



Course: CYB302

**Ethical Hacking
(Canadian Context)**

**Lab 9: Exploiting Application Vulnerabilities using
ZAP, XSS and URL manipulation.**

Coordinator and Instructor:

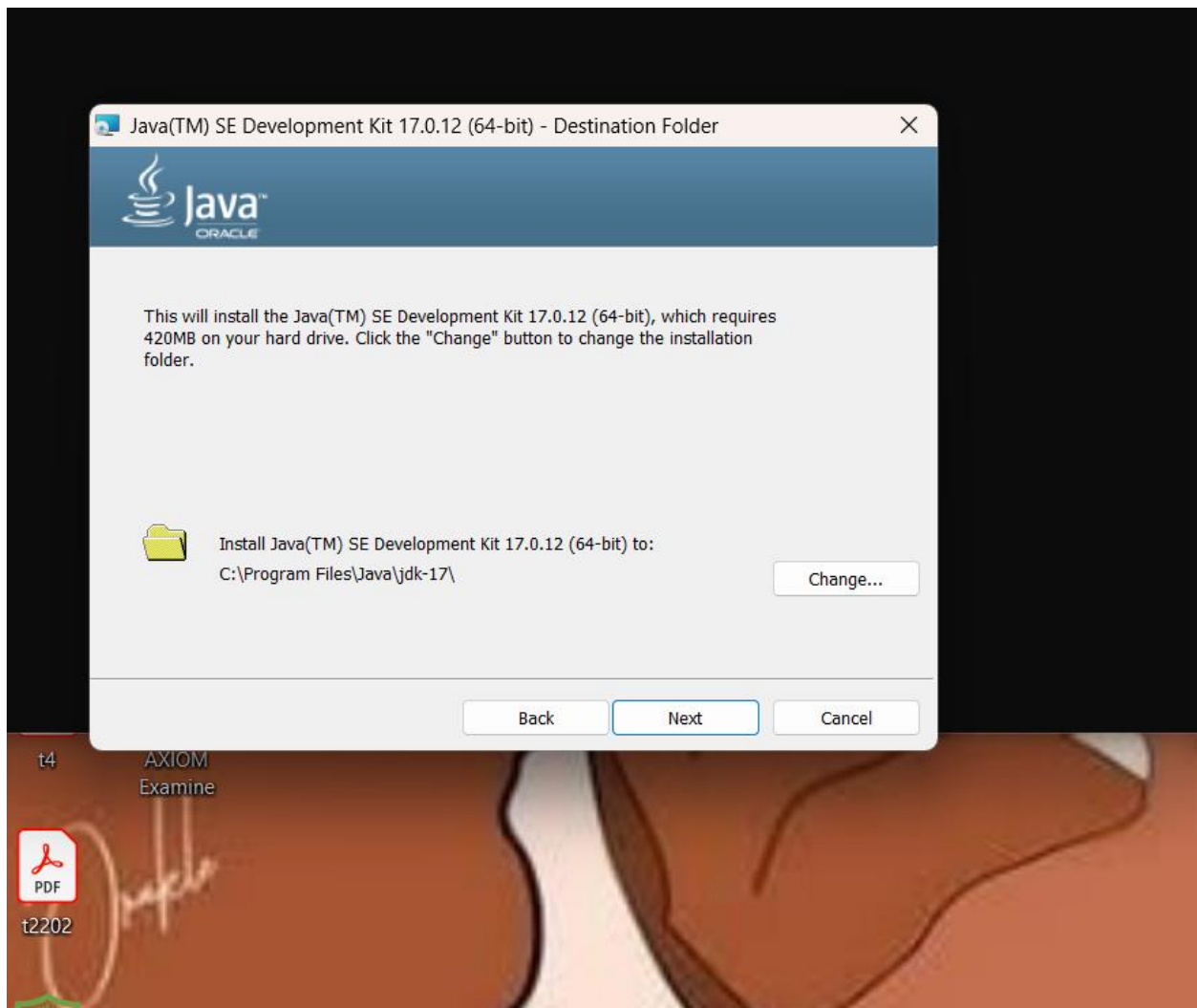
Muhamma Saleem

Student Name: Olushola Enoch Bayode

Student ID: 23077087

Section: 3rd Semester

Activity 1: Using the ZAP Proxy



Java(TM) SE Development Kit 17.0.12 (64-bit) - Progress

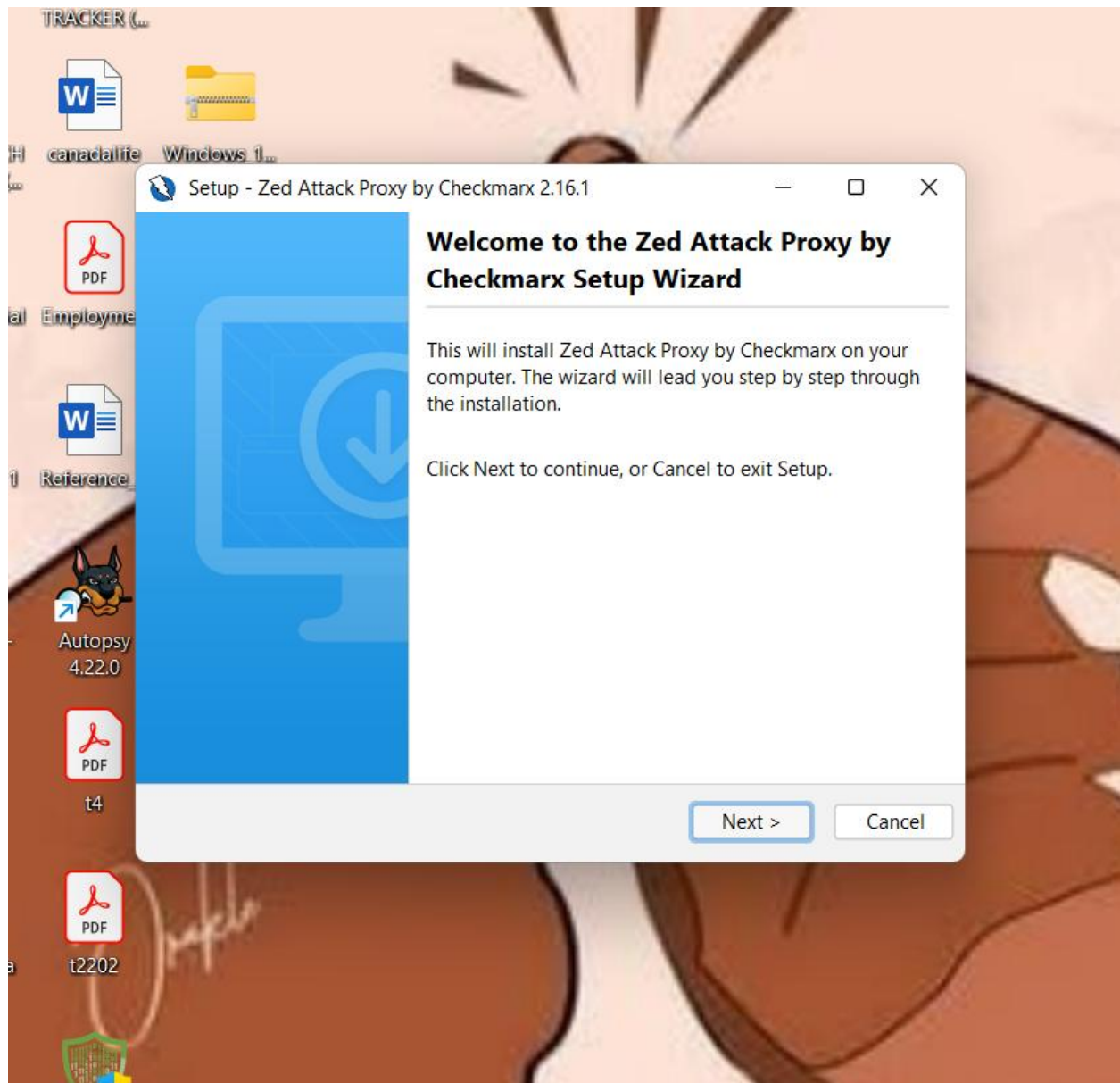


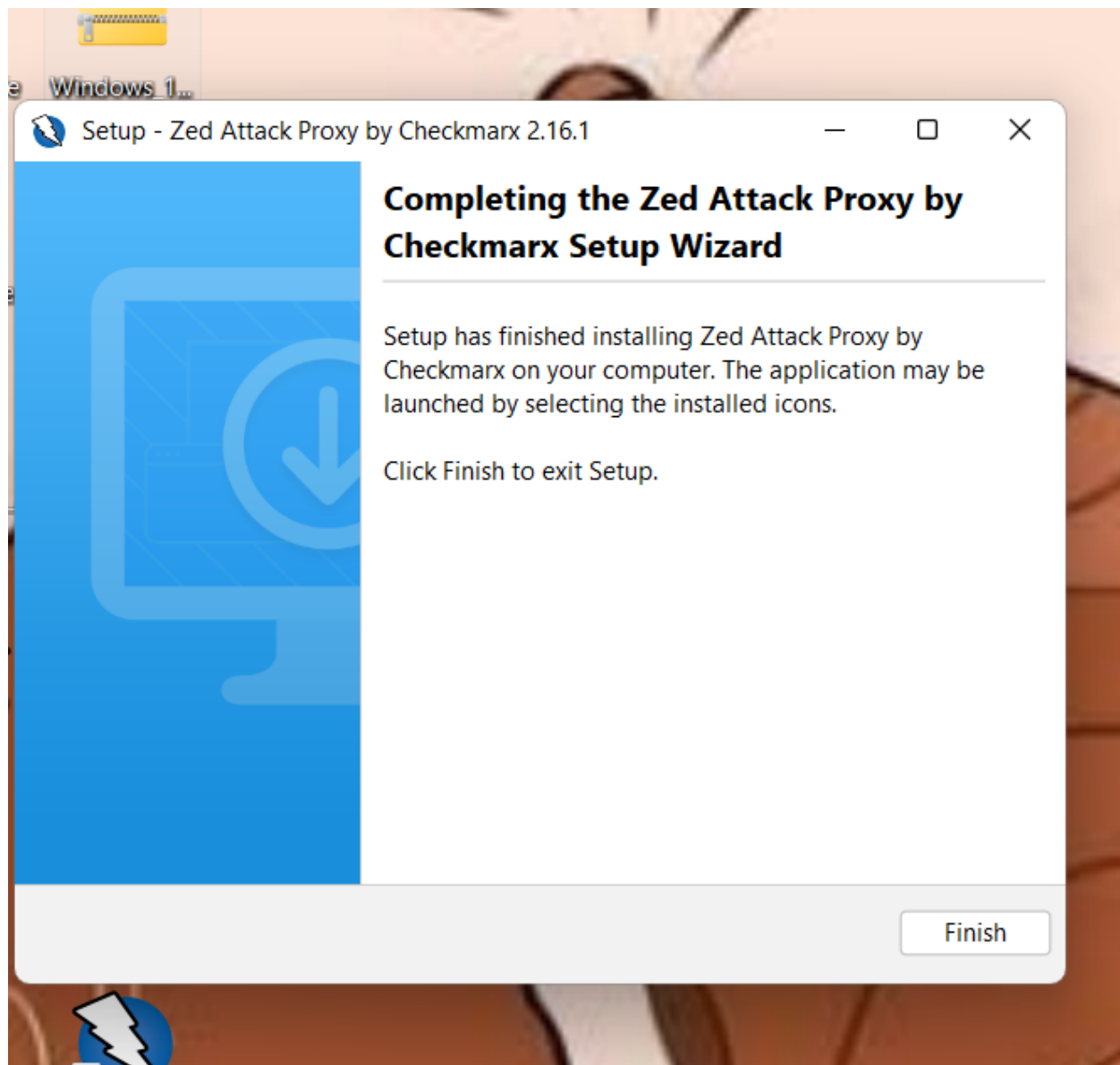
Status: Copying new files

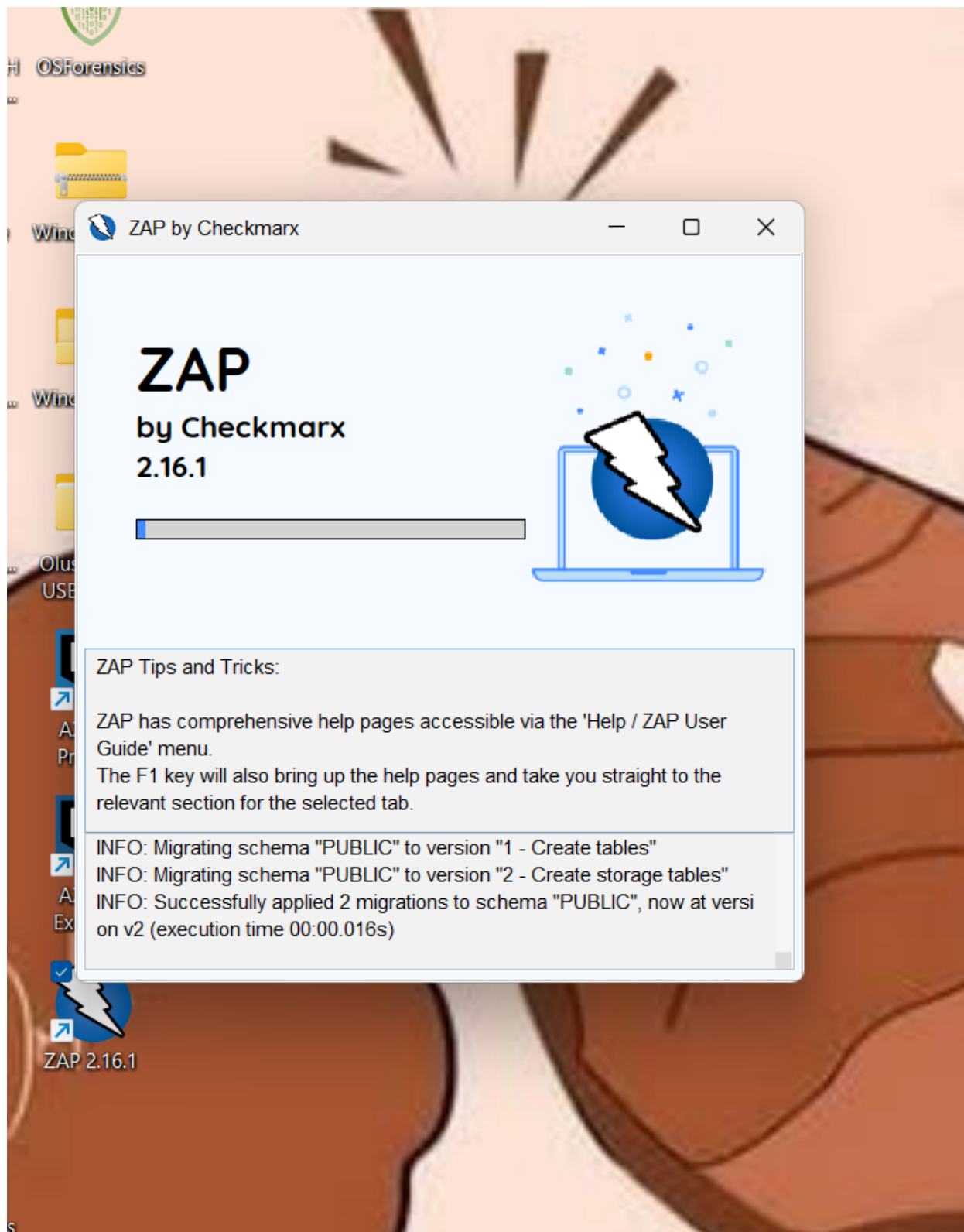


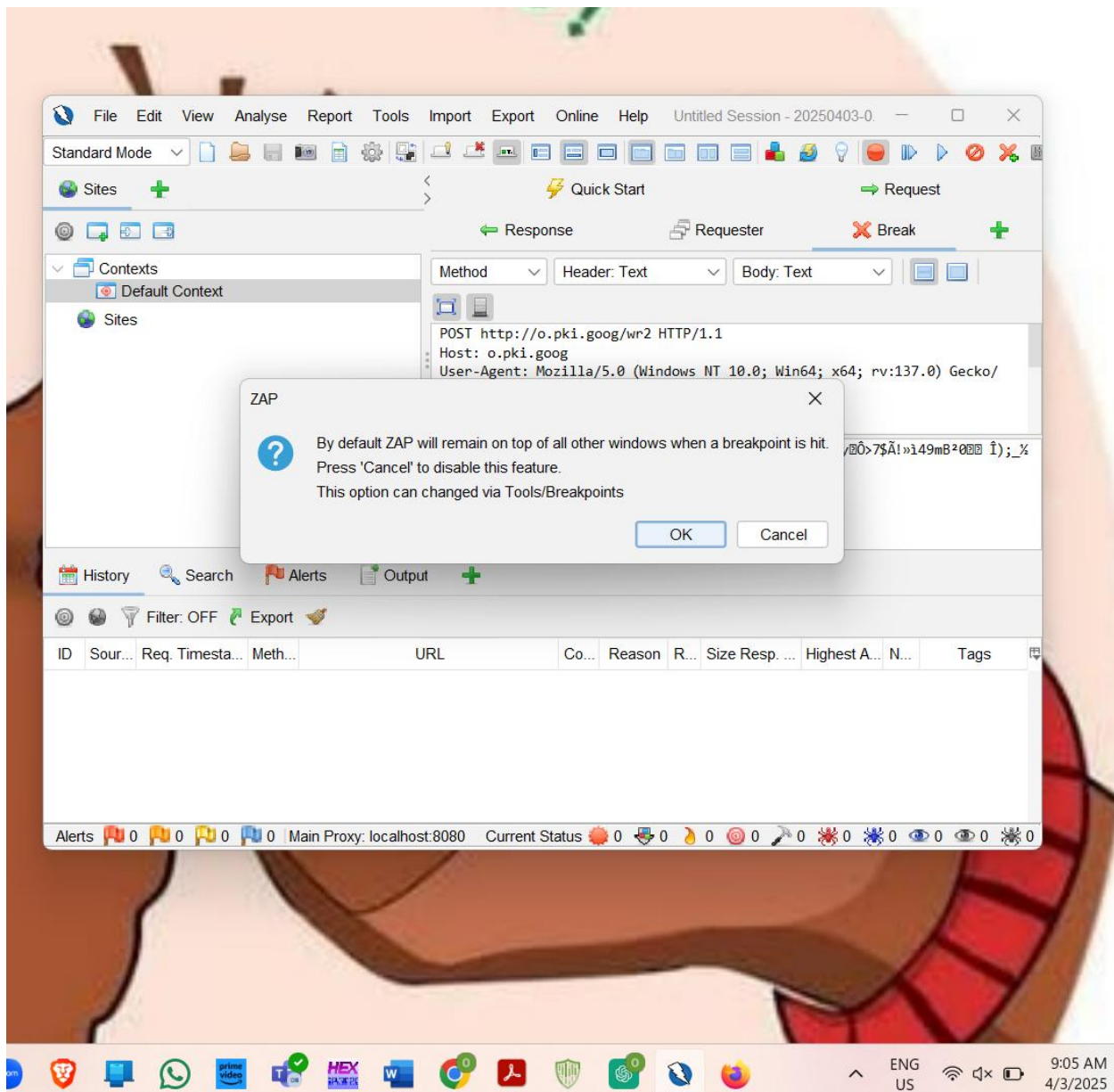
4

AXIOM
Examine









File Edit View Analyse Report Tools Import Export Online Help Untitled Session - 20250403-0

Standard Mode

