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Distributed and Cloud System Programming (5CS022)

Task3 – Hosting

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Task3

Hosting a web application on a Azure Linux server. The application should include both a front-end and a back-end. Your task is to create the hosting environment on the server and upload all necessary files for the application to function properly.

Let's create VM first

Microsoft Azure

Search resources, services, and docs (G+)

N.R.Khanal@wlv.ac.uk
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Home > Virtual machines >

Create a virtual machine

Instance details

Virtual machine name * ⓘ nayan ✓

Region * ⓘ (US) West US 3 ✓

Availability options ⓘ No infrastructure redundancy required ✓

Security type ⓘ Standard ✓

Image * ⓘ Ubuntu Server 20.04 LTS - x64 Gen2 ✓
[See all images](#) | [Configure VM generation](#)

VM architecture ⓘ
☐ Arm64
☒ x64

Run with Azure Spot discount ⓘ ☐

Size * ⓘ Standard_B1ms - 1 vcpu, 2 GiB memory (\$15.11/month) ✓
[See all sizes](#)

Administrator account

Authentication type ⓘ
☐ SSH public key
☒ Password

Username * ⓘ nayan ✓

Password * ⓘ ✓

Confirm password * ⓘ ✓

Inbound port rules

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports * ⓘ ☐ None

[Review + create](#) < Previous Next : Disks > [Give feedback](#)

Let's wait till the deployment is done

The screenshot shows the Microsoft Azure portal interface. At the top, the header includes the Microsoft Azure logo, a search bar, and user information for N.R.Khanal@wlv.ac.uk. The main content area displays a deployment named 'CreateVm-canonical.0001-com-ubuntu-server-focal' in the 'Deployment' section. A notification at the top right states 'Deployment in progress...' with a sub-message: 'Deployment to resource group '2227486Nayan_group' is in progress.' The left sidebar contains navigation links for Overview, Inputs, Outputs, and Template. The main panel shows the deployment status as 'Deployment is in progress' with details: Deployment name: Create..., Subscription: Azure for Stu..., Resource group: 2227486..., Start time: 5/16/..., and Correlation ID: bffc. Below this, a table titled 'Deployment details' shows 'No results.' for the 'Resource' column. The right sidebar features promotional cards for Microsoft Defender for Cloud, Free Microsoft tutorials, and Work with an expert.

Once deployment is completed, we'll copy it's ip address and use terminal to connect with our VM.

Microsoft Azure

Search resources, services, and docs (G+)

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Home > CreateVm-canonical.0001-com-ubuntu-server-focal-2-20230516150602 | Overview

nayan
Virtual machine

Search

Connect Start Restart Stop Capture Delete Refresh

Overview

- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems

Settings

- Networking
- Connect
- Disks
- Size
- Microsoft Defender for Cloud
- Advisor recommendations
- Extensions + applications
- Availability + scaling
- Configuration
- Identity
- Properties
- Locks

Operations

- Bastion
- Auto-shutdown
- Backup
- Disaster recovery
- Updates

Essentials [JSON View](#)

Resource group (move) nayan_group 05161506	Operating system Linux (ubuntu 20.04)
Status Running	Size Standard B1ms (1 vcpu, 2 GiB memory)
Location West US 3	Public IP address 20.38.14.64
Subscription (move) Azure for Students	Virtual network/subnet nayan-vnet/default
Subscription ID 32812db4-95b9-47b5-90b6-a4de0d650ff2	DNS name Not configured
	Health state -

Tags [\(edit\)](#)
[Click here to add tags](#)

Properties Monitoring Capabilities (7) Recommendations Tutorials

Virtual machine

Computer name nayan
Operating system Linux (ubuntu 20.04)
Publisher canonical
Offer 0001-com-ubuntu-server-focal
Plan 20_04-lts-gen2
VM generation V2
VM architecture x64

To establish connection with the VM we'll be using command "**ssh username@yourvmIP**"

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Acer> ssh nayan@20.38.14.64
The authenticity of host '20.38.14.64 (20.38.14.64)' can't be established.
ECDSA key fingerprint is SHA256:GXjFEFwqLAqD4iut590JeRDUVosisOpTSqxPEj0QU.
Are you sure you want to continue connecting (yes/no/[fingerprint])?
```

After typing yes you'll be greeted like this to enter password so go ahead and enter your vm password

If you've done all the steps correctly, you'll be greeted with another terminal like this

```
nayan@nayan: ~
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Acer> ssh nayan@20.38.14.64
The authenticity of host '20.38.14.64 (20.38.14.64)' can't be established.
ECDSA key fingerprint is SHA256:GXjFEFwqLAqD4iut590JeRDUVosisOpTSqxPEj0QU.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '20.38.14.64' (ECDSA) to the list of known hosts.
nayan@20.38.14.64's password:
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1037-azure x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Tue May 16 09:28:02 UTC 2023

System load:  0.08      Processes:    105
Usage of /:   5.2% of 28.89GB   Users logged in:  0
Memory usage: 13%      IPv4 address for eth0: 10.2.0.4
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

nayan@nayan:~$
```

Linux based server donot provide GUI based interface so lets install popular web based dashboard tool

Enter this in your terminal to import webmin import key: `wget http://www.webmin.com/jcameron-key.asc`

It'll install required prerequisites

```
nayan@nayan: ~
nayan@nayan:~$ wget http://www.webmin.com/jcameron-key.asc
--2023-05-16 09:32:02-- http://www.webmin.com/jcameron-key.asc
Resolving www.webmin.com (www.webmin.com)... 216.105.38.11
Connecting to www.webmin.com (www.webmin.com)|216.105.38.11|:80... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: https://www.webmin.com/jcameron-key.asc [following]
--2023-05-16 09:32:02-- https://www.webmin.com/jcameron-key.asc
Connecting to www.webmin.com (www.webmin.com)|216.105.38.11|:443... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: https://webmin.com/jcameron-key.asc [following]
--2023-05-16 09:32:02-- https://webmin.com/jcameron-key.asc
Resolving webmin.com (webmin.com)... 216.105.38.11
Connecting to webmin.com (webmin.com)|216.105.38.11|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1320 (1.3K) [text/plain]
Saving to: 'jcameron-key.asc'

jcameron-key.asc      100%[=====] 1.29K  --.-KB/s  in 0s

2023-05-16 09:32:02 (262 MB/s) - 'jcameron-key.asc' saved [1320/1320]

nayan@nayan:~$
```

Now to get or install the key input this command: `sudo apt-key add jcameron-key.asc`

If everything was done properly you'll get a feedback message of being ok

```
nayan@nayan: ~
nayan@nayan:~$ sudo apt-key add jcameron-key.asc
OK
nayan@nayan:~$
```

You will also add the Webmin repository into the `/etc/apt/sources.list` file. In this way, you will be able to install Webmin.

- Issue the following 3 commands in Terminal to do this:

Sudo bash

It will take me to the home directory

```
root@nayan: /home/nayan
nayan@nayan:~$ sudo bash
root@nayan: /home/nayan#
```

`echo "deb http://download.webmin.com/download/repository sarge contrib" >> /etc/apt/sources.list`

this will get the directory or package to install from the webmin package

`exit`

to exit the directory

```
nayan@nayan: ~
nayan@nayan:~$ sudo bash
root@nayan: /home/nayan# echo "deb http://download.webmin.com/download/repository sarge contrib" >> /etc/apt/sources.list
root@nayan: /home/nayan# exit
exit
nayan@nayan:~$
```

Now let's update the webmin repository with following command

sudo apt update

it'll update the repository and install some security patches and stuff

```
nayan@nayan: ~  
nayan@nayan:~$ sudo apt update  
Hit:1 http://azure.archive.ubuntu.com/ubuntu focal InRelease  
Get:2 http://azure.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]  
Get:3 http://azure.archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB]  
Get:4 http://azure.archive.ubuntu.com/ubuntu focal-security InRelease [114 kB]  
Ign:5 http://download.webmin.com/download/repository sarge InRelease  
Get:6 http://download.webmin.com/download/repository sarge Release [16.9 kB]  
Get:7 http://download.webmin.com/download/repository sarge Release.gpg [173 B]  
Get:8 http://azure.archive.ubuntu.com/ubuntu focal/universe amd64 Packages [8628 kB]  
Get:9 http://azure.archive.ubuntu.com/ubuntu focal/universe Translation-en [5124 kB]  
Get:10 http://azure.archive.ubuntu.com/ubuntu focal/universe amd64 c-n-f Metadata [265 kB]  
Get:11 http://azure.archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [144 kB]  
Get:12 http://azure.archive.ubuntu.com/ubuntu focal/multiverse Translation-en [104 kB]  
Get:13 http://azure.archive.ubuntu.com/ubuntu focal/multiverse amd64 c-n-f Metadata [9136 B]  
Get:14 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [2545 kB]  
Get:15 http://azure.archive.ubuntu.com/ubuntu focal-updates/main Translation-en [430 kB]  
Get:16 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 c-n-f Metadata [16.5 kB]  
Get:17 http://azure.archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [1846 kB]  
Get:18 http://azure.archive.ubuntu.com/ubuntu focal-updates/restricted Translation-en [260 kB]  
Get:19 http://azure.archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [1062 kB]  
Get:20 http://azure.archive.ubuntu.com/ubuntu focal-updates/universe Translation-en [251 kB]  
Get:21 http://azure.archive.ubuntu.com/ubuntu focal-updates/universe amd64 c-n-f Metadata [24.3 kB]  
Get:22 http://azure.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Packages [25.2 kB]  
Get:23 http://azure.archive.ubuntu.com/ubuntu focal-updates/multiverse Translation-en [7408 B]  
Get:24 http://azure.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 c-n-f Metadata [612 B]  
Get:25 http://azure.archive.ubuntu.com/ubuntu focal-backports/main amd64 Packages [45.7 kB]  
Get:26 http://azure.archive.ubuntu.com/ubuntu focal-backports/main Translation-en [16.3 kB]  
Get:27 http://azure.archive.ubuntu.com/ubuntu focal-backports/main amd64 c-n-f Metadata [1420 B]  
Get:28 http://azure.archive.ubuntu.com/ubuntu focal-backports/restricted amd64 c-n-f Metadata [116 B]  
Get:29 http://azure.archive.ubuntu.com/ubuntu focal-backports/universe amd64 Packages [24.9 kB]  
Get:30 http://azure.archive.ubuntu.com/ubuntu focal-backports/universe Translation-en [16.3 kB]  
Get:31 http://azure.archive.ubuntu.com/ubuntu focal-backports/universe amd64 c-n-f Metadata [880 B]  
Get:32 http://azure.archive.ubuntu.com/ubuntu focal-backports/multiverse amd64 c-n-f Metadata [116 B]  
Get:33 http://azure.archive.ubuntu.com/ubuntu focal-security/main amd64 Packages [2156 kB]  
Get:34 http://azure.archive.ubuntu.com/ubuntu focal-security/main Translation-en [348 kB]  
Get:35 http://azure.archive.ubuntu.com/ubuntu focal-security/main amd64 c-n-f Metadata [12.8 kB]  
Get:36 http://azure.archive.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [1719 kB]  
Get:37 http://azure.archive.ubuntu.com/ubuntu focal-security/restricted Translation-en [242 kB]  
Get:38 http://azure.archive.ubuntu.com/ubuntu focal-security/universe amd64 Packages [835 kB]  
Get:39 http://azure.archive.ubuntu.com/ubuntu focal-security/universe Translation-en [170 kB]  
Get:40 http://azure.archive.ubuntu.com/ubuntu focal-security/universe amd64 c-n-f Metadata [17.7 kB]  
Get:41 http://azure.archive.ubuntu.com/ubuntu focal-security/multiverse amd64 Packages [22.9 kB]  
Get:42 http://azure.archive.ubuntu.com/ubuntu focal-security/multiverse Translation-en [5488 B]  
Get:43 http://azure.archive.ubuntu.com/ubuntu focal-security/multiverse amd64 c-n-f Metadata [540 B]  
Get:44 http://download.webmin.com/download/repository sarge/contrib amd64 Packages [1432 B]  
Fetched 26.7 MB in 5s (5237 kB/s)  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
13 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

Now let's install webmin package with the following command

sudo apt install webmin

Once installed you'll be able to see this terminal feedback.

```
nayan@nayan: ~  
Setting up libdatettime-timezone-perl (1:2.38-1+2019c) ...  
Setting up libdatettime-perl:amd64 (2:1.51-1build1) ...  
Processing triggers for man-db (2.9.1-1) ...  
Processing triggers for mime-support (3.64ubuntu1) ...  
nayan@nayan:~$
```

Now let's configure our network firewall settings from our browser.

