BUILD A WEBSERVER AND AUTO-SCALING IN CLOUD		
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Field: HTML, CSS, PHP, AWS EC2, VPC, LOADBALANCING, AUTO-SCALING.		

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AND

AUTO-SCALING IN CLOUD

TEAM-20

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INTRODUCTION

Cloud computing enables users to access applications and data from anywhere in the globe, on any device with an internet connection. The advantage of cloud computing is that it comes with built-in connection, which allows teams to access the resources they need to make those decisions, as well as remote access and autoscaling.

The crucial Aws Services used were EC2 instance, autoscaling and load balancing.

Auto-scaled Instances stay on sleep when the load on the Instances is less, thus saving on electricity costs for companies running their own webserver infrastructure. Autoscaling solutions take care of unhealthy instances and servers that are crashed with heavy load by protecting hardware, network and applications failures.

Autoscaling can offer greater uptime and more availability in cases where production workloads are variable and unpredictable.

Amazon elastic compute cloud provides scalable computing capacity in the Amazon web services cloud. Using amazon EC2 to launch v virtual servers, configure security and networking and manage storage.

Amazon EC2 Auto Scaling helps to ensure that we have the correct number of Amazon EC2 instances available to handle the load for our application.

Elastic Load balancing automatically distributes our application traffic across all the EC2 instances that we are running. Elastic load balancing helps to manage incoming requests by optimally routing traffic so that no instance is overwhelmed.

SCOPE OF THE PROJECT

Adding Amazon EC2 Auto Scaling to your application architecture is one way to maximize the benefits of AWS cloud. Some of them are:

1. Better default tolerance:

   When an instance is unhealthy, Amazon EC2 Auto Scaling can recognize it, terminate it, and run a new instance to replace it. You can also employ several Availability Zones with Amazon EC2 Auto Scaling. If one Availability Zone goes down, Amazon EC2 Auto Scaling can compensate by launching instances in another.

2. Better availability:

   Amazon EC2 Auto Scaling ensures that your application has enough capacity to handle current traffic demand at all times.

3. Better cost management:

   Amazon EC2 Auto Scaling can increase and decrease capacity dynamically as needed. You save money by creating instances when they are needed and terminating them when they aren't since you pay for the EC2 instances you utilize.

Our main idea is developing an ecommerce website with **best performance** 'CHALO RIDER'. Our website is mainly for interconnecting riders. In our website Chalo Rider every users have the advantage of shopping. They can find different kinds of accessories for the riders such as helmets, gloves, spare parts etc. Users can write blogs about the places visited and post them. The most popular posts will be appeared on the top. In these posts they find the user experiences, some tips and ratings of the places they visited, and the best food they can find and places to stay-

in and they also can find the locations. These kinds and tips and ratings will beneficial to the users.

STRATEGY TO ACCOMPLISH THE PROJECT

We can use auto scaling to create scaling plans and automate how groups of different resources respond to demand changes. Auto scaling minimizes the server's burden and stores all data, which is advantageous to clients because if the load increases or the server crashes, we can use autoscaling to replace the server and reduce the load. Because of load balancing, when demand for servers increases, there is more availability for customers, and cost management fluctuates according to consumption, which is advantageous to the proprietor. Downtime on the server will be decreased. Administrative tasks will be completed in a short amount of time, with the majority of the job being automated.

Most of the people loves to travel around the world to visit new places. If a rider wants to travel to far off places they need some accessories like helmet, gloves, jacket, spare parts etc. There are many places to visit all over the globe but to view

the real beauty of some places should be at particular conditions like weather and seasons.

“CHALO RIDER” is a combination of ecommerce and blog for riders where the user can find different accessories at one place. Imported good for imported vehicles are also available here. Users can write the blogs on the various places they visit which consists of user experience, suggestions about various food items and the places to stay-in.

For a day nearly 4000 members can enjoy actually. As a result, when there are special offers, users will mostly access the website. There will be a drastic change in the usage

of the website. Also, as the business increases, the number of people that login into the website may increase, which may lead to an increase in downtime.

All these problems can be solved by using load balancing and auto scaling. For that we are using amazon web service (Aws) as a platform for maintaining website with load balancing and auto scaling.

