# Route 53

## What is Route 53 ?

- Amazon's Domain Name System (DNS) service
- Connects users to your website/application.
- Routes internet traffic to AWS resources, such as EC2 instances, S3 buckets, and more.

## What Route 53 Does ?

- Domain registration : Register and manage your domain names e.g devopsguide.online with Route 53.
- DNS record management : Create and manage DNS records (A, CNAME, MX, etc.) to control how your domain is accessed.
- Traffic routing : Route traffic to your website/application based on conditions (e.g., geography, latency) for optimal performance.
- Health checks : Monitor your resources' health and automatically route traffic to healthy resources if issues arise.
- Domain routing to AWS resources : Seamlessly connect your domain to AWS services like EC2, S3, and Lambda.

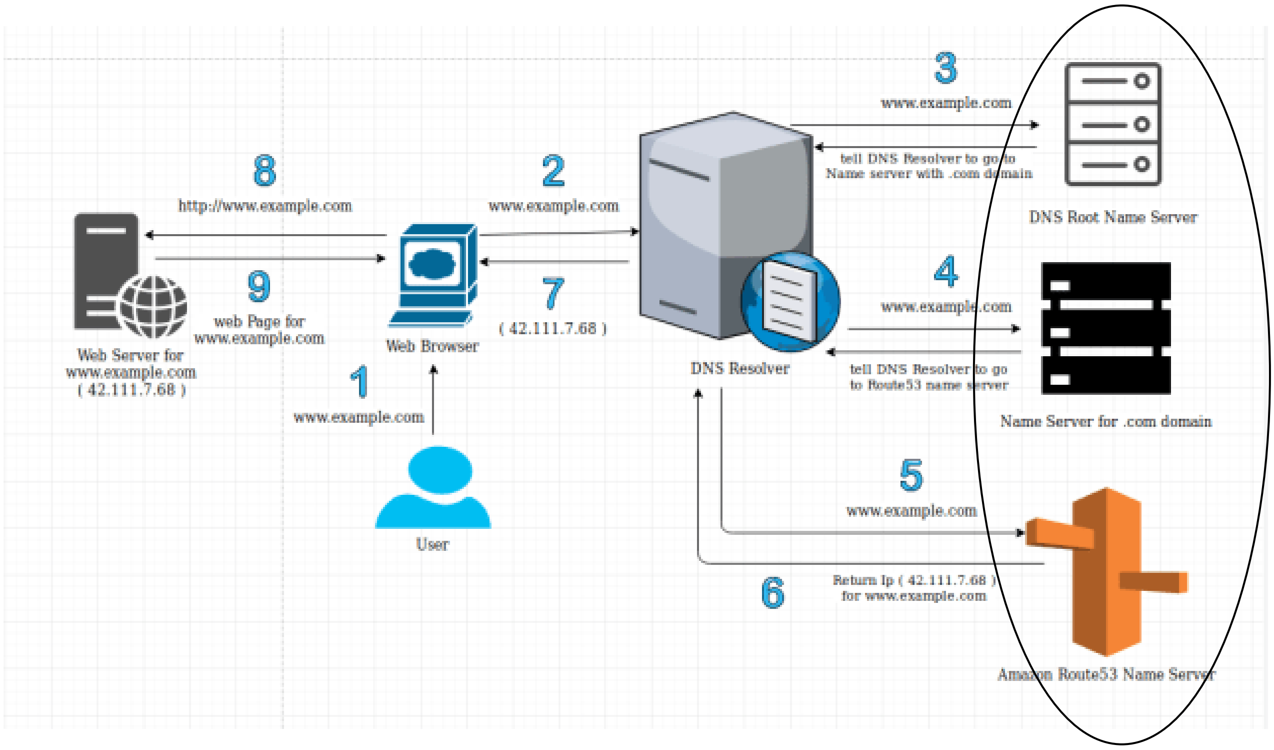
## Analogy:

Think of Route 53 as a GPS for the internet.

- You enter a website's address (devopsbatch.online)

- Route 53 directs you to the correct location (192.24.13.65)

## Diagrams to illustrate DNS resolution


3
www.example.com
tell DNS Resolver to go to Name server with .com domain
DNS Root Name Server
8
http://www.example.com
2
www.example.com
9
web Page for www.example.com
7
( 42.111.7.68 )
Web Server for www.example.com ( 42.111.7.68 )
Web Browser
DNS Resolver
4
www.example.com
tell DNS Resolver to go to Route53 name server
Name Server for .com domain
1
www.example.com
User
5
www.example.com
6
Return Ip ( 42.111.7.68 ) for www.example.com
Amazon Route53 Name Server

# Domain Breakdown

- Root Domain: devopsbatch.online

- Top-Level Domain (TLD): .online

- Second-Level Domain (SLD): devopsbatch

- Subdomain: www

Hierarchy

```
.online (TLD)
|
|-- devopsbatch (SLD/Root Domain)
|   |
|   |-- www (Subdomain)
```

In this case:

- "devopsbatch.online" is the root domain

- "www" is a subdomain of "devopsbatch.online"

Other possible subdomains:

- blog.devopsbatch.online

- training.devopsbatch.online

- community.devopsbatch.online

Now Lets see how the DNS resolver works

Explanation of DNS resolution using `www.devops.com`:

1. **Type the Address**: You enter `www.devops.com` in your browser.

2. **Check Cache**: The browser checks if it has the IP address cached. If not, the operating system checks its own cache.

3. **Query the DNS Resolver**: If no cached data is found, the OS sends the request to your DNS resolver (like your ISP's DNS or Google DNS).

4. **Root DNS Server**: The DNS resolver first asks the **root DNS server** for help. The root server doesn't know `www.devops.com` but directs the resolver to the **.com TLD server**.

5. **.com TLD Server**: Then DNS resolver then asks the **.com TLD server** where to find `devops.com`. The TLD server responds with the address of the **devops.com authoritative name server**.

6. **Authoritative Server**(route 53): The DNS resolver asks the **devops.com server** for the exact IP address of `www.devops.com`. This server provides the correct IP address.

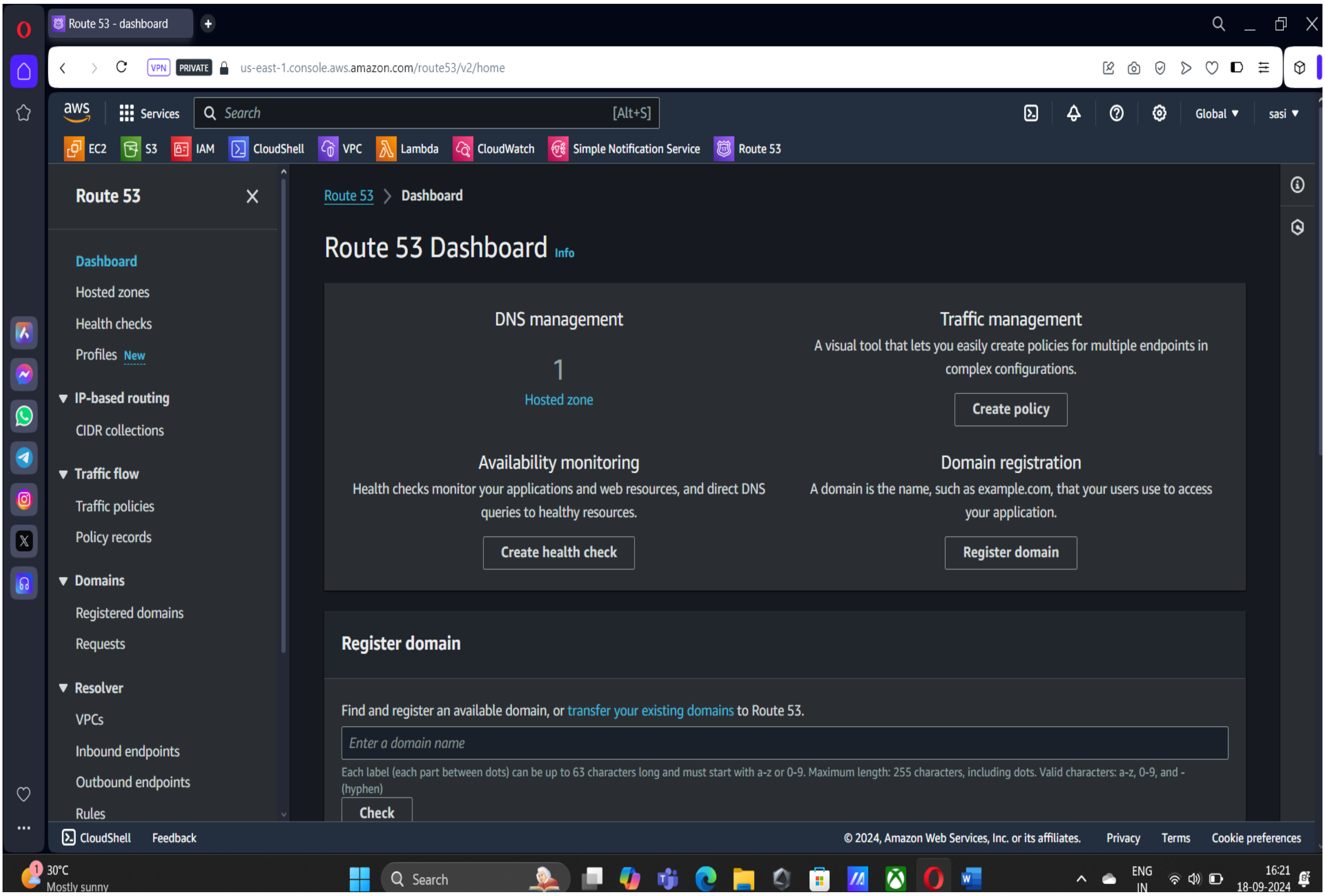
7. **IP Sent Back**: The DNS resolver sends the IP address to your browser, which then connects to the server and loads the webpage.

### Summary:

- **Root server** → **.com TLD server** → **devops.com server** → **IP address of `www.devops.com`** → Browser connects to website.

# Lets Create Route 53

Login to AWS and navigate to Route 53



A visual tool that lets you easily create policies for multiple endpoints in complex configurations.

Health checks monitor your applications and web resources, and direct DNS queries to healthy resources.

A domain is the name, such as example.com, that your users use to access your application.

Find and register an available domain, or transfer your existing domains to Route 53.

Each label (each part between dots) can be up to 63 characters long and must start with a-z or 0-9. Maximum length: 255 characters, including dots. Valid characters: a-z, 0-9, and - (hyphen)

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DNS Management

- Manage DNS records (A, CNAME, MX, etc.)

- Hosted zones in Route 53 are used for domain management, where all your domain's DNS records are mapped and managed.

- DNS query logging

Traffic Management

- Route traffic based on:
- Latency
- Geolocation
- Weight

- Load balancing and failover routing

What are records ?

In DNS management, records are used to map a domain name to an IP address or another domain name.

