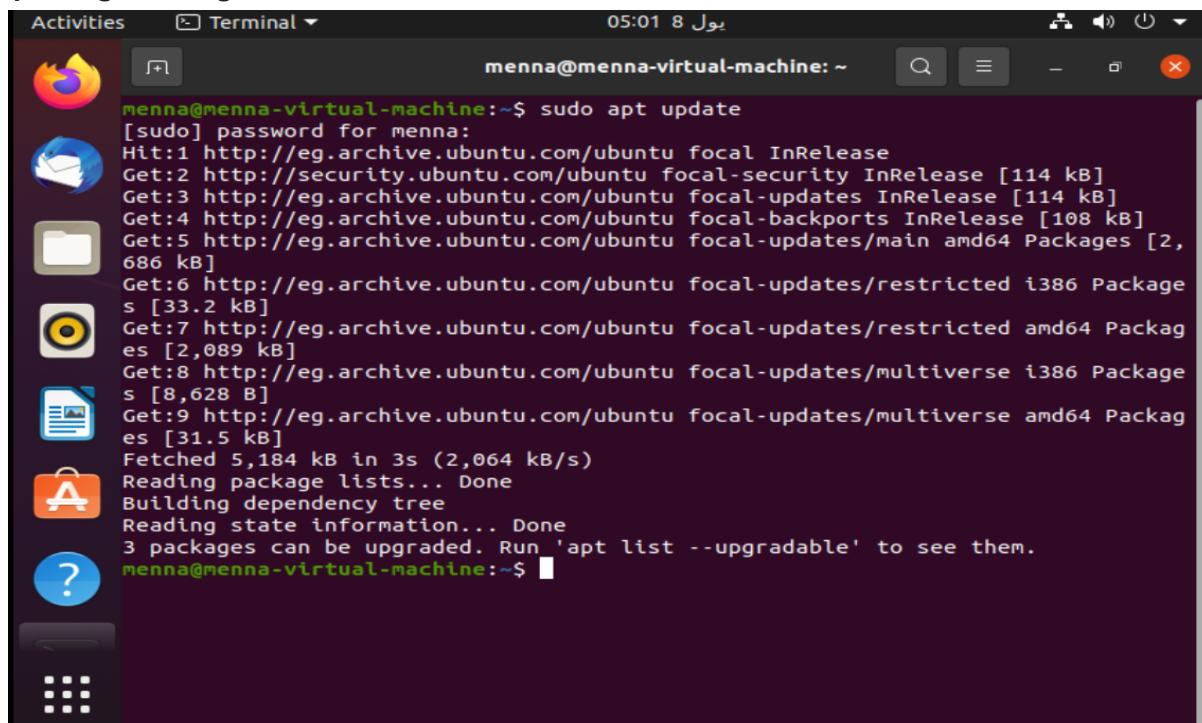
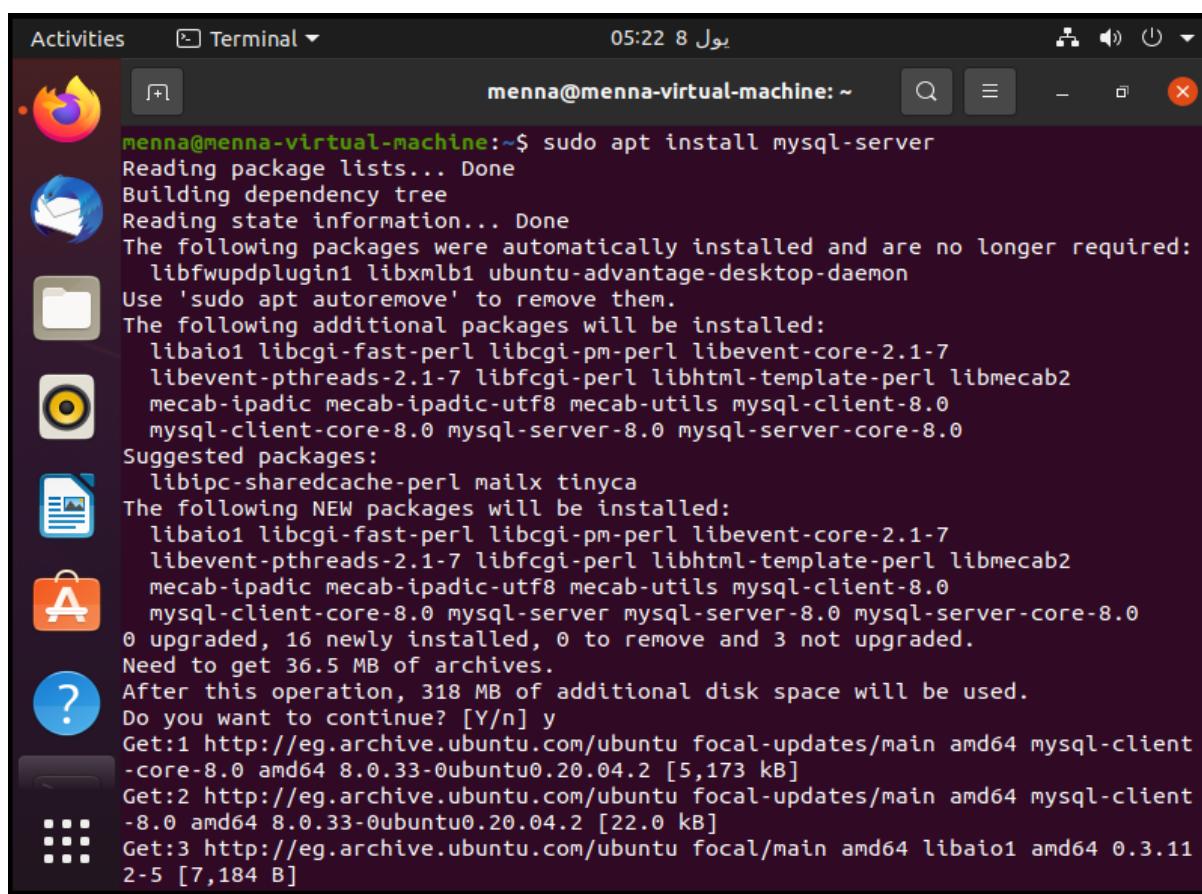


