Set up Docker Buildx  
163 stars

**Sentry Release**  
By getsentry  
GitHub Action for creating a release on Sentry  
150 stars

**Image Actions**  
By calibreapp  
Compresses Images for the Web  
845 stars

**Knative Service Manager**  
By redhat-actions  
Create and manage Knative Services  
3 stars

**Lightstep Pre-Deploy Check**  
By lightstep  
View service health, reported errors, and on-call information in null requests

# Features of Github Actions

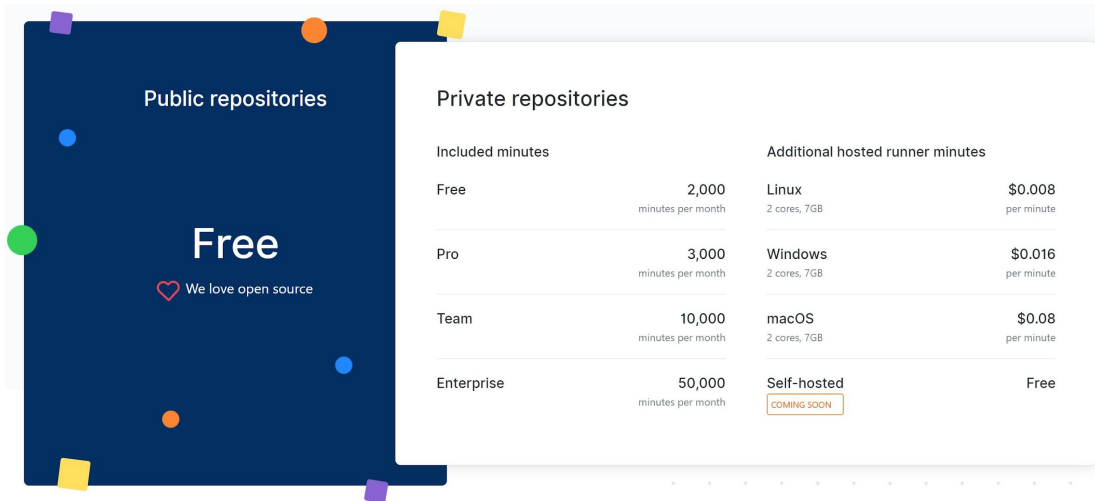
❖ Github

❖ Action Marketplace

❖ Pricing

- 體感來說我覺得蠻快的
- Public always free !
- Private
  - 2000 min/per month
  - student pack ?
- Self Runner !

❖ BTW, Travis-CI 好像急了



Public repositories		Private repositories	
		Included minutes	Additional hosted runner minutes
Free	2,000 minutes per month	Linux 2 cores, 7GB	\$0.008 per minute
Pro	3,000 minutes per month	Windows 2 cores, 7GB	\$0.016 per minute
Team	10,000 minutes per month	macOS 2 cores, 7GB	\$0.08 per minute
Enterprise	50,000 minutes per month	Self-hosted COMING SOON	Free

# How to write or use Github Action?





# Github Action

- ❖ Template
- ❖ Create by yourself
  - New repo on github
  - Create .github/workflow/[your-action].yaml
  - Write your workflow !

# Example action.yml

```
# This is a basic workflow to help you get started with Actions
```

```
name: CI
```

```
# Controls when the action will run.
```

```
on:
```

```
  push:
```

```
    branches: [main]
```

```
  pull_request:
```

```
    branches: [main]
```

```
# A workflow run is made up of one or more jobs that can run sequentially or in parallel
jobs:
```

```
  build:
```

```
    runs-on: ubuntu-latest
```

```
    steps:
```

```
      # Checks-out your repository under $GITHUB_WORKSPACE, so your job can access it
```

```
      - uses: actions/checkout@v2
```

```
      # Runs a single command using the runners shell
```

```
      - name: Run a one-line script
```

```
        run: echo Hello, world!
```

```
      # Runs a set of commands using the runners shell
```

```
      - name: Run a multi-line script
```

```
        run: |
```

```
          echo "A"
```

```
          echo "好油喔Peko"
```

