

UNIVERSITY PARTNER



Distributed and Cloud Systems Programming

(5CS022)

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Firstly, I logged in to my azure account and here is how it looks after entering into azure

The screenshot shows the Microsoft Azure portal interface. At the top, there is a navigation bar with several tabs and icons. Below the navigation bar, the main content area is divided into sections: 'Azure services' and 'Resources'. The 'Azure services' section contains icons for creating a resource, virtual machines, education, cost management, function apps, free services, app services, quickstart center, storage accounts, and more services. The 'Resources' section shows a list of recent resources, including 'AssignmentRadhika' (Virtual machine), 'AssignmentRadhika' (Resource group), 'vault873' (Recovery Services vault), 'coursework' (Resource group), 'Coursework_4' (Resource group), and 'week9-ip' (Public IP address). The bottom of the screen shows the Windows taskbar with various pinned icons and the system tray.

Then I am created a new virtual machine from virtual machine page by filling all the field as shown below

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

Home > Virtual machines >

Create a virtual machine

Subscription * (Azure for Students)

Resource group * (New) AssignmentRadhika Create new

Instance details

Virtual machine name * AssignmentRadhika

Region * (US) East US

Availability options No infrastructure redundancy required

Security type Standard

Image * Ubuntu Server 18.04 LTS - x64 Gen2 See all images | Configure VM generation

VM architecture Arm64 x64

< Previous Next : Disks >

Activate Windows
Go to Settings to activate Windows Give feedback

Review + create

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

Home > Virtual machines >

Create a virtual machine

VM architecture Arm64 x64

Run with Azure Spot discount

Size * Standard_B1s - 1 vcpu, 1 GiB memory (\$7.59/month) See all sizes

Administrator account

Authentication type SSH public key Password

Username * AssignmentRadhika

Password * *****

Confirm password * *****

VM architecture Arm64 x64

< Previous Next : Disks >

Activate Windows
Go to Settings to activate Windows Give feedback

Review + create

Microsoft Azure

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

Home > Virtual machines >

Create a virtual machine

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

Allow selected ports

Select inbound ports *

HTTP (80), HTTPS (443), SSH (22)

⚠️ This will allow all IP addresses to access your virtual machine. This is only recommended for testing. Use the Advanced controls in the Networking tab to create rules to limit inbound traffic to known IP addresses.

Review + create

< Previous

Next : Disks >

Activate Windows

Go to Settings to activate Windows

Give feedback

After the validation is passed, I am created a virtual machine clicking create

Microsoft Azure

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

Home > Virtual machines >

Create a virtual machine

Validation passed

Basics Disks Networking Management Monitoring Advanced Tags Review + create

Cost given below is an estimate and not the final price. Please use [Pricing calculator](#) for all your pricing needs.

Price

1 X Standard B1s by Microsoft

Subscription credits apply ⓘ

0.0104 USD/hr

[Terms of use](#) | [Privacy policy](#)

Pricing for other VM sizes

Activate Windows

Go to Settings to activate Windows

Give feedback

Create

< Previous

Next >

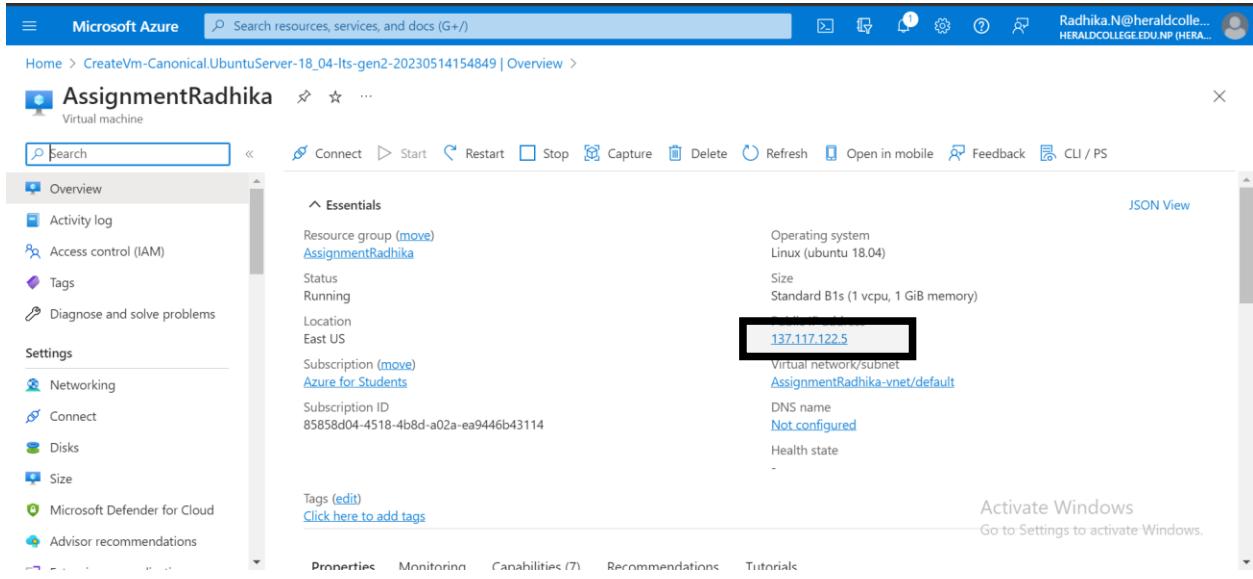
Download a template for automation

We can see that my deployment process is in progress from below screenshot

This screenshot shows the Microsoft Azure Deployment Overview page for a specific deployment named 'CreateVm-Canonical.UbuntuServer-18_04-Its-gen2-20230514154849'. The main message 'Deployment is in progress' is highlighted with a black box. Below it, deployment details are listed: Deployment name, Subscription (Azure for Students), Resource group (AssignmentRadhika), Start time (5/14/2023, 3:53:47 PM), and Correlation ID (b68320ac-7a97-4da0-9605-1). A 'Deployment details' section shows no results. On the right side, there are promotional banners for Microsoft Defender for Cloud, Free Microsoft tutorials, and Work with an expert.

This screenshot shows the Microsoft Azure Deployment Overview page after the deployment has completed successfully. The main message 'Your deployment is complete' is highlighted with a black box. Deployment details are listed: Deployment name, Subscription (Azure for Students), Resource group (AssignmentRadhika), Start time (5/14/2023, 3:53:47 PM), and Correlation ID (b68320ac-7a97-4da0-9605-1). A 'Deployment details' section shows no results. A 'Next steps' section includes 'Setup auto-shutdown' (Recommended), 'Monitor VM health, performance and network dependencies' (Recommended), and 'Run a script inside the virtual machine' (Recommended). Buttons for 'Go to resource' and 'Create another VM' are present. On the right side, there are promotional banners for Cost Management, Microsoft Defender for Cloud, and Free Microsoft tutorials.

After completing deployment process, I went to resources and here noted my server's Public IP address.



The screenshot shows the Microsoft Azure portal interface for a virtual machine named "AssignmentRadhika". The "Overview" tab is selected. Key details shown include:

- Resource group:** AssignmentRadhika
- Status:** Running
- Location:** East US
- Subscription:** Azure for Students
- Subscription ID:** 85858d04-4518-4b8d-a02a-ea9446b43114
- Operating system:** Linux (ubuntu 18.04)
- Size:** Standard B1s (1 vcpu, 1 GiB memory)
- Public IP Address:** 137.117.122.5 (highlighted in a red box)
- Virtual network/subnet:** AssignmentRadhika-vnet/default
- DNS name:** Not configured
- Health state:** -

The "Tags" section shows a link to "Click here to add tags".

I connected my Ubuntu Linux Server using SSH by entering into the command prompt.

```
AssignmentRadhika@AssignmentRadhika: ~
C:\Users\DeLL>ssh AssignmentRadhika@137.117.122.5
The authenticity of host '137.117.122.5 (137.117.122.5)' can't be established.
ECDSA key fingerprint is SHA256:Lo40UM1XC1JGJTNEg3G9a9JUVajKI7bNtJZi0BXUXEo.
Are you sure you want to continue connecting (yes/no/[fingerprint])? radhika@1234
Please type 'yes', 'no' or the fingerprint: yes
Warning: Permanently added '137.117.122.5' (ECDSA) to the list of known hosts.
AssignmentRadhika@137.117.122.5's password:
Permission denied, please try again.
AssignmentRadhika@137.117.122.5's password:
Welcome to Ubuntu 18.04.6 LTS (GNU/Linux 5.4.0-1107-azure x86_64)

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

System information as of Sun May 14 10:11:39 UTC 2023

System load: 0.49           Processes:      102
Usage of /: 4.5% of 28.89GB Users logged in: 0
Memory usage: 20%           IP address for eth0: 10.5.0.4
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
```

Then I installed webmin on my Linux Server

```
AssignmentRadhika@AssignmentRadhika: ~
AssignmentRadhika@AssignmentRadhika:~$ wget http://www.webmin.com/jcameron-key.asc
--2023-05-14 10:14:44-- 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]
--2023-05-14 10:14:44-- 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]
--2023-05-14 10:14:44-- 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

2023-05-14 10:14:45 (166 MB/s) - 'jcameron-key.asc' saved [1320/1320]

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

Activate Windows
Go to Settings to activate Windows.



