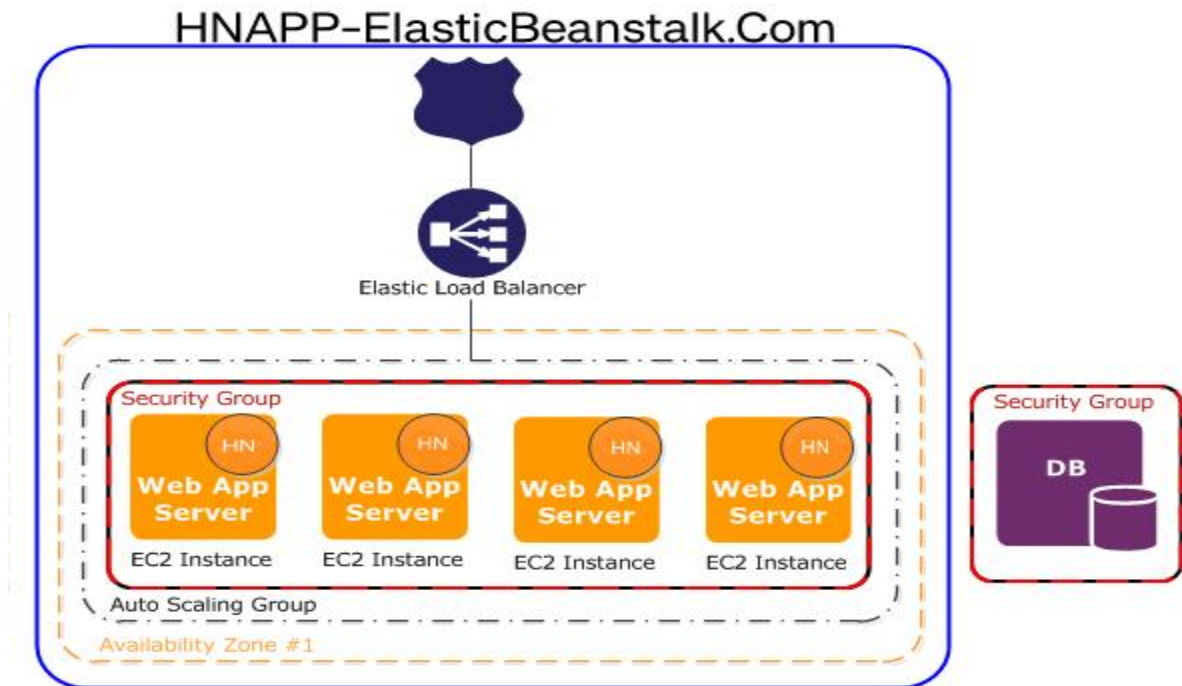


Project



Deploy a Web Application Using Elastic Beanstalk

07.11.2023

Himanshu Nimje
Nagpur-440017

Overview

AWS Elastic Beanstalk quickly deploys and manages applications in the AWS Cloud without worrying about the infrastructure that runs those applications. AWS Elastic Beanstalk reduces management complexity without restricting choice or control. You simply upload your application, and AWS Elastic Beanstalk automatically handles the details of capacity provisioning, load balancing, scaling, and application health monitoring.

Benefits

1. Fast and simple:- Developers can deploy applications in minutes without managing infrastructure or resource configuration.
2. Scalable:- Applications can be automatically scaled up and down based on needs.
3. Reduces complexity:- Elastic Beanstalk manages application versioning, deployment, auto scaling, load balancing, and health monitoring.
4. Focus on code:- Developers can focus on writing code instead of managing servers, databases, load balancers, firewalls, and networks.

Service Used

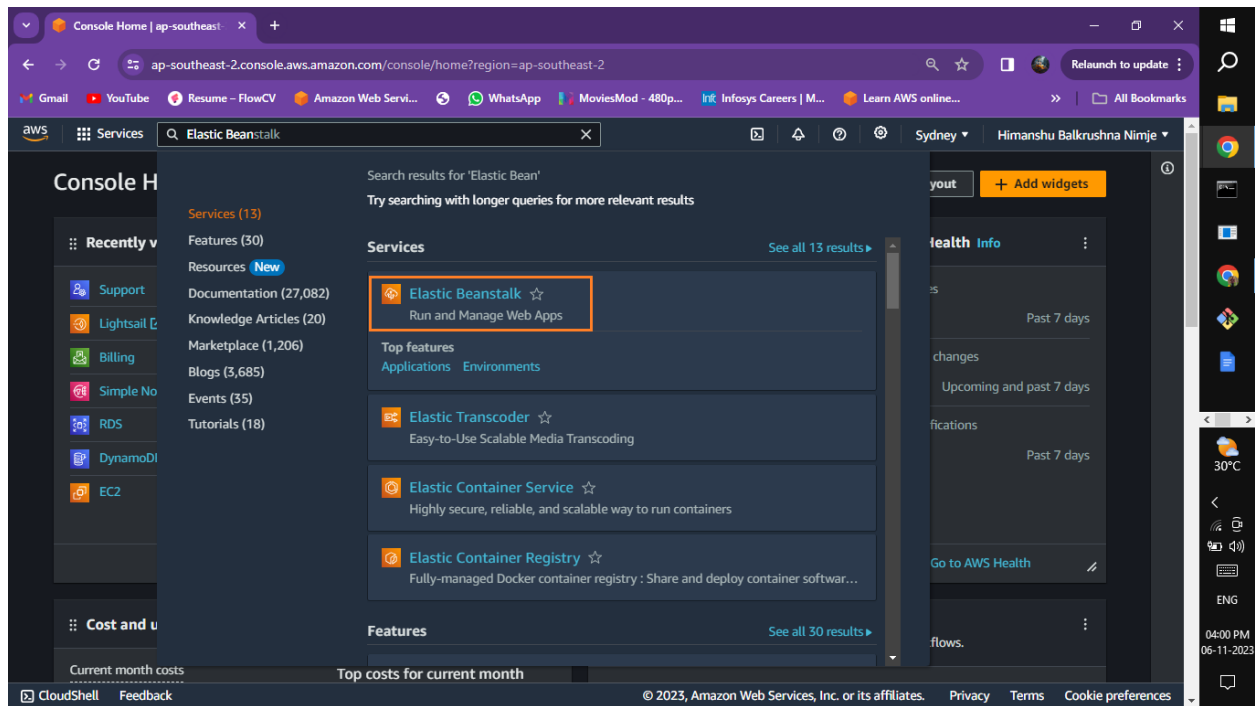
AWS Elastic Beanstalk

Steps

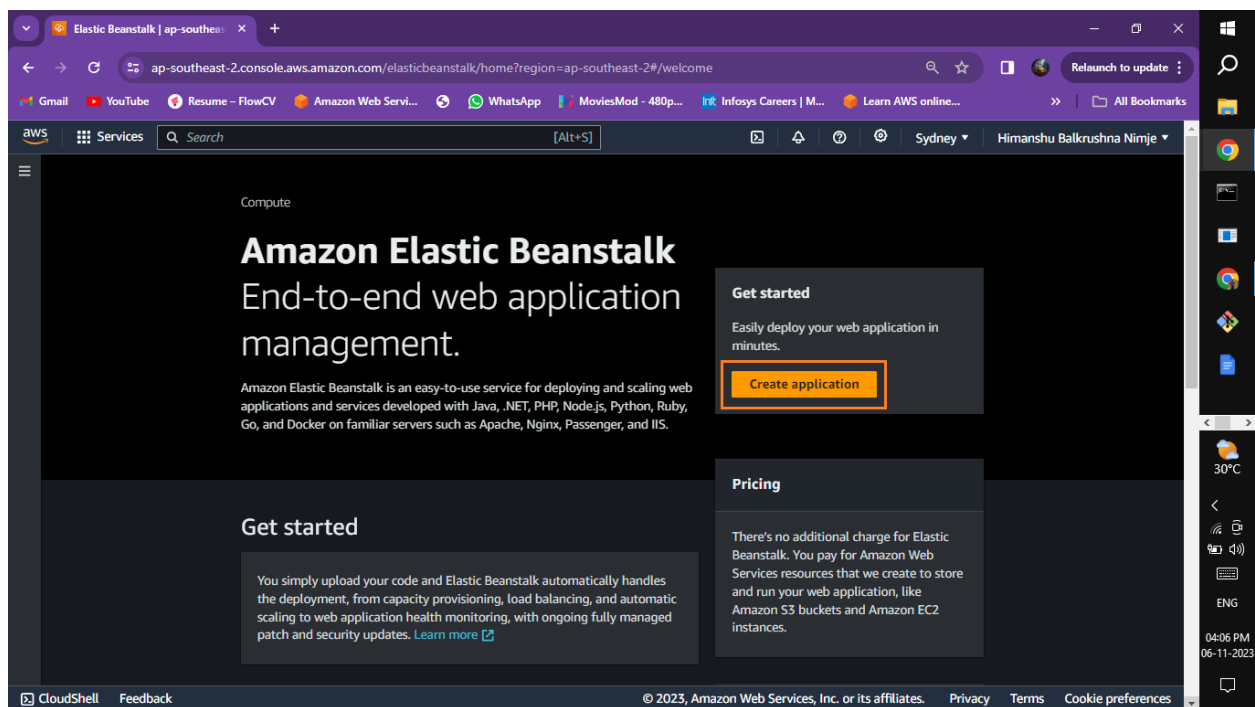
1. Prepare Your Application Code
2. Create an Elastic Beanstalk Application
3. Create an Environment
4. Review and Launch
5. Choose Web Server Environment
6. Configure Your Environment