Sites + Quick Start Request

Response Requester Break +

Contexts

- Default Context
- Sites

Method Header: Text Body: Text

POST http://o.pki.goog/wr2 HTTP/1.1
Host: o.pki.goog
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:137.0) Gecko/20100101 Firefox/137.0
Accept: */*
Accept-Language: en-US,en;q=0.5

0R0P0N0L0J0 00+0000 00S0000000Mw|0#10{5I00P00iy00>7\$Ä!»i49mB²000 i);_¼
000
*³00Ûy~

History Search Alerts Output +

Filter: OFF Export

ID	Sour...	Req. Timesta...	Meth...	URL	Co...	Reason	R...	Size Resp. ...	Highest A...	N...	Tags
----	---------	-----------------	---------	-----	-------	--------	------	----------------	--------------	------	------

Alerts 0 0 0 0 Main Proxy: localhost:8080 Current Status 0 0 0 0 0 0 0 0 0 0 0 0



cats



All Images Videos Shopping Short videos News Forums More

Tools

AI Overview

Learn more

There are multiple matches for cats, including a domestic animal, a musical, and a 2019 film.

Cats (the animal)

- The domestic cat (*Felis catus*) is a small, carnivorous mammal that is commonly kept as a pet.
- Cats are social animals that are solitary hunters.
- They have retractable claws, sharp teeth, and well-developed night vision and sense of smell.

Cats are creatures of routine and are most happy when going through that daily

Show more

Wikipedia
https://en.wikipedia.org/wiki/Cat

Cat

The cat (*Felis catus*), also referred to as the domestic cat or house cat, is a small domesticated carnivorous mammal. It is the only domesticated species of ...