```
AssignmentRadhika@AssignmentRadhika:~$ sudo apt-key add jcameron-key.asc
OK
AssignmentRadhika@AssignmentRadhika:~$ sudo bash
root@AssignmentRadhika:~# echo "deb http://download.webmin.com/download/repository sarge contrib" >> /etc/apt/sources.list
root@AssignmentRadhika:~# exit
exit
AssignmentRadhika@AssignmentRadhika:~$
```

```
AssignmentRadhika@AssignmentRadhika:~$ exit
exit
AssignmentRadhika@AssignmentRadhika:~$ sudo apt update
Hit:1 http://azure.archive.ubuntu.com/ubuntu bionic InRelease
Get:2 http://azure.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu bionic-backports InRelease [83.3 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Get:5 http://azure.archive.ubuntu.com/ubuntu bionic/universe amd64 Packages [8570 kB]
Get:6 http://azure.archive.ubuntu.com/ubuntu bionic/universe Translation-en [4941 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu bionic/multiverse amd64 Packages [151 kB]
Get:8 http://azure.archive.ubuntu.com/ubuntu bionic/multiverse Translation-en [108 kB]
Get:9 http://azure.archive.ubuntu.com/ubuntu bionic-updates/main amd64 Packages [2990 kB]
Get:10 http://azure.archive.ubuntu.com/ubuntu bionic-updates/main Translation-en [545 kB]
Get:11 http://azure.archive.ubuntu.com/ubuntu bionic-updates/restricted amd64 Packages [1269 kB]
Get:12 http://azure.archive.ubuntu.com/ubuntu bionic-updates/restricted Translation-en [176 kB]
Get:13 http://azure.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 Packages [1903 kB]
Get:14 http://azure.archive.ubuntu.com/ubuntu bionic-updates/universe Translation-en [417 kB]
Get:15 http://azure.archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 Packages [25.6 kB]
Get:16 http://azure.archive.ubuntu.com/ubuntu bionic-updates/multiverse Translation-en [6088 B]
Get:17 http://azure.archive.ubuntu.com/ubuntu bionic-backports/main amd64 Packages [53.3 kB]
Get:18 http://azure.archive.ubuntu.com/ubuntu bionic-backports/main Translation-en [14.6 kB]
Get:19 http://azure.archive.ubuntu.com/ubuntu bionic-backports/universe amd64 Packages [18.1 kB]
Get:20 http://azure.archive.ubuntu.com/ubuntu bionic-backports/universe Translation-en [8668 B]
Ign:21 http://download.webmin.com/download/repository sarge InRelease
Get:22 http://download.webmin.com/download/repository sarge Release [16.9 kB]
Get:23 http://azure.archive.ubuntu.com/ubuntu bionic-security/main amd64 Packages [2660 kB]
Get:24 http://download.webmin.com/download/repository sarge Release.gpg [173 B]
Get:25 http://azure.archive.ubuntu.com/ubuntu bionic-security/main Translation-en [458 kB]
Get:26 http://azure.archive.ubuntu.com/ubuntu bionic-security/restricted amd64 Packages [1240 kB]
Get:27 http://azure.archive.ubuntu.com/ubuntu bionic-security/restricted Translation-en [172 kB]
Get:28 http://azure.archive.ubuntu.com/ubuntu bionic-security/universe amd64 Packages [1294 kB]
Get:29 http://azure.archive.ubuntu.com/ubuntu bionic-security/universe Translation-en [305 kB]
Get:30 http://azure.archive.ubuntu.com/ubuntu bionic-security/multiverse amd64 Packages [19.8 kB]
Get:31 http://azure.archive.ubuntu.com/ubuntu bionic-security/multiverse Translation-en [3928 B]
Get:32 http://download.webmin.com/download/repository sarge/contrib amd64 Packages [1432 B]
Fetched 27.6 MB in 6s (4685 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
1 package can be upgraded. Run 'apt list --upgradable' to see it.
AssignmentRadhika@AssignmentRadhika:~$
```

Activate Windows
Go to Settings to activate Windows.

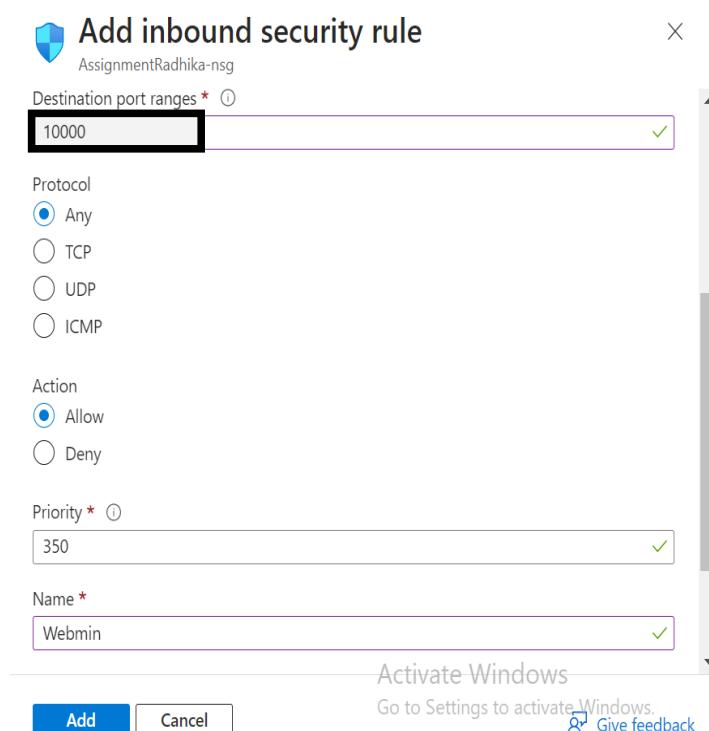


