

**BỘ GIÁO DỤC VÀ ĐÀO TẠO**  
**TRƯỜNG ĐẠI HỌC CẦN THƠ**  
**TRƯỜNG CÔNG NGHỆ THÔNG TIN VÀ TRUYỀN THÔNG**  
-----❖-----



**Phát triển ứng dụng Web**

## **Báo cáo thực hành**

**SINH VIÊN THỰC HIỆN:**  
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**Tháng 09/2024**

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## CHƯƠNG I: Ứng dụng Contactbook – Backend – Phần 1

### 1. Bước 0: Cài đặt Node và git

```
PS C:\Users\DELL> node -v
v20.10.0
PS C:\Users\DELL> git -v
git version 2.41.0.windows.1
PS C:\Users\DELL>
```

### 2. Bước 1: Tạo ứng dụng Node

```

package name: (contactbook-backend)
version: (1.0.0)
description:
entry point: (index.js) server.js
test command:
git repository:
keywords:
author: Min Tram
license: (ISC)
About to write to E:\SCHOOL WORK\PTUD Web\contactbook-backend\package.json:

{ress ^C at any time to quit.
  "name": "contactbook-backend",
  "version": "1.0.0",
  "description": "",
  "main": "server.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "author": "Min Tram",
  "license": "ISC"
}

Is this OK? (yes)
PS E:\SCHOOL WORK\PTUD Web\contactbook-backend>

```

Cài đặt các package cần thiết:

```

PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> npm install express cors

added 66 packages, and audited 67 packages in 4s

12 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
PS E:\SCHOOL WORK\PTUD Web\contactbook-backend>

```

### 3. Bước 2: Quản lý mã nguồn dự án với git và GitHub

Tạo tập tin .gitignore, npx gitignore node

```

Need to install the following packages:
gitignore@0.7.0es, and audited 67 packages in 4s
Ok to proceed? (y) y
Created .gitignore file for flag type node.
PS E:\SCHOOL WORK\PTUD Web\contactbook-backend>

```

Chạy lệnh git init, sau đó git status:

```

PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> git init
Reinitialized existing Git repository in E:/SCHOOL WORK/PTUD Web/contactbook-backend/.git/
PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        .gitignore
        package-lock.json
        package.json

nothing added to commit but untracked files present (use "git add" to track)
PS E:\SCHOOL WORK\PTUD Web\contactbook-backend>

```

Cho git quản lý 3 tập tin .gitignore, package-lock.json và package.json

```

PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> git add .gitignore package-lock.json package.json
warning: in the working copy of '.gitignore', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'package-lock.json', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'package.json', LF will be replaced by CRLF the next time Git touches it
PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file:   .gitignore
        new file:   package-lock.json
        new file:   package.json

```

Tạo commit

```

PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> git commit -m 'Cai dat du an'
[master (root-commit) 3c7e9f2] Cai dat du an
3 files changed, 863 insertions(+)
create mode 100644 .gitignore
create mode 100644 package-lock.json
create mode 100644 package.json