Human interaction with cats

List of cat breeds

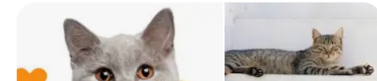
Islam and cats

Felis

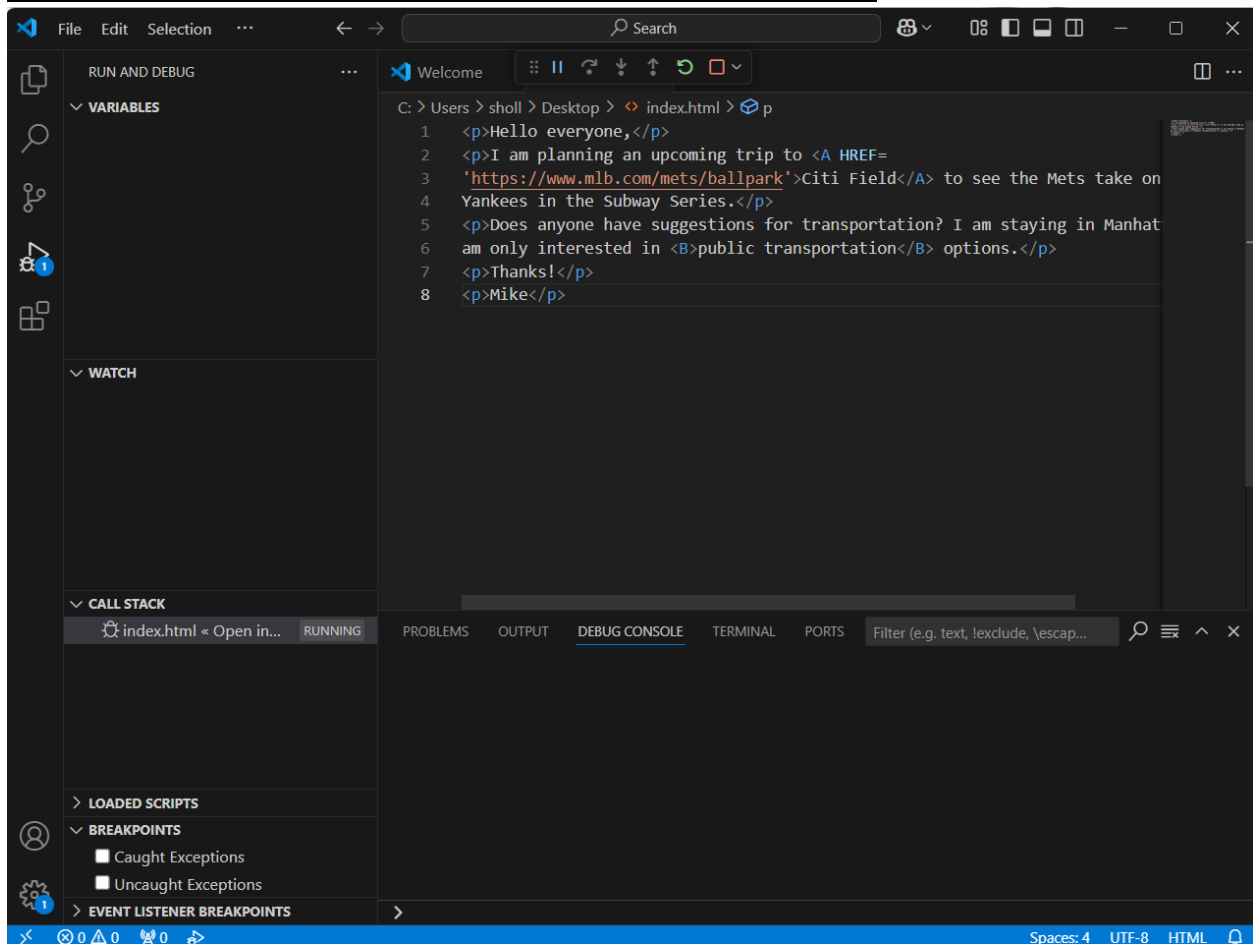


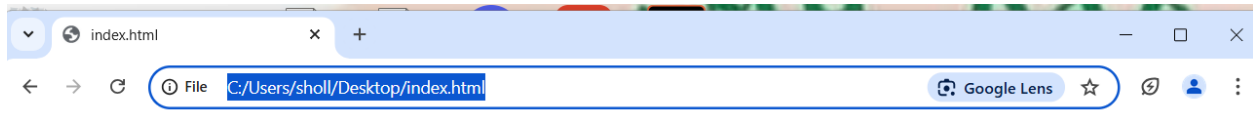
Cat

Animal



Activity 2: Creating a Cross-Site Scripting Vulnerability





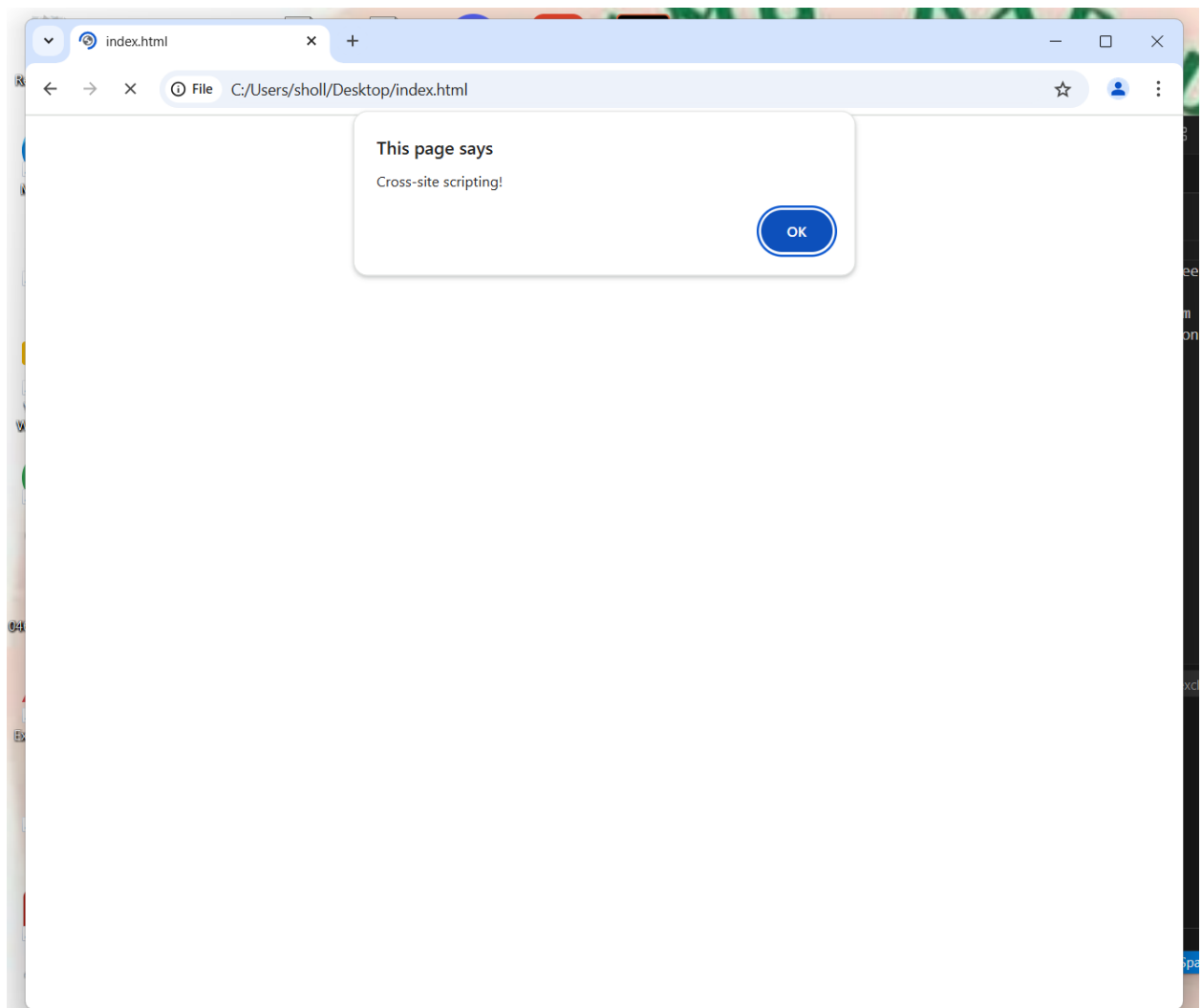
Hello everyone,

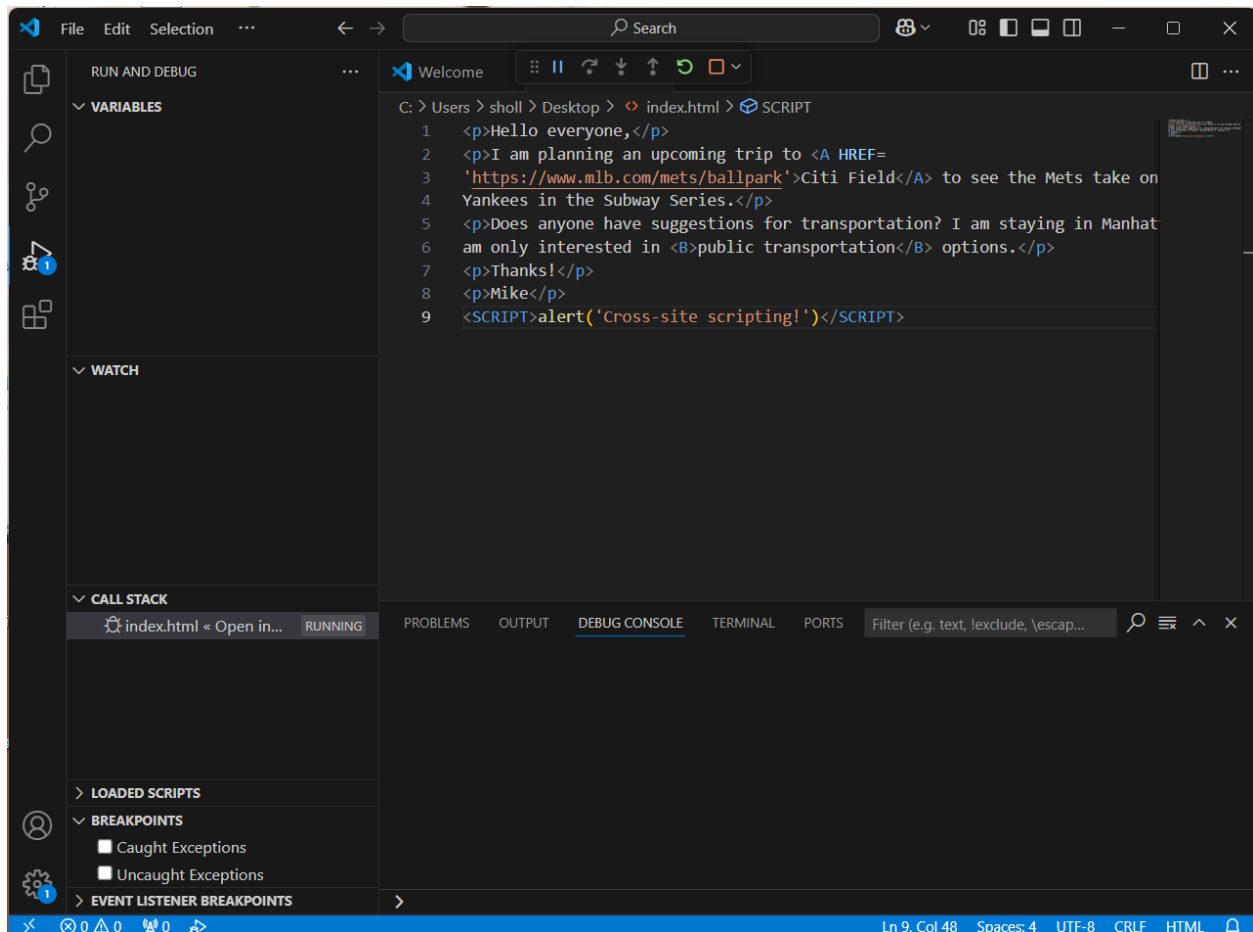
I am planning an upcoming trip to [Citi Field](#) to see the Mets take on the Yankees in the Subway Series.

