

BÁO CÁO THỰC HÀNH

Môn học: LẬP TRÌNH AN TOÀN VÀ KHAI THÁC LỖ HỔNG PHẦN MỀM

Tên chủ đề: AUTOMATING EVERYTHING AS CODE

GVHD: Nguyễn Hữu Quyền

Nhóm: 7

1. THÔNG TIN CHUNG:

(Liệt kê tất cả các thành viên trong nhóm)

Lớp: NT521.P11.ANTT.1

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2. NỘI DUNG THỰC HIỆN:¹

STT	Nội dung	Tình trạng	Trang
1	Cho biết thông tin về lần commit vừa thực hiện	100%	1
2	Hoàn thiện các bước trong tích hợp Git với Github	100%	1 - 4
3	Thực hiện commit và push code với thông điệp "Changed port from 8080 to 5050"	100%	4 - 6
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5	Hoàn thành job kiểm tra bản dựng ứng dụng tự động	100%	7 - 9
6	Hoàn thành pipeline của 2 ứng dụng Build và Test	100%	10 - 11
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Điểm tự đánh giá			10/10

Phần bên dưới của báo cáo này là tài liệu báo cáo chi tiết của nhóm thực hiện.

¹ Ghi nội dung công việc, các kịch bản trong bài Thực hành

BÁO CÁO CHI TIẾT

Bài 1: Cho biết thông tin commit:

```
Committing README.MD to begin tracking changes
vovanphuc@vovanphuc-Victus-by-HP-Laptop-16-d0xxx:~/labs/git-intro$ echo "I am beginning to understand Git" >> README.MD
vovanphuc@vovanphuc-Victus-by-HP-Laptop-16-d0xxx:~/labs/git-intro$ cat README.MD
I am on my way to passing the exam
I am beginning to understand Git
vovanphuc@vovanphuc-Victus-by-HP-Laptop-16-d0xxx:~/labs/git-intro$ git status
On branch master
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   README.MD

no changes added to commit (use "git add" and/or "git commit -a")
vovanphuc@vovanphuc-Victus-by-HP-Laptop-16-d0xxx:~/labs/git-intro$ git add README.MD
vovanphuc@vovanphuc-Victus-by-HP-Laptop-16-d0xxx:~/labs/git-intro$ git commit -m "Added additional line to file"
[master b433340] Added additional line to file
1 file changed, 1 insertion(+)
vovanphuc@vovanphuc-Victus-by-HP-Laptop-16-d0xxx:~/labs/git-intro$ git log
commit b433340c5a63ac39480cc396efd5fe8d142dc901 (HEAD -> master)
Author: Phuc Vo <phucvo.240504@gmail.com>
Date: Tue Sep 17 09:18:52 2024 +0700

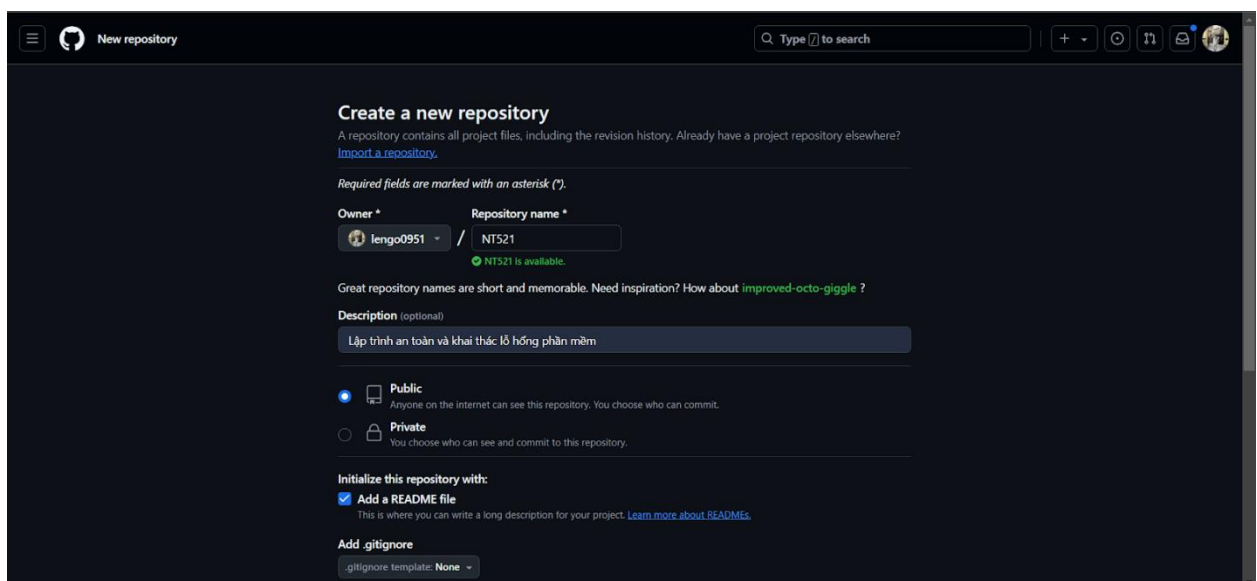
    Added additional line to file

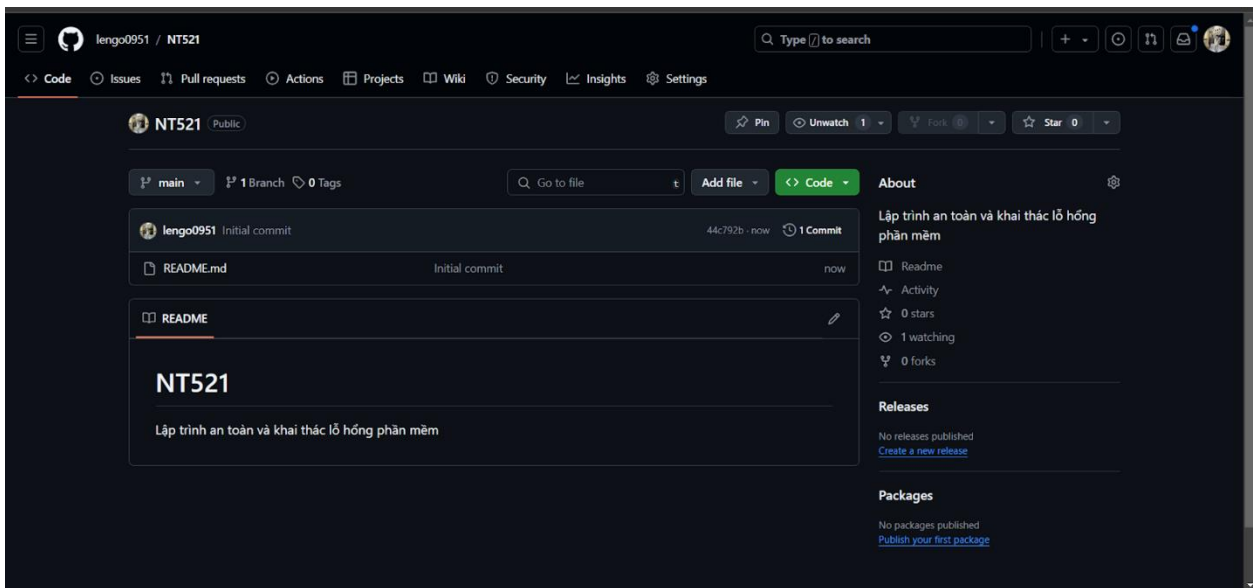
commit 5aefe417917b6b3dfff8477be0f263d3de45960f2
Author: Phuc Vo <phucvo.240504@gmail.com>
```

