

COUNTER PYTHON APP

Deploy App

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Zitouni Iptissem, Léa Perin

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I. Introduction

[1. Project objectives](#)

Our project aims to automate the deployment of our web application. To do this, we will use different technologies : gitlab and docker.

So we will see step by step how to do this.

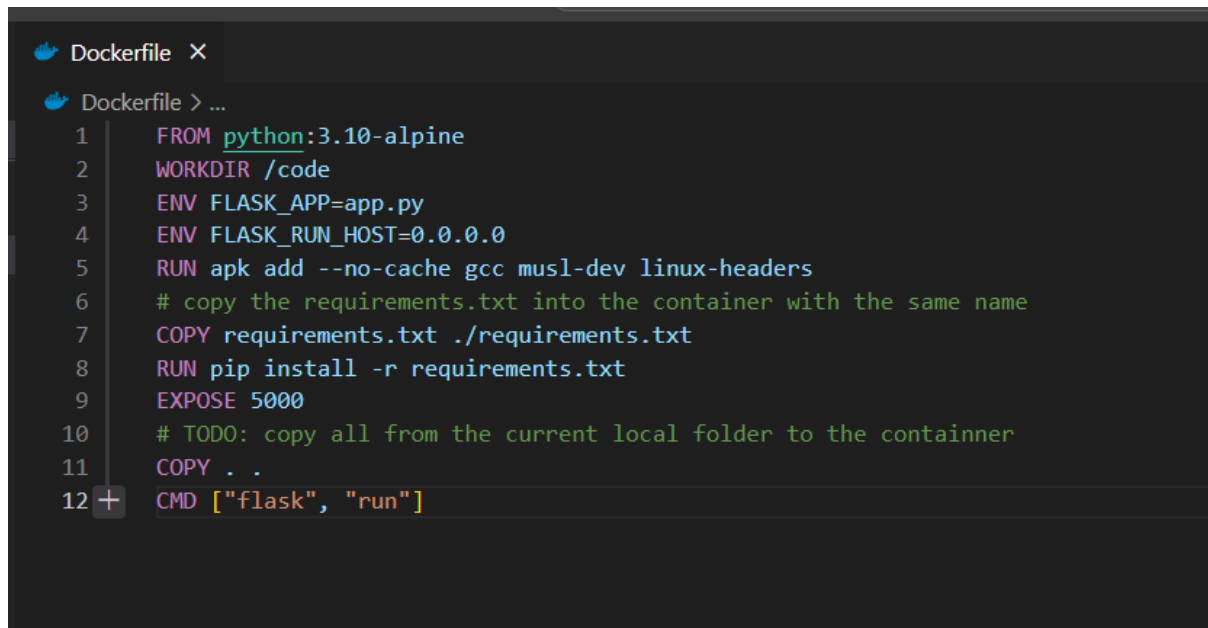
[1.2 Context of our infrastructure](#)

3 virtual machines :

- gitlab-instance : where we create our Ci/CD pipeline
- gitlab-runner : where this runs
- dev-srv : where the application will run

II. Environment: Dockerfile, git and runner configuration

1.DockerFile

A screenshot of a code editor showing a Dockerfile. The editor has a dark theme. The title bar of the editor shows 'Dockerfile' with a close button. The content of the Dockerfile is as follows:

```
1 FROM python:3.10-alpine
2 WORKDIR /code
3 ENV FLASK_APP=app.py
4 ENV FLASK_RUN_HOST=0.0.0.0
5 RUN apk add --no-cache gcc musl-dev linux-headers
6 # copy the requirements.txt into the container with the same name
7 COPY requirements.txt ./requirements.txt
8 RUN pip install -r requirements.txt
9 EXPOSE 5000
10 # TODO: copy all from the current local folder to the container
11 COPY . .
12 + CMD ["flask", "run"]
```

2. Push our project gitlab instance

Once the files of our application are up to date, we will push them in gitlab :

