

With a working project, we can finally get into implementing a CI/CD pipeline in GitLab. We'll use it to automatically run `dotnet build` and `dotnet test`. The pipeline configuration is defined in YAML, within the project itself. So, we have to create a new file in the root of the repo and commit it to GitLab.

```
PS C:\Tools\mycalculator> code .gitlab-ci.yml
```

```
image: mcr.microsoft.com/dotnet/sdk:6.0

variables:
  project: "Calculator"

stages:
  - build
  - test

before_script:
  - "dotnet restore"

build:
  stage: build
  variables:
    build_path: "$project"
  script:
    - "cd $build_path"
    - "dotnet build"

test:
  stage: test
  variables:
    test_path: "$project.Tests"
  script:
    - "cd $test_path"
    - "dotnet test"
```

The GitLab documentation includes a [keyword reference](#) for `.gitlab-ci.yml`.


Image defines the Docker container that we want the Runner to use. Because this is a .NET project, Microsoft's image makes logical sense as it will already contain the .NET SDK.

Stages allows us to break the pipeline down into smaller parts, which helps identity where any failures occur. E.g. did the pipeline failed because of a build failure, or because a test failure.

Within each stage, we have **script** options. These define the actual commands that need to be run. These are pretty much identical to what we ran manually in the last few lessons. However, you can see that it supports the use of **variables**, which makes re-using these configurations a little easier.

Push this file to the repo and the pipeline will trigger. The build stage will come first.

passed

Job build triggered 1 minute ago by  Rasta Mouse

Search job log

1 Running with gitlab-runner 15.5.1 (7178588d)

2 on gitlab yV1_4fbh

> 3 Preparing the "docker" executor

> 7 Preparing environment

> 9 Getting source from Git repository

10 Fetching changes with git depth set to 20...

11 Initialized empty Git repository in /builds/rasta/mycalculator/.git/

12 Created fresh repository.

13 Checking out e45a9b9b as main...

14 Skipping Git submodules setup

> 15 Executing "step_script" stage of the job script

16 Using docker image sha256:0ff04a23cb9e6263452b2cec8d7b23515163da2af5dd81f73263912baa71051e for mcr.microsoft.com/dotnet/sdk:6.0 with digest mcr.microsoft.com/dotnet/sdk@sha256:807eba67b95246174c63daa7fd5b5990ce555ecbff73437bbe6c31f28660acb ...

17 \$ dotnet restore

18 Determining projects to restore...

19 Restored /builds/rasta/mycalculator/Calculator/Calculator.csproj (in 103 ms).

20 Restored /builds/rasta/mycalculator/Calculator.Tests/Calculator.Tests.csproj (in 45.78 sec).

21 \$ cd \$build_path

22 \$ dotnet build

23 MSBuild version 17.3.2+561848881 for .NET

24 Determining projects to restore...

25 All projects are up-to-date for restore.

26 Calculator -> /builds/rasta/mycalculator/Calculator/bin/Debug/net6.0/Calculator.dll

27 Build succeeded.

28 0 Warning(s)

29 0 Error(s)

30 Time Elapsed 00:00:02.24


31 Job succeeded

00:00

00:01

Followed by the test stage.

passed

Job test triggered just now by  Rasta Mouse

Search job log

1 Running with gitlab-runner 15.5.1 (7178588d)

2 on gitlab yV1_4fbh

> 3 Preparing the "docker" executor

> 8 Preparing environment

9 Running on runner-yv14fbh-project-3-concurrent-0 via gitlab...

> 11 Getting source from Git repository

> 17 Executing "step_script" stage of the job script

18 Using docker image sha256:0ff04a23cb9e6263452b2cec8d7b23515163da2af5dd81f73263912baa71051e for mcr.microsoft.com/dotnet/sdk:6.0 with digest mcr.microsoft.com/dotnet/sdk@sha256:807eba67b95246174c63daa7fd5b5990ce555ecbff73437bbe6c31f28660acb ...

19 \$ dotnet restore

20 Determining projects to restore...

21 Restored /builds/rasta/mycalculator/Calculator/Calculator.csproj (in 87 ms).

22 Restored /builds/rasta/mycalculator/Calculator.Tests/Calculator.Tests.csproj (in 35.53 sec).

23 \$ cd \$test_path

24 \$ dotnet test

25 Determining projects to restore...

26 All projects are up-to-date for restore.

27 Calculator -> /builds/rasta/mycalculator/Calculator/bin/Debug/net6.0/Calculator.dll

28 Calculator.Tests -> /builds/rasta/mycalculator/Calculator.Tests/bin/Debug/net6.0/Calculator.Tests.dll

29 Test run for /builds/rasta/mycalculator/Calculator.Tests/bin/Debug/net6.0/Calculator.Tests.dll (.NETCoreApp,Version=v6.0)

30 Microsoft (R) Test Execution Command Line Tool Version 17.3.1 (x64)

31 Copyright (c) Microsoft Corporation. All rights reserved.

32 Starting test execution, please wait...

33 A total of 1 test files matched the specified pattern.

34 Passed! - Failed: 0, Passed: 4, Skipped: 0, Total: 4, Duration: 4 ms - /builds/rasta/mycalculator/Calculator.Tests/bin/Debug/net6.0/Calculator.Tests.dll (net6.0)

36 Job succeeded

00:01

00:01

00:00

00:43

Hopefully everything will pass, and you'll see a lot of satisfying green ticks.