

哈尔滨工业大学 计算学部

2024 年秋季学期 《开源软件开发实践》

## Lab4：开源软件开发中的 DevOps

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## 目 录

1 实验要求.....	1
2 实验内容 1 Github Actions DevOps 实践 .....	1
3 实验内容 2 Jenkins DevOps 实践.....	3
4 小结 .....	5

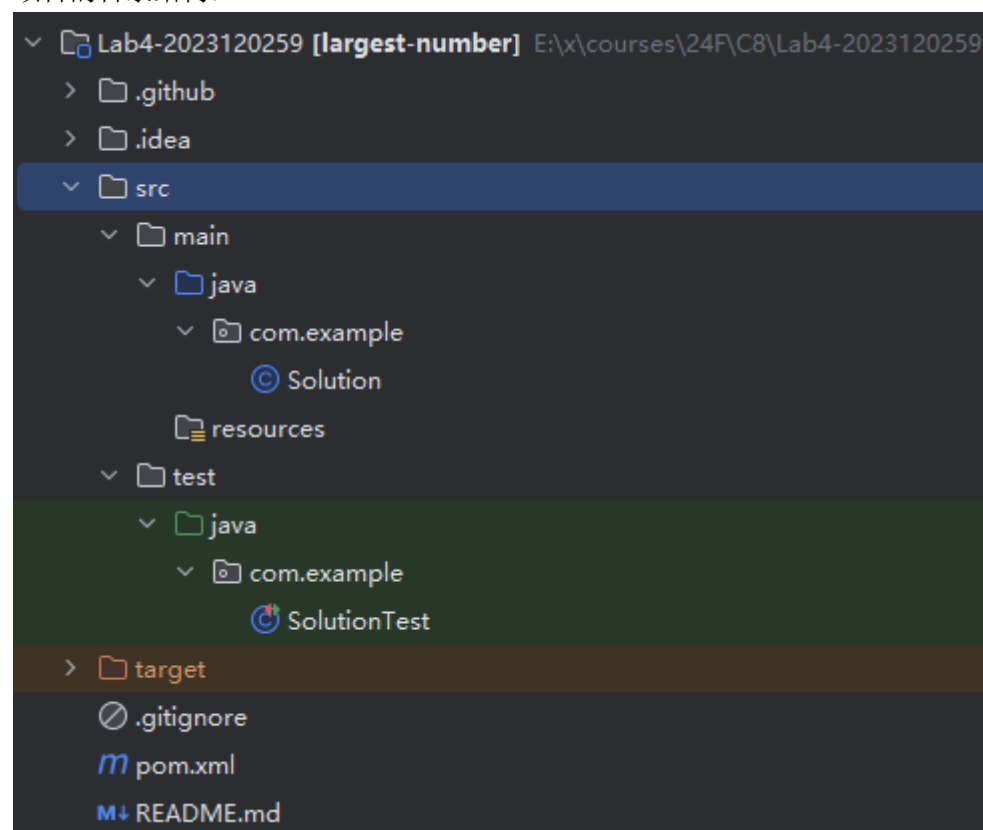
## 1 实验要求

本次实验训练开源软件开发中的基本 DevOps 操作，具体来说：

1. 掌握开源软件开发中的基本 DevOps 流程和工具的使用
2. 熟悉利用 Github Actions 进行 DevOps
3. 熟悉利用 Jenkins 进行 DevOps

## 2 实验内容 1 Github Actions DevOps 实践

项目的目录结构：



GitHub Actions:

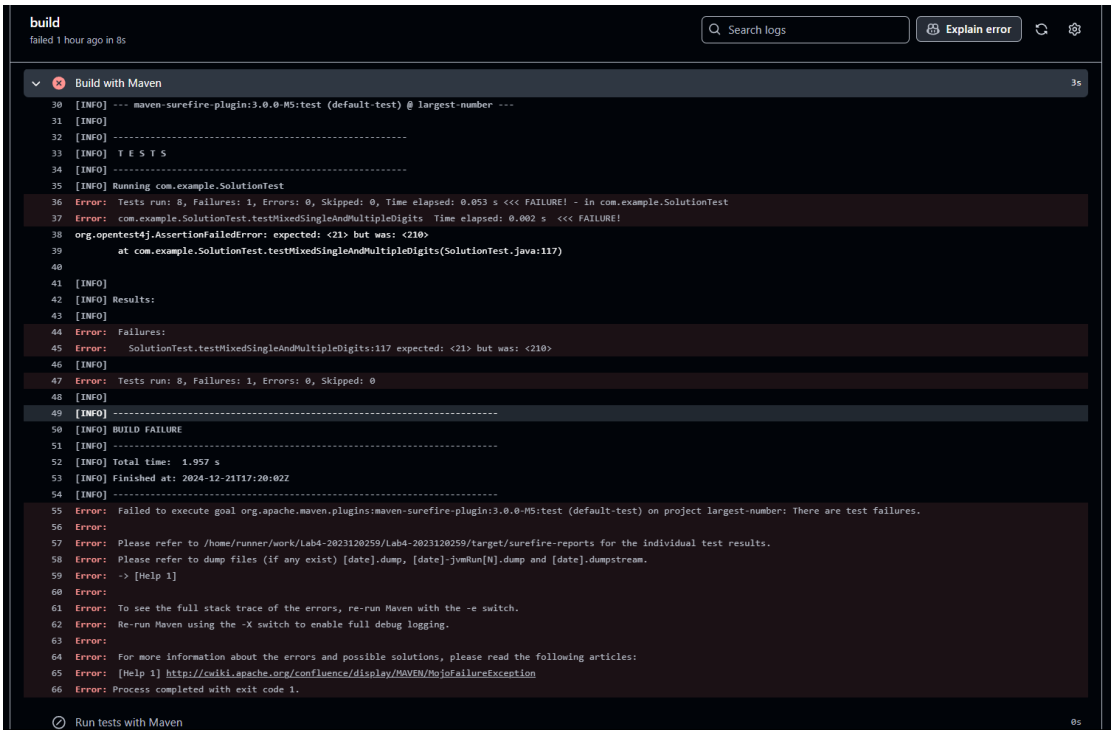
9 workflow runs			Event ▾	Status ▾	Branch ▾	Actor ▾
✓	Auto PR from dev-Jenkins to main	Java CI with Maven #9: Pull request #1 synchronize by under-tree	dev	2 minutes ago 22s	...	
✓	Auto PR from dev-Jenkins to main	Java CI with Maven #8: Pull request #1 opened by under-tree	dev	7 minutes ago 19s	...	
✓	fix up	Java CI with Maven #7: Commit 60344cc pushed by under-tree	main	15 minutes ago 32s	...	
✗	make a mistake	Java CI with Maven #6: Commit c2e9dbe pushed by under-tree	main	1 hour ago 16s	...	
✓	fix up	Java CI with Maven #5: Commit d57ea5f pushed by under-tree	main	1 hour ago 24s	...	
✓	Update maven.yml & pom.xml	Java CI with Maven #4: Commit f235e0b pushed by under-tree	main	2 hours ago 28s	...	

测试成功:

build		Search logs	🔄	⚙️
succeeded 1 hour ago in 15s				
>	✓ Set up job			0s
>	✓ Run actions/checkout@v4			1s
>	✓ Set up JDK 21			0s
>	✓ Build with Maven			9s
>	✓ Run tests with Maven			2s
>	✓ Post Set up JDK 21			1s
>	✓ Post Run actions/checkout@v4			0s
>	✓ Complete job			0s

