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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 VM details are as follows:

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

A red box highlights the 'Public IP address' column, and a red callout points to the value '172.164.240.153' with the text 'Virtual Machine Public IP'. Another red box highlights the VM name 'MyWebServer', with a red callout pointing to it and the text 'My Virtual Machine'.

The screenshot shows the detailed view of the 'MyWebServer' virtual machine. The left sidebar contains navigation links like Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Resource visualizer, Connect, Networking, Settings, Availability + scale, Security, Backup + disaster recovery, Operations, Monitoring, Automation, Help, Resource health, Boot diagnostics, Serial console, Reset password, and Connection troubleshoot. The main content area is titled 'Overview'.

Essentials section details:

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

Properties tab is selected. Other tabs include Monitoring, Capabilities (7), Recommendations (13), and Tutorials.

Virtual machine section details:

- Computer name: MyWebServer
- Operating system: Linux (ubuntu 22.04)
- VM generation: V2
- VM architecture: x64
- Agent status: Ready
- Agent version: 2.15.0.1
- Hibernation: Disabled

Networking section details:

- Public IP address: 172.164.240.153 (Network interface mywebserver230_z1)
1 associated public IPs
- Public IP address (IPv6): -
- Private IP address: 10.0.0.4
- Private IP address (IPv6): -
- Virtual network/subnet: MyWebServer-vnet/default
- DNS name: Configure

A red box highlights the 'Copy' icon in the top right corner of the main content area, with a red callout pointing to it and the text 'Open the cloud shell to start creation of the website on 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: [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. A red arrow points from the text "Beginning running updates for the VM" to the "sudo apt update" command.

```
* 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
[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]
Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Fetched 257 kB in 1s (412 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
29 packages can be upgraded. Run 'apt list --upgradable' to see them.
EnikStudent@MyWebServer:~$
```

Installation and configuration of Apache2:

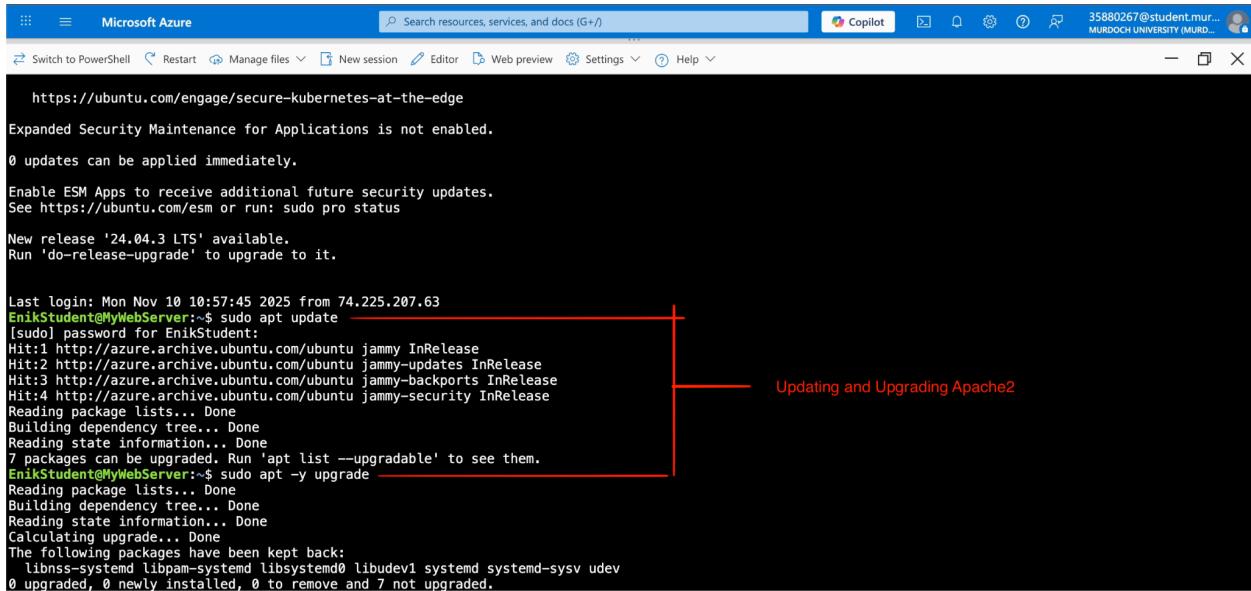
- Launch

The screenshot shows a Microsoft Azure Cloud Shell interface. The terminal window displays the steps to install, enable, and start the Apache2 service. Red arrows point from the text labels to the corresponding commands: "Installation of Apache2" to "sudo apt -y install apache2", "Enabling of Apache2" to "sudo systemctl enable apache2", and "Starting Apache2" to "sudo systemctl start apache2".

```
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
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
apache2 is already the newest version (2.4.52-1ubuntu4.16).
0 upgraded, 0 newly installed, 0 to remove and 7 not upgraded.
EnikStudent@MyWebServer:~$ sudo systemctl enable apache2
Synchronizing state of apache2.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable apache2
EnikStudent@MyWebServer:~$ sudo systemctl start apache2
EnikStudent@MyWebServer:~$ sudo systemctl status apache2 --no-pager
● 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

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.
EnikStudent@MyWebServer:~$
```