- Sử dụng “git log” để xem thông tin của tất cả các lần commit, thông tin của lần commit gần nhất sẽ xuất hiện đầu tiên.
- Commit ID: b433340c5a63ac39480cc396efd5fe8d142dc901
- Ngày giờ commit: Tue Sep 17 09:18:52 2024 +0700
- Thông điệp commit: Added additional line to file

Bài 2: Hoàn thiện các bước trong tích hợp Git với Github:

Bước 3: Tạo repository





Sau khi tạo xong

Bước 4+5: tạo devops-study-team và di chuyển

Đặt tên folder là devops-study-team và di chuyển file README.md vào

```
coolstar17@QuocNgo-PC: ~/LTAT_Labs/devops-study-team
```

```
coolstar17@QuocNgo-PC:~/LTAT_Labs$ mkdir devops-study-team
coolstar17@QuocNgo-PC:~/LTAT_Labs$ mv README.md devops-study-team/
coolstar17@QuocNgo-PC:~/LTAT_Labs$ cd devops-study-team/
coolstar17@QuocNgo-PC:~/LTAT_Labs/devops-study-team$ ls
README.md
coolstar17@QuocNgo-PC:~/LTAT_Labs/devops-study-team$
```

Bước 6: Khởi tạo Git repo

```
coolstar17@QuocNgo-PC: ~/LTAT_Labs/devops-study-team
```

```
coolstar17@QuocNgo-PC:~/LTAT_Labs$ cd devops-study-team/
coolstar17@QuocNgo-PC:~/LTAT_Labs/devops-study-team$ git init
hint: Using 'master' as the name for the initial branch. This default branch name
hint: is subject to change. To configure the initial branch name to use in all
hint: of your new repositories, which will suppress this warning, call:
hint:
hint:   git config --global init.defaultBranch <name>
hint:
hint: Names commonly chosen instead of 'master' are 'main', 'trunk' and
hint: 'development'. The just-created branch can be renamed via this command:
hint:
hint:   git branch -m <name>
Initialized empty Git repository in /home/coolstar17/LTAT_Labs/devops-study-team/.git/
coolstar17@QuocNgo-PC:~/LTAT_Labs/devops-study-team$
```

Bước 7: Trở Repo tới Github Repo

```
coolstar17@QuocNgo-PC:~/LTAT_Labs/devops-study-team$ git remote add origin https://github.com/lengo0951/NT521.git
coolstar17@QuocNgo-PC:~/LTAT_Labs/devops-study-team$ git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
  README.md

nothing added to commit but untracked files present (use "git add" to track)
coolstar17@QuocNgo-PC:~/LTAT_Labs/devops-study-team$
```

Bước 8:

```
coolstar17@QuocNgo-PC:~/LTAT_Labs/devops-study-team$ git add README.md
coolstar17@QuocNgo-PC:~/LTAT_Labs/devops-study-team$ git commit -m "update README.md"
[master (root-commit) 18b6666] update README.md
 1 file changed, 3 insertions(+)
 create mode 100644 README.md
coolstar17@QuocNgo-PC:~/LTAT_Labs/devops-study-team$
```

Bước 9:

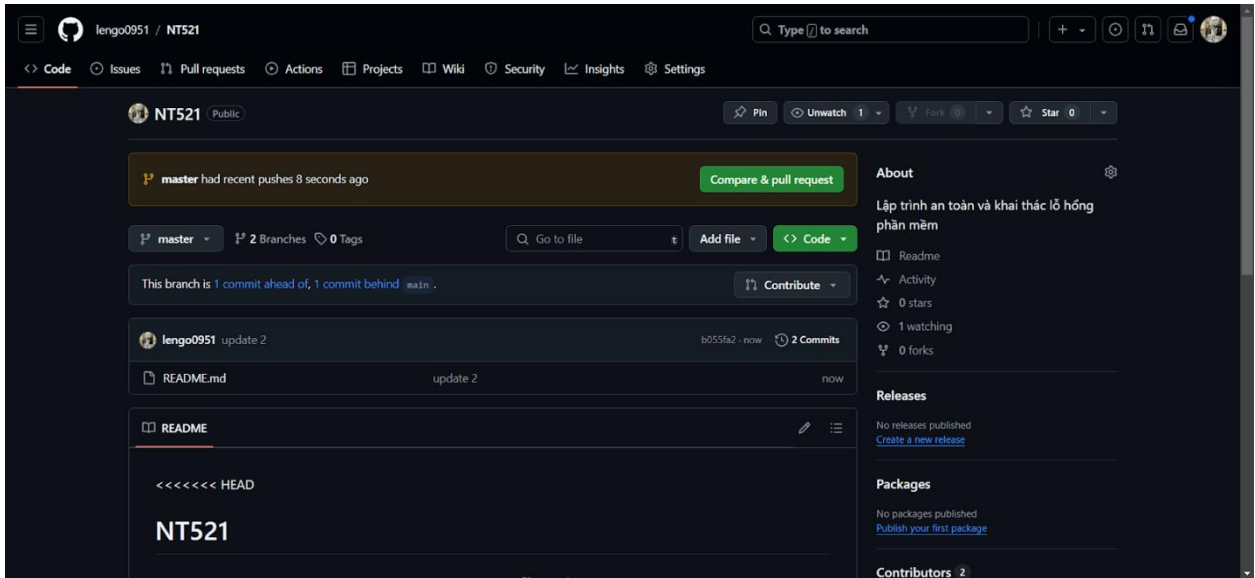
```
coolstar17@QuocNgo-PC:~/LTAT_Labs/devops-study-team$ git log
commit 18b666656387529a767f5fcd0b58ef57ff270cf (HEAD -> master)
Author: coolstar17 <lengo.vq@gmail.com>
Date:   Tue Sep 17 10:02:38 2024 +0700

    update README.md
coolstar17@QuocNgo-PC:~/LTAT_Labs/devops-study-team$
```

Bước 10:

```
coolstar17@QuocNgo-PC: ~/LTAT_Labs/devops-study-team
coolstar17@QuocNgo-PC:~/LTAT_Labs/devops-study-team$ git push -u origin HEAD:master
Everything up-to-date
coolstar17@QuocNgo-PC:~/LTAT_Labs/devops-study-team$ git add README.md
coolstar17@QuocNgo-PC:~/LTAT_Labs/devops-study-team$ git commit -m "update 2"
[detached HEAD b055fa2] update 2
 1 file changed, 7 insertions(+)
coolstar17@QuocNgo-PC:~/LTAT_Labs/devops-study-team$ git push -u origin HEAD:master
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 418 bytes | 418.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/lengo0951/NT521.git
 4d6e2b3..b055fa2 HEAD -> master
coolstar17@QuocNgo-PC:~/LTAT_Labs/devops-study-team$
```

