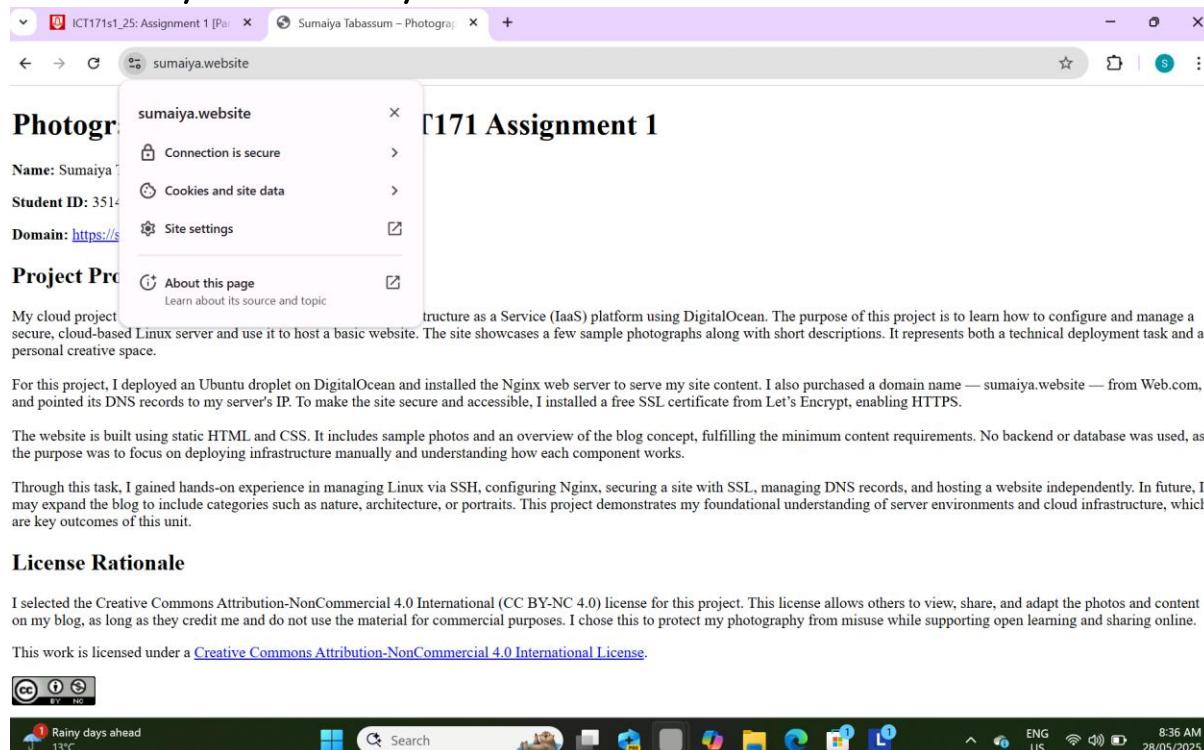


# Documentation

## 1. Project scenario

- **Project Title:** Photography Blog Website
- **Student Name:** Sumaiya Tabassum
- **Student ID:** 35149407
- **Domain Name:** <https://sumaiya.website>
- **Server Provider:** DigitalOcean (Ubuntu Server)
- **Web Server Software:** Nginx
- **License Selected:** Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0)

❖ It's already secured as you can see



## 2. DNS Functionality and Accessibility

- I bought my domain from web.com
- It's a A record

## Update History

These are the 10 last changes on your domain name:

Date & Time ↑	Update	User
2025-03-24 14:58 GMT+8	Type A resourcerecord delete	Sumaiya Tabassum
2025-03-24 14:58 GMT+8	Type A resourcerecord insert	Sumaiya Tabassum
2025-03-24 13:50 GMT+8	Type A resourcerecord insert	Sumaiya Tabassum
2025-03-24 13:50 GMT+8	Domain Private Reg update	Sumaiya Tabassum
2025-03-24 13:50 GMT+8	Transfer Protect Update	Sumaiya Tabassum

```
C:\Users\sumta>ping sumaiya.website

Pinging sumaiya.website [170.64.240.164] with 32 bytes of data:
Reply from 170.64.240.164: bytes=32 time=51ms TTL=53
Reply from 170.64.240.164: bytes=32 time=49ms TTL=53
Reply from 170.64.240.164: bytes=32 time=49ms TTL=53
Reply from 170.64.240.164: bytes=32 time=50ms TTL=53

Ping statistics for 170.64.240.164:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 49ms, Maximum = 51ms, Average = 49ms

C:\Users\sumta>
```