- Head on to your browser and click on “overview” of your virtual machine and then “networking”

The screenshot displays the Microsoft Azure portal interface. The top navigation bar includes the 'Microsoft Azure' logo, a search bar, and a user profile icon. The left sidebar shows the 'Overview' tab selected for the virtual machine 'nayan'. The main content area is divided into sections: 'Extensions + applications', 'Networking', 'Size', and 'Disk'. The 'Networking' section is highlighted with a red box and contains the following details:

- Public IP address:** 20.38.14.64 (Network interface nayan100)
- Public IP address (IPv6):** -
- Private IP address:** 10.2.0.4
- Private IP address (IPv6):** -
- Virtual network/subnet:** nayan-vnet/default
- DNS name:** Configure

Below the 'Networking' section, the 'Size' section shows the VM is configured as 'Standard B1ms' with 1 vCPU and 2 GiB RAM. The 'Disk' section shows the OS disk is 'nayan_disk1_b2234b28d95e4ca08ec572adcfe662da' with encryption at host disabled.

- You should see the NSG rules for the subnet in the top section and the NSG rules for the network interface in the bottom section of the same tab. In the bottom section, for the NSG rules for the network interface, select Add inbound port rule

Microsoft Azure Search resources, services, and docs (G+/)

Home > nayan

nayan | Networking
Virtual machine

Search

Feedback Attach network interface Detach network interface

nayan100

IP configuration ⓘ
ipconfig1 (Primary)

Network Interface: nayan100 Effective security rules Troubleshoot VM connection issues
Topology

Virtual network/subnet: nayan-vnet/default NIC Public IP: **20.38.14.64** NIC Private IP: **10.2.0.4**
Accelerated networking: **Disabled**

Inbound port rules Outbound port rules Application security groups Load balancing

Network security group **nayan-nsg** (attached to network interface: **nayan100**)
Impacts 0 subnets, 1 network interfaces

Add inbound port rule

Priority	Name	Port	Protocol	Source
300	SSH	22	TCP	Any
320	HTTPS	443	TCP	Any
340	HTTP	80	TCP	Any
65000	AllowVnetInBound	Any	Any	VirtualNet
65001	AllowAzureLoadBala...	Any	Any	AzureLoac
65500	DenyAllInBound	Any	Any	Any

Need help?
[Understand Azure load balancing](#)
[Quickstart: Create a public load balancer to load balance Virtual Machines](#)
[Quickstart: Direct web traffic with Azure Application Gateway](#)

And enter the configuration from the following picture

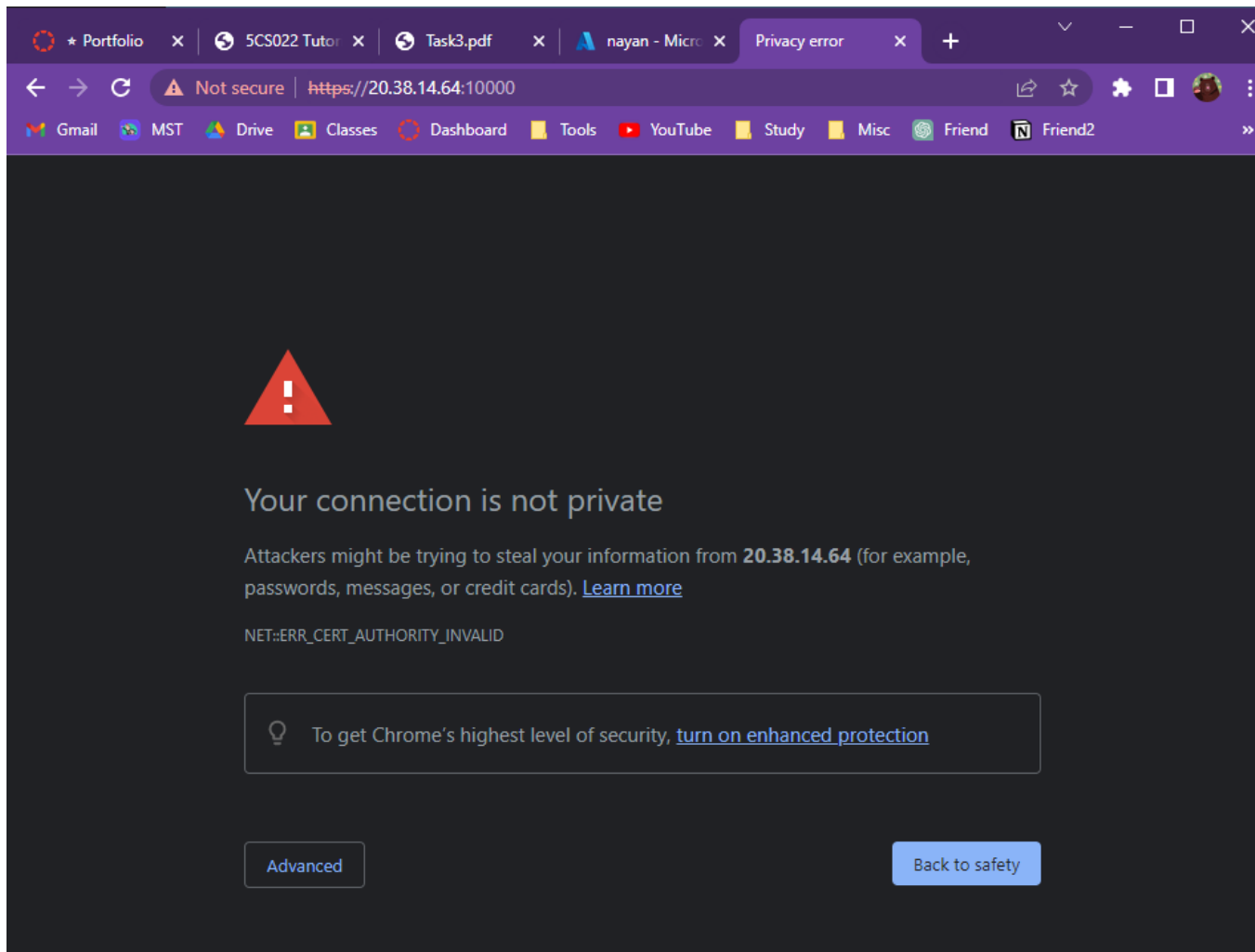
The screenshot shows the Microsoft Azure portal interface. On the left, the navigation pane is open, showing the 'Networking' section under 'Settings'. The main area displays the 'Add inbound security rule' dialog for a virtual machine named 'nayan'. The configuration fields are as follows:

- Source:** Any
- Source port ranges:** *
- Destination:** Any
- Service:** Custom
- Destination port ranges:** 10000
- Protocol:** Any (selected), TCP, UDP, ICMP
- Action:** Allow (selected), Deny
- Priority:** 350
- Name:** webmin
- Description:** (empty text box)

At the bottom of the dialog, there are 'Add' and 'Cancel' buttons. A 'Give feedback' link is also present in the bottom right corner.

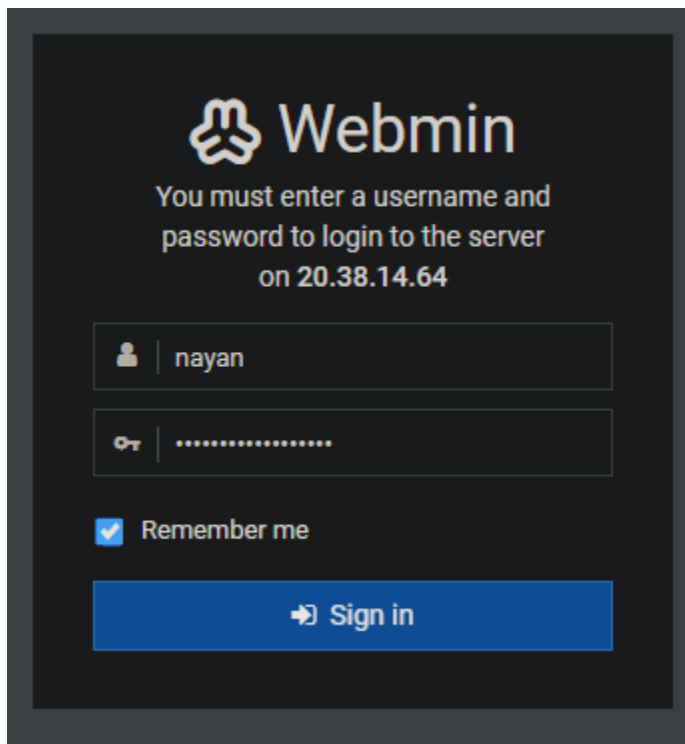
Press add

- Use your web browser and then go to the URL: <https://20.38.14.64:10000> [Substitute 20.38.14.64 with your Linux server's Public IP address.
 - The web browser may complain about the website's security certificate:
- Use your web browser and then go to the URL: <https://20.38.14.64:10000> [Substitute 20.38.14.64 with your Linux server's Public IP address.
 - The web browser may complain about the website's security certificate:



- Click on "Continue to this webpage (not recommended)."
- Login to Webmin with your Linux username and password

Once you press on **“Proceed”** you’ll be able to see this interface, enter your username and password of vm and you’re good to go.



The image shows the Webmin login interface. At the top, there is a logo consisting of three interlocking circles followed by the word "Webmin". Below the logo, a message states: "You must enter a username and password to login to the server on 20.38.14.64". There are two input fields: the first is for the username, which contains the text "nayan", and the second is for the password, which is masked with dots. Below these fields is a checkbox labeled "Remember me" which is checked. At the bottom, there is a blue button with a right-pointing arrow and the text "Sign in".