We are using amazon web service as cloud service provider. They are providing these services at beneficial values which includes services like elastic compute cloud (EC2) which is used as webserver, simple storage service(s3) bucket for storage services, cloud front for load testing, cloud watch for monitoring the EC2 instance for better security virtual private cloud (VPC) and security groups. Another one of the important Thing in EC2 which is Amazon Machine Image (AMI) for the future usage in auto scaling.

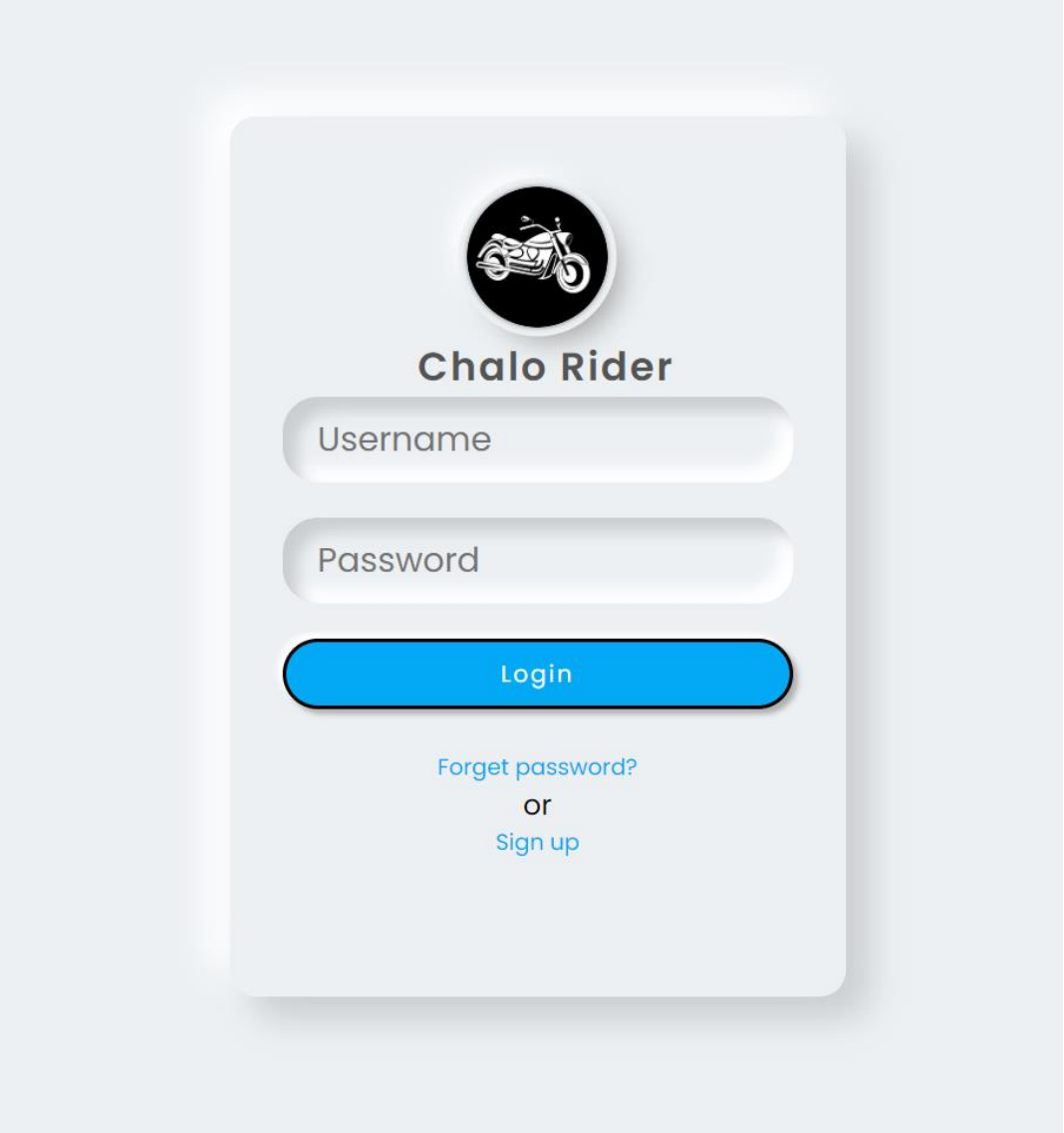
In EC2 instance we installed Apache, Php and Php my admin for backend (Database). By using database as service in amazon web service is easier by installing in the EC2 instance. We use cloud front and send more than 10000 requests for load testing which give results as we expected by automatically creating the EC2 instances. After stopping the cloud front the instances decreased to desired number of instances.