```

AssignmentRadhika@AssignmentRadhika: ~
AssignmentRadhika@AssignmentRadhika:~$ sudo apt install webmin
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
libalgorithm-c3-perl libauthen-pam-perl libb-hooks-endofscope-perl libb-hooks-op-check-perl libclass-c3-perl libclass-c3-xs-perl libclass-data-inheritable-perl
libclass-inspector-perl libclass-method-modifiers-perl libclass-singleton-perl libdata-optlist-perl libdatetime-locale-perl libdatetime-perl libdatetime-timezone-perl
libdevel-callchecker-perl libdevel-caller-perl libdevel-lexalias-perl libdevel-stacktrace-perl libdynaloader-functions-perl libeval-closure-perl libexception-class-perl
libfile-sharedir-perl libio-pty-perl libmodule-implementation-perl libmodule-runtime-perl libmro-compat-perl libnamespace-autoclean-perl libnamespace-clean-perl
libnet-ssleay-perl libpackage-stash-xs-perl libpadwalker-perl libparams-classify-perl libparams-util-perl libparams-validationcompiler-perl
libreadonly-perl libref-util-perl libref-util-xs-perl librole-tiny-perl libspecio-perl libsub-exporter-perl libsub-exporter-progressive-perl libsub-identify-perl
libsub-install-perl libsub-name-perl libsub-quote-perl libtry-tiny-perl libvariable-magic-perl perl-openssl-defaults unzip
Suggested packages:
libscalar-number-perl libtest-fatal-perl zip
The following NEW packages will be installed:
libalgorithm-c3-perl libauthen-pam-perl libb-hooks-endofscope-perl libb-hooks-op-check-perl libclass-c3-perl libclass-c3-xs-perl libclass-data-inheritable-perl
libclass-inspector-perl libclass-method-modifiers-perl libclass-singleton-perl libdata-optlist-perl libdatetime-locale-perl libdatetime-perl libdatetime-timezone-perl
libdevel-callchecker-perl libdevel-caller-perl libdevel-lexalias-perl libdevel-stacktrace-perl libdynaloader-functions-perl libeval-closure-perl libexception-class-perl
libfile-sharedir-perl libio-pty-perl libmodule-implementation-perl libmodule-runtime-perl libmro-compat-perl libnamespace-autoclean-perl libnamespace-clean-perl
libnet-ssleay-perl libpackage-stash-xs-perl libpadwalker-perl libparams-classify-perl libparams-util-perl libparams-validationcompiler-perl
libreadonly-perl libref-util-perl libref-util-xs-perl librole-tiny-perl libspecio-perl libsub-exporter-perl libsub-exporter-progressive-perl libsub-identify-perl
libsub-install-perl libsub-name-perl libsub-quote-perl libtry-tiny-perl libvariable-magic-perl perl-openssl-defaults unzip webmin
0 upgraded, 51 newly installed, 0 to remove and 1 not upgraded.
Need to get 38.0 MB of archives.
After this operation, 222 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://azure.archive.ubuntu.com/ubuntu bionic/main amd64 perl-openssl-defaults amd64 3build1 [7012 B]
Get:2 http://azure.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libnet-ssleay-perl amd64 1.84-1ubuntu0.2 [283 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu bionic/universe amd64 libauthen-pam-perl amd64 0.16-3build5 [24.2 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu bionic/main amd64 libbio-pty-perl amd64 1:1.08-1.1build4 [30.1 kB]
Get:5 http://azure.archive.ubuntu.com/ubuntu bionic-updates/main amd64 unzip amd64 5.0-21ubuntu1.2 [168 kB]
Get:6 http://azure.archive.ubuntu.com/ubuntu bionic/universe amd64 libalgorithm-c3-perl all 0.10-1 [11.3 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu bionic/main amd64 libb-hooks-op-check-perl amd64 0.22-1 [10.1 kB]
Get:8 http://azure.archive.ubuntu.com/ubuntu bionic/main amd64 libdynaloader-functions-perl all 0.003-1 [11.9 kB]
Get:9 http://azure.archive.ubuntu.com/ubuntu bionic/main amd64 libdevel-callchecker-perl amd64 0.007-2build1 [14.1 kB]
Get:10 http://azure.archive.ubuntu.com/ubuntu bionic/main amd64 libparams-classify-perl amd64 0.015-1 [21.2 kB]
Get:11 http://azure.archive.ubuntu.com/ubuntu bionic/main amd64 libmodule-runtime-perl all 0.016-1 [16.2 kB]
Get:12 http://azure.archive.ubuntu.com/ubuntu bionic/main amd64 libtry-tiny-perl all 0.30-1 [20.5 kB]
Get:13 http://azure.archive.ubuntu.com/ubuntu bionic/main amd64 libmodule-implementation-perl all 0.09-1 [12.2 kB]
Get:14 http://azure.archive.ubuntu.com/ubuntu bionic/main amd64 libsub-exporter-progressive-perl all 0.001013-1 [6784 B]
Get:15 http://azure.archive.ubuntu.com/ubuntu bionic/main amd64 libvariable-magic-perl amd64 0.62-1 [34.5 kB]

```

Finally, webmin is installed on my Linux server so I configured network firewall setting in order to allow access to the Webmin Control Panel



Feedback Attach network interface Detach network interface

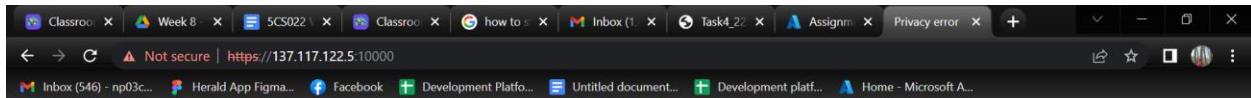
Inbound port rules Outbound port rules Application security groups Load balancing