### 3. Server Setup

- I created a new droplet (server) using Ubuntu 22.04 LTS on DigitalOcean (1 vCPU, 1 GB RAM).
- I already have a public IP address which is 209.38.20.184

The screenshot shows the DigitalOcean cloud interface. On the left, there's a sidebar with 'PROJECTS' and 'MANAGE' sections. Under 'PROJECTS', 'first-project' is selected. Under 'MANAGE', 'Droplets' is expanded, showing 'GPU Droplets', 'Functions', 'Kubernetes', 'Volumes Block Storage', 'Databases', 'Spaces Object Storage', 'Container Registry', and 'Backups & Snapshots'. The main content area shows a project named 'first-project' with a blue icon. It has tabs for 'Resources', 'Activity', and 'Settings'. Under 'Resources', it says 'DROPLETS (1)'. A single droplet is listed: 'ubuntu-s-1vcpu-1gb-syd1-01'. Its details are as follows:

Image	Ubuntu 24.10 x64	Region	SYD1
Size	1 vCPU 1GB / 25GB Disk (\$6/mo) <a href="#">Resize</a>	IPv4 IPv6 Enable	209.38.20.184 10.126.0.2 default-syd1

At the bottom of the droplet card, it says '170.64.240.164'. On the right side of the screen, there's a sidebar with 'My Team' (Sumaiya Tabassum, Owner), 'My Account', 'Feature Preview', 'Create a Team', 'Sign Out', and a referral link offer: 'Set up a referral link and earn free credits [learn more](#)'.

### 4. SSH Connection

- I used SSH command to connect to the server.
- Command: ssh [root@209.38.20.184](ssh://root@209.38.20.184)

```

root@ubuntu-s-1vcpu-1gb-sy ~ + - 
Microsoft Windows [Version 10.0.26100.3775]
(c) Microsoft Corporation. All rights reserved.

C:\Users\sumta>ssh root@209.38.20.184
root@209.38.20.184's password:
Welcome to Ubuntu 24.10 (GNU/Linux 6.11.0-19-generic x86_64)

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

System information as of Mon May  5 04:51:53 UTC 2025

System load: 0.0          Processes:           103
Usage of /: 19.2% of 23.10GB  Users logged in:      0
Memory usage: 24%          IPv4 address for eth0: 209.38.20.184
Swap usage:  0%            IPv4 address for eth0: 10.49.0.5

32 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

*** System restart required ***
Last login: Wed Apr  2 15:23:15 2025 from 203.217.64.128
root@ubuntu-s-1vcpu-1gb-sy:~# |