Bước 11:



Bài 3: Thực hiện commit và push code với thông điệp “Changed port from 8080 to 5050”:

- “cat sample_app.py”: đọc file sample_app.py
- “vim sample_app.py”: mục đích sửa port 8080 thành 5050
- “cat sample-app.sh”: đọc file sample-app.sh
- “vim sample-app.sh”: mục đích sửa port 8080 thành 5050

```
vovanphuc-22521147@LAPTO X + v
vovanphuc-22521147@LAPTOP-7UPGKHPU:~/KhaiThacLoHong/Lab1/Lab1-resource/sample-app/sample-app$ cat sample_app.py
# Add to this file for the sample app lab
from flask import Flask
from flask import request
from flask import render_template

sample = Flask(__name__)

@sample.route("/")
def main():
    return render_template("index.html")

if __name__ == "__main__":
    sample.run(host="0.0.0.0", port=8080)
vovanphuc-22521147@LAPTOP-7UPGKHPU:~/KhaiThacLoHong/Lab1/Lab1-resource/sample-app/sample-app$ vim sample_app.py
vovanphuc-22521147@LAPTOP-7UPGKHPU:~/KhaiThacLoHong/Lab1/Lab1-resource/sample-app/sample-app$ cat sample_ap
p.py
# Add to this file for the sample app lab
from flask import Flask
from flask import request
from flask import render_template

sample = Flask(__name__)

@sample.route("/")
def main():
    return render_template("index.html")

if __name__ == "__main__":
    sample.run(host="0.0.0.0", port=5050)
vovanphuc-22521147@LAPTOP-7UPGKHPU:~/KhaiThacLoHong/Lab1/Lab1-resource/sample-app/sample-app$ cat sample-ap
p.sh
#!/bin/bash
mkdir tempdir
mkdir tempdir/templates
mkdir tempdir/static
cp sample_app.py tempdir/.
cp -r templates/* tempdir/templates/.
cp -r static/* tempdir/static/.

echo "FROM python" >> tempdir/Dockerfile
echo "RUN pip install flask" >> tempdir/Dockerfile
echo "COPY ./static /home/myapp/static/" >> tempdir/Dockerfile
echo "COPY ./templates /home/myapp/templates/" >> tempdir/Dockerfile
echo "COPY sample_app.py /home/myapp/" >> tempdir/Dockerfile
echo "EXPOSE 8080" >> tempdir/Dockerfile
echo "CMD python /home/myapp/sample_app.py" >> tempdir/Dockerfile

cd tempdir
docker build -t sampleapp .
docker run -t -d -p 8080:8080 --name samplerunning sampleapp
docker ps -a
vovanphuc-22521147@LAPTOP-7UPGKHPU:~/KhaiThacLoHong/Lab1/Lab1-resource/sample-app/sample-app$ vim sample-app.sh
vovanphuc-22521147@LAPTOP-7UPGKHPU:~/KhaiThacLoHong/Lab1/Lab1-resource/sample-app/sample-app$ cat sample-ap
```



```
vovanphuc-22521147@LAPTO  x  +  v
vovanphuc-22521147@LAPTOP-7UPGKHFU:~/KhaitThacLoHong/Lab1/Lab1-resource/sample-app/sample-app$ vim sample-app.sh
vovanphuc-22521147@LAPTOP-7UPGKHFU:~/KhaitThacLoHong/Lab1/Lab1-resource/sample-app/sample-app$ cat sample-ap
p.sh
#!/bin/bash

mkdir tempdir
mkdir tempdir/templates
mkdir tempdir/static

cp sample_app.py tempdir/.
cp -r templates/* tempdir/templates/.
cp -r static/* tempdir/static/.

echo "FROM python" >> tempdir/Dockerfile
echo "RUN pip install flask" >> tempdir/Dockerfile
echo "COPY ./static /home/myapp/static/" >> tempdir/Dockerfile
echo "COPY ./templates /home/myapp/templates/" >> tempdir/Dockerfile
echo "COPY sample_app.py /home/myapp/" >> tempdir/Dockerfile
echo "EXPOSE 5050" >> tempdir/Dockerfile
echo "CMD python /home/myapp/sample_app.py" >> tempdir/Dockerfile

cd tempdir
docker build -t sampleapp .
docker run -t -d -p 5050:5050 --name samplerunning sampleapp
docker ps -a
vovanphuc-22521147@LAPTOP-7UPGKHFU:~/KhaitThacLoHong/Lab1/Lab1-resource/sample-app/sample-app$ bash ./sample
-app.sh
[*] Building 26.7s (11/11) FINISHED                                docker:default
=> [internal] load build definition from Dockerfile                0.1s
=> => transferring dockerfile: 221B                                0.0s
=> [internal] load metadata for docker.io/library/python:latest   3.5s
=> [auth] library/python:pull token for registry-1.docker.io       0.0s
=> [internal] load .dockerignore                                  0.0s
=> => transferring context: 2B                                       0.0s
=> [1/5] FROM docker.io/library/python:latest@sha256:7859853e7687927aa1d1b1a6a2f9e580ac98c2b66feeb 17.5s
=> => resolve docker.io/library/python:latest@sha256:7859853e7687927aa1d1b1a6a2f9e580ac98c2b66feeb1 0.0s
=> => sha256:7859853e7687927aa1d1b1a6a2f9e580ac98c2b66feeb1b77da97fed03b1ccbe 9.72kB / 9.72kB 0.0s
=> => sha256:8cd46d29083f265db57fd808ac1c444ec5a5b3f189c3d6d85043b647336913 49.56MB / 49.56MB 4.5s
=> => sha256:2e66a70da0bec13fb3d492fcdcf60f8a5ef8a1a65c4e8a4909e26742852f0f2 64.15MB / 64.15MB 2.1s
=> => sha256:f6b1ce9a1a1bba7fdf588248d1ab383a4cb11274997f39c9a0d6646f221379da 2.32kB / 2.32kB 0.0s
=> => sha256:ea2ebd985ab246eece277be25520ca8cfe82758b3d2b369e2fd69b374c1dc6c7fa 5.86kB / 5.86kB 0.0s
=> => sha256:2e66a70da0bec13fb3d492fcdcf60f8a5ef8a1a65c4e8a4909e26742852f0f2 24.85MB / 24.85MB 1.7s
=> => sha256:1c8ff076d818ad6b8597e83e18c83657cc716ab287c8380854ff91571c8cae81 211.27MB / 211.27MB 6.5s
=> => sha256:9d7cafee8af77ad487135151e94ef89c4edcd02ed6f8d66d8db130a246380d2 6.16MB / 6.16MB 2.7s
=> => sha256:76b2d602845c2157857573b7b630d6e22728251609b3a2013b7dfb5604d4a61f 24.14MB / 24.14MB 4.1s
=> => sha256:b61bc9b0e1d8628f1588d6d89bfabdbf871680a211e5cc2803bb77ad8f26170 250B / 250B 4.5s
=> => extracting sha256:8cd46d29083f265db57fd808ac1c444ec5a5b3f189c3d6d85043b647336913 2.9s
=> => extracting sha256:2e66a70da0bec13fb3d492fcdcf60f8a5ef8a1a65c4e8a4909e26742852f0f2 0.5s
=> => sha256:2e66a70da0bec13fb3d492fcdcf60f8a5ef8a1a65c4e8a4909e26742852f0f2 2.3s
=> => extracting sha256:1c8ff076d818ad6b8597e83e18c83657cc716ab287c8380854ff91571c8cae81 5.5s
=> => extracting sha256:9d7cafee8af77ad487135151e94ef89c4edcd02ed6f8d66d8db130a246380d2 0.3s
=> => extracting sha256:76b2d602845c2157857573b7b630d6e22728251609b3a2013b7dfb5604d4a61f 0.7s
=> => extracting sha256:b61bc9b0e1d8628f1588d6d89bfabdbf871680a211e5cc2803bb77ad8f26170 0.0s
=> [internal] load build context                                  0.0s
=> => transferring context: 1.97kB                                     0.0s
=> [2/5] RUN pip install flask                                   5.2s
```