Network security group AssignmentRadhika-nsg (attached to network interface: assignmenttradhika67)
Impacts 0 subnets, 1 network interfaces

Add inbound port rule

Priority	Name	Port	Protocol	Source	Destination	Action
300	⚠ SSH	22	TCP	Any	Any	✓
320	HTTPS	443	TCP	Any	Any	✓
340	HTTP	80	TCP	Any	Any	✓
350	Webmin	10000	Any	Any	Any	✓
65000	AllowVnetInBound	Any	Any	VirtualNetwork	VirtualNetwork	✓
65001	AllowAzureLoadBalancerInBound	Any	Any	AzureLoadBalancer	Any	✓
65500	DenyAllInBound	Any	Any	Any	Any	✗

We can see these rules in virtual machine. After that I used my web browser and URL: <https://137.117.122.5:10000>. The web browser complained about website's security certificate so I clicked on "continue to this webpage (not recommended)" by going in advanced



Your connection is not private

Attackers might be trying to steal your information from **137.117.122.5** (for example, passwords, messages, or credit cards). [Learn more](#)

NET::ERR_CERT_AUTHORITY_INVALID

To get Chrome's highest level of security, [turn on enhanced protection](#)

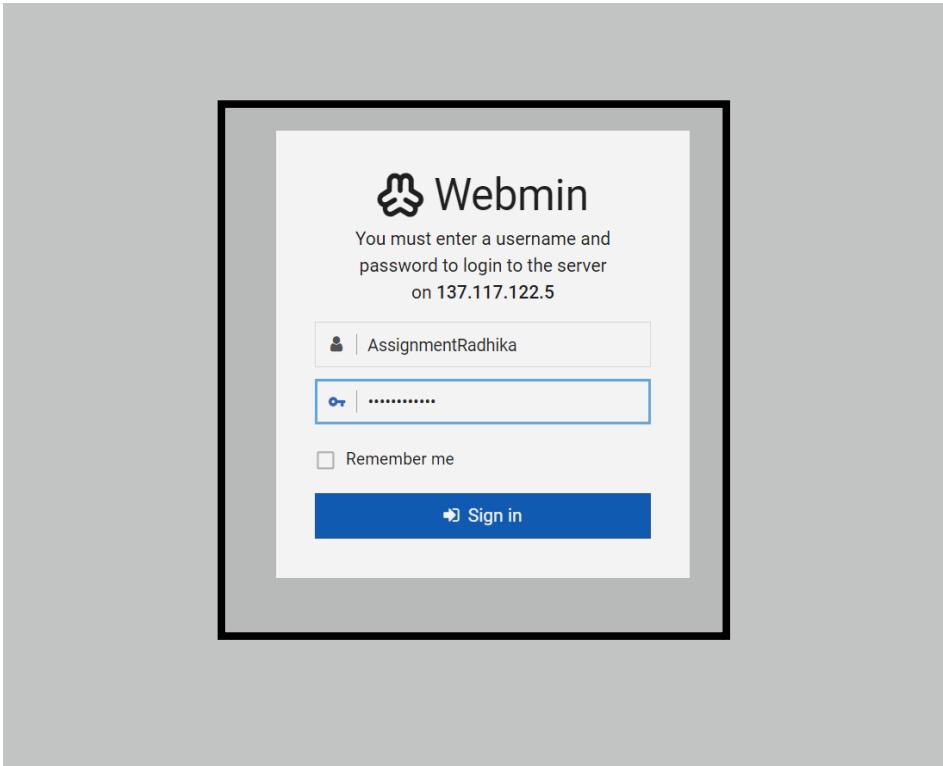
Advanced

Back to safety

Activate Windows
Go to Settings to activate Windows.



I logged into webmin with my linux username and password



Here is how webmin dashboard looks

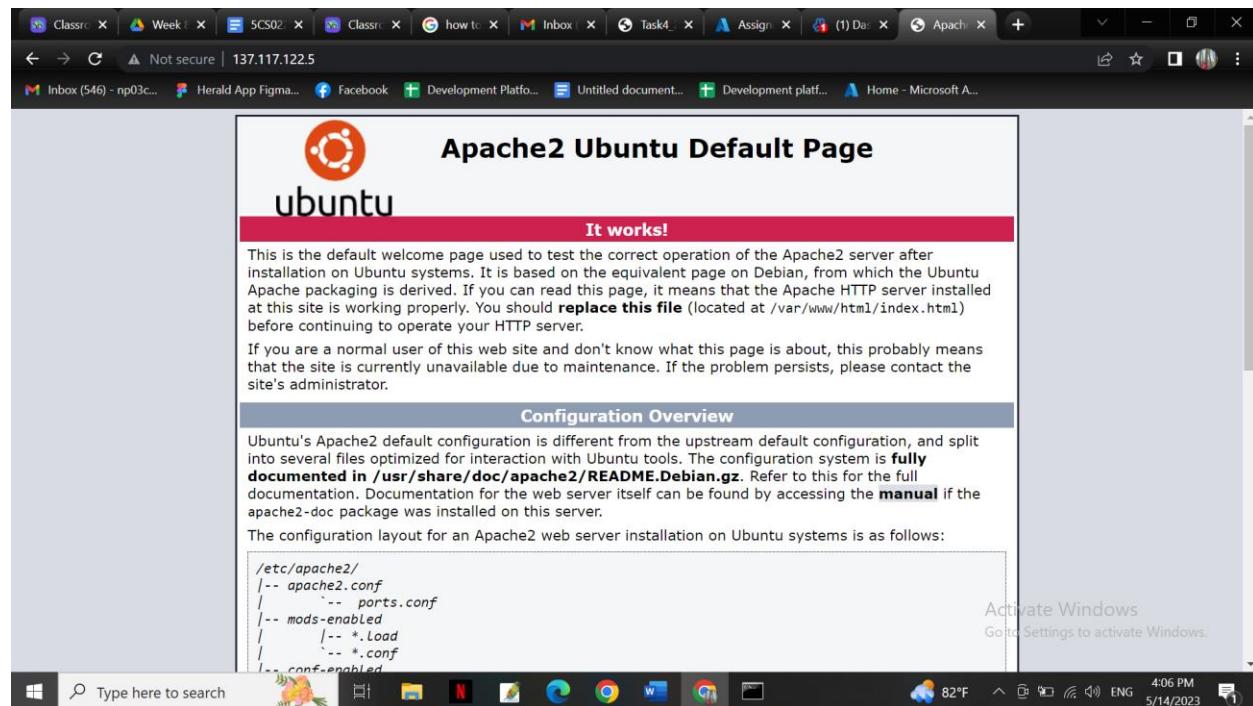
A screenshot of the Webmin dashboard. The left sidebar is titled "Webmin" and lists categories like System, Servers, Tools, Networking, Hardware, Cluster, Un-used Modules, and Refresh Modules. The main panel is titled "System Information" and features three donut charts: CPU (73%), REAL MEMORY (36%), and LOCAL DISK SPACE (5%). Below the charts is a table of system statistics:

System hostname	AssignmentRadhika.y5v5wny3ejre5h3rfqkadoygqc.bx.internal.cloudapp.net (10.5.0.4)
Operating system	Ubuntu Linux 18.04.6
Webmin version	2.021
Authentic theme version	20.21
Time on system	Sunday, May 14, 2023 10:19 AM
Kernel and CPU	Linux 5.4.0-1107-azure on x86_64
Processor information	Intel(R) Xeon(R) Platinum 8272CL CPU @ 2.60GHz, 1 cores
System uptime	10 minutes
Running processes	102
CPU load averages	0.074 (1 min) 0.31 (5 mins) 0.15 (15 mins)

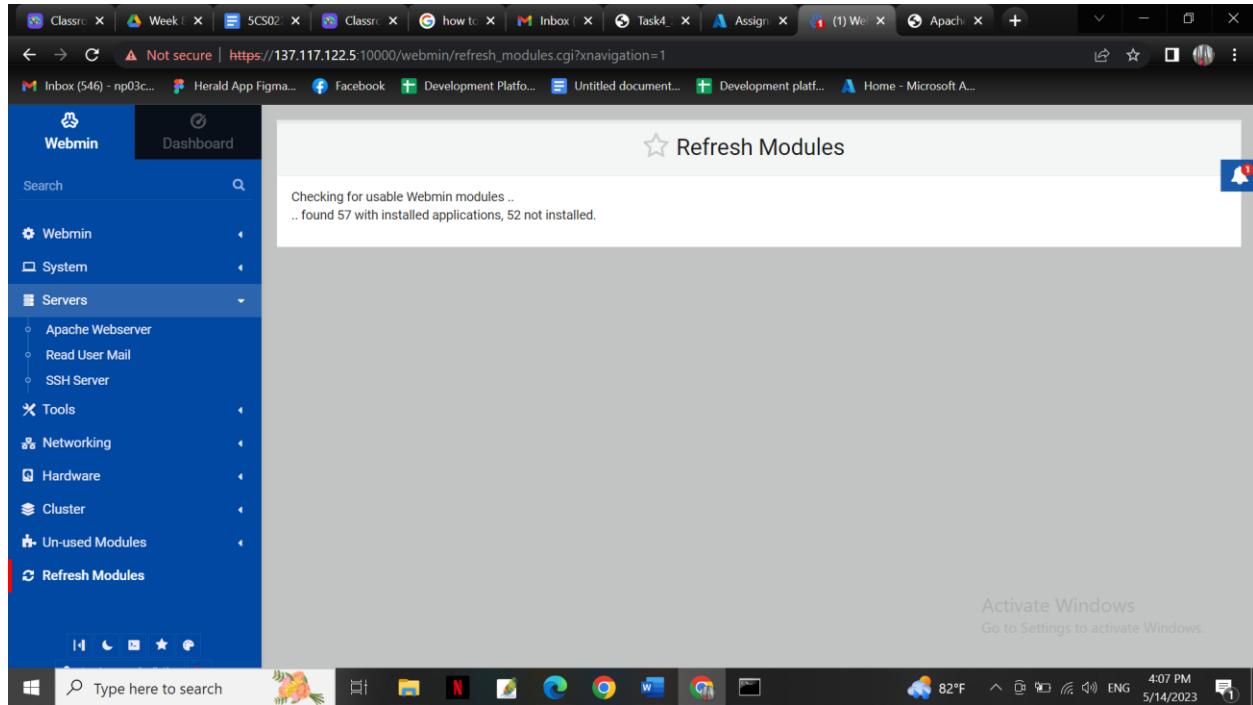
A message at the bottom right says "Activate Windows" and "Go to Settings to activate Windows." The taskbar at the bottom shows various open windows and the date/time as 4:04 PM on 5/14/2023.

Then I installed apache web server

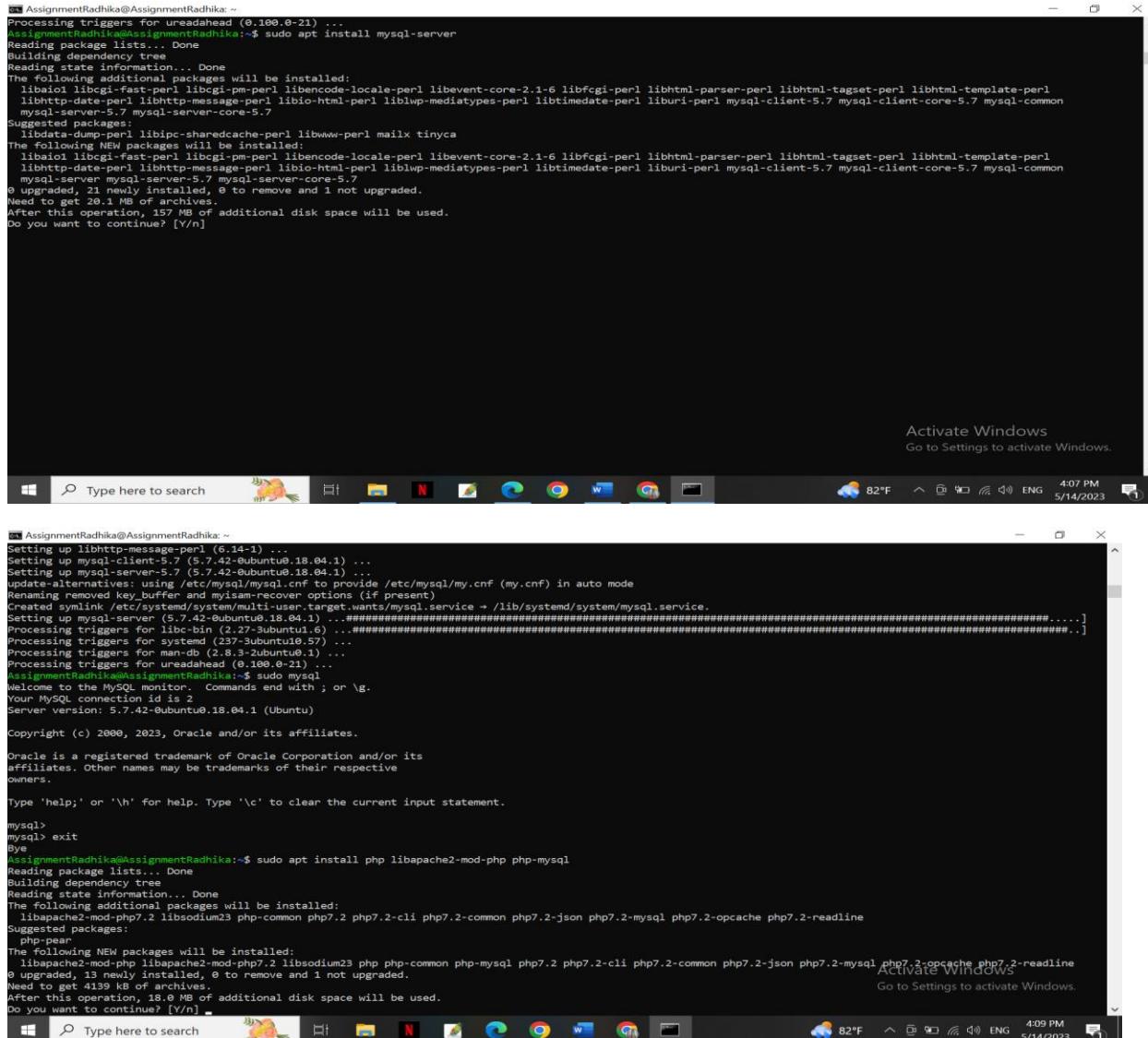
```
AssignmentRadhika@AssignmentRadhika: ~
AssignmentRadhika@AssignmentRadhika:~$ sudo apt install apache2
Reading package lists... Done
Building dependency tree...
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap liblbu5.2-0 ssl-cert
Suggested packages:
  www-browser apache2-doc apache2-suexec-pristine | apache2-suexec-custom openssl-blacklist
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap liblbu5.2-0 ssl-cert
0 upgraded, 10 newly installed, 0 to remove and 1 not upgraded.
Need to get 1730 kB of archives.
After this operation, 7800 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://azure.archive.ubuntu.com/ubuntu bionic/main amd64 libapr1 amd64 1.6.3-2 [90.9 kB]
Get:2 http://azure.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libaprutil1 amd64 1.6.1-2ubuntu0.1 [84.6 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.1-2ubuntu0.1 [10.6 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libaprutil1-ldap amd64 1.6.1-2ubuntu0.1 [8752 B]
Get:5 http://azure.archive.ubuntu.com/ubuntu bionic/main amd64 liblbu5.2-0 amd64 5.2.4-1.1build1 [108 kB]
Get:6 http://azure.archive.ubuntu.com/ubuntu bionic-updates/main amd64 apache2-bin amd64 2.4.29-1ubuntu4.27 [1871 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu bionic-updates/main amd64 apache2-utils amd64 2.4.29-1ubuntu4.27 [83.3 kB]
Get:8 http://azure.archive.ubuntu.com/ubuntu bionic-updates/main amd64 apache2-data all 2.4.29-1ubuntu4.27 [160 kB]
Get:9 http://azure.archive.ubuntu.com/ubuntu bionic-updates/main amd64 apache2 amd64 2.4.29-1ubuntu4.27 [95.1 kB]
Get:10 http://azure.archive.ubuntu.com/ubuntu bionic/main amd64 ssl-cert all 1.0.39 [17.0 kB]
Fetched 1730 kB in 0s (33.4 MB/s)
Preconfiguring packages ...
Selecting previously unselected package libapr1:amd64.
(Reading database ... 89194 files and directories currently installed.)
Preparing to unpack .../0-libapr1_1.6.3-2_amd64.deb ...
Unpacking libapr1:amd64 (1.6.3-2) ...
Selecting previously unselected package libaprutil1:amd64.
Preparing to unpack .../1-libaprutil1_1.6.1-2ubuntu0.1_amd64.deb ...
Unpacking libaprutil1:amd64 (1.6.1-2ubuntu0.1) ...
