

Web Lab Manual-1: Task 1

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Task 1: Installing and Configuring Apache2 Web Server

Task Objective

The objective of this task is to install, configure, and verify the Apache2 web server on an Ubuntu system. This includes:

- Installing Apache2 web server package
- Configuring the UFW (Uncomplicated Firewall) to allow HTTP and HTTPS traffic
- Verifying the Apache2 service is running and enabled
- Testing the web server functionality through browser access
- Confirming virtual host configurations

Implementation Steps

Step 1: Update System Packages

Before installing new software, it is best practice to update the system package lists and upgrade existing packages to their latest versions.

```
sudo apt update
```

Step 2: Install Apache2

Once the package lists are updated, install Apache2 along with related packages.

```
sudo apt install apache2
```

Step 3: Configure UFW Firewall

Configure the Ubuntu Firewall (UFW) to allow incoming HTTP and HTTPS traffic while maintaining security.

1. Install ufw

- sudo apt install ufw

2. List available firewall applications:

- `sudo ufw app list`

3. Allow Apache through the firewall:

- `sudo ufw allow 'Apache'`

4. Verify firewall rules:

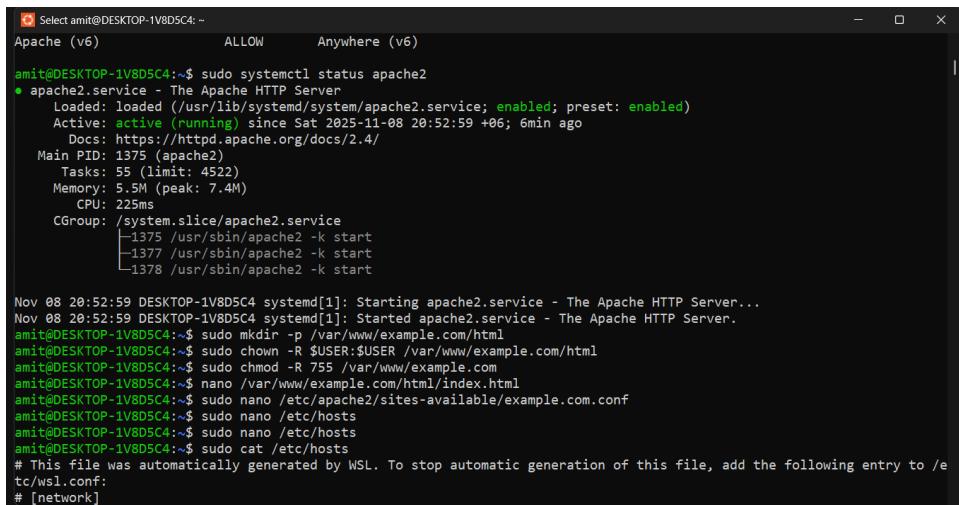
- `sudo ufw status`

Step 4: Verify Apache2 Service Status

Check that Apache2 is running and properly configured.

```
sudo systemctl status apache2
```

Terminal Output:



```
Select amit@DESKTOP-1V8D5C4: ~
Apache (v6)          ALLOW      Anywhere (v6)

amit@DESKTOP-1V8D5C4:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
   Active: active (running) since Sat 2025-11-08 20:52:59 +06; 6min ago
     Docs: https://httpd.apache.org/docs/2.4/
     Main PID: 1375 (apache2)
        Tasks: 55 (limit: 4522)
       Memory: 5.5M (peak: 7.4M)
          CPU: 225ms
        CGroup: /system.slice/apache2.service
                  ├─1375 /usr/sbin/apache2 -k start
                  ├─1377 /usr/sbin/apache2 -k start
                  ├─1378 /usr/sbin/apache2 -k start

Nov 08 20:52:59 DESKTOP-1V8D5C4 systemd[1]: Starting apache2.service - The Apache HTTP Server...
Nov 08 20:52:59 DESKTOP-1V8D5C4 systemd[1]: Started apache2.service - The Apache HTTP Server.

amit@DESKTOP-1V8D5C4:~$ sudo mkdir -p /var/www/example.com/html
amit@DESKTOP-1V8D5C4:~$ sudo chown -R $USER:$USER /var/www/example.com/html
amit@DESKTOP-1V8D5C4:~$ sudo chmod -R 755 /var/www/example.com
amit@DESKTOP-1V8D5C4:~$ nano /var/www/example.com/html/index.html
amit@DESKTOP-1V8D5C4:~$ sudo nano /etc/apache2/sites-available/example.com.conf
amit@DESKTOP-1V8D5C4:~$ sudo nano /etc/hosts
amit@DESKTOP-1V8D5C4:~$ sudo nano /etc/hosts
amit@DESKTOP-1V8D5C4:~$ sudo cat /etc/hosts
# This file was automatically generated by WSL. To stop automatic generation of this file, add the following entry to /etc/wsl.conf:
# [network]
```

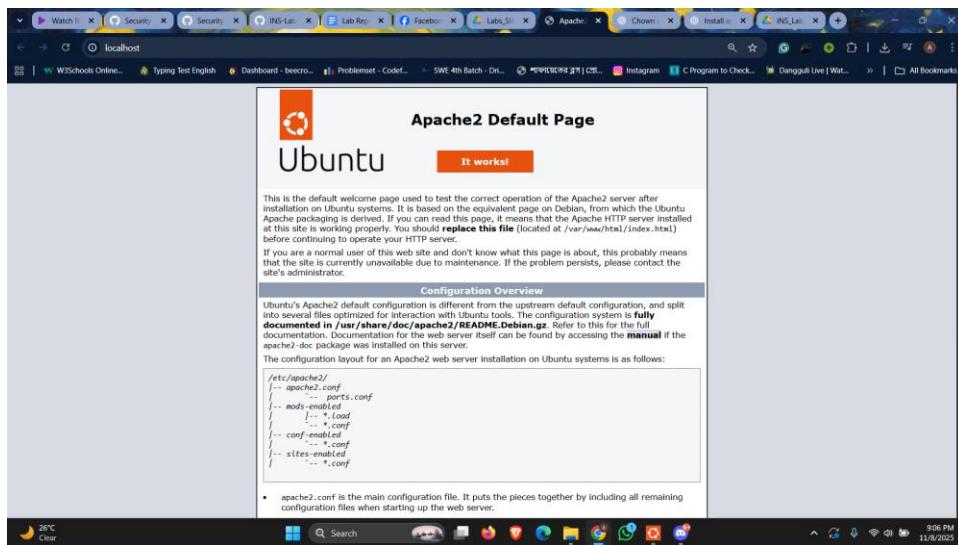
Key information from the status output:

- Service: apache2.service - The Apache HTTP Server
- Status: Loaded and active (running)
- Active state: active (running) since Sat 2025-11-08 08:01:31 UTC
- Main ID: 1375 (apache2)
- Memory usage: 5.5M (peak: 7.4M)

Testing and Verification

Browser Access Test - localhost

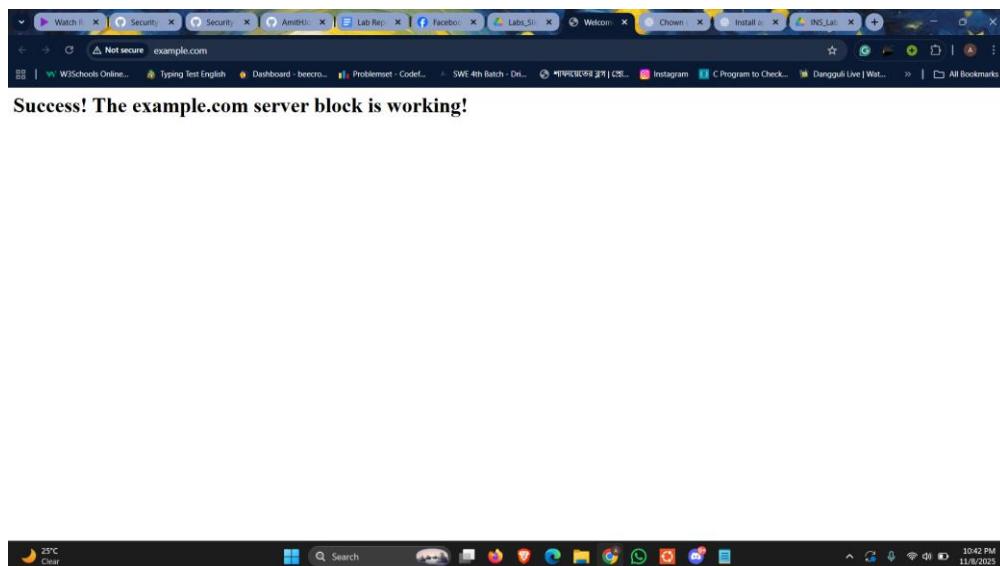
Accessing the Apache2 default page through localhost to verify the web server is serving content correctly.



Result: Apache2 Default Page displays successfully with "It works!" message

Browser Access Test - example.com

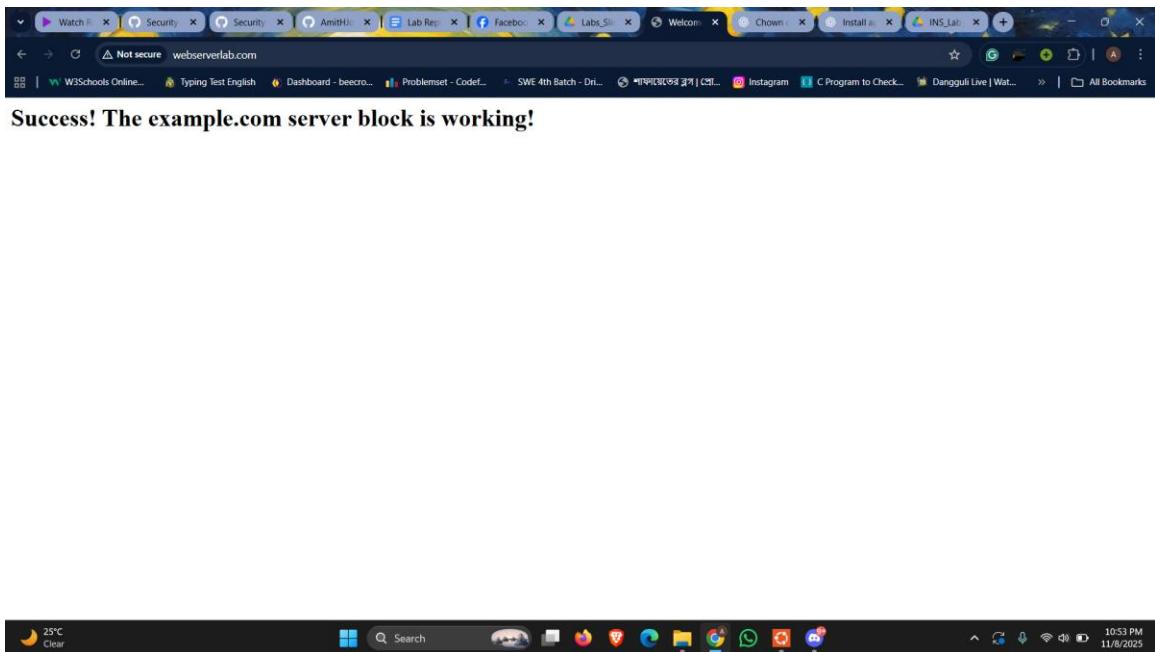
Testing access through example.com domain name.



Result: Server block for example.com is successfully working

Browser Access Test - webserverlab.com

Testing access through webserverlab.com domain name.



Result: Server block for webserverlab.com is successfully working

Configuration Details

Apache2 Directory Structure

Ubuntu's Apache2 default configuration is organized as follows:

```
/etc/apache2/
├── apache2.conf          (Main configuration file)
├── ports.conf             (Port configuration)
├── mods-enabled/          (Enabled modules)
│   └── *.load, *.conf
├── conf-enabled/          (Enabled configurations)
│   └── *.conf
└── sites-enabled/         (Enabled virtual host configurations)
    └── *.conf
```