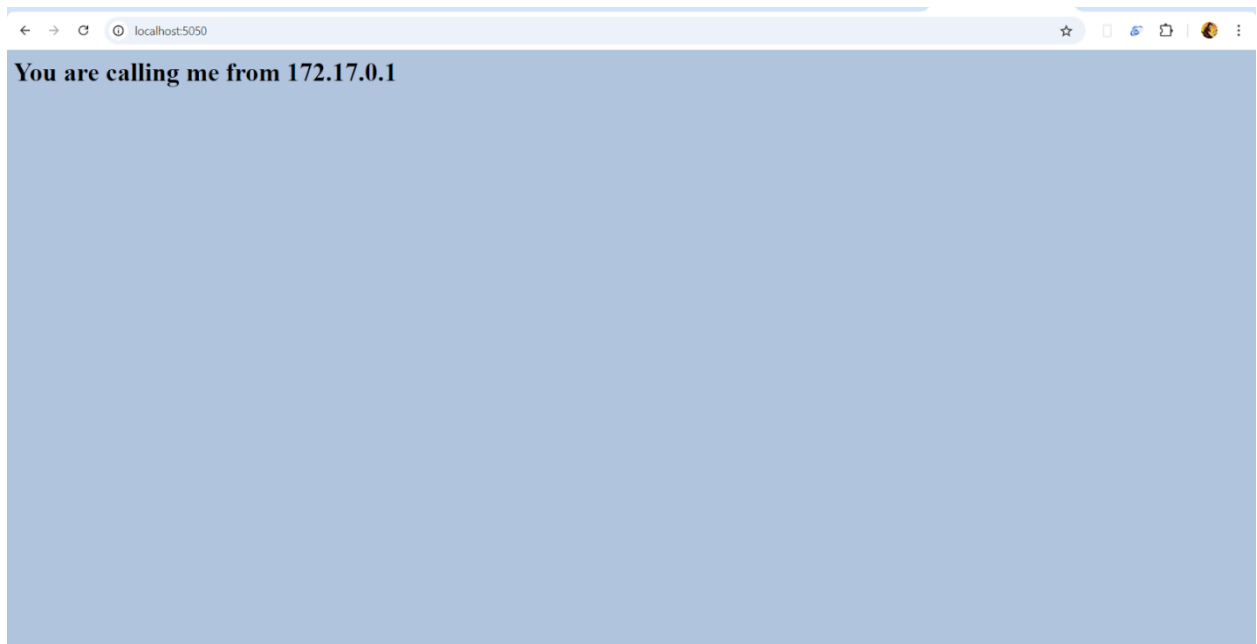
- “curl localhost:5050”: gửi một yêu cầu HTTP tới địa chỉ localhost với port 5050
- Sau đó push những thay đổi lên github

```
vovanphuc-22521147@LAPTO  x  +  v
=> => exporting layers                                             0.1s
=> => writing image sha256:b61bc9b0e1d8628f1588d6d89bfabdbf871680a211e5cc2803bb77ad8f26170 0.0s
=> => naming to docker.io/library/sampleapp                        0.0s

1 warning found (use --debug to expand):
 - JSOArgument: JSO arguments recommended for CMD to prevent unintended behavior related to OS signals (line 7)
619e9af31b96bf8a5f7076eae8db471294b49adfbaf4a9e1d8ee329ca77234
CONTAINER ID   IMAGE     COMMAND                  CREATED     STATUS      PORTS
619e9af31b96   sampleapp "/bin/sh -c 'python -"   1 second ago Up Less than a second 0.0.0.0:5050->5050/tcp   samplerunning
25d4f21fb7f8   hello-world "/hello"                 53 minutes ago Exited (0) 53 minutes ago

vovanphuc-22521147@LAPTOP-7UPGKHFU:~/KhaitThacLoHong/Lab1/Lab1-resource/sample-app/sample-app$ curl localhost
t:5050
<html>
<head>
<title>Sample app</title>
<link rel="stylesheet" href="/static/style.css" />
</head>
<body>
<h1>You are calling me from 172.17.0.1</h1>
</body>
</html>
vovanphuc-22521147@LAPTOP-7UPGKHFU:~/KhaitThacLoHong/Lab1/Lab1-resource/sample-app/sample-app$ git add .
vovanphuc-22521147@LAPTOP-7UPGKHFU:~/KhaitThacLoHong/Lab1/Lab1-resource/sample-app/sample-app$ git commit -m
"Changed port from 8080 to 5050"
[master 54b64ba] Changed port from 8080 to 5050
 8 files changed, 39 insertions(+), 3 deletions(-)
 create mode 100644 tempdir/Dockerfile
 create mode 100644 tempdir/sample_app.py
 create mode 100644 tempdir/static/style.css
 create mode 100644 tempdir/static/style.css:Zone.Identifier
 create mode 100644 tempdir/templates/index.html
 create mode 100644 tempdir/templates/index.html:Zone.Identifier
vovanphuc-22521147@LAPTOP-7UPGKHFU:~/KhaitThacLoHong/Lab1/Lab1-resource/sample-app/sample-app$ git push -u o
rigin master
Username for 'https://github.com': vovanphuc245
Password for 'https://vovanphuc245@github.com':
Enumerating objects: 9, done.
Counting objects: 100% (9/9), done.
Delta compression using up to 16 threads
Compressing objects: 100% (6/6), done.
Writing objects: 100% (6/6), 694 bytes | 694.00 KiB/s, done.
Total 6 (delta 3), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (3/3), completed with 3 local objects.
To https://github.com/phucv245/sample-app.git
 7592012..54b64ba master -> master
vovanphuc-22521147@LAPTOP-7UPGKHFU:~/KhaitThacLoHong/Lab1/Lab1-resource/sample-app/sample-app$ |
vovanphuc-22521147@LAPTOP-7UPGKHFU:~/KhaitThacLoHong/Lab1/Lab1-resource/sample-app/sample-app$
```