- Update



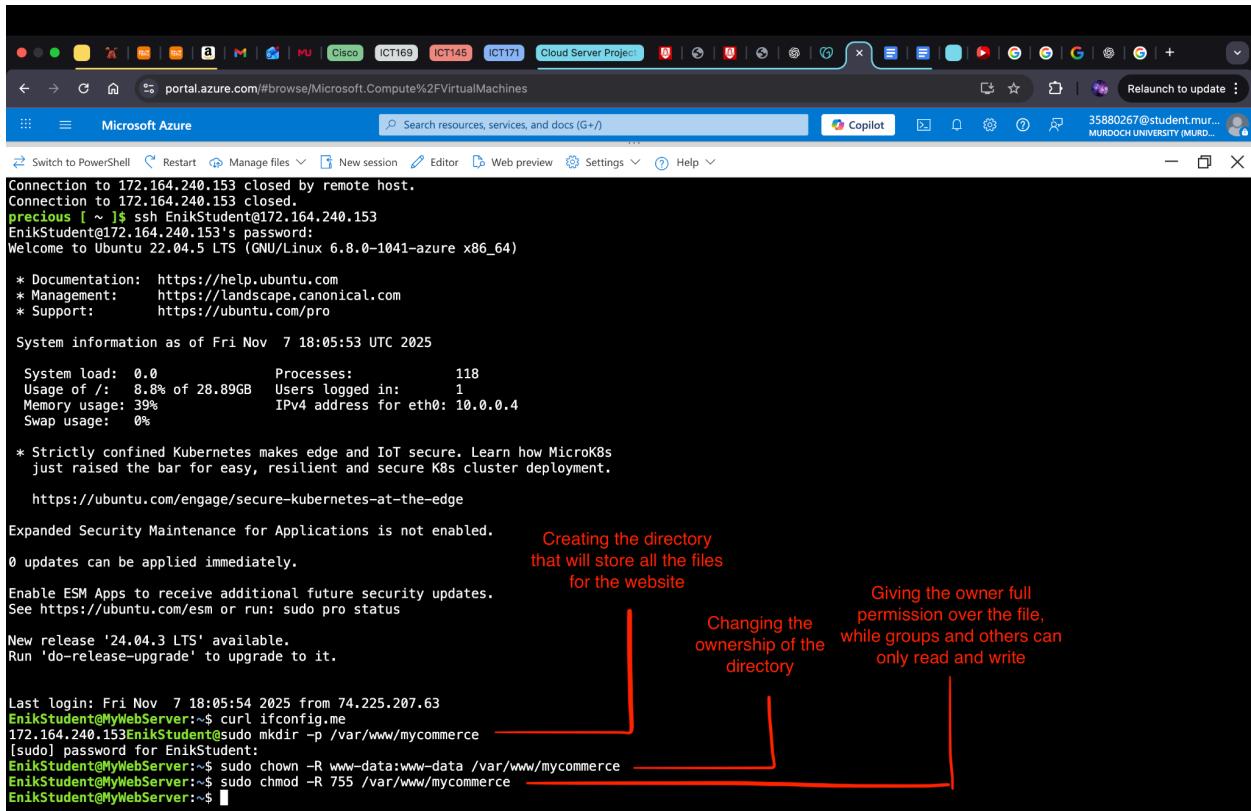
```
https://ubuntu.com/engage/secure-kubernetes-at-the-edge
Expanded Security Maintenance for Applications is not enabled.
0 updates can be applied immediately.

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.

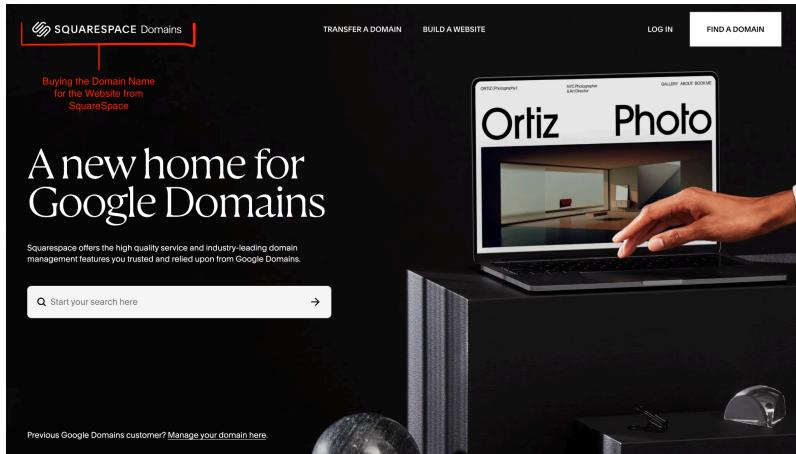
Last login: Fri Nov  7 18:05:54 2025 from 74.225.207.63
EnikStudent@MyWebServer:~$ curl ifconfig.me
172.164.240.153
EnikStudent@MyWebServer:~$ sudo mkdir -p /var/www/mycommerce
[sudo] password for EnikStudent:
EnikStudent@MyWebServer:~$ sudo chown -R www-data:www-data /var/www/mycommerce
EnikStudent@MyWebServer:~$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

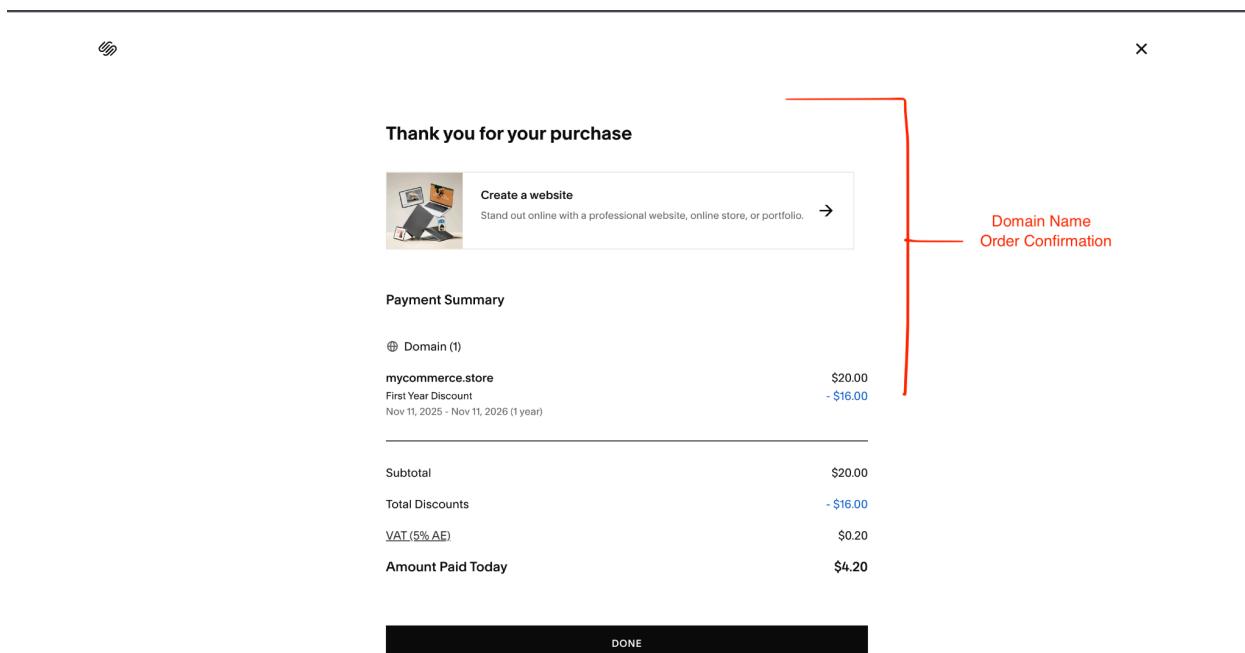
Linking Domain Name

- Domain name purchase



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

This screenshot shows the 'TERM' step of the domain registration process. On the left, the 'Registration Term' section asks users to ensure domain ownership and lock in the current price for the number of years selected by choosing a multi-year term. It shows a selection for 'mycommerce.store' with a '1 year' term length. A red bracket highlights this section. 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 highlights this section. A red line also points from the 'Payment of the Domain Name' label at the bottom left to 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. The dashboard includes sections for "Overview", "DNS", "Website", "Email", "Activity", "Permissions", and "Billing". On the right, there are settings for "WHOIS PRIVACY" (On), "DOMAIN LOCK" (On), and "Registration Information" (Registrant: Precious Enikanselu, address: Al Saud Street 6706, Floor 67, Torch Tower, Dubai). A sidebar on the right shows a preview of a website using Blueprint AI.

- Domain link platform

This is the linking of the Virtual Machine using its public IP - 172.164.240.153, to the domain name - mycommerce.store 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

HOST	TYPE	PRIORITY	TTL	DATA
@	A	N/A	1 hr	172.164.240.153
www	A	N/A	1 hr	172.164.240.153

Custom records

ADD RECORD

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>

```

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.

GNU nano 6.2

File menu: Switch to PowerShell, Restart, Manage files, New session, Editor, Web preview, Settings, Help.

Toolbar: Search resources, services, and docs (G+), Copilot, Refresh, Home, Profile, Help, Exit.