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```
PS C:\Ynov\Devops\counter_pyhton_app> git init --initial-branch=main
Initialized empty Git repository in C:/Ynov/Devops/counter_pyhton_app/.git/
PS C:\Ynov\Devops\counter_pyhton_app> git remote add origin http://192.168.198.142/root/counter_python_app.git
PS C:\Ynov\Devops\counter_pyhton_app> git add .
PS C:\Ynov\Devops\counter_pyhton_app> git commit -m "initial commit"
[main (root-commit) 0a805c5] initial commit
 create mode 100644 Dockerfile
 create mode 100644 README.md
 create mode 100644 app.py
 create mode 100644 requirements.txt
PS C:\Ynov\Devops\counter_pyhton_app> git push --set-upstream origin main
Enumerating objects: 6, done.
Counting objects: 100% (6/6), done.
Delta compression using up to 12 threads
Compressing objects: 100% (5/5), done.
Writing objects: 100% (6/6), 1.50 KiB | 1.50 MiB/s, done.
Total 6 (delta 0), reused 0 (delta 0), pack-reused 0
remote:
remote:
remote:
remote: To configure the remote, run:
remote:   git remote add origin http://192.168.198.142/root/counter_python_app.git
remote:
remote: To view the project, visit:
remote:   http://192.168.198.142/root/counter_python_app
remote:
remote:
remote:
To http://192.168.198.142/root/counter_python_app.git
 * [new branch]      main -> main
branch 'main' set up to track 'origin/main'.
PS C:\Ynov\Devops\counter_pyhton_app>
```

Result :

The screenshot shows a GitHub repository page for 'counter_python_app'. At the top, there's a header with the repository name, a lock icon, and statistics: 1 Commit, 1 Branch, 0 Tags, and 2 KiB Project Storage. Below this, a commit card for 'initial commit' by 'Nerlyss1' is shown, with the commit hash '0a805c51'. The main content area displays the 'main' branch and a list of files: README, Dockerfile, app.py, and requirements.txt. Each file has a 'Code' button. Below the file list, there's a table with columns 'Name', 'Last commit', and 'Last update'. The table lists the files and their commit history. At the bottom, there's a section for 'README.md'.

Name	Last commit	Last update
Dockerfile	initial commit	7 minutes ago
README.md	initial commit	7 minutes ago
app.py	initial commit	7 minutes ago
requirements.txt	initial commit	7 minutes ago

[3. Add runner to our instance :](#)

admin area > ci cd > runner > assign the runner to our project

Project runners

These runners are assigned to this project.

New project runner



Assigned project runners

● #4 (suXzdRtP8) 🔒

runner1

runner

shell



Disable for this project

III. Automation: CI/CD file

[1. Build-image step :](#)

This will create a docker images

```
build-image-job:
  stage: build-image
  script:
    - docker build -t ynov_lea_ipiti_counter_app_img .
    - docker images
```

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When we run our pipeline, the image is well created :

```
$ docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
ynov_lea_ipiti_counter_app_img	latest	964a575f17b8	1 second ago	224MB

2. Publish-image step :

This step will push our image into dockerhub:

We create variables in order not to disclose our personal information : settings > cicd > variable

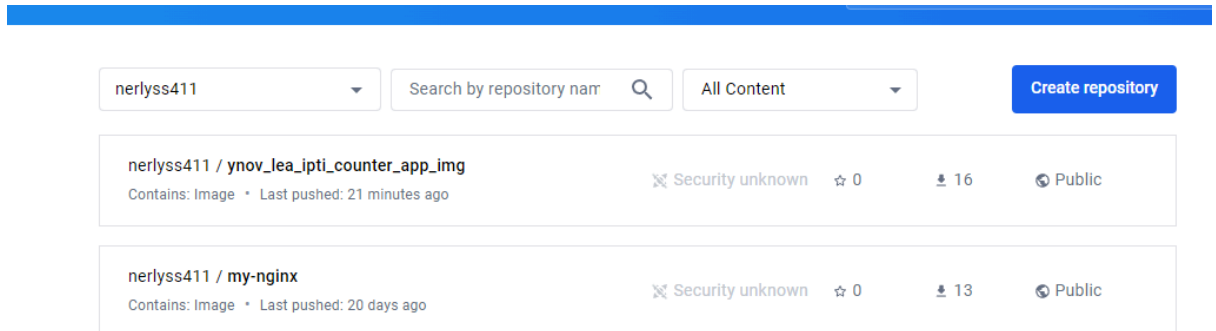
```
publish-image-job:
  stage: publish-image
  script:
    - docker tag ynov_lea_ipiti_counter_app_img nerlyss411/ynov_lea_ipiti_counter_app_img:$CI_COMMIT_SHORT_SHA
    - echo "$DOCKERHUB_PASSWORD" | docker login --username "$DOCKERHUB_LOGIN" --password-stdin
    - docker push nerlyss411/ynov_lea_ipiti_counter_app_img:$
```