Here are some examples of DNS records for the domain devopsgroup.online:

**A Records**

1. devopsgroup.online → 192.0.2.1 (maps domain to IP address)

2. (link unavailable) → 192.0.2.1 (maps subdomain to IP address)

3. blog.devopsgroup.online → 192.0.2.2 (maps subdomain to different IP address)

**CNAME Records**

1. blog.devopsgroup.online → devopsgroup.online (maps subdomain to main domain)

2. shop.devopsgroup.online → shopify.devopsgroup.online (maps subdomain to Shopify)

3. mail.devopsgroup.online → (link unavailable) (maps mail subdomain to Google Mail)

**MX Records**

1. devopsgroup.online → mail.devopsgroup.online (routes email to mail server)

2. devopsgroup.online → (link unavailable) (routes email to Gmail)

**NS Records**

1. devopsgroup.online → ns1.devopsgroup.online (specifies name server)

2. devopsgroup.online → ns2.devopsgroup.online (specifies secondary name server)

**PTR Records**

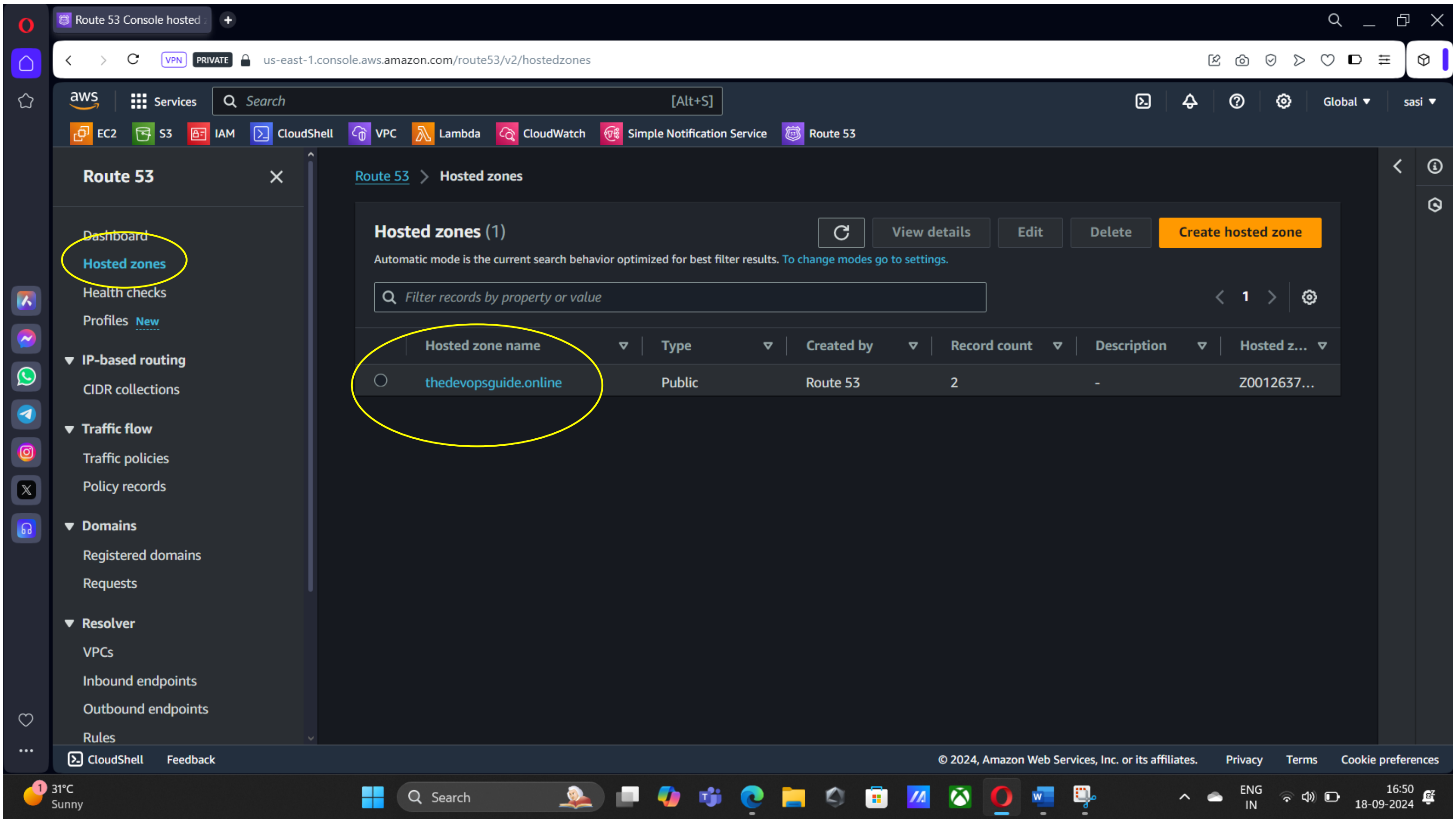
1. 192.0.2.1 → devopsgroup.online (reverse DNS record)

**AAAA Records**

1. devopsgroup.online → 2001:0db8:85a3:0000:0000:8a2e:0370:7334 (IPv6 record)

# Task-1 : lets use create A record

A record will simply map my Ec2 instance public to Domain



Hosted zones (1)

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

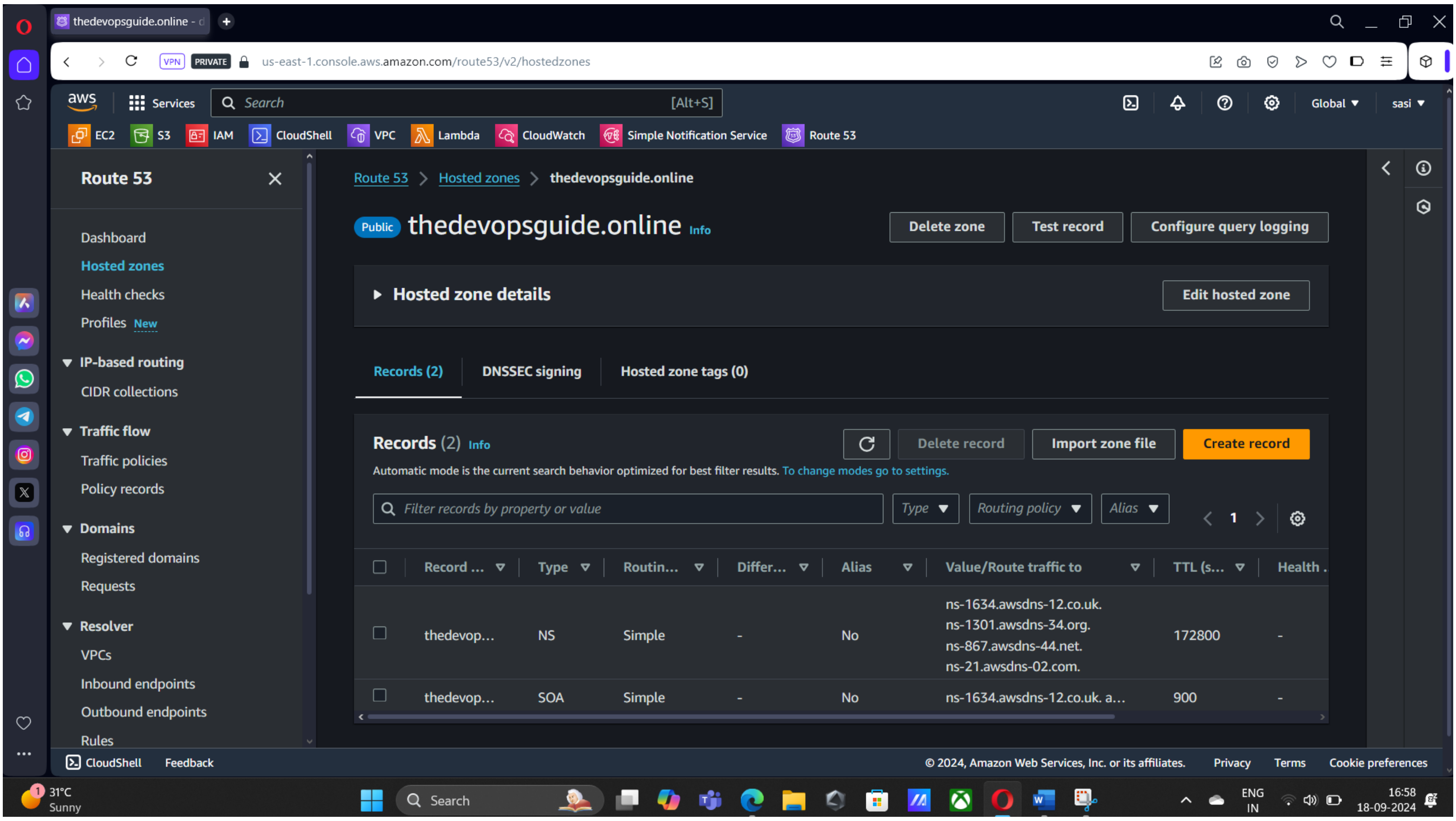
| | Hosted zone name | Type | Created by | Record count | Description | Hosted z... |
|---|---|---|---|---|---|---|
| ○ | thedevopsguide.online | Public | Route 53 | 2 | - | Z0012637... |

Click on Hosted zones You will get the Above page

Here I have already added the domain which I have purchased from hostinger (thedevopsguide.online)

If your first time user Please add your domain by creating hosted zone
you have to transfer your domain to route 53 then only you can access

Hosted zone name is noting but it like person it has the all details of your domains



us-east-1.console.aws.amazon.com/route53/v2/hostedzones

Route 53 > Hosted zones > thedevopsguide.online

Public thedevopsguide.online Info

Delete zone | Test record | Configure query logging

Hosted zone details — Edit hosted zone

Records (2) | DNSSEC signing | Hosted zone tags (0)

Records (2) 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 policy | Alias

| □ | Record ... | Type | Routin... | Differ... | Alias | Value/Route traffic to | TTL (s... | Health . |
|---|---|---|---|---|---|---|---|---|
| □ | thedevop... | NS | Simple | - | No | ns-1634.awsdns-12.co.uk.<br>ns-1301.awsdns-34.org.<br>ns-867.awsdns-44.net.<br>ns-21.awsdns-02.com. | 172800 | - |
| □ | thedevop... | SOA | Simple | - | No | ns-1634.awsdns-12.co.uk. a... | 900 | - |