- Chạy `http://localhost:5050`



Bài 4: Tìm hiểu và giải thích tùy chọn `-v` ở lệnh chạy Docker:

- Tùy chọn `-v` được sử dụng để gắn kết các volume giữa máy chủ và container. Volume trong Docker là cách để lưu trữ dữ liệu vĩnh viễn khi container bị xóa hoặc restart. Đây là cách để một container có thể truy cập vào hệ thống tập tin trên máy chủ.
- `-v jenkinsdata:/var/jenkins_home` : Gắn volume (thư mục) `jenkinsdata` trên máy chủ vào thư mục `/var/jenkins_home` trong container. Đây là nơi Jenkins lưu trữ dữ liệu cấu hình và các tệp build.
- `-v $(which docker):/usr/bin/docker` : Gắn Docker binary của máy chủ vào trong container. Điều này cho phép container Jenkins có thể chạy trên các lệnh Docker.
- `-v /var/run/docker.sock:/var/run/docker.sock` : Gắn Docker socket của máy chủ vào container, cho phép Jenkins có thể kiểm soát Docker daemon trên máy chủ (quan trọng để Jenkins có thể build và quản lý container Docker).
- `-v "$HOME":/home` : Gắn thư mục home của người dùng từ máy chủ vào thư mục `/home` trong container. Điều này giúp Jenkins có thể truy cập vào các tệp trong thư mục của người dùng.

- Bài 5: Hoàn thành job kiểm tra bản dựng ứng dụng tự động
- Tạo job mới đặt tên là TestAppJob_Nhom7

Jenkins

Dashboard > All > New Item

Search (CTRL+K) admin

New Item

Enter an item name

TestAppJob_Nhom7

Select an item type

- Freestyle project**
Classic, general-purpose job type that checks out from up to one SCM, executes build steps serially, followed by post-build steps like archiving artifacts and sending email notifications.
- Pipeline**
Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.
- Multi-configuration project**
Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.
- Folder**
Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different

OK

- Đặt description: “My first Nhom7’s Jenkins test.”

Dashboard > TestAppJob_Nhom7 > Configuration

Configure

General

Source Code Management

Build Triggers

Build Environment

Build Steps

Post-build Actions

General

Enabled

Description

My first Nhom7's Jenkins test.

Plain text [Preview](#)

- ☐ Discard old builds ?
- ☐ GitHub project
- ☐ This project is parameterized ?
- ☐ Throttle builds ?
- ☐ Execute concurrent builds if necessary ?

Advanced

Save Apply

- Source Code Management chọn None

Dashboard > TestAppJob_Nhom7 > Configuration

Configure

- General
- Source Code Management**
- Build Triggers
- Build Environment
- Build Steps
- Post-build Actions

Source Code Management

☒ None
☐ Git ?

Build Triggers

☐ Trigger builds remotely (e.g., from scripts) ?
☐ Build after other projects are built ?
☐ Build periodically ?
☐ GitHub hook trigger for GITScm polling ?
☐ Poll SCM ?

Build Environment

☐ Delete workspace before build starts
☐ Use secret text(s) or file(s) ?

Save **Apply**

- Tab Build Triggers chọn Build after other projects are built và điền BuildAppJob

Configure

- General
- Source Code Management
- Build Triggers**
- Build Environment
- Build Steps
- Post-build Actions

Build Triggers

☐ Trigger builds remotely (e.g., from scripts) ?
☒ Build after other projects are built ?

Projects to watch

BuildAppJob

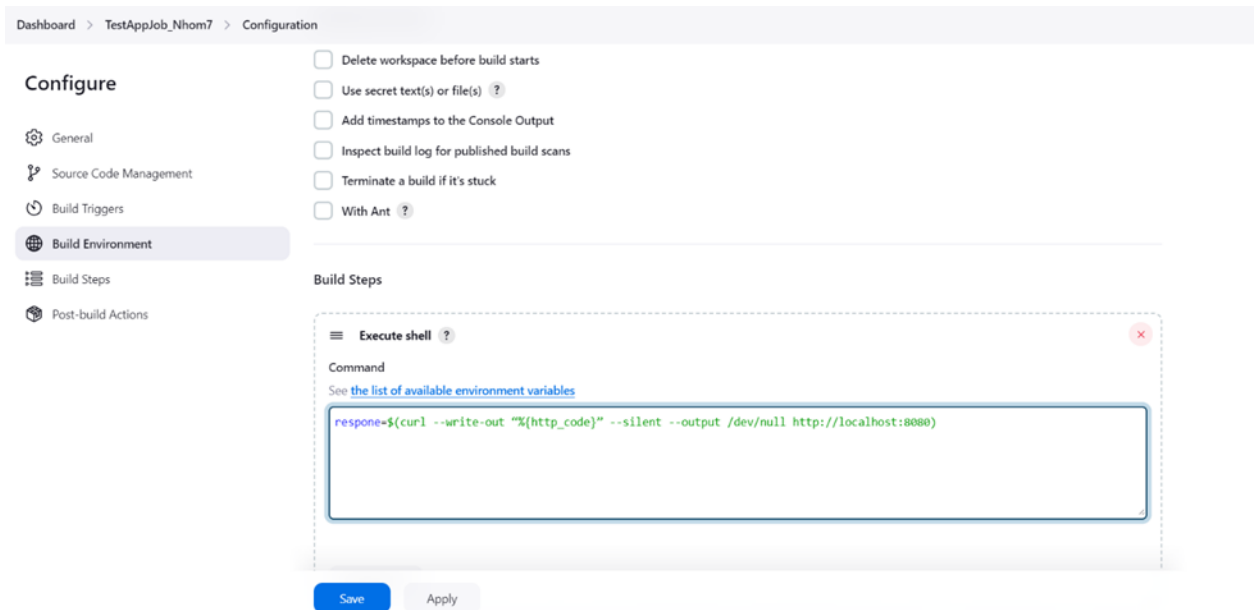
! No such project 'Bui'. Did you mean 'BuildAppJob'?