When pipeline is running :

```
1 Running with gitlab-runner 16.8.0 (c72a09b6)
2 on runner1 suXzdRtP, system ID: s_6210be06e6c2
3 Preparing the "shell" executor
4 Using Shell (bash) executor...
5 Preparing environment
6 Running on pcdely...
7 Getting source from Git repository
8 Fetching changes with git depth set to 20...
9 Reinitialized existing Git repository in /home/gitlab-runner/builds/suXzdRtP/0/root/counter_python_app/.git/
10 Checking out 4d522f7f as detached HEAD (ref is main)...
11 Skipping Git submodules setup
12 Executing "step_script" stage of the job script
13 $ echo "$DOCKERHUB_PASSWORD" | docker login --username "$DOCKERHUB_LOGIN" --password-stdin
14 WARNING! Your password will be stored unencrypted in /home/gitlab-runner/.docker/config.json.
15 Configure a credential helper to remove this warning. See
16 https://docs.docker.com/engine/reference/commandline/login/#credentials-store
17 Login Succeeded
18 $ docker tag ynov_lea_ipiti_counter_app_img nerlyss411/ynov_lea_ipiti_counter_app_img:$CI_COMMIT_SHORT_SHA
19 $ docker push nerlyss411/ynov_lea_ipiti_counter_app_img:$CI_COMMIT_SHORT_SHA
20 The push refers to repository [docker.io/nerlyss411/ynov_lea_ipiti_counter_app_img]
21 5d571e7ab619: Preparing
22 f370f404a3ea: Preparing
23 3866c8c7b9e6: Preparing
24 cfbe553f9f6b: Preparing
25 5dc6cd483cfe: Preparing
```

```
17 Login Succeeded
18 $ docker tag ynov_lea_ipiti_counter_app_img nerlyss411/ynov_lea_ipiti_counter_app_img:$CI_COMMIT_SHORT_SHA
19 $ docker push nerlyss411/ynov_lea_ipiti_counter_app_img:$CI_COMMIT_SHORT_SHA
20 The push refers to repository [docker.io/nerlyss411/ynov_lea_ipiti_counter_app_img]
21 5d571e7ab619: Preparing
22 f370f404a3ea: Preparing
23 3866c8c7b9e6: Preparing
24 cfbe553f9f6b: Preparing
25 5dc6cd483cfe: Preparing
26 8bf30651cf83: Preparing
27 9da37f712481: Preparing
28 9869e4387cac: Preparing
29 4c9c2b9681ab: Preparing
```

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3. Deploy-app step :

- SSH Connexion : gitlab-runner should access to dev-srv.

First of all, we create a file in variable who contains our key.

Edit variable ×

Type

File

Environments [?](#)

All (default)

Flags [?](#)

- ☒ **Protect variable**
Export variable to pipelines running on protected branches and tags only.
- ☐ **Mask variable**
Variable will be masked in job logs. Requires values to meet regular expression requirements.
- ☒ **Expand variable reference**
\$ will be treated as the start of a reference to another variable.

Key

SSH_PRIVATE_KEY

You can use CI/CD variables with the same name in

This step will allow to deploy our site: we will connect in SSH using the create variable previously. Then we delete the container if it exists then we run our new container.

```
deploy-app-job:
  stage: deploy-app
  script:
```

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```
- chmod 400 $SSH_PRIVATE_KEY
- ssh -i $SSH_PRIVATE_KEY -o StrictHostKeyChecking=no
nerlyss@192.168.198.143 "docker rm -f counter_app || true && docker run
--name counter_app -d -p 8080:5000
nerlyss411/ynov_lea_ipiti_counter_app_img:$CI_COMMIT_SHORT_SHA"
```

Once the pipeline is launched :

```
12 Executing "step_script" stage of the job script
13 $ chmod 400 $SSH_PRIVATE_KEY
14 $ ssh -i $SSH_PRIVATE_KEY -o StrictHostKeyChecking=no nerlyss@192.168.198.143 "docker rm -f counter_app || true && docker run --name counter_app -d -p
8080:5000 nerlyss411/ynov_lea_ipiti_counter_app_img:$CI_COMMIT_SHORT_SHA"
15 counter_app
16 Unable to find image 'nerlyss411/ynov_lea_ipiti_counter_app_img:cafe1ed5' locally
17 cafe1ed5: Pulling from nerlyss411/ynov_lea_ipiti_counter_app_img
18 4abcf2066143: Already exists
19 c3cdf40b8bda: Already exists
20 e364c76f7f9c: Already exists
21 00a2c001a0af: Already exists
22 77b5492a4815: Already exists
23 9ce9cb2f7bb4: Already exists
24 8f5b0c0b0b54: Already exists
25 7e194aa0cef6: Already exists
26 604aee12742a: Already exists
27 5b36cff4e232: Pulling fs layer
28 5b36cff4e232: Verifying Checksum
29 5b36cff4e232: Download complete
30 5b36cff4e232: Pull complete
31 Digest: sha256:e1a0e0fb3d4068bf7c87bf51e2c834164a557656d7869f34a3d9675cac46f4db
32 Status: Downloaded newer image for nerlyss411/ynov_lea_ipiti_counter_app_img:cafe1ed5
33 f544704b27344afcdc0344f35de03a8bfa36083fac7db7f26b76ee674a49012
34 Cleaning up project directory and file based variables
35 Job succeeded
```

Test

✓ Passed Administrator created pipeline for commit `cafe1ed5` finished 15 minutes ago

For `main`

latest 3 Jobs 45 seconds, queued for 9 seconds

Pipeline Needs Jobs 3 Tests 0

build-image

✓ build-image-job

publish-image

✓ publish-image-job

deploy-app

✓ deploy-app-job

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Interface web :