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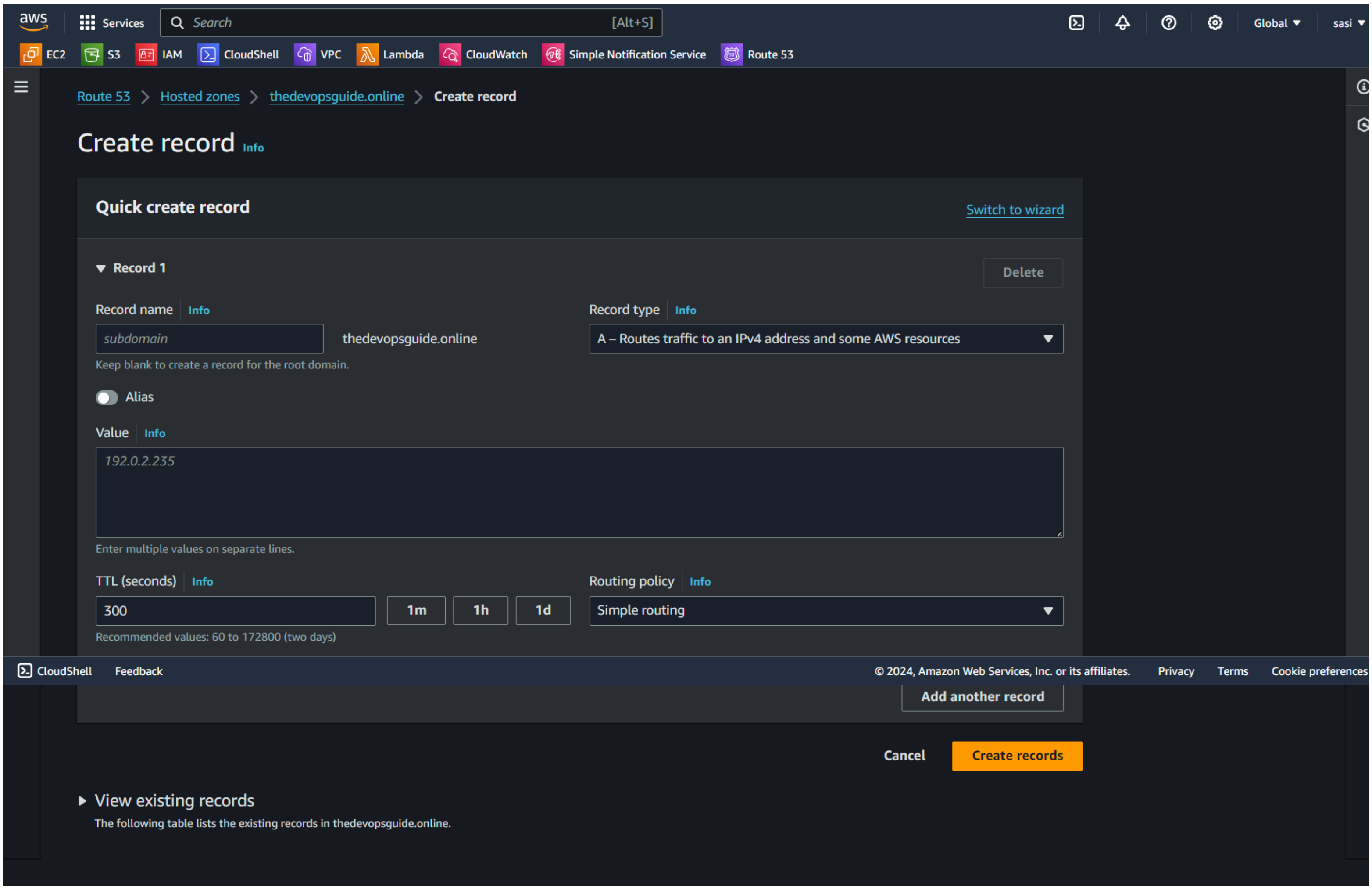
Click on Create record



Route 53 > Hosted zones > thedevopsguide.online > Create record

Create record Info

Quick create record — Switch to wizard

Record 1 — Delete

Record name Info: subdomain .thedevopsguide.online

Keep blank to create a record for the root domain.

Alias

Record type Info: A – Routes traffic to an IPv4 address and some AWS resources

Value Info: 192.0.2.235

Enter multiple values on separate lines.

TTL (seconds) Info: 300 — 1m | 1h | 1d

Recommended values: 60 to 172800 (two days)

Routing policy Info: Simple routing

Add another record

Cancel | Create records

View existing records

The following table lists the existing records in thedevopsguide.online.

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Record Creation Fields:

1. Name: The name of the record (e.g., devopsgroup.online, blog.devopsgroup.online)

2. Type: The type of record (A, CNAME, MX, NS, TXT, etc.)

3. Value: The value of the record (e.g., IP address, domain name, mail server)

4. TTL (Time To Live): The time (in seconds) that the record is cached

Give your subdomain name example (www. , blog., email.)

Select the record type

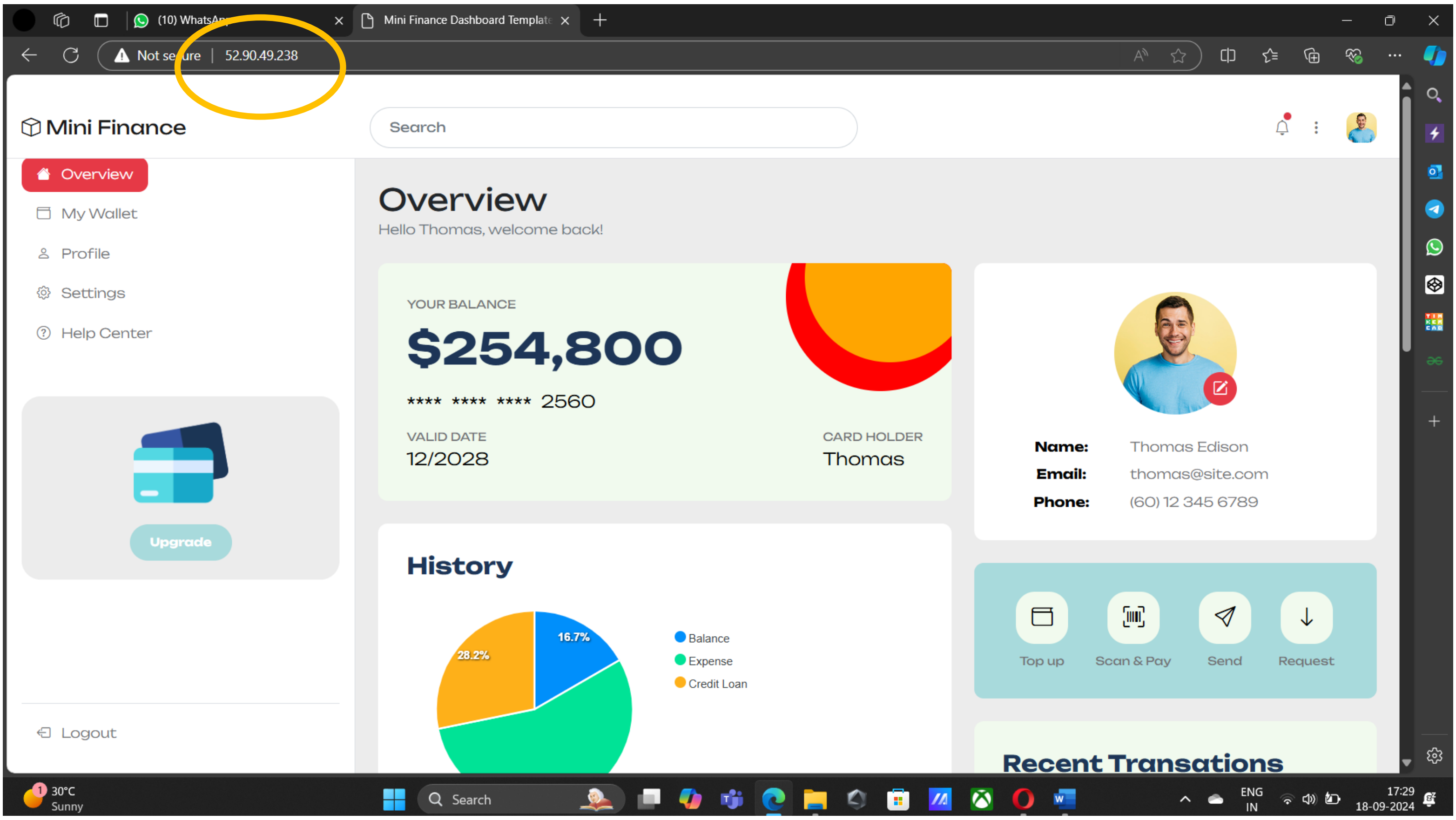
Give Value

Give TTL 30 sec

I have created Ec2 instance first and the hosted a web site in it .

Now using the  IP  address Ec2 to map the domain

Now first I will use IP address for testing my web-site .



Name: Thomas Edison
Email: thomas@site.com
Phone: (60) 12 345 6789

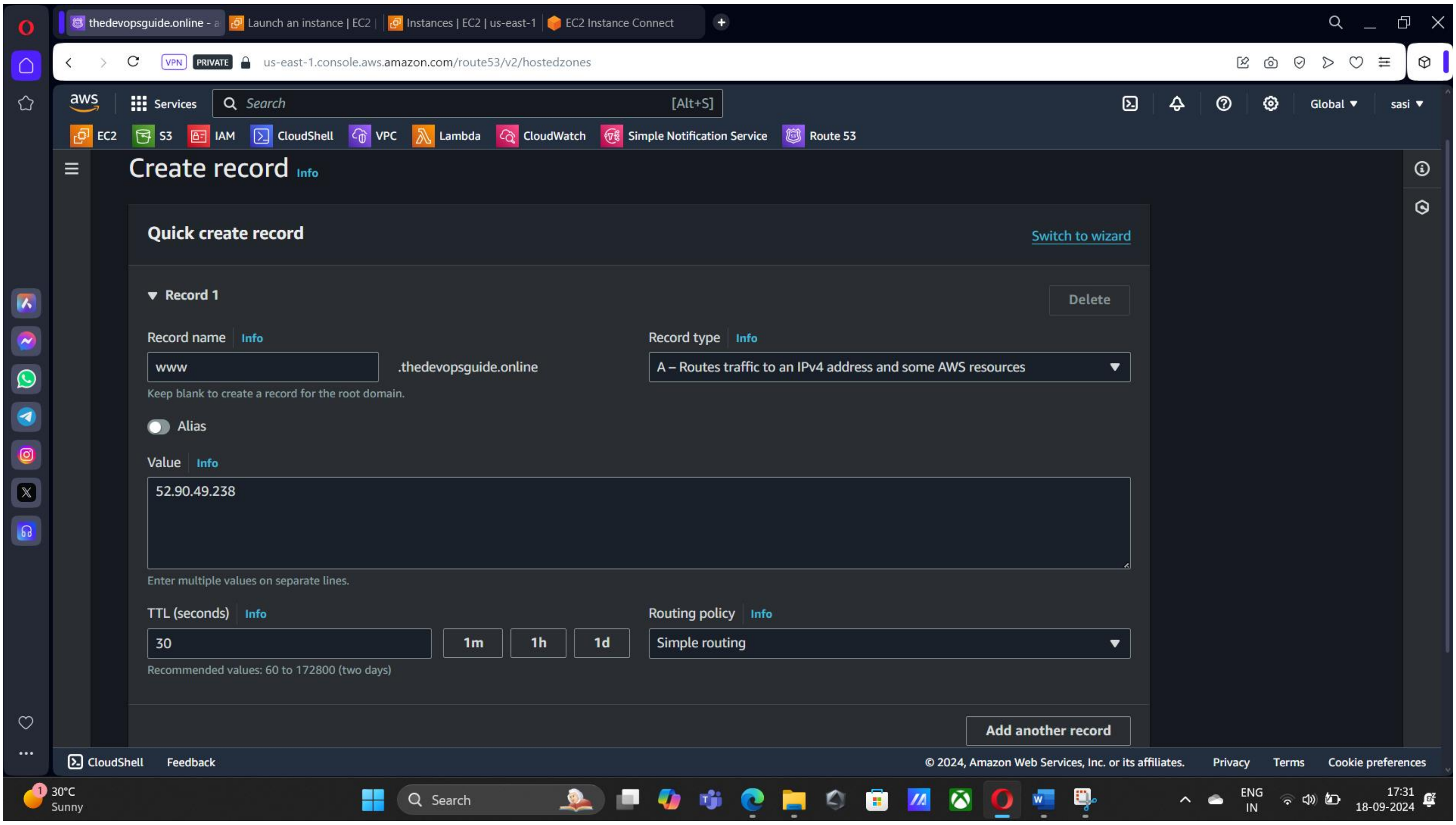
As you can see that I have used IP address

Now I will map the IP address for domain.name

See in the below image that I have pasted IP address of my Ec2 instance and I have selected A record

I have kept TTL as 30 seconds so that my domain name will be in user cached for 30 sec

Click on create record



thedevopsguide.online - a
Launch an instance | EC2 |
Instances | EC2 | us-east-1
EC2 Instance Connect
us-east-1.console.aws.amazon.com/route53/v2/hostedzones
Services
Search
[Alt+S]
Global
sasi
EC2
S3
IAM
CloudShell
VPC
Lambda
CloudWatch
Simple Notification Service
Route 53
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences
30°C
Sunny
Search
ENG
IN
17:31
18-09-2024

Create record Info

Quick create record

Switch to wizard

Record 1

Delete

Record name Info

www .thedevopsguide.online

Keep blank to create a record for the root domain.