Does anyone have suggestions for transportation? I am staying in Manhattan and am only interested in **public transportation** options.

Thanks!

Mike

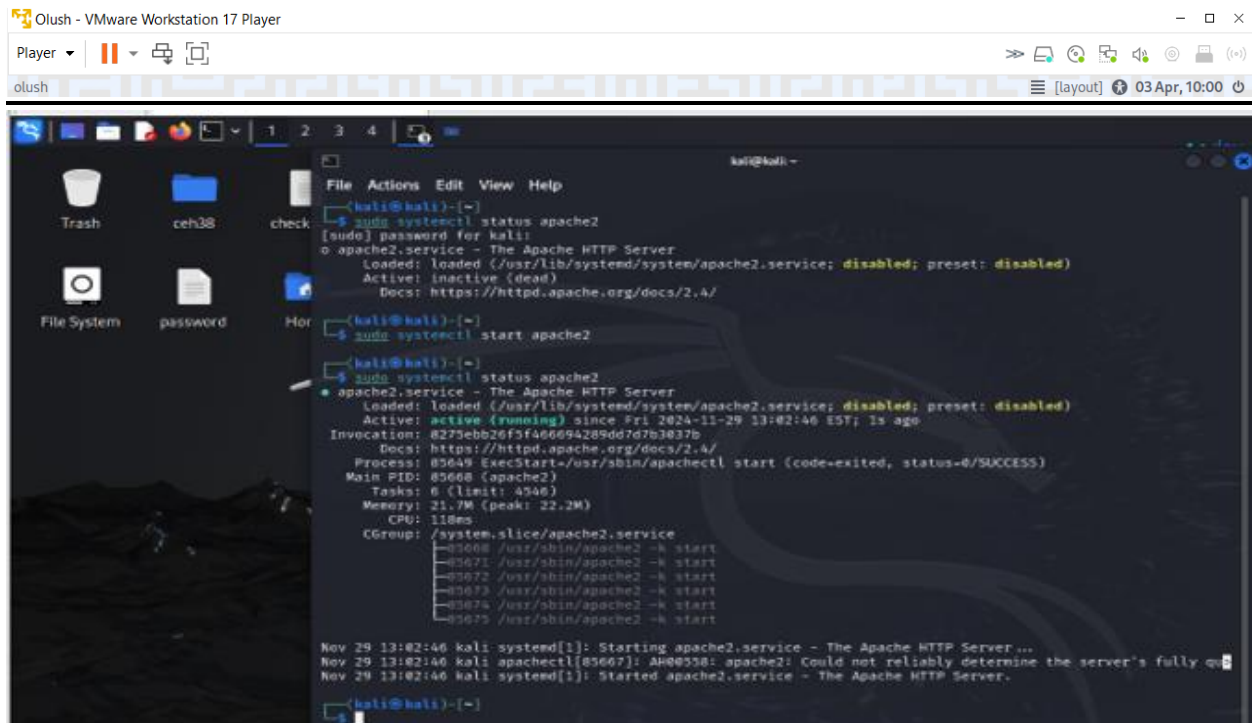




Did you see the impact of your cross-site scripting attack? Yes.

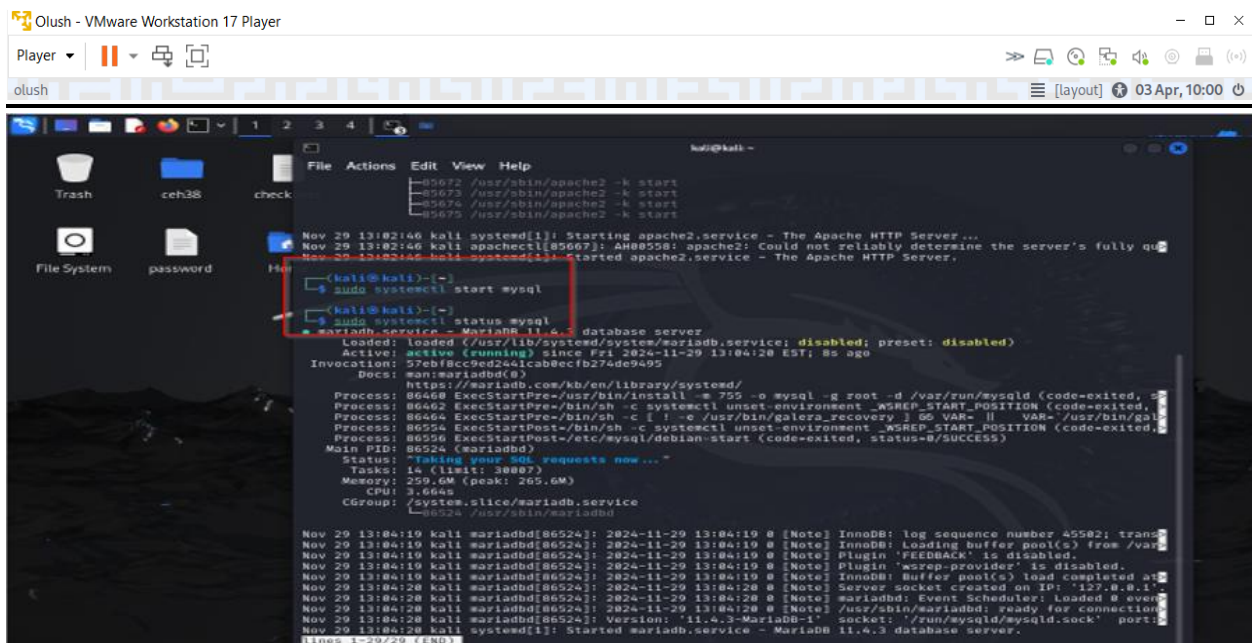
Activitiy#3: Exploiting Insecure Direct Object Reference (URL Manipulation)

Apache started and running:



```
kali@kali: ~  
$ sudo systemctl status apache2  
[sudo] password for kali:  
● apache2.service - The Apache HTTP Server  
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; disabled; preset: disabled)  
   Active: inactive (dead)  
     Docs: https://httpd.apache.org/docs/2.4/  
  
$ sudo systemctl start apache2  
  
$ sudo systemctl status apache2  
● apache2.service - The Apache HTTP Server  
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; disabled; preset: disabled)  
   Active: active (running) since Fri 2024-11-29 13:02:46 EST; 1s ago  
 Invocation: 8275ebb26f5f466694289dd7d7b3037b  
     Docs: https://httpd.apache.org/docs/2.4/  
   Process: 85649 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)  
 Main PID: 85668 (apache2)  
    Tasks: 6 (limit: 4546)  
  Memory: 21.7M (peak: 22.2M)  
     CPU: 118ms  
   CGroup: /system.slice/apache2.service  
           └─85668 /usr/sbin/apache2 -k start  
           └─85671 /usr/sbin/apache2 -k start  
           └─85672 /usr/sbin/apache2 -k start  
           └─85673 /usr/sbin/apache2 -k start  
           └─85674 /usr/sbin/apache2 -k start  
           └─85675 /usr/sbin/apache2 -k start  
  
Nov 29 13:02:46 kali: systemd[1]: Starting apache2.service - The Apache HTTP Server ...  
Nov 29 13:02:46 kali: apachectl[85667]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, please add the 'ServerName' directive to the configuration to avoid this warning.  
Nov 29 13:02:46 kali: systemd[1]: Started apache2.service - The Apache HTTP Server.  
  
$
```

