# Case Study: Scalable Web App Architecture on AWS

This project showcases the design and deployment of a highly available and scalable web application architecture on AWS. The goal was to ensure fault tolerance, efficient traffic distribution, and automated resource scaling based on demand fluctuations.

## Architecture Overview

- Amazon EC2: Hosts the web application.  
- Auto Scaling Group: Manages instance count based on traffic load.  
- Elastic Load Balancer (ALB): Balances traffic across EC2 instances in different Availability Zones.  
- Amazon Route 53: Handles DNS routing and health checks.  
- CloudWatch: Monitors application metrics and triggers alarms or scaling policies.

## Deployment Strategy

1. Configured EC2 launch template with application environment.  
2. Set up an Auto Scaling Group with min/max/desired instances.  
3. Created an Application Load Balancer across two Availability Zones.  
4. Configured Route 53 to route traffic to the ALB domain.  
5. Enabled CloudWatch to monitor CPU utilization and trigger scaling actions.

## Key Learnings

- Designed an architecture with high availability using Multi-AZ deployment.  
- Achieved automated scalability and load management with ASG and ALB.  
- Improved fault tolerance and performance monitoring through CloudWatch.  
- Gained practical experience with DNS routing and health checks via Route 53.