It's Giving Insecure Vibes: Secure Coding Literacy for Vibe Coders

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Generating code is easy!

But spotting security mistakes isn't....

Let's get you ready to fix those vibed vulnerabilities!

Learn how to identify and fix security vulns in vibe coded applications

1) Intro
2) Exploring vibe coding
3) Common vulns in vibed code
4) Recognizing AI generated code
5) Resolving vulns
6) AI-assisted coding
7) Quiz time!
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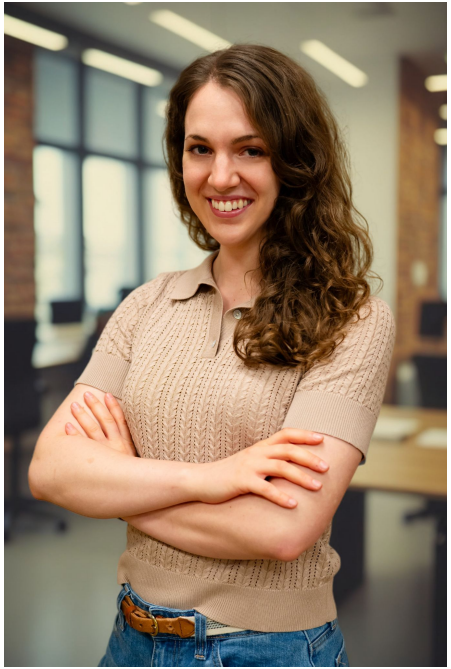
1) Intro

Hi, I'm Betta! I hack websites



- Started teaching myself to code at 13
- Began building websites for small businesses in Montana in high school through college
- Realized that web dev made me a good web hacker!
- Full cyber mode: M.S. Cyber, NSA cert program, GPEN
- Now an ethical hacker: web, cloud, AI, source code
- Currently a Lead Application Pentester @ OnDefend
- Specializes in code review and AI hacking, also building tools to speed up pentesting

Workshop Materials:

https://github.com/Betta-Lyon-Delsordo/insecure-vibes/

2) Exploring vibe coding

Where I'm seeing vibe coding:

- Vibe coding = using AI to write applications with very little edits
- Can be a great time saver: regex!
- But also has many risks, quality issues
- As a team lead on a pod of pentesters (and as a builder of internal software), I see more junior consultants leaning on AI
- We need more awareness of vibed vulnerabilities!

Good vibes:

- Save time writing route code
- Regex (sed/awk syntax)
- Troubleshooting error codes
- Translating from one coding language to another
- Translating comments into different human languages
- Great for prototyping, rapid ideation, internal apps
- Low barrier to entry: juniors and career changers

Bad vibes:

- Less technical users mean less understanding of code
- Very bad for scaling, troubleshooting, maintaining
- Can prevent learning and growth
- General lack of security awareness
- Very common to lack authorization and sanitization
- Public facing apps draw hacker attention -> easy breach

3) Common vulns in vibed code

Vibed vulns I see most often:

- Exposing sensitive information - hard coded API keys and creds
- Insecure default passwords, unencrypted traffic, no auth checks
- Detailed comments about exactly how to log in and exploit it
- Displaying way too much information to public users
- Very noisy exploits (if trying to evade detection)

Vibed vulns I see most often:

- No user input sanitization
- Pulling in malicious libraries masquerading as open source projects
- Pasting proprietary code into public/online LLMs that train on it
- Downloading malicious coding tools that claim to do ‘magic’

Examples:

```python
def hash_password(password: str) -> str:
    return hashlib.md5(password.encode("utf-8")).hexdigest()

@app.post("/register")
def register(user: User):
    if user.username in users:
        raise HTTPException(status_code=400, detail="Username already exists")
    users[user.username] = hash_password(user.password)
    return {"message": f"User {user.username} registered successfully."}

@app.post("/login")
def login(user: User):
    if user.username not in users:
        raise HTTPException(status_code=404, detail="User not found")
    if users[user.username] != hash_password(user.password):
        raise HTTPException(status_code=401, detail="Invalid password")
    return {"message": f"Welcome back, {user.username}!"}
```

Examples:

```
<input id="q" type="text" placeholder="Search"/>
<button id="btn">Search</button>
<div id="results" class="results"></div>
<script>
  const q = document.getElementById('q');
  const results = document.getElementById('results');
  document.getElementById('btn').addEventListener('click', () => {
    const term = q.value;
    const hits = [
      {t:'About', e:'Company info.'},
      {t:'Help', e:'Support center.'},
      {t:'Blog', e:'Latest posts.'}
    ];
    let html = `<p>Results for: <strong>${term}</strong></p><ul>`;
    for (const h of hits) html += `<li><h4>${h.t}</h4><p>${h.e}</p></li>`;
    html += '</ul>';
    results.innerHTML = html;
```