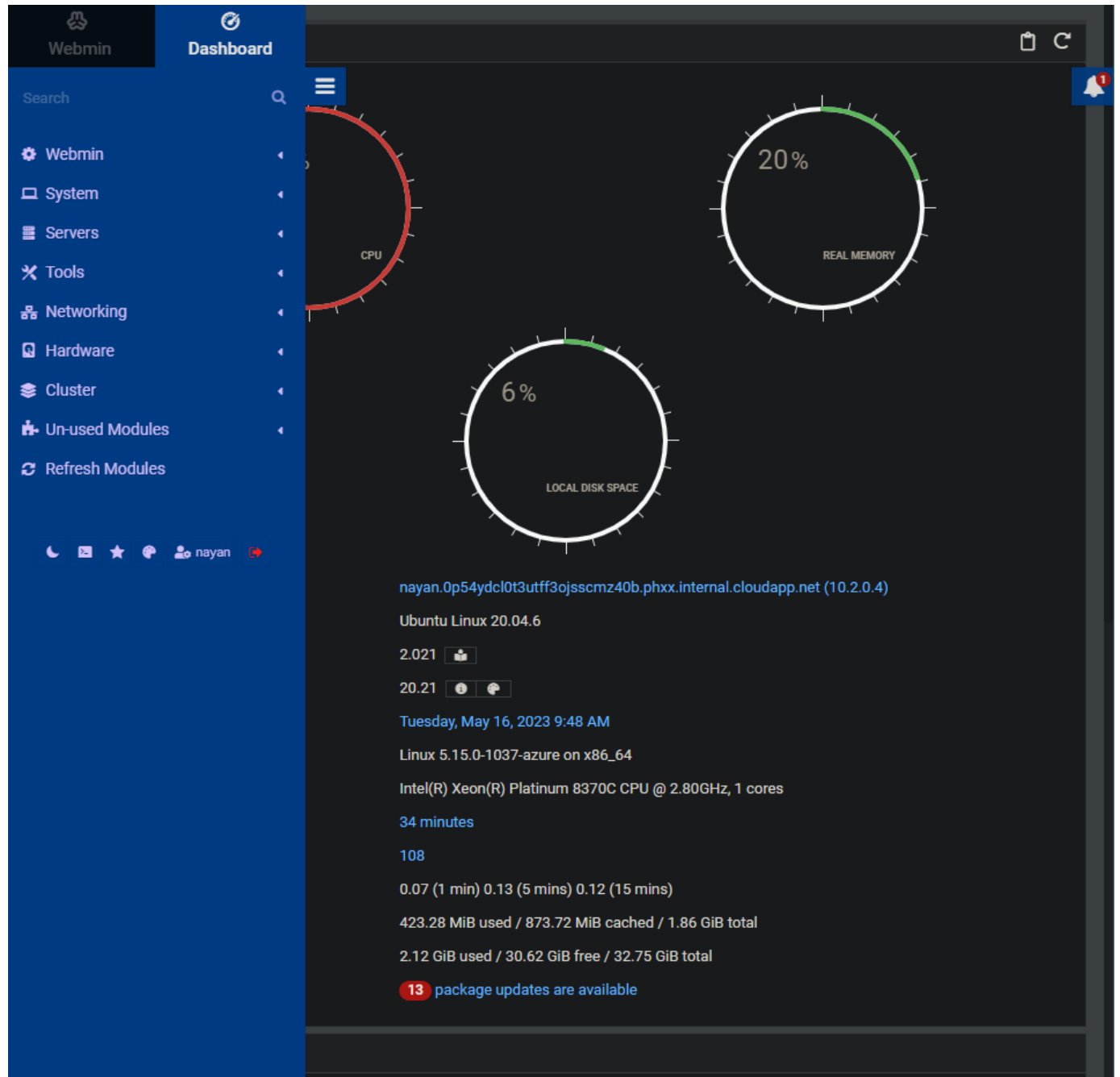
Webmin

You must enter a username and password to login to the server on 20.38.14.64

☒ Remember me

[➔ Sign in](#)

If you entered your credentials correctly, you'll be able to see this dashboard of your linux based interface

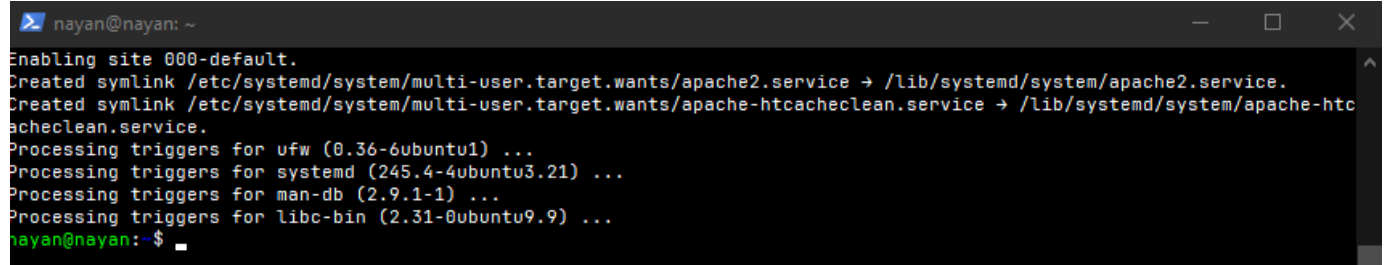


Now let's install Apache server

Choosing Apache server, you can never go wrong, for hosting a website, lets go and install it using our terminal:

sudo apt install apache2

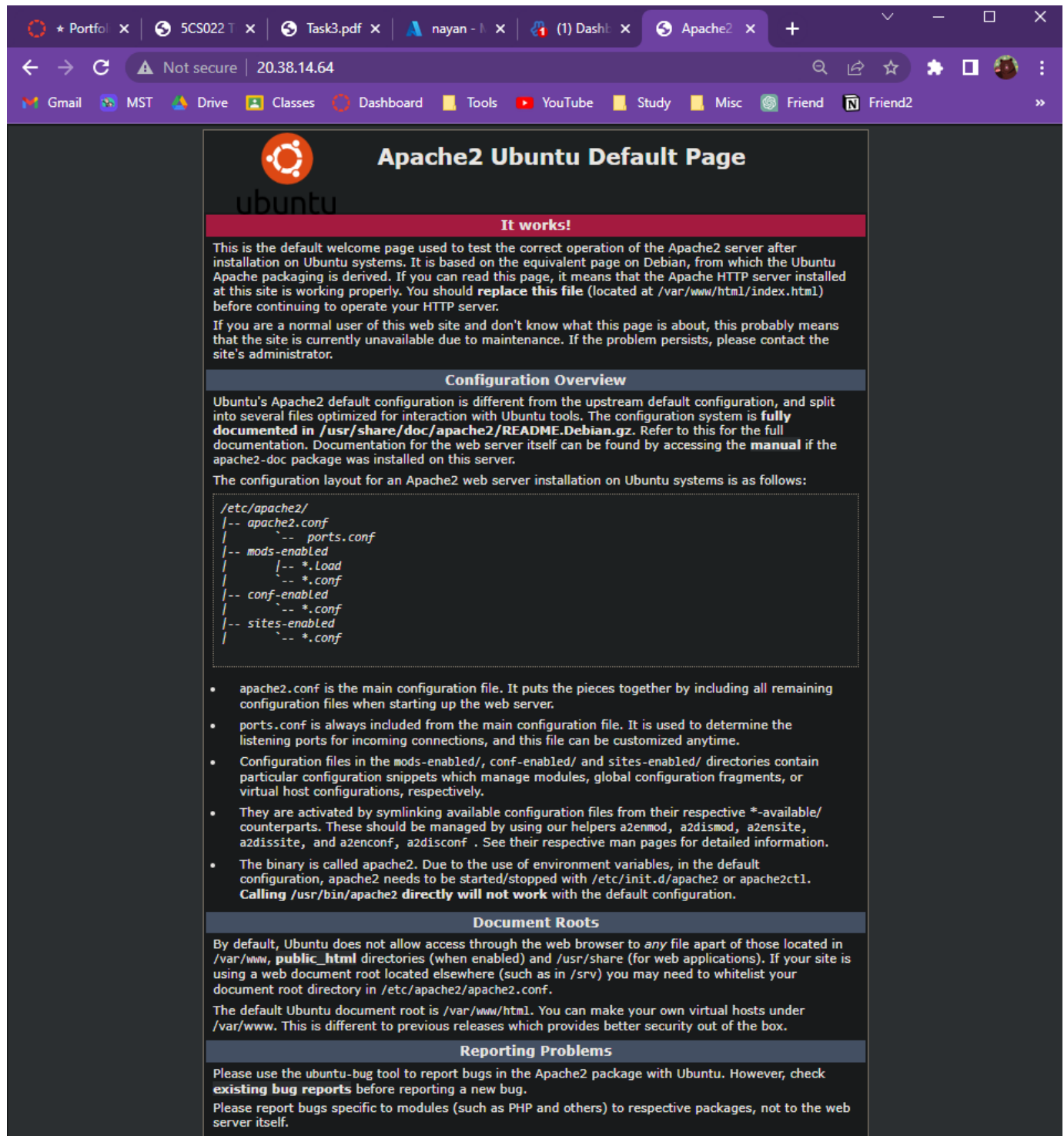
once installed you'll see something like this

A terminal window with a dark background and light text. The window title is 'nayan@nayan: ~'. The output of the command 'sudo apt install apache2' is displayed. It shows 'Enabling site 000-default.', followed by two lines about creating symlinks for 'apache2.service' and 'apache-htcacheclean.service'. Then, it shows 'Processing triggers' for 'ufw', 'systemd', 'man-db', and 'libc-bin'. The prompt 'nayan@nayan:~\$' is visible at the bottom.

```
nayan@nayan: ~  
Enabling site 000-default.  
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service → /lib/systemd/system/apache2.service.  
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service → /lib/systemd/system/apache-htcacheclean.service.  
Processing triggers for ufw (0.36-6ubuntu1) ...  
Processing triggers for systemd (245.4-4ubuntu3.21) ...  
Processing triggers for man-db (2.9.1-1) ...  
Processing triggers for libc-bin (2.31-0ubuntu9.9) ...  
nayan@nayan:~$
```

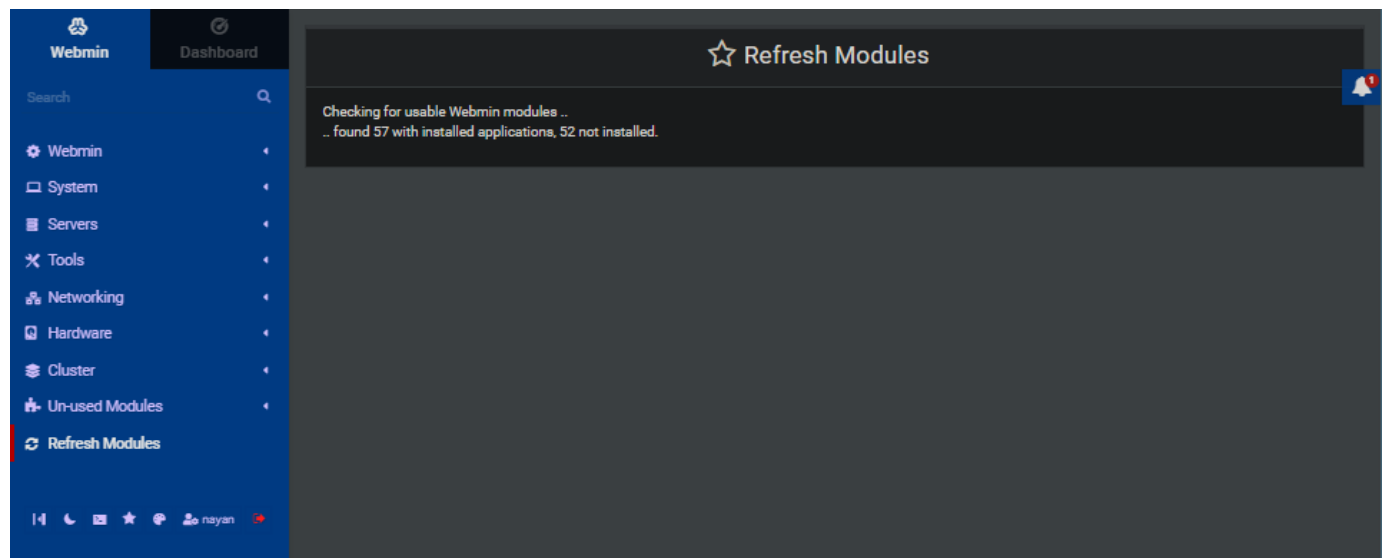
- Verify if apache was installed as planned by visiting your server's IP address in your web browser and http://your_server_IP_address/ example <http://20.38.14.64>

