CLOUD SERVER PROJECT REPORT

Project Title: CharityDonation Web

Application Deployment

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Github Repository: https://github.com/yasirarafat100/CharityDonation

IP address: https://18.139.115.202/

Website Link: https://childernhopeyasin.click/

INTRODUCTION

The report provides a detailed description of how the project named "CharityDonation" was planned, implemented and documented for cloud hosting. Amazon Web Services (AWS) Elastic Compute Cloud (EC2) is used as the IaaS provider for the deployment. Our goal with this server is to deliver a static website application that spreads awareness of charity and its benefits to the public.

The work consisted of installing a Linux server, setting up the web application, connecting to GitHub for version control management, configuring access rules and security, optional setup of a DNS server and writing scripts to automate server installation. This assignment let me use what I learned in ICT171 by working on cloud infrastructure and creating professional documentation.

SERVER PLANNING AND ARCHITECTURE

The initial stage was setting up a basic architectural plan. The system would use an EC2 instance on AWS to host the server, running Amazon Linux 2. The AWS Free Tier made a t2.micro instance the most readily available option. The services within a stack are:

Operating System

Ubuntu

Web Server

Apache HTTP Server

Source Control

GitHub

Cloud Solution

AWS (EC2)

Script Automation

Bash

SERVER DEPLOYMENT STEPS

LAUNCHING EC2 INSTANCE

1. Logged into AWS Console and navigated to EC2 Dashboard.
2. Created a new t2.micro EC2 instance.
3. Selected Amazon Linux 2 AMI (Free Tier Eligible).
4. Configured network settings and created a new security group.
5. Enabled ports 22 and 80.
6. Downloaded PEM key file for SSH access.

INSTALL APACHE AND GIT

```
sudo apt update -y

sudo apt install httpd git -y

sudo systemctl start httpd

sudo systemctl enable httpd
```

GITHUB INTEGRATION

A public repository was created to host the project files:

- **Repository**

  CharityDonation

- **Files**

  index.html, styles.css, script.js and deployment.js

The repository was cloned directly into the EC2 instance:

```
cd /var/www/html

sudo rm -rf *

sudo git clone https://github.com/yasirarafat100/CharityDonation.git .

sudo chmod -R 755 /var/www/html
```

This command ensured the website files were available to the Apache web server.

AUTOMATION SCRIPT

A Bash script was developed to automate server provisioning

```
#!/bin/bash
```

sudo yum update -y

sudo yum install httpd git -y

sudo systemctl start httpd

sudo systemctl enable httpd

cd /var/www/html

sudo rm -rf *

sudo git clone https://github.com/yasirarfat100/CharityDonation.git .

sudo chmod -R 755 /var/www/html

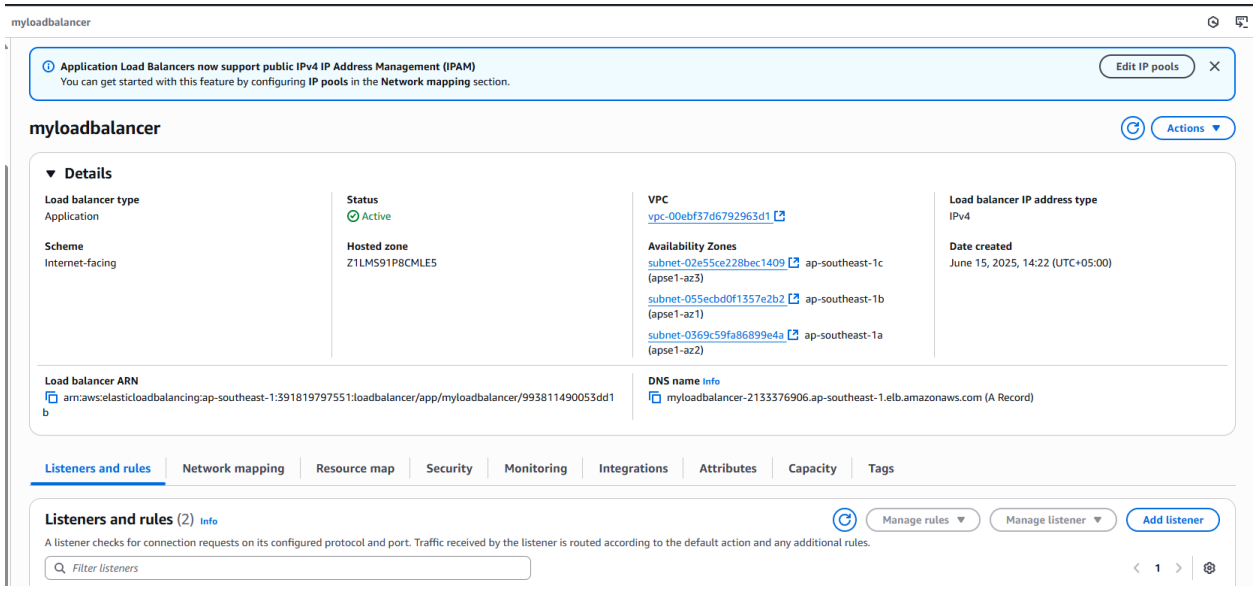
This script reduces setup time and ensures a consistent deployment process.

```
Get:15 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Components [212 B]
Get:16 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [208 B]
Fetched 1015 kB in 2s (649 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
45 packages can be upgraded. Run 'apt list --upgradable' to see them.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
apache2 is already the newest version (2.4.58-1ubuntu8.6).
0 upgraded, 0 newly installed, 0 to remove and 45 not upgraded.
Synchronizing state of apache2.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable apache2
ubuntu@ip-172-31-25-40:~$ sudo systemctl start apache2
sudo systemctl enable apache2
Synchronizing state of apache2.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable apache2
ubuntu@ip-172-31-25-40:~$ cd /var/www/html
sudo rm -rf *
```