哪些事件要發生時要觸發這個 workflow

也能透過更多的if, else 判斷自定義在下面的jobs, action, step 裡面

# Example action.yml

```
# This is a basic workflow to help you get started with Actions

name: CI

# Controls when the action will run.
on:
  push:
    branches: [main]
  pull_request:
    branches: [main]

# A workflow run is made up of one or more jobs that can run sequentially or in parallel
jobs:
```

```
  build:

    runs-on: ubuntu-latest

    steps:
      # Checks-out your repository under $GITHUB_WORKSPACE, so your job can access it
      - uses: actions/checkout@v2

      # Runs a single command using the runners shell
      - name: Run a one-line script
        run: echo Hello, world!

      # Runs a set of commands using the runners shell
      - name: Run a multi-line script
        run: |
          echo "A"
          echo "好油喔Peko"
```

jobs 裡面有多個 job  
將執行動作分組  
平行執行或能有相互依賴關係  
  
每個 job 裡面都是獨立的 vm

# Example action.yml

```
# This is a basic workflow to help you get started with Actions

name: CI

# Controls when the action will run.
on:
  push:
    branches: [main]
  pull_request:
    branches: [main]

# A workflow run is made up of one or more jobs that can run sequentially or in parallel
jobs:
  build:
    runs-on: ubuntu-latest

    steps:
      # Checks-out your repository under $GITHUB_WORKSPACE, so your job can access it
      - uses: actions/checkout@v2

      # Runs a single command using the runners shell
      - name: Run a one-line script
        run: echo Hello, world!

      # Runs a set of commands using the runners shell
      - name: Run a multi-line script
        run: |
          echo "A"
          echo "好油喔Peko"
```

能指定測試環境- OS, shell....

# Example action.yml

```
# This is a basic workflow to help you get started with Actions

name: CI

# Controls when the action will run.
on:
  push:
    branches: [main]
  pull_request:
    branches: [main]

# A workflow run is made up of one or more jobs that can run sequentially or in parallel
jobs:
  build:
    runs-on: ubuntu-latest

    steps:
      # Checks-out your repository under $GITHUB_WORKSPACE, so your job can access it
      - uses: actions/checkout@v2

      # Runs a single command using the runners shell
      - name: Run a one-line script
        run: echo Hello, world!

      # Runs a set of commands using the runners shell
      - name: Run a multi-line script
        run: |
          echo "A"
          echo "好油喔Peko"
```

多個 step 構成，一步步執行

用別人的 action, action/checkout 為 checkout  
repo 獲得程式碼出來

執行自己的 command

# Java Example

< > Code ⓘ Issues 🔄 Pull requests ⌚ Actions 📁 Projects 📖 Wiki ⓘ Security ↗ Insights ⚙ Settings

## Choose a workflow template

Build, test, and deploy your code. Make code reviews, branch management, and issue triaging work the way you want. Select a workflow template to get started.

Skip this and [set up a workflow yourself](#) →

### Workflows made for your Java repository Suggested

#### Scala

By GitHub Actions

Build and test a Scala project with SBT.

Set up this workflow

sbt test

actions/starter-workflows



Scala

#### Publish Java Package with Maven

By GitHub Actions

Build a Java Package using Maven and publish to GitHub Packages.

Set up this workflow

```
mvn -B package --file pom.xml
mvn deploy -s $GITHUB_WORKSPACE/settings.xml
```



#### Java with Maven

By GitHub Actions

Build and test a Java project with Apache Maven.

Set up this workflow

```
mvn -B package --file pom.xml
```

actions/starter-workflows



Java

#### Java with Gradle

By GitHub Actions

Build and test a Java project using a Gradle wrapper script.

Set up this workflow

```
chmod +x gradlew
./gradlew build
```



# Java Example

<> Edit new file

Preview

Spaces

2

No wrap

```
1 # This workflow will build a Java project with Gradle
2 # For more information see: https://help.github.com/actions/language-and-framework-guides/building-and-te
3
4 name: Java CI with Gradle
5
6 on:
7   push:
8     branches: [ main ]
9   pull_request:
10     branches: [ main ]
11
12 jobs:
13   build:
14
15     runs-on: ubuntu-latest
16
17     steps:
18     - uses: actions/checkout@v2
19     - name: Set up JDK 1.8
20       uses: actions/setup-java@v1
21       with:
22         java-version: 1.8
23     - name: Grant execute permission for gradlew
24       run: chmod +x gradlew
25     - name: Build with Gradle
26       run: ./gradlew build
27
```