TECHNOLOGIES USED:

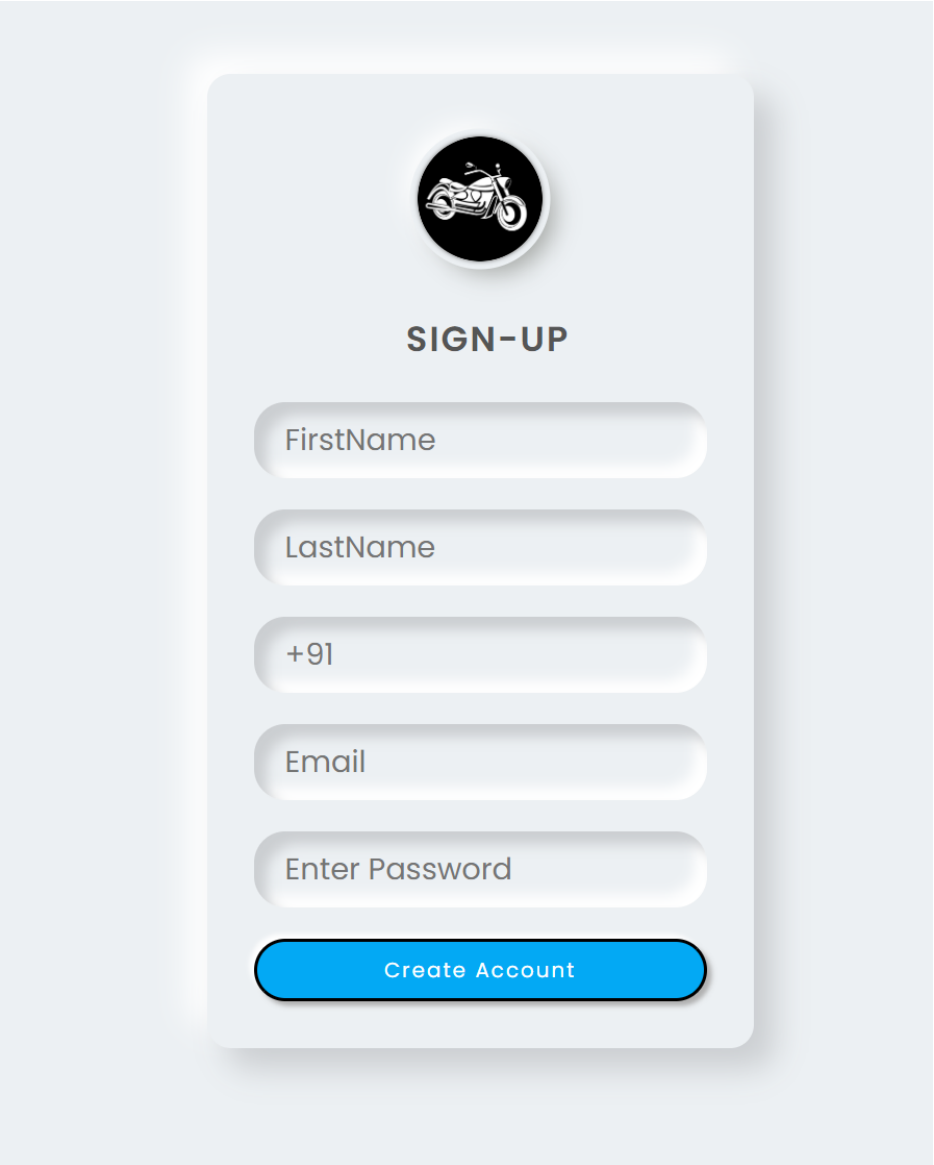
- HTML
- CSS
- PHP
- MYSQL
- AWS EC2
- AWS VPC
- AWS S3
- AWS CLOUD FORMATION TEMPLATE