Record type Info

A – Routes traffic to an IPv4 address and some AWS resources

Alias

Value Info

52.90.49.238

Enter multiple values on separate lines.

TTL (seconds) Info

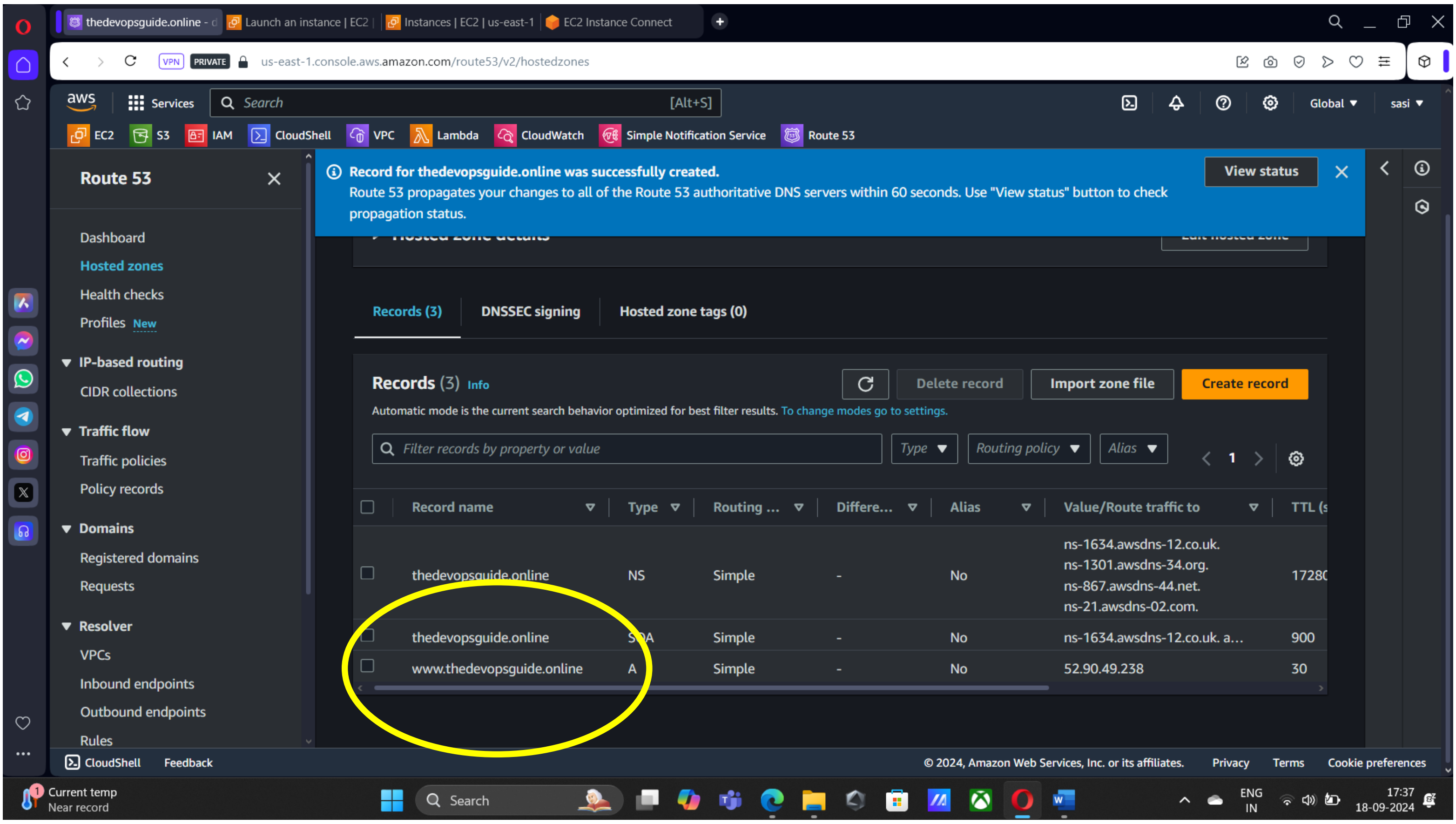
30 1m 1h 1d

Recommended values: 60 to 172800 (two days)

Routing policy Info

Simple routing

Add another record



Record for thedevopsguide.online was successfully created.
Route 53 propagates your changes to all of the Route 53 authoritative DNS servers within 60 seconds. Use "View status" button to check propagation status.

View status

Records (3) DNSSEC signing Hosted zone tags (0)

Records (3) Info

Delete record Import zone file Create record

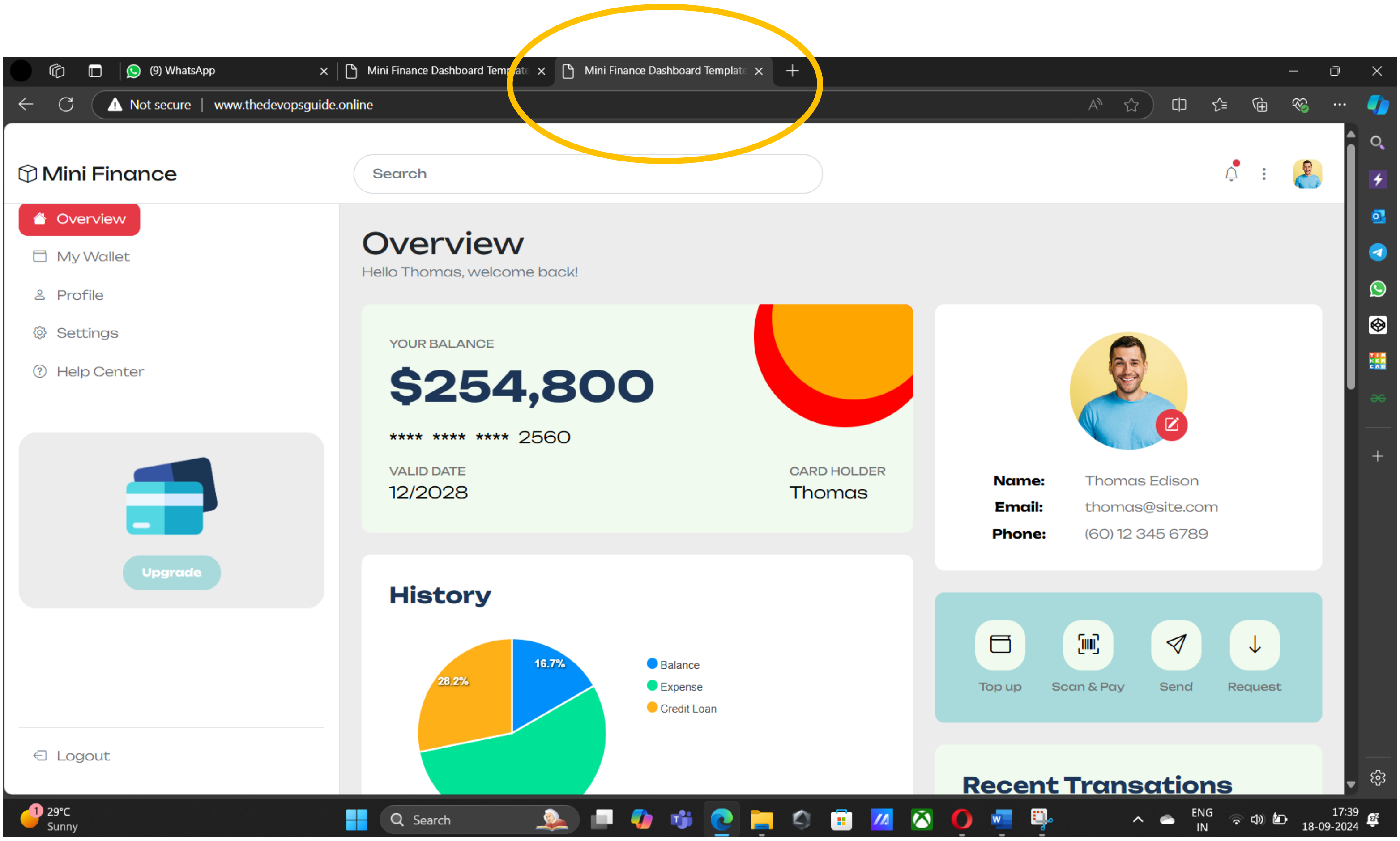
Automatic mode is the current search behavior optimized for best filter results. To change modes go to settings.

Filter records by property or value

Type Routing policy Alias 1

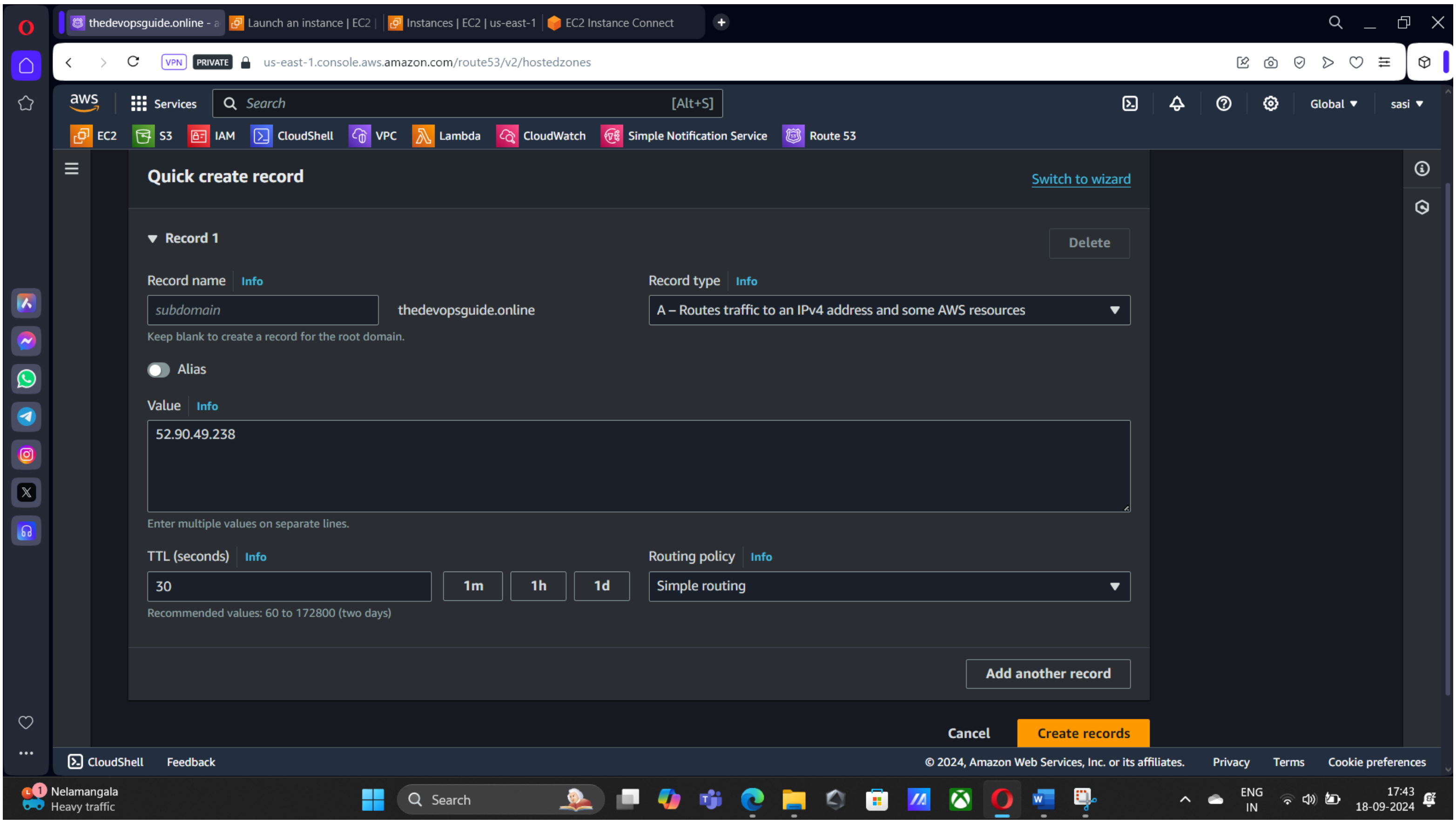
| □ | Record name | Type | Routing ... | Differe... | Alias | Value/Route traffic to | TTL (s |
|---|---|---|---|---|---|---|---|
| □ | thedevopsguide.online | NS | Simple | - | No | ns-1634.awsdns-12.co.uk.<br>ns-1301.awsdns-34.org.<br>ns-867.awsdns-44.net.<br>ns-21.awsdns-02.com. | 17280 |
| □ | thedevopsguide.online | SOA | Simple | - | No | ns-1634.awsdns-12.co.uk. a... | 900 |
| □ | www.thedevopsguide.online | A | Simple | - | No | 52.90.49.238 | 30 |