```

## 5. System update and upgrade

- Then I applied the command: sudo apt-get update

```

root@ubuntu-s-1vcpu-1gb-sy ~ + - 
Usage of /: 19.2% of 23.10GB  Users logged in:      0
Memory usage: 24%            IPv4 address for eth0: 209.38.20.184
Swap usage:  0%              IPv4 address for eth0: 10.49.0.5

2 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

** System restart required **
Last login: Wed Apr  2 15:23:15 2025 from 203.217.64.128
root@ubuntu-s-1vcpu-1gb-sy:~# sudo apt-get update
[...]
  et:1 https://repos-droplet.digitalocean.com/apt/droplet-agent main InRelease
  et:2 https://repos.digitalocean.com/apt/do-agent main InRelease
  et:3 http://mirrors.digitalocean.com/ubuntu oracular InRelease
  et:4 http://mirrors.digitalocean.com/ubuntu oracular-updates InRelease
  et:5 http://mirrors.digitalocean.com/ubuntu oracular-backports InRelease
  et:6 http://security.ubuntu.com/ubuntu oracular-security InRelease [126 kB]
gn:7 https://ppa.launchpadcontent.net/certbot/certbot/ubuntu oracular InRelease
et:8 http://security.ubuntu.com/ubuntu oracular-security/main amd64 Components [21.5 kB]
et:9 http://security.ubuntu.com/ubuntu oracular-security/universe amd64 Components [7184 B]
et:10 http://security.ubuntu.com/ubuntu oracular-security/restricted amd64 Components [212 B]
et:11 http://security.ubuntu.com/ubuntu oracular-security/multiverse amd64 Components [212 B]
rr:12 https://ppa.launchpadcontent.net/certbot/certbot/ubuntu oracular Release
  404 Not Found [IP: 185.125.190.80 443]
eadning package lists... Done
: The repository 'https://ppa.launchpadcontent.net/certbot/certbot/ubuntu oracular Release' does not have a Release
: Updating from such a repository can't be done securely, and is therefore disabled by default.
: See apt-secure(8) manpage for repository creation and user configuration details.
root@ubuntu-s-1vcpu-1gb-sy:~# |

```

## 6. Install software properties common

- I used the command: sudo apt-get install software-properties-common.

```
root@ubuntu-s-1vcpu-1gb-sy ~ + - 
root@ubuntu-s-1vcpu-1gb-sy1-01:~# sudo apt-get install software-properties-common
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  python3-software-properties
The following packages will be upgraded:
  python3-software-properties software-properties-common
2 upgraded, 0 newly installed, 0 to remove and 31 not upgraded.
Need to get 46.7 kB of archives.
After this operation, 0 B of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://mirrors.digitalocean.com/ubuntu oracular-updates/main amd64 software-properties-common all 0.102.1 [16.5 kB]
Get:2 http://mirrors.digitalocean.com/ubuntu oracular-updates/main amd64 python3-software-properties all 0.102.1 [30.2 kB]
Fetched 46.7 kB in 0s (107 kB/s)
(Reading database ... 108731 files and directories currently installed.)
Preparing to unpack .../software-properties-common_0.102.1_all.deb ...
Unpacking software-properties-common (0.102.1) over (0.102) ...
Preparing to unpack .../python3-software-properties_0.102.1_all.deb ...
Unpacking python3-software-properties (0.102.1) over (0.102) ...
Setting up python3-software-properties (0.102.1) ...
Setting up software-properties-common (0.102.1) ...
Processing triggers for man-db (2.12.1-3) ...
Processing triggers for dbus (1.14.10-4ubuntu5) ...
Scanning processes...
Scanning candidates...
Scanning linux images...

Pending kernel upgrade!
Running kernel version:
  6.11.0-19-generic
Diagnostics:
  The currently running kernel version is not the expected kernel version 6.11.0-24-generic.

Restarting the system to load the new kernel will not be handled automatically, so you should consider rebooting.

Restarting services...
```

## 7. Added the universe Repository command.

```
root@ubuntu-s-1vcpu-1gb-sy1-01:~# sudo add-apt-repository universe
Adding component(s) 'universe' to all repositories.
Press [ENTER] to continue or Ctrl-c to cancel.
Hit:1 https://repos.insights.digitalocean.com/apt/do-agent main InRelease
Hit:2 https://repos-droplet.digitalocean.com/apt/droplet-agent main InRelease
Hit:3 http://mirrors.digitalocean.com/ubuntu oracular InRelease
Hit:4 http://mirrors.digitalocean.com/ubuntu oracular-updates InRelease
Hit:5 http://security.ubuntu.com/ubuntu oracular-security InRelease
Hit:6 http://mirrors.digitalocean.com/ubuntu oracular-backports InRelease
Ign:7 https://ppa.launchpadcontent.net/certbot/certbot/ubuntu oracular InRelease
Err:8 https://ppa.launchpadcontent.net/certbot/certbot/ubuntu oracular Release
  404  Not Found [IP: 185.125.190.80 443]
Reading package lists... Done
E: The repository 'https://ppa.launchpadcontent.net/certbot/certbot/ubuntu oracular Release' does not have a Release file.
N: Updating from such a repository can't be done securely, and is therefore disabled by default.
N: See apt-secure(8) manpage for repository creation and user configuration details.
root@ubuntu-s-1vcpu-1gb-sy1-01:~# |
```