☒ Trigger only if build is stable
☐ Trigger even if the build is unstable
☐ Trigger even if the build fails
☐ Always trigger, even if the build is aborted

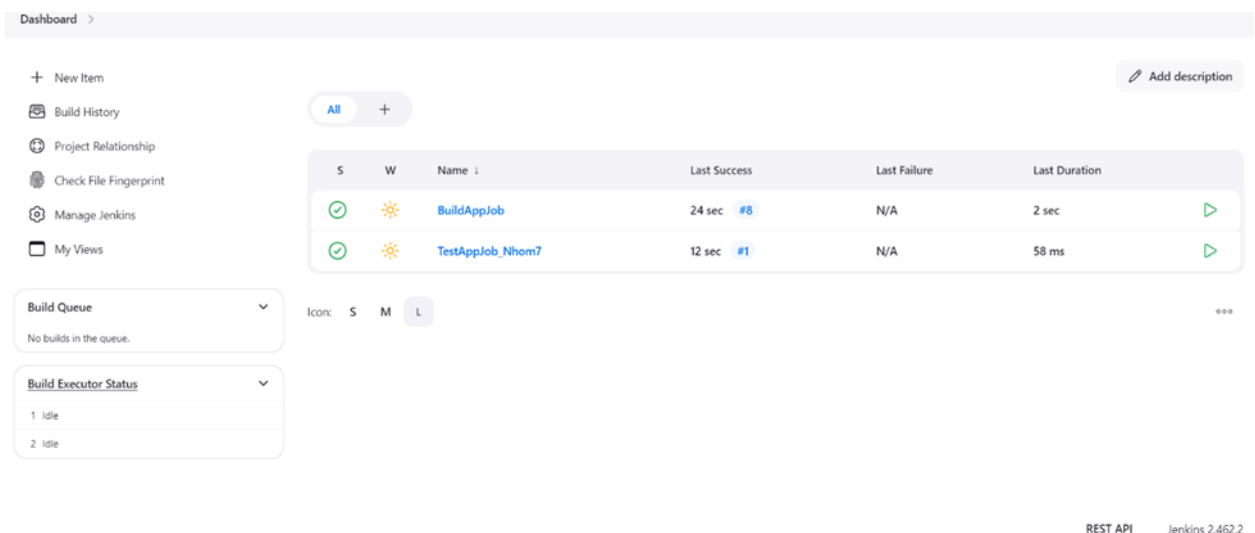
☐ Build periodically ?
☐ GitHub hook trigger for GITScm polling ?
☐ Poll SCM ?