- You will see the default Apache web page, which is there for informational and testing purposes. It should look something like this:

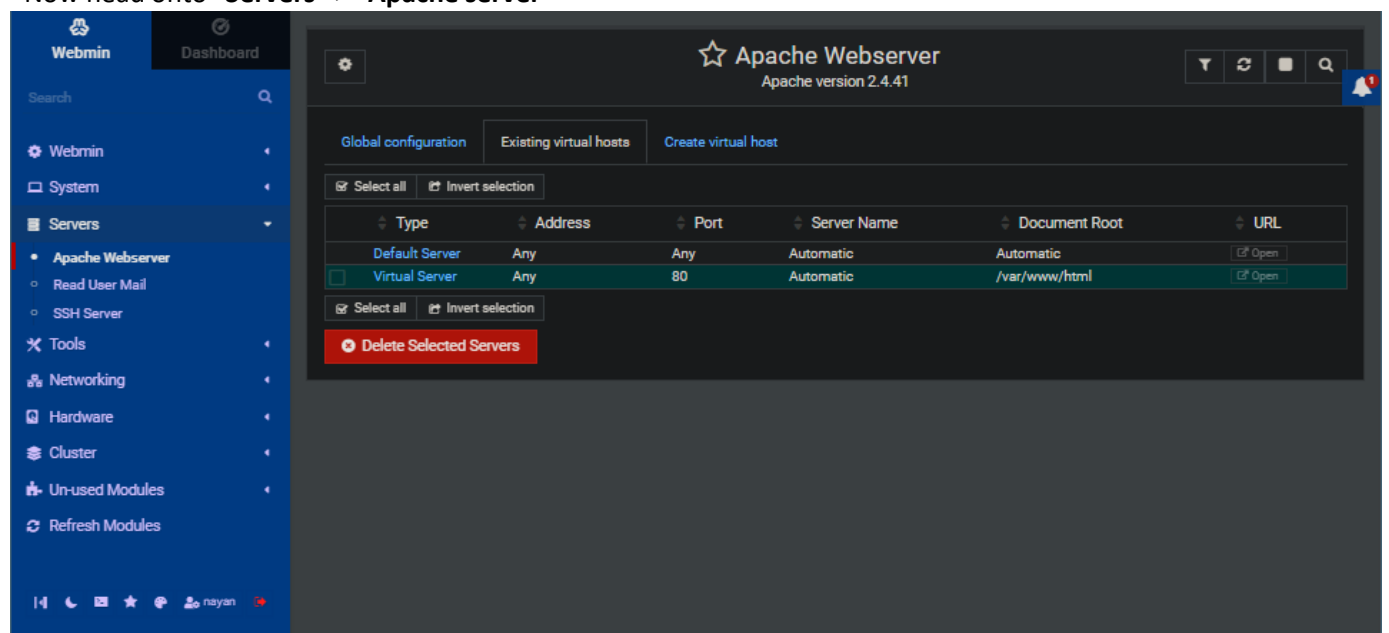


Once it is verified head back to webmin dashboard again apache server should be there if not then you need to press “refresh module”

If you pressed “refresh module you’ll be greeted with this interface:



Now head onto “Servers” > “Apache server”



Now let’s install MYSQL database using our terminal again.

We’ll be installing database to store our files and data.

- Again, use apt to acquire and install this software:

sudo apt install mysql-server

once its done we’ll be able to see interface like this


```
nayan@nayan: ~
Created symlink /etc/systemd/system/multi-user.target.wants/mysql.service → /lib/systemd/system/mysql.service.
Setting up libcgi-pm-perl (4.46-1) ...
Setting up libhtml-template-perl (2.97-1) ...
Setting up mysql-server (8.0.33-0ubuntu0.20.04.2) ...
Setting up libcgi-fast-perl (1:2.15-1) ...
Processing triggers for systemd (245.4-4ubuntu3.21) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.9) ...
nayan@nayan:~$
```

• Now that our MySQL database is running, we want to run a simple security script that will remove some dangerous defaults and lock down access to our database system a little bit. Start the interactive script by running:

sudo mysql_secure_installation

• The prompt will ask you for your current root password. Since you just installed MySQL, you most likely won't have one, so leave it blank by pressing enter. Then the prompt will ask you if you want to set a root password. Go ahead and enter Y, and follow the instructions:

- Choose low as password policy and set password as 'password'
- For the rest of the questions, press yes. When you're finished, test if you're able to log in to the MySQL console by typing:
- Choose low as password policy and set password as 'password'
- For the rest of the questions, press yes. When you're finished, test if you're able to log in to the MySQL console by typing:

```
nayan@nayan: ~
Using existing password for root.

Estimated strength of the password: 50
Change the password for root ? ((Press y|Y for Yes, any other key for No) : y

New password:
Re-enter new password:

Estimated strength of the password: 50
Do you wish to continue with the password provided?(Press y|Y for Yes, any other key for No) : y
By default, a MySQL installation has an anonymous user,
allowing anyone to log into MySQL without having to have
a user account created for them. This is intended only for
testing, and to make the installation go a bit smoother.
You should remove them before moving into a production
environment.

Remove anonymous users? (Press y|Y for Yes, any other key for No) : y
Success.

Normally, root should only be allowed to connect from
'localhost'. This ensures that someone cannot guess at
the root password from the network.

Disallow root login remotely? (Press y|Y for Yes, any other key for No) : y
Success.

By default, MySQL comes with a database named 'test' that
anyone can access. This is also intended only for testing,
and should be removed before moving into a production
environment.

Remove test database and access to it? (Press y|Y for Yes, any other key for No) : y
- Dropping test database...
Success.
- Removing privileges on test database...
Success.

Reloading the privilege tables will ensure that all changes
made so far will take effect immediately.

Reload privilege tables now? (Press y|Y for Yes, any other key for No) : y
Success.

All done!
nayan@nayan:~$
```

– Installing PHP

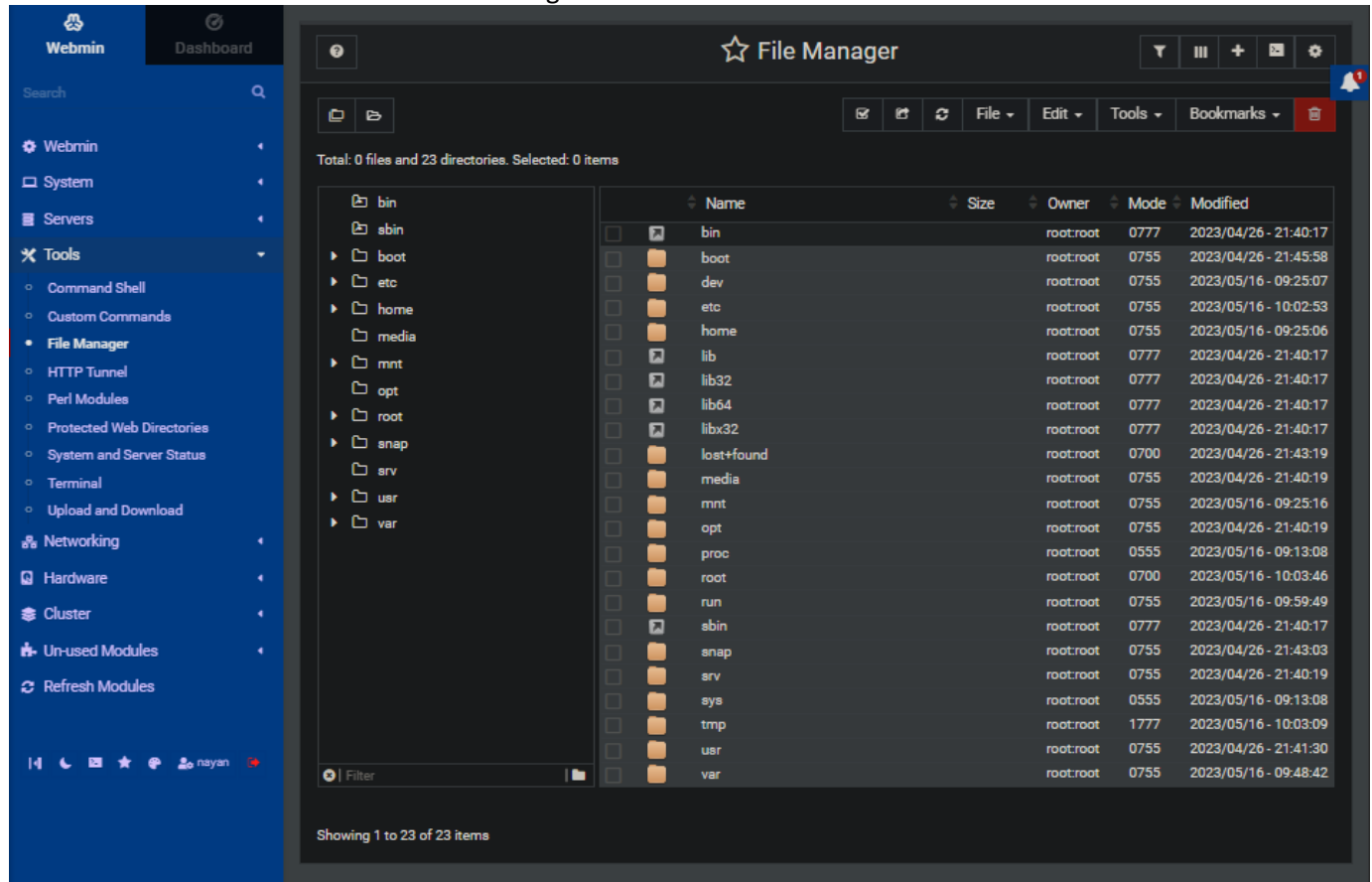
- PHP is the component of our setup that will process code to display dynamic content. It can run scripts, connect to our MySQL databases to get information, and hand the processed content over to our web server to display:

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

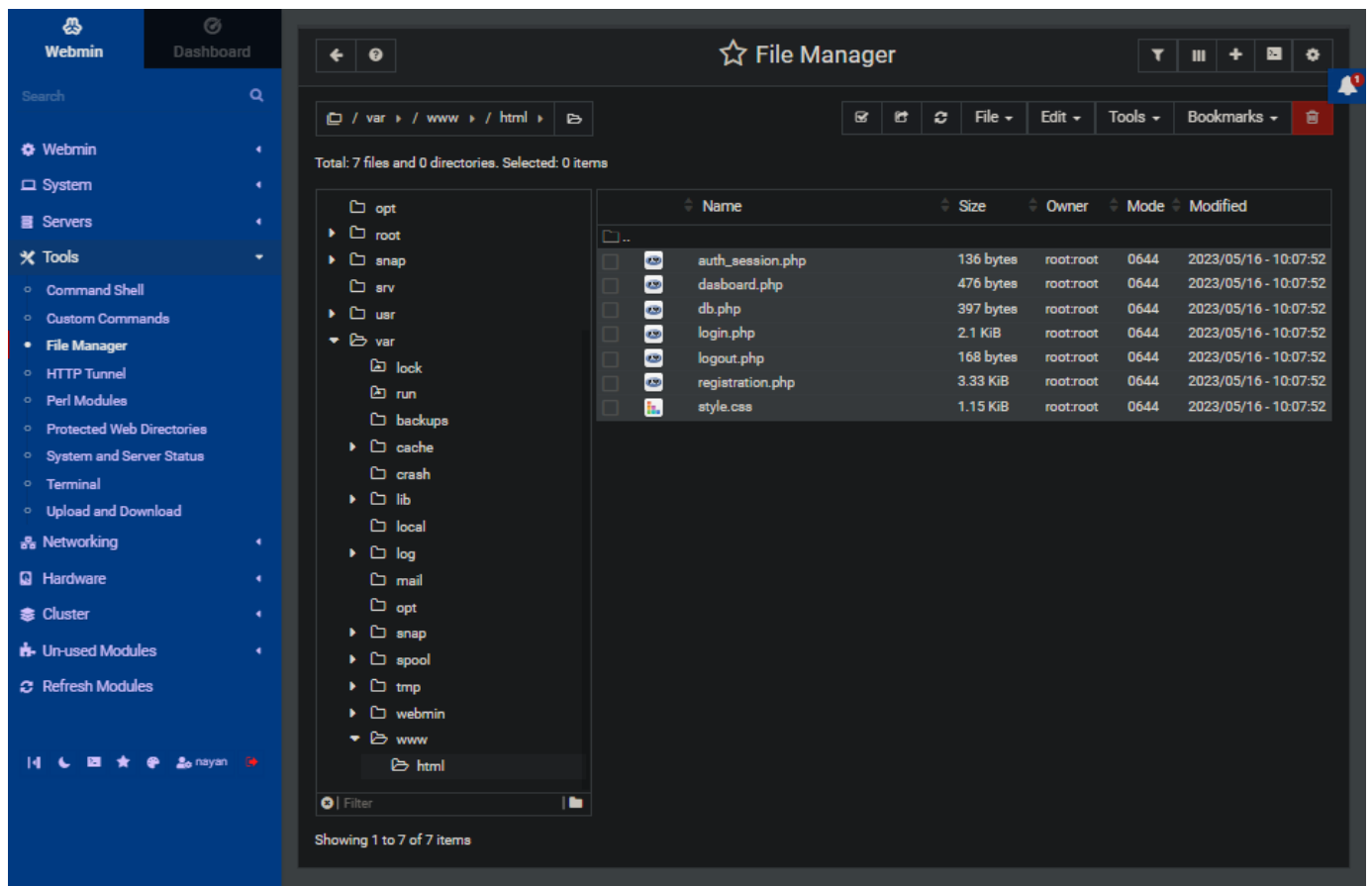
```
nayan@nayan: ~  
Creating config file /etc/php/7.4/apache2/php.ini with new version  
Module mpm_event disabled.  
Enabling module mpm_prefork.  
apache2_switch_mpm Switch to prefork  
apache2_invoke: Enable module php7.4  
Setting up php7.4 (7.4.3-4ubuntu2.18) ...  
Setting up libapache2-mod-php (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 (7.4.3-4ubuntu2.18) ...  
Processing triggers for libapache2-mod-php7.4 (7.4.3-4ubuntu2.18) ...  
nayan@nayan:~$
```

Part 8 - Manipulating files on the Linux Server via Webmin

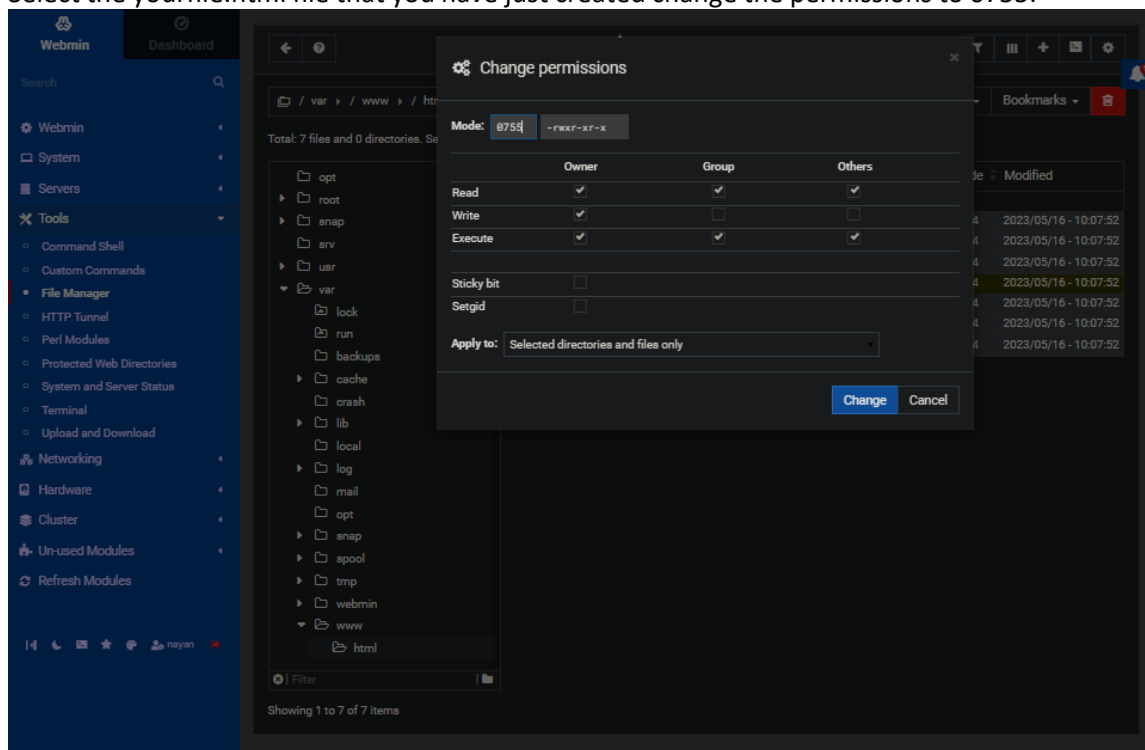
- In Webmin and click Tools and then File Manager.



- Navigate the File Manager by double-clicking the folders, to the directory `"/var/www/html"`.
- Click on the "File" and upload your files.



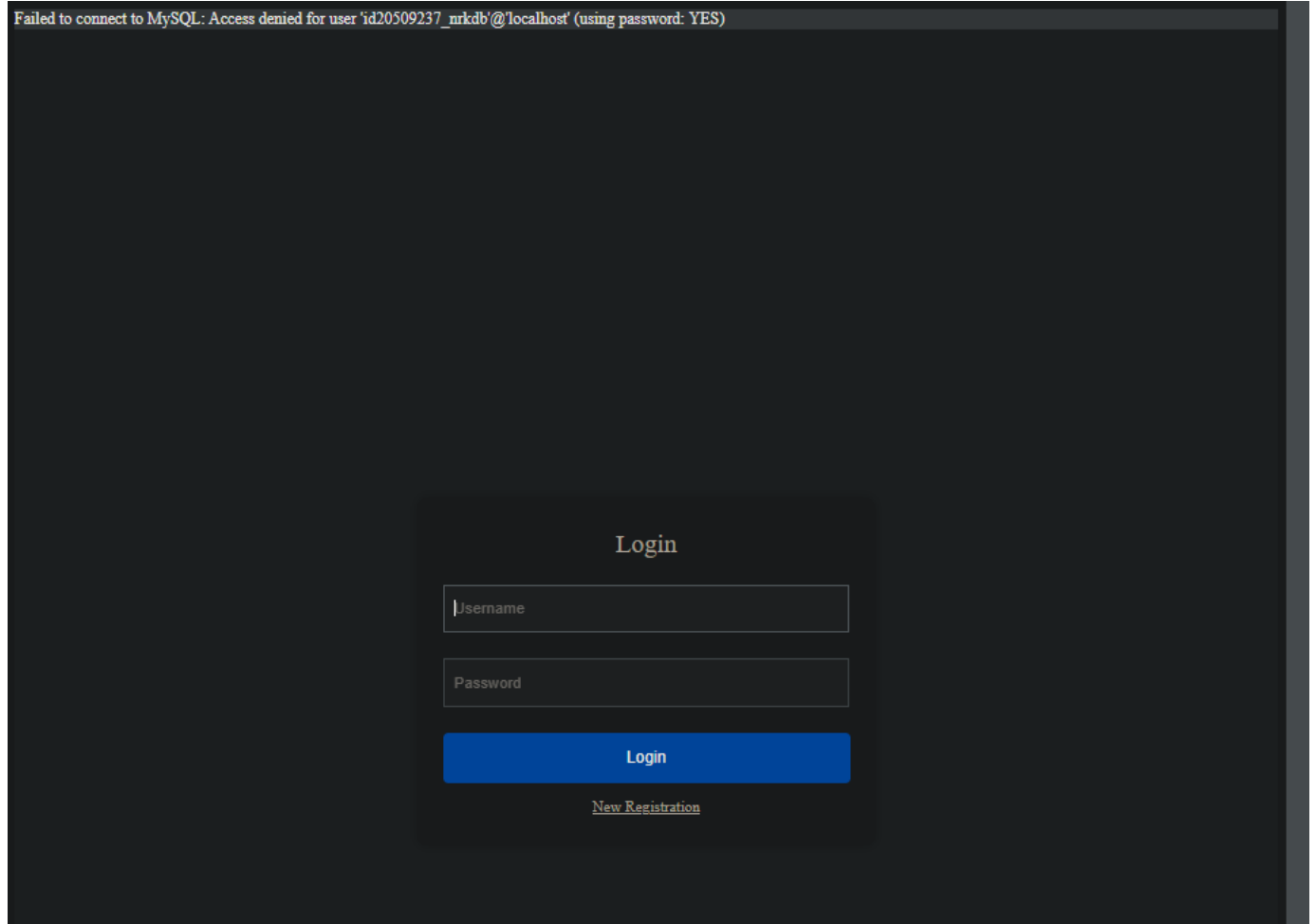
- Click "Save and Close".
- Select the yourfile.html file that you have just created change the permissions to 0755.



- Now verify that your new website is working.