- AWS CLOUDFRONT
- AWS LOADBALANCING

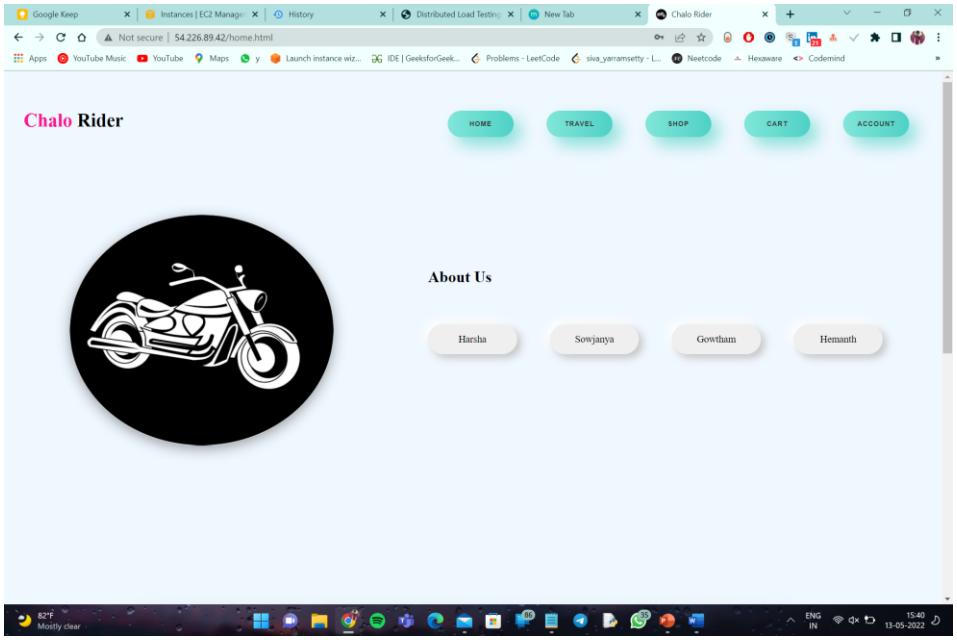
1. **Login Page**



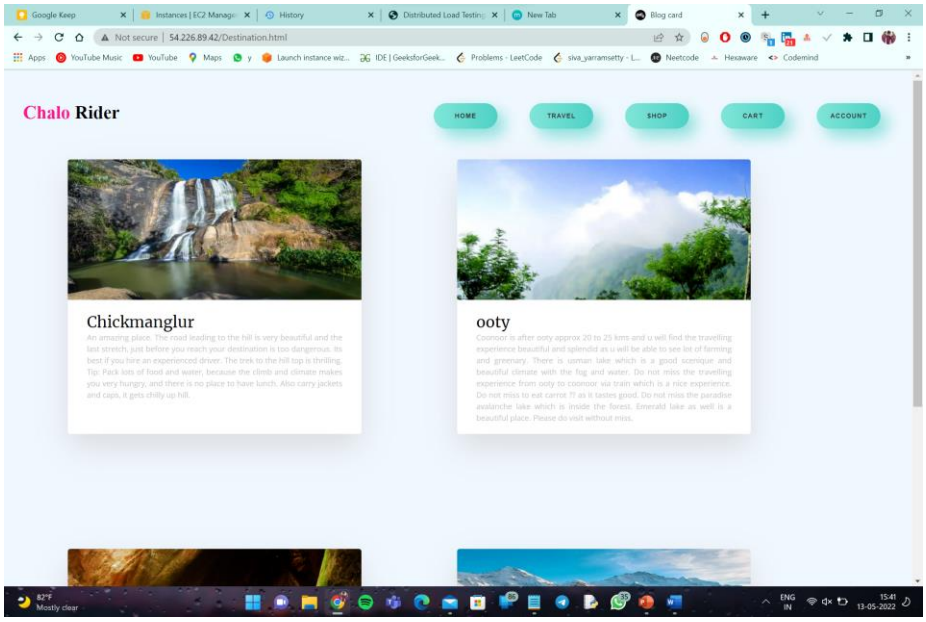
2. **Sign-up for New Users.**



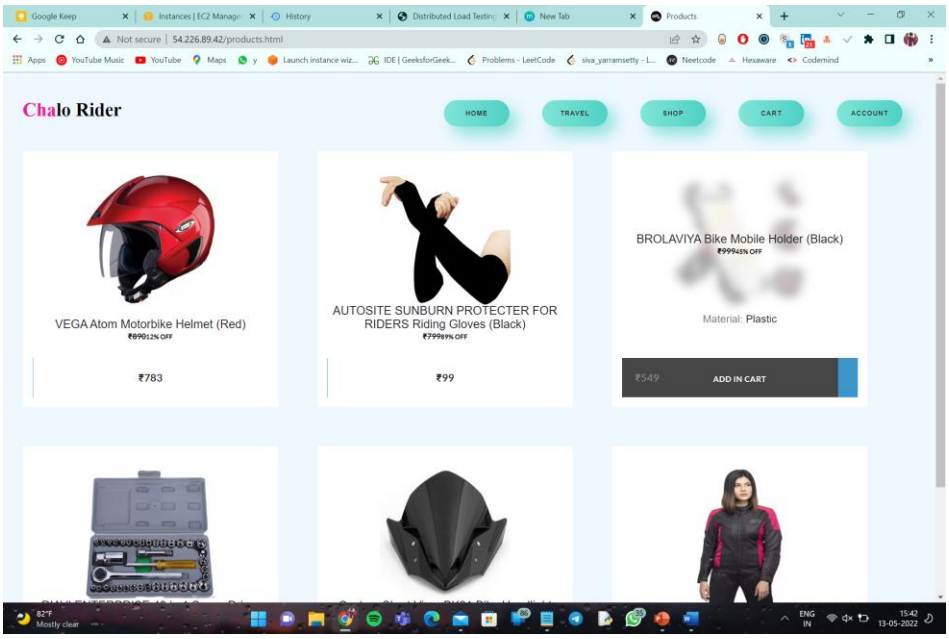
3. Home Page



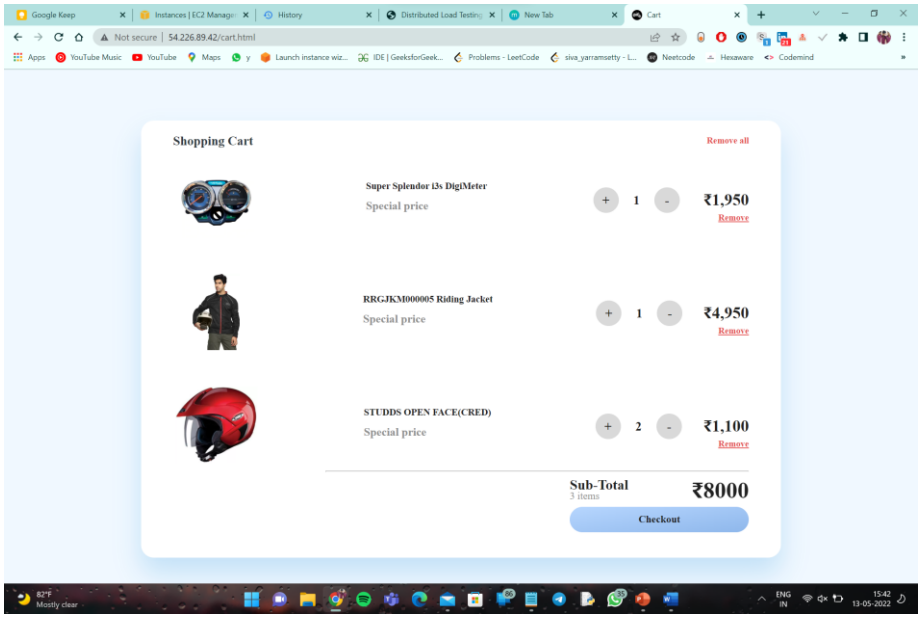
4. Travel Page



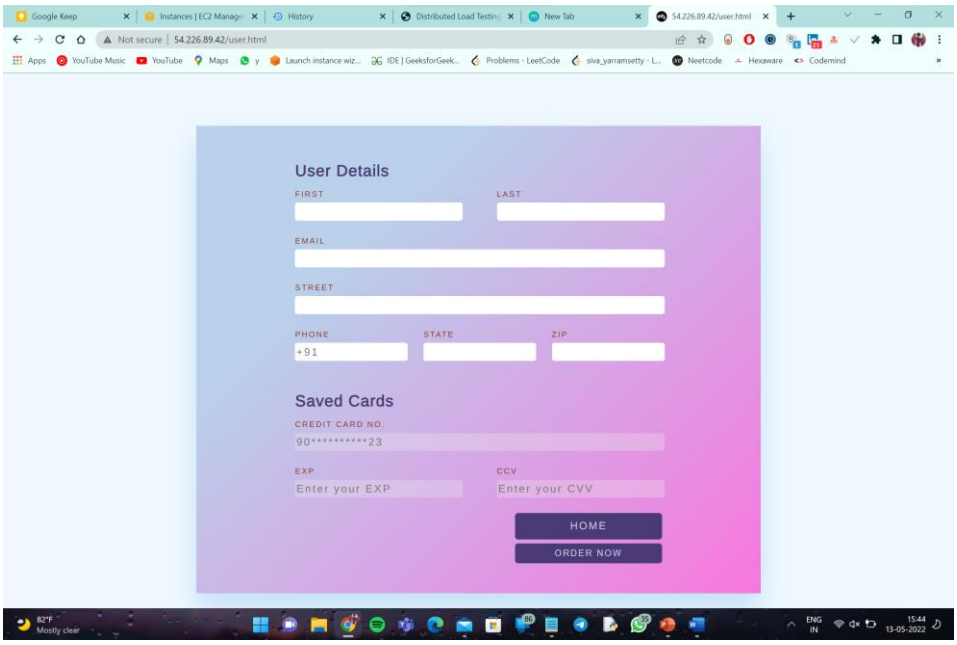
5. **Products / Store**



6. **Items in cart**



7. **User Edit Details Page**



8. Stress Test Initiation

ID	ikKGUEn9hK	STATUS	COMPLETE
NAME	chalo	STARTED AT	2022-05-12 13:48:49
DESCRIPTION	test	ENDED AT	2022-05-12 13:57:09
ENDPOINT	http://54.158.1.39	TASK COUNT	4 (4 completed)
METHOD	GET	CONCURRENCY	250
HEADERS	{}	RAMP UP	10s
BODY	{}	HOLD FOR	2m

9. Test Results

Avg Response Time	Avg Latency	Avg Connection Time	Avg Bandwidth
28.10507s	8.86663s	8.52079s	122.85 Kbps

Total Count: 4919	Success Count: 4919	Error Count: 0	Requests Per Second: 37.55

IMPACT AND OUTCOME

A website that allows consumers to purchase and sell physical goods, services, and digital products online rather than at a real store. A business can handle orders, receive payments, manage shipping and logistics, and provide customer care through an e-commerce website.

