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Lab Practical 09:
Perform web application security scan using W3AF or any Web Application Scanning Tool(Nessus)

Nessus :

- **Introduction:**

  Nessus is a widely used vulnerability scanning tool in the field of cyber security and security testing. Nessus is a platform developed by Tenable that scans for security vulnerabilities in devices, applications, operating systems, cloud services, and other network resources. It is a remote security scanning tool, which scans a computer and raises an alert if it discovers any vulnerabilities that malicious hackers could use to gain access to any computer, that you have connected with any network. It does this by running over 1200 checks on a given computer, to see if any of these attacks could be used to break into the computer or otherwise harm it.

- **Installation:**

  1. **Download Nessus:**
     - Navigate to the https://www.tenable.com/downloads/nessus page
     - Choose the appropriate version for your operating system and Download
  2. **Install Nessus:**
     - Open a terminal and navigate to the directory where the Nessus package was downloaded.
     - Run the following command:

```
┌──(kali㉿kali)-[~]
└─$ cd Downloads

┌──(kali㉿kali)-[~/Downloads]
└─$ sudo dpkg -i ./Nessus-10.8.3-ubuntu1604_amd64.deb
```

  3. **Start Nessus Service:**
     - start the Nessus service by following command:

```
┌──(kali㉿kali)-[~/Downloads]
└─$ sudo systemctl start nessusd.service
[sudo] password for kali:

┌──(kali㉿kali)-[~/Downloads]
└─$
```

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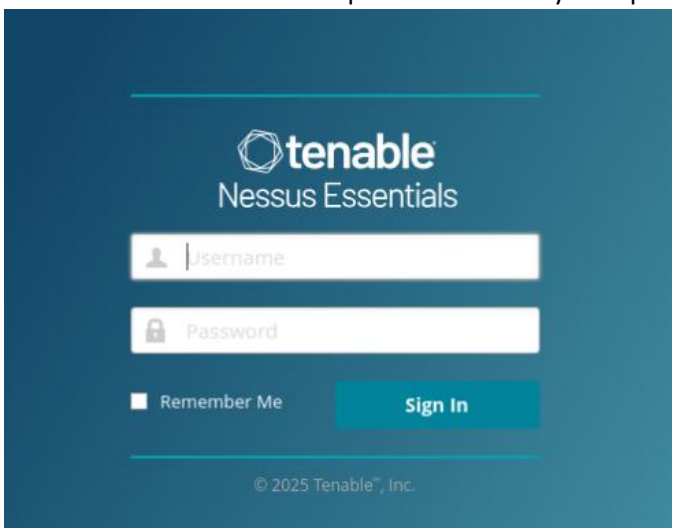
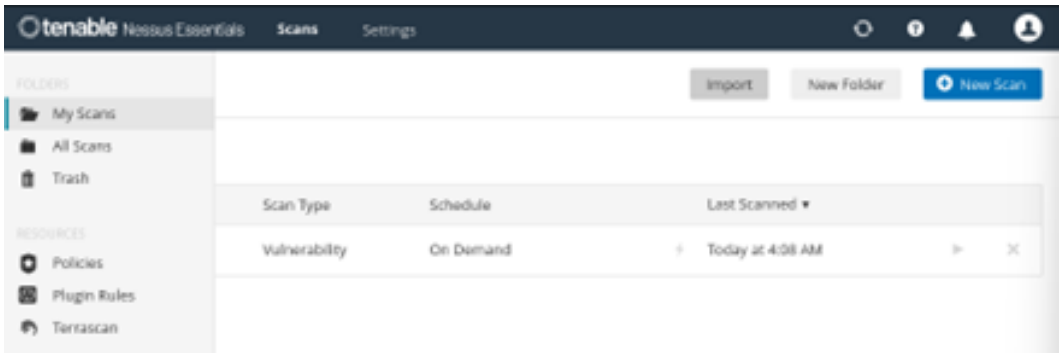
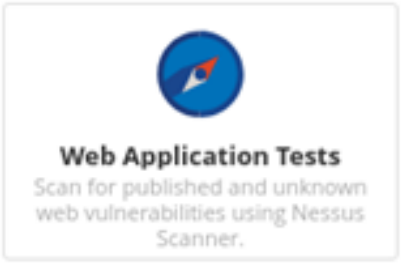
4. **Access Nessus Web Interface:**
   - Open a web browser and navigate to https://localhost:8834.
   - Follow the setup instructions to create an administrator account and activate Nessus using the activation code obtained during the download process.
   - The default username & password will be your operating system user's.