Implementation ↴

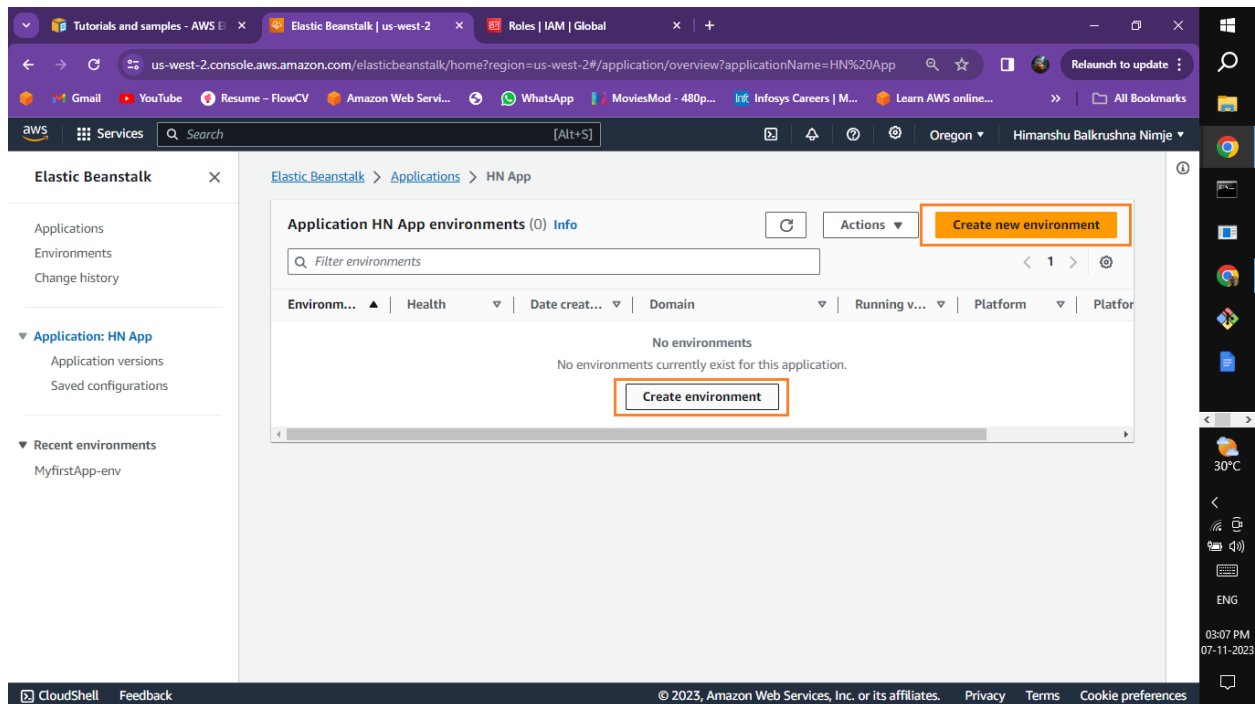
Go to Elastic Beanstalk



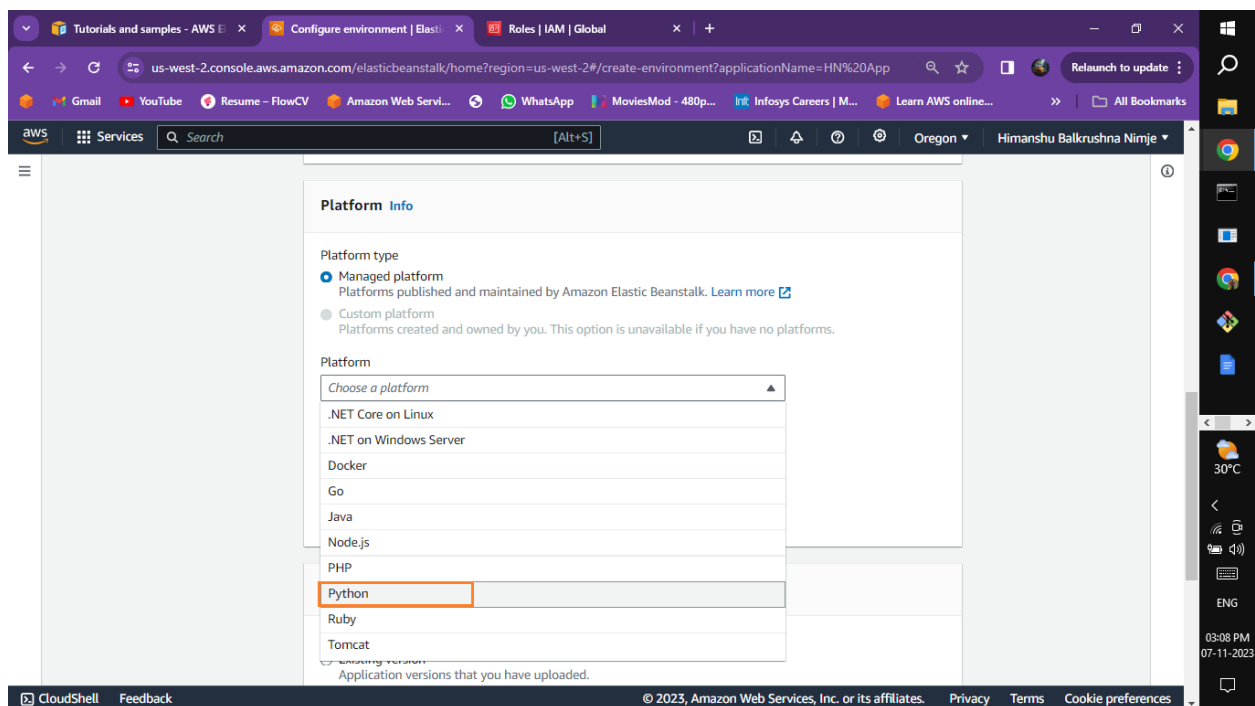
And Then click on



Click on create environment



Select a platform, select Python



Select VPC, Click on Public IP address

Virtual Private Cloud (VPC)

VPC
Launch your environment in a custom VPC instead of the default VPC. You can create a VPC and subnets in the VPC management console. [Learn more](#)

vpc-0cfdc8f994cb5dabe | (172.31.0.0/16)

[Create custom VPC](#)

Instance settings

Choose a subnet in each AZ for the instances that run your application. To avoid exposing your instances to the Internet, run your instances in private subnets and load balancer in public subnets. To run your load balancer and instances in the same public subnets, assign public IP addresses to the instances. [Learn more](#)

Public IP address
Assign a public IP address to the Amazon EC2 instances in your environment.
☒ Activated

Instance subnets

Filter instance subnets

Availability Zone	Subnet	CIDR	Name
us-west-2c	subnet-01bbfc40...	172.31.0.0/20	
us-west-2b	subnet-05cfc385...	172.31.32.0/20	
us-west-2d	subnet-08ea8163...	172.31.48.0/20	
us-west-2a	subnet-0973ad2a...	172.31.16.0/20	