Now I will use my domain name for the web-site. (www.thedevopsguide.online)



All set .

Now I will create another record with no subdomain and I will paste same instance IP address in value


us-east-1.console.aws.amazon.com/route53/v2/hostedzones

Quick create record

Switch to wizard

Record 1

Delete

Record name: subdomain thedevopsguide.online

Keep blank to create a record for the root domain.

Record type: A – Routes traffic to an IPv4 address and some AWS resources

Alias: off

Value: 52.90.49.238

Enter multiple values on separate lines.

TTL (seconds): 30 (1m, 1h, 1d)

Recommended values: 60 to 172800 (two days)

Routing policy: Simple routing

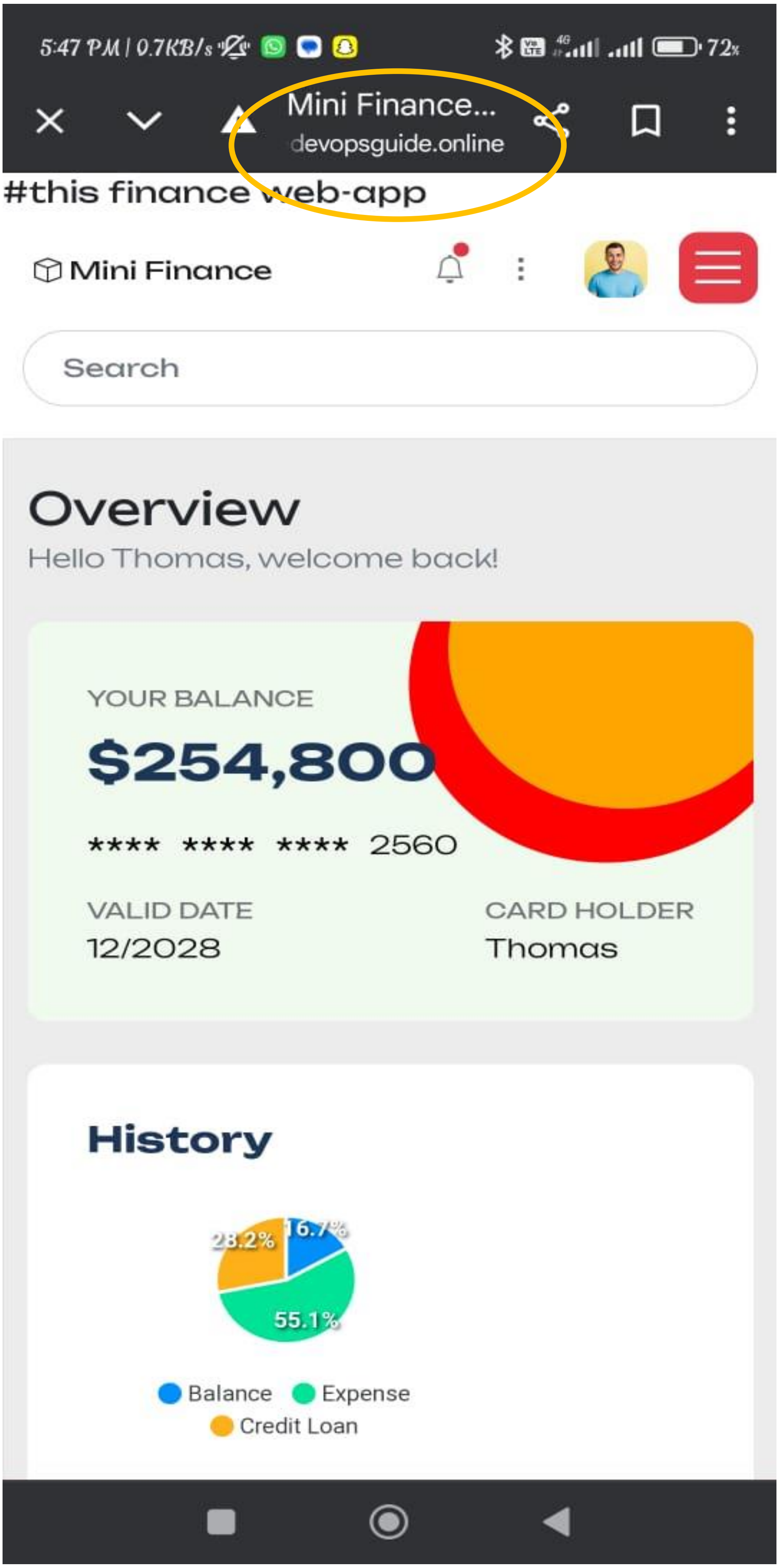
Add another record

Cancel | Create records

If I click thedevopsguide.online it will take me to the same web-site

Lets check

Check it



5:47 PM | 0.7KB/s 72%

Mini Finance...
devopsguide.online

#this finance web-app

Mini Finance

Search

Overview

Hello Thomas, welcome back!

YOUR BALANCE

$254,800

**** **** **** 2560

VALID DATE
12/2028

CARD HOLDER
Thomas

History

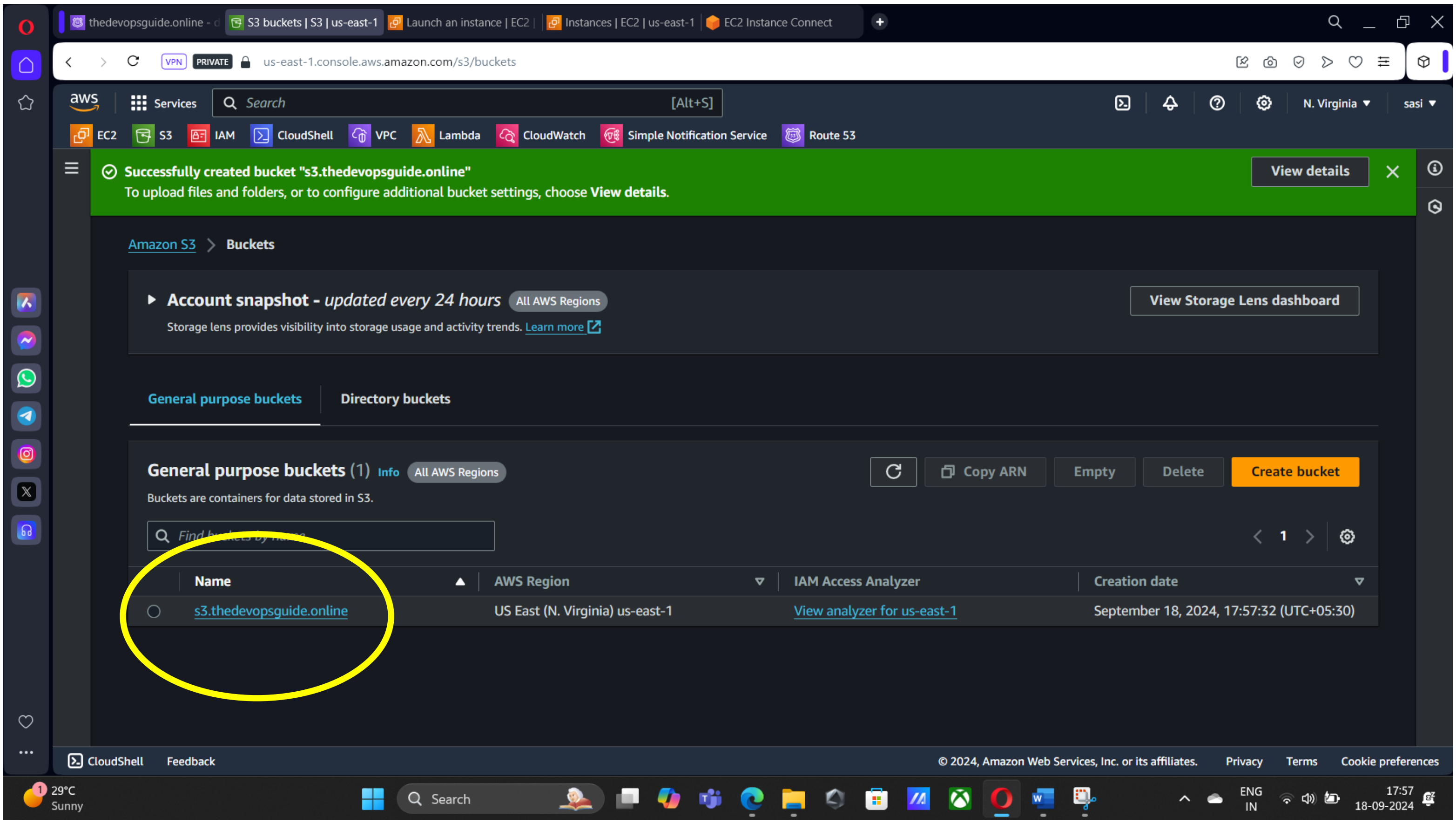
# Task-2

Using CNAME

First we need to create S3 bucket and we need to add the web-site into it

Note : we need to keep bucket name as same as the domain name

And uncheck block all public access and generate the policy



Successfully created bucket "s3.thedevopsguide.online"
To upload files and folders, or to configure additional bucket settings, choose **View details**.

Amazon S3 > Buckets

**Account snapshot -** *updated every 24 hours* All AWS Regions

Storage lens provides visibility into storage usage and activity trends. Learn more

General purpose buckets | Directory buckets

**General purpose buckets** (1) Info All AWS Regions

Buckets are containers for data stored in S3.