- **Scan DVWA (http://localhost/DVWA/index.php)**
  1. **Click on New Scan**



  2. **Select Web Application test**



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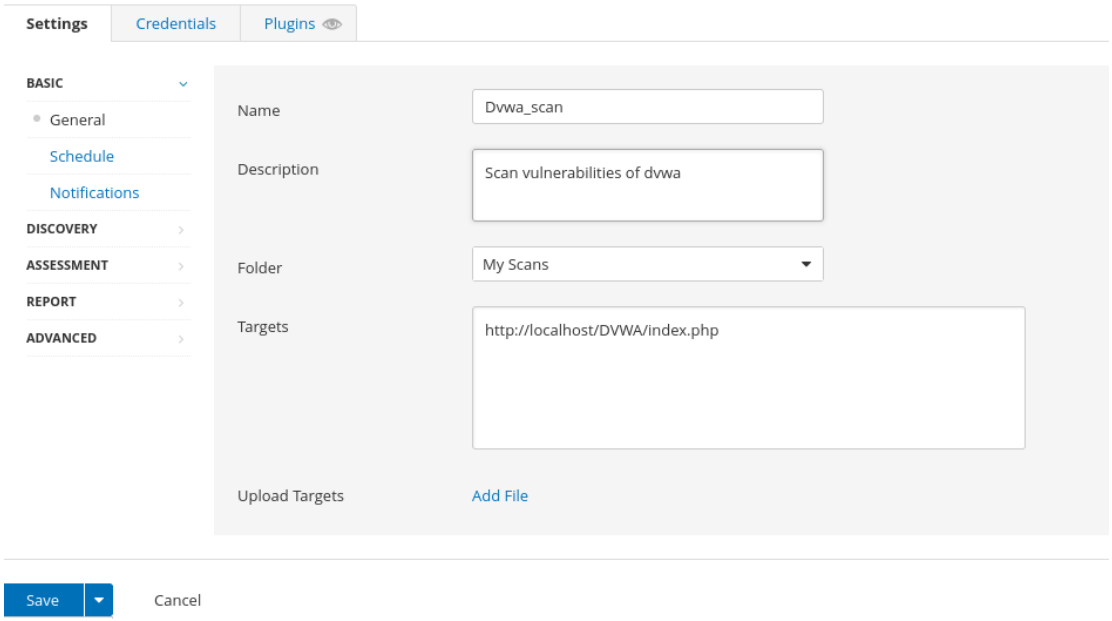
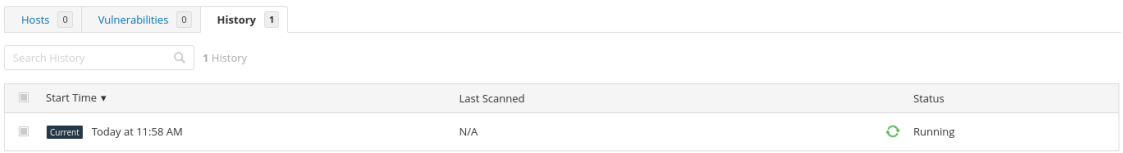
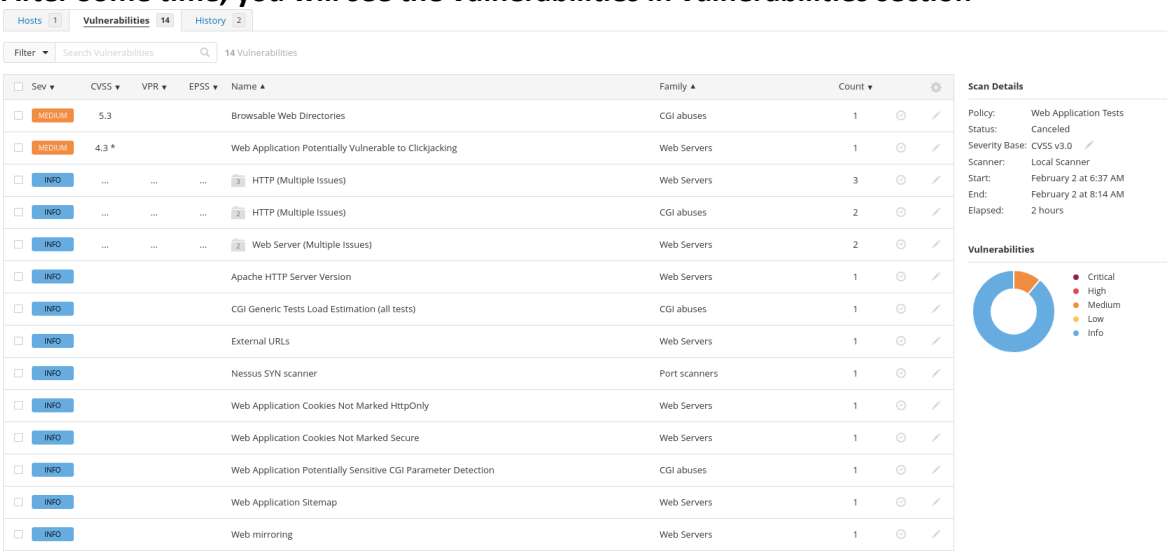
3. **Enter Name and Target and Click on launch**
   (here the Target should be IP address or URL of Target)