Install Apache, MySQL and PHP on the Linux machine using apt-get or another package manager



```
menna@menna-virtual-machine:~$ sudo apt update
[sudo] password for menna:
Hit:1 http://eg.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Get:3 http://eg.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:4 http://eg.archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB]
Get:5 http://eg.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [2,686 kB]
Get:6 http://eg.archive.ubuntu.com/ubuntu focal-updates/restricted i386 Packages [33.2 kB]
Get:7 http://eg.archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [2,089 kB]
Get:8 http://eg.archive.ubuntu.com/ubuntu focal-updates/multiverse i386 Packages [8,628 B]
Get:9 http://eg.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Packages [31.5 kB]
Fetched 5,184 kB in 3s (2,064 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
3 packages can be upgraded. Run 'apt list --upgradable' to see them.
menna@menna-virtual-machine:~$
```



```
menna@menna-virtual-machine:~$ sudo apt install mysql-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libfwupdplugin1 libxml2 ubuntu-adantage-desktop-daemon
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  libaio1 libcgifast-perl libcgipm-perl libevent-core-2.1-7
  libevent-pthreads-2.1-7 libfcgi-perl libhtml-template-perl libmecab2
  mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0
  mysql-client-core-8.0 mysql-server-8.0 mysql-server-core-8.0
Suggested packages:
  libipc-sharedcache-perl mailx tinyca
The following NEW packages will be installed:
  libaio1 libcgifast-perl libcgipm-perl libevent-core-2.1-7
  libevent-pthreads-2.1-7 libfcgi-perl libhtml-template-perl libmecab2
  mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0
  mysql-client-core-8.0 mysql-server mysql-server-8.0 mysql-server-core-8.0
0 upgraded, 16 newly installed, 0 to remove and 3 not upgraded.
Need to get 36.5 MB of archives.
After this operation, 318 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://eg.archive.ubuntu.com/ubuntu focal-updates/main amd64 mysql-client-core-8.0 amd64 8.0.33-0ubuntu0.20.04.2 [5,173 kB]
Get:2 http://eg.archive.ubuntu.com/ubuntu focal-updates/main amd64 mysql-client-8.0 amd64 8.0.33-0ubuntu0.20.04.2 [22.0 kB]
Get:3 http://eg.archive.ubuntu.com/ubuntu focal/main amd64 libaio1 amd64 0.3.11-2-5 [7,184 B]
```

Activities Terminal 05:26 8 جو

```
menna@menna-virtual-machine:~$ sudo apt install php libapache2-mod-php php-mysql
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libfwupdplugin1 libxmlb1 ubuntu-advantage-desktop-daemon
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  libapache2-mod-php7.4 php-common php7.4 php7.4-cli php7.4-common php7.4-json php7.4-mysql
  php7.4-opcache php7.4-readline
Suggested packages:
  php-pear
The following NEW packages will be installed:
  libapache2-mod-php libapache2-mod-php7.4 php php-common php-mysql php7.4 php7.4-cli php7.4-common
  php7.4-json php7.4-mysql php7.4-opcache php7.4-readline
0 upgraded, 12 newly installed, 0 to remove and 3 not upgraded.
Need to get 4,157 kB of archives.
After this operation, 18.5 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://eg.archive.ubuntu.com/ubuntu focal/main amd64 php-common all 2:75 [11.9 kB]
Get:2 http://eg.archive.ubuntu.com/ubuntu focal-updates/main amd64 php7.4-common amd64 7.4.3-4ubuntu2.19 [983 kB]
Get:3 http://eg.archive.ubuntu.com/ubuntu focal-updates/main amd64 php7.4-json amd64 7.4.3-4ubuntu2.19 [19.2 kB]
Get:4 http://eg.archive.ubuntu.com/ubuntu focal-updates/main amd64 php7.4-opcache amd64 7.4.3-4ubuntu2.19 [198 kB]
Get:5 http://eg.archive.ubuntu.com/ubuntu focal-updates/main amd64 php7.4-readline amd64 7.4.3-4ubuntu2.19 [12.6 kB]
Get:6 http://eg.archive.ubuntu.com/ubuntu focal-updates/main amd64 php7.4-cli amd64 7.4.3-4ubuntu2.19 [1,426 kB]
Get:7 http://eg.archive.ubuntu.com/ubuntu focal-updates/main amd64 libapache2-mod-php7.4 amd64 7.4.3-4ubuntu2.19 [1,369 kB]
Get:8 http://eg.archive.ubuntu.com/ubuntu focal/main amd64 libapache2-mod-php all 2:7.4+75 [2,836 B]
Get:9 http://eg.archive.ubuntu.com/ubuntu focal-updates/main amd64 php7.4 all 7.4.3-4ubuntu2.19 [9,236 B]
```

