**PROJECT ON VULNERABILITY ASSESSMENT FRAMEWORK USING MODERN GUI**

**BY: TEAM GUARDIANS**

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**INTRODUCTION:**

Our team has designed a framework for the vulnerability scans where the user is required to paste the URL of the website he/she is going to check for its vulnerability and flaws. Our framework ensures to deliver out the true and up to date information about the flaws in a very unique way.

Besides getting the vulnerability scan, user gets a description about the vulnerability so that he/she can check and work on it. It also shows how vulnerable your site is as low, medium, high risk using various colors.

**TOOLS AND LIBRARIES USED**

**Flask:**

A micro web framework for Python.

Handles routing (@app.route) and HTTP requests (request object).

Renders HTML templates (render\_template function).

**SQLAlchemy:**

Object-Relational Mapping (ORM) library for Python.

Manages database models (Scan, Alert, NmapResult).

Handles database connections and queries (db.session).

**Flask-Migrate:** Extension for Flask to handle database migrations.

Simplifies the process of applying and managing database schema changes.

**ZAPv2 (OWASP ZAP):**

Open-source web application security scanner.

Integrated for performing active and passive scans (zap.ascan and zap.pscan).

Retrieves security alerts (zap.core.alerts).

**nmap:**

Network exploration tool and security/port scanner.

Used to perform network scans (nmap.PortScanner()).

**Files and Directories:**

**App Initialization:**

app = Flask(\_name\_, static\_folder=r"C:\Users\(user's computer directory where template is stored)"): Defines the Flask application and specifies the static file directory.

**Database Configuration:**

app.config['SQLALCHEMY\_DATABASE\_URI']: Specifies the SQLite database location.

app.config['SQLALCHEMY\_TRACK\_MODIFICATIONS'] = False: Disables SQLAlchemy modification tracking.

**Database Models:**

Defines three database models (Scan, Alert, NmapResult) using SQLAlchemy ORM.

**Routes:**

/: Serves the index.html file from the specified static directory.

/scan: Endpoint for initiating a scan, handling both ZAP and nmap scans, storing results in the database, and rendering a results template.

/scans: Displays a list of scan records from the database.

**Templates:**

index.html: Main HTML file served by the application.

results.html: Template for displaying scan results.

scans.html: Template for displaying a list of scan records.

**Files and Directories Overview:**

**Static Files:**

Located at C:\Users\(user's computer directory where template is stored).

Contains static assets like CSS, JavaScript, and index.html.

**Database File:**

SQLite database file (zap\_scans.db).