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Introduction

Opening the VM-

The screenshot shows the Microsoft Azure portal interface. The user is viewing the 'Virtual machines' list. A single VM, 'MyWebServer', is listed. The 'Public IP address' column for this VM contains the value '172.164.240.153'. A red box highlights this IP address, and a red callout points to it with the text 'Virtual Machine Public IP'. A red arrow also points from the text 'My Virtual Machine' to the VM row.

| Name | Subscription | Resource Group | Location | Status | Operating system | Size | Public IP address | Disk | Update status |
|-------------|----------------------|-------------------|-----------|---------|------------------|--------------|-------------------|------|---------------------|
| MyWebServer | Azure subscription 1 | MyWebServer_group | UAE North | Running | Linux | Standard_B1s | 172.164.240.153 | 1 | Enable periodic ... |

Showing 1 - 1 of 1. Display count: auto ▾

The screenshot shows the detailed view of the 'MyWebServer' virtual machine. On the right side of the screen, there is a large red box highlighting the 'Cloud Shell' icon in the top navigation bar. A red callout points to this icon with the text 'Open the cloud shell to start creation of the website on the VM'. The main content area displays the VM's configuration details under the 'Essentials' tab. The 'Networking' tab is also visible on the right.

| Resource group (move) | MyWebServer_group | Operating system | : Linux (ubuntu 22.04) |
|-----------------------|--|------------------------|--|
| Status | : Running | Size | : Standard B1s (1 vcpu, 1 GiB memory) |
| Location | : UAE North (Zone 1) | Primary NIC public IP | : 172.164.240.153 1 associated public IPs |
| Subscription (move) | : Azure subscription 1 | Virtual network/subnet | : MyWebServer-vnet/default |
| Subscription ID | : f26e9722-94c8-4321-b30c-b14f663e2a78 | DNS name | : Not configured |
| Availability zone | : 1 | Health state | : - |
| | | Time created | : 10/10/2025, 11:56 UTC |

Requesting a Cloud Shell. **Succeeded.**
Connecting terminal...

```
Your Cloud Shell session will be ephemeral so no files or system changes will persist beyond your current session.  
previous [ ~ ]$ ssh EnikStudent@172.164.240.153  
EnikStudent@172.164.240.153's password: [REDACTED]
```

Typing the name of my Virtual Machine and its public IP to log in.
This is followed by a prompt for the password of the VM

Requesting a Cloud Shell. **Succeeded.**
Connecting terminal...

```
Your Cloud Shell session will be ephemeral so no files or system changes will persist beyond your current session.  
previous [ ~ ]$ ssh EnikStudent@172.164.240.153  
EnikStudent@172.164.240.153's password:  
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 6.8.0-1036-azure x86_64)  
  
 * Documentation: https://help.ubuntu.com  
 * Management: https://landscape.canonical.com  
 * Support: https://ubuntu.com/pro  
  
System information as of Fri Nov 7 17:39:41 UTC 2025  
  
System load: 0.0 Processes: 111  
Usage of /: 7.3% of 28.89GB Users logged in: 0  
Memory usage: 33% IPv4 address for eth0: 10.0.0.4  
Swap usage: 0%  
  
* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s just raised the bar for easy, resilient and secure K8s cluster deployment.  
https://ubuntu.com/engage/secure-kubernetes-at-the-edge  
Expanded Security Maintenance for Applications is not enabled.  
  
30 updates can be applied immediately.  
27 of these updates are standard security updates.  
To see these additional updates run: apt list --upgradable  
  
Enable ESM Apps to receive additional future security updates.  
See https://ubuntu.com/esm or run: sudo pro status  
  
Last login: Sat Oct 11 18:55:36 2025 from 4.247.135.109  
EnikStudent@MyWebServer:~$ [REDACTED]
```

Successful Login

Server Setup and Configuration

- Launch Installs

The screenshot shows a Microsoft Azure Cloud Shell interface. The terminal window displays system information and a command-line session for updating packages.

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

System information as of Fri Nov 7 17:39:41 UTC 2025

System load: 0.0 Processes: 111
Usage of /: 7.3% of 28.89GB Users logged in: 0
Memory usage: 33% IPv4 address for eth0: 10.0.0.4
Swap usage: 0%

* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s just raised the bar for easy, resilient and secure K8s cluster deployment.
https://ubuntu.com/engage/secure-kubernetes-at-the-edge

Expanded Security Maintenance for Applications is not enabled.

30 updates can be applied immediately.
27 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

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

Last login: Sat Oct 11 18:55:36 2025 from 4.247.135.109
EnikStudent@MyWebServer:~$ sudo apt update
```

A red arrow points from the text "Beginning running updates for the VM" to the "sudo apt update" command in the terminal.

Installation and configuration of Apache2:

- Launch

The screenshot shows a Microsoft Azure Cloud Shell interface. The terminal window displays the steps to install, enable, and start the Apache2 service.

```
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following packages have been kept back:
  libnss-systemd libpam-systemd libsystemd0 libudev1 systemd systemd-sysv udev
0 upgraded, 0 newly installed, 0 to remove and 7 not upgraded.
EnikStudent@MyWebServer:~$ sudo apt -y install apache2
```

A red arrow points from the text "Installation of Apache2" to the "sudo apt -y install apache2" command in the terminal.

```
EnikStudent@MyWebServer:~$ sudo systemctl enable apache2
```

A red arrow points from the text "Enabling of Apache2" to the "sudo systemctl enable apache2" command in the terminal.

```
EnikStudent@MyWebServer:~$ sudo systemctl start apache2
```

A red arrow points from the text "Starting Apache2" to the "sudo systemctl start apache2" command in the terminal.

```
EnikStudent@MyWebServer:~$ sudo systemctl status apache2 --no-pager
```

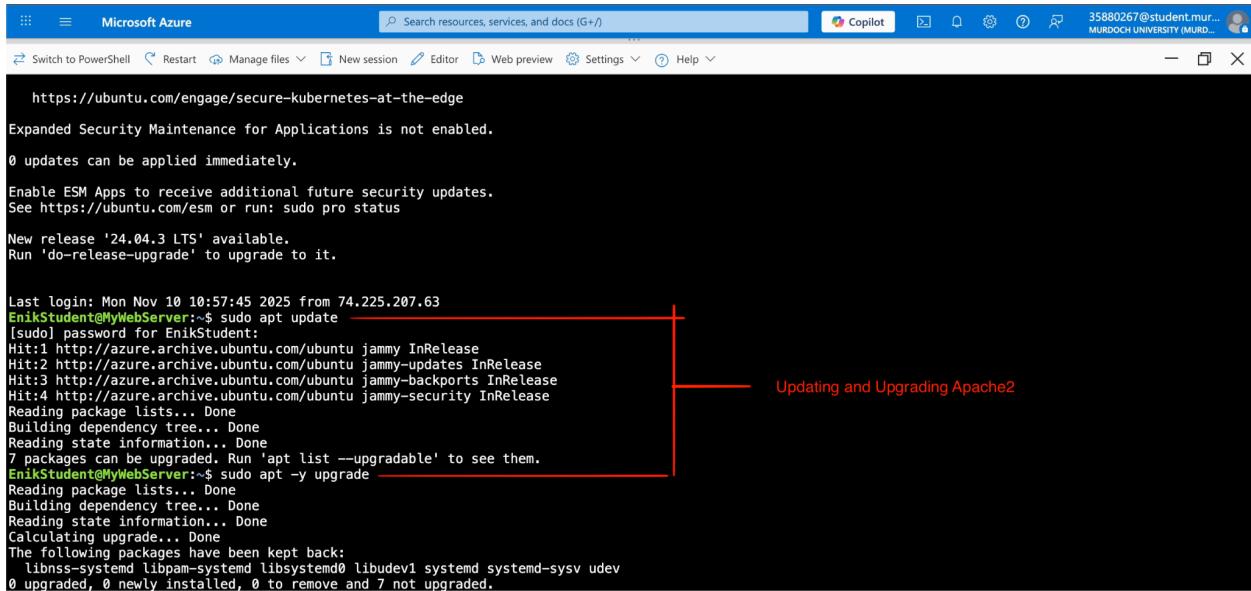
Apache2 service status output:

```
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
   Active: active (running) since Fri 2025-11-07 18:32:27 UTC; 2 days ago
     Docs: https://httpd.apache.org/docs/2.4/
 Main PID: 625 (apache2)
   Tasks: 55 (limit: 1009)
  Memory: 8.8M
    CPU: 11.853s
   CGroup: /system.slice/apache2.service
           └─ 625 /usr/sbin/apache2 -k start
               ├─ 46568 /usr/sbin/apache2 -k start
               ├─ 46569 /usr/sbin/apache2 -k start
               └─ 46569 /usr/sbin/apache2 -k start

Nov 07 18:32:27 MyWebServer systemd[1]: Starting The Apache HTTP Server...
Nov 07 18:32:27 MyWebServer systemd[1]: Started The Apache HTTP Server.
Nov 08 00:00:01 MyWebServer systemd[1]: Reloading The Apache HTTP Server...
Nov 08 00:00:02 MyWebServer systemd[1]: Reloaded The Apache HTTP Server.
Nov 09 00:00:01 MyWebServer systemd[1]: Reloading The Apache HTTP Server...
Nov 09 00:00:01 MyWebServer systemd[1]: Reloaded The Apache HTTP Server.
Nov 10 00:00:01 MyWebServer systemd[1]: Reloading The Apache HTTP Server...
Nov 10 00:00:01 MyWebServer systemd[1]: Reloaded The Apache HTTP Server.
```

A red arrow points from the text "EnikStudent@MyWebServer:~\$ " to the end of the terminal session.

- Update



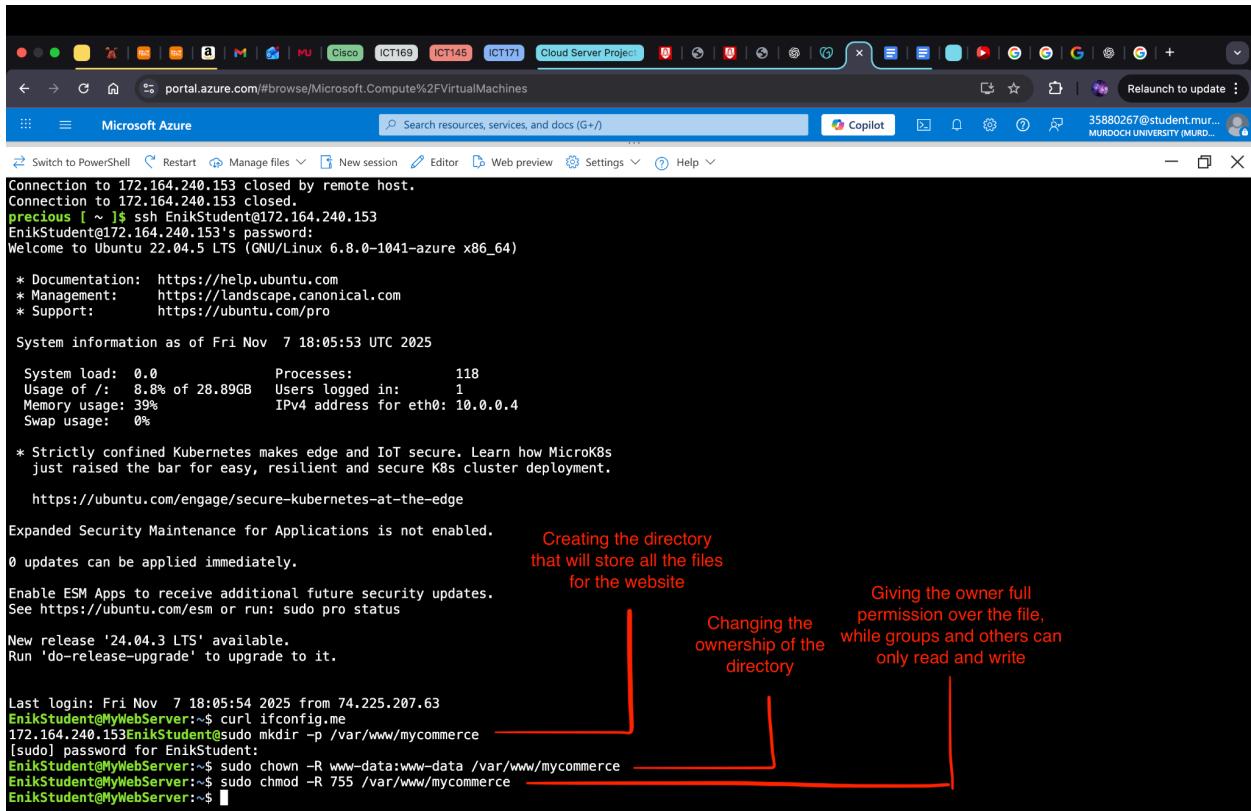
```
https://ubuntu.com/engage/secure-kubernetes-at-the-edge
Expanded Security Maintenance for Applications is not enabled.
0 updates can be applied immediately.

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

New release '24.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Mon Nov 10 10:57:45 2025 from 74.225.207.63
EnikStudent@MyWebServer:~$ sudo apt update
[sudo] password for EnikStudent:
Hit:1 http://azure.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
7 packages can be upgraded. Run 'apt list --upgradable' to see them.
EnikStudent@MyWebServer:~$ sudo apt -y upgrade
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following packages have been kept back:
 libnss-systemd libpam-systemd libsystemd0 libudev1 systemd systemd-sysv udev
0 upgraded, 0 newly installed, 0 to remove and 7 not upgraded.
```

- Configuration



Creating the directory that will store all the files for the website

```
Connection to 172.164.240.153 closed by remote host.
Connection to 172.164.240.153 closed.
[ ~ ]$ ssh EnikStudent@172.164.240.153
EnikStudent@172.164.240.153's password:
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 6.8.0-1041-azure x86_64)

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

System information as of Fri Nov  7 18:05:53 UTC 2025

 System load:  0.0          Processes:           118
 Usage of /:   8.8% of 28.89GB  Users logged in:      1
 Memory usage: 39%            IPv4 address for eth0: 10.0.0.4
 Swap usage:   0%

 * Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s just raised the bar for easy, resilient and secure K8s cluster deployment.

