

Gitlab Build Pipelines



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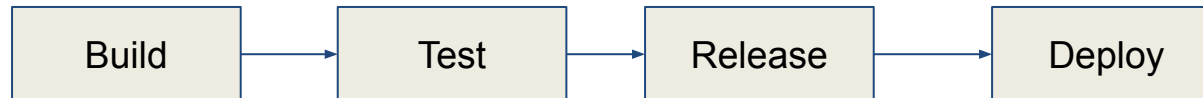
Software CI/CD Build Pipelines

- Fundamental building blocks for executing automated builds
 - Each step typically called a **stage**
 - Stages are executed for a specific purpose
 - Build (mvn package)
 - Test - testing tools
 - Release - create an artifact (.jar, .war, etc.)
 - Deploy - deploy release artifact to operation environment for testing, production, etc.
- Typical stages build pipeline:
 - Build
 - Test
 - Release
 - Deployment
- Can typically add custom stages

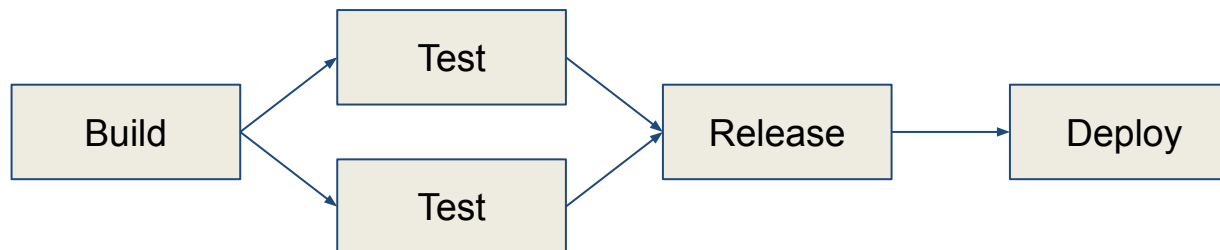


Software CI/CD Build Pipelines

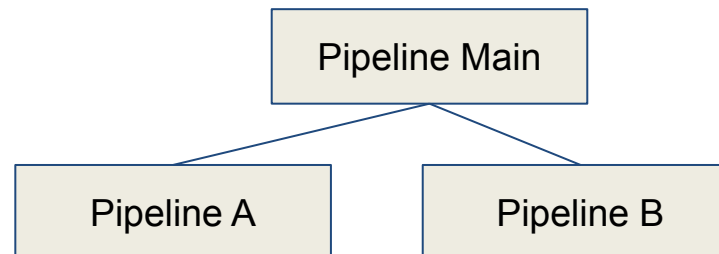
- Pipeline Structure
 - Simple Straight Line



- Parallel Execution (Acyclic)



- Hierarchical





Gitlab Pipeline Configuration

- **Convention** - gitlab looks for `.gitlab-ci.yml` in root repository directory to enable CI/CD pipelines
- Pipeline as code - IaC
 - **`.gitlab-ci.yml`** - pipeline configuration file in YAML format
 - Located in root directory of Gitlab repository
 - Managed the same as regular source code because changes affect quality and security of software builds.
- Build Stages
 - Executed as docker containers to isolate environment for running tools
 - Outputs from stages (artifacts, files. builds) can be cached to be used by downstream stages.
 - Gitlab has docker images for types of stages.
- Pipeline execution triggers
 - Manually
 - Branch commits
 - Rule based



New “CI/CD” Section

S

SimplePipeline

Project information

Repository

Issues 0

Merge requests 0

CI/CD

Pipelines

Editor

Jobs

Schedules

Test Cases

Security & Compliance

Deployments

Packages & Registries

cpsec4970-sum-a > aubie > SimplePipeline > Pipelines

All 2 Finished Branches Tags

Filter pipelines

Status

Pipeline

passed

00:00:12

5 minutes ago

Add README.md

#550381734

main

0d0ffadd

latest

passed

00:00:17

5 minutes ago

Update .gitlab-ci.yml

#550381700

main


7f6a1566



Executing a simple pipeline

main simplepipeline / .gitlab-ci.yml

Update .gitlab-ci.yml
Peter Baljet authored just now

 .gitlab-ci.yml 103 bytes

```
1 stages:
2   - build
3
4 image: alpine
5
6 build1:
7   stage: build
8   script:
9     - echo "Executing build stage"
10
```

Only has “build” stage pipeline

Uses “alpine” linux docker image

“build1” is single stage

“script” tag triggers following indented lines to be executed as a script



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Pipeline Results

S SimplePipeline

- Project information
- Repository
- Issues 0
- Merge requests 0
- CI/CD
- Pipelines**
- Editor
- Jobs
- Schedules
- Test Cases
- Security & Compliance
- Deployments
- Packages & Registries
- Infrastructure
- Monitor
- Analytics

cpsec4970-sum-a > aubie > SimplePipeline > Pipelines > #550381734

passed Pipeline #550381734 triggered 8 minutes ago by **Peter Baljet**

Add README.md

1 job for **main** in 12 seconds

latest

0d0ffadd

No related merge requests found.

Pipeline Needs Jobs 1 Tests 0

Build

build1

cpsec4970-sum-a > aubie > SimplePipeline > Jobs > #2518270156

passed Job build1 triggered 8 minutes ago by **Peter Baljet**

```
1 Running with gitlab-runner 14.10.0~beta.50.g1f2fe53e (1f2fe53e)
2 on blue-4.shared.runners-manager.gitlab.com/default J2nyw-s
3 Resolving secrets
4 Preparing the "docker+machine" executor
5 Using Docker executor with image alpine ...
6 Pulling docker image alpine ...
7 Using docker image sha256:e66264b98777e12192600bf9b4d663655c98a090072e1bab49e233d7531d1294 for alpine with digest alpine@sha256:
686d8c9dfa6f3ccfc8230bc3178d23f84eeaf7e457f36f271abacc53015037c ...
8 Preparing environment
9 Running on runner-j2nyw-s-project-36564347-concurrent-0 via runner-j2nyw-s-shared-1653769822-c6a05f00...
10 Getting source from Git repository
11 $ eval "$SCI_PRE_CLONE_SCRIPT"
12 Fetching changes with git depth set to 20...
13 Initialized empty Git repository in /builds/cpsec4970-sum-a/aubie/simplepipeline/.git/
14 Created fresh repository.
15 Checking out 0d0ffadd as main...
16 Skipping Git submodules setup
17 Executing "step_script" stage of the job script
18 Using docker image sha256:e66264b98777e12192600bf9b4d663655c98a090072e1bab49e233d7531d1294 for alpine with digest alpine@sha256:
686d8c9dfa6f3ccfc8230bc3178d23f84eeaf7e457f36f271abacc53015037c ...
19 $ echo "Executing build stage"
20 Executing build stage
21 Cleaning up project directory and file based variables
22 Job succeeded
```



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