HTTPS CONFIGURATION AND SSL/TLS SETUP (WITHOUT SCRIPT INCLUSION)

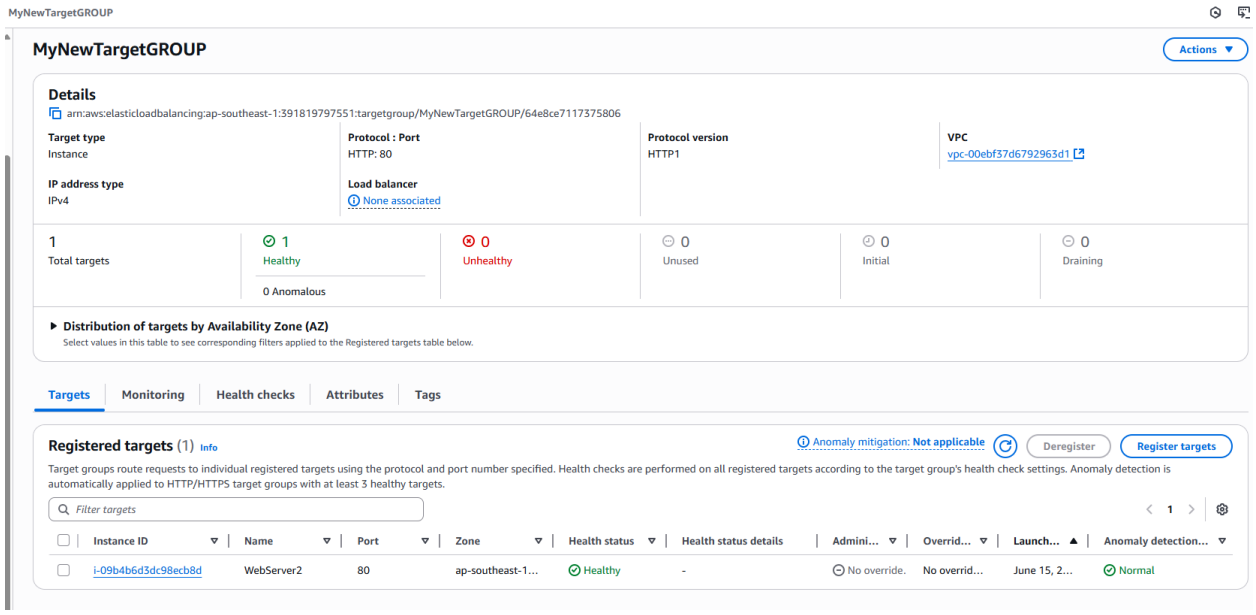
1. CREATED LOAD BALANCER

To begin, I logged into the AWS EC2 console and established an Application Load Balancer named myloadbalancer. Functioning as a central gateway for traffic, the load balancer spreads incoming HTTP/HTTPS requests across the backend EC2 instance.



