

# **Web Manual: Apache Web Server Installation & Maintenance**

## **Lab: 1**

### **Objectives**

- Install, administer, and maintain an Apache web server.
- Host multiple virtual websites on a single Apache server.
- Host simple dynamic websites using HTML and JavaScript.
- Understand Apache configuration files and directories.

### **Task 1: Setting up an Apache Web Server**

#### **Step 1: Installing Apache**

Apache was installed on Ubuntu using:

```
sudo apt update  
sudo apt install apache2
```

The Apache service was verified:

```
sudo systemctl status apache2
```

**Observation:** Apache was active and running. Accessible via `http://localhost` and `172.31.2.0`

#### **Step 2: Configuring the Firewall**

Firewall was configured to allow HTTP traffic:

```
sudo ufw allow 'Apache'  
sudo ufw status
```

**Observation:** HTTP traffic allowed, enabling browser access.

# Step 3: Testing Apache

`/etc/hosts` was updated to map a custom domain:

172.31.2.0 webserverlab.com

Accessing <http://webserverlab.com> displayed the default Apache landing page.

## Image:

```
jessia@JESSIA: ~
256 SHA256:SUMN1vGzbpesF50YGM/AvcV/cbXMa/27zEwo root@JESSIA (EDOSA)
Creating key /etc/ssh/ED25519 key pair ... take a moment
ED25519 key pair created for user jessia@JESSIA (ED25519)
Created symlink /etc/systemd/system/sockets.target.wants/ssh.socket → /usr/lib/systemd/system/ssh.socket.
Created symlink /etc/systemd/system/ssh.service.requires/ssh.socket → /usr/lib/systemd/system/ssh.socket.
Processing triggers for ufw (0.36-2.6)
Processing triggers for libaudit-bin (2.39-0ubuntu8.6) ...