## 8. Add the Certbot PPA

- sudo add-apt-repository ppa:certbot/certbot
- sudo apt-get update

```
root@ubuntu-s-1vcpu-1gb-sydl-01:~# sudo add-apt-repository ppa:certbot/certbot
PPA publishes dbgsym, you may need to include 'main/debug' component
Repository: 'Types: deb
URIs: https://ppa.launchpadcontent.net/certbot/certbot/ubuntu/
Suites: oracular
Components: main
Description:
The PPA has been DEPRECATED.

To get up to date instructions on how to get certbot for your systems, please see https://certbot.eff.org/docs/install.html.
More info: https://launchpad.net/~certbot/+archive/ubuntu/certbot
Adding repository.
Press [ENTER] to continue or Ctrl-c to cancel.
Found existing deb entry in /etc/apt/sources.list.d/certbot-ubuntu-certbot-oracular.sources
Hit:1 https://repos.insights.digitalocean.com/apt/do-agent main InRelease
Hit:2 http://mirrors.digitalocean.com/ubuntu oracular InRelease
Hit:3 https://repos-droplet.digitalocean.com/apt/droplet-agent main InRelease
Hit:4 http://mirrors.digitalocean.com/ubuntu oracular-updates InRelease
Hit:5 http://mirrors.digitalocean.com/ubuntu oracular-backports InRelease
Hit:6 http://security.ubuntu.com/ubuntu oracular-security InRelease
Ign:7 https://ppa.launchpadcontent.net/certbot/certbot/ubuntu oracular InRelease
Err:8 https://ppa.launchpadcontent.net/certbot/certbot/ubuntu oracular Release
  404  Not Found [IP: 185.125.190.80 443]
Reading package lists... Done
E: The repository 'https://ppa.launchpadcontent.net/certbot/certbot/ubuntu oracular Release' does not have a Release file.
N: Updating from such a repository can't be done securely, and is therefore disabled by default.
N: See apt-secure(8) manpage for repository creation and user configuration details.
```

```
root@ubuntu-s-1vcpu-1gb-sydl-01:~# sudo apt-get update
Hit:1 https://repos-droplet.digitalocean.com/apt/droplet-agent main InRelease
Hit:2 https://repos.insights.digitalocean.com/apt/do-agent main InRelease
Hit:3 http://mirrors.digitalocean.com/ubuntu oracular InRelease
Hit:4 http://mirrors.digitalocean.com/ubuntu oracular-updates InRelease
Hit:5 http://mirrors.digitalocean.com/ubuntu oracular-backports InRelease
Hit:6 http://security.ubuntu.com/ubuntu oracular-security InRelease
Ign:7 https://ppa.launchpadcontent.net/certbot/certbot/ubuntu oracular InRelease
Err:8 https://ppa.launchpadcontent.net/certbot/certbot/ubuntu oracular Release
  404  Not Found [IP: 185.125.190.80 443]
Reading package lists... Done
E: The repository 'https://ppa.launchpadcontent.net/certbot/certbot/ubuntu oracular Release' does not have a Release file.
N: Updating from such a repository can't be done securely, and is therefore disabled by default.
N: See apt-secure(8) manpage for repository creation and user configuration details.
```

## 9. Install Certbot's Nginx package

- Sudo apt-get install certbot python3-certbot-nginx

```
root@ubuntu-s-1vcpu-1gb-sydl-01:~# sudo apt-get install certbot python3-certbot-nginx
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
certbot is already the newest version (2.9.0-1.1).
python3-certbot-nginx is already the newest version (2.9.0-1).
0 upgraded, 0 newly installed, 0 to remove and 31 not upgraded.
root@ubuntu-s-1vcpu-1gb-sydl-01:~# |
```