Check if it is working

url: <http://20.38.14.64/login.php>



Our php is setup

- Setting up the MySQL Database Server

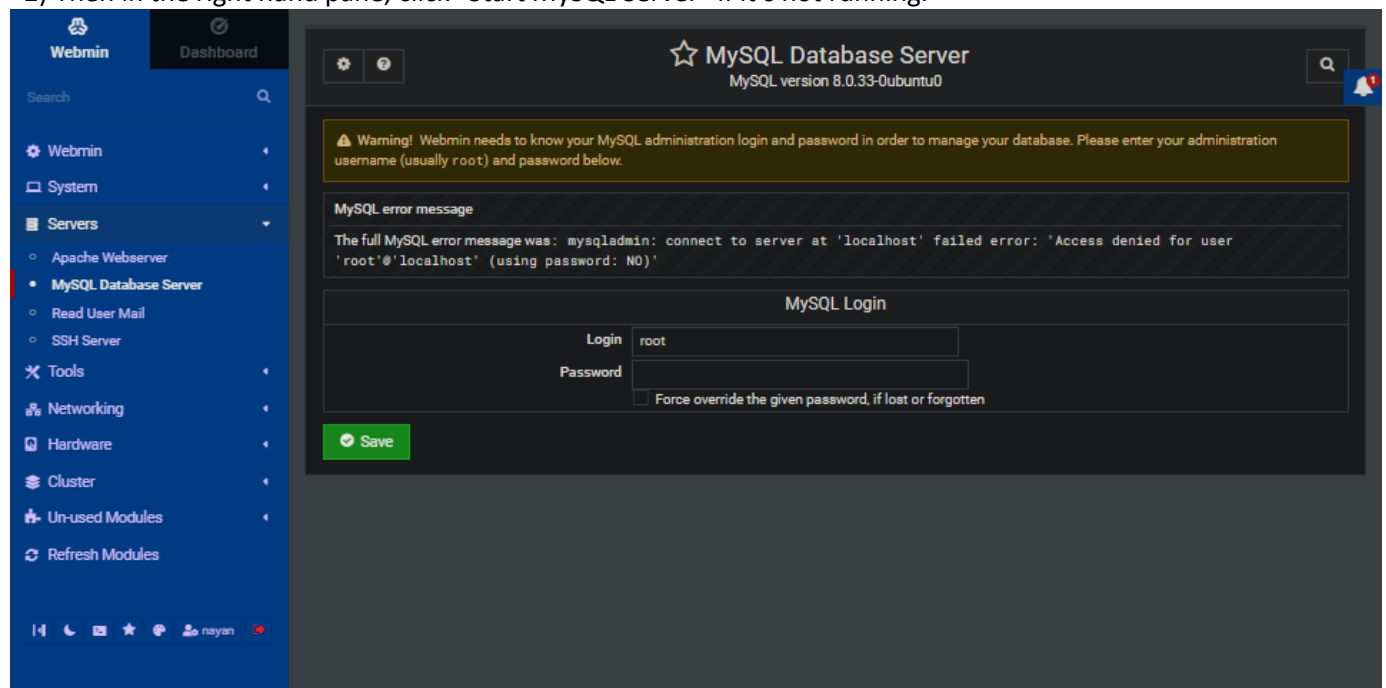
PHP Version 7.4.3-4ubuntu2.18	
	
System	Linux subarna 5.15.0-1037-azure #44-20.04.1-Ubuntu SMP Mon Apr 24 21:52:51 UTC 2023 x86_64
Build Date	Feb 23 2023 12:43:23
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php/7.4/apache2
Loaded Configuration File	/etc/php/7.4/apache2/php.ini
Scan this dir for additional .ini files	/etc/php/7.4/apache2/conf.d
Additional .ini files parsed	/etc/php/7.4/apache2/conf.d/10-mysqnd.ini, /etc/php/7.4/apache2/conf.d/10-opcache.ini, /etc/php/7.4/apache2/conf.d/10-pdo.ini, /etc/php/7.4/apache2/conf.d/20-calendar.ini, /etc/php/7.4/apache2/conf.d/20-ctype.ini, /etc/php/7.4/apache2/conf.d/20-exif.ini, /etc/php/7.4/apache2/conf.d/20-ffi.ini, /etc/php/7.4/apache2/conf.d/20-fileinfo.ini, /etc/php/7.4/apache2/conf.d/20-ftp.ini, /etc/php/7.4/apache2/conf.d/20-gdlib.ini, /etc/php/7.4/apache2/conf.d/20-iconv.ini, /etc/php/7.4/apache2/conf.d/20-json.ini, /etc/php/7.4/apache2/conf.d/20-mysql.ini, /etc/php/7.4/apache2/conf.d/20-pdo_mysql.ini, /etc/php/7.4/apache2/conf.d/20-phar.ini, /etc/php/7.4/apache2/conf.d/20-posix.ini, /etc/php/7.4/apache2/conf.d/20-readline.ini, /etc/php/7.4/apache2/conf.d/20-shmop.ini, /etc/php/7.4/apache2/conf.d/20-sockets.ini, /etc/php/7.4/apache2/conf.d/20-sysvmsg.ini, /etc/php/7.4/apache2/conf.d/20-sysvsem.ini, /etc/php/7.4/apache2/conf.d/20-sysvshm.ini, /etc/php/7.4/apache2/conf.d/20-tokenizer.ini
PHP API	20190902
PHP Extension	20190902
Zend Extension	320190902
Zend Extension Build	API320190902.NTS
PHP Extension Build	API20190902.NTS
Debug Build	no
Thread Safety	disabled
Zend Signal Handling	enabled
Zend Memory Manager	enabled
Zend Multibyte Support	disabled
IPv6 Support	enabled
DTrace Support	available, disabled
Registered PHP Streams	https, ftps, compress.zlib, php, file, glob, data, http, ftp, phar
Registered Stream Socket Transports	tcp, udp, unix, udg, ssl, tls, tlsv1.0, tlsv1.1, tlsv1.2, tlsv1.3
Registered Stream Filters	zlib.*, string.rot13, string.toupper, string.tolower, string.strip_tags, convert.*, consumed, dechunk, convert.iconv.*
This program makes use of the Zend Scripting Language Engine: Zend Engine v3.4.0, Copyright (c) Zend Technologies with Zend OPcache v7.4.3-4ubuntu2.18, Copyright (c), by Zend Technologies	
	

Configuration

apache2handler

1) On the left hand side of Webmin, under Servers and then click on “MySQL Database Server”.

2) Then in the right hand pane, click “Start MySQL Server” if it’s not running.



Enter your username and password and click save you can see this option now

Webmin

Dashboard

Search

Webmin

System

Servers

Apache Webserver

MySQL Database Server

Read User Mail

SSH Server

Tools

Networking

Hardware

Cluster

Un-used Modules

Refresh Modules

14

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MySQL Database Server

MySQL version 8.0.33-0ubuntu0.20.04.2

Select all

Invert selection

Create a new database

Database name	Tables	Indexes	Views
<input type="checkbox"/> information_schema	79	0	0
<input type="checkbox"/> mysql	37	5	0

Select all

Invert selection

Create a new database

Drop Selected Databases

Global Options

User Permissions

Database Permissions

Table Permissions

Field Permissions

MySQL Server Configuration

Edit Config Files

Database Connections

MySQL System Variables

SSL Certificate

Change Administration Password

Stop MySQL Server

Click this button to stop the MySQL database server on your system. This will prevent any users or programs from accessing the database, including this Webmin module.

Backup Databases

Click this button to setup the backup of all MySQL databases, either immediately or on a configured schedule.

Warning: The Perl modules DBI and DBD::mysql are not installed on your system, so Webmin will not be able to reliably access your MySQL database. Click here to install them now.

Now lets create users click on user permission and click on create new user

Webmin

Dashboard

Search

Webmin

System

Servers

Apache Webserver

MySQL Database Server

Read User Mail

SSH Server

Tools

Networking

Hardware

Cluster

Un-used Modules

Refresh Modules

14

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User Permissions

Select all

Invert selection

Create new user

User	Hosts	Certificate	Permissions
<input type="checkbox"/> debian-sys-maint	localhost	None	All
<input type="checkbox"/> mysql.infochema	localhost	None	Select table data
<input type="checkbox"/> mysql.session	localhost	None	Shutdown database Superuser
<input type="checkbox"/> mysql.sys	localhost	None	None
<input type="checkbox"/> root	localhost	None	All

Select all

Invert selection

Create new user

Delete Selected

The options below configure synchronization between Unix users created through Webmin and MySQL users.

When to synchronize

☐ Add a new MySQL user when a Unix user is added
☐ Update a MySQL user when the matching Unix user is modified.
☐ Delete a MySQL user when the matching Unix user is deleted.

Permissions for new users

Select table data

Insert table data

Update table data

Delete table data

Create tables

Drop tables

Reload grants

Create new users with hosts

☒ All hosts
☐ Specific host

Save

Return to database list

Now after setting user permission

The screenshot shows the 'Create User' form in Webmin. The left sidebar is expanded to 'MySQL Database Server'. The form fields are as follows:

- Username: ☐ Anonymous user ☒ user
- Password: ☐ None ☒ Set to.. password
- Hosts: ☐ Any ☒ localhost
- Permissions: A dropdown menu is open showing the following options: Alter routine, Create User, Create Event, Create Trigger, Create Tablespace, Create_role_priv, and Drop_role_priv.
- Maximum concurrent logins: ☒ Unlimited ☐ At most
- Maximum connections per hour: ☒ Unlimited ☐ At most
- Maximum queries per hour: ☒ Unlimited ☐ At most
- Maximum updates per hour: ☒ Unlimited ☐ At most
- Required certificate type: None
- SSL cipher: (empty field)

At the bottom, there is a 'Create' button and two links: 'Return to user list' and 'Return to database list'.

Set database permission to the user

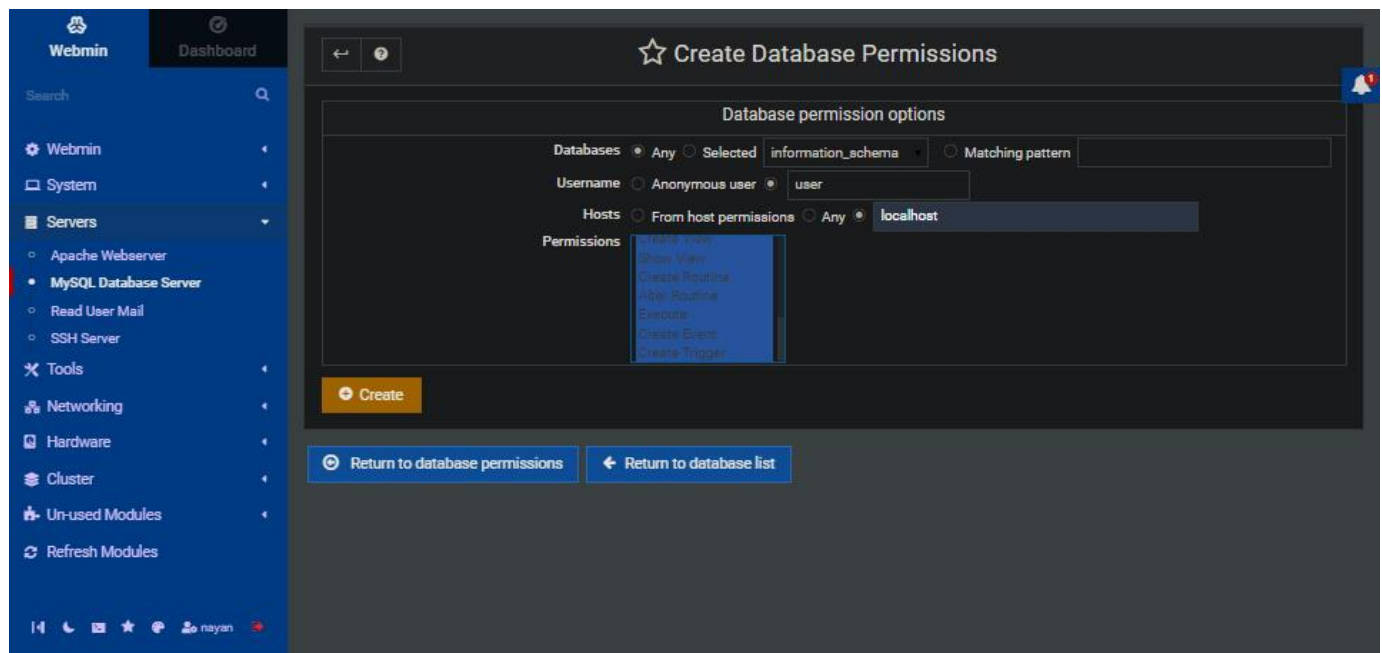
The screenshot shows the 'Create Database' form in Webmin. The left sidebar is expanded to 'MySQL Database Server'. The form fields are as follows:

- Database name: id20509237_nrk
- Character set: <Default>
- Collation order: <Default>
- Initial table: ☒ None ☐ Named
- with fields below... (checkbox)

Field name	Data type	Type width	Key?	Auto-increment?	Allow nulls?	Unsigned?	Default value
username	varchar	50	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	
email	varchar	50	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	
password	varchar	50	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	
create_datetime	datetime	50	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> Yes	

At the bottom, there is a 'Create' button and a link: 'Return to database list'.