jessia@JESSIA:~$ sudo ufw app list
Available applications:
 Apache
 Apache Full
 Apache Secure
 OpenSSH
jessia@JESSIA:~$ sudo ufw allow 'Apache'
Rule added
Rule added (v6)
jessia@JESSIA:~$ sudo ufw status
Status: active

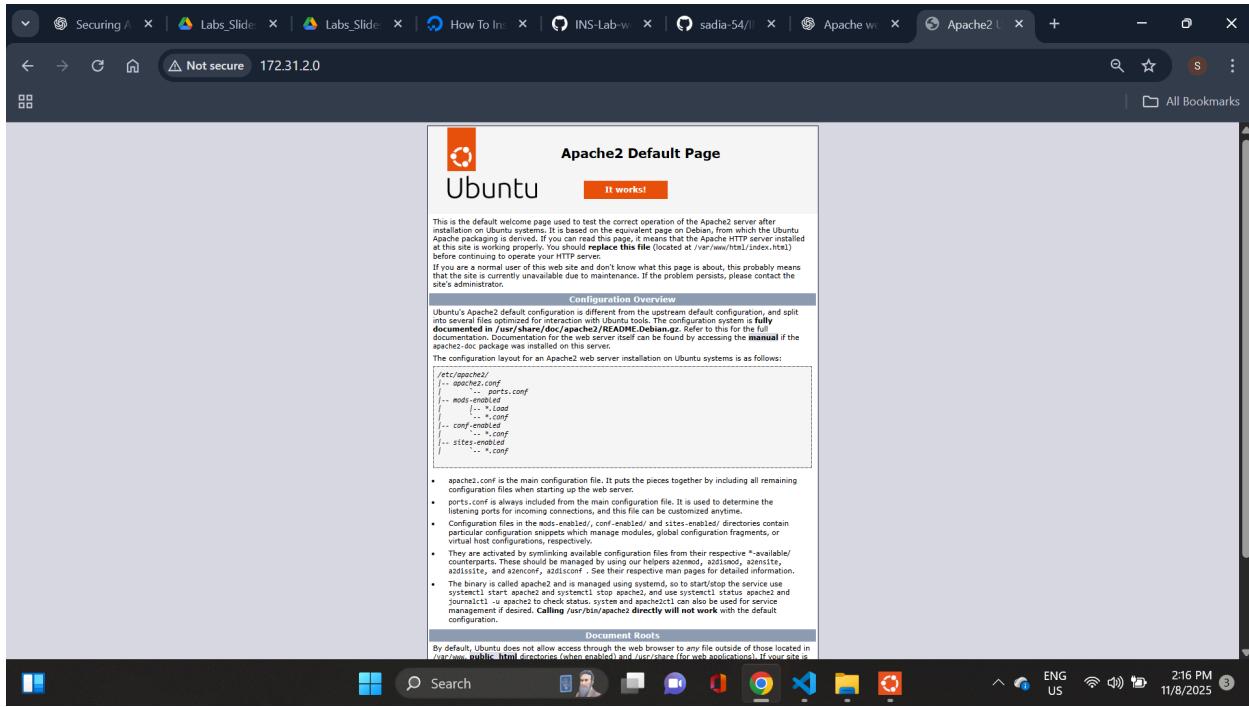
To                         Action      From
--                         ----      --
Apache                      ALLOW      Anywhere
Apache (v6)                  ALLOW      Anywhere (v6)

jessia@JESSIA:~$ sudo ufw allow 'OpenSSH'
Rule added
Rule added (v6)
jessia@JESSIA:~$ sudo ufw status
Status: active

To                         Action      From
--                         ----      --
Apache                      ALLOW      Anywhere
OpenSSH                     ALLOW      Anywhere
Apache (v6)                  ALLOW      Anywhere (v6)
OpenSSH (v6)                ALLOW      Anywhere (v6)

jessia@JESSIA:~$ 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 14:03:31 +06; 8min ago
     Docs: https://httpd.apache.org/docs/2.4/
      Main PID: 1427 (apache2)
        Tasks: 55 (limit: 4626)
       Memory: 5.5M (peak: 5.9M)
          CPU: 10ms
         CGroup: /system.slice/apache2.service
             └─1427 /usr/sbin/apache2 -k start
                  ├─1429 /usr/sbin/apache2 -k start
                  ├─1429 /usr/sbin/apache2 -k start
                  └─1430 /usr/sbin/apache2 -k start

Nov 08 14:03:31 JESSIA systemd[1]: Starting apache2.service - The Apache HTTP Server...
Nov 08 14:03:31 JESSIA systemd[1]: Started apache2.service - The Apache HTTP Server.
jessia@JESSIA:~$
```



**Checkpoint 1:** Apache installation verified successfully.

## Task 2: Setting Up Virtual Hosts

### Step 1: Directory Structure and Index Pages

**example.com**

Directories were created:

```
sudo mkdir -p /var/www/example.com/html
sudo chown -R $USER:$USER /var/www/example.com/html
sudo chmod -R 755 /var/www/example.com
```

**index.html** content:

```
<html>
<head>
<title>Welcome to Example.com!</title>
</head>
```

```
<body>
<h1>Success! The example.com server block is working!</h1>
</body>
</html>
```

## Step 2: Virtual Host Configuration

Virtual host configuration for example.com:

```
<VirtualHost *:80>
ServerAdmin admin@example.com
ServerName example.com
ServerAlias www.example.com
DocumentRoot /var/www/example.com/html
ErrorLog ${APACHE_LOG_DIR}/error.log
CustomLog ${APACHE_LOG_DIR}/access.log combined
</VirtualHost>
```

Commands to enable site and reload Apache:

```
sudo a2ensite example.com.conf
sudo a2dissite 000-default.conf
sudo systemctl restart apache2
sudo apache2ctl configtest
# Syntax OK
```

**Observation:** Accessing <http://example.com> displayed the correct content.

## Image:

The screenshot shows a Linux desktop environment with a terminal window and a web browser window. The terminal window displays a series of Apache configuration commands and their outputs, confirming the successful creation and configuration of a server block for 'example.com'. The browser window shows the URL 'example.com' and displays the message 'Success! The example.com server block is working!'.

```
jessia@JESSIA:~$ sudo chown -R $USER:$USER /var/www/example.com/html
jessia@JESSIA:~$ sudo chmod -R 755 /var/www/example.com
jessia@JESSIA:~$ nano /var/www/example.com/html/index.html
jessia@JESSIA:~$ sudo nano /etc/apache2/sites-available/example.com.conf
jessia@JESSIA:~$ sudo a2ensite example.com.conf
Enabling site example.com.
To activate the new configuration, you need to run:
systemctl reload apache2
jessia@JESSIA:~$ sudo a2dissite 000-default.conf
Site 000-default disabled.
To activate the new configuration, you need to run:
systemctl reload apache2
jessia@JESSIA:~$ systemctl reload apache2
Failed to reload apache2.service: Interactive authentication required.
See system logs and 'systemctl status apache2.service' for details.
jessia@JESSIA:~$ sudo service apache2 reload
jessia@JESSIA:~$ sudo a2dissite 000-default.conf
Site 000-default already disabled
jessia@JESSIA:~$ sudo apache2ctl configtest
Syntax OK
jessia@JESSIA:~$ sudo systemctl restart apache2
jessia@JESSIA:~$ ls /var/www/example.com/html
index.html
jessia@JESSIA:~$ sudo nano /etc/apache2/sites-available/example.com.conf
jessia@JESSIA:~$ sudo apache2ctl configtest
Syntax OK
jessia@JESSIA:~$ sudo service apache2 reload
jessia@JESSIA:~$ sudo nano /etc/hosts
jessia@JESSIA:~$ ping example.com -c 2
PING example.com (127.0.0.1) 56(84) bytes of data.
64 bytes from localhost (127.0.0.1): icmp_seq=1 ttl=64 time=0.510 ms
64 bytes from localhost (127.0.0.1): icmp_seq=2 ttl=64 time=0.119 ms

--- example.com ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1119ms
rtt min/avg/max/mdev = 0.119/0.314/0.510/0.195 ms
jessia@JESSIA:~$ sudo nano /etc/hosts
jessia@JESSIA:~$ sudo apache2ctl -s
apache2: illegal option -- s
Usage: /usr/sbin/apache2 [-D name] [-d directory] [-f file]
jessia@JESSIA:~$
```

The screenshot shows a Windows desktop environment with a terminal window and a web browser window. The terminal window displays a series of Apache configuration commands and their outputs, confirming the successful creation and configuration of a server block for 'webserverlab.com'. The browser window shows the URL 'webserverlab.com' and displays the message 'Success! The example.com server block is working!'.

```
jessia@JESSIA:~$ curl http://example.com
<html>
<head>
<title>Welcome to Example.com!</title>
</head>
<body>
<h1>Success! The example.com server block is working!</h1>
</body>
</html>
jessia@JESSIA:~$ hostname -I
172.31.2.0
jessia@JESSIA:~$ 
jessia@JESSIA:~$ 
jessia@JESSIA:~$ sudo a2ensite example.com.conf
Site example.com already enabled
jessia@JESSIA:~$ sudo systemctl restart apache2
jessia@JESSIA:~$ hostname -I
172.31.2.0
jessia@JESSIA:~$ sudo s2dissite 000-default.conf
sudo: s2dissite: command not found
jessia@JESSIA:~$ sudo a2dissite 000-default.conf
Site 000-default already disabled
jessia@JESSIA:~$ sudo service apache2 reload
jessia@JESSIA:~$ ls /etc/apache2/sites-enabled/
example.com.conf
jessia@JESSIA:~$ sudo nano /etc/apache2/sites-available/webserverlab.com.conf
jessia@JESSIA:~$ sudo a2ensite webserverlab.com.conf
Enabling site webserverlab.com.
To activate the new configuration, you need to run:
systemctl reload apache2
jessia@JESSIA:~$ systemctl reload apache2
Failed to reload apache2.service: Interactive authentication required.
See system logs and 'systemctl status apache2.service' for details.
jessia@JESSIA:~$ sudo systemctl reload apache2
jessia@JESSIA:~$ sudo service apache2 reload
jessia@JESSIA:~$ sudo a2ensite webserverlab.com.conf
Site webserverlab.com already enabled
jessia@JESSIA:~$
```

## Step 3: Multiple Virtual Hosts

anothervhost.com

Directories and permissions:

```
sudo mkdir -p /var/www/anothervhost.com/html  
sudo chown -R $USER:$USER /var/www/anothervhost.com/html  
sudo chmod -R 755 /var/www/anothervhost.com
```

index.html:

```
<html>  
<head>  
<title>Another Virtual Host</title>  
</head>  
<body>  
<h1>Welcome to anothervhost.com!</h1>  
<p>This is a different site from example.com.</p>  
</body>  
</html>
```

Virtual host configuration:

```
<VirtualHost *:80>  
ServerAdmin admin@anothervhost.com  
ServerName anothervhost.com  
ServerAlias www.anothervhost.com  
DocumentRoot /var/www/anothervhost.com/html  
ErrorLog ${APACHE_LOG_DIR}/anothervhost_error.log  
CustomLog ${APACHE_LOG_DIR}/anothervhost_access.log combined  
</VirtualHost>
```

Enable site and reload Apache:

```
sudo a2ensite anothervhost.com.conf  
sudo service apache2 reload
```

/etc/hosts entries:

```
172.31.2.0 example.com  
172.31.2.0 anothervhost.com
```

172.31.2.0 webserverlab.com

**Observation:**

- `http://example.com` → Example.com content
- `http://anothervhost.com` → Another Virtual Host content

**Image:**

The screenshot shows a Windows desktop environment. In the center, a Microsoft Edge browser window is open with the URL `anothervhost.com`. The page content reads: "This is the homepage for anothervhost.com! Different content from example.com or webserverlab.com." To the right of the browser, a terminal window titled "jessia@JESSIA: ~" is running. The terminal shows a series of commands and their outputs related to Apache configuration and site enablement. The session starts with `hostname -I` showing the IP 172.31.2.0, followed by `a2ensite example.com.conf`, `sudo systemctl restart apache2`, and `hostname -I` again. It then attempts to manage a non-existent site `000-default.conf`, which fails with "command not found". Subsequent commands include `ls /etc/apache2/sites-enabled/example.com.conf`, `nano /etc/apache2/sites-available/webserverlab.com.conf`, `a2ensite webserverlab.com.conf`, and `systemctl reload apache2`. This is followed by a failed attempt to reload `apache2.service` due to interactive authentication required. Finally, it shows the configuration for `anothervhost.com`, creating the directory `/var/www/anothervhost.com/html`, changing ownership to the user, chmodding the file to 755, nano editing the index.html file, enabling the site with `a2ensite anothervhost.com.conf`, and reloading the service.

```
jessia@JESSIA: ~
</html>
jessia@JESSIA:~$ hostname -I
172.31.2.0
jessia@JESSIA:~$
jessia@JESSIA:~$
jessia@JESSIA:~$
jessia@JESSIA:~$ sudo a2ensite example.com.conf
Site example.com already enabled
jessia@JESSIA:~$ sudo systemctl restart apache2
jessia@JESSIA:~$ hostname -I
172.31.2.0
jessia@JESSIA:~$ sudo s2dissite 000-default.conf
sudo: s2dissite: command not found
jessia@JESSIA:~$ sudo a2dissite 000-default.conf
Site 000-default already disabled
jessia@JESSIA:~$ sudo service apache2 reload
jessia@JESSIA:~$ ls /etc/apache2/sites-enabled/
example.com.conf
jessia@JESSIA:~$ sudo nano /etc/apache2/sites-available/webserverlab.com.conf
jessia@JESSIA:~$ sudo a2ensite webserverlab.com.conf
Enabling site webserverlab.com.
To activate the new configuration, you need to run:
    systemctl reload apache2
jessia@JESSIA:~$ systemctl reload apache2
Failed to reload apache2.service: Interactive authentication required.
See system logs and 'systemctl status apache2.service' for details.
jessia@JESSIA:~$ sudo systemctl reload apache2
jessia@JESSIA:~$ sudo service apache2 reload
jessia@JESSIA:~$ sudo a2ensite anothervhost.com.conf
Site anothervhost.com already enabled
jessia@JESSIA:~$ sudo mkdir -p /var/www/anothervhost.com/html
jessia@JESSIA:~$ sudo chown -R $USER:$USER /var/www/anothervhost.com/html
jessia@JESSIA:~$ sudo chmod -R 755 /var/www/anothervhost.com
jessia@JESSIA:~$ nano /var/www/anothervhost.com/html/index.html
jessia@JESSIA:~$ sudo nano /etc/apache2/sites-available/anothervhost.com.conf
jessia@JESSIA:~$ sudo a2ensite anothervhost.com.conf
Enabling site anothervhost.com.
To activate the new configuration, you need to run:
    systemctl reload apache2
jessia@JESSIA:~$ sudo service apache2 reload
```

**Checkpoint 4:** Multiple virtual hosts working successfully.

## Task 3: Hosting Dynamic Websites (HTML + JavaScript)

### Dynamic Site 1 — `dynsite1.com`

Directory setup:

```
sudo mkdir -p /var/www/dynsite1.com/html
```

```
sudo chown -R $USER:$USER /var/www/dynsite1.com/html  
sudo chmod -R 755 /var/www/dynsite1.com
```

index.html:

```
<!DOCTYPE html>  
<html>  
<head>  
<title>Dynamic Site 1</title>  
<script>  
function handleForm(event) {  
    event.preventDefault();  
    var name = document.getElementById('name').value;  
    var age = document.getElementById('age').value;  
    alert('Hello ' + name + '! You are ' + age + ' years old.' );  
}  
</script>  
</head>  
<body>  
<h1>Welcome to Dynamic Site 1</h1>  
<form onsubmit="handleForm(event)">  
Name: <input type="text" id="name" required><br><br>  
Age: <input type="number" id="age" required><br><br>  
<input type="submit" value="Submit">  
</form>  
</body>  
</html>
```

**Observation:** Form inputs displayed an alert with the correct values.

## Image:

The screenshot shows a web browser window with the URL `dynsite1.com`. The page displays a "Welcome to Dynamic Site 1" header and a form with fields for "Name" and "Age". Below the form is a "Submit" button. To the right of the browser is a terminal window titled "jessia@JESSIA: ~". The terminal shows a series of commands run by the user to manage Apache sites, including creating directories, changing ownership, setting permissions, and enabling sites. The terminal output is as follows:

```
jessia@JESSIA:~$ systemctl reload apache2
Failed to reload apache2.service: Interactive authentication required.
See system logs and 'systemctl status apache2.service' for details.
jessia@JESSIA:~$ sudo systemctl reload apache2
jessia@JESSIA:~$ sudo service apache2 reload
jessia@JESSIA:~$ sudo a2ensite webserverlab.com.conf
Site webserverlab.com already enabled
jessia@JESSIA:~$ sudo mkdir -p /var/www/anothervhost.com/html
jessia@JESSIA:~$ sudo chown -R $USER:$USER /var/www/anothervhost.com/html
jessia@JESSIA:~$ sudo chmod -R 755 /var/www/anothervhost.com/html
jessia@JESSIA:~$ nano /var/www/anothervhost.com/html/index.html
jessia@JESSIA:~$ sudo nano /etc/apache2/sites-available/anothervhost.com.conf
jessia@JESSIA:~$ sudo a2ensite anothervhost.com.conf
Enabling site anothervhost.com.
To activate the new configuration, you need to run:
    systemctl reload apache2
jessia@JESSIA:~$ sudo service apache2 reload
jessia@JESSIA:~$ sudo mkdir -p /var/www/dynsite1.com/html
[judo] password for jessia:
jessia@JESSIA:~$ sudo chown -R $USER:$USER /var/www/dynsite1.com/html
jessia@JESSIA:~$ sudo chmod -R 755 /var/www/dynsite1.com/html
jessia@JESSIA:~$ sudo mkdir -p /var/www/dynsite2.com/html
jessia@JESSIA:~$ sudo chown -R $USER:$USER /var/www/dynsite2.com/html
jessia@JESSIA:~$ sudo chmod -R 755 /var/www/dynsite2.com/html
jessia@JESSIA:~$ nano /var/www/dynsite1.com/html/index.html
jessia@JESSIA:~$ nano /var/www/dynsite2.com/html/index.html
jessia@JESSIA:~$ sudo nano /etc/apache2/sites-available/dynsite1.com.conf
jessia@JESSIA:~$ sudo nano /etc/apache2/sites-available/dynsite2.com.conf
jessia@JESSIA:~$ sudo a2ensite dynsite1.com.conf
Enabling site dynsite1.com.
To activate the new configuration, you need to run:
    systemctl reload apache2
jessia@JESSIA:~$ sudo a2ensite dynsite2.com.conf
Enabling site dynsite2.com.
To activate the new configuration, you need to run:
    systemctl reload apache2
jessia@JESSIA:~$ sudo service apache2 reload
jessia@JESSIA:~$ sudo apache2ctl configtest
Syntax OK
jessia@JESSIA:~$
```

This screenshot is similar to the one above, showing a web browser at `dynsite1.com`. It includes a modal dialog box with the text "dynsite1.com says" and "Hello sadia! You are 23 years old." with an "OK" button. The browser form has "Name: sadia" and "Age: 23" filled in. The terminal window on the right shows the same Apache configuration commands as the previous screenshot, with the addition of a "password for jessia:" prompt when running sudo commands.

## Dynamic Site 2 — dynsite2.com

Directory setup:

```
sudo mkdir -p /var/www/dynsite2.com/html  
sudo chown -R $USER:$USER /var/www/dynsite2.com/html  
sudo chmod -R 755 /var/www/dynsite2.com
```

**index.html:**

```
<!DOCTYPE html>  
<html>  
<head>  
<title>Dynamic Site 2</title>  
<script>  
function calculateSum(event) {  
    event.preventDefault();  
    var num1 = parseFloat(document.getElementById('num1').value);  
    var num2 = parseFloat(document.getElementById('num2').value);  
    var num3 = parseFloat(document.getElementById('num3').value);  
    var sum = num1 + num2 + num3;  
    alert('The sum of the numbers is: ' + sum);  
}  
</script>  
</head>  
<body>  
<h1>Welcome to Dynamic Site 2</h1>  
<form onsubmit="calculateSum(event)">  
Number 1: <input type="number" id="num1" required><br><br>  
Number 2: <input type="number" id="num2" required><br><br>  
Number 3: <input type="number" id="num3" required><br><br>  
<input type="submit" value="Calculate Sum">  
</form>  
</body>  
</html>
```

**Observation:** Form correctly calculated and displayed the sum.

**Image:**

Welcome to Dynamic Site 2

Number 1:

Number 2:

Number 3:

Calculate Sum

```
jessia@JESSIA:~\n  systemctl reload apache2\njessia@JESSIA:~$ systemctl reload apache2\nFailed to reload apache2.service: Interactive authentication required.\nSee system logs and 'systemctl status apache2.service' for details.\njessia@JESSIA:~$ sudo systemctl reload apache2\njessia@JESSIA:~$ sudo service apache2 reload\njessia@JESSIA:~$ sudo a2ensite webserverlab.com.conf\nSite webserverlab.com already enabled\njessia@JESSIA:~$ sudo mkdir -p /var/www/anothervhost.com/html\njessia@JESSIA:~$ sudo chown -R $USER:$USER /var/www/anothervhost.com/html\njessia@JESSIA:~$ sudo chmod -R 755 /var/www/anothervhost.com\njessia@JESSIA:~$ nano /var/www/anothervhost.com/html/index.html\njessia@JESSIA:~$ sudo nano /etc/apache2/sites-available/anothervhost.com.conf\njessia@JESSIA:~$ sudo a2ensite anothervhost.com.conf\nEnabling site anothervhost.com.\nTo activate the new configuration, you need to run:\n  systemctl reload apache2\njessia@JESSIA:~$ sudo service apache2 reload\njessia@JESSIA:~$ sudo mkdir -p /var/www/dynsite1.com/html\n[judo] password for jessia:\njessia@JESSIA:~$ sudo chown -R $USER:$USER /var/www/dynsite1.com/html\njessia@JESSIA:~$ sudo chmod -R 755 /var/www/dynsite1.com\njessia@JESSIA:~$ sudo mkdir -p /var/www/dynsite2.com/html\njessia@JESSIA:~$ sudo chown -R $USER:$USER /var/www/dynsite2.com/html\njessia@JESSIA:~$ sudo chmod -R 755 /var/www/dynsite2.com\njessia@JESSIA:~$ nano /var/www/dynsite1.com/html/index.html\njessia@JESSIA:~$ nano /var/www/dynsite2.com/html/index.html\njessia@JESSIA:~$ sudo nano /etc/apache2/sites-available/dynsite1.com.conf\njessia@JESSIA:~$ sudo nano /etc/apache2/sites-available/dynsite2.com.conf\njessia@JESSIA:~$ sudo a2ensite dynsite1.com.conf\nEnabling site dynsite1.com.\nTo activate the new configuration, you need to run:\n  systemctl reload apache2\njessia@JESSIA:~$ sudo a2ensite dynsite2.com.conf\nEnabling site dynsite2.com.\nTo activate the new configuration, you need to run:\n  systemctl reload apache2\njessia@JESSIA:~$ sudo service apache2 reload\njessia@JESSIA:~$ sudo apache2ctl configtest\nSyntax OK
```

dynsite2.com says

The sum of the numbers is: 62

OK

Welcome to Dynamic Site 2

Number 1:

Number 2:

Number 3:

Calculate Sum

```
jessia@JESSIA:~\n  systemctl reload apache2\njessia@JESSIA:~$ systemctl reload apache2\nFailed to reload apache2.service: Interactive authentication required.\nSee system logs and 'systemctl status apache2.service' for details.\njessia@JESSIA:~$ sudo systemctl reload apache2\njessia@JESSIA:~$ sudo service apache2 reload\njessia@JESSIA:~$ sudo a2ensite webserverlab.com.conf\nSite webserverlab.com already enabled\njessia@JESSIA:~$ sudo mkdir -p /var/www/anothervhost.com/html\njessia@JESSIA:~$ sudo chown -R $USER:$USER /var/www/anothervhost.com/html\njessia@JESSIA:~$ sudo chmod -R 755 /var/www/anothervhost.com\njessia@JESSIA:~$ nano /var/www/anothervhost.com/html/index.html\njessia@JESSIA:~$ sudo nano /etc/apache2/sites-available/anothervhost.com.conf\njessia@JESSIA:~$ sudo a2ensite anothervhost.com.conf\nEnabling site anothervhost.com.\nTo activate the new configuration, you need to run:\n  systemctl reload apache2\njessia@JESSIA:~$ sudo service apache2 reload\njessia@JESSIA:~$ sudo mkdir -p /var/www/dynsite1.com/html\n[judo] password for jessia:\njessia@JESSIA:~$ sudo chown -R $USER:$USER /var/www/dynsite1.com/html\njessia@JESSIA:~$ sudo chmod -R 755 /var/www/dynsite1.com\njessia@JESSIA:~$ sudo mkdir -p /var/www/dynsite2.com/html\njessia@JESSIA:~$ sudo chown -R $USER:$USER /var/www/dynsite2.com/html\njessia@JESSIA:~$ sudo chmod -R 755 /var/www/dynsite2.com\njessia@JESSIA:~$ nano /var/www/dynsite1.com/html/index.html\njessia@JESSIA:~$ nano /var/www/dynsite2.com/html/index.html\njessia@JESSIA:~$ sudo nano /etc/apache2/sites-available/dynsite1.com.conf\njessia@JESSIA:~$ sudo nano /etc/apache2/sites-available/dynsite2.com.conf\njessia@JESSIA:~$ sudo a2ensite dynsite1.com.conf\nEnabling site dynsite1.com.\nTo activate the new configuration, you need to run:\n  systemctl reload apache2\njessia@JESSIA:~$ sudo a2ensite dynsite2.com.conf\nEnabling site dynsite2.com.\nTo activate the new configuration, you need to run:\n  systemctl reload apache2\njessia@JESSIA:~$ sudo service apache2 reload\njessia@JESSIA:~$ sudo apache2ctl configtest\nSyntax OK
```

**Checkpoint 5:** Two dynamic websites deployed successfully.

# Apache File Structure & Directories

Directory/File	Description
/var/www/html	Default web content
/var/www/example.com/html	Example.com content
/var/www/anothervhost.com/html	Another VHost content
/var/www/dynsite1.com/html	Dynamic site 1 content
/var/www/dynsite2.com/html	Dynamic site 2 content
/etc/apache2/apache2.conf	Main Apache configuration
/etc/apache2/ports.conf	Apache ports configuration
/etc/apache2/sites-available/	Virtual host configuration files
/etc/apache2/sites-enabled/	Enabled virtual host symlinks
/etc/apache2/mods-available/	Available Apache modules
/etc/apache2/mods-enabled/	Enabled modules
/var/log/apache2/access.log	Access logs
/var/log/apache2/error.log	Error logs