# Summary

## VPC and Subnets:

To deploy our application, we created a Virtual Private Cloud (VPC) in the North Virginia region. The VPC consisted of two public subnets and three private subnets. Our goal was to enhance security, so we placed the web servers and RDS instances in the private subnets. Additionally, we set up an Internet gateway and NAT gateway to provide internet connectivity to the private subnets.

## EC2 Instance and Launch Configuration:

We launched an EC2 instance in one of the public subnets. On this instance, we installed IIS (Internet Information Services) and MySQL Workbench/Client. The purpose of this instance was to create a Launch Configuration, which specifies the configuration settings for subsequent instances launched by the Auto Scaling Group. Once the Launch Configuration was created, we terminated the initial EC2 instance.

## Auto Scaling Group:

To ensure high availability and scalability, we configured an Auto Scaling Group. This group was responsible for provisioning web servers and maintaining a desired capacity of 2 virtual machines (VMs). We defined the minimum and maximum capacity for the group. To keep the web servers isolated, we placed the Auto Scaling Group in the private subnet.

## Elastic Load Balancer (ELB):

We created an Internet-facing Elastic Load Balancer to distribute incoming traffic to the web servers. For security purposes, we configured a separate security group for the ELB and the Auto Scaling Group. This setup allows web traffic only from the ELB. Both EC2 instances were added to the target group of the ELB, enabling them to handle incoming HTTP traffic on port 80. This configuration ensures load balancing and fault tolerance for the web server page.

## Bastion Host:

To enhance security, we configured the web servers to be accessible only through a Bastion host. This means that direct access to the web servers from the internet is restricted, and users must go through the Bastion host to access them. This extra layer of protection adds to the overall security of the deployment.

## MySQL RDS:

We created a MySQL RDS (Relational Database Service) instance to serve as the database for our web application. Placing the RDS instance in the private subnet ensured its isolation from the internet. To allow access only from the web servers, we configured security groups accordingly. This setup provides a secure and scalable database solution for our web application.

## MySQL Client Configuration:

We installed the MySQL client on the web servers within the Auto Scaling Group. The client was configured to connect to the RDS instance, enabling seamless communication between the web servers and the database. This allows for efficient data retrieval and storage.

## Auto Scaling Notifications:

To stay informed about scaling activities or events related to the web servers, we configured notifications via Email/SMS. These notifications help us monitor the health and performance of the deployment and take timely actions if required.

## Route 53:

We configured Route 53, the DNS service provided by Amazon Web Services, to associate the load balancer endpoint with a domain name. This customization allows users to access our website using a personalized domain name (e.g., yourname.sherdilitaacademy.net). Route 53 ensures reliable and scalable DNS resolution, providing seamless access to our web application.