Find buckets by name

| | Name | AWS Region | IAM Access Analyzer | Creation date |
|---|---|---|---|---|
| ○ | s3.thedevopsguide.online | US East (N. Virginia) us-east-1 | View analyzer for us-east-1 | September 18, 2024, 17:57:32 (UTC+05:30) |

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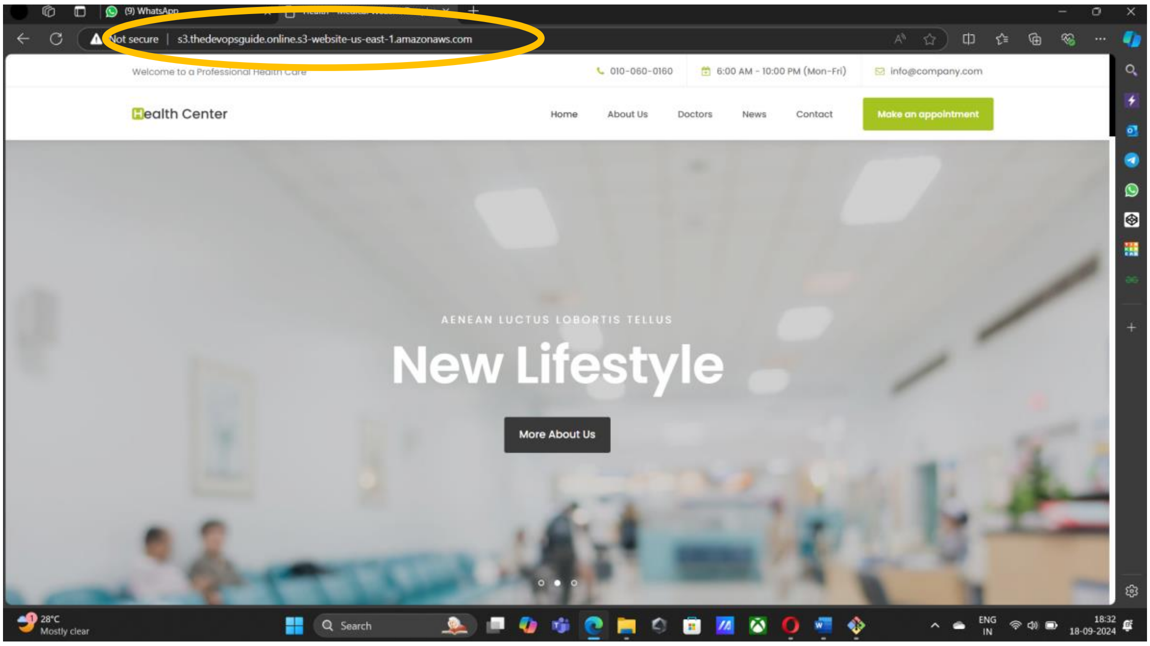
I have kept my bucket name as s3.thedevopsguide.online

Now I have the url of my s3 bucket
lets check it will work or not

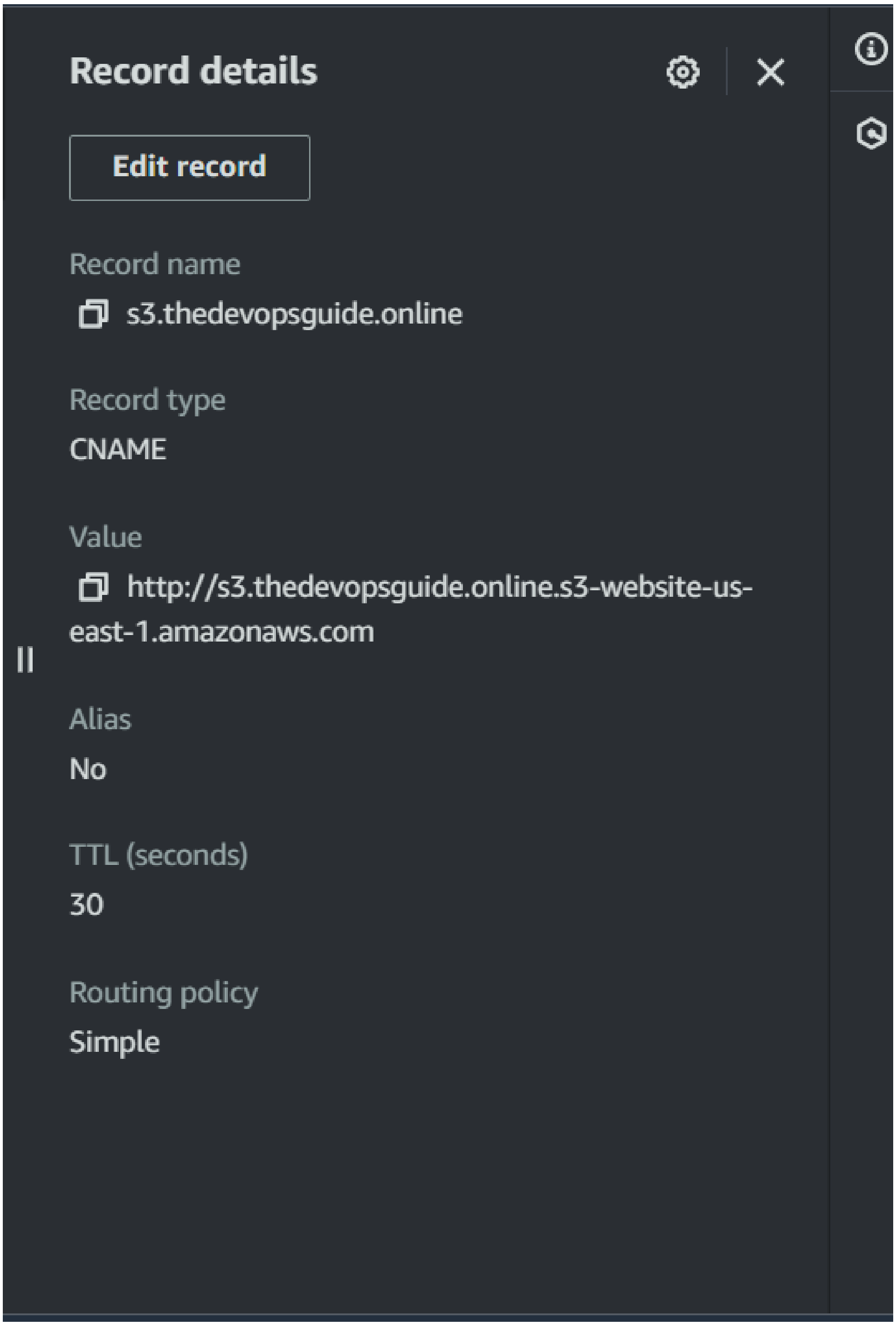
http://s3.thedevopsguide.online.s3-website-us-east-1.amazonaws.com



As you can see that I have used http url to go to my web-site now we need

Map my URL using the CNAME record

Now I will create record as s3.thedevopsguide.online



Record name
s3.thedevopsguide.online

Record type
CNAME

Value
http://s3.thedevopsguide.online.s3-website-us-east-1.amazonaws.com

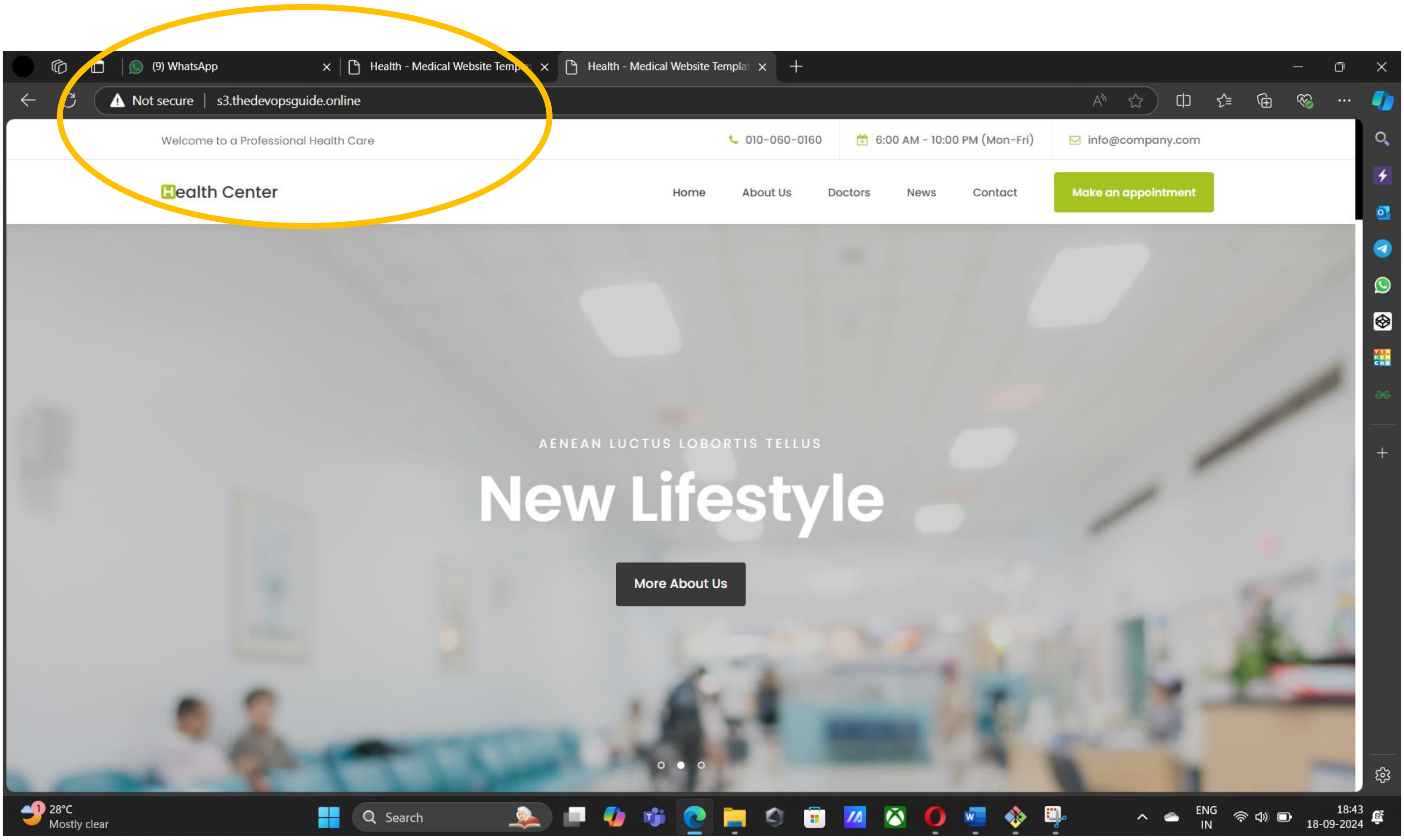
Alias
No

TTL (seconds)
30

Routing policy
Simple

S3.thedevopsguide.online → http://s3.thedevopsguide.online.s3-website-us-east-1.amazonaws.com→S3 bucket.

Now lets check will get the web-site or not.



And all set .

Now relax 5 min .

# Task-3

Using alias With A Record

Alias means Redirecting our traffic to some resource like load balancer etc..