## 10. Set up SSL with certbot for Nginx:

- Sudo certbot –nginx -d Sumaiya.website -d [www.sumaiya.website](http://www.sumaiya.website)

```
root@ubuntu-s-1vcpu-1gb-sydl-01:~# sudo certbot --nginx -d sumaiya.website -d www.sumaiya.website
Saving debug log to /var/log/letsencrypt/letsencrypt.log
-----
You have an existing certificate that contains a portion of the domains you
requested (ref: /etc/letsencrypt/renewal/www.sumaiya.website.conf)

It contains these names: www.sumaiya.website

You requested these names for the new certificate: sumaiya.website,
www.sumaiya.website.

Do you want to expand and replace this existing certificate with the new
certificate?
-----
(E)xpand/(C)ancel:
(E)xpand/(C)ancel: E
Renewing an existing certificate for sumaiya.website and www.sumaiya.website

Successfully received certificate.
Certificate is saved at: /etc/letsencrypt/live/www.sumaiya.website/fullchain.pem
Key is saved at:          /etc/letsencrypt/live/www.sumaiya.website/privkey.pem
This certificate expires on 2025-08-03.
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 sumaiya.website to /etc/nginx/sites-enabled/default
Successfully deployed certificate for www.sumaiya.website to /etc/nginx/sites-enabled/default
Your existing certificate has been successfully renewed, and the new certificate has been installed.

-----
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
-----
```

## 11. Web server (Nginx) configuration:

- I used this command: `sudo nano /etc/nginx/sites-enabled/default`
- Listen on port 80 (HTTP) and 443 (HTTPS)
- Serve my `index.html` file from `/var/www/html`
- Secure the connection using Certbot's SSL certificate

```

GNU nano 8.1                               /etc/nginx/sites-enabled/default

server {
    listen 80;
    server_name sumaiya.website www.sumaiya.website;

    root /var/www/html;
    index index.html;

    location / {
        try_files $uri $uri/ =404;
    }
}

server {
    listen 443 ssl;
    server_name sumaiya.website www.sumaiya.website;

    ssl_certificate /etc/letsencrypt/live/www.sumaiya.website/fullchain.pem;
    ssl_certificate_key /etc/letsencrypt/live/www.sumaiya.website/privkey.pem;
    include /etc/letsencrypt/options-ssl-nginx.conf;
    ssl_dhparam /etc/letsencrypt/ssl-dhparams.pem;

    root /var/www/html;
    index index.html;

    location / {
        try_files $uri $uri/ =404;
    }
}

```

[ Read 29 lines ]

**GNU nano 8.1**

**^G Help** **^O Write Out** **^F Where Is** **^K Cut** **^T Execute** **^C Location** **M-U Undo** **M-A Set Mark**  
**^X Exit** **^R Read File** **^V Replace** **^U Paste** **^J Justify** **^/ Go To Line** **M-E Redo** **M-G Copy**

## 12. Editing the HTML page

```

GNU nano 8.1                               /var/www/html/index.html

<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Sumaiya Tabassum - Photography Blog Project</title>
</head>
<body>
    <h1>Photography Blog Project - ICT171 Assignment 1</h1>

    <p><strong>Name:</strong> Sumaiya Tabassum</p>
    <p><strong>Student ID:</strong> 35149407</p>
    <p><strong>Domain:</strong> <a href="https://sumaiya.website" target="_blank">https://sumaiya.website</a></p>

    <h2>Project Proposal</h2>
    <p>
        My cloud project is a photography blog website hosted on an Infrastructure as a Service (IaaS) platform using DigitalOcean. The >
        <br><br>
        For this project, I deployed an Ubuntu droplet on DigitalOcean and installed the Nginx web server to serve my site content. I als<
        <br><br>
        The website is built using static HTML and CSS. It includes sample photos and an overview of the blog concept, fulfilling the mi<
        <br><br>
        Through this task, I gained hands-on experience in managing Linux via SSH, configuring Nginx, securing a site with SSL, managing<
    </p>

    <h2>License Rationale</h2>
    <p>
        I selected the Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0) license for this project. This licens<
    </p>

    <footer>
        <p>This work is licensed under a
            <a href="https://creativecommons.org/licenses/by-nc/4.0/" target="_blank">
                Creative Commons Attribution-NonCommercial 4.0 International License</a>.