 https://ubuntu.com/engage/secure-kubernetes-at-the-edge

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

New release '24.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

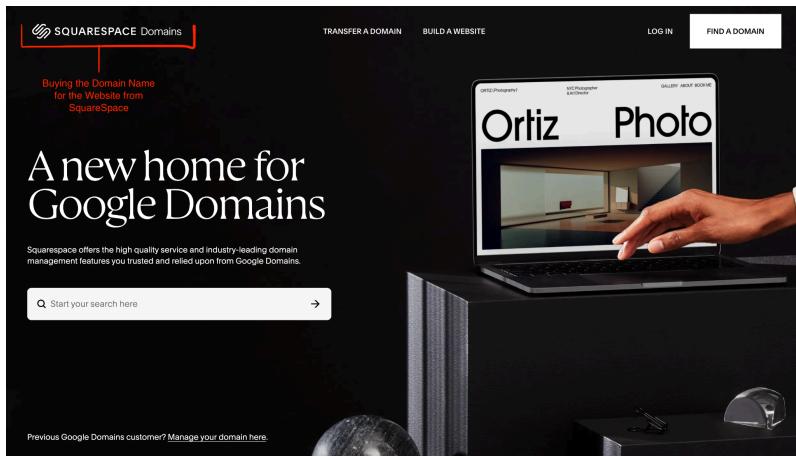
Last login: Fri Nov  7 18:05:54 2025 from 74.225.207.63
EnikStudent@MyWebServer:~$ curl ifconfig.me
172.164.240.153
EnikStudent@MyWebServer:~$ sudo mkdir -p /var/www/mycommerce
[sudo] password for EnikStudent:
EnikStudent@MyWebServer:~$ sudo chown -R www-data:www-data /var/www/mycommerce
EnikStudent@MyWebServer:~$ sudo chmod -R 755 /var/www/mycommerce
EnikStudent@MyWebServer:~$
```

Changing the ownership of the directory

Giving the owner full permission over the file, while groups and others can only read and write

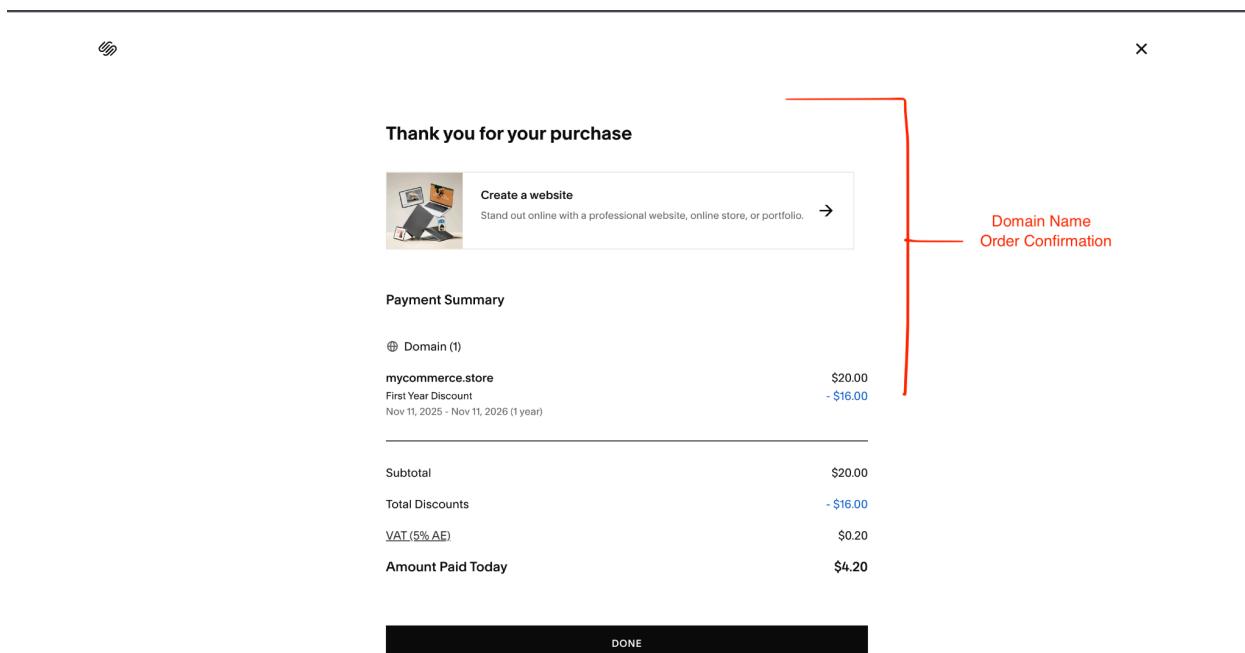
Linking Domain Name

- Domain name purchase



This screenshot shows the 'Find your domain' search results page. The search bar at the top contains 'mycommerce'. Below the search bar, a list of domain suggestions is shown, with 'mycommerce.store' highlighted with a blue border and a dropdown arrow indicating it's selected. To the right, a sidebar displays a summary of the selected domain: 'mycommerce.store \$4/yr' and '1 domain \$4/yr' with a 'CHECKOUT' button. A red bracket on the left side groups the search bar and the list of results, while another red bracket on the right side groups the sidebar summary.

This screenshot shows the 'TERM' step of the domain registration process. On the left, the 'Registration Term' section allows selecting a multi-year term for the domain 'mycommerce.store' (1 year). On the right, the 'Order Summary' section provides a breakdown of the costs: Subtotal (\$20.00), Total Discounts (-\$16.00), VAT (5% AE) (\$0.20), and Estimated Total (\$4.20). A red bracket on the left side groups the 'TERM' section, and another red bracket on the right side groups the 'Order Summary' section. A red line also points from the 'Payment of the Domain Name' label at the bottom left towards the 'Order Summary' section.



The screenshot shows the Squarespace Domains dashboard. At the top, there's a message about two-factor authentication. The main area displays the domain "mycommerce.store" with a "Action Required" status indicator. Below the domain details, there's a message about email verification required. On the right side, there are sections for "RENEW ON" (November 11, 2026), "WHOIS PRIVACY" (On), and "DOMAIN LOCK" (On). At the bottom, there are "Registration Information" fields for the registrant and a promotional section for Blueprint AI.

- Domain link platform

This is the linking of the virtual machine using its public ip address to the domain name on Squarespace

| HOST | TYPE | PRIORITY | TTL | DATA |
|----------------|-------|----------|-------|--|
| _domainconnect | CNAME | 0 | 4 hrs | _domainconnect.domains.squarespace.com |

| HOST | TYPE | PRIORITY | TTL | DATA |
|------------|------|----------|-------|--|
| _domainkey | TXT | 0 | 4 hrs | v=DKIM1; p= |
| _dmarc | TXT | 0 | 4 hrs | v=DMARC1; p=reject; sp=reject; adkim=s; aspf=s |
| @ | TXT | 0 | 4 hrs | v=spf1 -all |

| Custom records | | | | |
|----------------|-------|----------|------|------------------|
| HOST | TYPE | PRIORITY | TTL | DATA |
| www | CNAME | N/A | 1 hr | mycommerce.store |
| @ | A | N/A | 1 hr | 172.164.240.153 |

Custom email with Google Workspace

Build trust and brand consistency with a custom email address powered by Google Workspace.

GET STARTED

```
GNU nano 6.2
<VirtualHost *:80>
    ServerName mycommerce.store
    ServerAlias www.mycommerce.store
    DocumentRoot /var/www/html
    <Directory /var/www/html>
        AllowOverride All
    </Directory>
    ErrorLog ${APACHE_LOG_DIR}/error.log
    CustomLog ${APACHE_LOG_DIR}/access.log combined
</VirtualHost>
```

I Wrote 10 lines]

After linking the domain name to the IP, this configuration file is created using the command 'sudo nano /etc/apache2/sites-available/mycommerce.store.conf' to ensure connection of the domain name on this end.

Help Write Out Where Is Cut Paste Execute Justify Location Go To Line Undo Redo Set Mark To Bracket Exit Read File Where Was