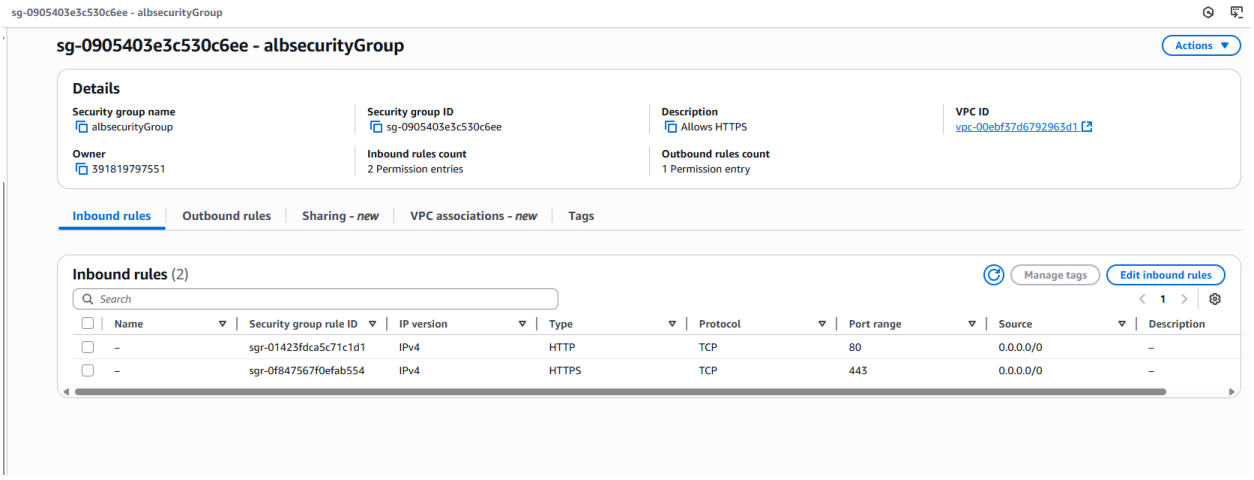
2. CREATED TARGET GROUP

Afterward, I built a target group bound to HTTP port 80 and connected it to my EC2 instance. In this configuration, I could confirm that the web server answered properly to basic HTTP requests before implementing HTTPS.



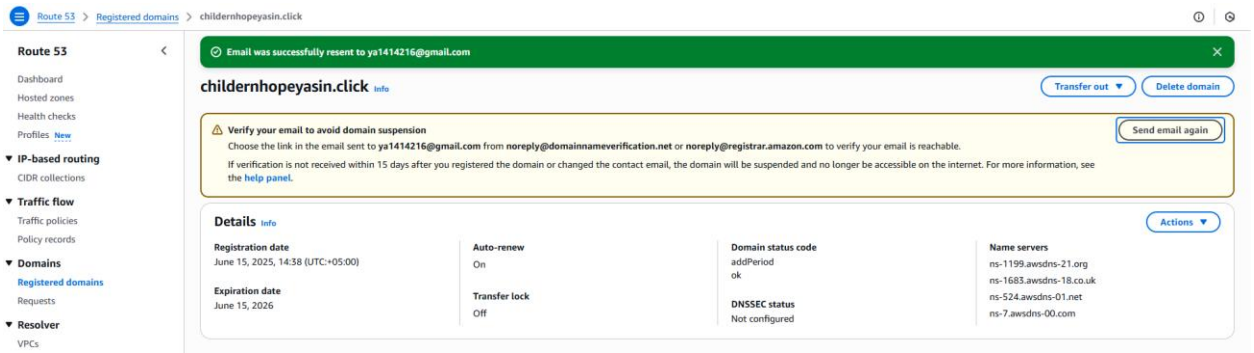
3. SECURITY GROUP CONFIGURED

Subsequently, I set up a security group to regulate traffic to both my EC2 instance and associated Load Balancer. I added inbound rules for ports 80 (HTTP) and 443 (HTTPS) to allow incoming web traffic securely and support both protocols.