Build Environment

- Viết Bash Shell: Kiểm tra trạng thái HTTP của http://localhost:8080

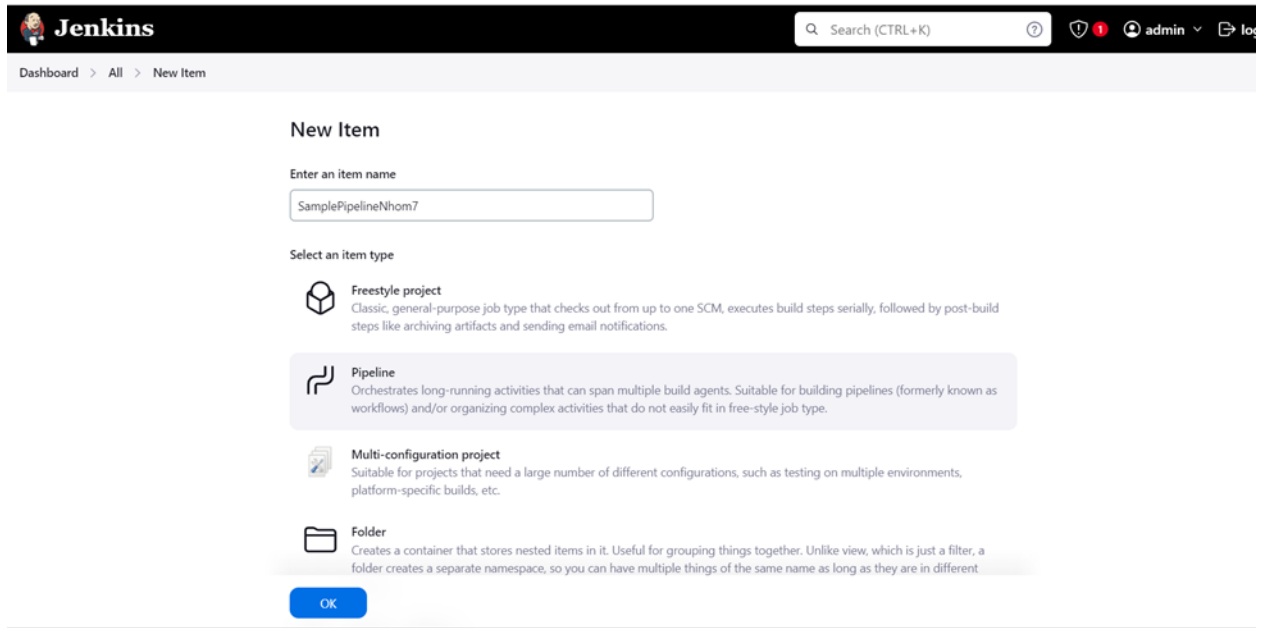


- Chạy job BuildAppJob và kiểm tra kết quả nhận được

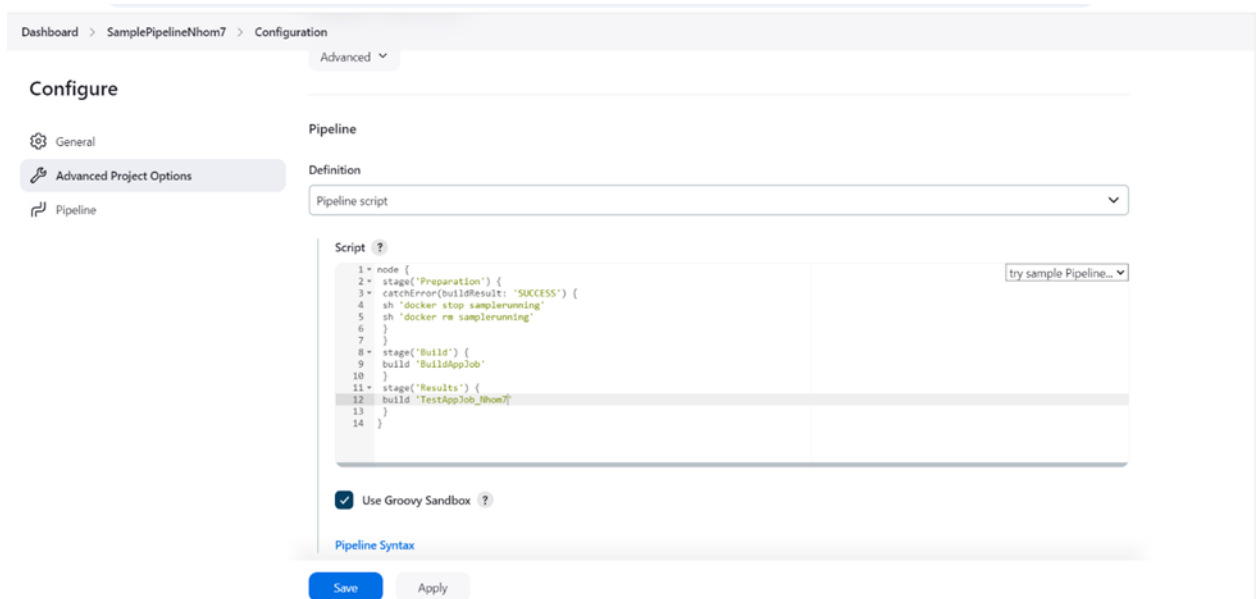


Bài 6: Hoàn thành pipeline của 2 ứng dụng Build và Test

- Tạo job mới đặt tên là SamplePipelineNhom7 với kiểu Pipeline



- Cấu hình job SamplePipeline



- Chạy job SamplePipeline và kiểm tra trong phần Console Output

```
Dashboard > SamplePipelineNhóm7 > #1
Replay
Pipeline Steps
Workspaces

[Pipeline] sh
+ docker rm samplerunning
samplerunning
[Pipeline] }
[Pipeline] // catchError
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Build)
[Pipeline] build (Building BuildAppJob)
Scheduling project: BuildAppJob
Starting building: BuildAppJob #25
Build BuildAppJob #25 completed: SUCCESS
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Results)
[Pipeline] build (Building TestAppJob_Nhóm7)
Scheduling project: TestAppJob_Nhóm7
Starting building: TestAppJob_Nhóm7 #3
Build TestAppJob_Nhóm7 #3 completed: SUCCESS
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

- Kết quả nhận được thành công

Dashboard >

+ New Item

Build History

Project Relationship

Check File Fingerprint

Manage Jenkins

My Views

Build Queue

No builds in the queue.

Build Executor Status

1 Idle

2 Idle

All +

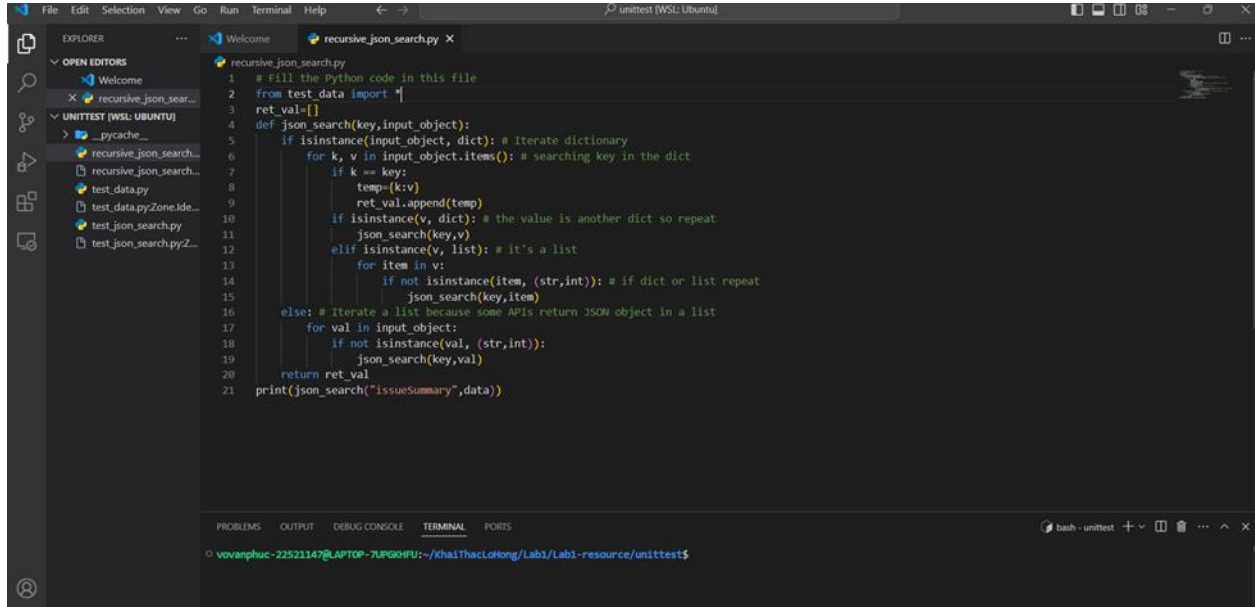
S	W	Name	Last Success	Last Failure	Last Duration
✓	☀	BuildAppJob	40 sec #25	N/A	2.1 sec
✓	☀	SamplePipelineNhóm7	1 min 2 sec #1	N/A	31 sec
✓	☀	TestAppJob_Nhóm7	30 sec #3	N/A	35 ms

Icon: S M L

Add description

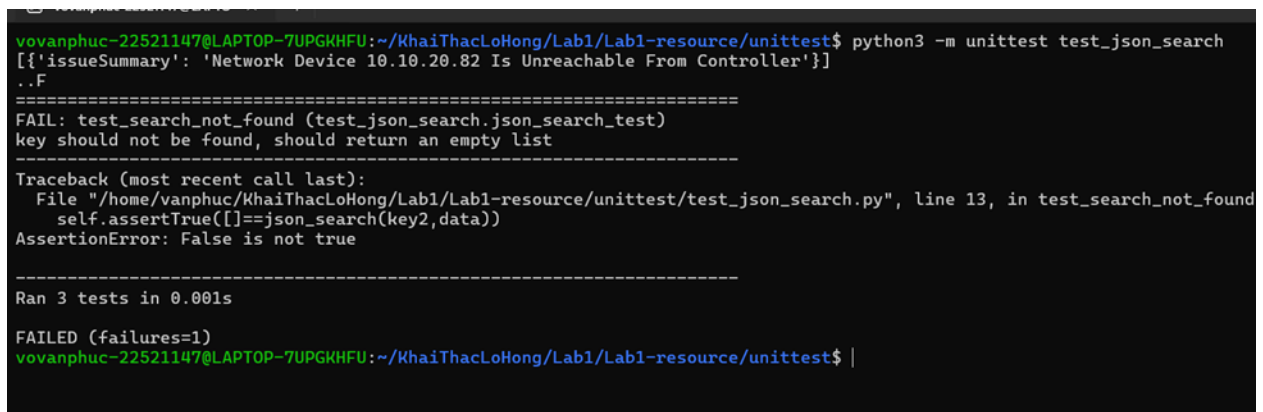
Bài 7: Sửa lỗi bằng cách di chuyển `ret_val=[]` và thực thi lại `recursive_json_search.py`

- Di chuyển `ret_val=[]` ra khỏi hàm