Select subnet

Instance settings

Choose a subnet in each AZ for the instances that run your application. To avoid exposing your instances to the Internet, run your instances in private subnets and load balancer in public subnets. To run your load balancer and instances in the same public subnets, assign public IP addresses to the instances. [Learn more](#)

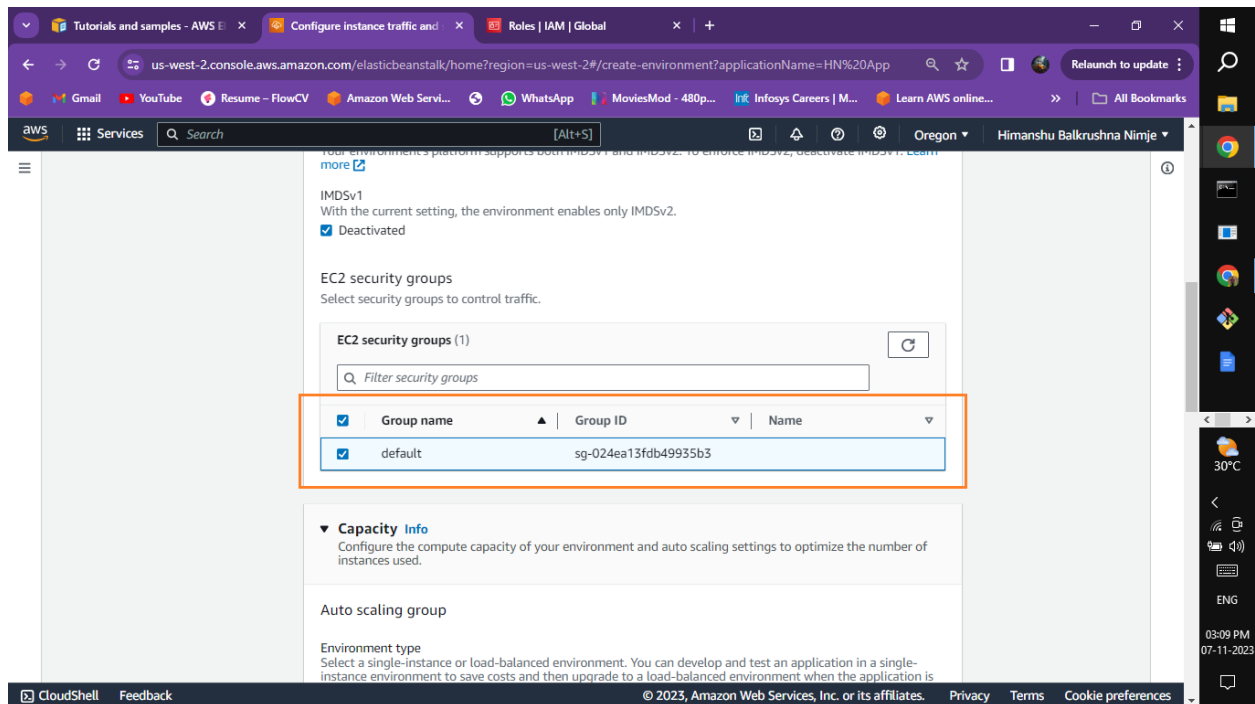
Public IP address
Assign a public IP address to the Amazon EC2 instances in your environment.
☒ Activated

Instance subnets

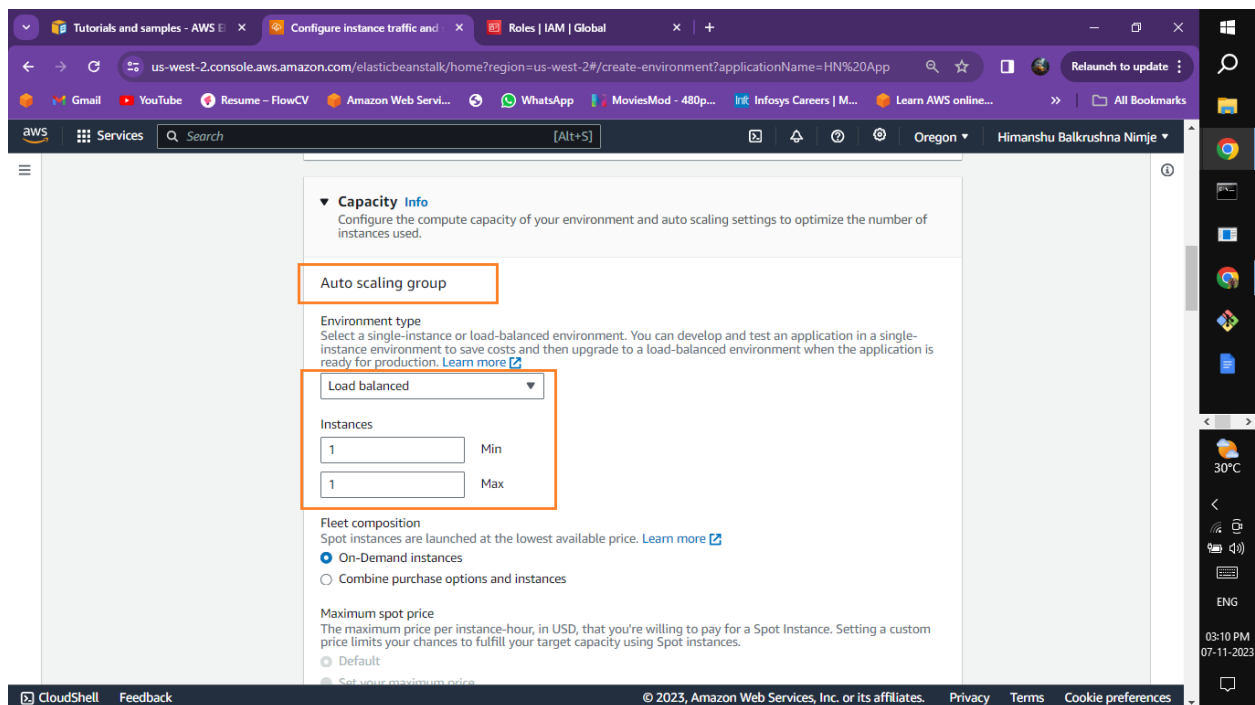
Filter instance subnets

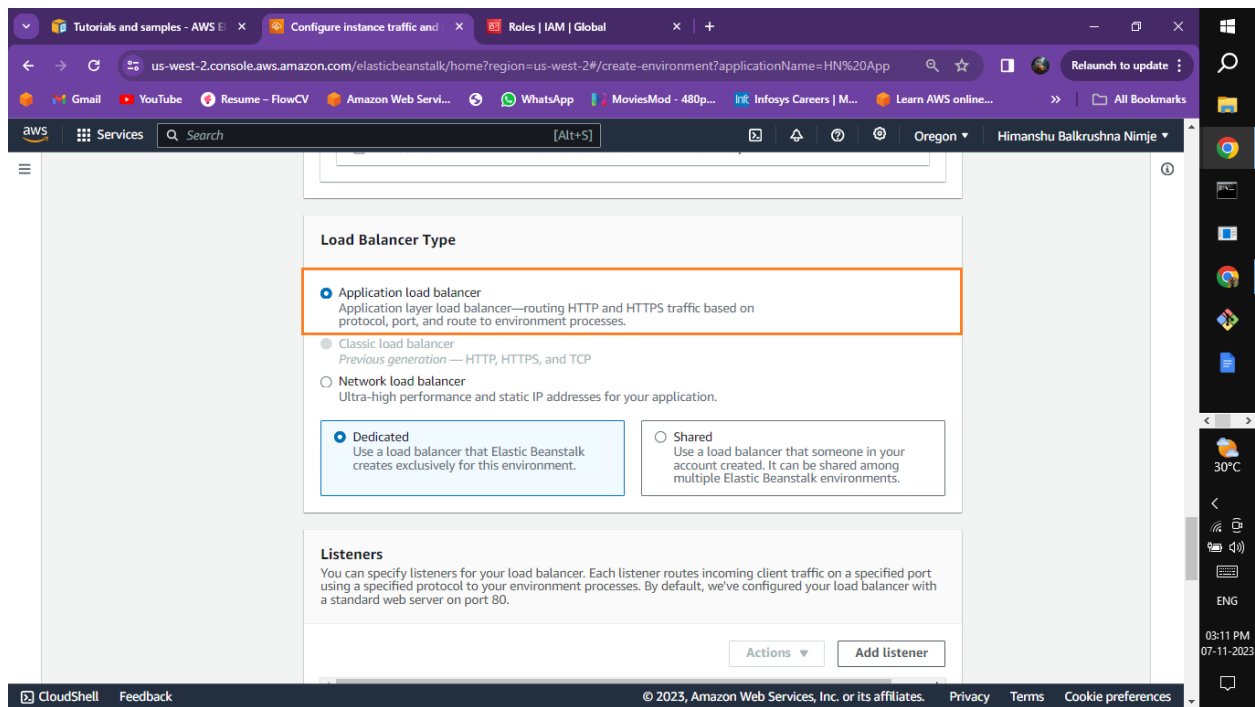
Availability Zone	Subnet	CIDR	Name
us-west-2c	subnet-01bbfc40...	172.31.0.0/20	
<input checked="" type="checkbox"/> us-west-2b	subnet-05cfc385...	172.31.32.0/20	
<input checked="" type="checkbox"/> us-west-2d	subnet-08ea8163...	172.31.48.0/20	
us-west-2a	subnet-0973ad2a...	172.31.16.0/20	