Activities Terminal 05:27 8 جو

```
menna@menna-virtual-machine:~$ Setting up php7.4-opcache (7.4.3-4ubuntu2.19) ...
Creating config file /etc/php/7.4/mods-available/opcache.ini with new version
Setting up php7.4-json (7.4.3-4ubuntu2.19) ...
Creating config file /etc/php/7.4/mods-available/json.ini with new version
Setting up php-mysql (2:7.4+75) ...
Setting up php7.4-cli (7.4.3-4ubuntu2.19) ...
update-alternatives: using /usr/bin/php7.4 to provide /usr/bin/php (php) in auto mode
update-alternatives: using /usr/bin/phar7.4 to provide /usr/bin/phar (phar) in auto mode
update-alternatives: using /usr/bin/phar.phar7.4 to provide /usr/bin/phar.phar (phar.phar) in auto mode
Creating config file /etc/php/7.4/cli/php.ini with new version
Setting up libapache2-mod-php7.4 (7.4.3-4ubuntu2.19) ...
Creating config file /etc/php/7.4/apache2/php.ini with new version
Module mpm_event disabled.
Enabling module mpm_prefork.
apache2_switch_mpm Switch to prefork
apache2_invoke: Enable module php7.4
Setting up php7.4 (7.4.3-4ubuntu2.19) ...
Setting up libapache2-mod-php (2:7.4+75) ...
Setting up php (2:7.4+75) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for php7.4-cli (7.4.3-4ubuntu2.19) ...
Processing triggers for libapache2-mod-php7.4 (7.4.3-4ubuntu2.19) ...
menna@menna-virtual-machine:~$ menna@menna-virtual-machine:~$ php -v
PHP 7.4.3-4ubuntu2.19 (cli) (built: Jun 27 2023 15:49:59) ( NTS )
Copyright (c) The PHP Group
Zend Engine v3.4.0, Copyright (c) Zend Technologies
    with Zend OPcache v7.4.3-4ubuntu2.19, Copyright (c), by Zend Technologies
menna@menna-virtual-machine:~$
```

Activities Terminal 05:03 8 جمادى المئوية

```
menna@menna-virtual-machine:~$ sudo apt install apache2
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libfwupdplugin1 libxml2.9.0ubuntu0.1 ubuntu-advantage-desktop-daemon
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils libapr1 libaprutil1
  libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.2-0
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils libapr1 libaprutil1
  libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.2-0
0 upgraded, 9 newly installed, 0 to remove and 3 not upgraded.
Need to get 1,821 kB of archives.
After this operation, 7,952 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://eg.archive.ubuntu.com/ubuntu focal/main amd64 libapr1 amd64 1.6.5-1ubuntu1 [91.4 kB]
Get:2 http://eg.archive.ubuntu.com/ubuntu focal-updates/main amd64 libaprutil1 amd64 1.6.1-4ubuntu2.1 [84.9 kB]
Get:3 http://eg.archive.ubuntu.com/ubuntu focal-updates/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.1-4ubuntu2.1 [10.6 kB]
Get:4 http://eg.archive.ubuntu.com/ubuntu focal-updates/main amd64 libaprutil1-ldap amd64 1.6.1-4ubuntu2.1 [8,756 B]
Get:5 http://eg.archive.ubuntu.com/ubuntu focal/main amd64 liblua5.2-0 amd64 5.2.4-1.1build3 [106 kB]
```

2. Configure Apache to serve the website from the /var/www/html/ directory.

The screenshot shows a Linux desktop environment with a dark theme. On the left is a vertical dock with icons for various applications: a folder, a mail icon, a terminal, a file manager, a system settings icon, a help icon, and a dash icon. The main window is a terminal window titled "Terminal" with the command-line interface (CLI) visible. The CLI shows the user running the command `sudo ufw allow "Apache"`, which outputs "Skipping adding existing rule" twice. Then, the user runs `sudo ufw status`, which shows the following output:

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

The terminal ends with `menna@menna-virtual-machine:~$`. Below the terminal is a Firefox web browser window titled "Firefox Web Browser". The address bar shows `localhost`. The page displayed is the "Apache2 Ubuntu Default Page" with the heading "It works!". The page content includes instructions for testing the Apache server and a "Configuration Overview" section detailing the file structure of the configuration files.

Activities Firefox Web Browser 05:16 8 جو

Apache2 Ubuntu Default Page Firefox Privacy Notice

localhost 67%

```
/* Configuration files included by apache2.conf
   '-- *.conf
   |-- sites-enabled
   |   '-- *.conf
```

apache2.conf is the main configuration file. It puts the pieces together by including all remaining configuration files when starting up the web server.

ports.conf is always included from the main configuration file. It is used to determine the listening ports for incoming connections, and this file can be customized anytime.

Configuration files in the mods-enabled/, conf-enabled/ and sites-enabled/ directories contain particular configuration snippets which manage modules, global configuration fragments, or virtual host configurations, respectively.

They are activated by symlinking available configuration files from their respective *-available/ counterparts. These should be managed by using our helpers a2enmod, a2dismod, a2ensite, a2dissite, and a2enconf, a2disconf . See their respective man pages for detailed information.

The binary is called apache2. Due to the use of environment variables, in the default configuration, apache2 needs to be started/stopped with /etc/init.d/apache2 or apache2ctl. **Calling /usr/bin/apache2 directly will not work** with the default configuration.

Document Roots

By default, Ubuntu does not allow access through the web browser to *any* file apart of those located in /var/www, **public_html** directories (when enabled) and /usr/share (for web applications). If your site is using a web document root located elsewhere (such as in /srv) you may need to whitelist your document root directory in /etc/apache2/apache2.conf.