```

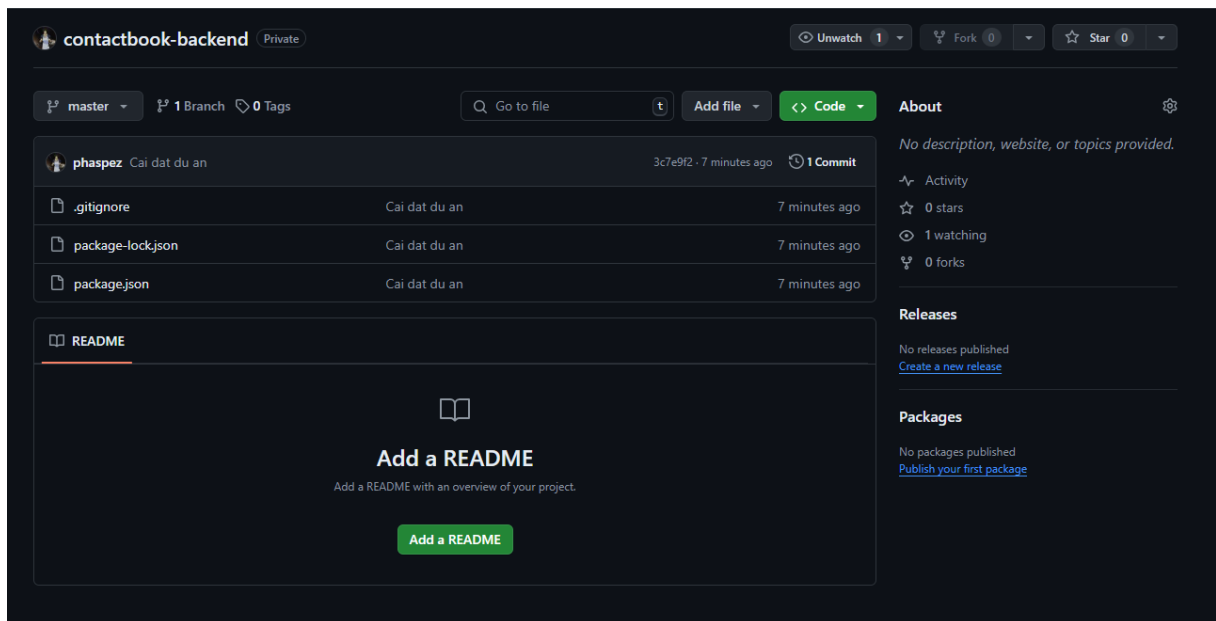
Push origin trên GitHub

```

PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> git remote add origin https://github.com/phaspez/contactbook-backend.git
PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> git push origin master
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (5/5), done.
Writing objects: 100% (5/5), 8.64 KiB | 1.73 MiB/s, done.
Total 5 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/phaspez/contactbook-backend.git
 * [new branch]      master -> master

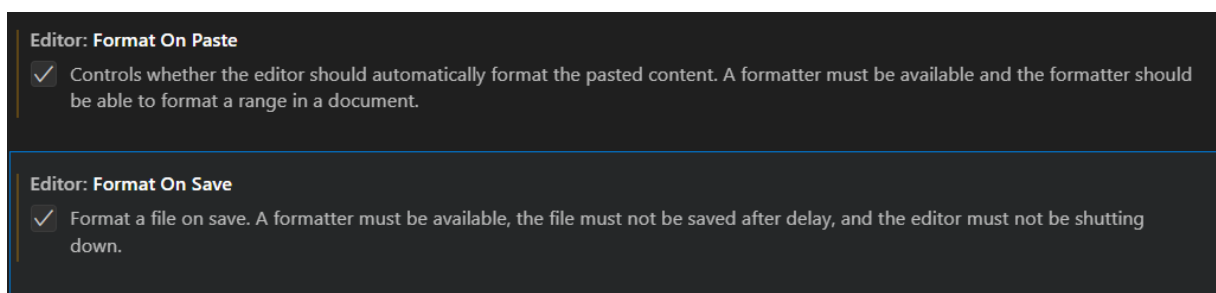
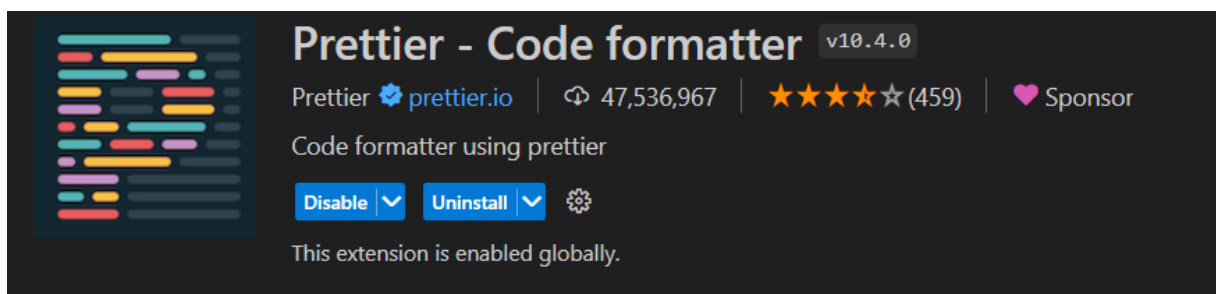
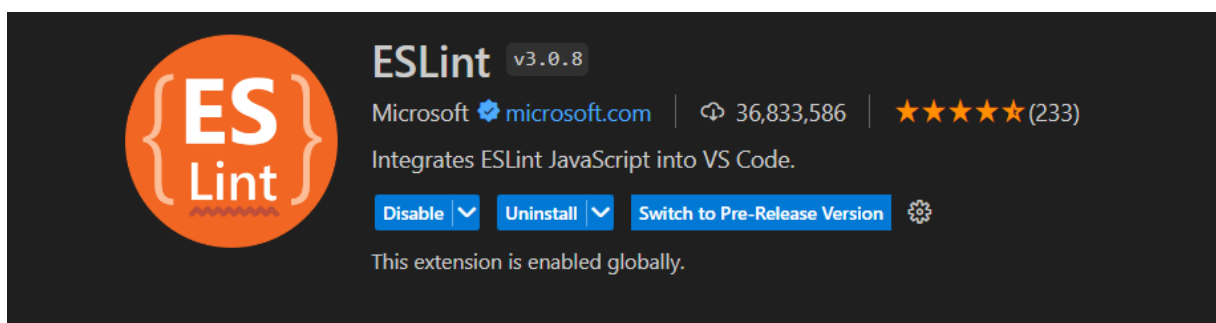
```

Trên GitHub:



#### 4. Bước 3: Cấu hình VSCode, ESLint và Prettier

Cài đặt ESLint, Prettier trên VSCode



```
PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> npm i -D eslint prettier eslint-config-prettier

added 95 packages, and audited 162 packages in 11s

35 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
```

Tạo file .eslintrc.js

```
.eslintrc.js U ● JS eslint.config.mjs U ● Settings

.eslintrc.js > ...
1  module.exports = {
2    env: {
3      node: true,
4      commonjs: true,
5      es2021: true,
6    },
7    extends: ['eslint:recommended', 'prettier'],
8  };
```

## 5. Bước 4: Cài đặt Express

Tạo tập tin app.js và server.js

```
.eslintrc.js U ● JS app.js U ● JS server.js U ● JS eslint.config.mjs U ● Settings

JS app.js > ...
1  const express = require("express");
2  const cors = require("cors");
3
4  const app = express();
5  app.use(cors());
6  app.use(express.json());
7
8  app.get("/", (req, res) => {
9    res.json({ message: "Welcome to contact book application." });
10 });
11
12 module.exports = app;
13
```

```
.eslintrc.js U JS app.js U JS server.js U X JS eslint.config.mjs U Settings
JS server.js > ...
1 const app = require("./app");
2 const config = require("./app/config");
3
4 const PORT = config.app.port;
5 app.listen(PORT, () => {
6   console.log(`Server is running on port ${PORT}`);
7 });
8
```

```
CONTACTBOOK-BACKEND
  app\config
  JS index.js U
  > node_modules
.eslintrc.js U
.gitignore
JS app.js U
JS eslint.config.mjs U
app > config > JS index.js > ...
1 const config = {
2   app: {
3     port: process.env.PORT || 3000,
4   },
5 };
6
7 module.exports = config;
8
```

Kiểm tra kết quả:

```
PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> node server.js
Server is running on port 3000
```

```
localhost:3000
Pretty-print ☐
{"message":"Welcome to contact book application."}
```

Cài đặt nodemon:

```
PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> npm install nodemon --save-dev

added 22 packages, and audited 202 packages in 5s

46 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
```



```

    "scripts": {
      "test": "echo \"Error: no test specified\" && exit 1",
      "start": "nodemon server.js"
    },
    "author": "Min Tram",
    "license": "ISC"
  }
}

