SQL Injection Primer

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Housekeeping

- Attendance - https://forms.gle/f4FSQEGQ6TE51aGQ7
- UB Lockdown - https://forms.gle/VFCexqE61mSWCbxeA
- GDDC - https://forms.gle/5xwsx8j6CYqEbFiW7

Structured Query Language (SQL)

- Used for managing data held in relational database management system
- Industry standard
- Capabilities include:
    - Executing queries
    - Retrieving data
    - Inserting records
    - Deleting records

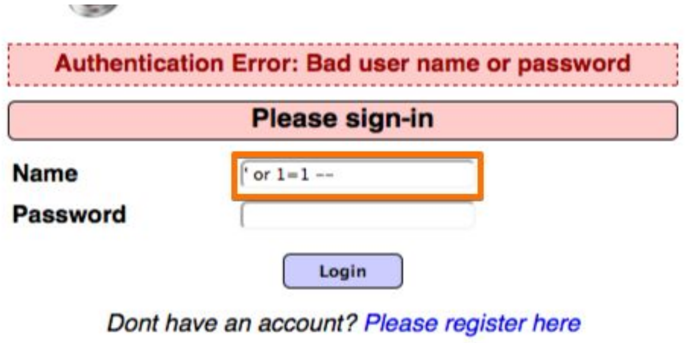
SQL Injection

- SQLi vulnerabilities arise when user supplied data becomes part of SQL queries in an unsafe manner.
- An attacker can inject a malicious input and execute SQL commands leading to reading and/or modifying the stored data and sometimes even performing remote code execution.

Login Bypass Example

- Eg. SELECT * FROM users WHERE user ='<user input>' AND pass='<userinput>'
- Payload: 'or 1=1 --
- ---> SELECT * FROM users WHERE user=''or 1=1 --' AND password='foo'
  - Query Evaluates to true - Login Bypassed

Login Bypass Example



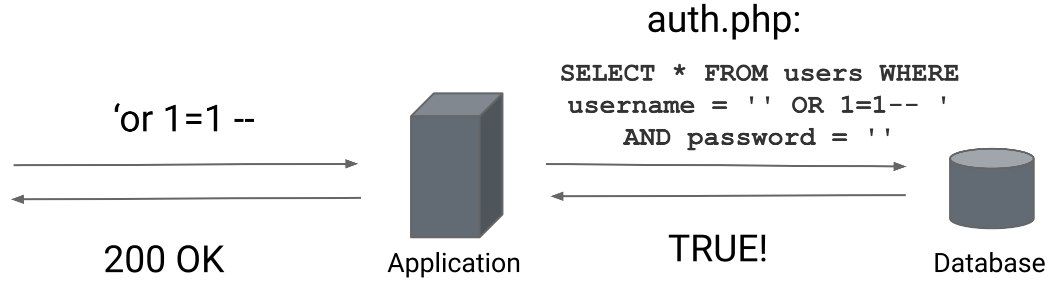
Authentication Error: Bad user name or password

Please sign-in

Name: ' or 1=1 --

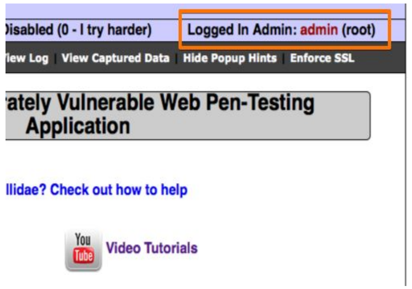
Password:

Dont have an account? Please register here



auth.php:

```
SELECT * FROM users WHERE
username = '' OR 1=1-- '
AND password = ''
```



Disabled (0 - I try harder) | Logged In Admin: admin (root)

iew Log | View Captured Data | Hide Popup Hints | Enforce SSL

ately Vulnerable Web Pen-Testing Application

llidae? Check out how to help

Boolean Based

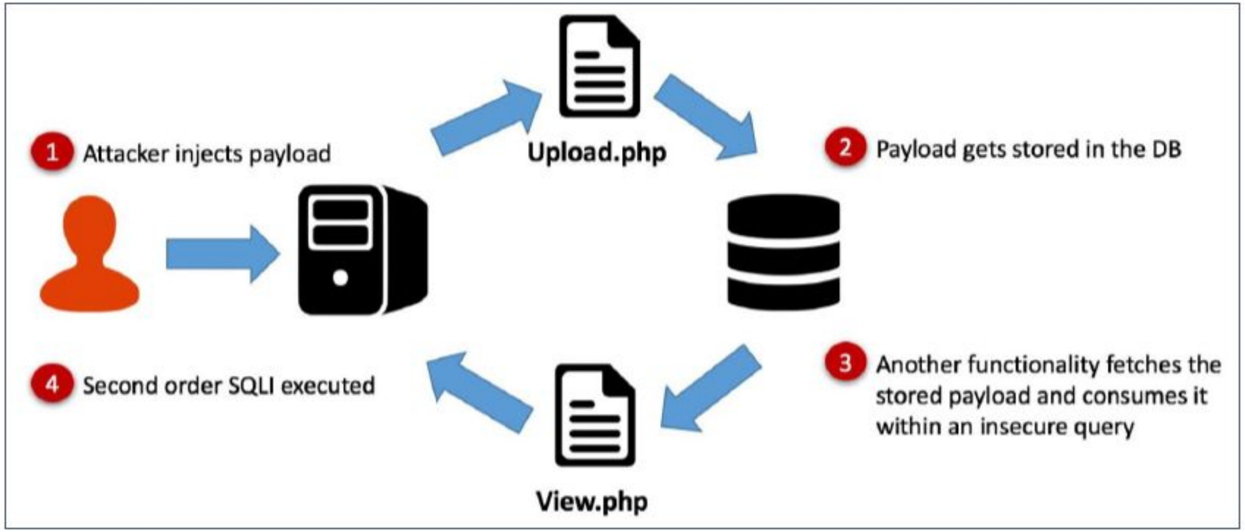
- Forcing query to return either a true or false response
- Allows an attacker to determine whether a query was true or false without having access to errors
- Very slow as an attacker would need to enumerate the data base one character at a time

Blind (Inferential) SQL Injection

- User input is improperly put into a query however no output can be seen
- Determining the value of a query is usually determined in a boolean value by utilizing time
- Tends to be very slow, as each character must be enumerated in database
- Depending on the timings false positives could be common

Second Order Injection

- Leveraging file upload/creation functionalities to upload/create .php file with malicious SQL queries
- Leveraging website functionality to load the .php file
- Custom SQL Query is executed


1 Attacker injects payload
Upload.php
2 Payload gets stored in the DB
3 Another functionality fetches the stored payload and consumes it within an insecure query
View.php
4 Second order SQLI executed

Activity

1. Connect to Globalprotect
2. Go to https://server.uacyber.org:8006
3. Log in using number given redteam(1 - 20):bb123#123
4. Set Authentication Realm to: Proxmox VE authentication server
5. Login with user: root password: bb123#123
6. Box with SQLI vulnerability: 192.168.3.41