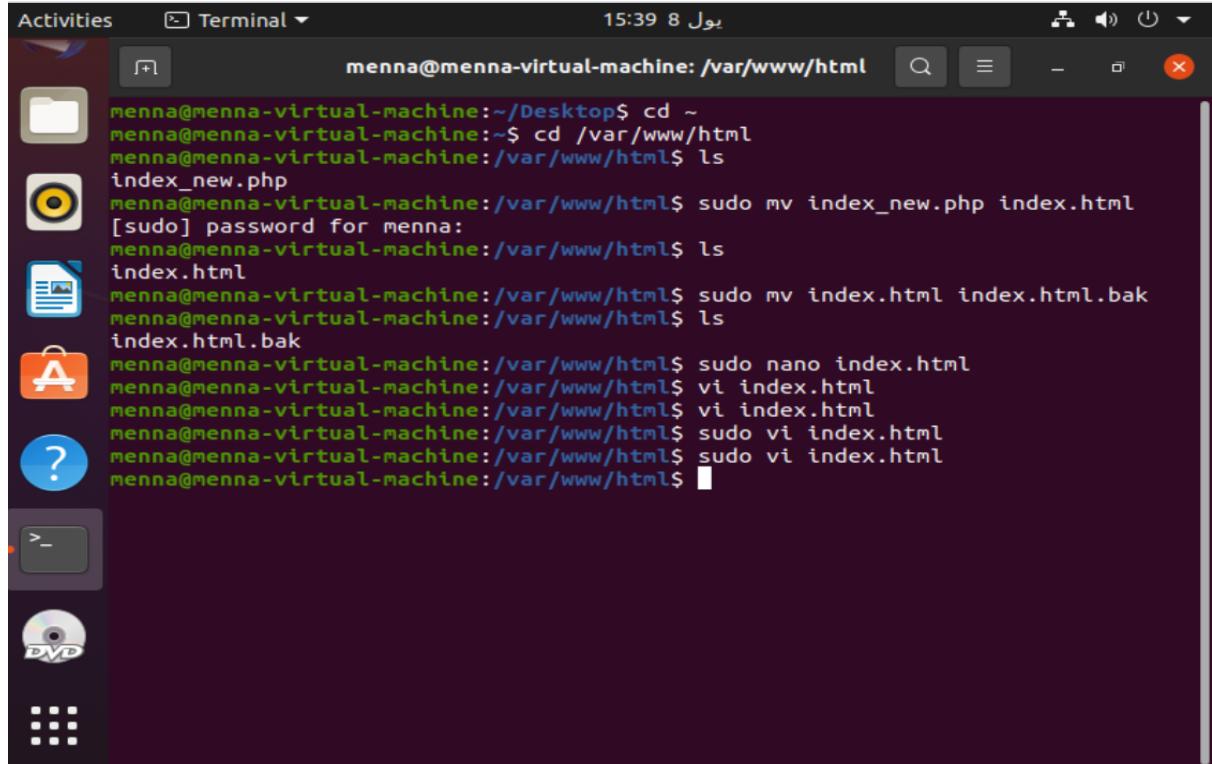
The default Ubuntu document root is /var/www/html. You can make your own virtual hosts under /var/www. This is different to previous releases which provides better security out of the box.

Reporting Problems

Please use the ubuntu-bug tool to report bugs in the Apache2 package with Ubuntu. However, check **existing bug reports** before reporting a new bug.

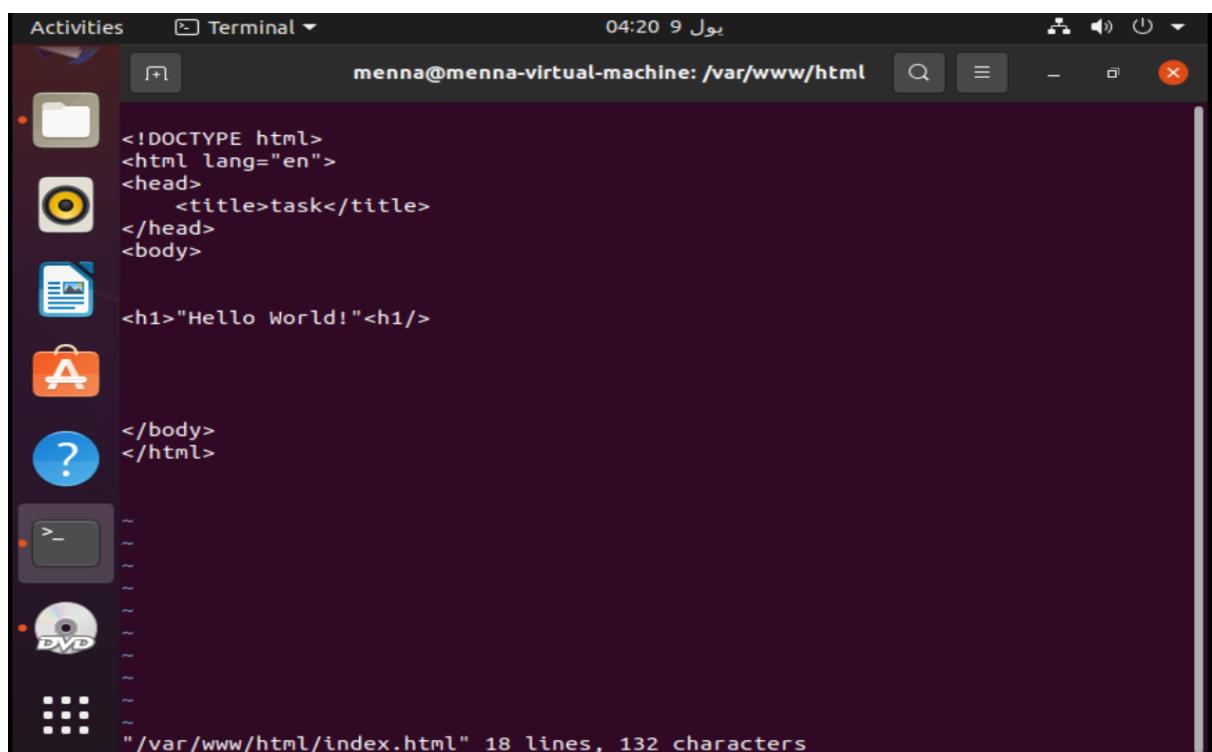
Please report bugs specific to modules (such as PHP and others) to respective packages, not to the web server itself.