```

Lưu các thay đổi vào git:

```

PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> git add -u
warning: in the working copy of 'package-lock.json', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'package.json', LF will be replaced by CRLF the next time Git touches it
PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> git add app/ app.js server.js
PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> git commit -m "Cai dat express chay thong bao xin chao"
[master a8cf984] Cai dat express chay thong bao xin chao
5 files changed, 1674 insertions(+), 22 deletions(-)
create mode 100644 app.js
create mode 100644 app/config/index.js
create mode 100644 server.js

```

## 6. Bước 5: Định nghĩa Controller và các route

Tạo file contact.controller.js

```

CONTACTBOOK-BACKEND
├── app
│   ├── config
│   │   └── index.js
│   └── controllers
│       └── contact.controller.js
├── node_modules
├── .eslinttrc.js
├── .gitignore
├── app.js
├── eslint.config.mjs
├── package-lock.json
├── package.json
└── server.js

```

```

controllers > JS contact.controller.js > ...
1  exports.create = (req, res) => {
2    res.send({ message: "create handler" });
3  };
4
5  exports.findAll = (req, res) => {
6    res.send({ message: "findAll handler" });
7  };
8
9  exports.findOne = (req, res) => {
10   res.send({ message: "findOne handler" });
11 };
12
13 exports.update = (req, res) => {
14   res.send({ message: "update handler" });
15 };
16
17 exports.delete = (req, res) => {
18   res.send({ message: "delete handler" });
19 };
20
21 exports.deleteAll = (req, res) => {
22   res.send({ message: "deleteAll handler" });
23 };
24
25 exports.findAllFavorite = (req, res) => {
26   res.send({ message: "findAllFavorite handler" });
27 };
28

```

Tạo file contact.route.js

```

app > routes > JS contact.route.js > ...
1  const express = require("express");
2  const contacts = require("../controllers/contact.controller");
3
4  const router = express.Router();
5
6  router
7    .route("/")
8    .get(contacts.findAll)
9    .post(contacts.create)
10   .delete(contacts.deleteAll);
11
12  router.route("/favorite").get(contacts.findAllFavorite);
13
14  router
15    .route("/:id")
16    .get(contacts.findOne)
17    .put(contacts.update)
18    .delete(contacts.delete);
19
20  module.exports = router;
21

```

Cập nhật lại app.js:

```

JS app.js > ...
1  const express = require("express");
2  const cors = require("cors");
3  const contactsRouter = require("./app/routes/contact.route");
4
5  const app = express();
6  app.use(cors());
7  app.use(express.json());
8  app.use("/api/contacts", contactsRouter);
9
10  app.get("/", (req, res) => {
11    res.json({ message: "Welcome to contact book application." });
12  });
13
14  module.exports = app;
15

```

Kiểm tra ví dụ:

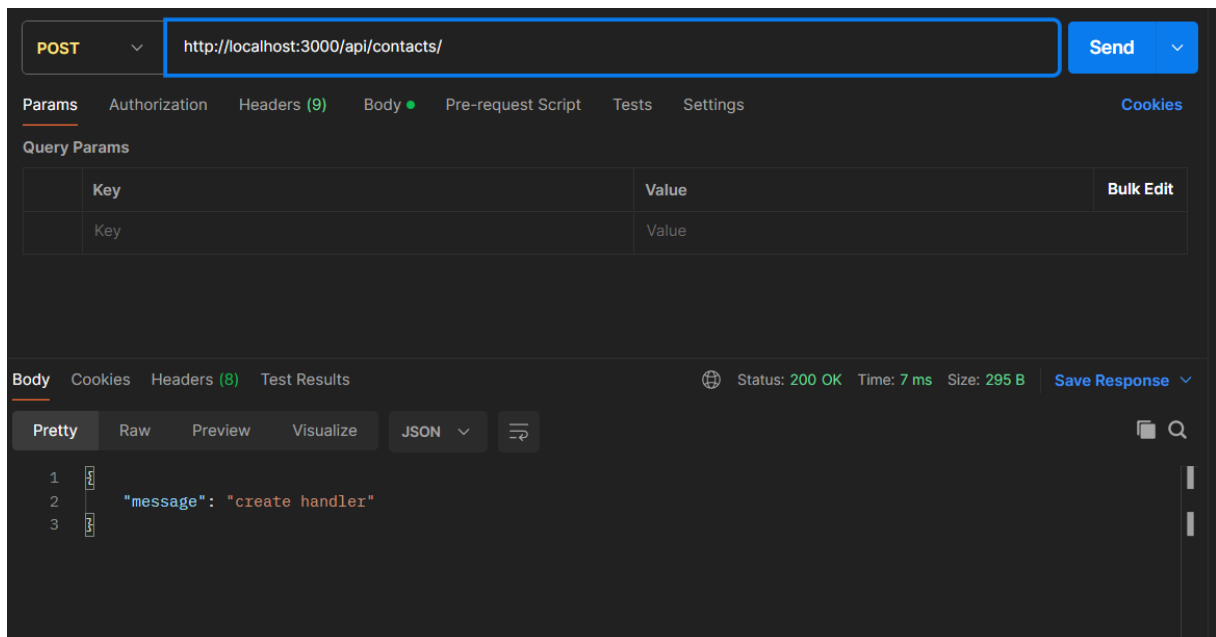
localhost:3000/api/contacts/favorite

Pretty-print ☐

```

{"message": "findAllFavorite handler"}

```

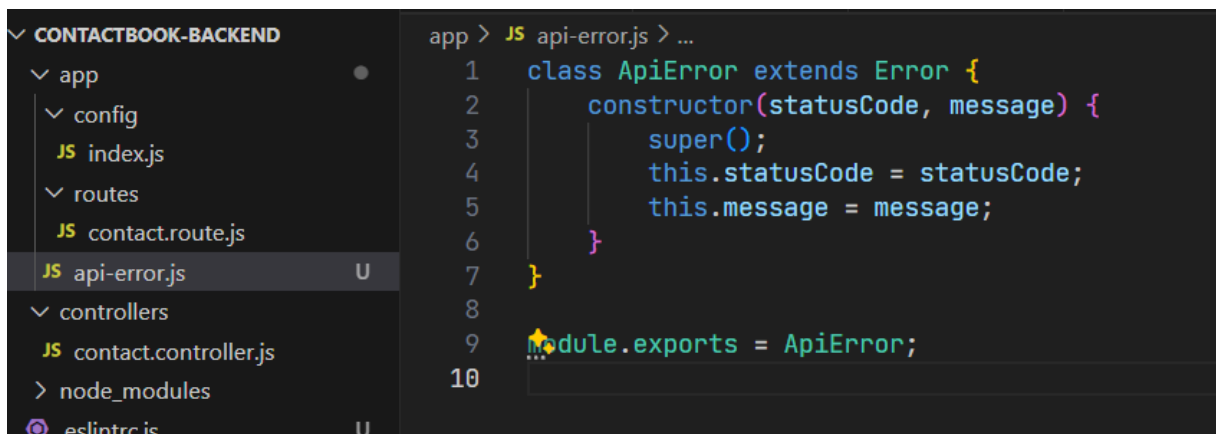


Lưu thay đổi trên git:

```
PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> git add -u
PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> git add controllers app/routes
PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> git commit -m "Định nghĩa các route cho tài nguyên Contact"
[master e215677] Định nghĩa các route cho tài nguyên Contact
2 files changed, 47 insertions(+)
create mode 100644 app/routes/contact.route.js
create mode 100644 controllers/contact.controller.js
PS E:\SCHOOL WORK\PTUD Web\contactbook-backend>
```