# **Lab4 - CI/CD with Github Actions**



# Lab4

## ❖ 說明

1. 這個 Lab 會有部份給分與加分題機制, 依照完成程度的多寡進行配分
2. 由於這次 lab 比較偏邏輯與理解, 助教會盡量在每個part 部份附上必要參考資料方便查詢
3. 程式輸入輸出都有一定彈性, 只要概念上有對即可

## ❖ 完成這個 Lab 你會需要研究的東西

1. Git, Git flow
2. Github Actions
3. CI/CD 流程思考與控制
4. Action Jobs 之間傳遞資料

# Lab4

- ❖ Part 1 - Write a rock-paper-scissors game with JAVA
  - ❖ Part 2 - Write a rock-paper-scissors game unit test
  - ❖ Part 3 - Use github action to compile, test, assemble JAR file
  - ❖ Part 4 - Use github action to automate release jar file when push is a tag pushed events
- 
- ❖ Bonus - Use action/cache to cache your dependencies and speed up your build time.

# Overall

<> Code

Issues

Pull requests

Actions

Projects

Wiki

Security

Insights

...

main

1 branch

3 tags

Go to file

Add file

Code

setsal update readme

8ba11bb 14 seconds ago 6 commits

.github

update

13 hours ago

gradle/wrapper

first commit

13 hours ago

src

first commit

13 hours ago

.gitignore

first commit

13 hours ago

README.md

update readme

14 seconds ago

build.gradle

update readme

14 seconds ago

gradlew

first commit

13 hours ago

gradlew.bat

first commit

13 hours ago

settings.gradle

first commit

13 hours ago

About

No description, website, or topics provided.

Readme

Releases 3

v1.2 Latest 13 hours ago

+ 2 releases

Packages

No packages published

Publish your first package

Languages

Java 100.0%

README.md

NYCU Software Testing Lab4 - CI/CD with Github Actions

CI/CD with Github Action passing

Let's play Rock Paper Scissors!

<> Code

Issues

Pull requests

Actions

Projects

Wiki

Security

Insights

Settings

Workflows

new workflow

All workflows

CI/CD with Github Action

All workflows

Showing runs from all workflows

Filter workflows

6 workflow runs

update readme

CI/CD with Github Action #6: Commit 8ba11bb pushed by setsal

main

1 minute ago

In progress

...

update readme

CI/CD with Github Action #5: Commit 9576890 pushed by setsal

main

13 hours ago

2m 13s

...

CI/CD with Github Action

CI/CD with Github Action #4: by setsal

v1.2

13 hours ago

2m 24s

...

CI/CD with Github Action

CI/CD with Github Action #3: by setsal

/setsal/st\_lab4\_demo

13 hours ago

Failure

...

CI/CD with Github Action

CI/CD with Github Action #2: by setsal

v1.0

13 hours ago

1m 40s

...

first commit

CI/CD with Github Action #1: Commit 1cd32a1 pushed by setsal

main

13 hours ago

1m 33s

...

Latest release

v1.2

d42a9fb

Compare

v1.2

github-actions released this 13 hours ago · 2 commits to main since this release

v1.2 release

Assets 3

st\_nycu\_lab4-1.0-SNAPSHOT.jar

1.94 KB

Source code (zip)

Source code (tar.gz)

# Part I

## ❖ Part 1 - Write a rock-paper-scissors game with JAVA

### 1. Main.java

- a. 主程式
- b. 呼叫 Game.java 相關邏輯進行勝負判斷

### 2. Game.java

- a. 遊戲相關邏輯處理
- b. 須含兩個 function
  - i. 判斷勝負 ( Player 1 win, Player 2 win, Draw )
  - ii. 輸入 validation: Invalid input throw IllegalArgumentException ( player 輸入剪刀石頭布以外 )

# Part 1 - rock-paper-scissors game

## ❖ Part 1 - rock-paper-scissors game

- Main.java
- Game.java
- 比完勝負一次後程式直接結束即可
- Sample

```
=== Welcome to Rock-Paper-Scissors game ===  
Enter Player 1 choice (rock, paper or scissors):  
rock  
Enter Player 2 choice (rock, paper or scissors):  
paper  
Player 2 win!
```

```
=== Welcome to Rock-Paper-Scissors game ===  
Enter Player 1 choice (rock, paper or scissors):  
rock  
Enter Player 2 choice (rock, paper or scissors):  
rock  
Draw!
```

```
=== Welcome to Rock-Paper-Scissors game ===  
Enter Player 1 choice (rock, paper or scissors):  
peko  
Exception in thread "main" java.lang.IllegalArgumentException: Bad Choice!  
    at RockPaperScissorsGame.main(RockPaperScissorsGame.java:12)
```