Mysql started and Runing in kali:



```
kali@kali: ~  
$ sudo systemctl start mysql  
  
$ sudo systemctl status mysql  
● mariadb.service - MariaDB 11.4.3 database server  
   Loaded: loaded (/usr/lib/systemd/system/mariadb.service; disabled; preset: disabled)  
   Active: active (running) since Fri 2024-11-29 13:04:20 EST; 8s ago  
 Invocation: 57ebf8cc9ed24c1cabecf0274de9495  
     Docs: man:mariadb(8)  
           https://mariadb.com/kb/en/library/systemd/  
   Process: 86460 ExecStartPre=/usr/bin/install -m 755 -o mysql -g root -d /var/run/mysqld (code=exited, status=0/SUCCESS)  
   Process: 86462 ExecStartPre=/bin/sh -c 'systemctl unset-environment _WSREP_START_POSITION' (code=exited, status=0/SUCCESS)  
   Process: 86464 ExecStartPre=/bin/sh -c '[[ -e /usr/bin/galera_recovery ]] && VAR= [[ VAR= /usr/bin/galera_recovery ]] && VAR= /usr/bin/galera_recovery' (code=exited, status=0/SUCCESS)  
   Process: 86524 ExecStartPost=/etc/mysql/debian-start (code=exited, status=0/SUCCESS)  
 Main PID: 86524 (mariadbd)  
    Status: "Taking your SQL requests now..."  
    Tasks: 14 (limit: 38807)  
  Memory: 259.6M (peak: 265.6M)  
     CPU: 3.664s  
   CGroup: /system.slice/mariadb.service  
           └─86524 /usr/sbin/mariadbd  
  
Nov 29 13:04:19 kali: mariadbd[86524]: 2024-11-29 13:04:19 # [Note] InnoDB: log sequence number 45582; transaction log of /var/lib/mysql/mysql.ibd flushed (log file /var/lib/mysql/mysql.ibd)  
Nov 29 13:04:19 kali: mariadbd[86524]: 2024-11-29 13:04:19 # [Note] InnoDB: Loading buffer pool(s) from /var/lib/mysql/mysql.ibd  
Nov 29 13:04:19 kali: mariadbd[86524]: 2024-11-29 13:04:19 # [Note] Plugin 'FEDBACK' is disabled.  
Nov 29 13:04:19 kali: mariadbd[86524]: 2024-11-29 13:04:19 # [Note] Plugin 'wsrep-provider' is disabled.  
Nov 29 13:04:19 kali: mariadbd[86524]: 2024-11-29 13:04:19 # [Note] InnoDB: Buffer pool(s) load completed at 2024-11-29 13:04:19  
Nov 29 13:04:20 kali: mariadbd[86524]: 2024-11-29 13:04:20 # [Note] Server socket created on IP: '127.0.0.1'  
Nov 29 13:04:20 kali: mariadbd[86524]: 2024-11-29 13:04:20 # [Note] mariadbd: Event Scheduler: Loaded 0 events  
Nov 29 13:04:20 kali: mariadbd[86524]: 2024-11-29 13:04:20 # [Note] /usr/sbin/mariadbd: ready for connection  
Nov 29 13:04:20 kali: mariadbd[86524]: Version: '11.4.3-MariaDB-1' socket: '/run/mysqld/mysqld.sock' port: 3306 MySQL Community Server - GPL  
Nov 29 13:04:20 kali: systemd[1]: Started mariadb.service - MariaDB 11.4.3 database server.  
  
[lines 1-29/29 (END)]
```

Database created in mysql:

Olush - VMware Workstation 17 Player

Player ▾ || ▢ ▣ ▤

olush [layout] 03 Apr, 10:00

```
kali@kali: ~  
File Actions Edit View Help  
Memory: 259.6M (peak: 265.6M)  
CPU: 3.664s  
CGroup: /system.slice/mariadb.service  
└─86524 /usr/sbin/mariabdd  
Nov 29 13:04:19 kali mariabdd[86524]: 2024-11-29 13:04:19 0 [Note] InnoDB: log sequence number 45502; trans  
Nov 29 13:04:19 kali mariabdd[86524]: 2024-11-29 13:04:19 0 [Note] InnoDB: Loading buffer pool(s) from /var  
Nov 29 13:04:19 kali mariabdd[86524]: 2024-11-29 13:04:19 0 [Note] Plugin 'FEEDBACK' is disabled.  
Nov 29 13:04:19 kali mariabdd[86524]: 2024-11-29 13:04:19 0 [Note] Plugin 'wsrep-provider' is disabled.  
Nov 29 13:04:19 kali mariabdd[86524]: 2024-11-29 13:04:19 0 [Note] InnoDB: Buffer pool(s) load completed at  
Nov 29 13:04:20 kali mariabdd[86524]: 2024-11-29 13:04:20 0 [Note] Server socket created on IP: '127.0.0.1'.  
Nov 29 13:04:20 kali mariabdd[86524]: 2024-11-29 13:04:20 0 [Note] mariabdd: Event Scheduler: Loaded 0 even  
Nov 29 13:04:20 kali mariabdd[86524]: 2024-11-29 13:04:20 0 [Note] /usr/sbin/mariabdd: ready for connection  
Nov 29 13:04:20 kali mariabdd[86524]: Version: '11.4.3-MariaDB-1' socket: '/run/mysqld/mysqld.sock' port: 3  
Nov 29 13:04:20 kali systemd[1]: Started mariadb.service - MariaDB 11.4.3 database server.  
  
(kali@kali)~  
$ sudo mysql --user=root --password  
Welcome to the MariaDB monitor. Commands end with ; or \g.  
Your MariaDB connection id is 43  
Server version: 11.4.3-MariaDB-1 Debian n/a  
  
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.  
  
Support MariaDB developers by giving a star at https://github.com/MariaDB/server  
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.  
  
MariaDB [(none)]> create database CYB302  
→ ;  
Query OK, 1 row affected (0.001 sec)  
  
MariaDB [(none)]> show databases;  
+-----+  
| Database |  
+-----+  
| CYB302 |  
| information_schema |  
| mysql |  
| performance_schema |  
| sys |  
+-----+  
5 rows in set (0.001 sec)  
  
MariaDB [(none)]> █
```

User (mohamed') and privilege created:

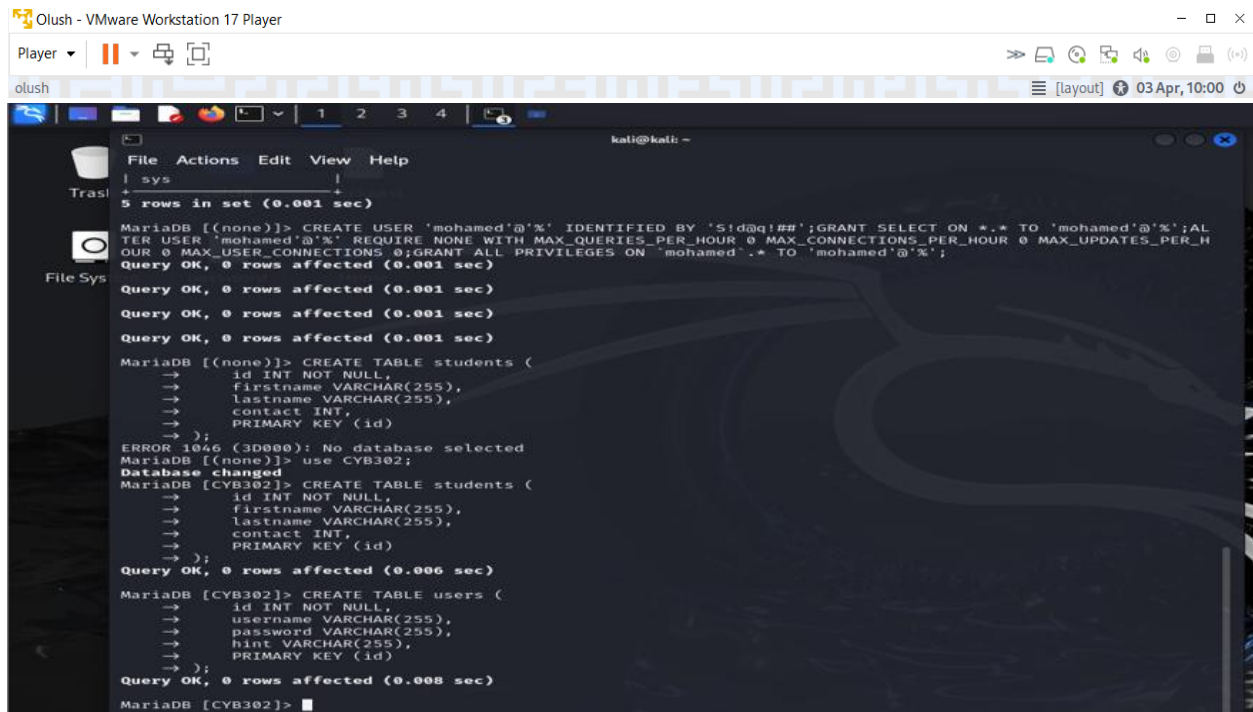
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Player ▾ || ▢ ▣ ▤