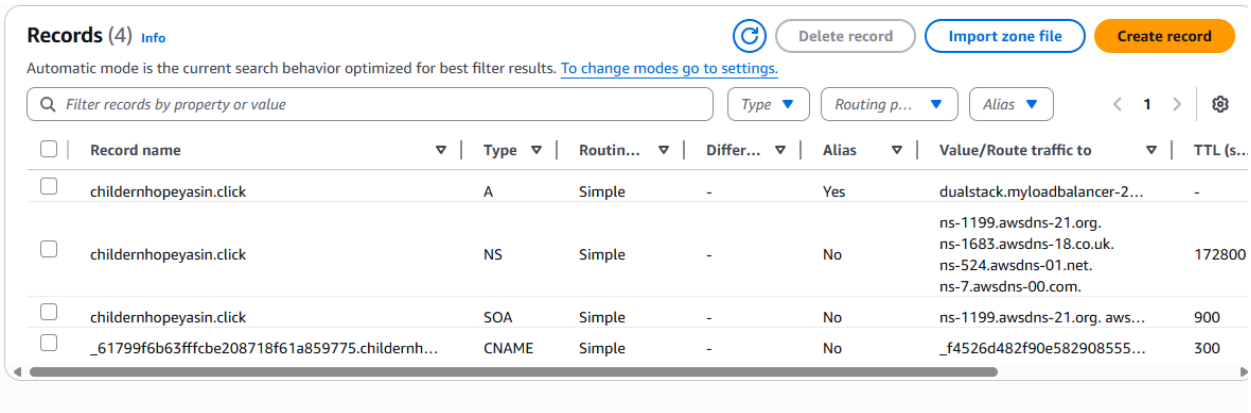
4. PURCHASED DOMAIN VIA ROUTE 53

To visit the site via a custom domain, I bought the childernhopeyasin.click address through AWS Route 53. Such a domain furnishes a professional identity and is essential for SSL certificate validation.



5. CREATED DNS RECORD

Once the domain was purchased, I subsequently set up a DNS A record on Route 53, routing it to the load balancer. In doing so, every request made to the domain is directed to the website running on the EC2 instance.



Records (4) Info

Delete record | Import zone file | Create record

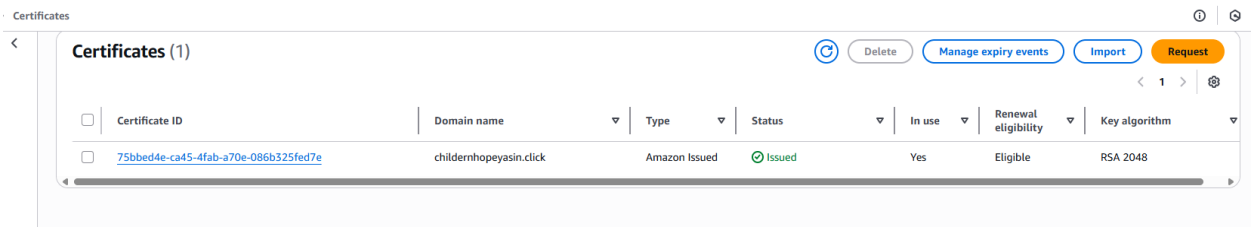
Automatic mode is the current search behavior optimized for best filter results. To change modes go to settings.

Filter records by property or value | Type | Routing p... | Alias

Record name	Type	Routin...	Differ...	Alias	Value/Route traffic to	TTL (s...
childernhopeyasin.click	A	Simple	-	Yes	dualstack.myloadbalancer-2...	-
childernhopeyasin.click	NS	Simple	-	No	ns-1199.awsdns-21.org. ns-1683.awsdns-18.co.uk. ns-524.awsdns-01.net. ns-7.awsdns-00.com.	172800
childernhopeyasin.click	SOA	Simple	-	No	ns-1199.awsdns-21.org. aws...	900
_61799f6b63fffcbe208718f61a859775.childernh...	CNAME	Simple	-	No	_f4526d482f90e582908555...	300

6. REGISTERED A NEW SSL CERTIFICATE AND SET IT UP.

To convert the site to HTTPS, I used AWS Certificate Manager (ACM) to register a free SSL certificate for the domain. I then bound the certificate to a fresh HTTPS rule inside the load balancer, thereby securing web traffic.



Certificates

Certificates (1)

Delete | Manage expiry events | Import | Request

Certificate ID	Domain name	Type	Status	In use	Renewal eligibility	Key algorithm
75bbed4e-ca45-4fab-a70e-086b325fed7e	childernhopeyasin.click	Amazon Issued	Issued	Yes	Eligible	RSA 2048

TESTING AND VALIDATION

Post-deployment, validation steps included:

- Accessing the website via browser: https://childernhopeyasin.click/
- Verifying Apache status: sudo systemctl status httpd
- Confirming GitHub files were loaded correctly

Functional testing confirmed that the HTML, CSS, and JS were rendered as expected and the browser could access the site globally.