```

[ Read 41 lines ]

**GNU nano 8.1**

**^G Help** **^O Write Out** **^F Where Is** **^K Cut** **^T Execute** **^C Location** **M-U Undo** **M-A Set Mark**  
**^X Exit** **^R Read File** **^V Replace** **^U Paste** **^J Justify** **^/ Go To Line** **M-E Redo** **M-G Copy**

```

<p>
    My cloud project is a photography blog website hosted on an Infrastructure as a Service (IaaS) platform using DigitalOcean. The >
    <br><br>
    For this project, I deployed an Ubuntu droplet on DigitalOcean and installed the Nginx web server to serve my site content. I al>
    <br><br>
    The website is built using static HTML and CSS. It includes sample photos and an overview of the blog concept, fulfilling the mi>
    <br><br>
    Through this task, I gained hands-on experience in managing Linux via SSH, configuring Nginx, securing a site with SSL, managing>
</p>

<h2>License Rationale</h2>
<p>
    I selected the Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0) license for this project. This licens>
</p>

<footer>
    <p>This work is licensed under a
        <a href="https://creativecommons.org/licenses/by-nc/4.0/" target="_blank">
            Creative Commons Attribution-NonCommercial 4.0 International License</a>
        </p>
        <a href="https://creativecommons.org/licenses/by-nc/4.0/">
            
        </a>
    </footer>
<h2>Photo Gallery</h2>




```

|

**Keyboard Shortcuts:**

- Help:** ^G
- Exit:** ^X
- Write Out:** ^O
- Read File:** ^R
- Where Is:** ^F
- Replace:** ^\
- Cut:** ^K
- Paste:** ^U
- Execute:** ^T
- Justify:** ^J
- Location:** ^C
- Go To Line:** ^/
- Undo:** M-U
- Redo:** M-E
- Set Mark:** M-A
- Copy:** M-G

## 13. Final Website Test

- The website loaded successfully over HTTPS.
- The padlock icon appeared in the browser, showing the SSL certificate was working.
- The HTML page displayed my blog title, name, student ID, and welcome message.

## 14. GitHub Repository

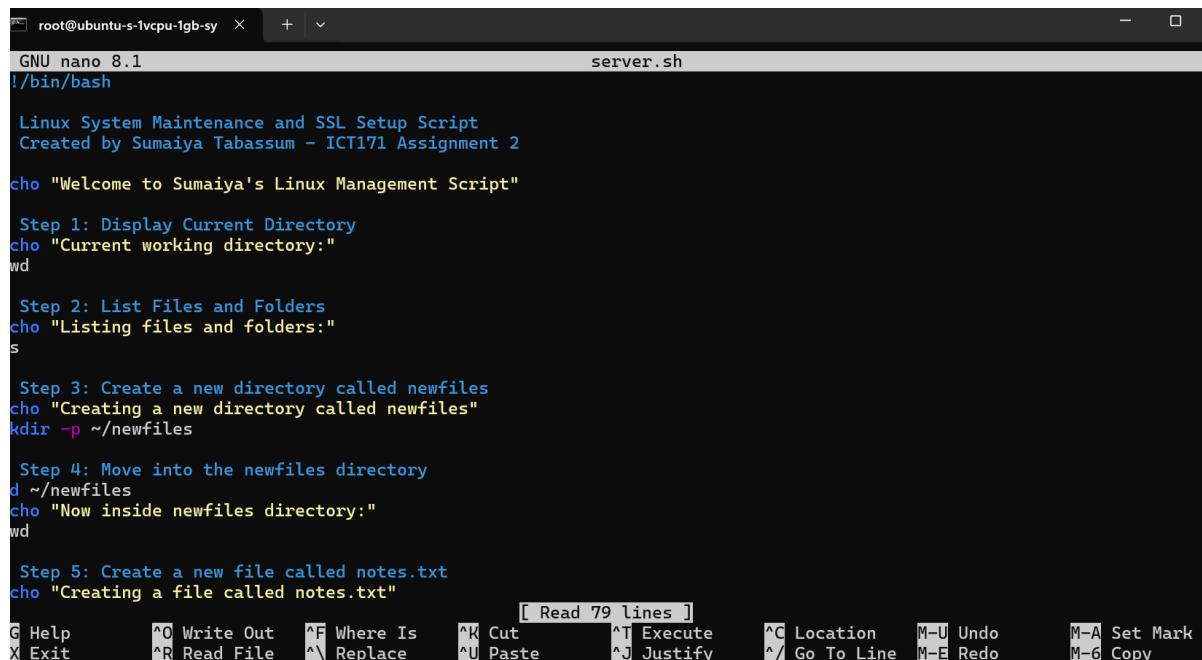
- I uploaded the following files to my GitHub repository:
- index.html — the photography blog HTML page
- server.sh — the Bash script I created for server task for the beginners and beginners of Linux user.
- GitHub repository link:  
<https://github.com/sumaiya2025/ict171-assignment2.git>