Now lets create 2 buckets

1. s3.thedevopsguide.online ( where I have my web-site )
2. www.thedevopsguide.online ( In this I don’t have anything)

Now lets create record

What exactly we are doing here

S3.thedevopsguide.online

Where we have website

A NAME record

Will create record with same subdomain (s3.)

Alias should be on

Name should be same make sure

Select S3 endpoint & region & select your bucket

www.thedevopsguide.online where we don’t have website

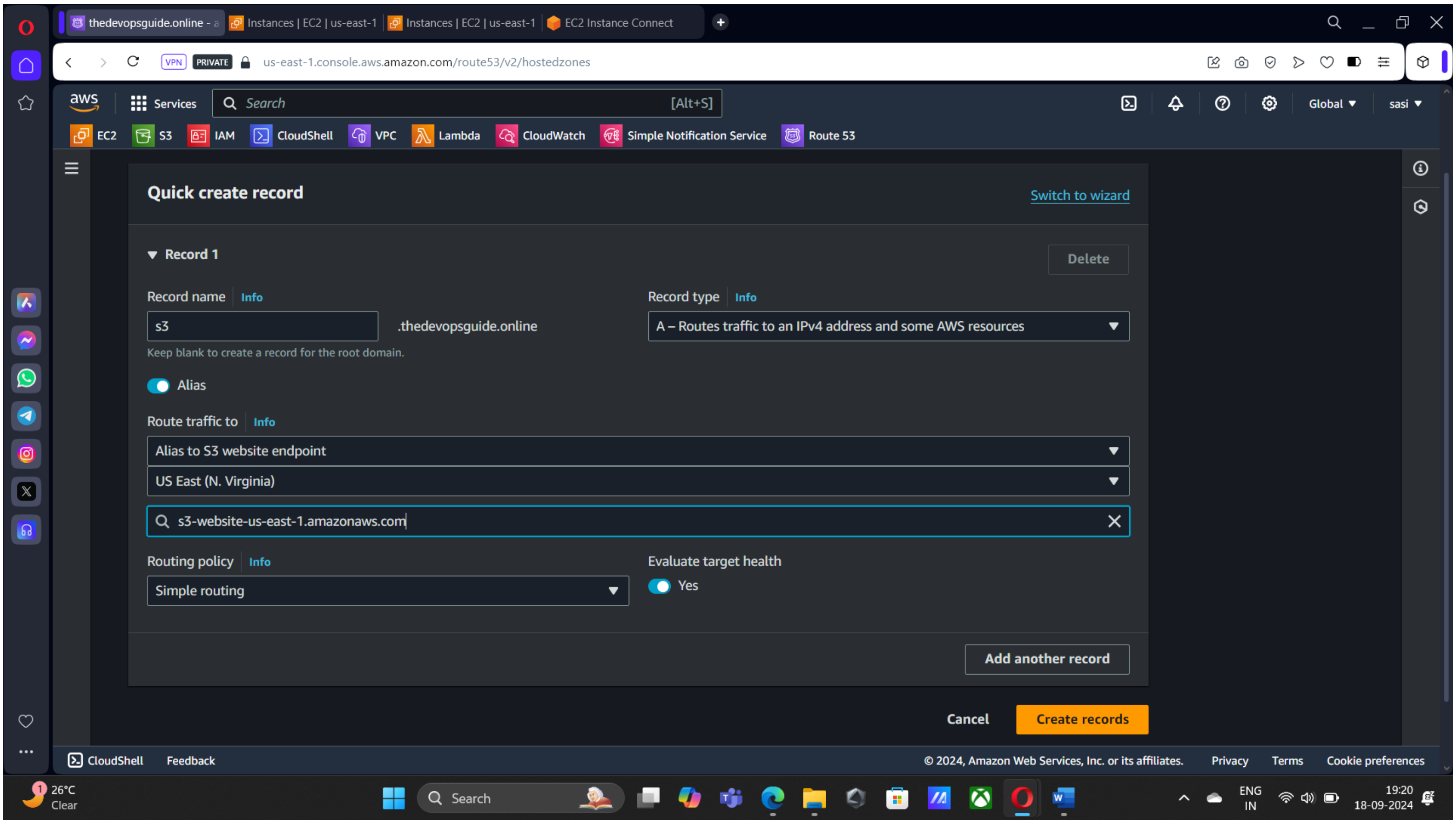
A NAME record

Will create record with same subdomain(www.)

Alias should be on

Name should be same make sure

Select s3 endpoint & region & select your bucket



Quick create record

Record 1

Record name: s3 .thedevopsguide.online

Keep blank to create a record for the root domain.

Record type: A – Routes traffic to an IPv4 address and some AWS resources

Alias: ●

Route traffic to: Alias to S3 website endpoint

US East (N. Virginia)

s3-website-us-east-1.amazonaws.com

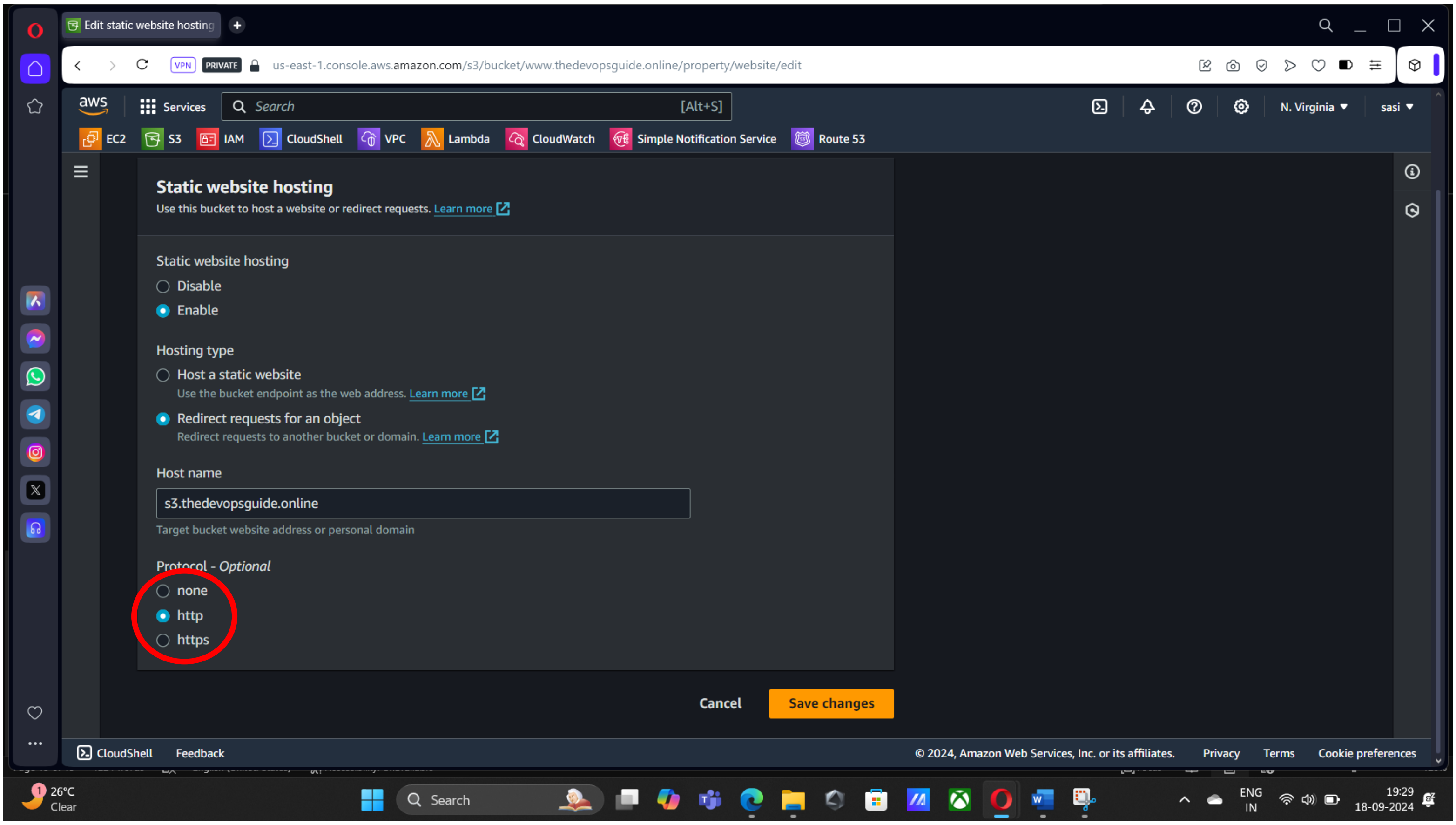
Routing policy: Simple routing

Evaluate target health: ● Yes

For first bucket s3.thedevopsguide.online

DONE now we should redirect the second bucket www.thedevopsguide.online

Click on bucket name → go to properties → static website hosting → edit →Static website hosting(enable) →Hosting type (Redirect requests for an object) → enable http



Static website hosting

Use this bucket to host a website or redirect requests. Learn more

Static website hosting

○ Disable

● Enable

Hosting type

○ Host a static website

Use the bucket endpoint as the web address. Learn more

● Redirect requests for an object

Redirect requests to another bucket or domain. Learn more

Host name: s3.thedevopsguide.online

Target bucket website address or personal domain

Protocol - *Optional*

○ none

● http

○ https

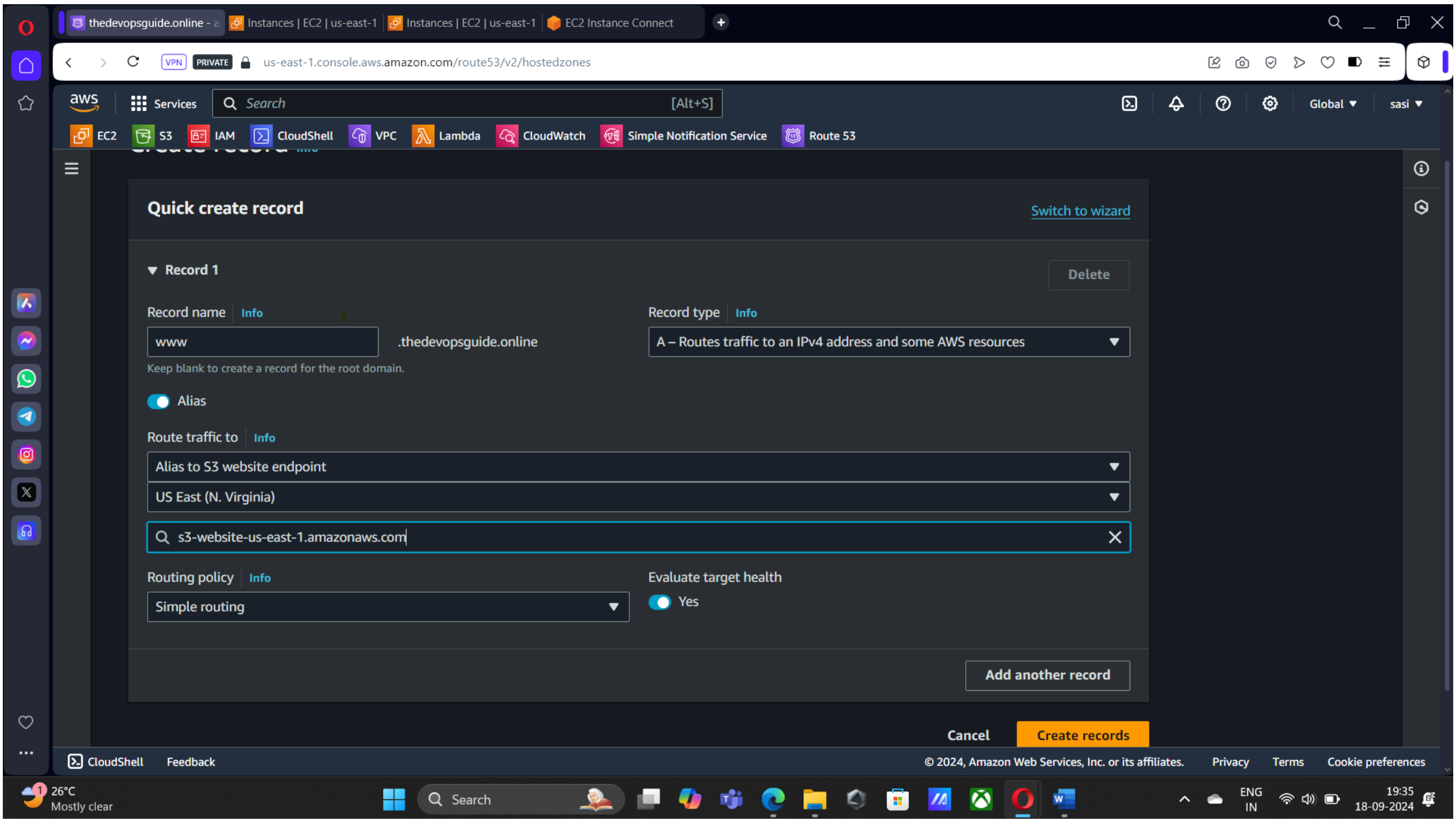
us-east-1.console.aws.amazon.com/s3/bucket/www.thedevopsguide.online/property/website/edit
Cancel
Save changes