Children's Hope
Home
About
Our Work
Stories
Team
Donate Now
Transforming Lives, One Child at a Time
Join us in our mission to provide education, healthcare, and relief to children in need around the world. Together, we can create lasting change.
Donate Now
Learn More
About Children's Hope
Dedicated to creating lasting change in children's lives worldwide through education, healthcare, and emergency relief programs.
Our Mission
Founded in 2009, Children's Hope has been at the forefront of providing essential services to underprivileged children globally. We believe every child deserves access to quality education, healthcare, and basic necessities regardless of their circumstances.
Education
Quality learning for all
Healthcare
Medical care & nutrition

Our Work

Three pillars of impact: Education, Health, and Relief programs that transform communities

Education

Building schools, training teachers, and providing educational materials to ensure every child has access to quality learning opportunities.

Health

Providing medical care, nutrition programs, and health education to improve children's overall well-being and development.

Relief

Emergency response and long-term solutions to combat hunger and provide essential supplies during crises.

Stories of Hope

Real stories from the children and families whose lives have been transformed

Health Impact

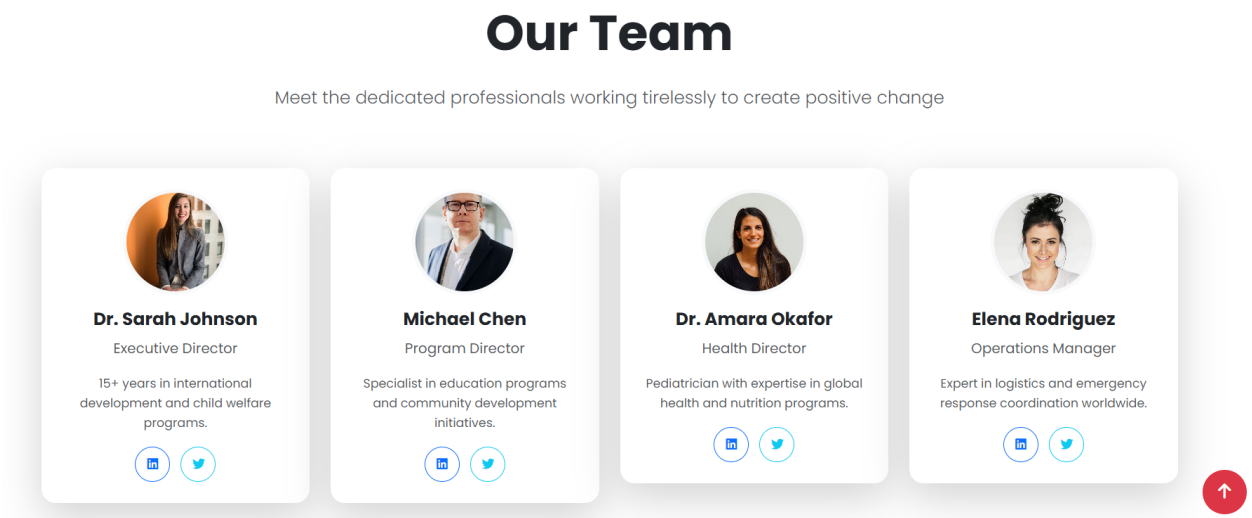
Ahmed's Recovery

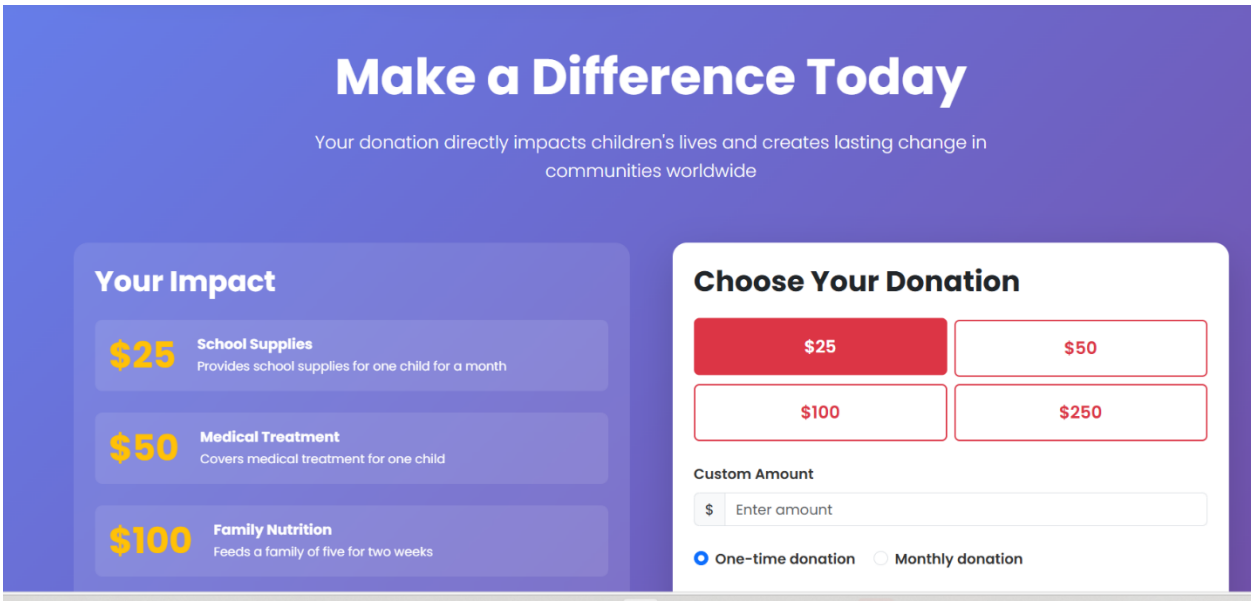
Bangladesh

"When I was sick with malaria, the mobile clinic came to our village. The doctors saved my life. Now I'm healthy and back in school, playing with my friends every day and dreaming of becoming a doctor."

Treatment received:
2019

Health status:
Fully recovered





SCRIPT DOCUMENTATION

The CharityDonation project's script.js file is a well-made JavaScript file that makes the website more responsive, accessible and captures the user's attention. It is more than just validating and also relies on several components together to demonstrate strong grasp of scripting, good user experience and performance.

KEY FEATURES

NAVIGATION ENHANCEMENTS

Page links scroll onto the screen comfortably and they appear highlighted when visited; the background image in the navbar moves based on how far down the page you've scrolled.

THE SYSTEM USES LOGIC WHEN PROCESSING DONATION FORMS.

Handles user clicks on donation buttons or typing in a donation amount. It handles missing inputs by highlighting required fields and giving error messages or success texts in real time.

COUNTER ANIMATION

Utilizes IntersectionObserver to show animated statistics counters as you scroll down the page, helping to avoid unnecessary activities on the screen.

NEWSLETTER SUBSCRIPTION