Bottom status bar: 35880267@student.murdoch.edu.au, MURDOCH UNIVERSITY (MURDOCH), Help, Write Out, Read File, Where Is, Replace, Cut, Paste, Execute, Justify, Location, Go To Line, Undo, Redo, Set Mark, Copy, To Bracket, 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 -
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 libudev 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

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 (MUR...

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

```
See 'snap info <snapname>' for additional versions.
EnikStudent@MyWebServer:/var/www/mycommerce$ sudo apt install certbot python3-certbot-apache -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
E: Unable to locate package certbot
EnikStudent@MyWebServer:/var/www/mycommerce$ sudo apt install certbot python3-certbot-apache -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  augeas-lenses libaugeas0 python3-acme python3-augaeas python3-certbot python3-configargparse python3-icu python3-josepy python3-parsedatetime
  python3-requests-toolbelt python3-rfc339 python3-zope.component python3-zope.event python3-zope.hookable
Suggested packages:
  augeas-doc python-certbot-doc python3-certbot-nginx augeas-tools python-acme-doc python-certbot-apache-doc
The following NEW packages will be installed:
  augeas-lenses certbot libaugeas0 python3-acme python3-augaeas python3-certbot python3-certbot-apache python3-configargparse python3-icu python3-josepy
  python3-parsedatetime python3-requests-toolbelt python3-rfc339 python3-zope.component python3-zope.event python3-zope.hookable
0 upgraded, 16 newly installed, 0 to remove and 7 not upgraded.
Need to get 1552 kB of archives.
After this operation, 7681 kB of additional disk space will be used.
Get:1 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 augeas-lenses all 1.13.0-1 [321 kB]
Get:2 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 libaugeas0 amd64 1.13.0-1 [200 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 python3-josepy all 1.10.0-1 [22.0 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 python3-requests-toolbelt all 0.9.1-1 [38.0 kB]
Get:5 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 python3-rfc339 all 1.1-3 [7110 B]
Get:6 http://azure.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 python3-acme all 1.21.0-1ubuntu0.1 [36.4 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 python3-augaeas all 0.5.0-1.1 [9124 B]
Get:8 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 python3-configargparse all 1.5.3-1 [26.9 kB]
Get:9 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 python3-parsedatetime all 2.6.2 [32.9 kB]
Get:10 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 python3-zope.hookable amd64 5.1.0-1build1 [11.6 kB]
Get:11 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 python3-zope.event all 4.4-3 [8180 B]
Get:12 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 python3-zope.component all 4.3.0-3 [38.3 kB]
Get:13 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 python3-certbot all 1.21.0-1build1 [175 kB]
Get:14 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 python3-certbot all 1.21.0-1build1 [21.3 kB]
Get:15 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 python3-certbot-apache all 1.21.0-1 [64.2 kB]
Get:16 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 python3-icu amd64 2.8.1-0ubuntu2 [540 kB]
Fetched 1552 kB in 0s (10.4 MB/s)
Preconfiguring packages ...

```

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

35880267@student.mur... MURDOCH UNIVERSITY (MUR...

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

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

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 -y
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 0s (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) ...

```

Microsoft Azure

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

```

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 -

Microsoft Azure

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

```

GNU nano 6.2 index.html
<!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="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="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">
```

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

Wrote 51 lines]

Help Write Out Where Is Cut Execute Location Undo Set Mark To Bracket

Exit Read File Replace Paste Justify Go To Line Redo Copy Where Was

- Style.css

Microsoft Azure

GNU nano 6.2

```
{ 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;
}
```

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.

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

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

- Men Section Webpage

Microsoft Azure

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>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>