Selecting previously unselected package libaprutil1-dbd-sqlite3:amd64.
Preparing to unpack .../2-libaprutil1-dbd-sqlite3_1.6.1-2ubuntu0.1_amd64.deb ...
Unpacking libaprutil1-dbd-sqlite3:amd64 (1.6.1-2ubuntu0.1) ...
Selecting previously unselected package libaprutil1-ldap:amd64.
Preparing to unpack .../3-libaprutil1-ldap_1.6.1-2ubuntu0.1_amd64.deb ...
Unpacking libaprutil1-ldap:amd64 (1.6.1-2ubuntu0.1) ...
Selecting previously unselected package liblbu5.2-0:amd64.
Preparing to unpack .../4-liblbu5.2-0_5.2.4-1.1build1_amd64.deb ...
Activate Windows
Go to Settings to activate Windows.
82°F 4:05 PM 5/14/2023
```



After installing apache the we can see apache webserver in webmin server too.



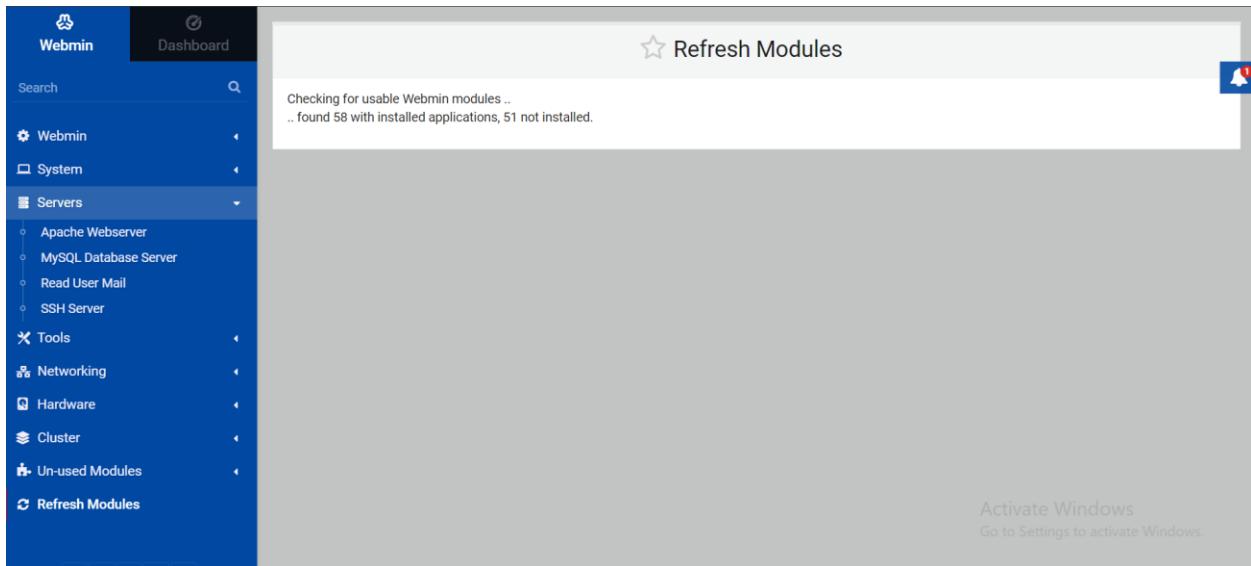
Then I installed mysql database server



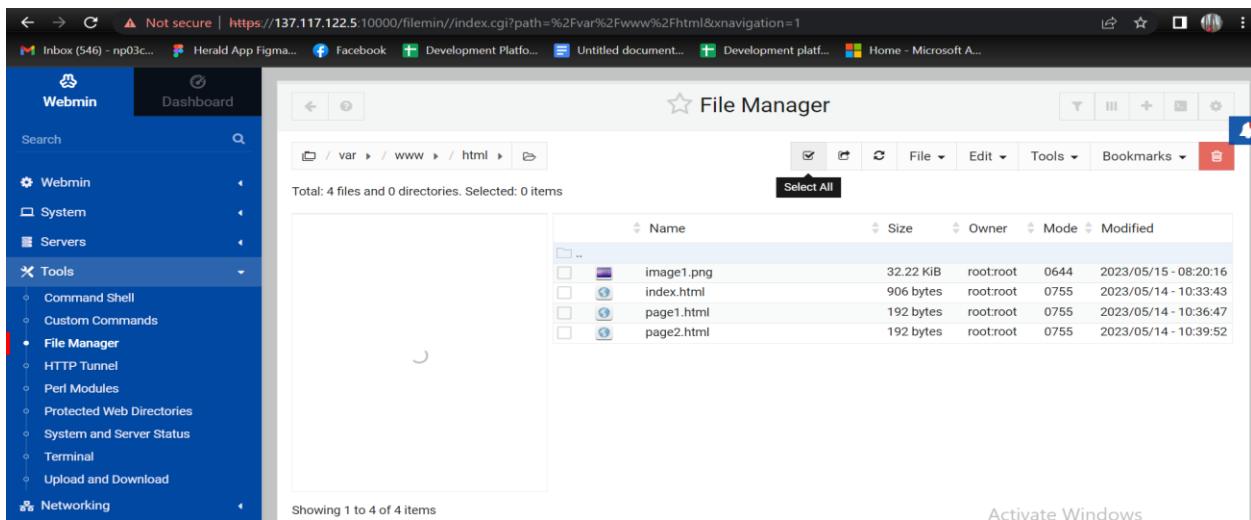
```
AssignmentRadhika@AssignmentRadhika:~ Processing triggers for ureadahead (0.100.0-21) ... AssignmentRadhika:~$ sudo apt install mysql-server Reading package lists... Done Building dependency tree Reading state information... Done The following additional packages will be installed: libaio1 libcgi-fast-perl libcgipm-perl libencode-locale-perl libevent-core-2.1-6 libfcgi-perl libhtml-parser-perl libhtml-tagset-perl libhtml-template-perl libhttp-date-perl libhttp-message-perl libio-html-perl liblwp-mediatypes-perl libtime-Perl liburi-perl mysql-client-5.7 mysql-client-core-5.7 mysql-common mysql-server mysql-server-5.7 mysql-server-core-5.7 Suggested packages: libdata-dump-perl libipc-sharedcache-perl libwww-perl mailx tinyca The following NEW packages will be installed: libaio1 libcgi-fast-perl libcgipm-perl libencode-locale-perl libevent-core-2.1-6 libfcgi-perl libhtml-parser-perl libhtml-tagset-perl libhtml-template-perl libhttp-date-perl libhttp-message-perl libio-html-perl liblwp-mediatypes-perl libtime-Perl liburi-perl mysql-client-5.7 mysql-client-core-5.7 mysql-common mysql-server mysql-server-5.7 mysql-server-core-5.7 0 upgraded, 13 newly installed, 0 to remove and 1 not upgraded. Need to get 28.1 MB of archives. After this operation, 157 MB of additional disk space will be used. Do you want to continue? [Y/n]
```

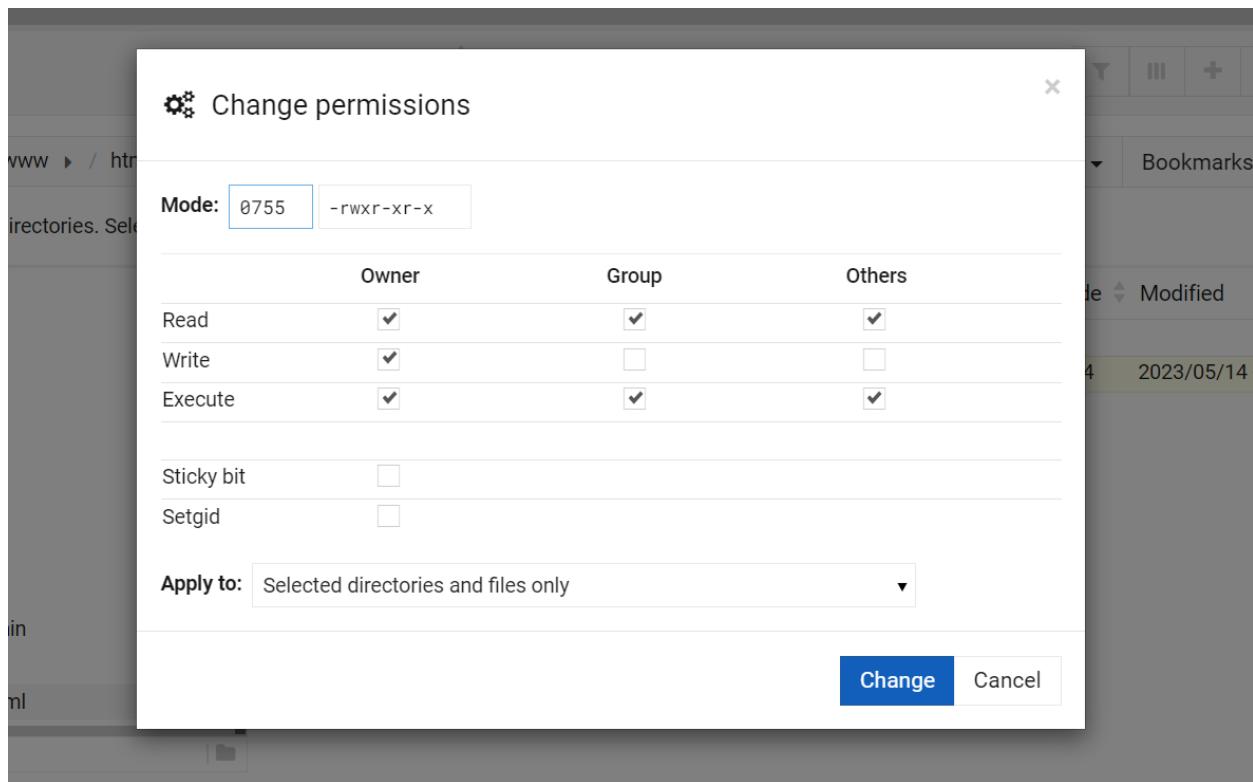
```
AssignmentRadhika@AssignmentRadhika:~ Setting up libhttp-message-perl (6.14-1) ... Setting up mysql-client-5.7 (5.7.42-0ubuntu0.18.04.1) ... Setting up mysql-server-5.7 (5.7.42-0ubuntu0.18.04.1) ... update-alternatives: using /etc/mysql/mysql.cnf to provide /etc/mysql/my.cnf (my.cnf) in auto mode Renaming removed key_buffer and myisam-recover options (if present) Created symlink /etc/systemd/system/mysql-user.target.wants/mysql.service → /lib/systemd/system/mysql.service. Setting up mysql-server-5.7 (5.7.42-0ubuntu0.18.04.1) ... Processing triggers for libc-bin (2.27-3ubuntu1.6) ... Processing triggers for systemd (237-3ubuntu0.57) ... Processing triggers for man-db (2.8.3-2ubuntu0.1) ... Processing triggers for ureadahead (0.100.0-21) ... AssignmentRadhika@AssignmentRadhika:~$ sudo mysql Welcome to the MySQL monitor. Commands end with ; or \g. Your MySQL connection id is 2 Server version: 5.7.42-0ubuntu0.18.04.1 (Ubuntu) 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> mysql> exit Bye AssignmentRadhika@AssignmentRadhika:~$ sudo apt install php libapache2-mod-php php-mysql Reading package lists... Done Building dependency tree Reading state information... Done The following additional packages will be installed: libapache2-mod-php7.2 libodium23 php-common php7.2 php7.2-cli php7.2-common php7.2-json php7.2-mysql php7.2-opcache php7.2-readline Suggested packages: php-pecl The following NEW packages will be installed: libapache2-mod-php libapache2-mod-php7.2 libodium23 php-common php7.2 php7.2-cli php7.2-common php7.2-json php7.2-mysql php7.2-opcache php7.2-readline 0 upgraded, 13 newly installed, 0 to remove and 1 not upgraded. Need to get 4139 kB of archives. After this operation, 18.0 MB of additional disk space will be used. Do you want to continue? [Y/n]
```

After installing mysql the we can see Mysql Database Server in webmin server too.



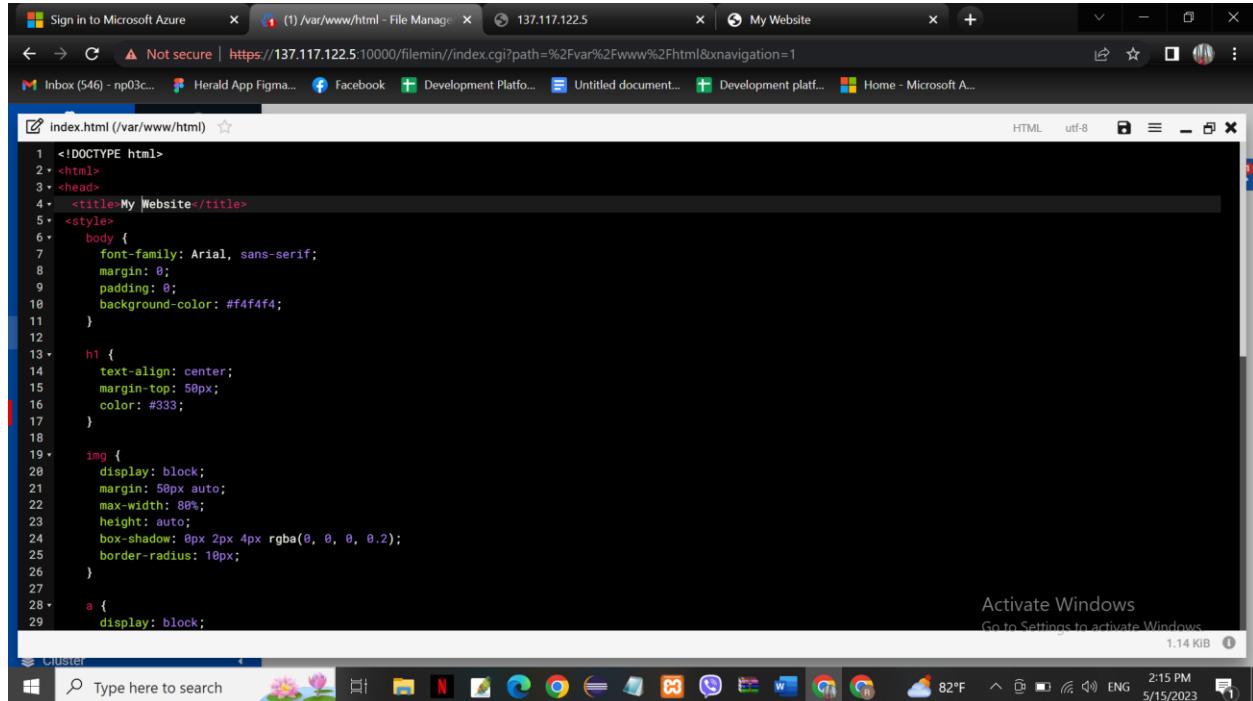
Then I created 3 html files named as index.html, page1.html and page2.html and changed their permission as shown below





I added code to each html file as shown below

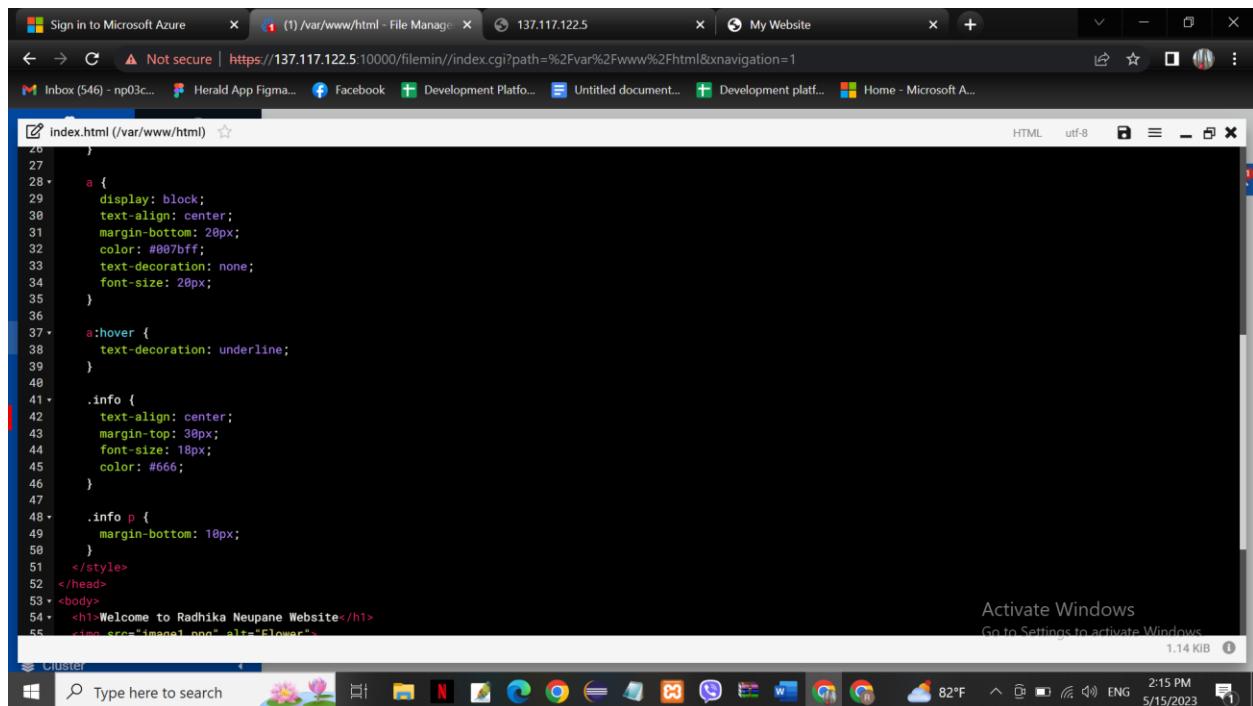
For index.html



The screenshot shows the Microsoft Edge browser window with the URL <https://137.117.122.5:10000/filemin//index.cgi?path=%2Fvar%2Fwww%2Fhtml&xnavigation=1>. The page title is "My Website". The content area displays the following HTML and CSS code:

```
<!DOCTYPE html>
<html>
<head>
<title>My Website</title>
<style>
body {
    font-family: Arial, sans-serif;
    margin: 0;
    padding: 0;
    background-color: #f4f4f4;
}
h1 {
    text-align: center;
    margin-top: 50px;
    color: #333;
}
img {
    display: block;
    margin: 50px auto;
    max-width: 80%;
    height: auto;
    box-shadow: 0px 2px 4px rgba(0, 0, 0, 0.2);
    border-radius: 10px;
}
a {
    display: block;
}
```

The status bar at the bottom right indicates "Activate Windows" and "Go to Settings to activate Windows". The taskbar below shows various pinned icons.



The screenshot shows the Microsoft Edge browser window with the same URL and page title. The content area displays the following updated HTML and CSS code:

```
        }
    }
    a {
        display: block;
        text-align: center;
        margin-bottom: 20px;
        color: #007bff;
        text-decoration: none;
        font-size: 20px;
    }
    a:hover {
        text-decoration: underline;
    }
.info {
    text-align: center;
    margin-top: 30px;
    font-size: 18px;
    color: #6666;
}
.info p {
    margin-bottom: 10px;
}
</style>
</head>
<body>
<h1>Welcome to Radhika Neupane Website</h1>

```

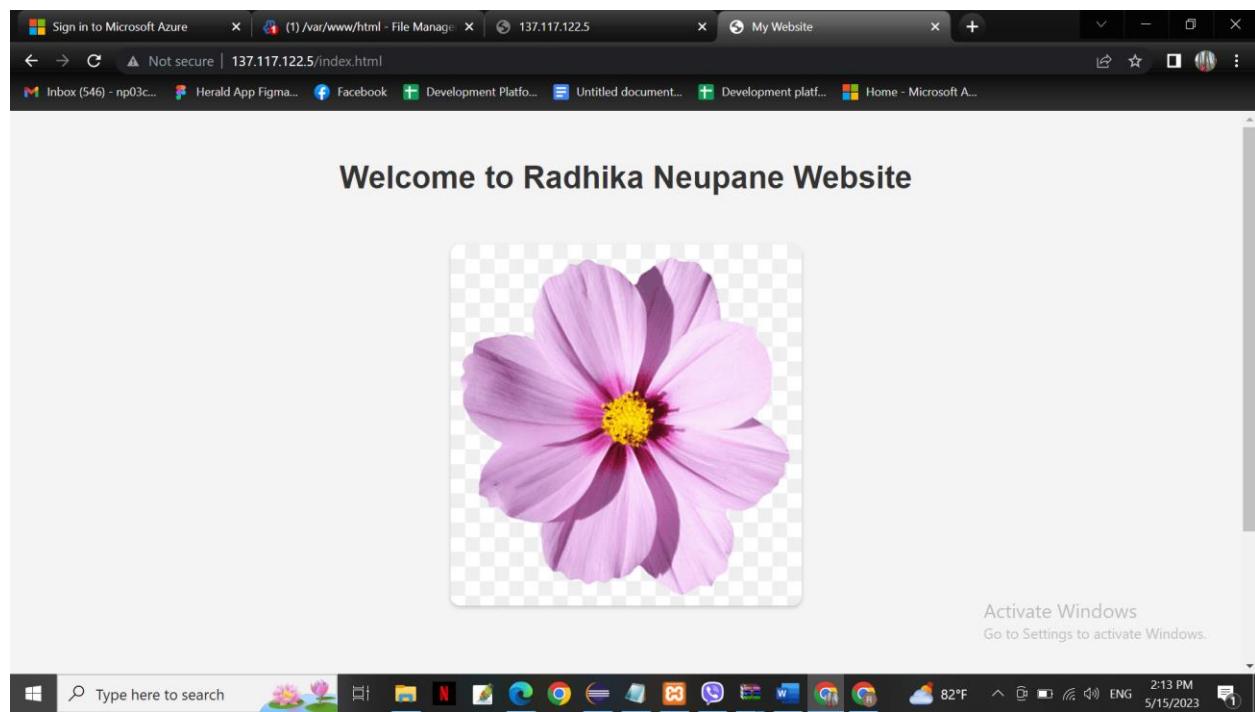
The status bar at the bottom right indicates "Activate Windows" and "Go to Settings to activate Windows". The taskbar below shows various pinned icons.

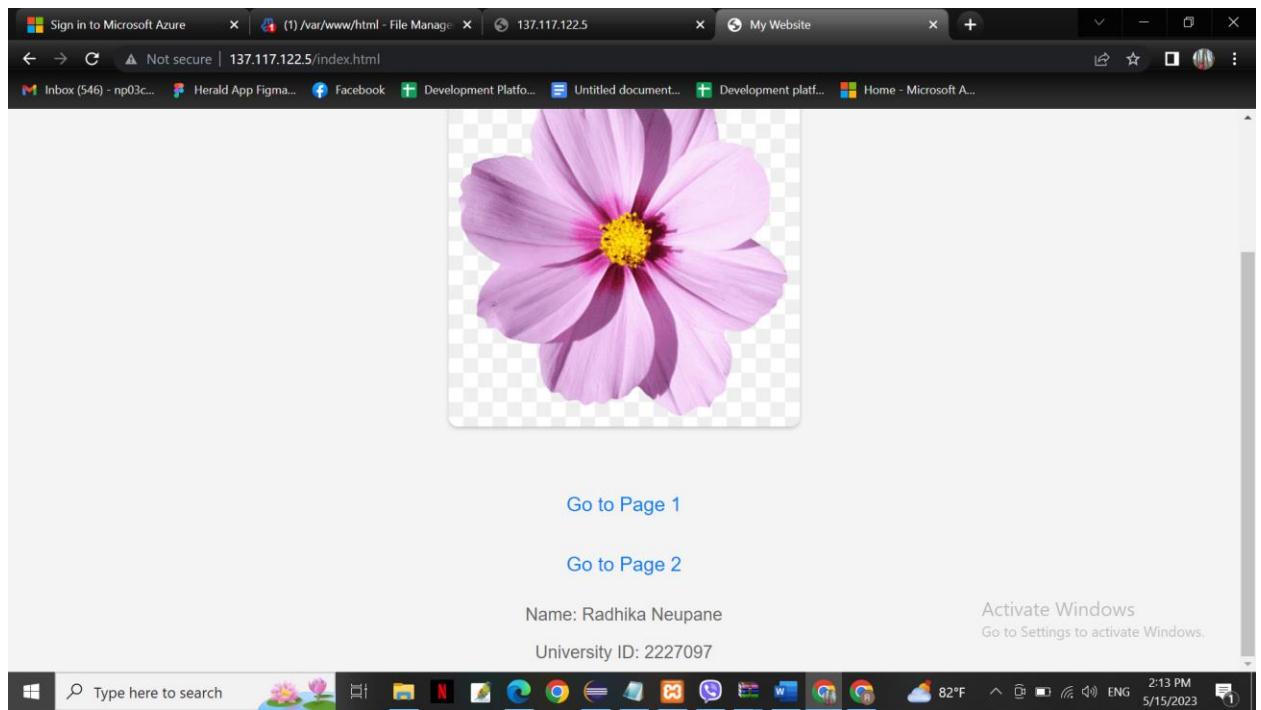
```
38     text-decoration: underline;
39   }
40
41 .info {
42   text-align: center;
43   margin-top: 30px;
44   font-size: 18px;
45   color: #666;
46 }
47
48 .info p {
49   margin-bottom: 10px;
50 }
</style>
</head>
<body>
<h1>Welcome to Radhika Neupane Website</h1>