Examples:

```
public class MainActivity extends AppCompatActivity {
    // For testing your application, make sure to delete these later

    private static final String ADMIN_USERNAME = "admin";
    private static final String ADMIN_PASSWORD = "trythis1234";

    private EditText userField;
    private EditText passField;
    private Button loginBtn;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
```

4) Recognizing AI generated code

Easy giveaways for AI generated code

- Emoji comments!
- Perfect formatting, especially for large tables or JSON that would be difficult for a human to type
- Very perfect print statements with verbose language
- Redundant or unnecessary functions
- Lack of user comprehension about what the code does

Easy giveaways for AI generated code

- Crashes or fails without meaningful errors, no evidence of incremental development or debugging or unit tests
- Nonsensical imports
- Function stubs that don’t do anything
- No attempt to integrate with existing environment

Examples:

```
int main() {
    std::cout << "🎬 Starting Super Fun Data Analyzer v0.1! 🎬\n";

    auto records = loadRecords(); // load data 📂
    std::cout << "Loaded " << records.size() << " records! 📚\n";

    auto analysis = analyzeRecords(records); // analyze data 🔍
    std::cout << "Analysis complete! ✅\n";

    saveResults(analysis); // save results 💾

    std::cout << "All done! 🎉 Have a nice day! 🌈\n";
    return 0;
}
```

Examples:


```
{
  "app": {
    "name": "MegaConfig",
    "version": "2.3.1",
    "dataStructure": [[["alpha", "beta", "gamma"], ["delta", ["epsilon", "zeta"], "eta"]
    "theme": {
      "asciiLogo": "  ___  _  _  ___\n / _ \\| || || _ \\\n| (_) | __ ||   /\n \\___/|_
      "colors": {"primary": "#123456","secondary": "#abcdef","background": "#f0f0f0"},
      "fonts": {"header": "Arial Bold","body": "Courier New"}
    }
  },
```

5) Resolving vulns

Resolve those vulns!

- Learn some basic application security: OWASP Top 10 is a great place to start
- Prompt with emphasis on secure coding
- Ask the AI to review its own code for security
- Adversarial AI: ask another AI to find the vulnerabilities
- Always ask for secure defaults, no hard coding creds, do user input sanitization, authorization checks

Resolve those vulns!

- Do a thorough review of the code, spend more time reviewing than you did coding!
- Get help from someone who knows, and keep learning how to actually code
- Don’t put things into production or accept sensitive data if you don’t know what you’re doing
- Train junior members on the risks of AI coding and keep training them on real, manual coding
- Make sure your team understands the risks of sharing code with public/online LLMs and train them to use private/local alternatives

Examples:

I need a search function using python and fastAPI. Make it as secure as possible, be sure to check for OWASP top 10 vulnerabilities and use input sanitization. Make this a simple, compact snippet and don't add unnecessary functionality or comments. Do a quality check to make sure it actually works and has no vulnerabilities

python

Copy code

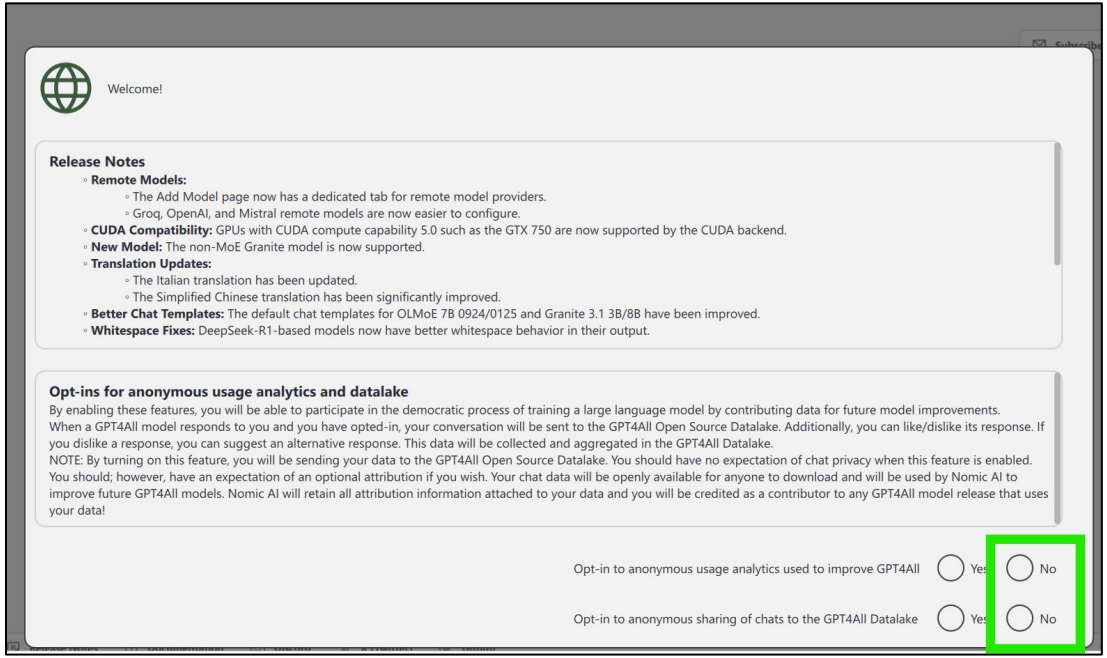
```python
from fastapi import FastAPI, Query, HTTPException
from pydantic import BaseModel
from typing import List
import html
import re

app = FastAPI()
```

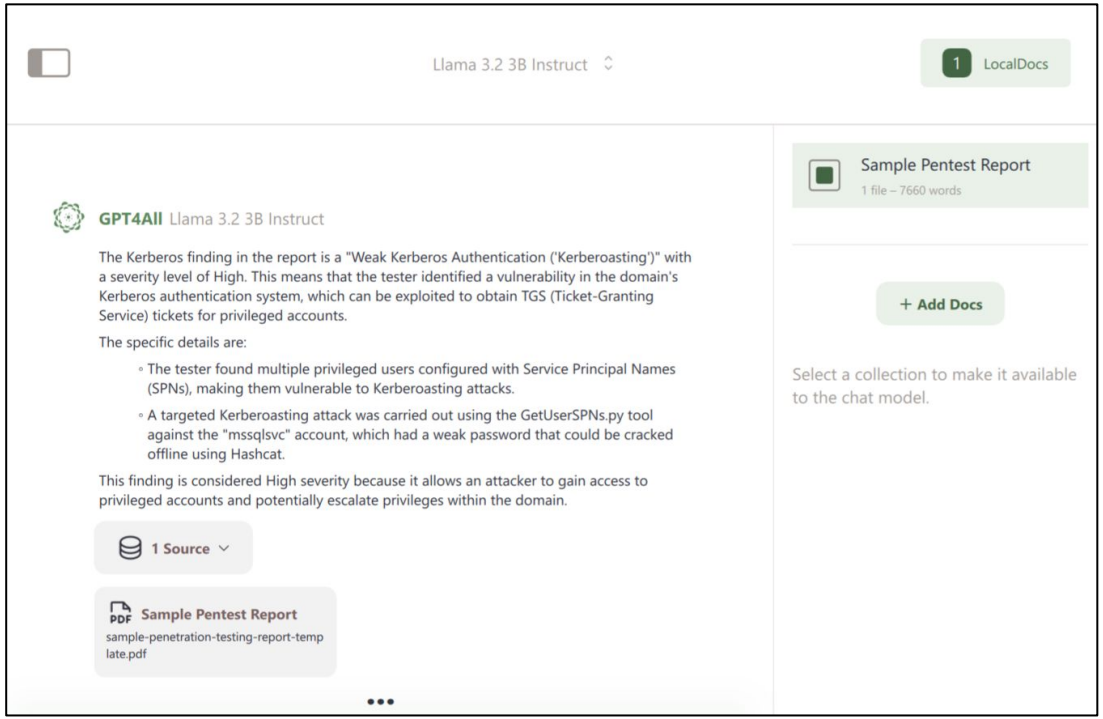
Offline AI

- Encourage team members to use offline or private AI solutions
- Especially important with pentesting, national security, proprietary code, sensitive datasets
- GPT4All is a great option: https://www.nomic.ai/gpt4all
- Use with a model like Llama3, and turn off analytics and data lake on startup -> then fully private

GPT4All startup options



GPT4All: Offline local docs



6) AI-assisted coding

How to do ‘AI-assisted coding’

- Instead of having the AI write everything, use it as a companion to help you troubleshoot tough errors
- Try to code out the entire application as you normally would manually, but then ask for help when you get tough errors or are exploring new tech stacks
- Get help with troubleshooting and ask for secure architecture advice

How to do ‘AI-assisted coding’

- Ask an AI to review your code for vulnerabilities
- Ask for tutoring and quiz sessions to help you learn more kinds of vulnerabilities
- Use vibe coding for quick, internal scripts (like regex or awk/sed) and know when go manual for bigger projects

Examples:

Help me troubleshoot this error. I am building an application with LangChain and I need to figure out where this issue came up:

```
Traceback (most recent call last):
  File "example.py", line 5, in <module>
    from langchain.chat_models import ChatOpenAI
  File "/usr/local/lib/python3.11/site-
packages/langchain/chat_models/openai.py", line 15, in <module>
    from openai import OpenAI
ModuleNotFoundError: No module named 'openai'
```

This traceback is telling you exactly what the problem is:

vbnet Copy code

```
ModuleNotFoundError: No module named 'openai'
```

It happens because **LangChain relies on the** `openai` **Python package**, but it is not installed in your environment.

Here's how to fix it:

1. **Install the OpenAI package** using pip:

bash Copy code

```
pip install openai
```

Examples:

Help me make this code more secure. I want to use an up to date cryptographic hashing method for storing the passwords and a better way of storing the passwords, with integrity checks. Also only give generic errors to the user, and have a lockout for too many attempts

```
def hash_password(password: str) -> str:
    return hashlib.md5(password.encode("utf-8")).hexdigest()

@app.post("/register")
def register(user: User):
    if user.username in users:
        raise HTTPException(status_code=400, detail="Username already exists")
```

Examples:

Give me a bash one liner that does a regex for internal IP addresses in a log file

You can use `grep -E` with a regex for private/internal IPs. Here's a compact **one-liner**:

bash Copy code

```
grep -Eo '((10|127)\.([0-9]{1,3}\.){2}[0-9]{1,3}|172\.(1[6-9]|2[0-9]|3[0-1])\.([0-9]{1,3}\.)[0-9]
```

✅ **Explanation:**

- `-E` → extended regex
- `-o` → print only the matching part
- Matches:
  - `10.x.x.x`
  - `127.x.x.x` (loopback)
  - `172.16.x.x` – `172.31.x.x`
  - `192.168.x.x`

7) Quiz time!

Spot the vulns!

```
#!/usr/bin/env bash
LOGFILE="./login.log"
touch "$LOGFILE"
chmod 600 "$LOGFILE"
read -p "👤 Username: " USER
read -s -p "🔒 Password: " PASS
echo
TS=$(date -u +"%Y-%m-%dT%H:%M:%SZ")
echo "[$TS] 🔐 User: $USER | Password: $PASS" >> "$LOGFILE"
echo "✅ Logged login info for user: $USER 🎉"
```

Spot the vulns!

```
var users = map[string]string{}

func register(username, password string) bool {
    if _, exists := users[username]; exists {
        return false
    }
    users[username] = password
    return true
}

func login(username, password string) bool {
    // TODO: implement login verification
    return false
}
```

Spot the vulns!

```php
if ($_SERVER['REQUEST_METHOD'] === 'POST') {
    $u = $_POST['username'] ?? '';
    $p = $_POST['password'] ?? '';
    $m = $_POST['mfa'] ?? '';

    if (!isset($users[$u]) || !password_verify($p, $users[$u])) {
        echo "Login failed";
        exit;
    }

    if ($m !== '123456') {
        echo "MFA failed";
        exit;
    }

    echo "Welcome, " . htmlspecialchars($u, ENT_QUOTES, 'UTF-8');
}
```

Spot the vulns!

```php
function secureAuthenticate($u, $p) {
    global $mysqli;
    $u_clean = trim($u);
    $p_clean = trim($p);
    $query = "SELECT id FROM users WHERE username = '$u_clean' AND password = '$p
    $res = $mysqli->query($query);
    if ($res && $res->num_rows === 1) {
        $row = $res->fetch_assoc();
        return (int)$row['id'];
    }
    return false;
}
```

Spot the vulns!

```python
from fastapi import FastAPI, Query
import subprocess

app = FastAPI()

@app.get("/ping")
def ping(host: str = Query(...)):
    res = subprocess.run(f"ping -c 4 {host}", shell=True, capture_output=True, te
    return {"returncode": res.returncode, "output": res.stdout + res.stderr}
```

8) Questions?

Let's connect!

https://www.linkedin.com/in/betta-lyon-delsordo/