Select Default Security Group

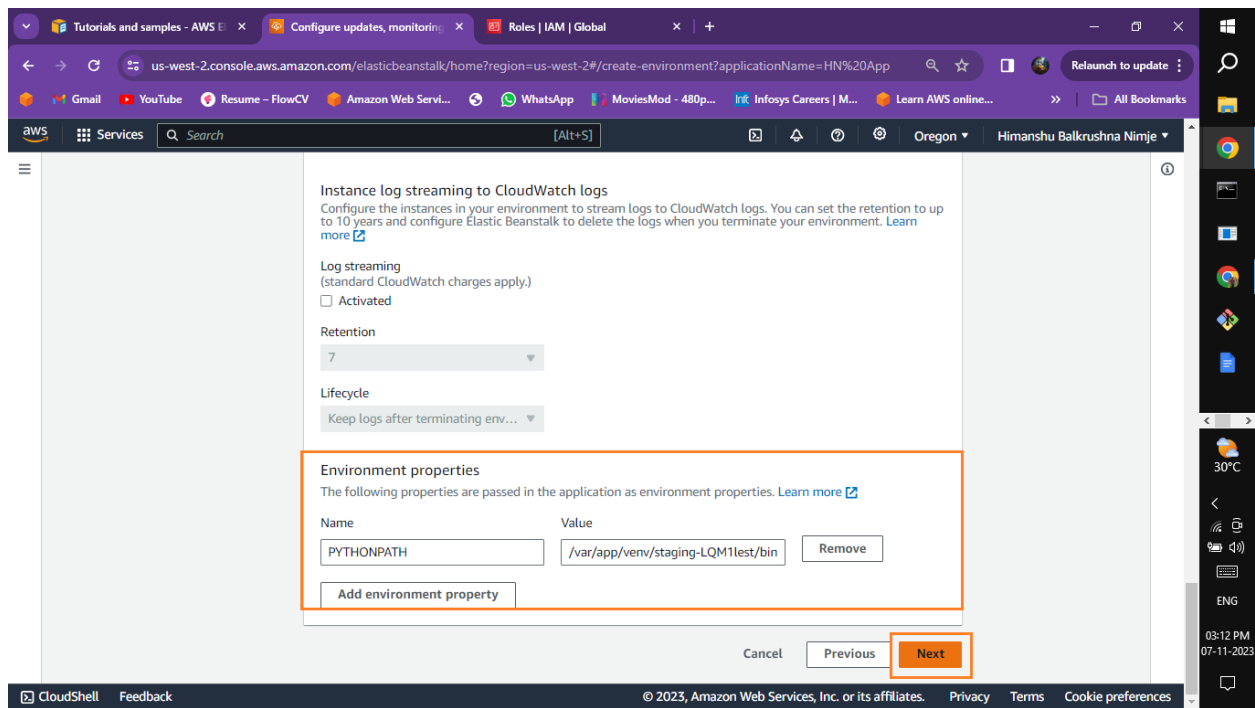


In Auto Scaling group , Select Application Load Balancer then Select 1 minimum instance and 1 maximum instance for Handling the Load