Be sure to select the database



Now make sure to use your own db connection code here's mine:

```

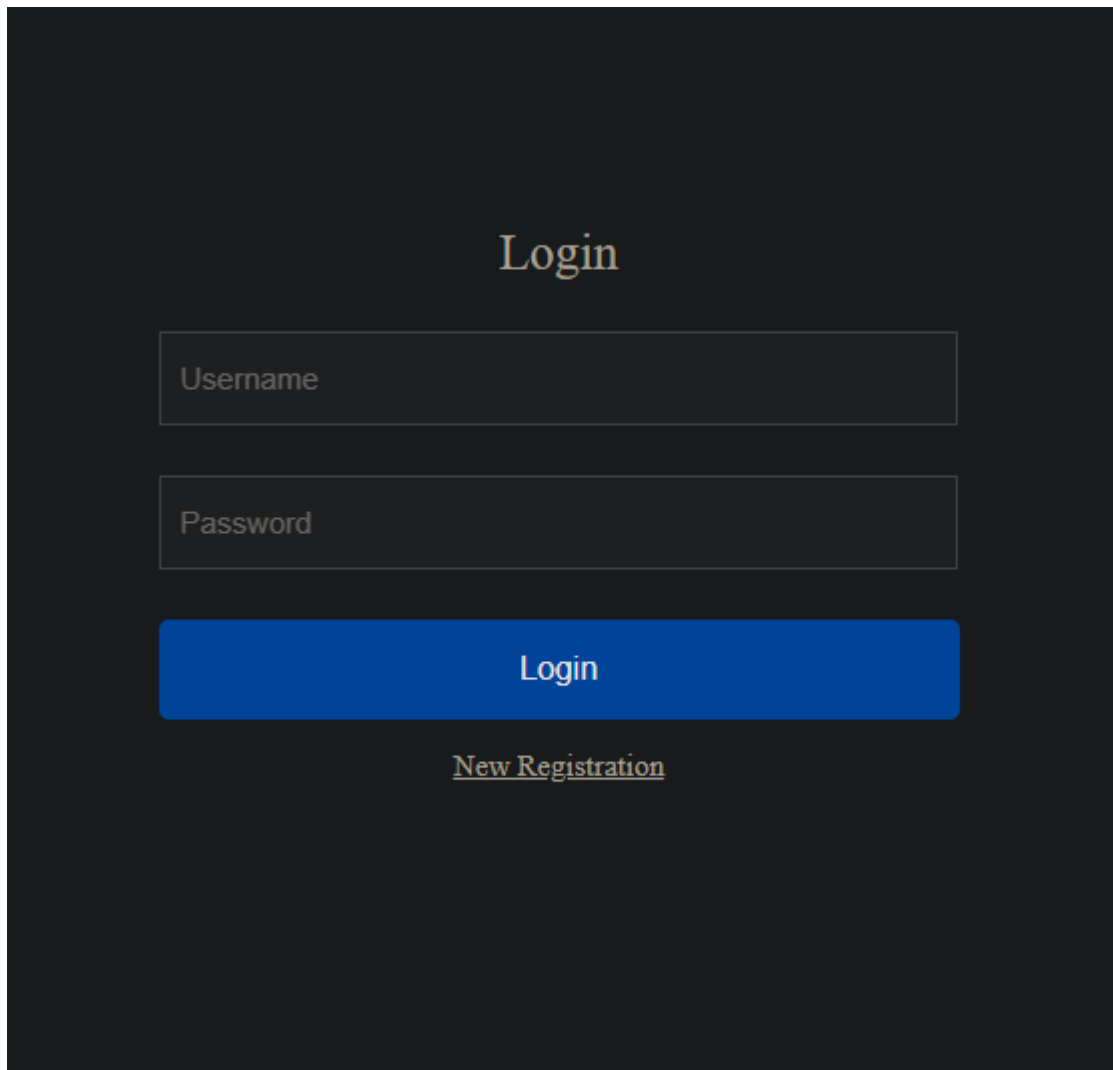
db.php (/var/www/html) ☆
1  <?php
2      // Enter your host name, database username, password, and database name.
3      // If you have not set database password on localhost then set empty.
4      $con = mysqli_connect("localhost","root","password","id20509237_nrk");
5      // Check connection
6      if (mysqli_connect_errno()){
7          echo "Failed to connect to MySQL: " . mysqli_connect_error();
8      }
9      ?>

```

My database connection is done!

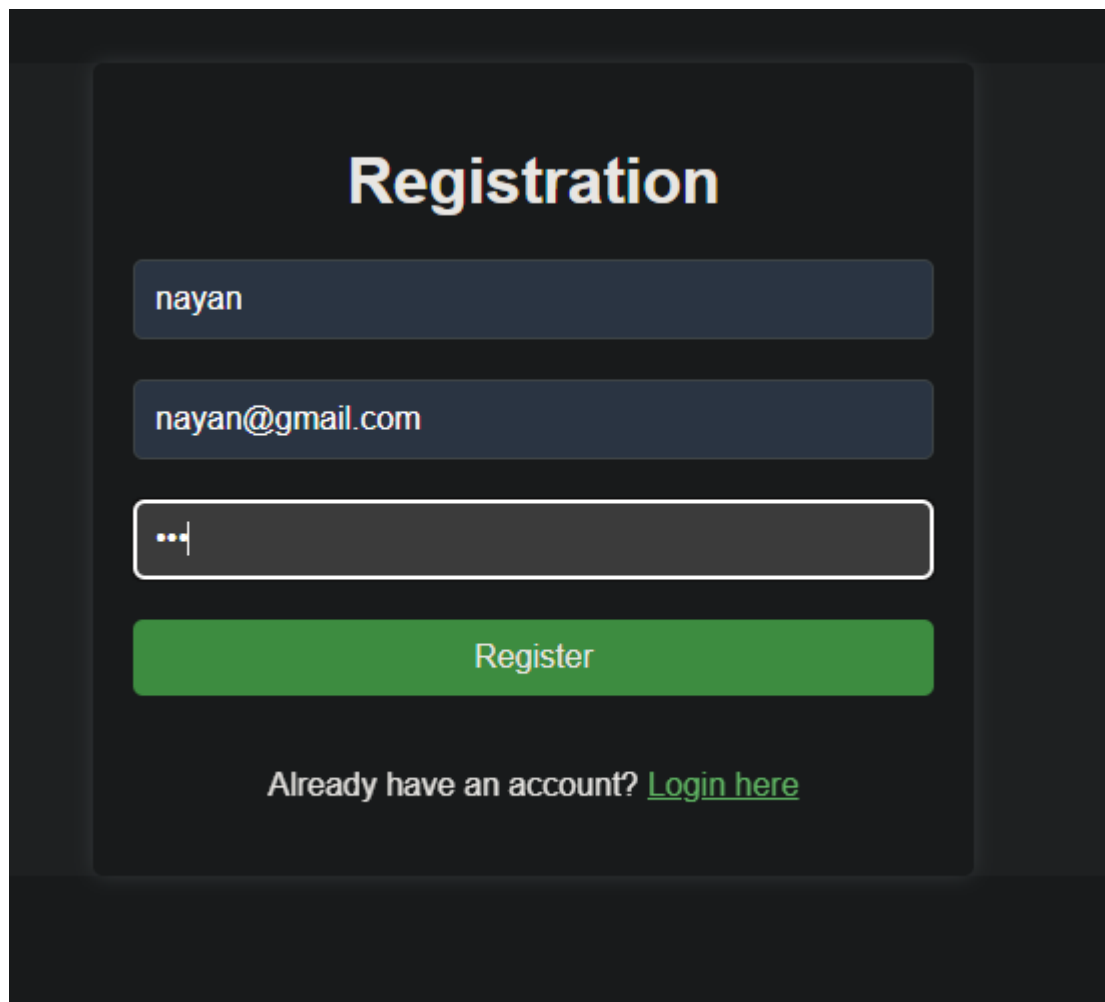
Now let's test it

url: <http://20.38.14.64/login.php>



The image shows a login interface on a dark background. At the top, the word "Login" is centered in a light-colored serif font. Below it are two input fields: the first is labeled "Username" and the second is labeled "Password", both in a light gray sans-serif font. Under the password field is a solid blue button with the word "Login" in white sans-serif font. At the bottom, the text "[New Registration](#)" is centered in a light-colored serif font, with the underline indicating it is a link.

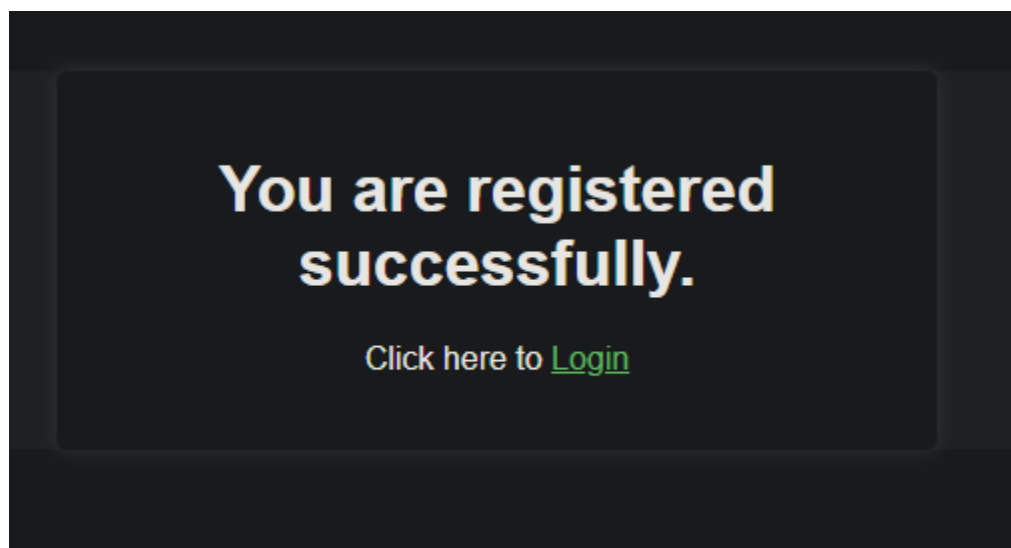
If the user has the required credentials they can log in, otherwise they can select new registration.

A registration form on a dark background. The title "Registration" is at the top in a large, bold, white font. Below it are three input fields: the first contains "nayan", the second contains "nayan@gmail.com", and the third is empty with a white border and a small white cursor. Below the input fields is a green button with the text "Register" in white. At the bottom, there is a link that says "Already have an account? [Login here](#)".