Create a simple website that displays the message "Hello World!" when accessed through a web browser



A screenshot of an Ubuntu desktop environment. On the left is a dock with icons for Dash, Home, Applications, and Help. In the center is a terminal window titled "Terminal". The terminal shows the following command-line session:

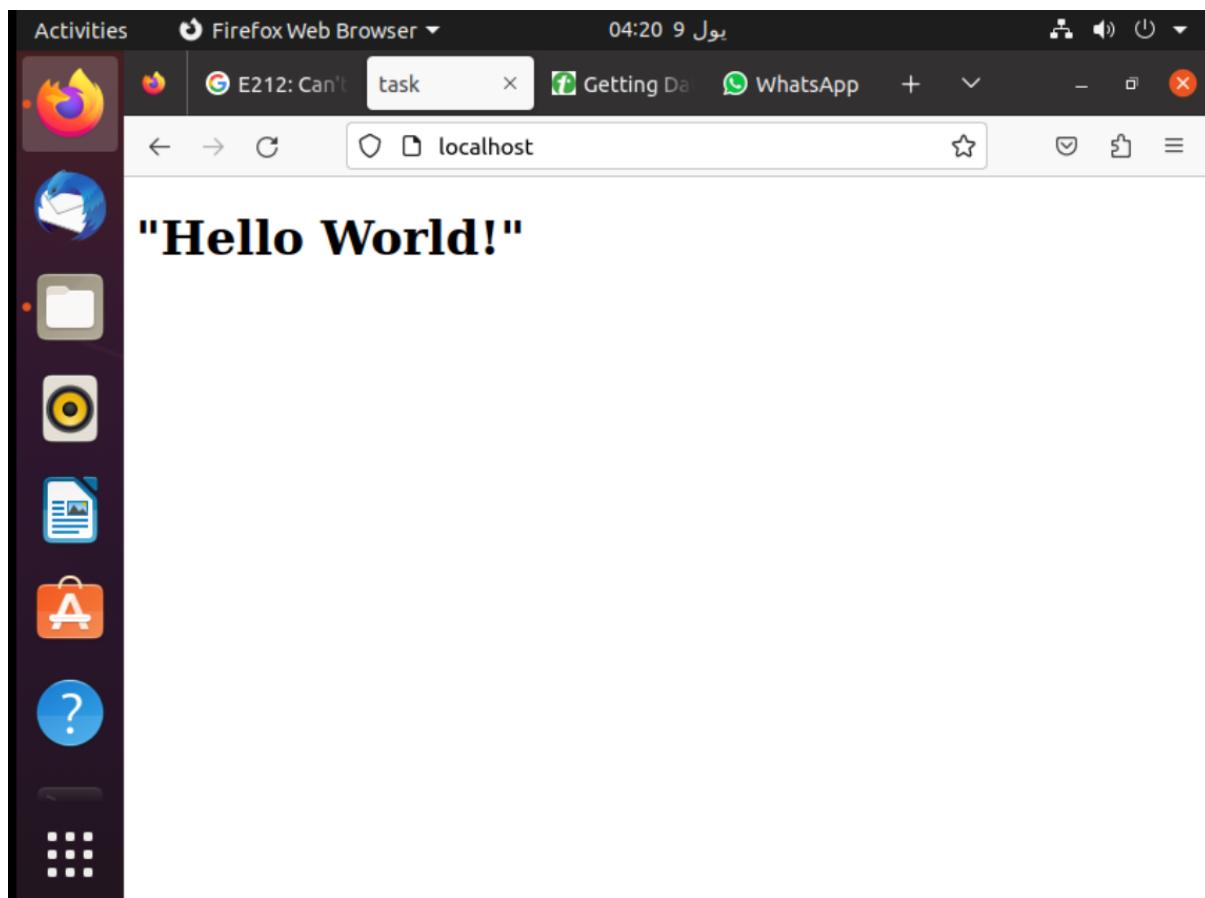
```
menna@menna-virtual-machine:~/Desktop$ cd ~
menna@menna-virtual-machine:~$ cd /var/www/html
menna@menna-virtual-machine:/var/www/html$ ls
index_new.php
menna@menna-virtual-machine:/var/www/html$ sudo mv index_new.php index.html
[sudo] password for menna:
menna@menna-virtual-machine:/var/www/html$ ls
index.html
menna@menna-virtual-machine:/var/www/html$ sudo mv index.html index.html.bak
menna@menna-virtual-machine:/var/www/html$ ls
index.html.bak
menna@menna-virtual-machine:/var/www/html$ sudo nano index.html
menna@menna-virtual-machine:/var/www/html$ vi index.html
menna@menna-virtual-machine:/var/www/html$ vi index.html
menna@menna-virtual-machine:/var/www/html$ sudo vi index.html
menna@menna-virtual-machine:/var/www/html$ sudo vi index.html
menna@menna-virtual-machine:/var/www/html$
```