## 7. Bước 6: Cài đặt xử lý lỗi

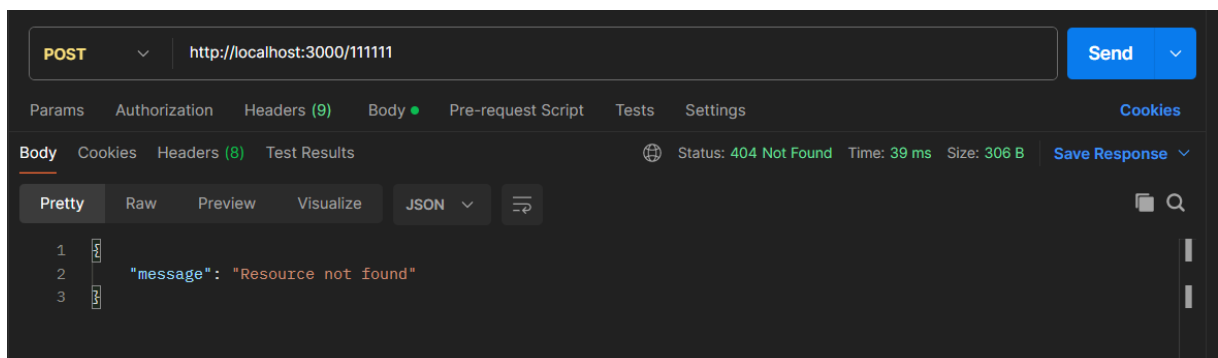
Tạo `app/api-error.js`



Thêm vào các middleware xử lý lỗi trong `app.js`:

```
.eslintrc.js U JS app.js M X JS server.js JS index.js {} package.json JS contact.co
JS app.js > ...
1  const express = require("express");
2  const cors = require("cors");
3  const contactsRouter = require("./app/routes/contact.route");
4  const ApiError = require("./app/api-error");
5
6  const app = express();
7  app.use(cors());
8  app.use(express.json());
9  app.use("/api/contacts", contactsRouter);
10
11  app.use((req, res, next) => {
12    next(new ApiError(404, "Resource not found"));
13  });
14
15  app.use((err, req, res, next) => {
16    return res.status(err.statusCode || 500).json({
17      message: err.message || "Internal Server Error",
18    });
19  });
20
21  app.get("/", (req, res) => {
22    res.json({ message: "Welcome to contact book application." });
23  });
24
25  module.exports = app;
26
```

Kiểm tra ví dụ:

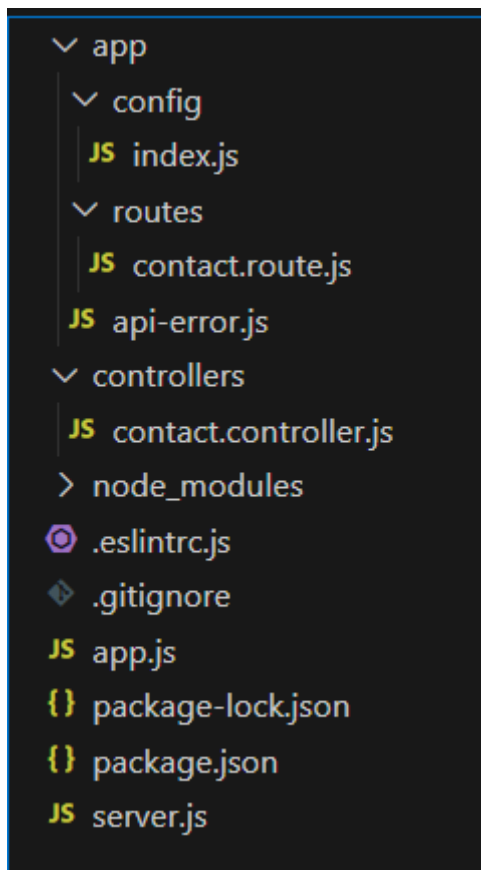


Lưu thay đổi trên git:

```
PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> git add -u
PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> git add app/api-error.js
PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> git commit -m "Cai dat xu ly loi"
[master 9642a10] Cai dat xu ly loi
2 files changed, 20 insertions(+)
create mode 100644 app/api-error.js
```

```
● PS E:\SCHOOL WORK\PTUD Web\contactbook-backend> git push origin master
Enumerating objects: 28, done.
Counting objects: 100% (28/28), done.
Delta compression using up to 8 threads
Compressing objects: 100% (21/21), done.
Writing objects: 100% (25/25), 24.40 KiB | 999.00 KiB/s, done.
Total 25 (delta 7), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (7/7), done.
To https://github.com/phaspez/contactbook-backend.git
3c7e9f2..9642a10 master -> master
```

Cây thư mục hiện tại:



Link mã nguồn: <https://github.com/phaspez/contactbook-backend>