# Part I

## ❖ Note

- 基於作業三, 要使用 Gradle, Maven 哪種 java 建構工具都可以
- 個人會比較建議用 gradle, 還有 junit 5

## ❖ 評分點

- 遊戲執行正確性
- 是否有將主程式邏輯與遊戲判斷邏輯拆分出來 ( Main.java, Game.java )

# Part 2

## ❖ Part 2 - Write a rock-paper-scissors game unit test

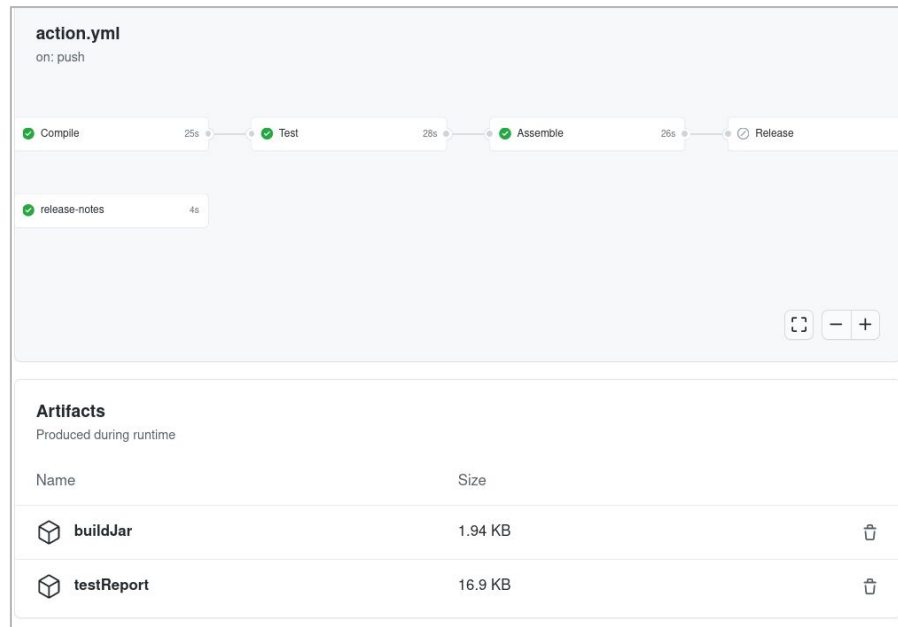
- 針對 Game.java 進行單元測試即可 ( Main.java 不要求 )
- 測試須滿足以下條件
  - a. all win cases
  - b. all lose cases
  - c. all draw cases
  - d. valid/invalid input cases

## ❖ 評分點

- 測試正確執行與否
- 是否所有情況都有進行測試

# Github Action artifacts

- 每個 job 裡面是獨立的 VM, 資料不相通
- 取出每次 workflow Test、Assemble 完後的資料
- **Upload/Download Artifacts Actions**
  - <https://github.com/actions/upload-artifact>
  - <https://github.com/actions/download-artifact>



**action.yml**  
on: push

Workflow steps: Compile (25s) → Test (28s) → Assemble (25s) → Release → release-notes (4s)

**Artifacts**  
Produced during runtime

Name	Size
buildJar	1.94 KB
testReport	16.9 KB



# Part 3

## ❖ Part 3 - Use github action to **compile, test, assemble jar**

可以先 Private, 但繳交截止前記得公開

- 將程式托管到 github 上並公開 ( 名稱請取 st\_nycu\_lab4\_[你的學號] )
- 撰寫 github action
  - a. 只要有新 commit 並 push, 就需執行 **Compile, Test, Assemble** 三種 job
  - b. **Storing workflow "all test report directory", "assemble jar file" as workflow artifacts**
  - c. Add github action badge to README

## ❖ 評分點

- Action 執行正常, Jar 檔執行正常
- Compile, Test, Assemble 不能放在同一 job 裡進行
- Compile, Test, Assemble 三種 job 須有先後依賴順序, 不能 "平行執行"
- 正確上傳 jar 檔與 testReport 到 github workflow artifacts 裡
- 程式碼需有 README file、gitignore file, 不可將 dependencies 或 build 或無關檔案上傳至 Github
- Badge

# Part 3

README.md

## NYCU Software Testing L Github Actions

CI/CD with Github Action passing

Let's play Rock Paper Scissors!