```
EnikStudent@MyWebServer:/var/www/mycommerce$ nslookup mycommerce.store 8.8.8.8
Server:      8.8.8.8
Address:     8.8.8.8#53

Non-authoritative answer:
Name:   mycommerce.store
Address: 172.164.240.153
```

By inputting this command we have confirmed the link between the Domain name and my website's IP because the Address label displays the VM's public IP

Server Security

```
[sudo] password for EnikStudent:
Sorry, try again.
[sudo] password for EnikStudent:
Hit:1 http://azure.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease [127 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Get:5 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [3076 kB]
Get:6 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main Translation-en [475 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 c-n-f Metadata [19.0 kB]
Get:8 http://azure.archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 Packages [4853 kB]
Get:9 http://azure.archive.ubuntu.com/ubuntu jammy-updates/restricted Translation-en [903 kB]
Get:10 http://azure.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1242 kB]
Get:11 http://azure.archive.ubuntu.com/ubuntu jammy-updates/universe Translation-en [308 kB]
Get:12 http://azure.archive.ubuntu.com/ubuntu jammy-security/main amd64 Packages [2815 kB]
Get:13 http://azure.archive.ubuntu.com/ubuntu jammy-security/main Translation-en [408 kB]
Get:14 http://azure.archive.ubuntu.com/ubuntu jammy-security/restricted amd64 Packages [4700 kB]
Get:15 http://azure.archive.ubuntu.com/ubuntu jammy-security/restricted Translation-en [876 kB]
Get:16 http://azure.archive.ubuntu.com/ubuntu jammy-security/universe amd64 Packages [1009 kB]
Get:17 http://azure.archive.ubuntu.com/ubuntu jammy-security/universe Translation-en [220 kB]
Fetched 21.3 MB in 5s (4202 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
7 packages can be upgraded. Run 'apt list --upgradable' to see them.
EnikStudent@MyWebServer:/var/www/mycommerce$ sudo apt upgrade -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following packages have been kept back:
  libnss-systemd libpam-systemd libsystemd0 libudev1 systemd systemd-sysv udev
0 upgraded, 0 newly installed, 0 to remove and 7 not upgraded.
EnikStudent@MyWebServer:/var/www/mycommerce$ sudo ufw allow OpenSSH
Rules updated
Rules updated (v6)
EnikStudent@MyWebServer:/var/www/mycommerce$ sudo ufw allow 80/tcp
Rules updated
Rules updated (v6)
EnikStudent@MyWebServer:/var/www/mycommerce$ sudo ufw allow443/tcp
```

Here another update and upgrade for apache2 is run to keep it in check

These three commands are used in installing the firewall for the website to ensure its security

```
EnikStudent@MyWebServer:/var/www/mycommerce$ sudo ufw allow 443/tcp
Rules updated
Rules updated (v6)
EnikStudent@MyWebServer:/var/www/mycommerce$ sudo ufw enable
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
Firewall is active and enabled on system startup
EnikStudent@MyWebServer:/var/www/mycommerce$ sudo ufw status
Status: active
```

| To | Action | From |
|--------------|--------|---------------|
| -- | --- | --- |
| OpenSSH | ALLOW | Anywhere |
| 80/tcp | ALLOW | Anywhere |
| 443/tcp | ALLOW | Anywhere |
| OpenSSH (v6) | ALLOW | Anywhere (v6) |
| 80/tcp (v6) | ALLOW | Anywhere (v6) |
| 443/tcp (v6) | ALLOW | Anywhere (v6) |

These continued commands are also use in the configuration of a firewall for the website

```
EnikStudent@MyWebServer:/var/www/mycommerce$ 
EnikStudent@MyWebServer:/var/www/mycommerce$ sudo nano /etc/ssh/sshd_config
```

This command configures ssh in the website rather than using password which is less secure

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

35880267@student.mur... MURDOCH UNIVERSITY (MURD...)

```
EnikStudent@MyWebServer:~$ sudo certbot --apache -d mycommerce.store -d www.mycommerce.store
Saving debug log to /var/log/letsencrypt/letsencrypt.log
Enter email address (used for urgent renewal and security notices)
(Enter 'c' to cancel): 35880267@student.murdoch.edu.au

-----
Please read the Terms of Service at
https://letsencrypt.org/documents/LE-SA-v1.6-August-18-2025.pdf. You must agree
in order to register with the ACME server. Do you agree?
(Y)es/(N)o: yes

-----
Would you be willing, once your first certificate is successfully issued, to
share your email address with the Electronic Frontier Foundation, a founding
partner of the Let's Encrypt project and the non-profit organization that
develops Certbot? We'd like to send you email about our work encrypting the web,
EFF news, campaigns, and ways to support digital freedom.
(Y)es/(N)o: yes
Account registered.

Requesting a certificate for mycommerce.store and www.mycommerce.store

Successfully received certificate.
Certificate is saved at: /etc/letsencrypt/live/mycommerce.store/fullchain.pem
Key is saved at: /etc/letsencrypt/live/mycommerce.store/privkey.pem
This certificate expires on 2026-02-11.
These files will be updated when the certificate renews.
Certbot has set up a scheduled task to automatically renew this certificate in the background.

Deploying certificate
Successfully deployed certificate for mycommerce.store to /etc/apache2/sites-available/mycommerce-le-ssl.conf
Successfully deployed certificate for www.mycommerce.store to /etc/apache2/sites-available/mycommerce-le-ssl.conf
Congratulations! You have successfully enabled HTTPS on https://mycommerce.store and https://www.mycommerce.store

-----
If you like Certbot, please consider supporting our work by:
* Donating to ISRG / Let's Encrypt: https://letsencrypt.org/donate
* Donating to EFF: https://eff.org/donate-le
```

This command is used in obtaining the necessary SSL certificate for the website, and change http to https.

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

35880267@student.mur... MURDOCH UNIVERSITY (MURD...)

Home > MyWebServer

MyWebServer | Network settings

Virtual machine

Search

Public IP address : 172.164.240.153

Private IP address : 10.0.0.4

Admin security rules : 0 (Configure)

Network security group : MyWebServer-nsg

Accelerated networking : Disabled

Effective security rules : 0

Rules Collapse all

Adding a https port

Network security group MyWebServer-nsg (attached to networkInterface: mywebserver230_z1)
Impacts 0 subnets, 1 network interfaces

+ Create port rule

| Priority ↑ | Name | Port | Protocol | Source | Destination | Action |
|------------|-------------------------------|------|----------|-------------------|----------------|--------|
| 300 | SSH | 22 | TCP | Any | Any | Allow |
| 320 | HTTP | 80 | TCP | Any | Any | Allow |
| 330 | HTTPS | 443 | TCP | Any | Any | Allow |
| 65000 | AllowVnetInBound | Any | Any | VirtualNetwork | VirtualNetwork | Allow |
| 65001 | AllowAzureLoadBalancerInBound | Any | Any | AzureLoadBalancer | Any | Allow |
| 65500 | DenyAllInBound | Any | Any | Any | Any | Deny |

Inbound port rules (6)

Outbound port rules (3)

Add or remove favorites by pressing Cmd + Shift + F

This might result in unexpected behavior and should NOT be done unless you know exactly what you are doing!

