**Practical 8: Installing and Configuring an Open-Source Web Server**

**Aim:** To install and configure an open-source web server (Apache HTTP Server) on Windows and Ubuntu operating systems.

**Objective:**

* Understand how to install a basic web server.
* Learn how to configure the web server to serve websites.
* Start, stop, and restart the server on both Windows and Ubuntu.
* Verify server operation via browser access.

**Prerequisites:**

* Basic system operations knowledge (Windows / Ubuntu).
* Administrative privileges on the machine.
* Internet connection.
* Basic understanding of HTTP and web servers.

**Theory:**

The **Apache HTTP Server** is a free, open-source, cross-platform web server software, maintained by the Apache Software Foundation.  
It is one of the oldest and most widely used web servers globally.  
It serves static and dynamic web pages over the HTTP protocol.

**Steps to Install and Configure Apache HTTP Server:**

**On Windows OS**

**1. Install Required Software**

* Download **Apache HTTP Server** for Windows from a reliable distribution (e.g., Apache Lounge: <https://www.apachelounge.com/download/>).
* Also, make sure you have installed **Visual C++ Redistributable** for the corresponding Apache build.

**2. Extract and Install**

* Extract the downloaded zip into a folder, e.g., C:\Apache24\.
* Open Command Prompt (Admin) and navigate to the bin directory:

cd C:\Apache24\bin

**3. Install Apache as a Service**

httpd.exe -k install

**4. Start the Apache Service**

httpd.exe -k start

Or use the **Services** app and manually start the "Apache2.4" service.

**5. Verify Installation**

* Open a browser and go to:

http://localhost

You should see the default **Apache HTTP Server Test Page**.

**6. Configuration**

* Edit the main configuration file:

C:\Apache24\conf\httpd.conf

* Change default ports, set server name, document root, etc., as needed.

Example to change server port to 8080:

Listen 8080

Restart Apache after configuration changes:

httpd.exe -k restart

**On Ubuntu OS**

**1. Update Packages**

sudo apt update

sudo apt upgrade

**2. Install Apache Server**

sudo apt install apache2

**3. Start Apache Service**

sudo systemctl start apache2

**4. Enable Apache to Start at Boot**

sudo systemctl enable apache2

**5. Verify Installation**

* Open a browser and visit:

http://localhost

or, if remote:

http://your\_server\_ip

You should see the default **Apache2 Ubuntu Default Page**.

**6. Basic Configuration**

* Configuration files are located in:

/etc/apache2/

* Main config file:

/etc/apache2/apache2.conf

* To change listening ports, edit:

/etc/apache2/ports.conf

and virtual host files in /etc/apache2/sites-available/.

After any changes, reload Apache:

sudo systemctl reload apache2

**7. Stopping and Restarting Apache**

sudo systemctl stop apache2

sudo systemctl restart apache2

**Output:**

* Server accessible at http://localhost.
* Able to serve basic HTML files placed in the web root:
  + Windows Default: C:\Apache24\htdocs\
  + Ubuntu Default: /var/www/html/

Example:

* Placing a file index.html in the respective folder and visiting http://localhost/index.html displays the custom page.

**Conclusion:**

* Successfully installed and configured Apache HTTP Server on both Windows and Ubuntu OS.
* Verified the server functionality via web browser.
* Learned basic configuration, starting, stopping, and restarting the server services.