```
1 # Fill the Python code in this file
2 from test_data import
3 ret_val=[]
4 def json_search(key,input_object):
5     if isinstance(input_object, dict): # Iterate dictionary
6         for k, v in input_object.items(): # searching key in the dict
7             if k == key:
8                 temp={k:v}
9                 ret_val.append(temp)
10            if isinstance(v, dict): # the value is another dict so repeat
11                json_search(key,v)
12            elif isinstance(v, list): # it's a list
13                for item in v:
14                    if not isinstance(item, (str,int)): # if dict or list repeat
15                        json_search(key,item)
16            else: # Iterate a list because some APIs return JSON object in a list
17                for val in input_object:
18                    if not isinstance(val, (str,int)):
19                        json_search(key,val)
20        return ret_val
21 print(json_search("issueSummary",data))
```

- Kết quả nhận được khi chạy

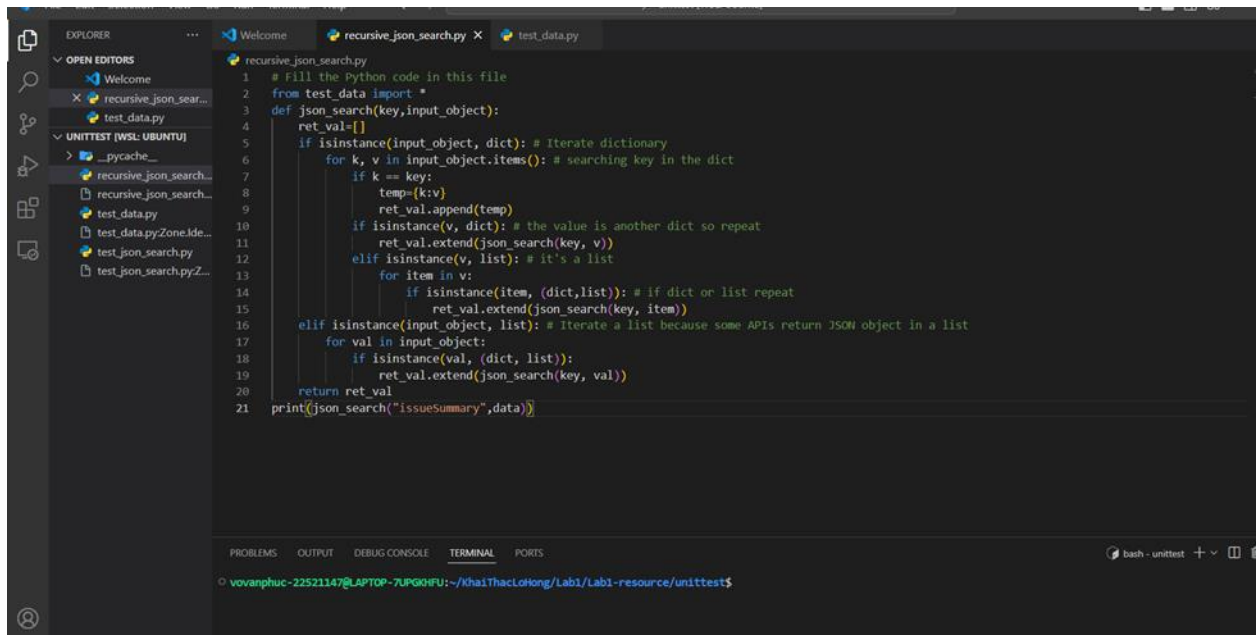


```
vovanphuc-22521147@LAPTOP-7UPGKHFU:~/KhaiThacLoHong/Lab1/Lab1-resource/unittest$ python3 -m unittest test_json_search
[{'issueSummary': 'Network Device 10.10.20.82 Is Unreachable From Controller'}]
..F
=====
FAIL: test_search_not_found (test_json_search.json_search_test)
key should not be found, should return an empty list
=====
Traceback (most recent call last):
  File "/home/vanphuc/KhaiThacLoHong/Lab1/Lab1-resource/unittest/test_json_search.py", line 13, in test_search_not_found
    self.assertTrue([]==json_search(key2,data))
AssertionError: False is not true
=====
Ran 3 tests in 0.001s
FAILED (failures=1)
vovanphuc-22521147@LAPTOP-7UPGKHFU:~/KhaiThacLoHong/Lab1/Lab1-resource/unittest$ |
```

Bài 8: Nguyên nhân, cách sửa lỗi và thực thi lại unittest:

- Hàm đệ quy không trả về giá trị đúng cách: Khi gọi hàm đệ quy `json_search(key, v)` hoặc `json_search(key, item)` mà không lưu kết quả trả về của nó vào biến `ret_val`. Do đó các giá trị tìm thấy không được thêm vào kết quả cuối cùng.

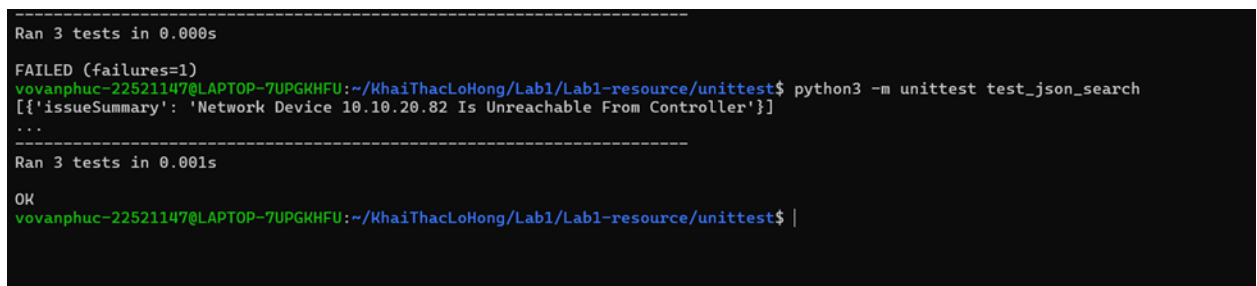
Cách sửa: Sử dụng `ret_val.extend()` để thêm kết quả của các lần gọi đệ quy vào danh sách kết quả:



The screenshot shows a VS Code editor with two files open: `recursive_json_search.py` and `test_data.py`. The `recursive_json_search.py` file contains the following Python code:

```
1 # Fill the Python code in this file
2 from test_data import *
3 def json_search(key, input_object):
4     ret_val=[]
5     if isinstance(input_object, dict): # Iterate dictionary
6         for k, v in input_object.items(): # searching key in the dict
7             if k == key:
8                 temp={k:v}
9                 ret_val.append(temp)
10            if isinstance(v, dict): # the value is another dict so repeat
11                ret_val.extend(json_search(key, v))
12            elif isinstance(v, list): # it's a list
13                for item in v:
14                    if isinstance(item, (dict, list)): # if dict or list repeat
15                        ret_val.extend(json_search(key, item))
16            elif isinstance(input_object, list): # Iterate a list because some APIs return JSON object in a list
17                for val in input_object:
18                    if isinstance(val, (dict, list)):
19                        ret_val.extend(json_search(key, val))
20    return ret_val
21 print(json_search("issueSummary", data))
```

- Kết quả nhận được khi chạy



The screenshot shows a terminal window with the following output:

```
Ran 3 tests in 0.000s
FAILED (failures=1)
vovanphuc-22521147@LAPTOP-7UPGKHFU:~/KhaitThacLoHong/Lab1/Lab1-resource/unittest$ python3 -m unittest test_json_search
[{'issueSummary': 'Network Device 10.10.20.82 Is Unreachable From Controller'}]
...
Ran 3 tests in 0.001s
OK
vovanphuc-22521147@LAPTOP-7UPGKHFU:~/KhaitThacLoHong/Lab1/Lab1-resource/unittest$ |
```