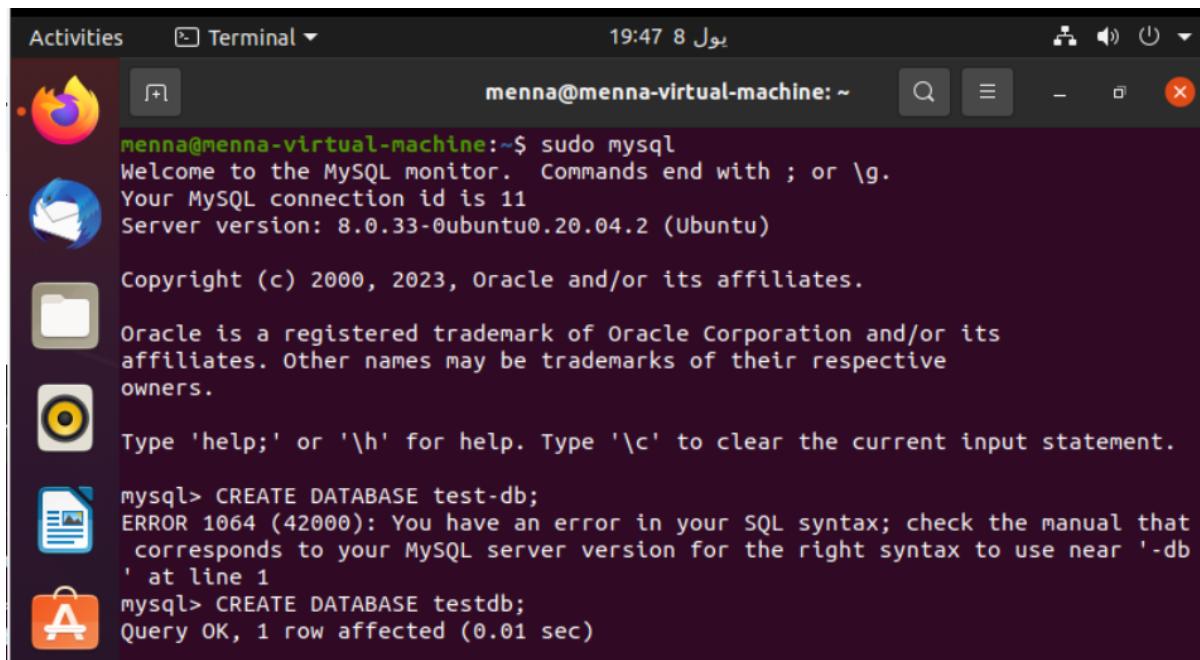
A screenshot of an Ubuntu desktop environment. On the left is a dock with icons for Dash, Home, Applications, and Help. In the center is a terminal window titled "Terminal". The terminal shows the following command-line session, which displays the contents of the "index.html" file:

```
menna@menna-virtual-machine:/var/www/html$ cat index.html
<!DOCTYPE html>
<html lang="en">
<head>
    <title>task</title>
</head>
<body>
    <h1>"Hello World!"<h1/>
</body>
</html>
```

At the bottom of the terminal window, it shows the status: "/var/www/html/index.html" 18 lines, 132 characters.



Configure MySQL to create a new database, user, and password for the website.



A screenshot of a Ubuntu desktop environment. The terminal window shows the following MySQL session:

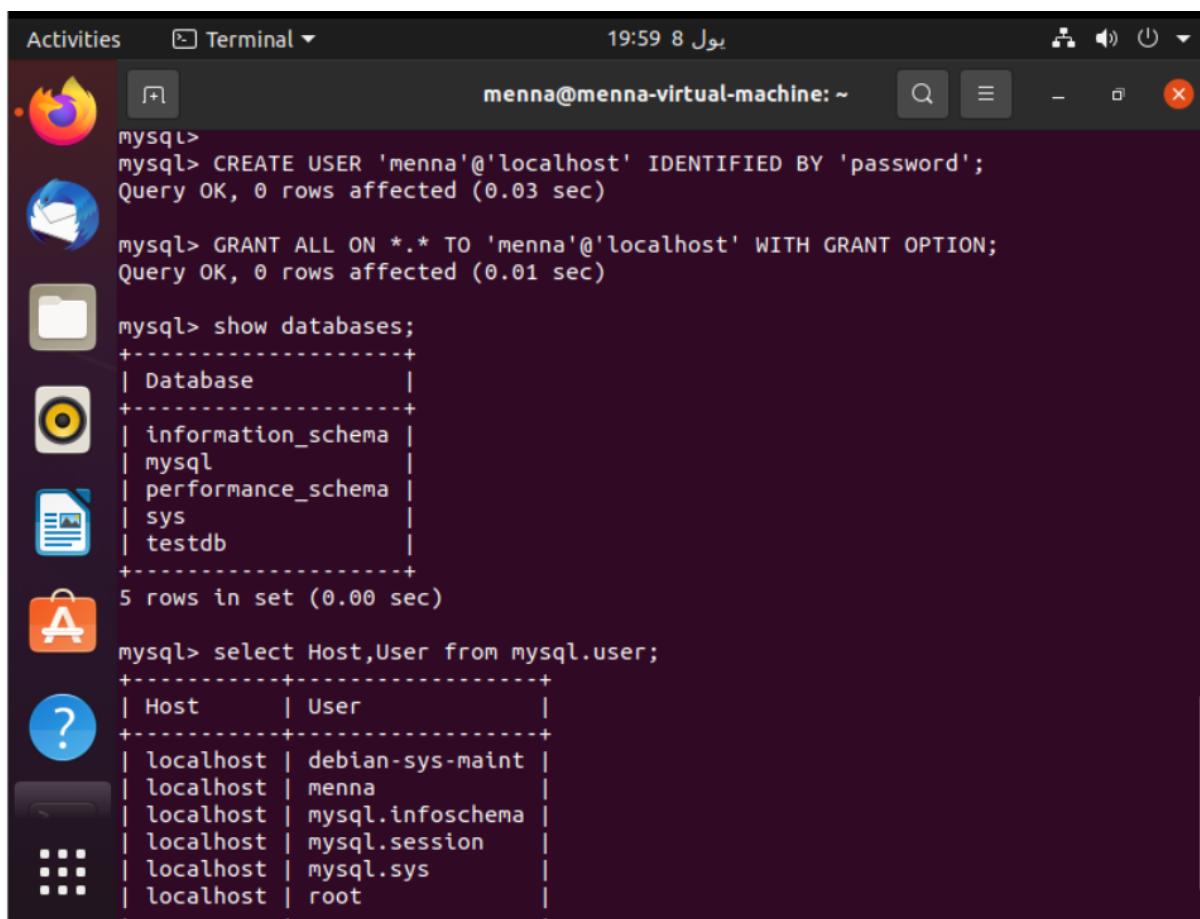
```
menna@menna-virtual-machine:~$ sudo mysql
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 11
Server version: 8.0.33-0ubuntu0.20.04.2 (Ubuntu)

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Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> CREATE DATABASE test-db;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that
corresponds to your MySQL server version for the right syntax to use near '-db'
' at line 1
mysql> CREATE DATABASE testdb;
Query OK, 1 row affected (0.01 sec)
```