Save the changes .

Summary

- we created two s3 bucket .
- Then created record for first bucket s3.thedevopsguide.online
- The we redirected first s3.thedevopsguide.online bucket to second s3 bucket www.thedevopsguide.online
  Make sure you first redirect www.thedevopsguide.online → s3.thedevopsguide.online

  Now we should create another record for second bucket www.thedevopsguide.online



Quick create record

▼ Record 1

Record name: www .thedevopsguide.online

Keep blank to create a record for the root domain.

Record type: A – Routes traffic to an IPv4 address and some AWS resources

Alias: on

Route traffic to: Alias to S3 website endpoint

US East (N. Virginia)

s3-website-us-east-1.amazonaws.com

Routing policy: Simple routing

Evaluate target health: Yes

www.thedevopsguide.online we are creating one record
so whenever we put www.thedevopsguide.online in browser it will go to it and it will redirect it to s3.thedevopsguide.online

Note : when we are creating records for second bucket make sure we first redirect second to first bucket which have web-site.

Now see how its working

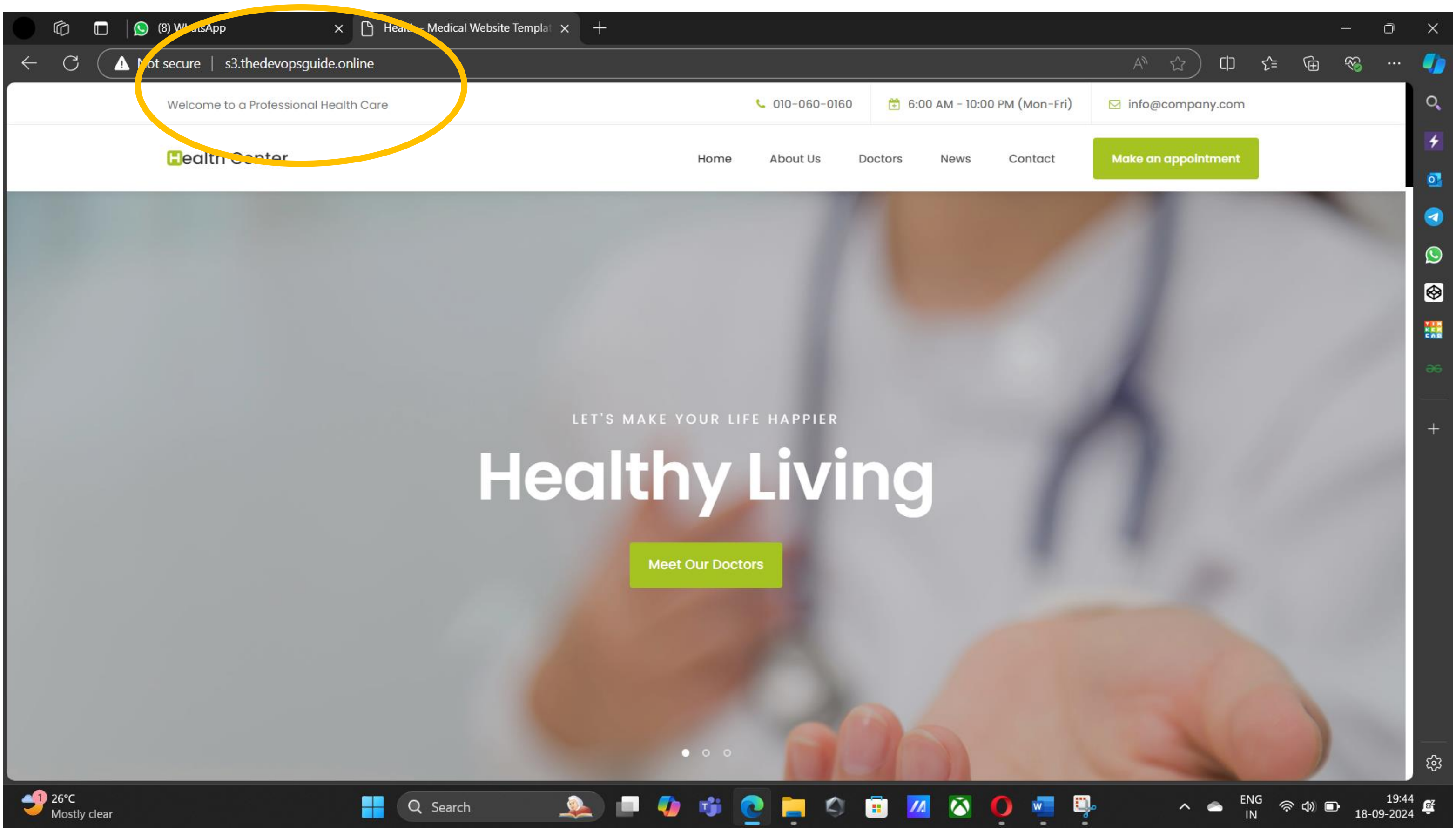
s3.thedevopsguide.online this bucket has my website correct!

www.thedevopsguide.online this bucket is empty

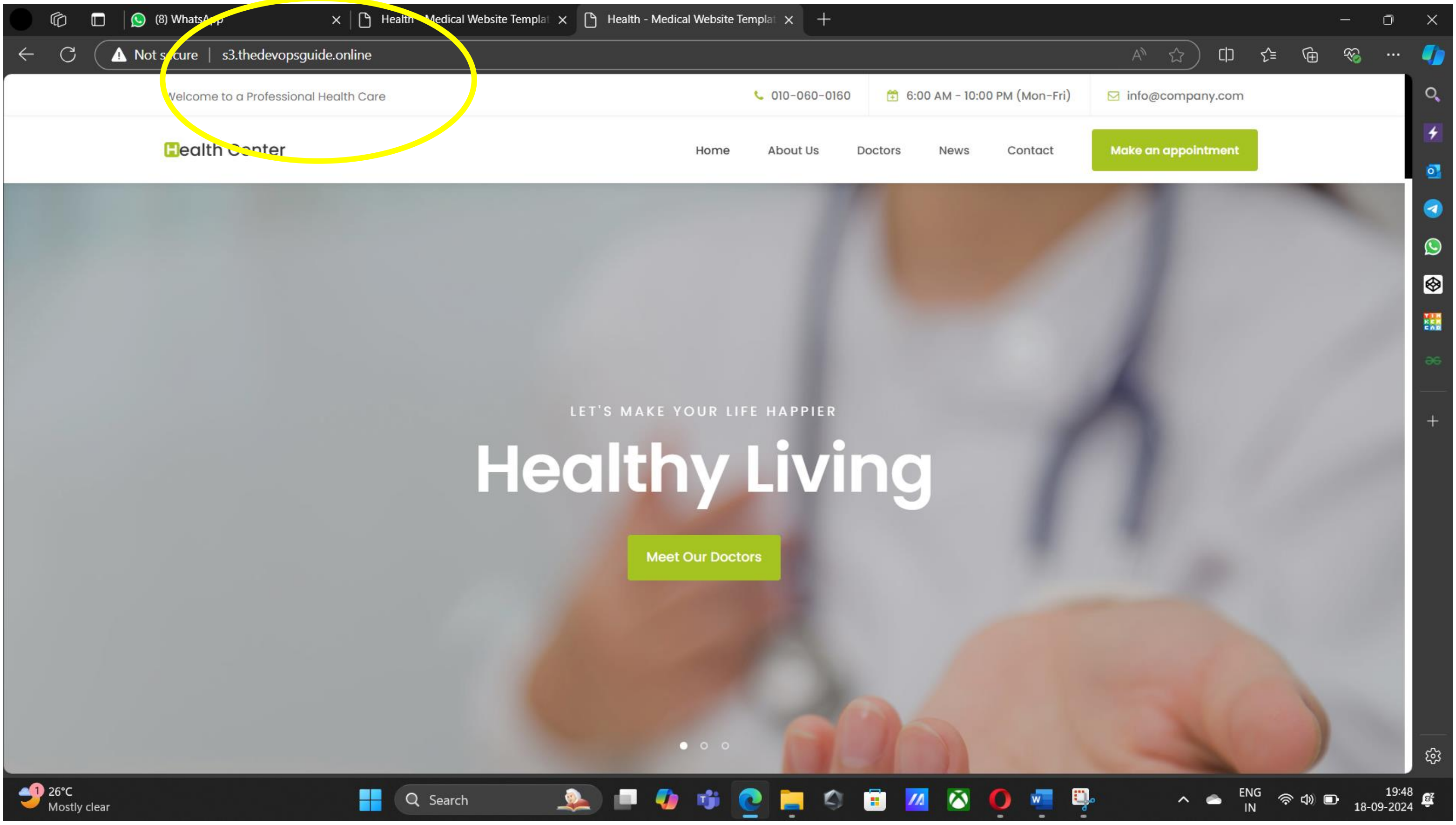
we have redirected www.thedevopsguide.online to s3.thedevopsguide.online which has the web-site

Now whenever the user will put in browser www.thedevopsguide.online he will get redirected to s3.thedevopsguide.online

Now checking by domain s3.thedevopsguide.online into browser



Now checking by using this domain www.thedevopsguide.online into browser


(8) WhatsApp
Health - Medical Website Templat
Health - Medical Website Templat
Not secure | s3.thedevopsguide.online
Welcome to a Professional Health Care
010-060-0160
6:00 AM - 10:00 PM (Mon-Fri)
info@company.com
Health Center
Home
About Us
Doctors
News
Contact
Make an appointment
LET'S MAKE YOUR LIFE HAPPIER
Healthy Living
Meet Our Doctors
26°C
Mostly clear
Search
ENG
IN
19:48
18-09-2024

It will show the same s3.thedevopsguide.online because its redirecting that’s why ..

And all set .