Đức Toàn

**Giao diện Mapreduce  
 - app.py**

from flask import Flask, render\_template, request

import subprocess

app = Flask(\_\_name\_\_)

# Các file JSON có thể chọn

json\_files = [

"input/books\_clean.json",

"input/tiki\_book\_data\_clean.json"

]

jobs = {

"avg\_rating": {

"mapper": "mapper/avg\_rating\_mapper.py",

"reducer": "reducer/avg\_rating\_reducer.py",

"input\_type": "single"

},

"avg\_price": {

"mapper": "mapper/avg\_price\_mapper.py",

"reducer": "reducer/avg\_price\_reducer.py",

"input\_type": "single"

},

"max\_price": {

"mapper": "mapper/max\_price\_mapper.py",

"reducer": "reducer/max\_price\_reducer.py",

"input\_type": "single"

},

"min\_price": {

"mapper": "mapper/min\_price\_mapper.py",

"reducer": "reducer/min\_price\_reducer.py",

"input\_type": "single"

},

"count\_rating": {

"mapper": "mapper/count\_rating\_mapper.py",

"reducer": "reducer/count\_rating\_reducer.py",

"input\_type": "single"

},

"compare\_avg\_price": {

"mapper": "mapper/compare\_avg\_price\_mapper.py",

"reducer": "reducer/compare\_avg\_price\_reducer.py",

"input\_type": "multiple"

}

}

def run\_mapreduce(mapper, reducer, input\_files):

try:

if isinstance(input\_files, list):

combined\_input = ""

for file in input\_files:

with open(file, "r", encoding="utf-8") as f:

combined\_input += f.read()

mapper\_proc = subprocess.Popen(

["python3", mapper],

stdin=subprocess.PIPE,

stdout=subprocess.PIPE,

stderr=subprocess.PIPE,

text=True

)

mapper\_output, mapper\_err = mapper\_proc.communicate(input=combined\_input)

if mapper\_proc.returncode != 0:

return f"Mapper error:\n{mapper\_err}"

reducer\_proc = subprocess.Popen(

["python3", reducer],

stdin=subprocess.PIPE,

stdout=subprocess.PIPE,

stderr=subprocess.PIPE,

text=True

)

reducer\_output, reducer\_err = reducer\_proc.communicate(input=mapper\_output)

if reducer\_proc.returncode != 0:

return f"Reducer error:\n{reducer\_err}"

return reducer\_output

else:

with open(input\_files, "r", encoding="utf-8") as f:

file\_content = f.read()

mapper\_proc = subprocess.Popen(

["python3", mapper],

stdin=subprocess.PIPE,

stdout=subprocess.PIPE,

stderr=subprocess.PIPE,

text=True

)

mapper\_output, mapper\_err = mapper\_proc.communicate(input=file\_content)

if mapper\_proc.returncode != 0:

return f"Mapper error:\n{mapper\_err}"

reducer\_proc = subprocess.Popen(

["python3", reducer],

stdin=subprocess.PIPE,

stdout=subprocess.PIPE,

stderr=subprocess.PIPE,

text=True

)

reducer\_output, reducer\_err = reducer\_proc.communicate(input=mapper\_output)

if reducer\_proc.returncode != 0:

return f"Reducer error:\n{reducer\_err}"

return reducer\_output

except Exception as e:

return f"Exception: {str(e)}"

@app.route("/", methods=["GET", "POST"])

def index():

result = None

selected\_job = None

selected\_file = None

disable\_file\_select = False

if request.method == "POST":

selected\_job = request.form.get("job")

selected\_file = request.form.get("input\_file")

if selected\_job in jobs:

job = jobs[selected\_job]

if job["input\_type"] == "single":

if selected\_file not in json\_files:

result = "Vui lòng chọn file hợp lệ."

else:

result = run\_mapreduce(job["mapper"], job["reducer"], selected\_file)

else:

result = run\_mapreduce(job["mapper"], job["reducer"], json\_files)

disable\_file\_select = (job["input\_type"] == "multiple")

else:

result = "Chức năng không hợp lệ."

return render\_template(

"index.html",

jobs=jobs.keys(),

files=json\_files,

result=result,

selected\_job=selected\_job,

selected\_file=selected\_file,

disable\_file\_select=disable\_file\_select

)

if \_\_name\_\_ == "\_\_main\_\_":

app.run(debug=True)

**+ index.html**

**<!DOCTYPE html>**

**<html lang="en">**

**<head>**

**<meta charset="UTF-8" />**

**<title>MapReduce Web GUI</title>**

**<style>**

**body { font-family: Arial, sans-serif; margin: 20px; background: #f9f9f9; }**

**select, button, input { padding: 8px 12px; font-size: 16px; }**

**select:disabled, input:disabled {**

**background-color: #ddd;**

**color: #666;**

**}**

**pre { background: #fff; border: 1px solid #ddd; padding: 15px; white-space: pre-wrap; max-height: 400px; overflow-y: auto; }**

**h1 { color: #2c3e50; }**

**form { margin-bottom: 20px; }**

**label { display: inline-block; margin-bottom: 6px; }**

**</style>**

**<script>**

**function toggleFileSelect() {**

**const jobSelect = document.getElementById("job");**

**const fileSelect = document.getElementById("input\_file");**

**const fileInputDisplay = document.getElementById("input\_file\_display");**

**if (jobSelect.value === "compare\_avg\_price") {**

**if (fileSelect) fileSelect.style.display = "none";**

**if (fileInputDisplay) fileInputDisplay.style.display = "block";**

**} else {**

**if (fileSelect) fileSelect.style.display = "inline-block";**

**if (fileInputDisplay) fileInputDisplay.style.display = "none";**

**}**

**}**

**window.onload = function() {**

**toggleFileSelect();**

**document.getElementById("job").addEventListener("change", toggleFileSelect);**

**}**

**</script>**

**</head>**

**<body>**

**<h1>Chạy các chức năng MapReduce</h1>**

**<form method="POST">**

**<label for="job">Chọn chức năng:</label>**

**<select name="job" id="job" required>**

**<option value="">-- Chọn chức năng --</option>**

**{% for job in jobs %}**

**<option value="{{ job }}" {% if job == selected\_job %}selected{% endif %}>{{ job }}</option>**

**{% endfor %}**

**</select>**

**<br /><br />**

**<label for="input\_file">Chọn file đầu vào:</label><br />**

**{% if disable\_file\_select %}**

**<input type="text" id="input\_file\_display" value="{{ selected\_file }}" disabled style="width: 100%;" />**

**<select id="input\_file" name="input\_file" style="display: none;">**

**<option value=""></option>**

**</select>**

**{% else %}**

**<input type="text" id="input\_file\_display" disabled style="display:none;" />**

**<select name="input\_file" id="input\_file" required>**

**<option value="">-- Chọn file --</option>**

**{% for f in files %}**

**<option value="{{ f }}" {% if f == selected\_file %}selected{% endif %}>{{ f }}</option>**

**{% endfor %}**

**</select>**

**{% endif %}**

**<br /><br />**

**<button type="submit">Chạy</button>**

**</form>**

**{% if result is not none %}**

**<h2>Kết quả:</h2>**

**<pre>{{ result }}</pre>**

**{% endif %}**

**</body>**

**</html>**