Ensures valid email addresses and responds promptly to actions from the subscribers. For verification, it relies on using icons and alerts.

REAL-TIME CAROUSEL AND SCROLL EFFECTS

Cycles through the user stories using Bootstrap's carousel and also adds animations to cards and content sections using IntersectionObserver and Animate.css.

SCROLL-TO-TOP BUTTON

Javascript is used to add styling and features that improve the navigation, mainly for mobile and long pages.

LAZY LOADING & PRELOADING

Ensures images are loaded quickly and uses fewer resources to boost how fast the site runs.

EASY-TO-USE AND ERROR MANAGEMENT

The theme supports skipping to main content, better keyboard support, touch-friendly mobile experiences and simulation of print. Errors are displayed in the console and make debugging easier.

SECURITY CONSIDERATIONS

Several best practices were implemented:

- Used SSH key pair for login (instead of password).
- Closed unused ports in the EC2 Security Group.
- Applied file permission restrictions (chmod 755).
- Regular updates using yum update.

If the project were to be extended, future enhancements would include HTTPS using Let's Encrypt and integration with Cloudflare for additional protection.

LEARNING OUTCOMES AND REFLECTION

The project helped me understand and apply cloud infrastructure setups and management more thoroughly. Things you learn to do well:

IAAS PROFICIENCY

Understanding how EC2 instances are launched, security measures involved and working with SSH.

LINUX COMMAND-LINE

Acquired proficiency with the basics like commands, user permissions and file structures.

APACHE CONFIGURATION

Are familiar with server setup, handling of directories and serving web content.

GITHUB USAGE

Developed abilities to manage versions, collaborate online and keep projects hosted on servers.

AUTOMATION

Bash scripting built my trust in automating the steps to deploy applications.

Making sure DNS updates were delivered and fixing Apache file permissions were my main challenges. By using thorough debugging and consulting the official documents, these problems were fixed. Scripting the deployment process made sure the process could be repeated easily, and the results were always consistent.

CONCLUSION

All in all, this project allowed me to set up and use an EC2 server on AWS and a GitHub repository. The project is now available to the public and all required learning was completed. It highlights what I can do and is because I will modify it throughout later semesters. Through these experiences, I am now confident and able to manage web infrastructure in cloud systems securely and smoothly. Everything about documentation, version control, scripting and deployment was fully discussed.

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