<br>
<a href="page1.html">Go to Page 1</a>
<br>
<a href="page2.html">Go to Page 2</a>
<div class="info">
<p>Name: Radhika Neupane</p>
<p>University ID: 2227097</p>
</div>
</body>
</html>
```

Activate Windows
Go to Settings to activate Windows.
1.14 KIB

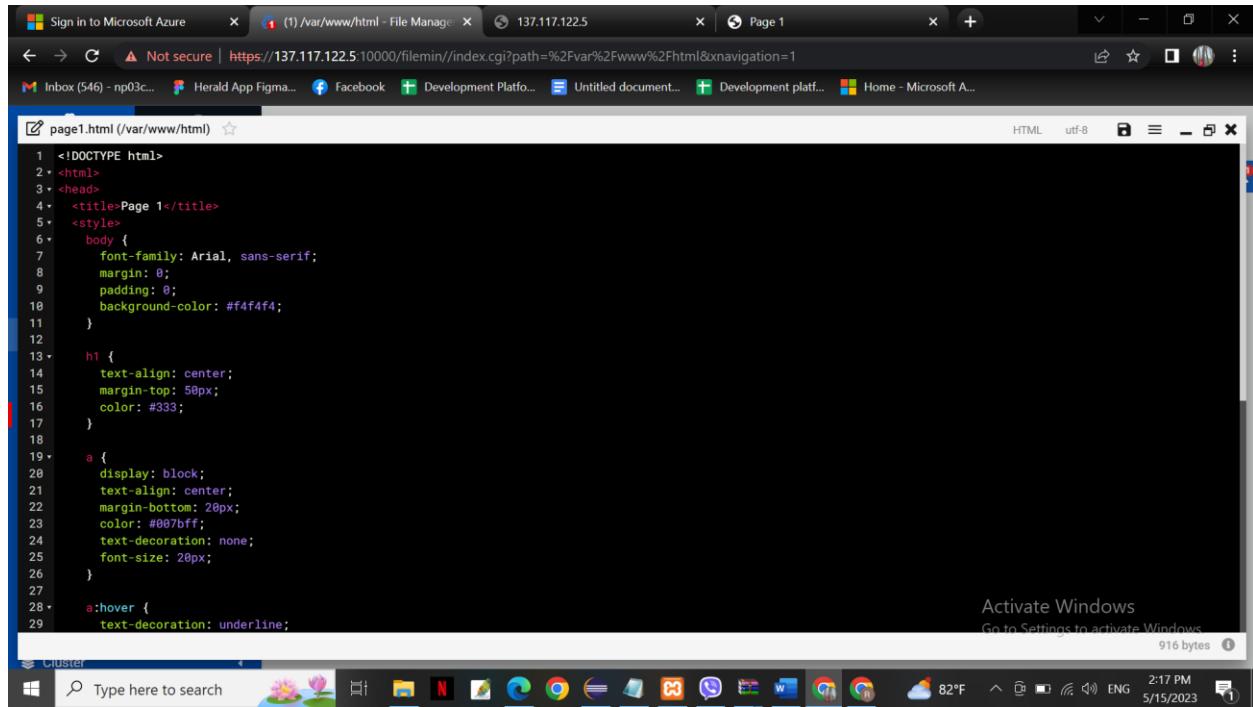
Here is how index.html looks





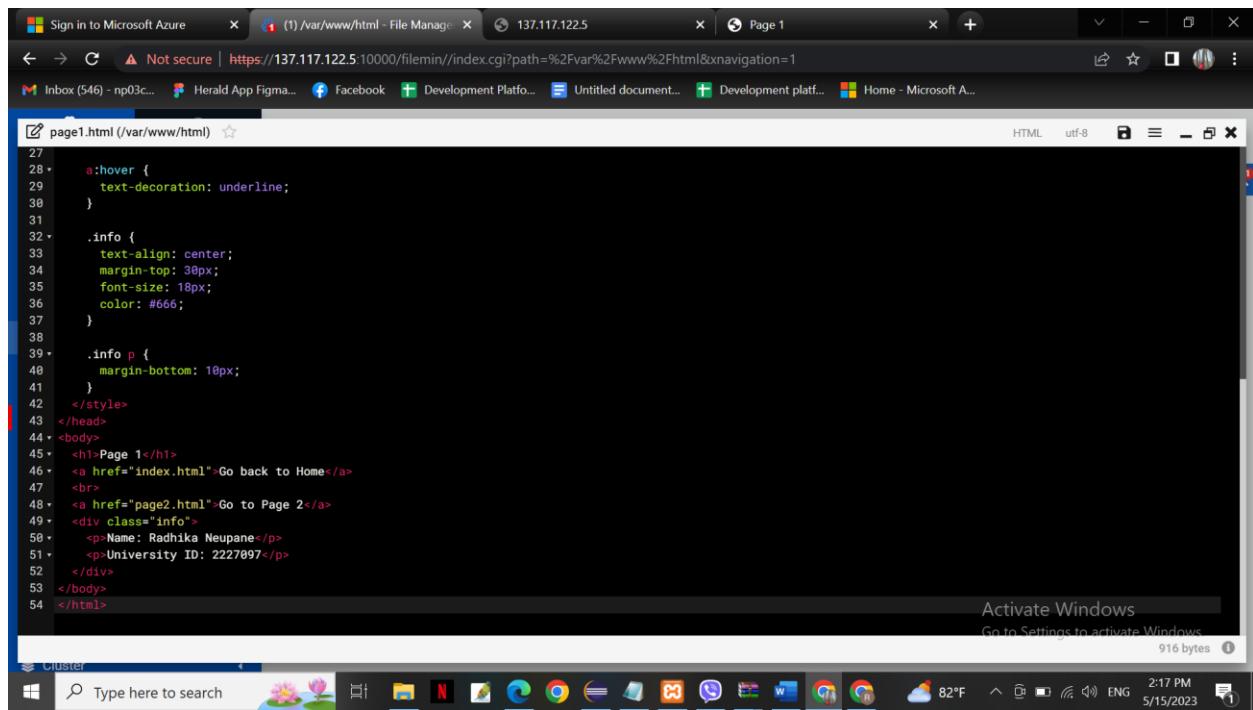
<http://137.117.122.5/index.html>

For page1.html



```
1 <!DOCTYPE html>
2 <html>
3 <head>
4   <title>Page 1</title>
5   <style>
6     body {
7       font-family: Arial, sans-serif;
8       margin: 0;
9       padding: 0;
10      background-color: #f4f4f4;
11    }
12
13   h1 {
14     text-align: center;
15     margin-top: 50px;
16     color: #333;
17   }
18
19   a {
20     display: block;
21     text-align: center;
22     margin-bottom: 20px;
23     color: #007bff;
24     text-decoration: none;
25     font-size: 20px;
26   }
27
28   a:hover {
29     text-decoration: underline;
30 }
```

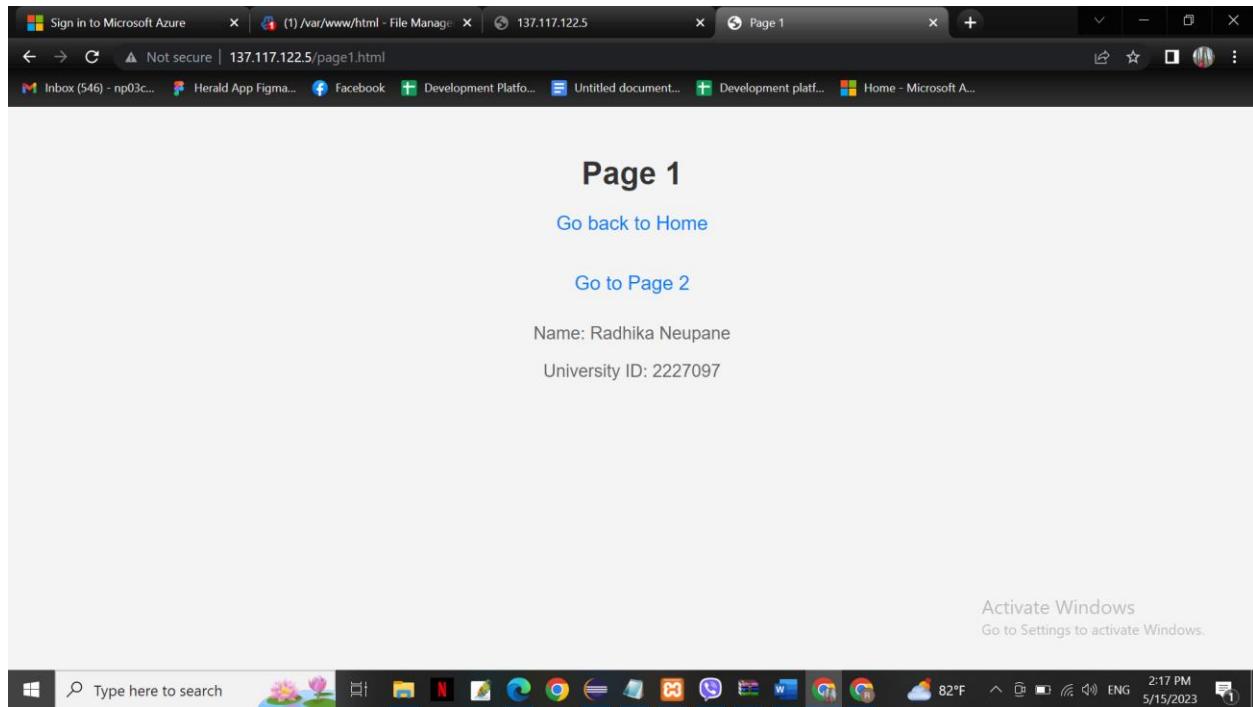
Activate Windows
Go to Settings to activate Windows
916 bytes