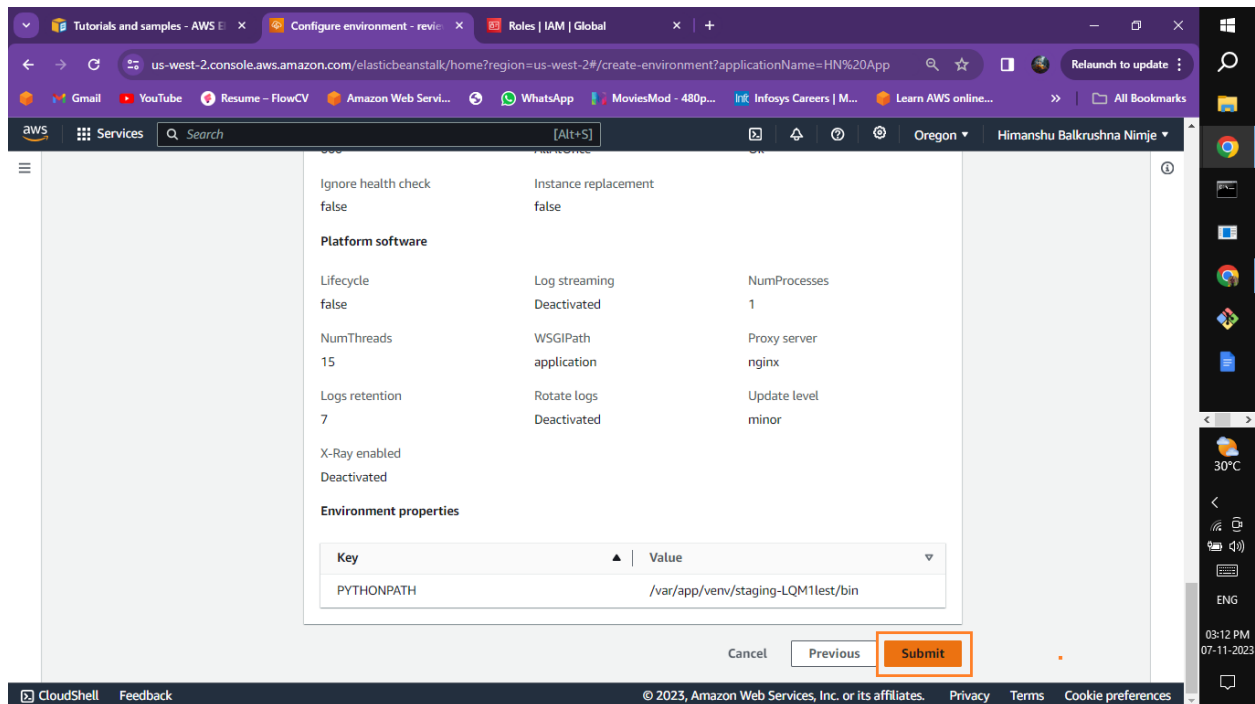




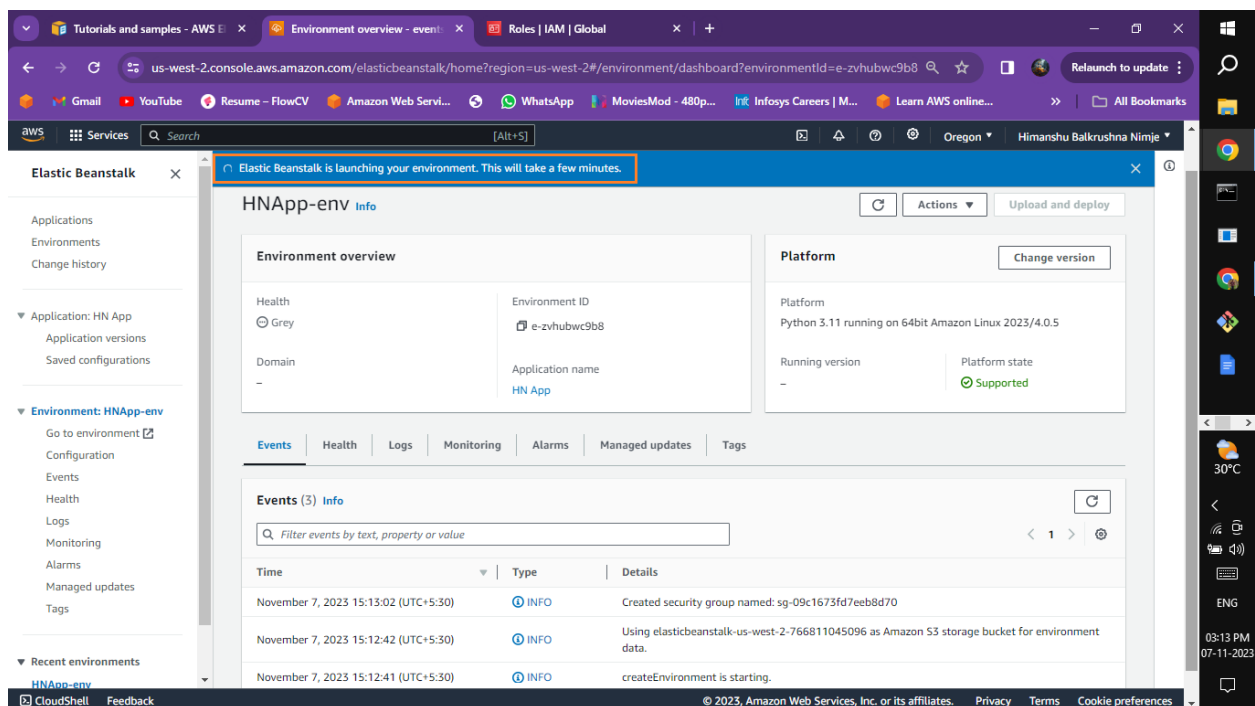
Click on the Next



Click on Submit



Elastic Beanstalk is launching environment



After 5 Minutes later Environment successfully launched

The screenshot displays the AWS Elastic Beanstalk console for the 'HNApp-env' environment. The 'Health' status is 'Green', indicating the environment is successfully launched. The 'Events' tab shows a list of events, including 'Successfully launched environment: HNApp-env'.

Environment overview

- Health: Green
- Environment ID: e-zhubwc9b8
- Domain: HNApp-env-eb-p7mafau-us-west-2.elasticbeanstalk.com
- Application name: HN App

Platform

- Platform: Python 3.11 running on 64bit Amazon Linux 2023/4.0.5
- Running version: -
- Platform state: Supported

Events (21) info

Time	Type	Details
November 7, 2023 15:16:21 (UTC+5:30)	INFO	Successfully launched environment: HNApp-env
November 7, 2023 15:16:20 (UTC+5:30)	INFO	Application available at HNApp-env-eb-p7mafau-us-west-2.elasticbeanstalk.com.
November 7, 2023 15:16:06 (UTC+5:30)	INFO	Adding instance 'i-037b2sc52289577' to your environment.
November 7, 2023 15:16:06 (UTC+5:30)	INFO	Environment health has been set to GREEN
November 7, 2023 15:16:06 (UTC+5:30)	INFO	Added EC2 instance 'i-037b2sc52289577' to Auto Scaling Group 'aws-eb-zhubwc9b8-stack-AWSEBAutoScalingGroup-onQd8BfqT3M'.
November 7, 2023 15:15:46 (UTC+5:30)	INFO	Instance deployment completed successfully.
November 7, 2023 15:15:43 (UTC+5:30)	INFO	Instance deployment successfully generated a 'Procfile'.
November 7, 2023 15:15:39 (UTC+5:30)	INFO	Created Load Balancer listener named: 'arn:aws:elasticloadbalancing:us-west-2:766811045096:listener/app/aws-eb-AWSEB-ABH2wptolu/v5405F28266e3551/67754f2152d568a'.
November 7, 2023 15:15:39 (UTC+5:30)	INFO	Created load balancer named: 'arn:aws:elasticloadbalancing:us-west-2:766811045096:loadbalancer/app/aws-eb-AWSEB-ABH2wptolu/v5405F28266e3551'.
November 7, 2023 15:15:33 (UTC+5:30)	INFO	Created CloudWatch alarm named: 'aws-eb-zhubwc9b8-stack-AWSEBCloudWatchAlarmLow-RMS5onlvok2'.
November 7, 2023 15:13:33 (UTC+5:30)	INFO	Created CloudWatch alarm named: 'aws-eb-zhubwc9b8-stack-AWSEBCloudWatchAlarmHigh-og3CQ2tTgt'.
November 7, 2023 15:13:33 (UTC+5:30)	INFO	Created Auto Scaling group policy named: 'arn:aws:autoscaling:us-west-2:766811045096:autoScalingPolicy/33aaf18-68b6-4099-9d75-471d48d300f:autoScalingGroup/aws-eb-zhubwc9b8-stack-AWSEBAutoScalingGroup-onQd8BfqT3M-policy/arn:aws-eb-zhubwc9b8-stack-AWSEBAutoScalingGroupPolicy-vg3Cwvdyt'.

The health of environment is showing Green

The screenshot displays the AWS Elastic Beanstalk console for the 'HNApp-env' environment. The 'Health' status is 'Green', indicating the environment is successfully launched. The 'Events' tab shows a list of events, including 'Successfully launched environment: HNApp-env'.

Environment overview

- Health: Green
- Environment ID: e-zhubwc9b8
- Domain: HNApp-env-eb-p7mafau-us-west-2.elasticbeanstalk.com
- Application name: HN App

Platform

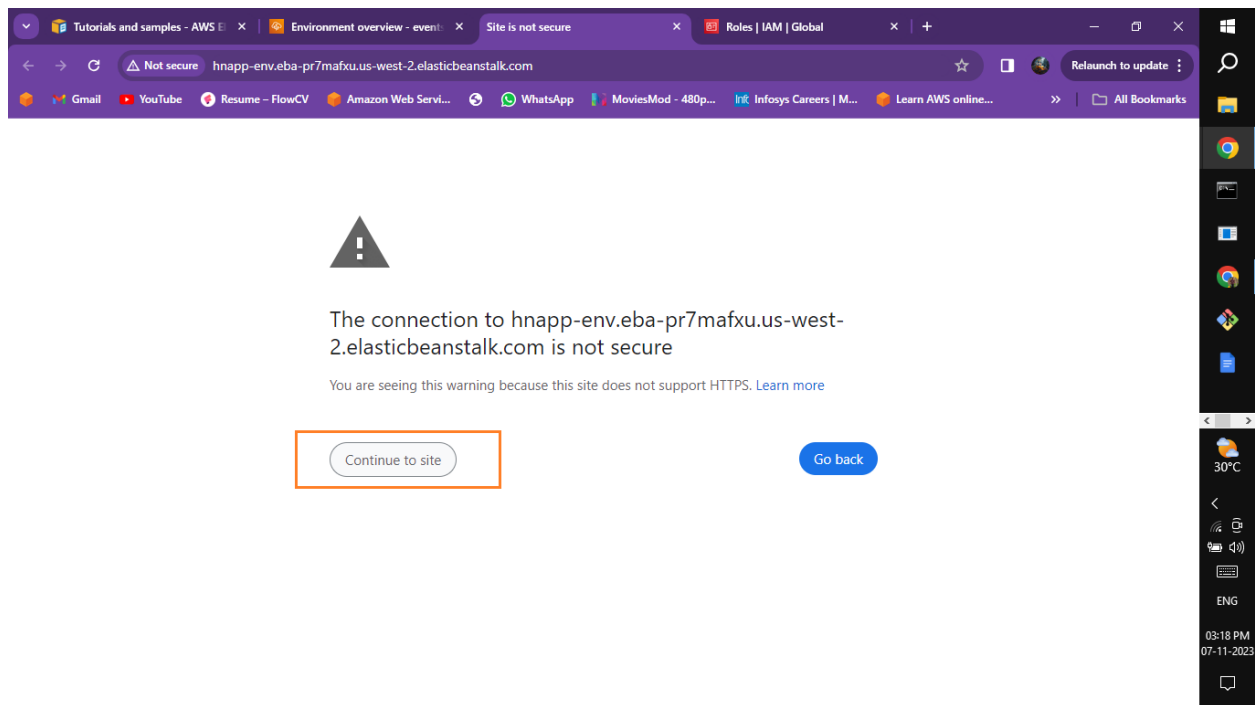
- Platform: Python 3.11 running on 64bit Amazon Linux 2023/4.0.5
- Running version: -
- Platform state: Supported