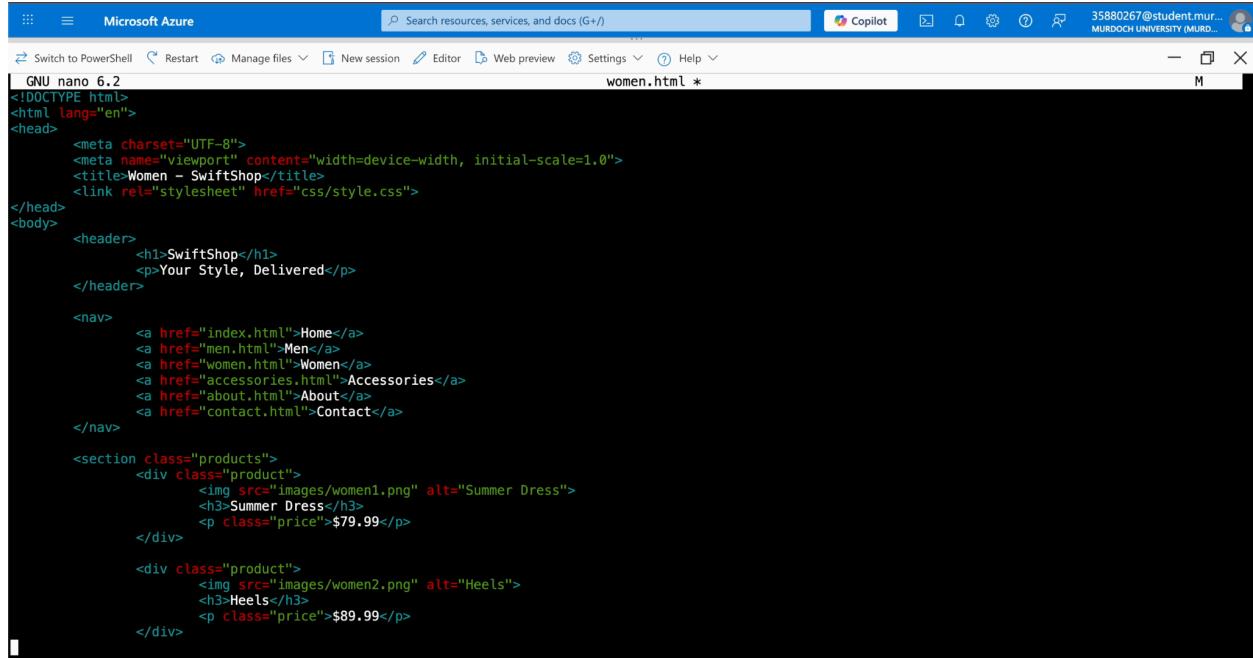
    <section class="products">
        <div class="product">
            
            <h3>Classic Leather Jacket</h3>
            <p class="price">$149.99</p>
        </div>

        <div class="product">
            
            <h3>StreetRunner Sneakers</h3>
            <p class="price">$89.99</p>
        </div>
    </section>

```

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

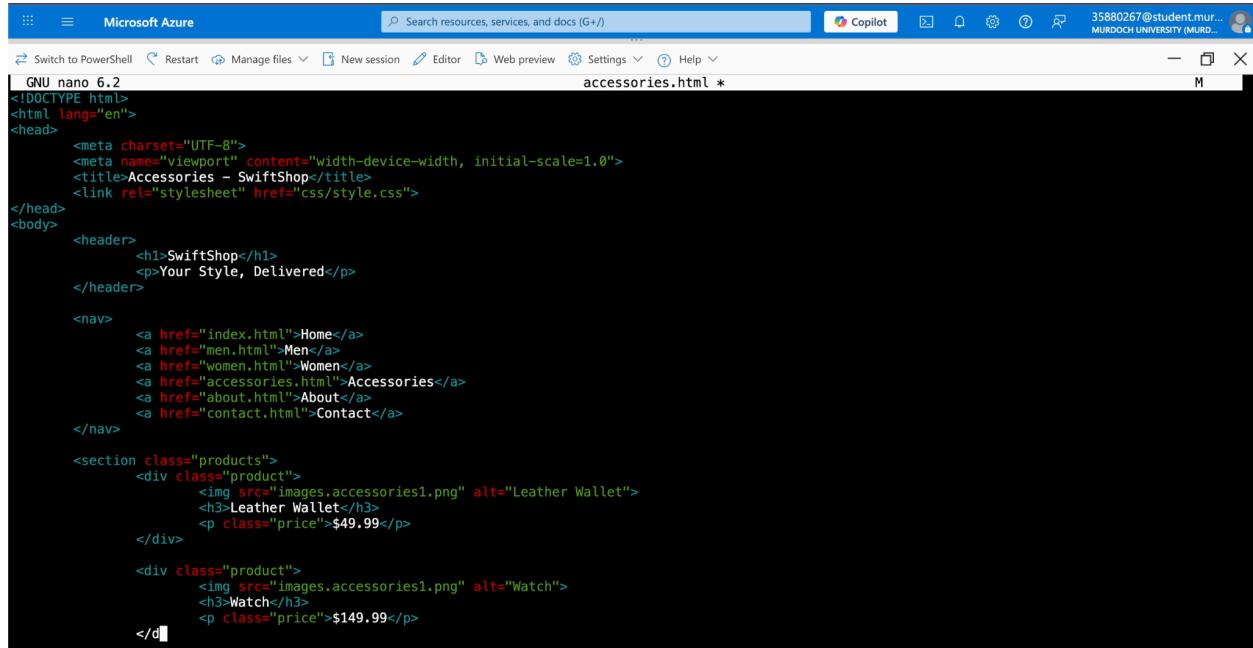


The screenshot shows a Microsoft Azure terminal window titled "Microsoft Azure". The title bar includes standard icons for switching to PowerShell, restarting, managing files, creating new sessions, and settings. On the right side of the title bar, there is a user profile icon and the email address "35880267@student.mur... MURDOCH UNIVERSITY (MURD...)".

The main area of the terminal displays the content of a file named "women.html" using the "GNU nano 6.2" editor. The code is an HTML document structure:

```
<!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



The screenshot shows a Microsoft Azure terminal window titled "Microsoft Azure". The title bar includes standard icons for switching to PowerShell, restarting, managing files, creating new sessions, and settings. On the right side of the title bar, there is a user profile icon and the email address "35880267@student.mur... MURDOCH UNIVERSITY (MURD...)".