```
27
28   a:hover {
29     text-decoration: underline;
30   }
31
32   .info {
33     text-align: center;
34     margin-top: 30px;
35     font-size: 18px;
36     color: #666;
37   }
38
39   .info p {
40     margin-bottom: 10px;
41   }
42   </style>
43 </head>
44 <body>
45   <h1>Page 1</h1>
46   <a href="index.html">Go back to Home</a>
47   <br>
48   <a href="page2.html">Go to Page 2</a>
49   <div class="info">
50     <p>Name: Radhika Neupane</p>
51     <p>University ID: 2227097</p>
52   </div>
53 </body>
54 </html>
```

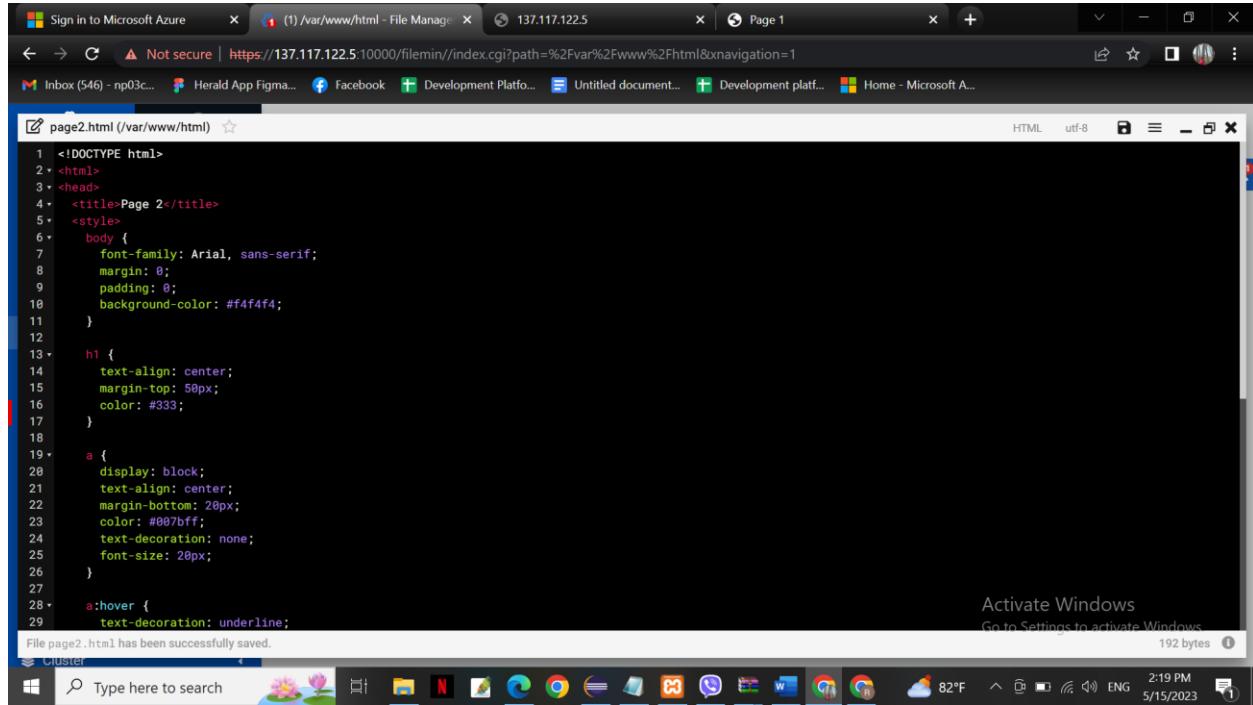
Activate Windows
Go to Settings to activate Windows
916 bytes

Here is how page1.html looks



<http://137.117.122.5/page1.html>

For page2.html



```
1 <!DOCTYPE html>
2 <html>
3 <head>
4   <title>Page 2</title>
5   <style>
6     body {
7       font-family: Arial, sans-serif;
8       margin: 0;
9       padding: 0;
10      background-color: #f4f4f4;
11    }
12
13   h1 {
14     text-align: center;
15     margin-top: 50px;
16     color: #333;
17   }
18
19   a {
20     display: block;
21     text-align: center;
22     margin-bottom: 20px;
23     color: #007bff;
24     text-decoration: none;
25     font-size: 20px;
26   }
27
28   a:hover {
29     text-decoration: underline;
30 }
```

File page2.html has been successfully saved.

Activate Windows
Go to Settings to activate Windows
192 bytes

Sign in to Microsoft Azure (1) /var/www/html - File Manager 137.117.122.5 Page 1

Not secure | https://137.117.122.5:10000/filemin/index.cgi?path=%2Fvar%2Fwww%2Fhtml&navigation=1

Inbox (546) - np03c... Herald App Figma... Facebook Development Platfo... Untitled document... Development platf... Home - Microsoft A...

page2.html (/var/www/html)

```
27
28+   a:hover {
29+     text-decoration: underline;
30+   }
31
32+ .info {
33+   text-align: center;
34+   margin-top: 30px;
35+   font-size: 18px;
36+   color: #666;
37+ }
38
39+ .info p {
40+   margin-bottom: 10px;
41+ }
42 </style>
43 </head>
44 <body>
45 <h1>Page 2</h1>
46 <a href="index.html">Go back to Home</a>
47 <br>
48 <a href="page1.html">Go to Page 1</a>
49 <div class="info">
50   <p>Name: Radhika Neupane</p>
51   <p>University ID: 2227097</p>
52 </div>
53 </body>
54 </html>
```

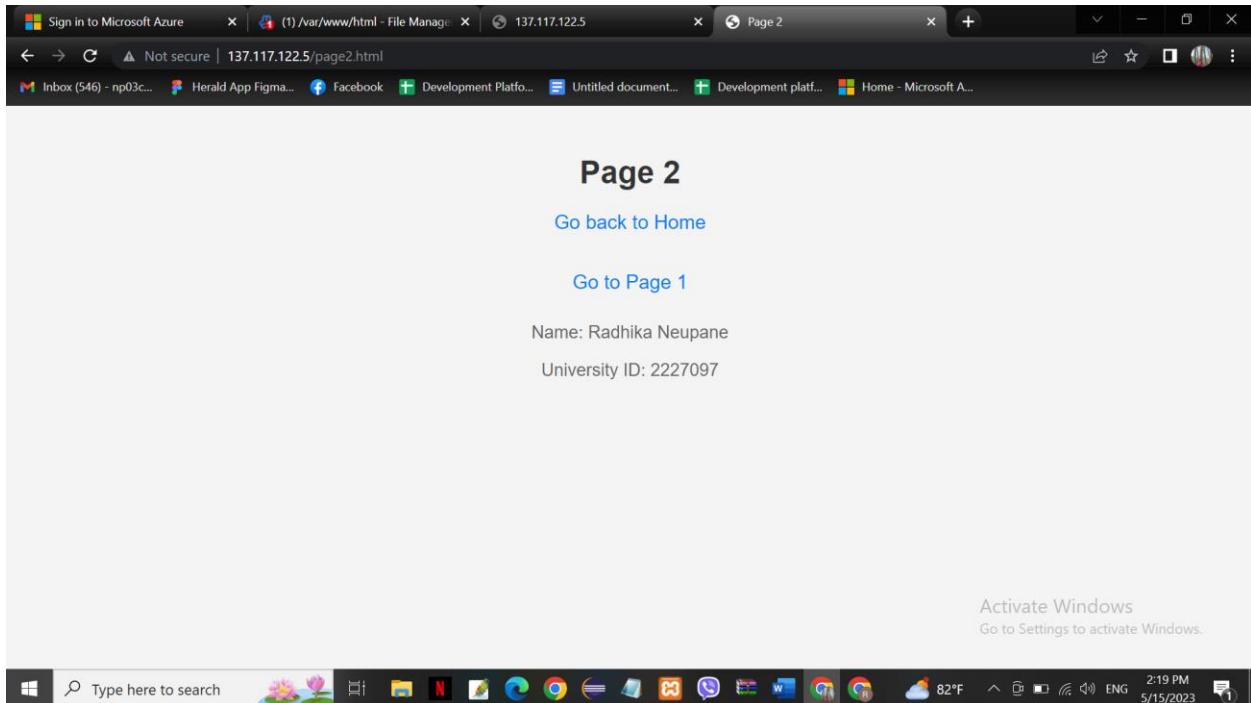
Activate Windows
Go to Settings to activate Windows
916 bytes

Type here to search

Cluster

82°F 2:19 PM 5/15/2023

Here is how page2.html looks



<http://137.117.122.5/page2.html>