build		Search logs	🔄	⚙️
succeeded 1 hour ago in 15s				
✓	Run tests with Maven			2s
16	[INFO] skip non existing resourceDirectory /home/runner/work/Lab4-2023120259/Lab4-2023120259/src/main/resources			
17	[INFO]			
18	[INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ largest-number ---			
19	[INFO] Nothing to compile - all classes are up to date			
20	[INFO]			
21	[INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ largest-number ---			
22	[INFO] Using 'UTF-8' encoding to copy filtered resources.			
23	[INFO] skip non existing resourceDirectory /home/runner/work/Lab4-2023120259/Lab4-2023120259/src/test/resources			
24	[INFO]			
25	[INFO] --- maven-compiler-plugin:3.1:testCompile (default-testCompile) @ largest-number ---			
26	[INFO] Nothing to compile - all classes are up to date			
27	[INFO]			
28	[INFO] --- maven-surefire-plugin:3.0.0-M5:test (default-test) @ largest-number ---			
29	[INFO]			
30	[INFO] -----			
31	[INFO] T E S T S			
32	[INFO] -----			
33	[INFO] Running com.example.SolutionTest			
34	[INFO] Tests run: 8, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.039 s - in com.example.SolutionTest			
35	[INFO]			
36	[INFO] Results:			
37	[INFO]			
38	[INFO] Tests run: 8, Failures: 0, Errors: 0, Skipped: 0			
39	[INFO]			
40	[INFO] -----			
41	[INFO] BUILD SUCCESS			
42	[INFO] -----			
43	[INFO] Total time: 1.319 s			
44	[INFO] Finished at: 2024-12-21T17:15:11Z			
45	[INFO] -----			

测试失败:



### 3 实验内容 2 Jenkins DevOps 实践

#### 步骤六

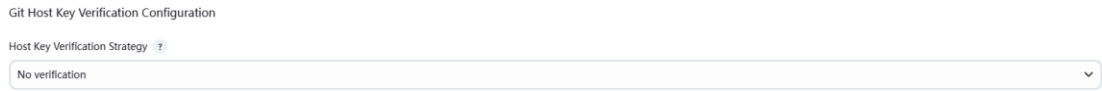
源码管理:



添加凭据:

凭据				
类型	提供者	存储 ↓	域	名称
	System		全局	under-tree

关闭 Host 检查:



## 构建触发器：

构建触发器

- ☐ 触发远程构建 (例如,使用脚本) ?
- ☐ Build after other projects are built ?
- ☐ Build periodically ?
- ☐ GitHub hook trigger for GITScm polling ?
- ☒ Poll SCM ?

日程表 ?

H/3 \* \* \* \*

Would last have run at 2024年12月22日星期日 中国标准时间 02:05:10; would next run at 2024年12月22日星期日 中国标准时间 02:08:10.

## 构建步骤：

Build Steps

Execute Windows batch command ?

命令

参阅 可用环境变量列表

mvn validate

高级

Execute Windows batch command ?

命令

参阅 可用环境变量列表

mvn test

高级

Execute Windows batch command ?

命令

参阅 可用环境变量列表

set GH\_TOKEN=ghp\_Q8MPocLzE4xjJ7CvIm9nLbrSE5zBqY0IqpnY  
gh pr create --title "Auto PR from dev-Jenkins to main" --body "This is an auto PR from Jenkins." --base main --head dev --repo OSSDP/Lab4-2023120259

## 步骤七

## 修改源码并提交至 dev 分支：



## 等待定时任务进行构建流程：

## 🟢 #7 (2024年12月22日 02:32:47)



启动用户 **admin**



This run spent:

- 4 ms waiting;
- 14 sec build duration;
- 14 sec total from scheduled to completion.



**Revision:** 48cd3f81fc4984c5d0523890c73101f5ff24e5af

**Repository:** git@github.com:OSSDP/Lab4-2023120259.git

- refs/remotes/origin/dev



Changes

1. test ([details](#) / [githubweb](#))

成功推送 PR 至仓库:

## 4 小结

通过本次实验，我学习了如何使用 GitHub Actions 实现源码的自动化测试，以及如何借助 Jenkins 实现定时任务（自动推送 PR）的构建。在实践的过程中，我逐渐掌握了 DevOps

的流程以及相关工具的使用。