```
To continue type in the phrase 'Yes, do as I say!' or retry by passing '-f': -f
Aborting
EnikStudent@MyWebServer:~/var/www/mycommerce$ sudo apt install fail2ban
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
python3-pyinotify whois
Suggested packages:
mailx monit sqlite3 python-pyinotify-doc
The following NEW packages will be installed:
fail2ban python3-pyinotify whois
0 upgraded, 3 newly installed, 0 to remove and 7 not upgraded.
Need to get 473 kB of archives.
After this operation, 2486 kB of additional disk space will be used.
Get:1 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 fail2ban all 0.11.2-6 [394 kB]
Get:2 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 python3-pyinotify all 0.9.6-1.3 [24.8 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 whois amd64 5.5.13 [53.4 kB]
Fetched 473 kB in 1s (649 kB/s)
Selecting previously unselected package fail2ban.
(Reading database ... 91646 files and directories currently installed.)
Preparing to unpack .../fail2ban_0.11.2-6_all.deb ...
Unpacking fail2ban (0.11.2-6) ...
Selecting previously unselected package python3-pyinotify.
Preparing to unpack .../python3-pyinotify_0.9.6-1.3_all.deb ...
Unpacking python3-pyinotify (0.9.6-1.3) ...
Selecting previously unselected package whois.
Preparing to unpack .../whois_5.5.13_amd64.deb ...
Unpacking whois (5.5.13) ...
Setting up whois (5.5.13) ...
Setting up fail2ban (0.11.2-6) ...
Setting up python3-pyinotify (0.9.6-1.3) ...
Processing triggers for man-db (2.10.2-1) ...

```

This command is for installing the fail2ban software on the directory to configure brute force protection of the website against any unwanted external forces.

```
fail2ban python3-pyinotify whois
0 upgraded, 3 newly installed, 0 to remove and 7 not upgraded.
Need to get 473 kB of archives.
After this operation, 2486 kB of additional disk space will be used.
Get:1 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 fail2ban all 0.11.2-6 [394 kB]
Get:2 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 python3-pyinotify all 0.9.6-1.3 [24.8 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 whois amd64 5.5.13 [53.4 kB]
Fetched 473 kB in 1s (649 kB/s)
Selecting previously unselected package fail2ban.
(Reading database ... 91646 files and directories currently installed.)
Preparing to unpack .../fail2ban_0.11.2-6_all.deb ...
Unpacking fail2ban (0.11.2-6) ...
Selecting previously unselected package python3-pyinotify.
Preparing to unpack .../python3-pyinotify_0.9.6-1.3_all.deb ...
Unpacking python3-pyinotify (0.9.6-1.3) ...
Selecting previously unselected package whois.
Preparing to unpack .../whois_5.5.13_amd64.deb ...
Unpacking whois (5.5.13) ...
Setting up whois (5.5.13) ...
Setting up fail2ban (0.11.2-6) ...
Setting up python3-pyinotify (0.9.6-1.3) ...
Processing triggers for man-db (2.10.2-1) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

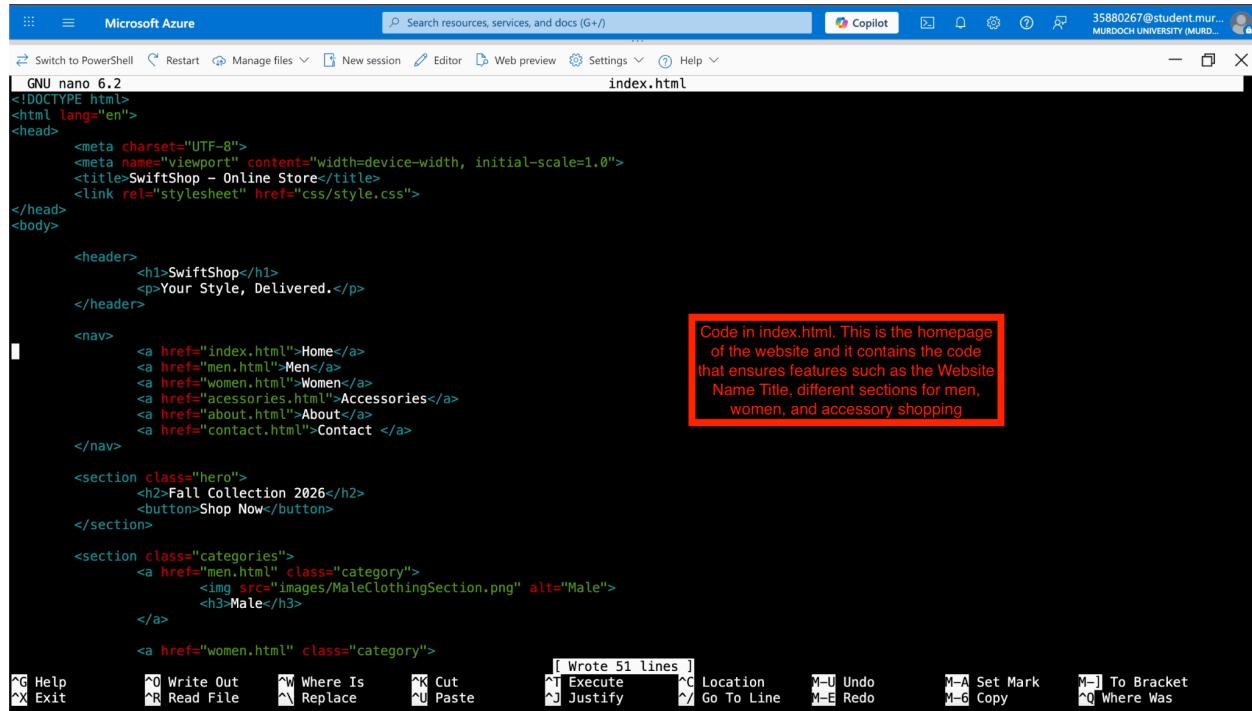
No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
EnikStudent@MyWebServer:~/var/www/mycommerce$ sudo systemctl enable fail2ban
Synchronizing state of fail2ban.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable fail2ban
Created symlink /etc/systemd/system/multi-user.target.wants/fail2ban.service → /lib/systemd/system/fail2ban.service.
EnikStudent@MyWebServer:~/var/www/mycommerce$ sudo systemctl start fail2ban
EnikStudent@MyWebServer:~/var/www/mycommerce$
```

This is enabling and starting the fail2ban software installed for the website protection

Code Scripts

- HomePage -



Code in index.html. This is the homepage of the website and it contains the code that ensures features such as the Website Name Title, different sections for men, women, and accessory shopping.

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>SwiftShop - Online Store</title>
    <link rel="stylesheet" href="css/style.css">
</head>
<body>

    <header>
        <h1>SwiftShop</h1>
        <p>Your Style, Delivered.</p>
    </header>

    <nav>
        <a href="#">Home</a>
        <a href="men.html">Men</a>
        <a href="women.html">Women</a>
        <a href="accessories.html">Accessories</a>
        <a href="about.html">About</a>
        <a href="contact.html">Contact </a>
    </nav>

    <section class="hero">
        <h2>Fall Collection 2026</h2>
        <button>Shop Now</button>
    </section>

    <section class="categories">
        <a href="men.html" class="category">
            
            <h3>Male</h3>
        </a>

        <a href="women.html" class="category">
            ...
        </a>
    </section>
</body>
```

GNU nano 6.2

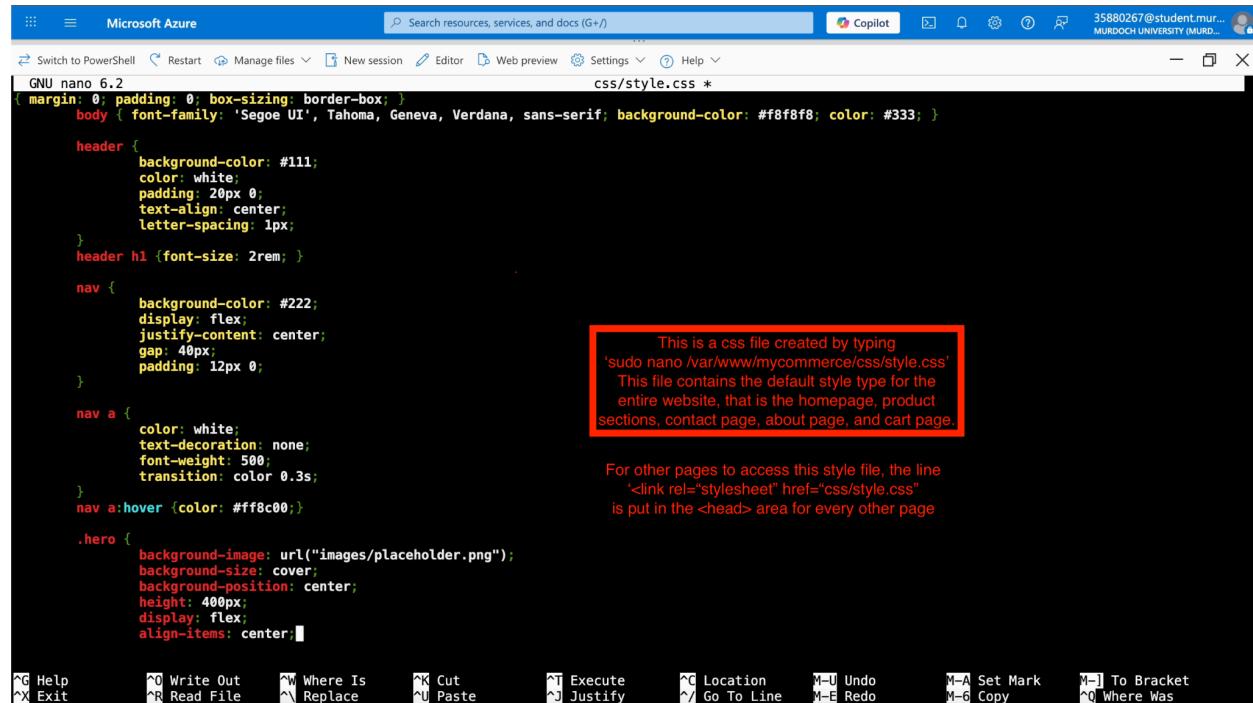
index.html

File Edit View Insert Cell Help Copilot

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- Style.css -



This is a css file created by typing 'sudo nano /var/www/mycommerce/css/style.css' This file contains the default style type for the entire website, that is the homepage, product sections, contact page, about page, and cart page.

```
{ margin: 0; padding: 0; box-sizing: border-box; }
body { font-family: 'Segoe UI', Tahoma, Geneva, Verdana, sans-serif; background-color: #f8f8f8; color: #333; }

header {
    background-color: #111;
    color: white;
    padding: 20px 0;
    text-align: center;
    letter-spacing: 1px;
}
header h1 {font-size: 2rem; }

nav {
    background-color: #222;
    display: flex;
    justify-content: center;
    gap: 40px;
    padding: 12px 0;
}

nav a {
    color: white;
    text-decoration: none;
    font-weight: 500;
    transition: color 0.3s;
}
nav a:hover {color: #ff8c00; }

.hero {
    background-image: url("images/placeholder.png");
    background-size: cover;
    background-position: center;
    height: 400px;
    display: flex;
    align-items: center;
```

For other pages to access this style file, the line '`<link rel="stylesheet" href="css/style.css"`' is put in the `<head>` area for every other page

GNU nano 6.2

css/style.css *

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- Men Section Webpage

Microsoft Azure

Search resources, services, and docs (G+)

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GNU nano 6.2 men.html *

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Men - SwiftShop</title>
    <link rel="stylesheet" href="css/style.css">
</head>
<body>
    <header>
        <h1>SwiftShop</h1>
        <p>Your Style, Delivered</p>
    </header>
    <nav>
        <a href="index.html">Home</a>
        <a href="men.html">Men</a>
        <a href="women.html">Women</a>
        <a href="accessories.html">Accessories</a>
        <a href="about.html">About</a>
        <a href="contact.html">Contact</a>
    </nav>
    <section class="products">
        <div class="product">
            
            <h3>Classic Leather Jacket</h3>
            <p class="price">$149.99</p>
        </div>
        <div class="product">
            
            <h3>StreetRunner Sneakers</h3>
            <p class="price">$89.99</p>
        </div>
    </section>
</body>
```

This is men.html, where the male products are displayed. Users can look at items and add them into the cart using a built in button. All the other product pages, women.html, and accessories.html, are built in the exact same way as this html file but with their own respective products.

- Women Section Webpage

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

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GNU nano 6.2 women.html *

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Women - SwiftShop</title>
    <link rel="stylesheet" href="css/style.css">
</head>
<body>
    <header>
        <h1>SwiftShop</h1>
        <p>Your Style, Delivered</p>
    </header>
    <nav>
        <a href="index.html">Home</a>
        <a href="men.html">Men</a>
        <a href="women.html">Women</a>
        <a href="accessories.html">Accessories</a>
        <a href="about.html">About</a>
        <a href="contact.html">Contact</a>
    </nav>
    <section class="products">
        <div class="product">
            
            <h3>Summer Dress</h3>
            <p class="price">$79.99</p>
        </div>
        <div class="product">
            
            <h3>Heels</h3>
            <p class="price">$89.99</p>
        </div>
    </section>
</body>
```

- Accessories Section Webpage

```

GNU nano 6.2
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Accessories - SwiftShop</title>
    <link rel="stylesheet" href="css/style.css">
</head>
<body>
    <header>
        <h1>SwiftShop</h1>
        <p>Your Style, Delivered</p>
    </header>
    <nav>
        <a href="index.html">Home</a>
        <a href="men.html">Men</a>
        <a href="women.html">Women</a>
        <a href="accessories.html">Accessories</a>
        <a href="about.html">About</a>
        <a href="contact.html">Contact</a>
    </nav>
    <section class="products">
        <div class="product">
            
            <h3>Leather Wallet</h3>
            <p class="price">$49.99</p>
        </div>
        <div class="product">
            
            <h3>Watch</h3>
            <p class="price">$149.99</p>
        </div>
    </section>
</body>