olush [layout] 03 Apr, 10:00

```
kali@kali: ~  
File Actions Edit View Help  
Nov 29 13:04:20 kali mariabdd[86524]: 2024-11-29 13:04:20 0 [Note] mariabdd: Event Scheduler: Loaded 0 even  
Nov 29 13:04:20 kali mariabdd[86524]: 2024-11-29 13:04:20 0 [Note] /usr/sbin/mariabdd: ready for connection  
Nov 29 13:04:20 kali mariabdd[86524]: Version: '11.4.3-MariaDB-1' socket: '/run/mysqld/mysqld.sock' port: 3  
Nov 29 13:04:20 kali systemd[1]: Started mariadb.service - MariaDB 11.4.3 database server.  
  
(kali@kali)~  
$ sudo mysql --user=root --password  
Welcome to the MariaDB monitor. Commands end with ; or \g.  
Your MariaDB connection id is 43  
Server version: 11.4.3-MariaDB-1 Debian n/a  
  
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.  
  
Support MariaDB developers by giving a star at https://github.com/MariaDB/server  
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.  
  
MariaDB [(none)]> create database CYB302  
→ ;  
Query OK, 1 row affected (0.001 sec)  
  
MariaDB [(none)]> show databases;  
+-----+  
| Database |  
+-----+  
| CYB302 |  
| information_schema |  
| mysql |  
| performance_schema |  
| sys |  
+-----+  
5 rows in set (0.001 sec)  
  
MariaDB [(none)]> CREATE USER 'mohamed'@'%' IDENTIFIED BY '5iddq!@#';GRANT SELECT ON *.* TO 'mohamed'@'%';AL  
TER USER 'mohamed'@'%' REQUIRE NONE WITH MAX_QUERIES_PER_HOUR 0 MAX_CONNECTIONS_PER_HOUR 0 MAX_UPDATES_PER_H  
OUR 0 MAX_USER_CONNECTIONS 0;GRANT ALL PRIVILEGES ON 'mohamed'.* TO 'mohamed'@'%';  
Query OK, 0 rows affected (0.001 sec)  
  
Query OK, 0 rows affected (0.001 sec)  
  
Query OK, 0 rows affected (0.001 sec)  
  
Query OK, 0 rows affected (0.001 sec)  
  
MariaDB [(none)]> █
```

Table “student” & “user” created on CYB302 database:



```
Olush - VMware Workstation 17 Player
Player
Olush
kati@kati: ~
File Actions Edit View Help
Trasl
File Sys
MariaDB [(none)]> CREATE USER 'mohamed'@'%' IDENTIFIED BY '5!d@q!##'; GRANT SELECT ON *.* TO 'mohamed'@'%'; ALTER USER 'mohamed'@'%' REQUIRE NONE WITH MAX_QUERIES_PER_HOUR 0 MAX_CONNECTIONS_PER_HOUR 0 MAX_UPDATES_PER_HOUR 0 MAX_USER_CONNECTIONS 0; GRANT ALL PRIVILEGES ON *.* TO 'mohamed'@'%';
Query OK, 0 rows affected (0.001 sec)
Query OK, 0 rows affected (0.001 sec)
Query OK, 0 rows affected (0.001 sec)
MariaDB [(none)]> CREATE TABLE students (
  id INT NOT NULL,
  first_name VARCHAR(255),
  last_name VARCHAR(255),
  contact INT,
  PRIMARY KEY (id)
);
ERROR 1046 (3D000): No database selected
MariaDB [(none)]> use CYB302;
Database changed
MariaDB [CYB302]> CREATE TABLE students (
  id INT NOT NULL,
  first_name VARCHAR(255),
  last_name VARCHAR(255),
  contact INT,
  PRIMARY KEY (id)
);
Query OK, 0 rows affected (0.006 sec)
MariaDB [CYB302]> CREATE TABLE users (
  id INT NOT NULL,
  username VARCHAR(255),
  password VARCHAR(255),
  hint VARCHAR(255),
  PRIMARY KEY (id)
);
Query OK, 0 rows affected (0.008 sec)
MariaDB [CYB302]>
```

Showing created tables: students & user:



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Player ▾ | [Icons] | olush | [layout] 03 Apr, 10:00

```
kali@kali:~$  
File Actions Edit View Help  
MariaDB [CYB302]> INSERT INTO students (id, firstname, lastname, contact)  
→ VALUES  
→ (501, 'Manmeet', 'Singh', 124052),  
→ (502, 'Helly', 'Patel', 335250),  
→ (503, 'Shakir', 'Bagiya', 203190);  
Query OK, 3 rows affected (0.002 sec)  
Records: 3 Duplicates: 0 Warnings: 0  
MariaDB [CYB302]> INSERT INTO users (id, username, password, hint)  
→ VALUES  
→ (501, 'msingh', '*_cb5527001', 'Cybersecurity'),  
→ (502, 'hpatel', '9enTqT_E', 'Pentest'),  
→ (503, 'sbagiya', '9Qne0fTh0rneE', 'Game');  
ERROR 1054 (42S22): Unknown column 'username' in 'field list'  
MariaDB [CYB302]> INSERT INTO users (id, username, password, hint)  
→ VALUES  
→ (501, 'msingh', '*_cb5527001', 'Cybersecurity'),  
→ (502, 'hpatel', '9enTqT_E', 'Pentest'),  
→ (503, 'sbagiya', '9Qne0fTh0rneE', 'Game');  
Query OK, 3 rows affected (0.001 sec)  
Records: 3 Duplicates: 0 Warnings: 0  
MariaDB [CYB302]> select * from students;  
+----+-----+-----+-----+  
| id | firstname | lastname | contact |  
+----+-----+-----+-----+  
| 501 | Manmeet | Singh | 124052 |  
| 502 | Helly | Patel | 335250 |  
| 503 | Shakir | Bagiya | 203190 |  
+----+-----+-----+-----+  
3 rows in set (0.001 sec)  
MariaDB [CYB302]> select * from users;  
+----+-----+-----+-----+  
| id | username | password | hint |  
+----+-----+-----+-----+  
| 501 | msingh | *_cb5527001 | Cybersecurity |  
| 502 | hpatel | 9enTqT_E | Pentest |  
| 503 | sbagiya | 9Qne0fTh0rneE | Game |  
+----+-----+-----+-----+  
3 rows in set (0.001 sec)  
MariaDB [CYB302]>
```

Downloading files and setting apache webserver:

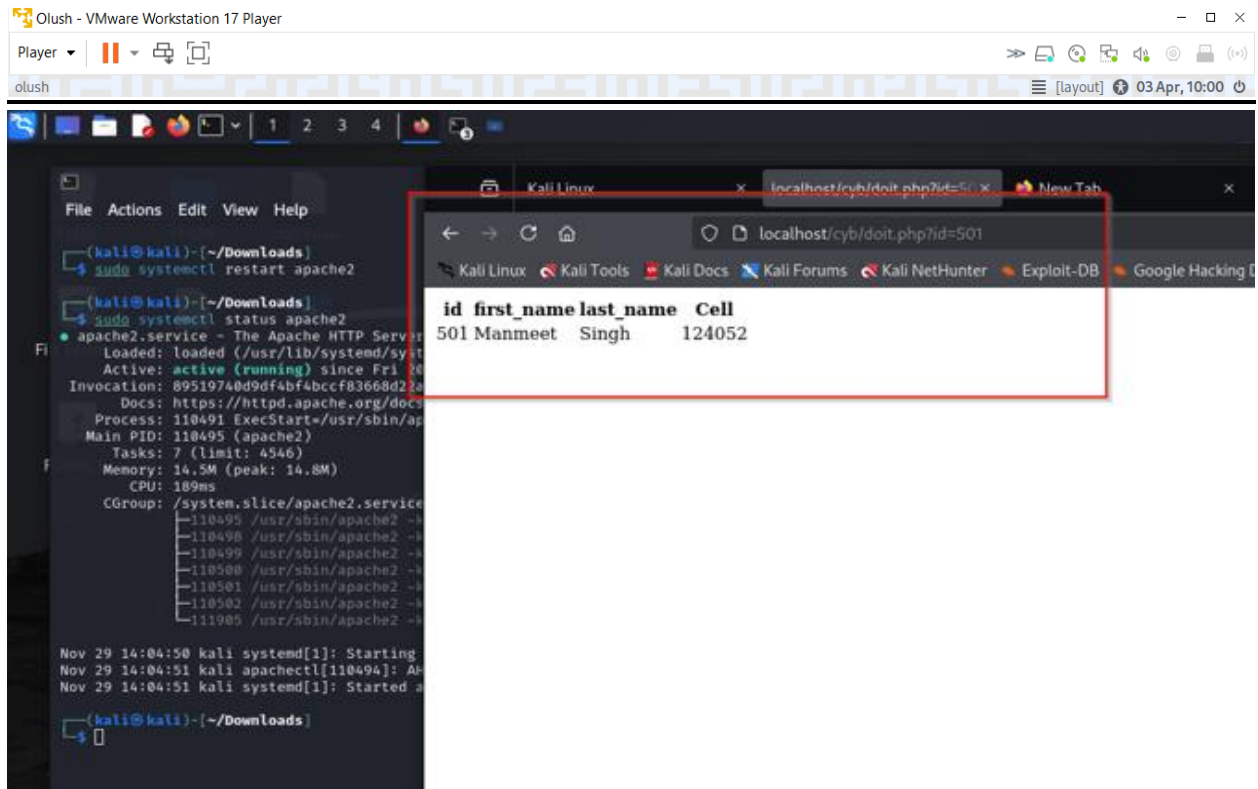
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Player ▾ | [Icons] | olush | [layout] 03 Apr, 10:00