Events (21) info

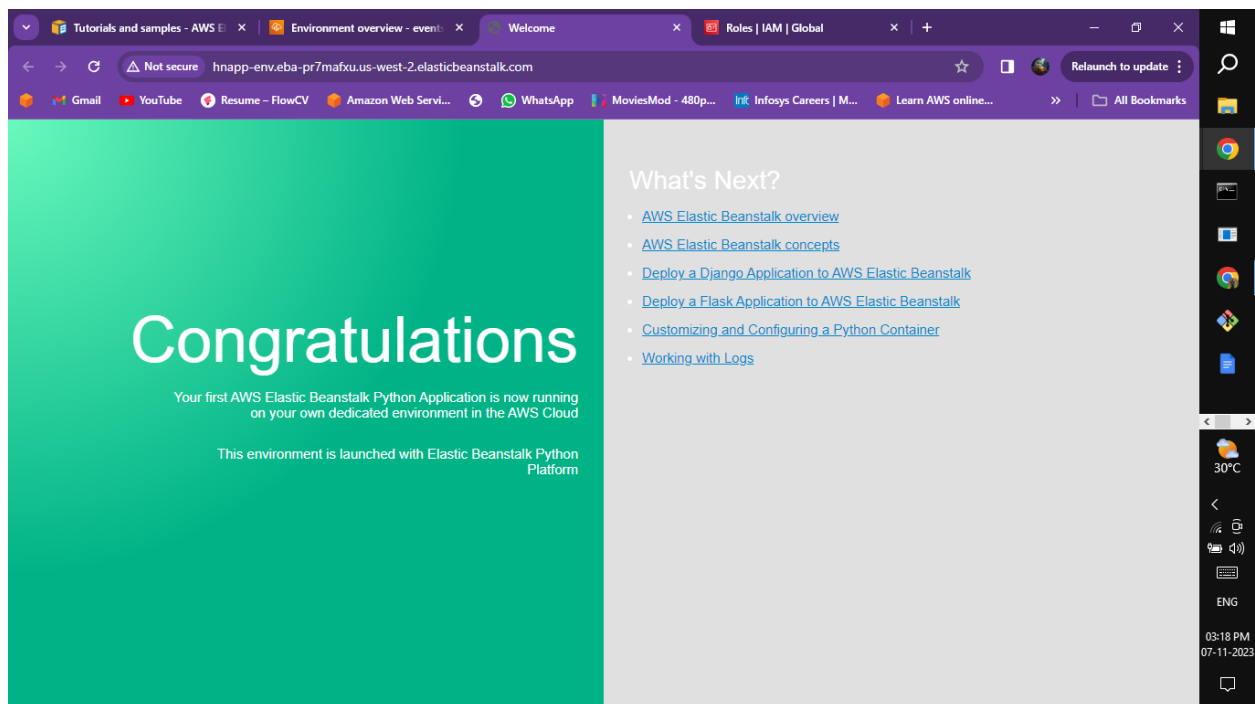
Time	Type	Details
November 7, 2023 15:16:21 (UTC+5:30)	INFO	Successfully launched environment: HNApp-env
November 7, 2023 15:16:20 (UTC+5:30)	INFO	Application available at HNApp-env-eb-p7mafau-us-west-2.elasticbeanstalk.com.
November 7, 2023 15:16:06 (UTC+5:30)	INFO	Adding instance 'i-037b2sc52289577' to your environment.
November 7, 2023 15:16:06 (UTC+5:30)	INFO	Environment health has been set to GREEN
November 7, 2023 15:16:06 (UTC+5:30)	INFO	Added EC2 instance 'i-037b2sc52289577' to Auto Scaling Group 'aws-eb-zhubwc9b8-stack-AWSEBAutoScalingGroup-onQd8BfqT3M'.
November 7, 2023 15:15:46 (UTC+5:30)	INFO	Instance deployment completed successfully.
November 7, 2023 15:15:43 (UTC+5:30)	INFO	Instance deployment successfully generated a 'Procfile'.
November 7, 2023 15:15:39 (UTC+5:30)	INFO	Created Load Balancer listener named: 'arn:aws:elasticloadbalancing:us-west-2:766811045096:listener/app/aws-eb-AWSEB-ABH2wptolu/v5405F28266e3551/67754f2152d568a'.
November 7, 2023 15:15:39 (UTC+5:30)	INFO	Created load balancer named: 'arn:aws:elasticloadbalancing:us-west-2:766811045096:loadbalancer/app/aws-eb-AWSEB-ABH2wptolu/v5405F28266e3551'.
November 7, 2023 15:15:33 (UTC+5:30)	INFO	Created CloudWatch alarm named: 'aws-eb-zhubwc9b8-stack-AWSEBCloudWatchAlarmLow-RMS5onlvok2'.
November 7, 2023 15:13:33 (UTC+5:30)	INFO	Created CloudWatch alarm named: 'aws-eb-zhubwc9b8-stack-AWSEBCloudWatchAlarmHigh-og3CQ2tTgt'.
November 7, 2023 15:13:33 (UTC+5:30)	INFO	Created Auto Scaling group policy named: 'arn:aws:autoscaling:us-west-2:766811045096:autoScalingPolicy/33aaf18-68b6-4099-9d75-471d48d300f:autoScalingGroup/aws-eb-zhubwc9b8-stack-AWSEBAutoScalingGroup-onQd8BfqT3M-policy/arn:aws-eb-zhubwc9b8-stack-AWSEBAutoScalingGroupPolicy-vg3Cwvdyt'.

click on the Domain

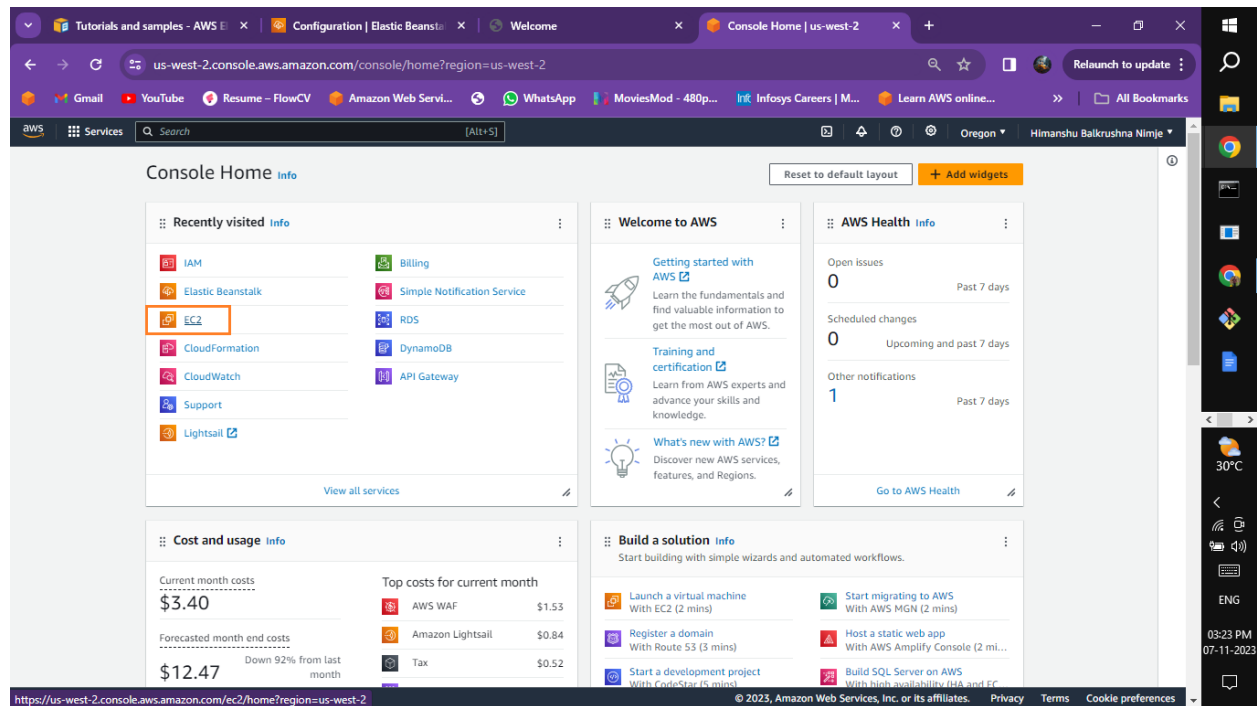
The screenshot shows the AWS Elastic Beanstalk console for an environment named 'HNApp-env'. The top navigation bar indicates the user is logged in as 'Himanshu Balkrushna Nimje' in the 'Oregon' region. The left sidebar provides navigation for 'Applications', 'Environments', and 'Recent environments'. The main content area shows the 'Environment overview' for 'HNApp-env', which is in a 'Green' health state. Key details include the Environment ID 'e-zvhbwc9b8', Application name 'HN App', and Platform 'Python 3.11 running on 64bit Amazon Linux 2023/4.0.5'. Below the overview, the 'Events' section lists recent activities, such as the successful launch of the environment and the addition of a new instance.