### Summary

Jobs

- ✓ Compile
- ✓ release-notes
- ✓ Test
- ✓ Assemble
- Release

Triggered via push 4 minutes ago

setsal pushed → 2c93bbe [main](#)

Status: **Success**

Total duration: **2m 1s**

Billable time: **1m 23s**

Artifacts: **2**

### action.yml





on: push

✓ Compile 25s → ✓ Test 28s → ✓ Assemble 26s → ○ Release

✓ release-notes 4s

### Artifacts

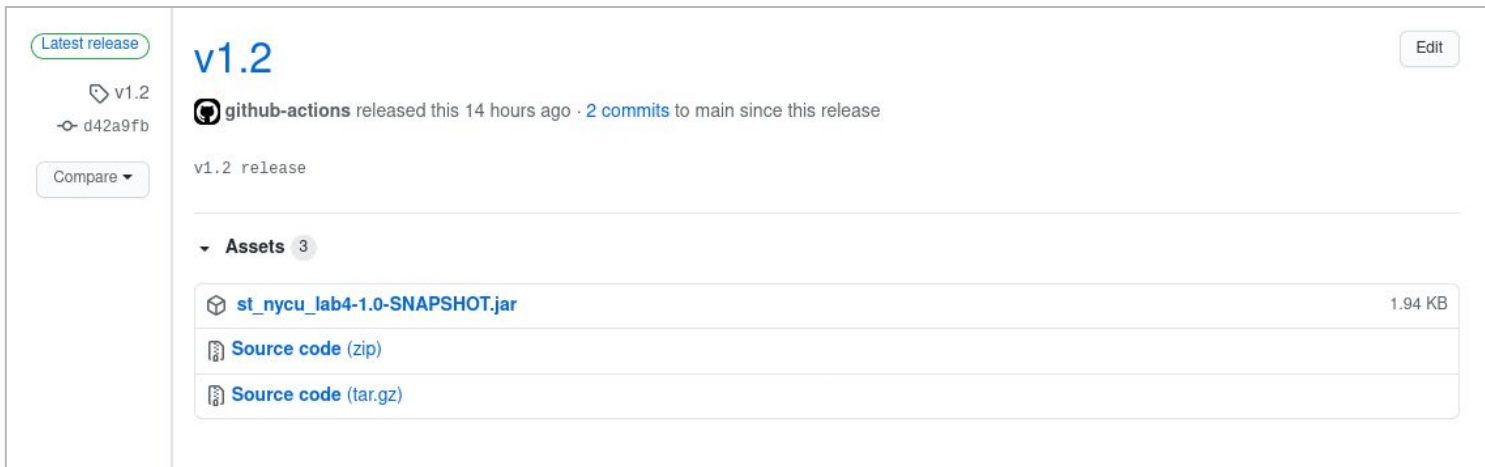
Produced during runtime

Name	Size	
 <b>buildJar</b>	1.94 KB	
 <b>testReport</b>	16.9 KB	

# Part 4

## ❖ Part 4 - Use github action to **automate release jar file when push is a tag pushed events**

1. 新增一個 job 為 Release
2. 該 Release 階段觸發條件為只有 Git tag push 的時候
3. 第三階段 Assemble jar file 後, 在第四階段透過 [action-gh-release](#) 加入到 Github release 裡面



# Part 4

- ❖ Part 4 - Use github action to automate release jar file when push is a tag pushed events



Normal push event



Tag push event

# Part 4

## ❖ 你可能會需要使用到的 action

- <https://github.com/softprops/action-gh-release>
- <https://github.com/actions/download-artifact>

## ❖ 評分點

- 該 Action job 執行結果
- 觸發該 job 需為 tag push event 時才執行該 job
  - 善用 Github action context expression syntax
  - <https://docs.github.com/en/actions/reference/context-and-expression-syntax-for-github-actions#determining-when-to-use-contexts>
- Assemble, Release 需在不同 job 裡面
- 產生之 jar 檔案名稱需跟 gradle、maven 裡面設定之 version 一致
  - 因為不同 step, 可能會用到 step 相關 output or temp environment
  - [https://docs.github.com/en/actions/reference/workflow-syntax-for-github-actions#jobsjob\\_idoutputs](https://docs.github.com/en/actions/reference/workflow-syntax-for-github-actions#jobsjob_idoutputs)
  - <https://docs.github.com/en/actions/reference/environment-variables>
  - 寫死會扣一點分數！

v1.2

 **github-actions** released this 21 hours ago · [2 commits](#) to main sinc

v1.2 release

Assets 3

 **st\_nycu\_lab4-1.0-SNAPSHOT.jar**

 [Source code](#) (zip)