A screenshot of a Ubuntu desktop environment. The terminal window shows the following MySQL session:

```
mysql>
mysql> CREATE USER 'menna'@'localhost' IDENTIFIED BY 'password';
Query OK, 0 rows affected (0.03 sec)

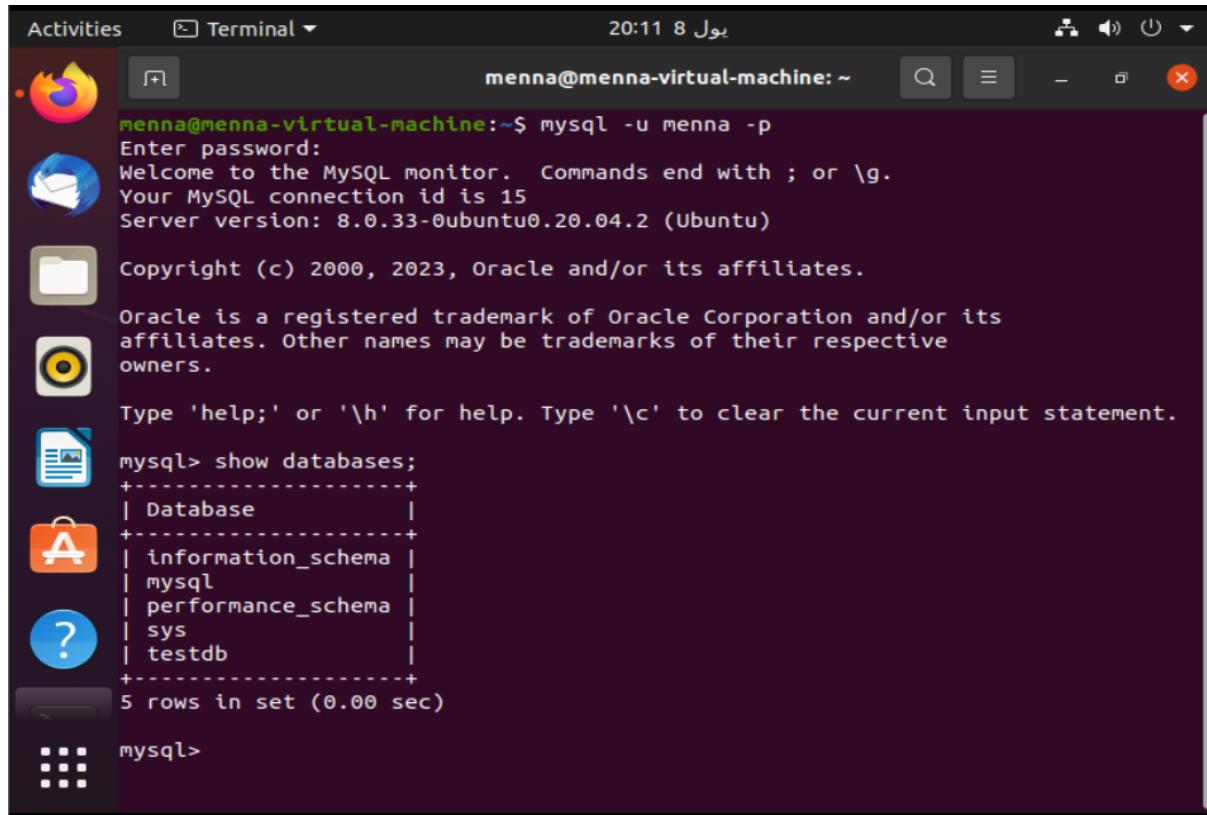
mysql> GRANT ALL ON *.* TO 'menna'@'localhost' WITH GRANT OPTION;
Query OK, 0 rows affected (0.01 sec)

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| sys                |
| testdb             |
+--------------------+
5 rows in set (0.00 sec)

mysql> select Host,User from mysql.user;
+-----+-----+
| Host   | User  |
+-----+-----+
| localhost | debian-sys-maint |
| localhost | menna      |
| localhost | mysql.infoschema |
| localhost | mysql.session |
| localhost | mysql.sys    |
| localhost | root       |
+-----+-----+
```

Modify the website to use the newly created database to display a message that includes the visitor's IP address and the current time

--first i created a database and table to store the visitor_id and ip address



The image shows a screenshot of a Ubuntu desktop environment. In the top left corner, there is a dock with several icons: a browser, a file manager, a terminal, a mail client, a system settings icon, and others. The terminal window is open and displays the MySQL command-line interface. The session starts with the user logging in:

```
menna@menna-virtual-machine:~$ mysql -u menna -p
Enter password:
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 15
Server version: 8.0.33-0ubuntu0.20.04.2 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
```

Then, the user runs the command `show databases;` to list the available databases:

```
mysql> show databases;
+--------------------+
| Database          |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| sys                |
| testdb             |
+--------------------+
5 rows in set (0.00 sec)
```