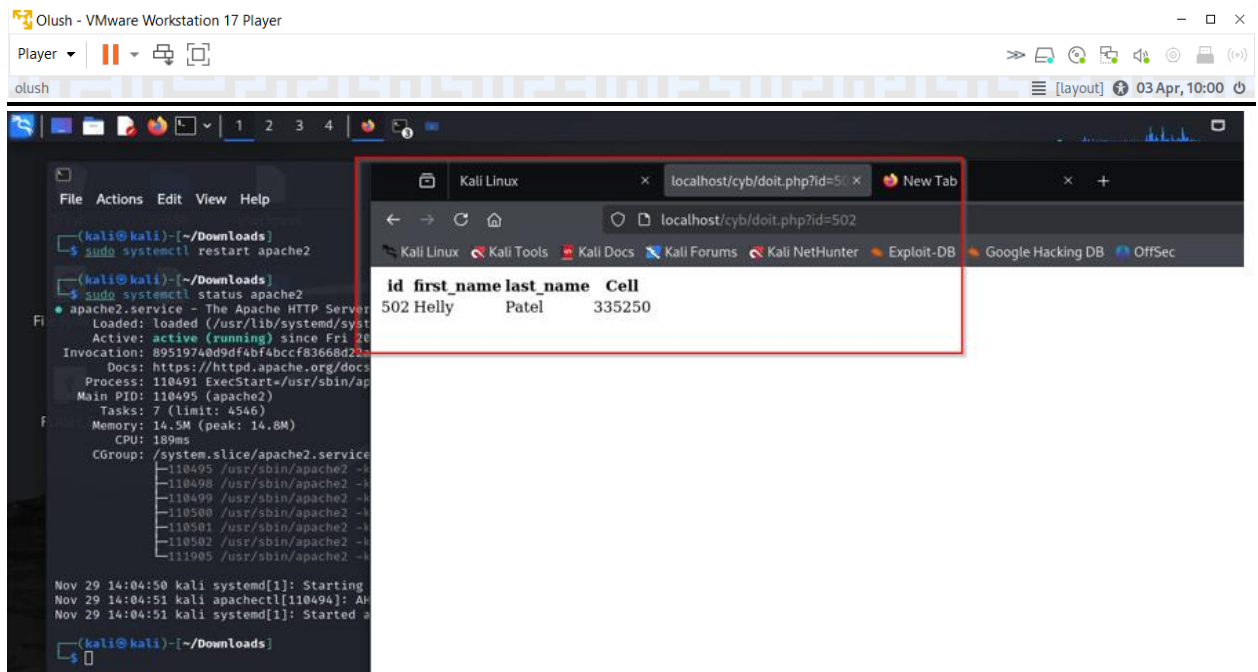
```
kali@kali:~/Downloads  
File Actions Edit View Help  
(kali@kali)-[~]  
$ cd /home/kali/Downloads  
(kali@kali)-[~/Downloads]  
$ ls  
doit.php 'My Basic Network Scan_xgvxaz.pdf' ZAP_2_15_0_unix.sh  
form.php Nessus-10.0.2-ubuntu1804_amd64.deb  
(kali@kali)-[~/Downloads]  
$ sudo mkdir /var/www/html/cyb  
[sudo] password for kali:  
(kali@kali)-[~/Downloads]  
$ sudo mv doit.php form.php /var/www/html/cyb  
(kali@kali)-[~/Downloads]  
$ sudo systemctl restart apache2  
(kali@kali)-[~/Downloads]  
$
```

URL Manipulation:

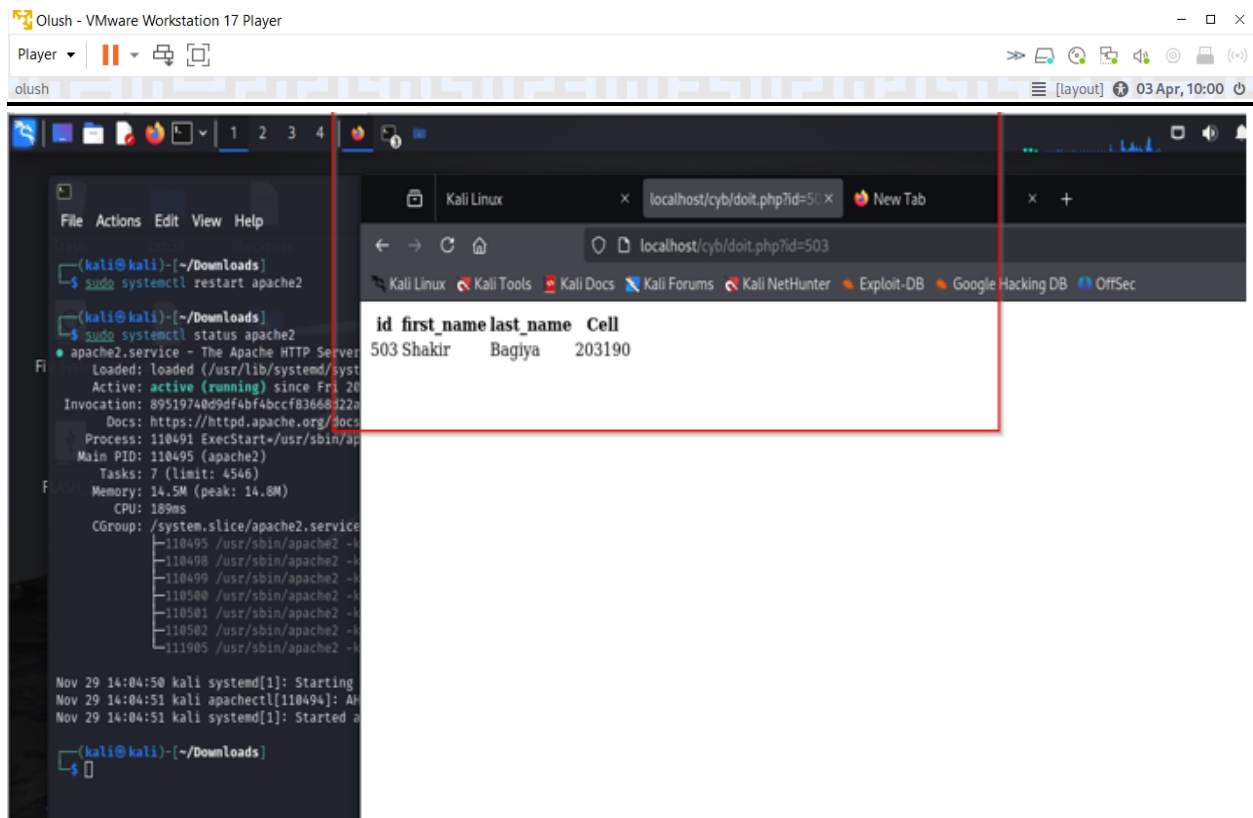
Accessing localhost/cyb/form.php and inserting 501 to view user:



Accessing localhost/cyb/form.php and inserting 502 to view user:



Accessing localhost/cyb/form.php and inserting 503 to view user:



Accessing localhost/cyb/form.php and inserting 504 to view user:

