

ITUMELENG MOLAWA

ST10373912

ICE TASK 3- Pulsevote Readme from 01-setting up foundations to 05 - Securing your Login

## 01- SETTING UP FOUNDATIONS SCREENSHOTS:

```
C:\WINDOWS\system32\cmd.exe x Command Prompt x Command Prompt x + v
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.

C:\Users\itume>mkdir pulsevote-backend
C:\Users\itume>cd pulsevote-backend
C:\Users\itume\pulsevote-backend>npm init -y
Unknown command: "init-y"

Did you mean this?
  npm init # Create a package.json file
To see a list of supported npm commands, run:
  npm help

C:\Users\itume\pulsevote-backend>npm init -y
Wrote to C:\Users\itume\pulsevote-backend\package.json:

{
  "name": "pulsevote-backend",
  "version": "1.0.0",
  "description": "",
  "main": "index.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "keywords": [],
  "author": "",
  "license": "ISC"
}

C:\Users\itume\pulsevote-backend>
```

```
C:\WINDOWS\system32\cmd.exe x Command Prompt x Command Prompt x + v
(c) Microsoft Corporation. All rights reserved.

C:\Users\itume>mkdir pulsevote-backend
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C:\Users\itume\pulsevote-backend>npm init -y
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}

C:\Users\itume\pulsevote-backend>npm install express cors dotenv helmet mongoose express-rate-limit
added 91 packages, and audited 92 packages in 7s
19 packages are looking for funding
run 'npm fund' for details
```

```
C:\WINDOWS\system32\cmd.exe x Command Prompt x Command Prompt x + v
To see a list of supported npm commands, run:
npm help

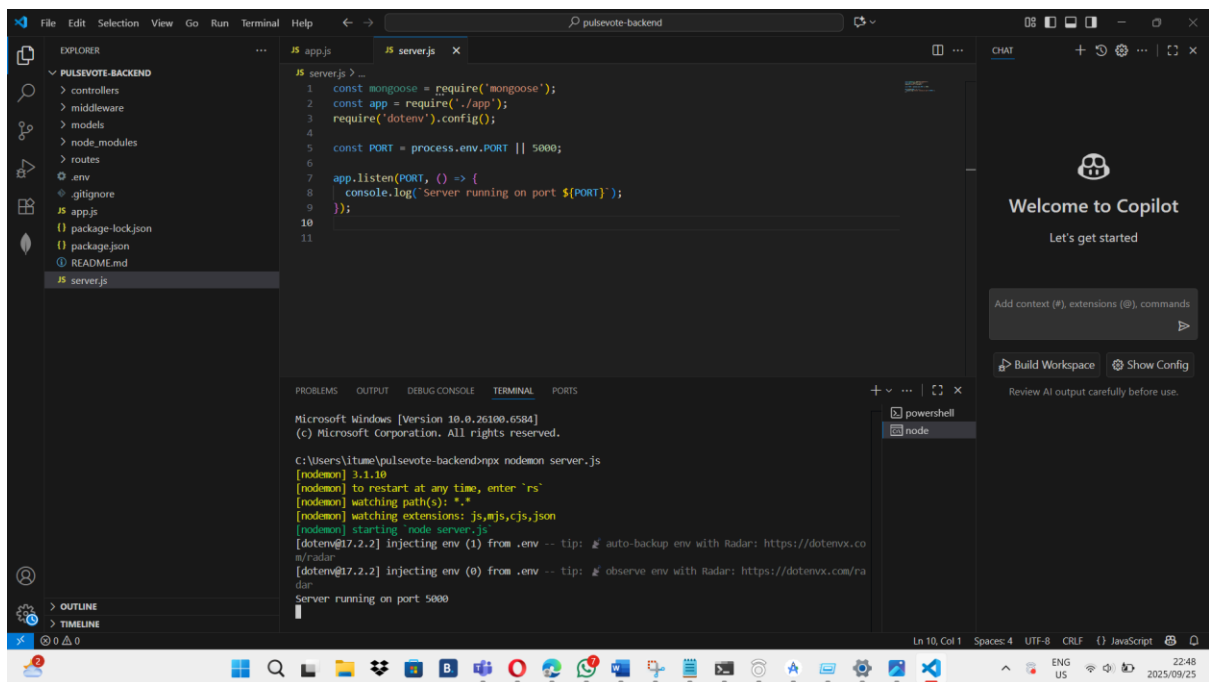
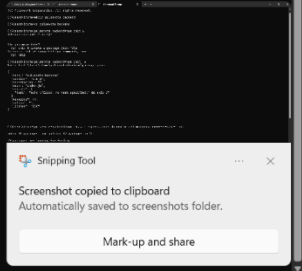
C:\Users\itume\pulsevote-backend>npm init -y
Wrote to C:\Users\itume\pulsevote-backend\package.json:

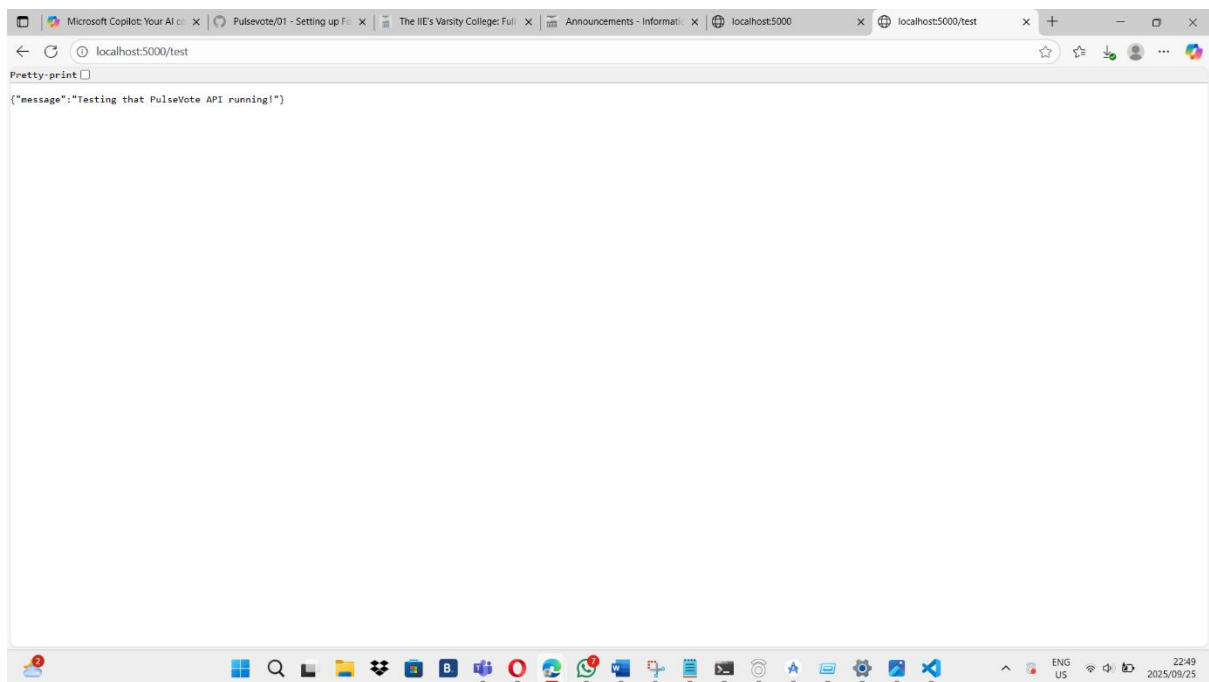
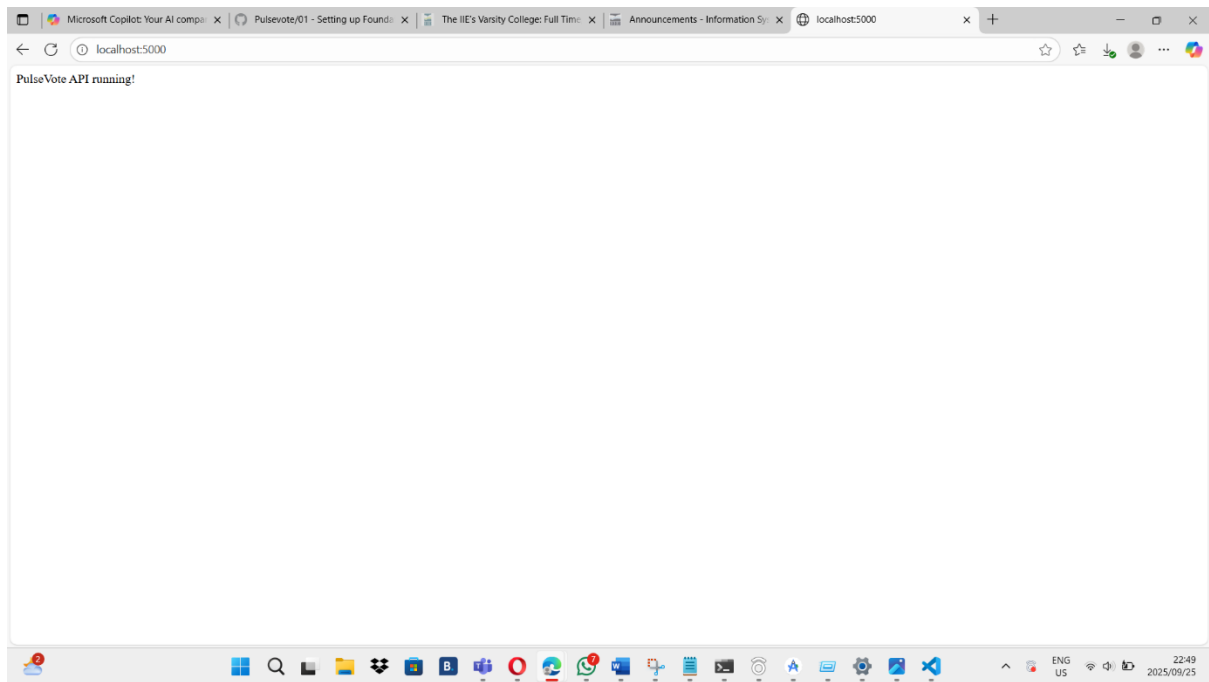
{
  "name": "pulsevote-backend",
  "version": "1.0.0",
  "description": "",
  "main": "index.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "keywords": [],
  "author": "",
  "license": "ISC"
}

C:\Users\itume\pulsevote-backend>npm install express cors dotenv helmet mongoose express-rate-limit
added 91 packages, and audited 92 packages in 7s
19 packages are looking for funding
  run `npm fund` for details
found 0 vulnerabilities

C:\Users\itume\pulsevote-backend>npm install --save-dev nodemon
added 27 packages, and audited 119 packages in 3s
23 packages are looking for funding
  run `npm fund` for details
found 0 vulnerabilities

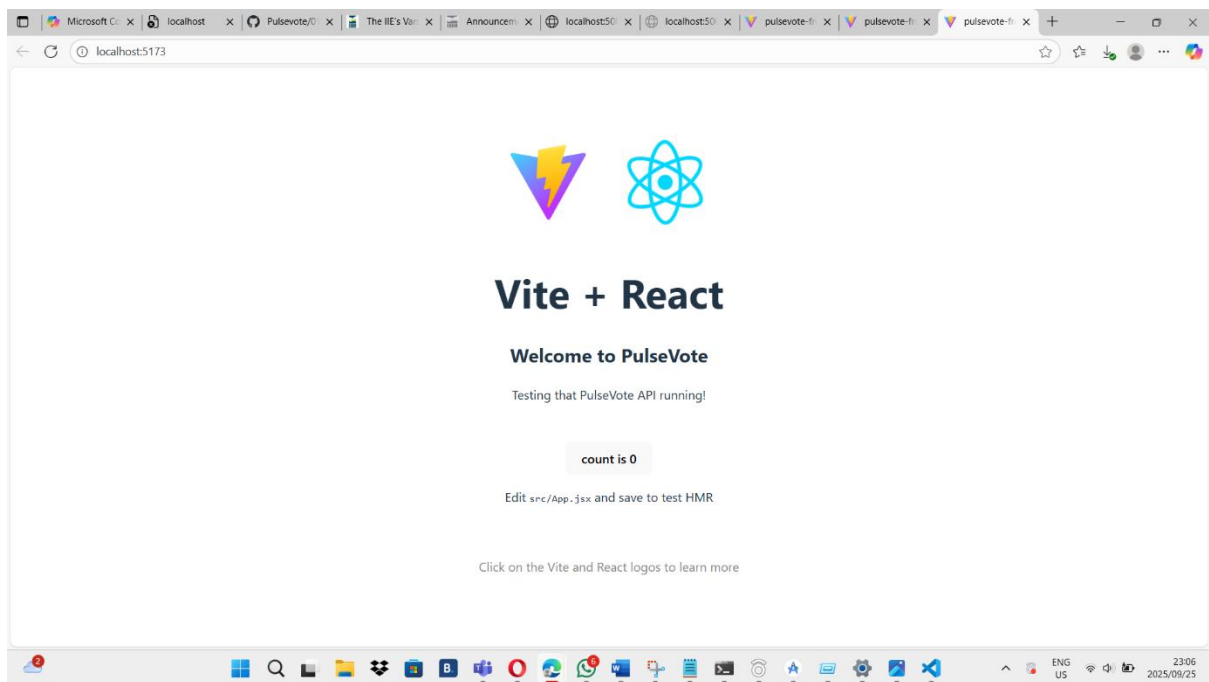
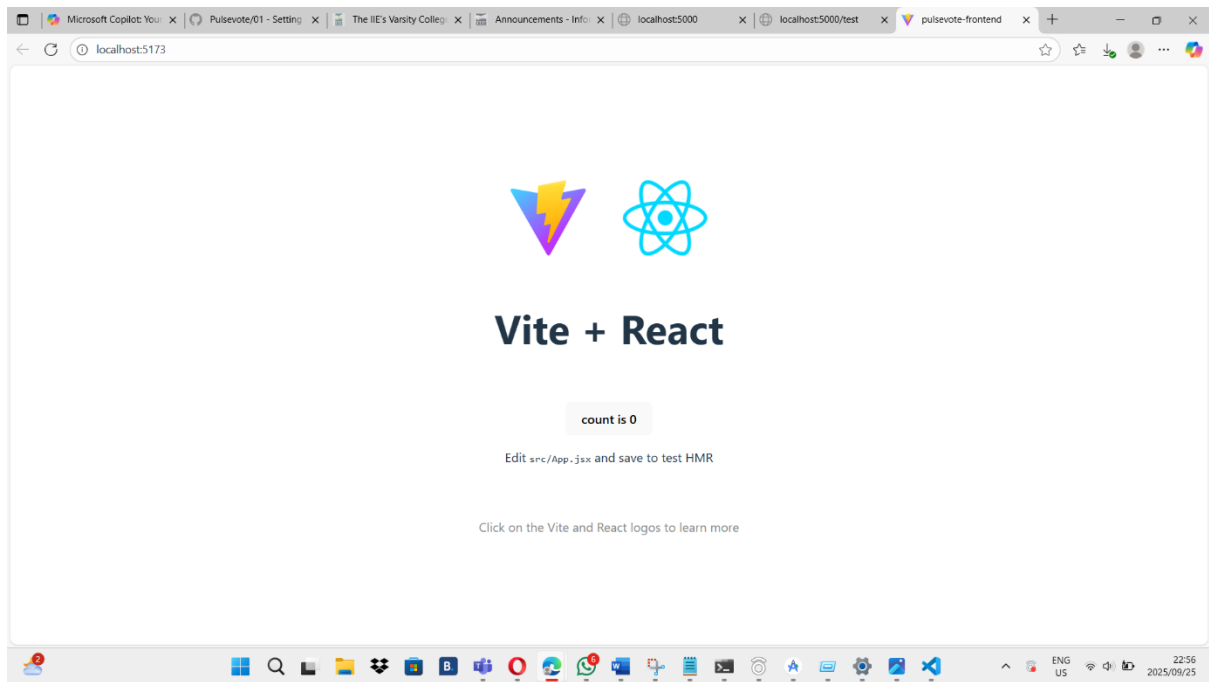
C:\Users\itume\pulsevote-backend>
```

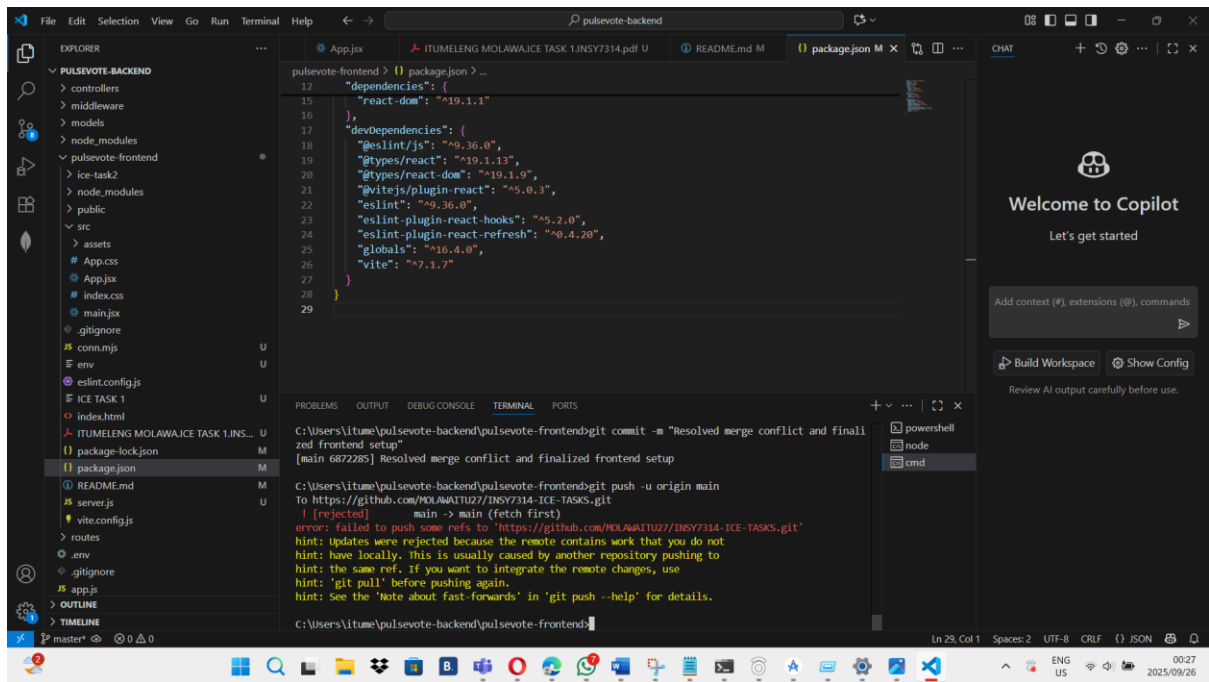




VITE v7.1.7 ready in 627 ms

- Local: <http://localhost:5173/>
- Network: use `--host` to expose
- press `h + enter` to show help





THE ONLY THING I FAILED TO DO WAS PUSH TO GIT BECAUSE I KEPT ON GETTING THIS ERROR MESSAGE I TRIED FIXING IT A COUPLE OF TIME BUT I FAILED

[illegible]

```
C:\Users\itume\pulsevote-backend\pulsevote-frontend>mkdir ssl

C:\Users\itume\pulsevote-backend\pulsevote-frontend>copy ..\ssl\key.pem ssl\
1 file(s) copied.

C:\Users\itume\pulsevote-backend\pulsevote-frontend>copy ..\ssl\cert.pem ssl\
1 file(s) copied.

C:\Users\itume\pulsevote-backend\pulsevote-frontend>
```

```

C:\WINDOWS\system32\cmd.exe
C:\WINDOWS\system32\cmd.exe
C:\WINDOWS\system32\cmd.exe
.12) at async bundleAndLoadConfigFile (file:///C:/Users/itume/pulsevote-backend/pulsevote-frontend/node_modules/vite/dist/node/chunks/dep-Bm2ujbhY.js:36116:1
7) at async loadConfigFromFile (file:///C:/Users/itume/pulsevote-backend/pulsevote-frontend/node_modules/vite/dist/node/chunks/dep-Bm2ujbhY.js:36983:42)
at async resolveConfig (file:///C:/Users/itume/pulsevote-backend/pulsevote-frontend/node_modules/vite/dist/node/chunks/dep-Bm2ujbhY.js:35732:22)
at async _createServer (file:///C:/Users/itume/pulsevote-backend/pulsevote-frontend/node_modules/vite/dist/node/chunks/dep-Bm2ujbhY.js:28908:67)

C:\Users\itume\pulsevote-backend\pulsevote-frontend>mkdir ssl

C:\Users\itume\pulsevote-backend\pulsevote-frontend>copy ..\ssl\key.pem ssl\
1 file(s) copied.

C:\Users\itume\pulsevote-backend\pulsevote-frontend>copy ..\ssl\cert.pem ssl\
1 file(s) copied.

C:\Users\itume\pulsevote-backend\pulsevote-frontend>dir ssl
Volume in drive C is Acer
Volume Serial Number is D6F7-6CF2

Directory of C:\Users\itume\pulsevote-backend\pulsevote-frontend\ssl

2025/09/26 01:35 <DIR> .
2025/09/26 01:35 <DIR> ..
2025/09/26 01:08 1 344 cert.pem
2025/09/26 01:08 1 732 key.pem
2025/09/26 01:08 2 File(s) 3 076 bytes
2 Dir(s) 869 451 563 008 bytes free

C:\Users\itume\pulsevote-backend\pulsevote-frontend>npm run dev

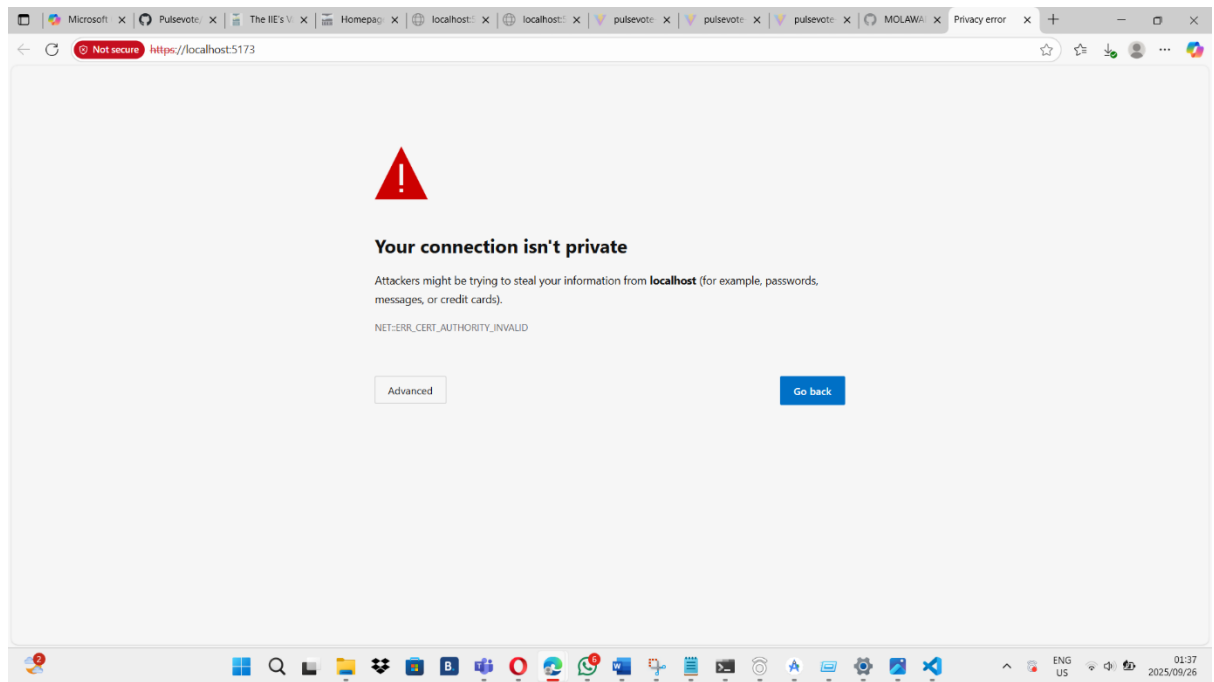
> pulsevote-frontend@0.0.0 dev
> vite

01:36:21 [vite] (client) Re-optimizing dependencies because lockfile has changed

VITE v7.1.7 ready in 848 ms

  → Local: https://localhost:5173/
  → Network: use --host to expose
  → press h + enter to show help

```



```
C:\Users\itume\pulsevote-backend>netstat -ano | findstr :5000
TCP    0.0.0.0:5000          0.0.0.0:0           LISTENING        18072
TCP    [::]:5000           [::]:0              LISTENING        18072

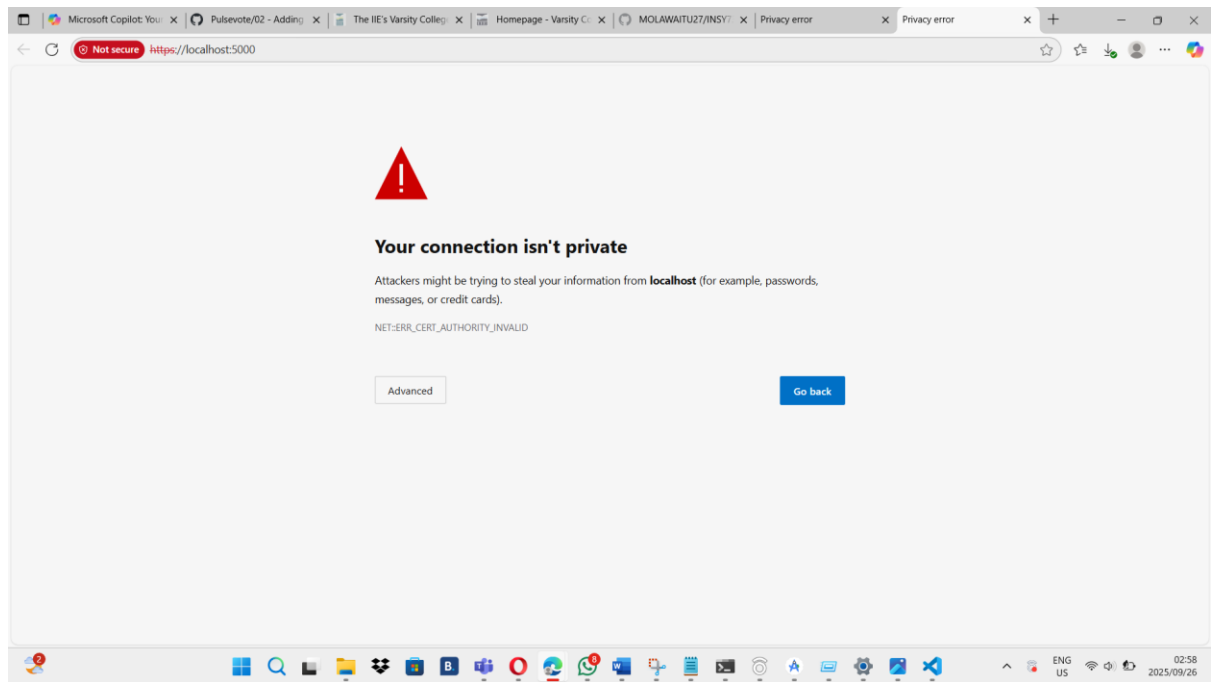
C:\Users\itume\pulsevote-backend>taskkill /PID 18072 /F
SUCCESS: The process with PID 18072 has been terminated.

C:\Users\itume\pulsevote-backend>npm run dev

> pulsevote-backend@1.0.0 dev
> nodemon server.js

[nodemon] 3.1.10
[nodemon] to restart at any time, enter `rs`
[nodemon] watching path(s): *.*
[nodemon] watching extensions: js,mjs,cjs,json
[nodemon] starting `node server.js`
🚀 Backend running securely at https://localhost:5000
```





In this project, I implemented SSL (Secure Sockets Layer) to secure both the frontend and backend of the PulseVote application during local development. SSL is a protocol that encrypts data exchanged between a client and server, ensuring that sensitive information such as login credentials, user activity, and votes are transmitted securely. Without SSL, data sent over the network is vulnerable to interception and tampering. By enabling HTTPS, I added a critical layer of protection and aligned the project with modern security standards.

To achieve this, I generated a self-signed certificate using OpenSSL, which produced two key files: `key.pem` and `cert.pem`. These were stored in an `ssl` directory and referenced in both the frontend and backend configurations. On the frontend, I updated the `vite.config.js` file to serve the React app over HTTPS using the certificate. On the backend, I modified `server.js` to use Node's built-in `https` module, allowing the Express server to run securely on port 5000. I also ensured that both environments used consistent certificate paths and that the development server could be launched using `npm run dev`.

During testing, I accessed the frontend at <https://localhost:5173> and the backend at <https://localhost:5000>. As expected with self-signed certificates, the browser displayed a warning, which I bypassed by selecting "Advanced" and proceeding. This confirmed that both servers were running securely and that the SSL configuration was successful. I also resolved common issues such as missing files, port conflicts, and incorrect paths, which helped reinforce my troubleshooting skills and understanding of secure architecture.

This exercise taught me how SSL works at a practical level and how to integrate it manually into a full-stack application. It also highlighted the difference between self-signed certificates used in development and trusted certificates required in production. In a live deployment, SSL should be handled by a Certificate Authority such as Let's Encrypt, with automated renewal and reverse proxy support via tools like Nginx. Overall,

this task strengthened my ability to build secure, scalable systems and document them clearly for academic review.

03:

```
C:\Users\itume\pulsevote-backend>npm run dev

> pulsevote-backend@1.0.0 dev
> nodemon server.js

[nodemon] 3.1.10
[nodemon] to restart at any time, enter `rs`
[nodemon] watching path(s): *.*
[nodemon] watching extensions: js,mjs,cjs,json
[nodemon] starting 'node server.js'
[dotenv@17.2.2] injecting env (3) from .env -- tip: 🛡️ prevent building .env in docker: https://dotenvx.com/prebuild
(node:22284) [MONGODB DRIVER] Warning: useNewUrlParser is a deprecated option: useNewUrlParser has no effect since Node.js Driver version 4.0.0 and will be removed in the next major version
(Use `node --trace-warnings ...` to show where the warning was created)
(node:22284) [MONGODB DRIVER] Warning: useUnifiedTopology is a deprecated option: useUnifiedTopology has no effect since Node.js Driver version 4.0.0 and will be removed in the next major version
✔ Connected to MongoDB Atlas
🔒 Backend running securely at https://localhost:5000
```

Microsoft Copilot: Your AI co- X PulseVote/03 - Adding Auth X The IIE's Varsity College: Full X Homepage - Varsity College X MOLAWAITU27/INSY7314- X localhost:5000

← ↻ 🔒 Not secure https://localhost:5000

🔒 Secure PulseVote backend is running!

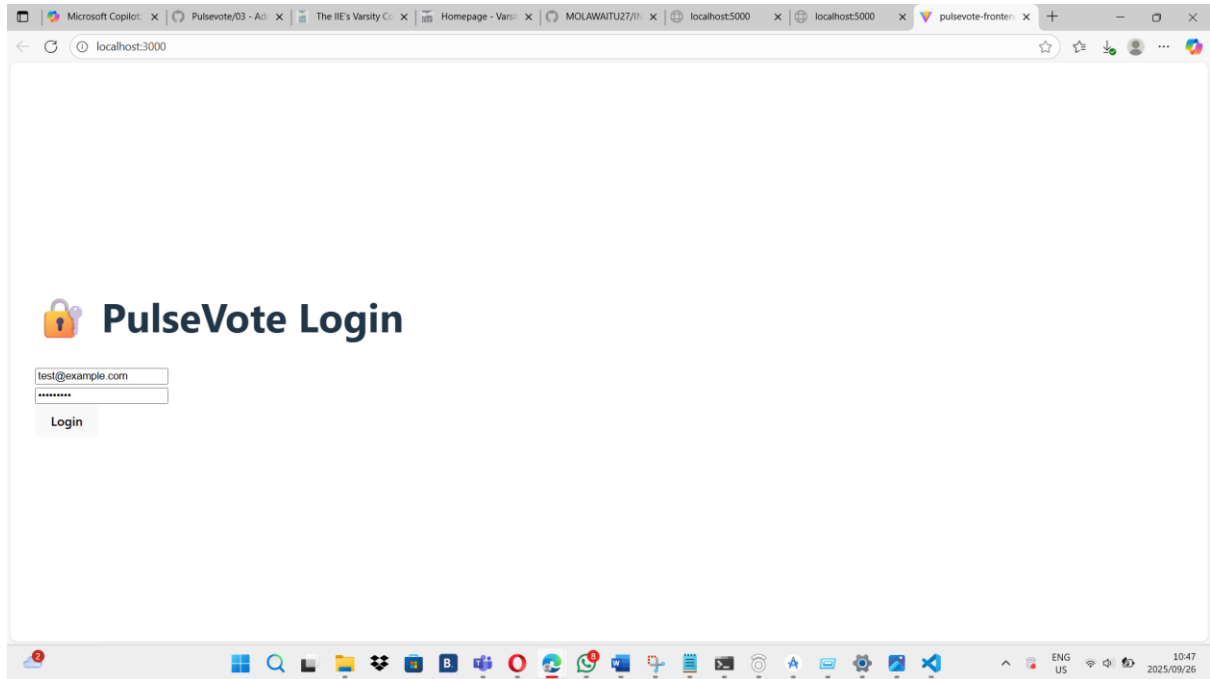
Windows taskbar: 1001 2025/09/26

FRONTEND:

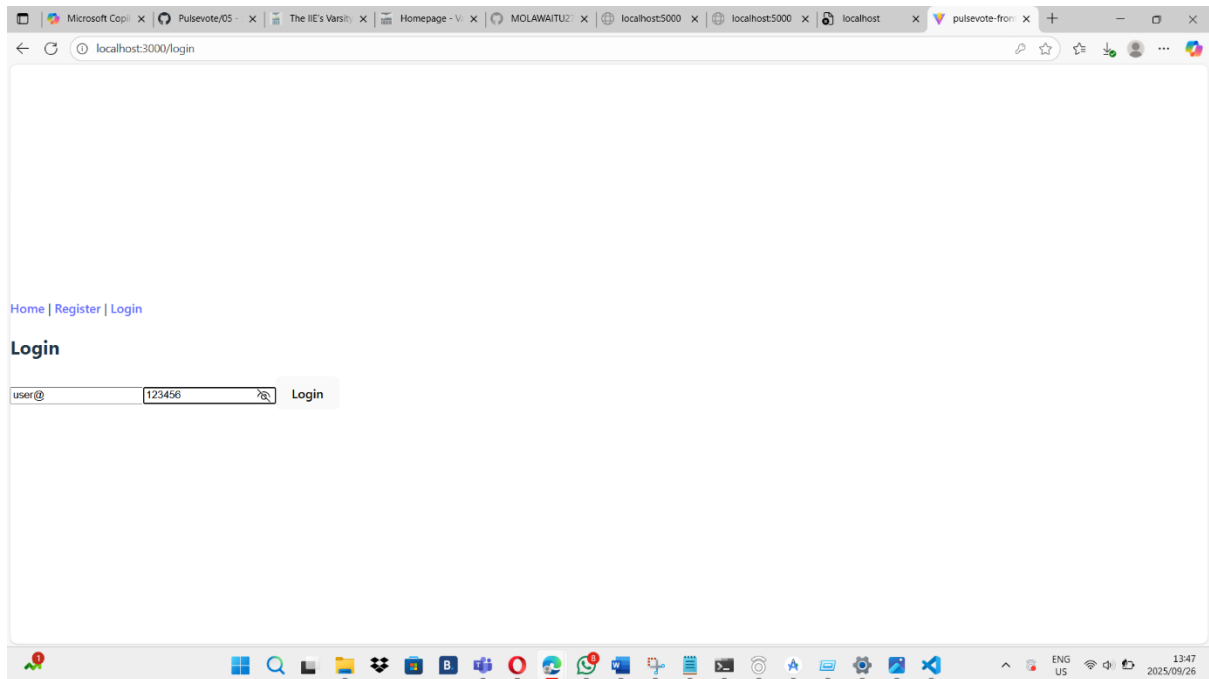
```
C:\WINDOWS\system32\cmd.exe X Command Prompt X C:\WINDOWS\system32\cmd.exe X + v
```

```
VITE v7.1.7 ready in 639 ms
➔ Local:   http://localhost:3000/
➔ Network: use --host to expose
➔ press h + enter to show help
```

Windows taskbar: 1046 2025/09/26



## 05- Securing your login:



## ERROR MESSAGE BECAUSE I ENTERED WEAK THINGS TO TEST:

