**Q1: Set up a LAMP stack (Linux, Apache, MySQL, PHP) on a server and deploy a basic PHP-based website.**

**Steps to Set Up a LAMP Stack:**

1. **Update the System**:
   * Run the following commands to update your Linux system:

sudo apt update

sudo apt upgrade -y

1. **Install Apache**:
   * Install Apache web server:

sudo apt install apache2 -y

* + Start and enable Apache:

sudo systemctl start apache2

sudo systemctl enable apache2

* + Verify Apache is running by visiting http://your-server-ip in a browser.

1. **Install MySQL**:
   * Install MySQL:

sudo apt install mysql-server -y

* + Secure the MySQL installation:

sudo mysql\_secure\_installation

* + Follow the prompts to set the root password and secure the database.

1. **Install PHP**:
   * Install PHP and required modules:

sudo apt install php libapache2-mod-php php-mysql -y

* + Test PHP by creating a test file:

echo "<?php phpinfo(); ?>" | sudo tee /var/www/html/info.php

* + Visit http://your-server-ip/info.php to verify PHP is working.

1. **Deploy a Basic PHP Website**:
   * Create a directory for your website:

sudo mkdir /var/www/mywebsite

* + Set ownership:

sudo chown -R $USER:$USER /var/www/mywebsite

* + Create a sample PHP file:

echo "<?php echo 'Hello, World!'; ?>" > /var/www/mywebsite/index.php

OR

For HTML site:

echo "<!DOCTYPE html> <html> <head><title>Sample Website</title></head> <body><h1>Welcome to the Sample Website!</h1></body> </html>" > /var/www/samplewebsite/index.html

* + Update the Apache configuration to serve your website:

sudo nano /etc/apache2/sites-available/mywebsite.conf

**Add the following content:**

<VirtualHost \*:80>

ServerAdmin admin@mywebsite.com

DocumentRoot /var/www/mywebsite

ServerName mywebsite.com

ServerAlias www.mywebsite.com

<Directory /var/www/mywebsite>

Options Indexes FollowSymLinks

AllowOverride All

Require all granted

</Directory>

ErrorLog ${APACHE\_LOG\_DIR}/error.log

CustomLog ${APACHE\_LOG\_DIR}/access.log combined

</VirtualHost>

* + Enable the website:

sudo a2ensite mywebsite

sudo systemctl reload apache2

* + Access the site at http://your-server-ip.