4. **Wait till it scan the Target (the running state will change to complete)**



5. **After Some time, you will see the vulnerabilities in vulnerabilities section**



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- **Vulnerabilities & Solution:**

1. **Browsable Web Directories**

   Impact: Allows attackers to list files and directories, which may reveal sensitive information or expose attack surfaces.

   Solution: Disable directory listing (ex: Disable "Directory Browsing" in IIS Manager)

2. **Web Application Potentially Vulnerable to Common Attacks**

   Impact: This suggests the web application may be vulnerable to attacks like SQL Injection, XSS, CSRF, etc.

   Solution:

   - nput Validation: Implement strong validation and sanitization for user inputs.
   - Parameterized Queries: Use prepared statements for database interactions.
   - Enable a Web Application Firewall (WAF): Use tools like ModSecurity.

3. **Apache HTTP Server Version Disclosure**

   Impact: Attackers can determine the Apache version and exploit known vulnerabilities.

   Solution: Hide the Apache version (ex: ServerSignature Off, ServerTokens Prod)

4. **External URLs Found**

   Impact: This lists external URLs referenced by the web application, which may reveal third-party integrations.

   Solution:

   - Review external links to ensure they are necessary and secure.
   - Use rel="noopener noreferrer" for external links.

5. **Web Application Cookies Not Marked HttpOnly and Secure (Info)**

   Impact: Can lead to session hijacking or Man-in-the-Middle (MITM) attacks.

   Solution: Set HttpOnly and Secure attributes for cookies (ex: Set-Cookie: session_id=abc123; HttpOnly; Secure; SameSite=Strict)

6. **Web Mirroring Allowed**

   Impact: Attackers can easily copy the entire website for phishing or reconnaissance.

   Solution:

   - Restrict web scrapers with a robots.txt file.
   - Implement rate-limiting in the web server.