## 15. Windows Scripting for Server Access and File Transfer

- To manage the server from my local Windows computer, I used the Windows Command Prompt.  
`ssh root@209.38.20.184` (This command allowed me to connect securely from my Windows terminal to the Ubuntu server hosted on DigitalOcean.)
- SCP command to copy file from server to desktop:  
`scp root@209.38.20.184:/var/www/html/index.html C:\Users\sumta\Desktop\` (This command downloaded the HTML file from the server to my Windows machine.)  
These commands demonstrate how I used **Windows scripting** to remotely access, manage, and transfer files to and from the IaaS server.)

## 16. Bash Scripting (server.sh)

- To support my project and demonstrate basic scripting skills, I created a Bash script named `server.sh`. This script automates essential server setup tasks and is designed for beginners learning Linux.
- I created a Bash Script named **server.sh**
- I used the command: `nano server.sh`



```

root@ubuntu-s-1vcpu-1gb-sy:~% nano 8.1          server.sh
GNU nano 8.1
#!/bin/bash

Linux System Maintenance and SSL Setup Script
Created by Sumaiya Tabassum - ICT171 Assignment 2

echo "Welcome to Sumaiya's Linux Management Script"

Step 1: Display Current Directory
echo "Current working directory:"
wd

Step 2: List Files and Folders
echo "Listing files and folders:"
ls

Step 3: Create a new directory called newfiles
echo "Creating a new directory called newfiles"
mkdir -p ~/newfiles

Step 4: Move into the newfiles directory
cd ~/newfiles
echo "Now inside newfiles directory:"
wd

Step 5: Create a new file called notes.txt
echo "Creating a file called notes.txt"

```

The screenshot shows a terminal window titled "root@ubuntu-s-1vcpu-1gb-sy ~". The command `nano 8.1` was run to edit a file named `server.sh`. The script contains five steps: displaying the current working directory, listing files and folders, creating a new directory called `newfiles`, moving into it, and creating a new file called `notes.txt`. The terminal also shows standard nano key bindings at the bottom.

- To make it executable: `chmod +x server.sh`
- To run the script: `./server.sh`

- This script creates a new directory called “newfiles”. It updates and upgrades the Ubuntu system and installs Nginx and Certbot. Basically, it will help for the beginners, and it will help them how to operate Linux server for the very first time. It will introduce them to the Linux server.
- **The script is saved in my GitHub repository:**  
 <https://github.com/sumaiya2025/ict171-assignment2>

## 17. License

- I applied the **Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0)** license to my project. (<https://creativecommons.org/licenses/by-nc/4.0/>)
- This license allows others to share, use, and adapt my work. As long as they give proper credit. I chose this license to protect my photography blog content from being reused for profit.

## 18. Video Demonstration

- For the video I have already showed that how I deploy my website.
- The video, I uploaded it google drive.
- For the video you have to download it. :)
- Video link:  
<https://drive.google.com/file/d/1DqwGBHw8jmANBltp1ps1EY3VFmPDTUJQ/view?usp=sharing>