 [Source code](#) (tar.gz)

其實也是可以多一個 workflow 來專門處理該種狀況

不過這裡要求能透過 condition 方式進行 job 執行與否判斷

# Bonus

❖ **Bonus - Use `action/cache` to cache your dependencies and speed up your build time.**

1. 每個 Job 獨立環境
2. 專案龐大, Dependencies 肥大問題
3. 嘗試使用 `action/cache` 來 cache 你的 dependencies 供每次 workflow 利用

# Lab4 作業繳交方式

# Lab4 作業繳交方式

- ❖ 請上傳一份 **PDF** 說明文件至 E3, 內容需含以下幾點
  - 學號, 姓名, 系級
  - Your lab4 Github repo url
  - Part 1 ~ 4 (Bonus optional) 簡單截圖說明
    - 如何完成...
    - step3, step4 請額外附上對應的 github workflow 連結參考 (以此當基準點評分)
    - 如果有做 Bonus 也請說明分析減少了哪些部分, 那些部分因此加速了
  - (Optional) 作業心得
- ❖ 本次 Lab 為期兩週
- ❖ 如果遇到困難, 寄信問問題請先多想想和查詢, 需要幫助也請描述完整情況 >.0



# If you want to run your GitHub Actions locally ...

❖ <https://github.com/nektos/act>

The screenshot shows the GitHub repository page for `nektos/act`. The repository is in the `master` branch and has 30 tags. The main content area displays a list of files and their commit history:

File	Description	Commit
<code>.github</code>	Update test workflows and improve 'expression_test.go'/'run_context_t...	12 days ago
<code>cmd</code>	Add --users flag to support Docker daemon that enables user namespac...	25 days ago
<code>pkg</code>	fix: add 'ImageOS' env var based on running platform (#571)	7 days ago
<code>.actrc</code>	feat: support custom GITHUB_RUN_ID, GITHUB_RUN_NUMBER (#369)	6 months ago
<code>.editorconfig</code>	Initial commit with support for GitHub actions	2 years ago
<code>.gitignore</code>	Fix path for local node12 actions (#371)	6 months ago
<code>.golangci.yml</code>	GitHub env file support (#426)	2 months ago
<code>.goreleaser.yml</code>	update goreleaser.yml	2 months ago
<code>CODEOWNERS</code>	gofmt	13 months ago
<code>CONTRIBUTING.md</code>	Update brand name for macOS (#252)	10 months ago
<code>LICENSE</code>	Initial commit	2 years ago
<code>Makefile</code>	Fix path for local node12 actions (#371)	6 months ago
<code>README.md</code>	Add more context to MODULE_NOT_FOUND errors and how to fix it (#55...	12 days ago
<code>VERIFICATION</code>	Fix 132 - support for chocolatey install (#144)	13 months ago
<code>act-clinspec</code>	Fix 132 - support for chocolatey install (#144)	13 months ago
<code>go.mod</code>	properly parse arguments to Docker container steps (#539)	29 days ago
<code>go.sum</code>	Add survey during first run for a default image (#483)	2 months ago

The right sidebar contains the following sections:

- About**: Run your GitHub Actions locally. Includes links for `golang`, `devops`, `ci`, and `github-actions`. It also shows the MIT License.
- Releases**: 30 releases. The latest release is `v0.2.20` on 9 Feb.
- Sponsor this project**: A section for sponsoring the project, featuring a profile for `cplee Casey Lee` and a `Sponsor` button.
- Packages**: No packages published.
- Contributors**: 72 contributors.

不過有些 feature 不支援

其實 Github Action 還能玩出更多的花樣

有興趣的可以多看看花樣百出的 Action Market 😊

喔 對了 安全也很重要喔 🍆

要注意 **Public Repo Action** 是會被別人看光光的

如果有些敏感檔案記得務必要小心！

**Thanks!**