The main area of the terminal displays the content of a file named "accessories.html" using the "GNU nano 6.2" editor. The code is an HTML document structure:

```
<!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 22:00:13 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:
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:
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:
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:
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:
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:
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:
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:
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:
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:
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:
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:
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:
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:
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:
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:
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:
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.

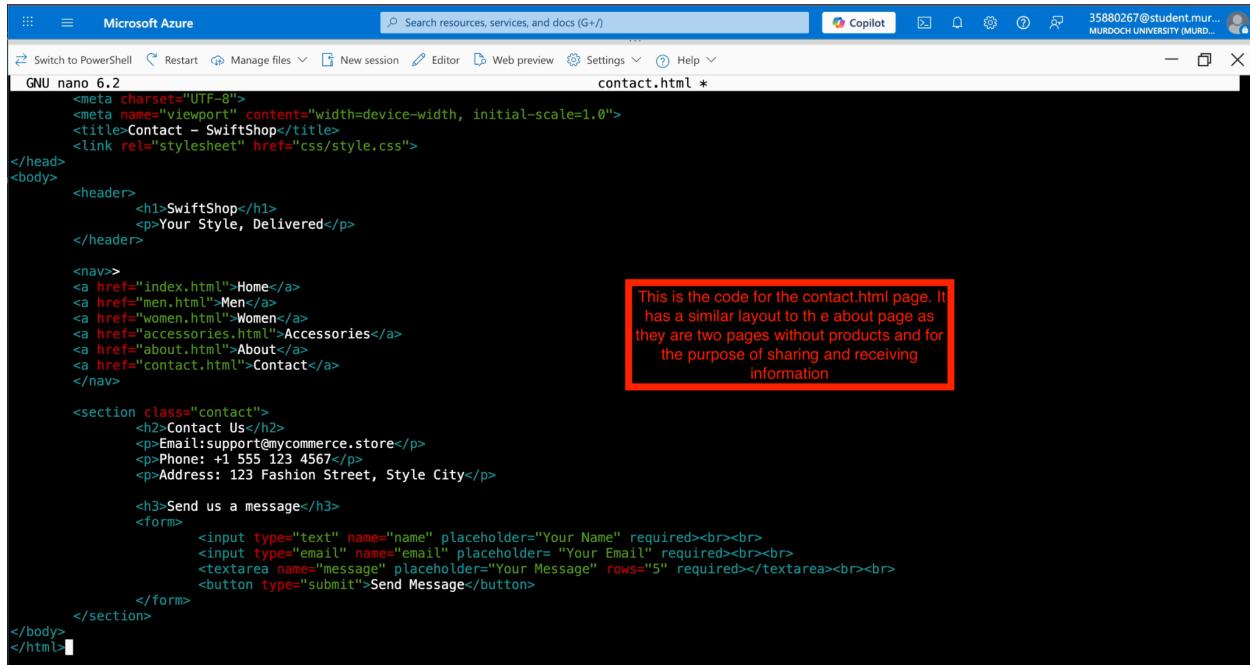
- About Page

```
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>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>
```

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.

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

```

GNU nano 6.2                               contact.html *
<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>