Chalo Rider is an e-commerce website that serves as a one-stop-shop for all accessories, spare parts, essentials, and support all the riders require for their incredible journeys throughout the world.

However, Chalo Rider is a well-thought-out concept.

The creation of this concept necessitated the use of numerous new technologies, including frontend programming languages such as HTML, CSS, and JavaScript.

Working with MYSQL and PHP is also a plus.

We had a fantastic time learning these technologies for the Chalo Rider front-end and back-end development.

Using Xampp, we ran a number of tests on the local server (APACHE, MYSQL).

Later, the website was hosted on Amazon Web Services (AWS), one of the most promising and customer-friendly cloud providers.

Amazon EC2 and Amazon S3 Bucket were used to do this.

Instead of using RDS, we spent a lot of time and effort installing Apache, PHPMyAdmin, and creating a database on the EC2 server.

At this point, the actual work begins on our project.

We normally notice an upsurge in Load at Once during promotional periods or any festive period.

We used AWS Load balancer to manage that load, and as soon as it was up and running, we used AWS Load balancer to control that load, and as soon as the load increases, more instances are generated, distributing the load evenly among them.

This ensures that the website has very little/no downtime and that server crashes are avoided to a large extent.

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The purpose of this research was to visualize and understand how AWS Autoscaling works and using understanding other AWS Services.

AWS Auto Scaling is an ideal feature to implement your cloud scaling strategy. It automatically based on traffic demand.

For Chalo Rider ecommerce stores, traffic variations are often unpredictable. AWS Auto Scaling ensures your Chalo Rider site has high performance & uptime.

Auto Scaling helps to minimize cloud costs. You only pay for the resources used. You can create scaling policies and set targets based on your preference.

Overall, AWS Auto Scaling is an excellent solution for Chalo Rider server resources.