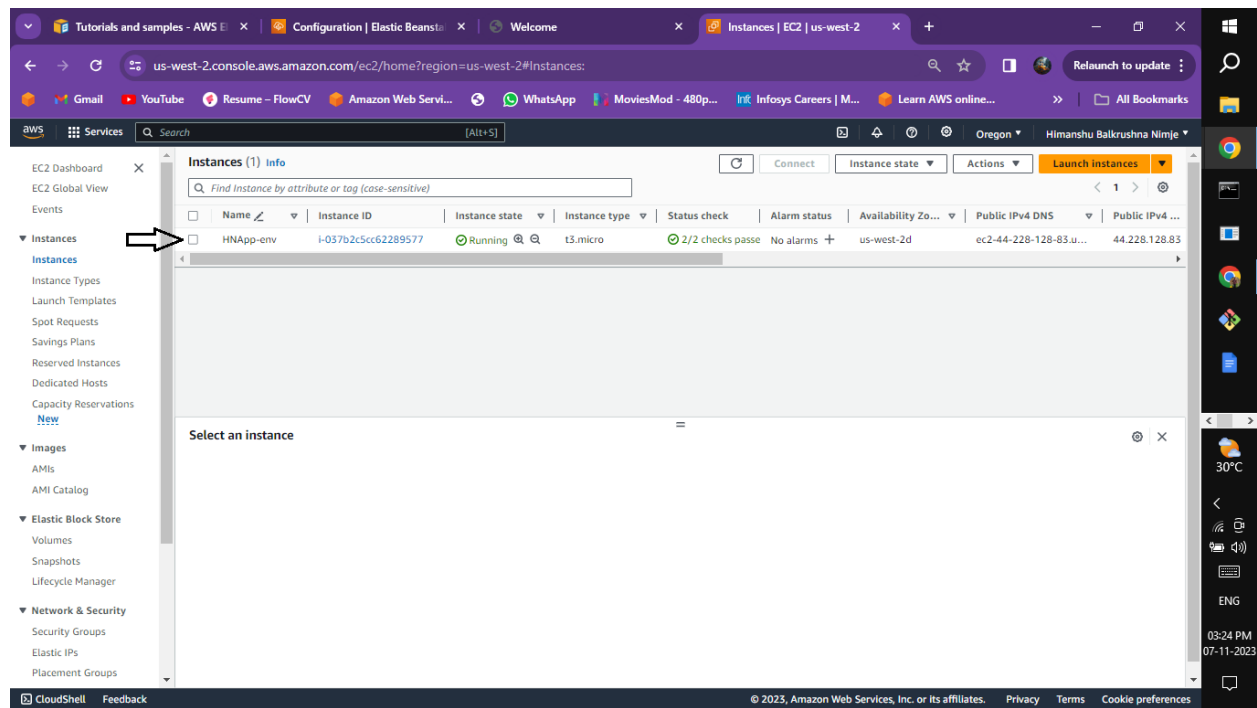
App Environment has Launched



Let's see the services Behind the app, Go to EC2 and Click on



Here is App Instances



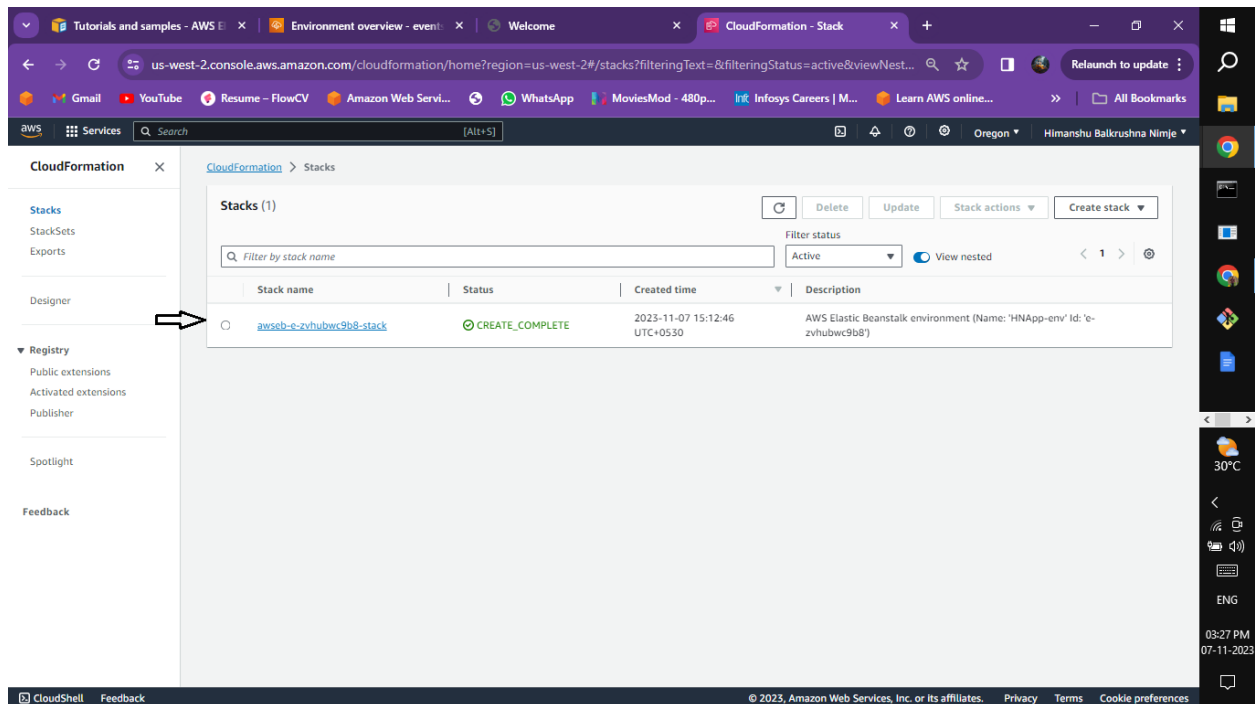
Here is App LoadBalancer

The screenshot shows the AWS Management Console interface for the 'Load balancers' page. The left sidebar lists various AWS services, with 'Network & Security' expanded and 'Load Balancing' selected. The main content area shows a table of load balancers. One load balancer is listed with the name 'awseb--AWSEB-ABH...', DNS name 'awseb--AWSEB-ABH2wgxtolsu', state 'Active', VPC ID 'vpc-0cfd8f994cb5d...', and availability zones '2 Availability Zones'. The page also includes a 'Create load balancer' button and a search bar for filtering load balancers.