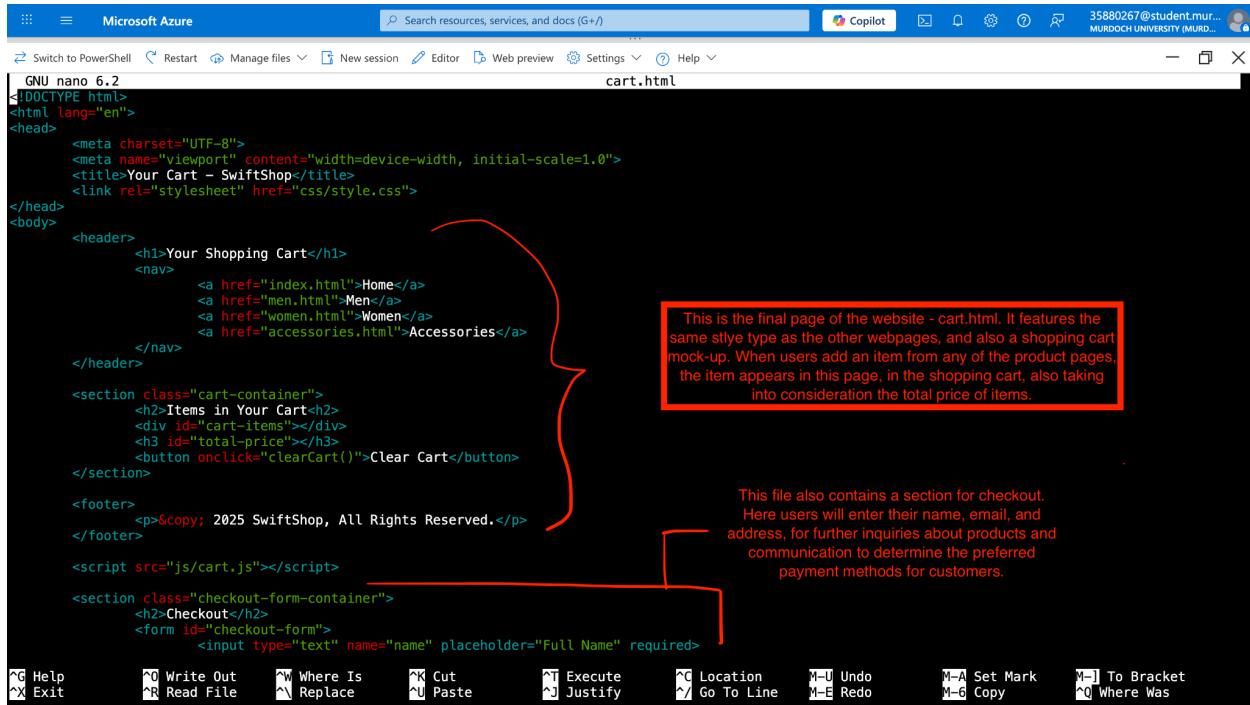
<nav>
<a href="index.html">Home</a>
<a href="men.html">Men</a>
<a href="women.html">Women</a>
<a href="accessories.html">Accessories</a>
<a href="about.html">About</a>
<a href="contact.html">Contact</a>
</nav>

<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



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.

```

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>

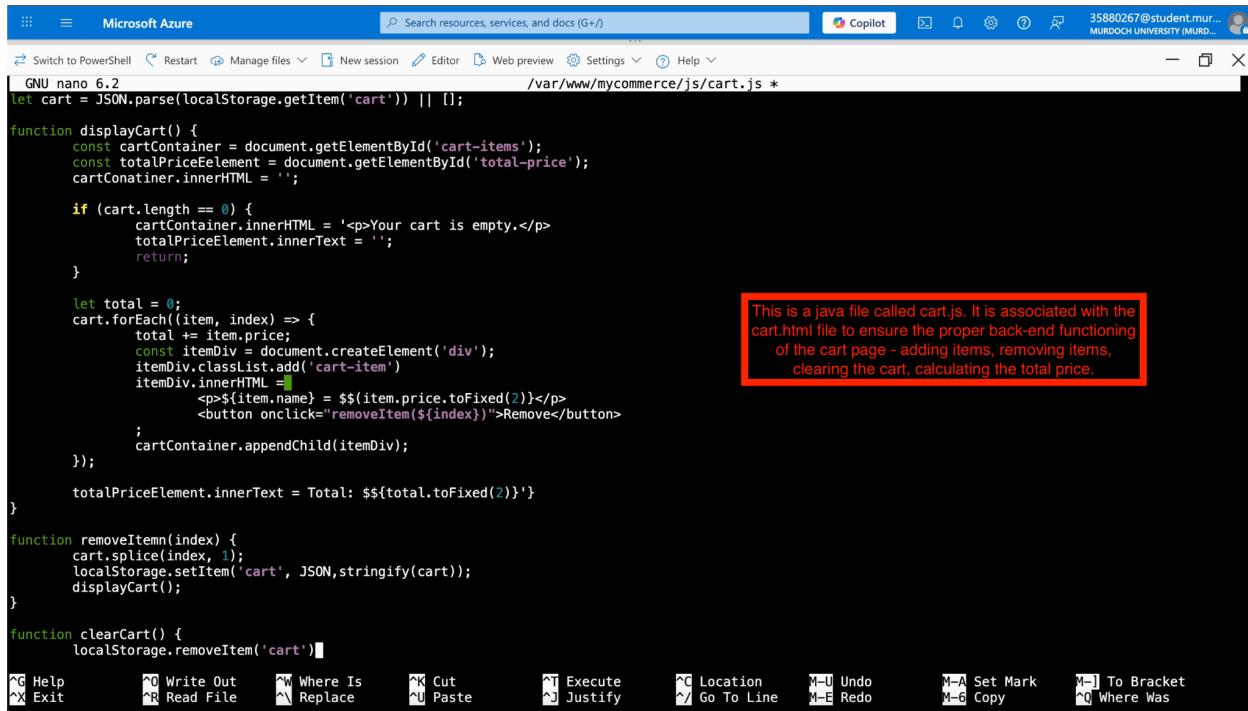
    <script src="js/cart.js"></script>

    <section class="checkout-form-container">
        <h2>Checkout</h2>
        <form id="checkout-form">
            <input type="text" name="name" placeholder="Full Name" required>
        </form>
    </section>
</body>