```

```

Last login: Tue Nov 11 22:00:15 on ttys000
(base) gloryenikanselu@Glorys-MBP ~ % scp /Users/gloryenikanselu/Desktop/men7.png EnikStudent@172.164.240.153:/var/www/mycommerce/images/
EnikStudent@172.164.240.153's password: 100% 991KB 3.1MB/s 00:00
men7.png
(base) gloryenikanselu@Glorys-MBP ~ % scp /Users/gloryenikanselu/Desktop/women1.png EnikStudent@172.164.240.153:/var/www/mycommerce/images/
EnikStudent@172.164.240.153's password: 100% 934KB 3.4MB/s 00:00
women1.png
(base) gloryenikanselu@Glorys-MBP ~ % scp /Users/gloryenikanselu/Desktop/women2.png EnikStudent@172.164.240.153:/var/www/mycommerce/images/
EnikStudent@172.164.240.153's password: 100% 475KB 1.4MB/s 00:00
women2.png
(base) gloryenikanselu@Glorys-MBP ~ % scp /Users/gloryenikanselu/Desktop/women3.png EnikStudent@172.164.240.153:/var/www/mycommerce/images/
EnikStudent@172.164.240.153's password: 100% 387KB 383.0KB/s 00:01
women3.png
(base) gloryenikanselu@Glorys-MBP ~ % scp /Users/gloryenikanselu/Desktop/women4.png EnikStudent@172.164.240.153:/var/www/mycommerce/images/
EnikStudent@172.164.240.153's password: 100% 767KB 3.8MB/s 00:00
women4.png
(base) gloryenikanselu@Glorys-MBP ~ % scp /Users/gloryenikanselu/Desktop/women5.png EnikStudent@172.164.240.153:/var/www/mycommerce/images/
EnikStudent@172.164.240.153's password: 100% 237KB 2.5MB/s 00:00
women5.png
(base) gloryenikanselu@Glorys-MBP ~ % scp /Users/gloryenikanselu/Desktop/women6.png EnikStudent@172.164.240.153:/var/www/mycommerce/images/
EnikStudent@172.164.240.153's password: 100% 758KB 2.9MB/s 00:00
women6.png
(base) gloryenikanselu@Glorys-MBP ~ % scp /Users/gloryenikanselu/Desktop/women7.png EnikStudent@172.164.240.153:/var/www/mycommerce/images/
EnikStudent@172.164.240.153's password: 100% 1871KB 4.8MB/s 00:00
women7.png
(base) gloryenikanselu@Glorys-MBP ~ % scp /Users/gloryenikanselu/Desktop/accessories1.png EnikStudent@172.164.240.153:/var/www/mycommerce/images/
EnikStudent@172.164.240.153's password: 100% 697KB 4.2MB/s 00:00
accessories1.png
(base) gloryenikanselu@Glorys-MBP ~ % scp /Users/gloryenikanselu/Desktop/accessories2.png EnikStudent@172.164.240.153:/var/www/mycommerce/images/
EnikStudent@172.164.240.153's password: 100% 279KB 2.3MB/s 00:00
accessories2.png
(base) gloryenikanselu@Glorys-MBP ~ % scp /Users/gloryenikanselu/Desktop/accessories3.png EnikStudent@172.164.240.153:/var/www/mycommerce/images/
EnikStudent@172.164.240.153's password: 100% 453KB 2.9MB/s 00:00
accessories3.png
(base) gloryenikanselu@Glorys-MBP ~ % scp /Users/gloryenikanselu/Desktop/accessories4.png EnikStudent@172.164.240.153:/var/www/mycommerce/images/
EnikStudent@172.164.240.153's password: 100% 232KB 2.5MB/s 00:00
accessories4.png
(base) gloryenikanselu@Glorys-MBP ~ % scp /Users/gloryenikanselu/Desktop/accessories5.png EnikStudent@172.164.240.153:/var/www/mycommerce/images/
EnikStudent@172.164.240.153's password: 100% 203KB 1.9MB/s 00:00
accessories5.png
(base) gloryenikanselu@Glorys-MBP ~ % scp /Users/gloryenikanselu/Desktop/accessories6.png EnikStudent@172.164.240.153:/var/www/mycommerce/images/
EnikStudent@172.164.240.153's password: 100% 344KB 2.3MB/s 00:00
accessories6.png
(base) gloryenikanselu@Glorys-MBP ~ % scp /Users/gloryenikanselu/Desktop/accessories7.png EnikStudent@172.164.240.153:/var/www/mycommerce/images/
EnikStudent@172.164.240.153's password: 100% 395KB 2.7MB/s 00:00
accessories7.png
(base) gloryenikanselu@Glorys-MBP ~ % scp /Users/gloryenikanselu/Desktop/accessories8.png EnikStudent@172.164.240.153:/var/www/mycommerce/images/
EnikStudent@172.164.240.153's password: 100% 441KB 3.2MB/s 00:00
accessories8.png
(base) gloryenikanselu@Glorys-MBP ~ % scp /Users/gloryenikanselu/Desktop/accessories9.png EnikStudent@172.164.240.153:/var/www/mycommerce/images/
EnikStudent@172.164.240.153's password: 100% 681KB 4.6MB/s 00:00
accessories9.png
(base) gloryenikanselu@Glorys-MBP ~ % scp /Users/gloryenikanselu/Desktop/accessories10.png EnikStudent@172.164.240.153:/var/www/mycommerce/images/
EnikStudent@172.164.240.153's password: 

```

This is the macOS terminal where I have used my Microsoft Azure VM name (EnikStudent) and the public IP address (172.164.240.153), to transfer and save all the images taken from the web to the Virtual machine to be integrated into the product pages.

- About Page

This is the code of about.html, the about page of the website that is made accessible from every other webpage for users to see.

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>About - SwiftShop</title>
    <link rel="stylesheet" href="css/style.css">
</head>
<body>
    <header>
        <h1>SwiftShop</h1>
        <p>Your Style, Delivered</p>
    </header>
    <nav>
        <a href="index.html">Home</a>
        <a href="men.html">Men</a>
        <a href="women.html">Women</a>
        <a href="accessories.html">Accessories</a>
        <a href="about.html">About</a>
        <a href="contact.html">Contact</a>
    </nav>
    <section class="about">
        <h2>About SwiftShop</h2>
        <p>SwiftShop was founded to bring style, quality, and convenience together in one place. Our mission is to make fashion accessible, comfortable, and stylish for everyone.</p>
        <p>We carefully create each collection and focus on quality materials, sustainable practices, and excellent customer service.</p>
    </section>
</body>
</html>
```

[Wrote 31 lines]

File Edit View Insert Insert Object Tools Help

Help Exit Write Out Read File Where Is Replace Cut Paste Execute Justify Location Go To Line Undo Redo Set Mark Copy To Bracket Where Was

- Contact Page

This is the code for the contact.html page. It has a similar layout to the about page as they are two pages without products and for the purpose of sharing and receiving information.

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Contact - SwiftShop</title>
    <link rel="stylesheet" href="css/style.css">
</head>
<body>
    <header>
        <h1>SwiftShop</h1>
        <p>Your Style, Delivered</p>
    </header>
    <nav>
        <a href="index.html">Home</a>
        <a href="men.html">Men</a>
        <a href="women.html">Women</a>
        <a href="accessories.html">Accessories</a>
        <a href="about.html">About</a>
        <a href="contact.html">Contact</a>
    </nav>
    <section class="contact">
        <h2>Contact Us</h2>
        <p>Email: support@mycommerce.store</p>
        <p>Phone: +1 555 123 4567</p>
        <p>Address: 123 Fashion Street, Style City</p>
        <h3>Send us a message</h3>
        <form>
            <input type="text" name="name" placeholder="Your Name" required><br><br>
            <input type="email" name="email" placeholder="Your Email" required><br><br>
            <textarea name="message" placeholder="Your Message" rows="5" required></textarea><br><br>
            <button type="submit">Send Message</button>
        </form>
    </section>
</body>
</html>
```

- Cart Page

Microsoft Azure

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

Switch to PowerShell Restart Manage files New session Editor Web preview Settings Help

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GNU nano 6.2 cart.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Your Cart - SwiftShop</title>
    <link rel="stylesheet" href="css/style.css">
</head>
<body>
    <header>
        <h1>Your Shopping Cart</h1>
        <nav>
            <a href="index.html">Home</a>
            <a href="men.html">Men</a>
            <a href="women.html">Women</a>
            <a href="accessories.html">Accessories</a>
        </nav>
    </header>
    <section class="cart-container">
        <h2>Items In Your Cart</h2>
        <div id="cart-items"></div>
        <h3 id="total-price"></h3>
        <button onclick="clearCart()">Clear Cart</button>
    </section>
    <footer>
        <p>© 2025 SwiftShop, All Rights Reserved.</p>
    </footer>
    <script src="js/cart.js"></script>
<section class="checkout-form-container">
    <h2>Checkout</h2>
    <form id="checkout-form">
        <input type="text" name="name" placeholder="Full Name" required>
    </form>
</section>
```

This is the final page of the website - cart.html. It features the same style type as the other webpages, and also a shopping cart mock-up. When users add an item from any of the product pages, the item appears in this page, in the shopping cart, also taking into consideration the total price of items.

This file also contains a section for checkout. Here users will enter their name, email, and address, for further inquiries about products and communication to determine the preferred payment methods for customers.

Help Exit Write Out Where Is Cut Execute Location Undo Set Mark To Bracket Read File Replace Paste Justify Go To Line Redo Copy Where Was

● Cart.js

Microsoft Azure

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

Switch to PowerShell Restart Manage files New session Editor Web preview Settings Help

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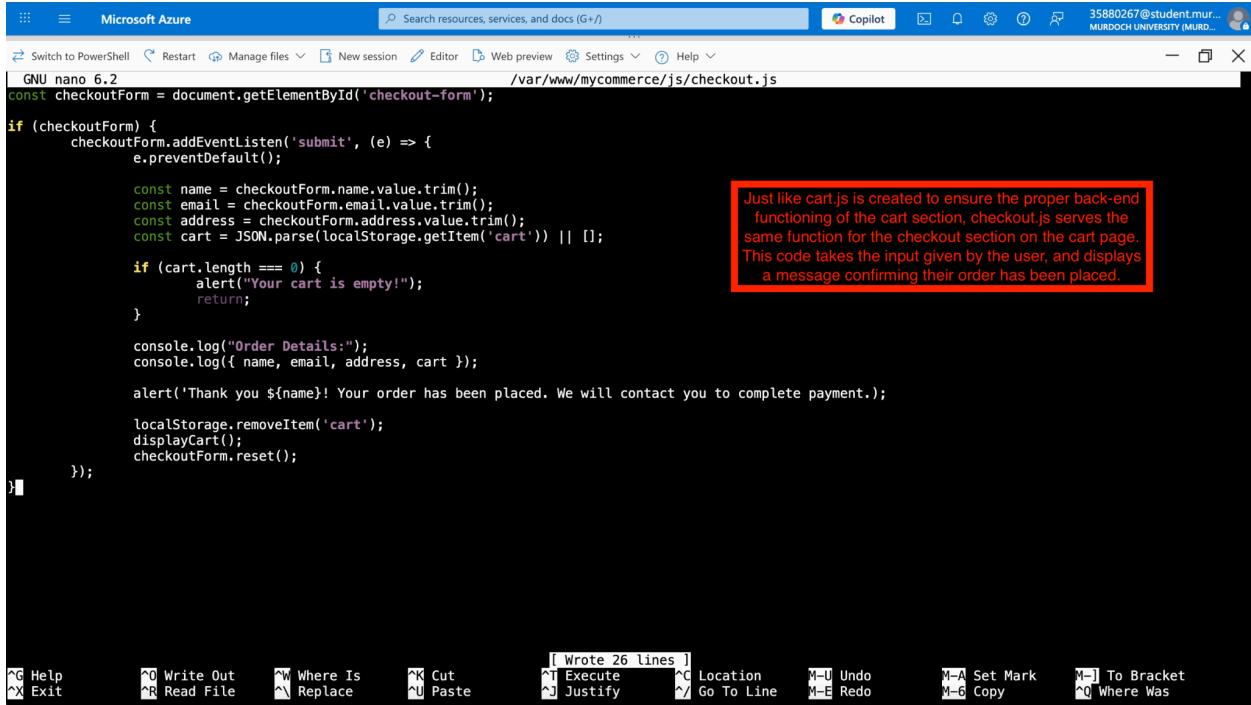
GNU nano 6.2 /var/www/mycommerce/js/cart.js *

```
let cart = JSON.parse(localStorage.getItem('cart')) || [];
function displayCart() {
    const cartContainer = document.getElementById('cart-items');
    const totalPriceElement = document.getElementById('total-price');
    cartContainer.innerHTML = '';
    if (cart.length == 0) {
        cartContainer.innerHTML = '<p>Your cart is empty.</p>';
        totalPriceElement.innerText = '';
        return;
    }
    let total = 0;
    cart.forEach(item, index) => {
        total += item.price;
        const itemDiv = document.createElement('div');
        itemDiv.classList.add('cart-item')
        itemDiv.innerHTML = `
            <p>${item.name} = ${item.price.toFixed(2)}</p>
            <button onclick="removeItem(${index})">Remove</button>
        `;
        cartContainer.appendChild(itemDiv);
    });
    totalPriceElement.innerText = `Total: ${total.toFixed(2)}`;
}
function removeItem(index) {
    cart.splice(index, 1);
    localStorage.setItem('cart', JSON.stringify(cart));
    displayCart();
}
function clearCart() {
    localStorage.removeItem('cart');
```

This is a java file called cart.js. It is associated with the cart.html file to ensure the proper back-end functioning of the cart page - adding items, removing items, clearing the cart, calculating the total price.

Help Exit Write Out Where Is Cut Execute Location Undo Set Mark To Bracket Read File Replace Paste Justify Go To Line Redo Copy Where Was

- Checkout.js



The screenshot shows a Microsoft Azure terminal window titled "Microsoft Azure". The URL bar indicates the file is located at `/var/www/mycommerce/js/checkout.js`. The terminal window displays the following code:

```

GNU nano 6.2
const checkoutForm = document.getElementById('checkout-form');

if (checkoutForm) {
  checkoutForm.addEventListener('submit', (e) => {
    e.preventDefault();

    const name = checkoutForm.name.value.trim();
    const email = checkoutForm.email.value.trim();
    const address = checkoutForm.address.value.trim();
    const cart = JSON.parse(localStorage.getItem('cart')) || [];

    if (cart.length === 0) {
      alert("Your cart is empty!");
      return;
    }

    console.log("Order Details:");
    console.log({ name, email, address, cart });

    alert('Thank you ${name}! Your order has been placed. We will contact you to complete payment.');

    localStorage.removeItem('cart');
    displayCart();
    checkoutForm.reset();
  });
}

```

A red box highlights the line `if (cart.length === 0) {`, which is part of the logic to check if the user's cart is empty before proceeding with the order placement.

Just like cart.js is created to ensure the proper back-end functioning of the cart section, checkout.js serves the same function for the checkout section on the cart page. This code takes the input given by the user, and displays a message confirming their order has been placed.

The terminal window also shows a menu bar with options like "Switch to PowerShell", "Restart", "Manage files", "New session", "Editor", "Web preview", "Settings", "Help", and "Copilot". At the bottom, there is a toolbar with various keyboard shortcuts for file operations like Help, Exit, Write Out, Read File, Where Is, Replace, Cut, Paste, Execute, Justify, Location, Go To Line, Undo, Redo, Set Mark, Copy, and Where Was.

*Throughout the creation of the website, there are many syntax errors that come in the form of wrong spelling or incorrect punctuation used that have occurred and are identified and fixed as expected; however may still be visible in some of the screenshots.