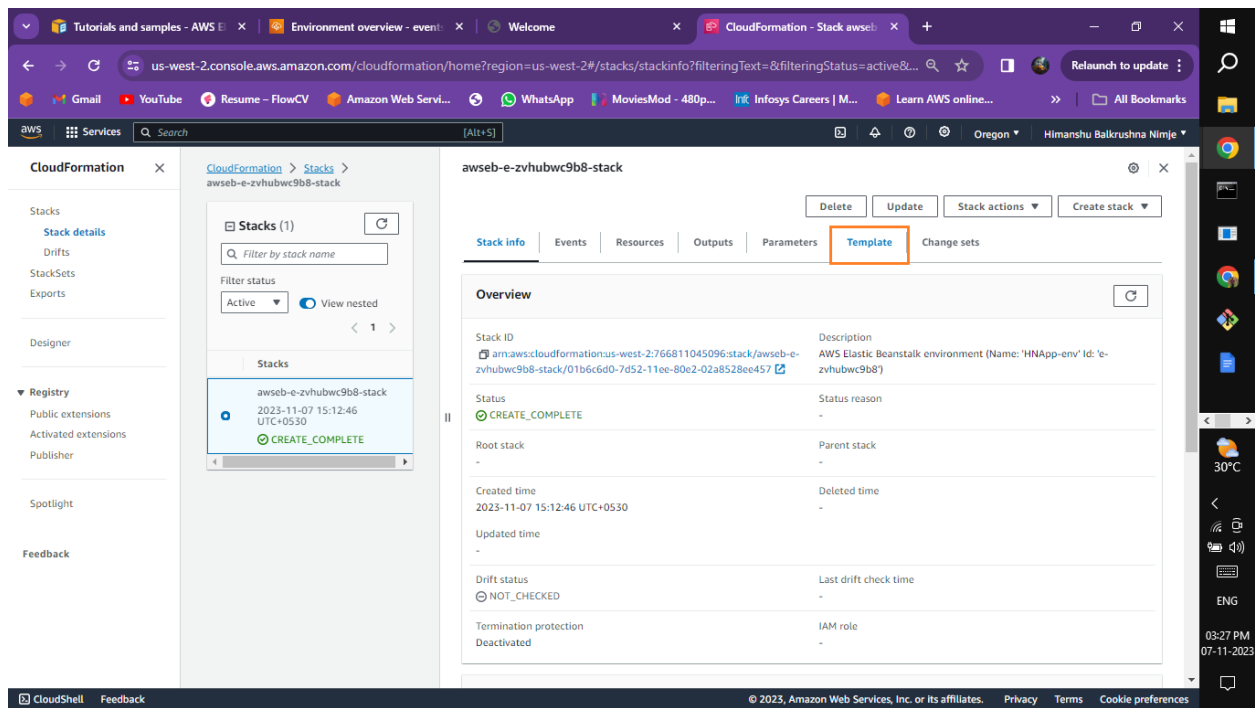
Here is VPC Availability Zones and Subnets

The screenshot shows the 'Load balancer details' page for the load balancer 'awseb--AWSEB-ABH2wgxtolsu'. The page is divided into several sections. The 'Details' section includes fields for 'Load balancer type' (Application), 'Status' (Active), 'Scheme' (Internet-facing), 'Hosted zone' (Z1H1FLSHABSF5), 'VPC' (vpc-0cfd8f994cb5dabc), 'Availability Zones' (us-west-2b and us-west-2d), 'IP address type' (IPv4), 'Date created' (November 7, 2023, 15:12 (UTC+05:30)), 'Load balancer ARN' (arn:aws:elasticloadbalancing:us-west-2:766811045096:loadbalancer/app/awseb--AWSEB-ABH2wgxtolsu/e5b05f28266e3553), and 'DNS name' (awseb--AWSEB-ABH2wgxtolsu-248184081.us-west-2.elb.amazonaws.com). The 'Listeners and rules' section shows a table for filtering listeners, with columns for 'Protocol/Port', 'Default action', 'Rules', 'ARN', 'Security policy', 'Default SSL/TLS certificate', and 'Tags'.

Design of App Environment



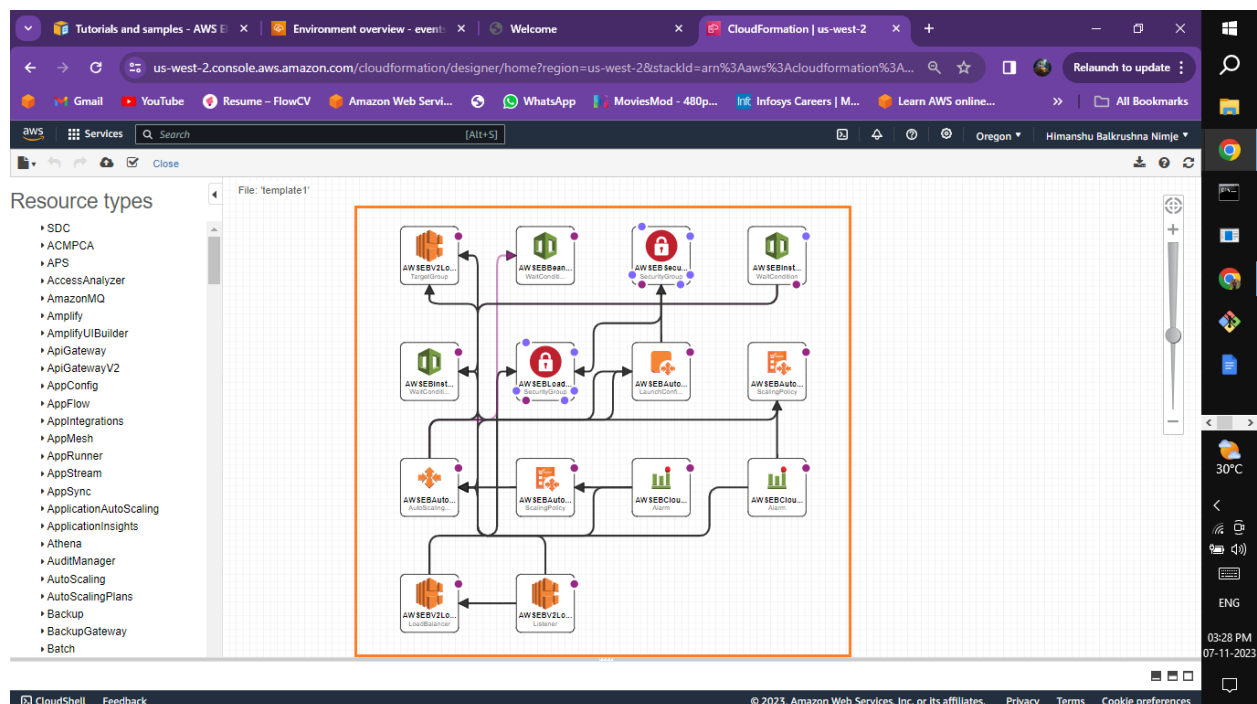
click on the cloudformation go to stack option, Then go to Template Option



click on View in Designer option

The screenshot shows the AWS CloudFormation console for the stack 'aws-e-zvhubwc9b8-stack'. The 'Template' tab is active, displaying the template body. An orange arrow points to the 'View in Designer' button. The left sidebar shows the 'Stacks' list with the stack 'aws-e-zvhubwc9b8-stack' selected. The bottom status bar shows the URL: <https://us-west-2.console.aws.amazon.com/cloudformation/designer/home?region=us-west-2&stackId=arn:aws:cloudformation:us-west-2:66811045096:stack/aws-e-zvhubwc9b8-stack/01b6c6d0-7d52-11ee-80e2-02a8528ee457>.

Here is The Architecture Diagram Of App environment



What I Learned

1. Elastic Beanstalk Environment:- Understanding what an Elastic Beanstalk environment is and how it provides a platform for deploying and running web applications without managing the underlying infrastructure.
2. Elastic Beanstalk Console:- Navigating the Elastic Beanstalk console in the AWS Management Console and the key sections such as environments, applications, and configurations.
3. Creating an Elastic Beanstalk Application:- Creating an Elastic Beanstalk application, giving it a name, and understanding how it serves as a container for your web application.
4. Environment Configuration:- Configuring your Elastic Beanstalk environment, including settings like instance type, instance count, environment variables, and more.
5. Scaling Options:- Learning about the automatic scaling capabilities of Elastic Beanstalk and how to configure scaling options based on your application's needs.
6. Health Monitoring:- Monitoring the health of application and environment, including understanding how Elastic Beanstalk manages instance health and replaces unhealthy instances.
7. Clean-Up and Termination:- Learning how to terminate an Elastic Beanstalk environment when it's no longer needed to avoid incurring unnecessary costs.

By going through the process of deploying a web application with Elastic Beanstalk, I have gained practical experience in deploying, managing, and scaling applications in a simplified and automated manner within the AWS environment.