```

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

- Cart.js



```

Microsoft Azure
Search resources, services, and docs (G+)
Copilot
35880267@student.mur... MURDOCH UNIVERSITY (MUR...
Switch to PowerShell Restart Manage files New session Editor Web preview Settings Help
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>${item.name}</p>
            <button onclick="removeItem(${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');
}

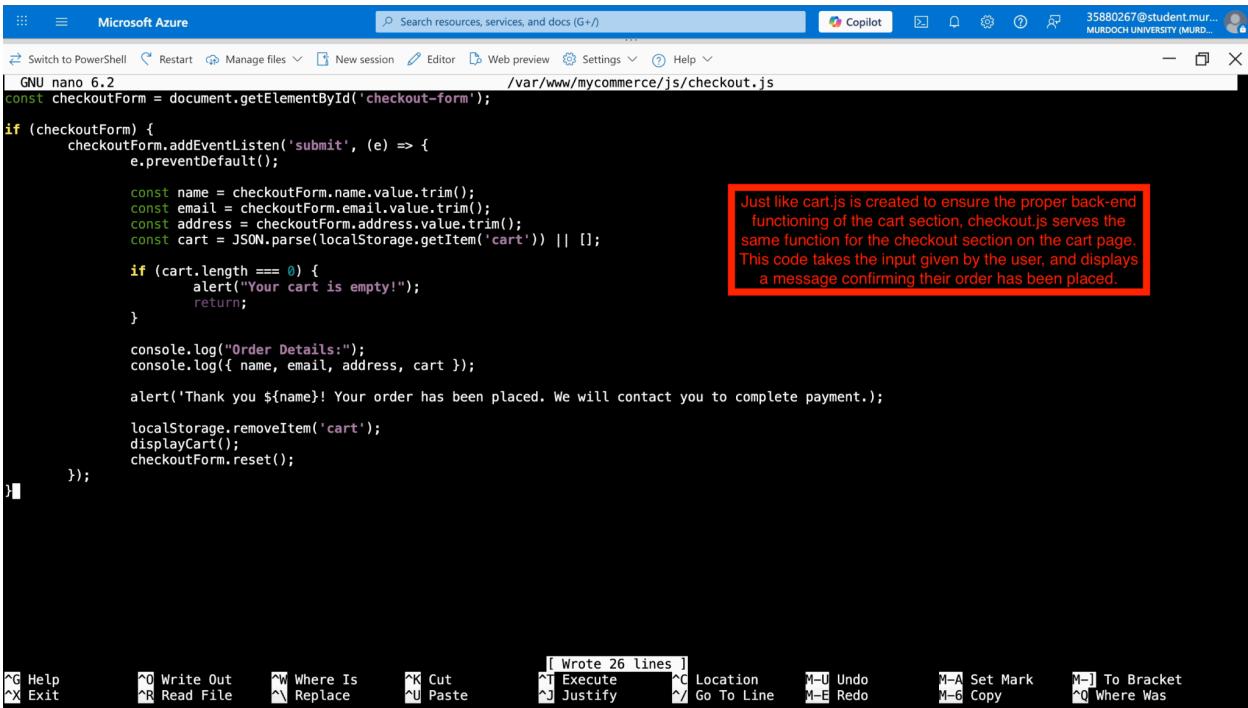
```

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 Write Out Where Is Cut Execute Location Undo Set Mark To Bracket

Exit Read File Replace Paste Go To Line Redo Copy Where Was

- [Checkout.js](#)



```

Microsoft Azure
Search resources, services, and docs (G+)
Copilot
35880267@student.mur... MURDOCH UNIVERSITY (MUR...
Switch to PowerShell Restart Manage files New session Editor Web preview Settings Help
GNU nano 6.2 /var/www/mycommerce/js/checkout.js
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();
    });
}

[Wrote 26 lines]

```

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.

Help Write Out Where Is Cut Execute Location Undo Set Mark To Bracket

Exit Read File Replace Paste Go To Line Redo Copy Where Was

Verification and Testing

The screenshot shows the homepage of SwiftShop. At the top, there's a black header bar with the brand name "SwiftShop" and the tagline "Your Style, Delivered." Below the header is a navigation menu with links for Home, Men, Women, Accessories, Cart (with a count of 2), About, and Contact. The main banner features a large, abstract background image with grey and white wavy patterns. Overlaid on this is the text "Fall Collection 2026" in a bold, white, sans-serif font, followed by a small orange "Shop Now" button. Below the banner is a large, partially visible image of a person wearing a green ribbed top and a brown and white plaid jacket.