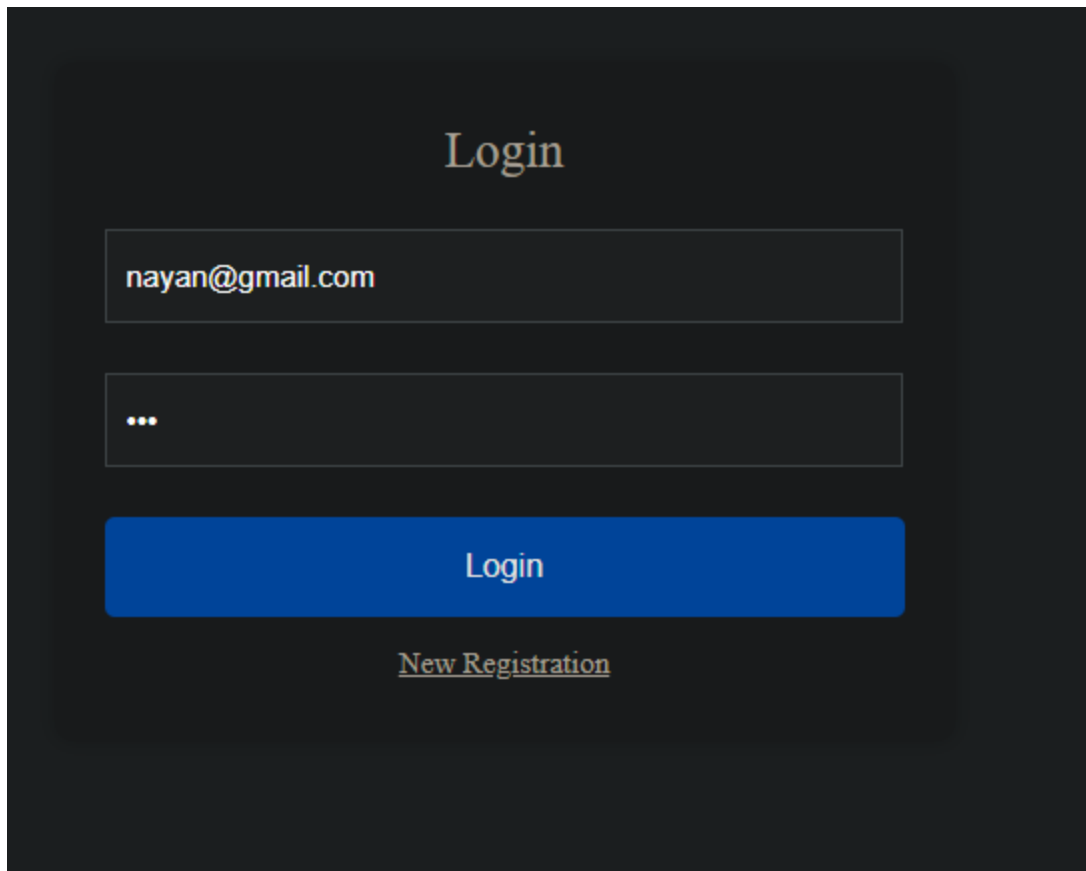
Registration

Already have an account? [Login here](#)

Here they can add their information and select register.



They will be notified that they are registered.

A login form on a dark background. At the top, the word "Login" is centered in a light blue serif font. Below it are two input fields: the first contains the email "nayan@gmail.com" and the second contains three dots "...". A solid blue button with the word "Login" in white is positioned below the fields. At the bottom, the text "New Registration" is centered and underlined in a light blue serif font.

Login

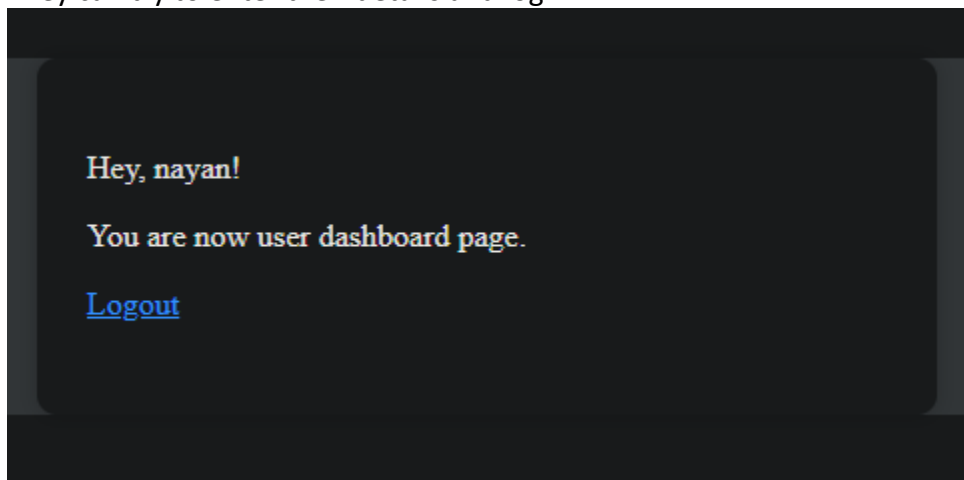
nayan@gmail.com

...

Login

New Registration

They can try to enter their details and log in

A user dashboard on a dark background. It displays a personalized greeting "Hey, nayan!" in a light blue serif font. Below the greeting is the message "You are now user dashboard page." in the same font. At the bottom, there is a blue underlined link labeled "Logout".

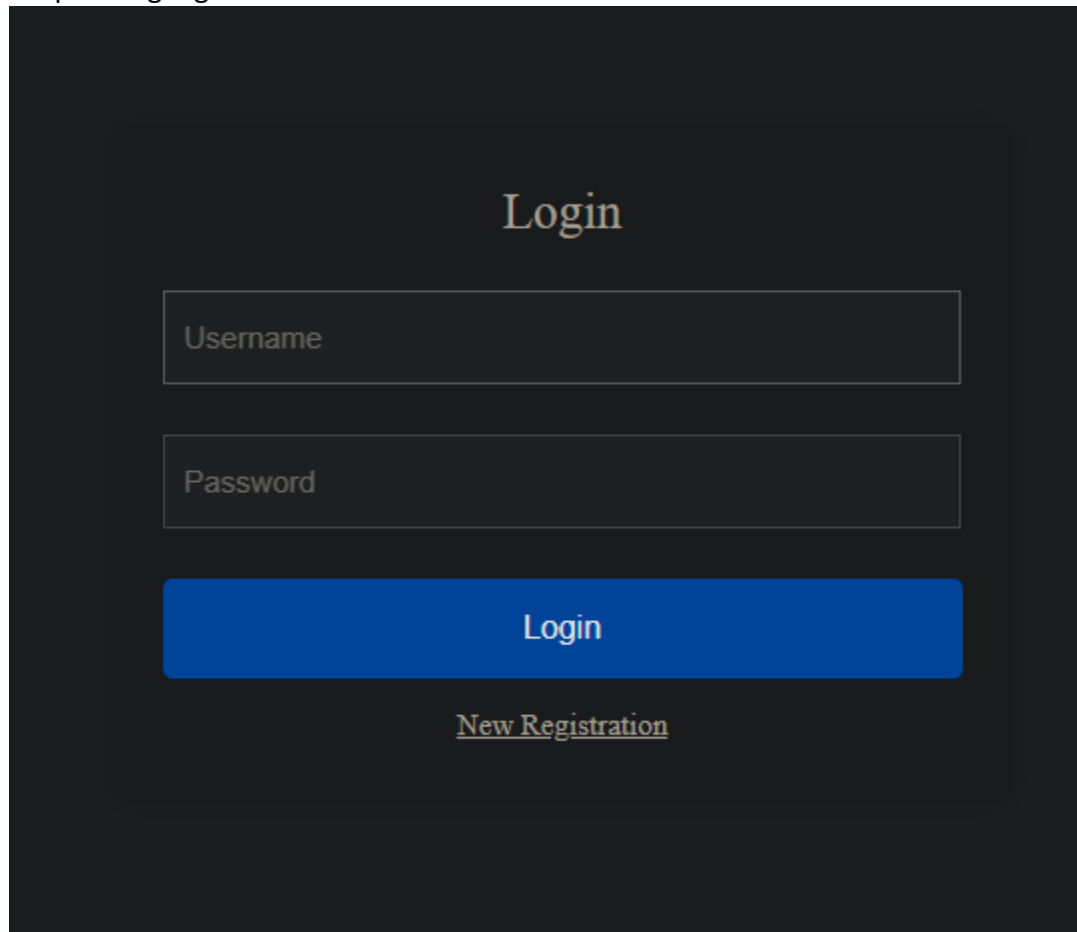
Hey, nayan!

You are now user dashboard page.

Logout

If the credentials are right they are sent to the dashboard. They can choose to logout.

On pressing logout:

A screenshot of a login form on a dark background. The form is centered and contains the following elements: the word "Login" in a large, light-colored serif font; a text input field with the placeholder "Username"; another text input field with the placeholder "Password"; a solid blue button with the text "Login" in white; and a text link "New Registration" in a light-colored serif font below the button.

Login

Username

Password

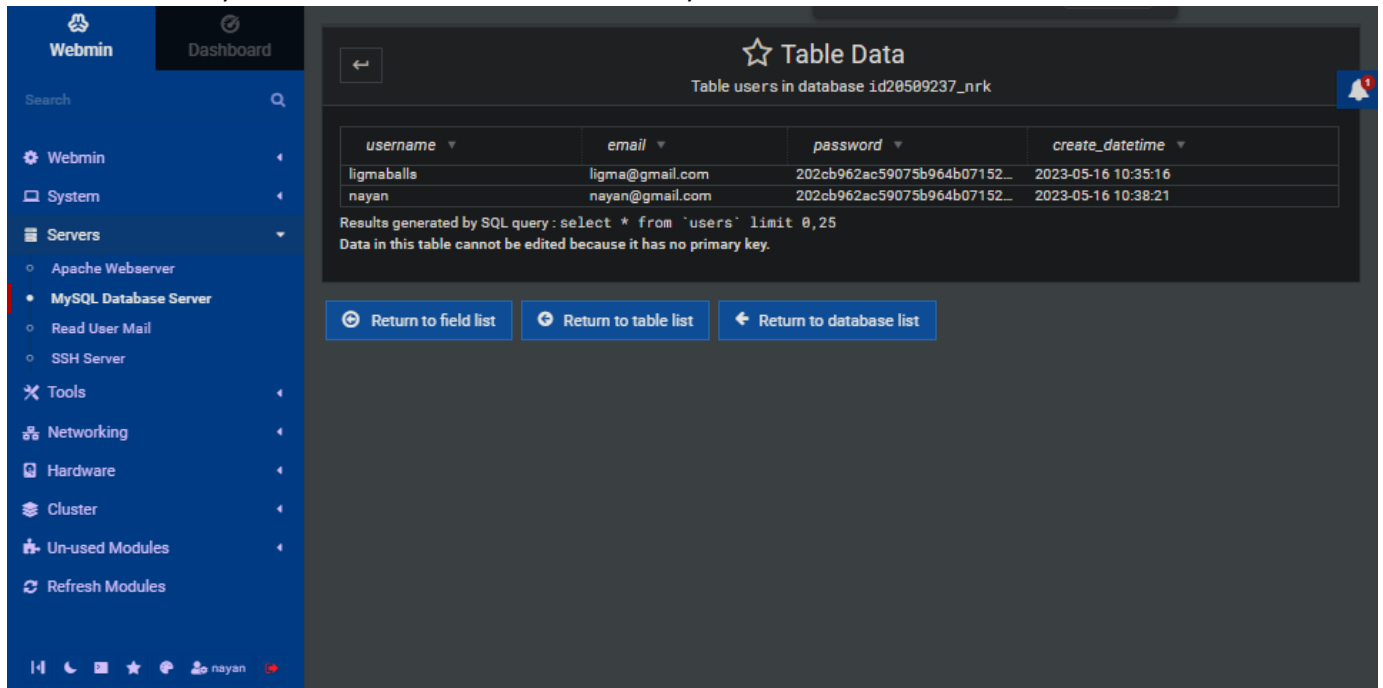
Login

New Registration

As we can see the application works.

Let's check database now

User is successfully created the one that I created recently is at last



The screenshot shows the Webmin interface with the 'Table Data' view for the 'users' table in a MySQL database. The table contains two rows: 'ligmaballs' and 'nayan'. The interface includes a sidebar with navigation options like 'Webmin', 'System', 'Servers', and 'Tools'. The main content area shows the table data and a message indicating that the data cannot be edited because it has no primary key.

username	email	password	create_datetime
ligmaballs	ligma@gmail.com	202cb962ac59075b964b07152...	2023-05-16 10:35:16
nayan	nayan@gmail.com	202cb962ac59075b964b07152...	2023-05-16 10:38:21

Results generated by SQL query : select * from 'users' limit 0,25
Data in this table cannot be edited because it has no primary key.

Return to field list Return to table list Return to database list

With that we've completed our task.