Finally, the user ends the session with `\q`:

```
mysql> \q
```

Activities Terminal 20:56 8 جمادى المenna@menna-virtual-machine: ~

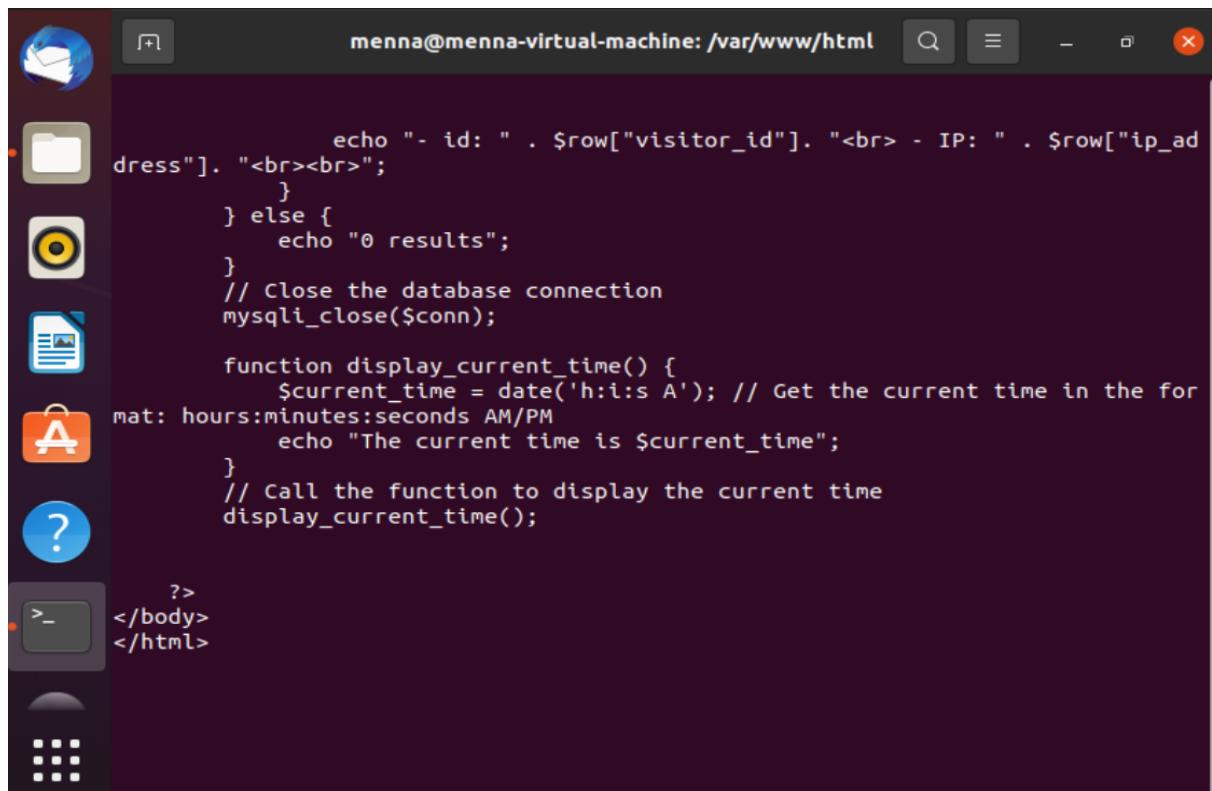
```
Copyright (c) 2000, 2023, Oracle and/or its affiliates.  
Oracle is a registered trademark of Oracle Corporation and/or its  
affiliates. Other names may be trademarks of their respective  
owners.  
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.  
mysql> CREATE TABLE testdb.visitors ( visitor_id INT AUTO_INCREMENT, ip_address  
        varchar(30) NOT NULL, PRIMARY KEY(visitor_id) );  
Query OK, 0 rows affected (0.04 sec)  
  
mysql> insert into testdb.visitors (ip_address) values (127.0.0.1);  
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that  
corresponds to your MySQL server version for the right syntax to use near '.0.  
1)' at line 1  
mysql> insert into testdb.visitors (ip_address) values ("127.0.0.1");  
Query OK, 1 row affected (0.01 sec)  
  
mysql> select * from testdb.visitors;  
+-----+-----+  
| visitor_id | ip_address |  
+-----+-----+  
| 1 | 127.0.0.1 |  
+-----+-----+  
1 row in set (0.00 sec)  
  
mysql>
```

Activities Terminal 04:28 9 جمادى المenna@menna-virtual-machine: /var/www/html\$ sudo vi config.php
menna@menna-virtual-machine: /var/www/html\$

```
<?php
include_once 'config.php';
?>
<!DOCTYPE html>
<html lang="en">
<head>
    <title>task</title>
</head>
<body>
    <?php
        $sql = "SELECT * FROM visitors;";
        $result = mysqli_query($conn, $sql);

        // Check if the query was successful
        if (mysqli_num_rows($result) > 0) {
            // Output data of each row
            while($row = mysqli_fetch_assoc($result)) {

                echo "- id: " . $row["visitor_id"]. "<br> - IP: " . $row["ip_address"]. "<br><br>";
            }
        } else {
            echo "0 results";
        }
        // Close the database connection
        mysqli_close($conn);
    </?php>
</body>
</html>
```



The screenshot shows a terminal window titled "menna@menna-virtual-machine: /var/www/html". The window contains the following PHP code:

```
echo "- id: " . $row["visitor_id"]. "<br> - IP: " . $row["ip_address"]. "<br><br>";
} else {
    echo "0 results";
}
// Close the database connection
mysqli_close($conn);

function display_current_time() {
    $current_time = date('h:i:s A'); // Get the current time in the format: hours:minutes:seconds AM/PM
    echo "The current time is $current_time";
}
// Call the function to display the current time
display_current_time();

?>
</body>
</html>
```

Test the website by accessing it through a web browser and verifying that it displays the expected message

