The Field Project Report

For Bachelors of Science Degree

"ZERO-DOWNTIME WEB APPLICATION DEPLOYMENT ON AWS"

Submitted to

“CASAS”

New Arts, Commerce and Science College, Ahmednagar (Autonomous)

In

“Bachelor of Science”

Submitted by

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Under the Guidance of “Prof. Dhiraj Kharade Sir/ Prof. Shradhha Panchal Mam”

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Field Project Synopsis

Name of the Student: Dipali Jyotiba Kshirsagar

Name of the Guide: Prof. Dhiraj Kharade Sir & Prof. Shraddha Panchal Mam

Title of the Field Project: Zero-Downtime Web Application Deployment using AWS EC2, RDS, Application Load Balancer, and Auto Scaling.

Objectives:

- To deploy a highly available PHP/MySQL web application on AWS infrastructure.
- To implement Application Load Balancer for distributing traffic across multiple EC2 instances.
- To configure Auto Scaling Groups to handle traffic spikes and ensure fault tolerance.
- To establish secure connectivity between EC2 web servers and RDS MySQL database.
- To implement Blue/Green deployment strategy for continuous updates with zero downtime.
- To understand and implement AWS security groups, VPC configuration, and region-based deployment.

Research Methodology:

- **Research Design:** Descriptive and Practical Implementation
- **Data Collection:** Primary (Hands-on AWS environment setup, load testing, and monitoring)
- **Tools for Analysis**: AWS Management Console, Application Load Balancer metrics, Auto Scaling monitoring, CloudWatch logs, PHP/HTML/CSS code testing, and RDS performance monitoring.
- **Time Frame:** 60 Hours

Work Outline:

- Requirement Analysis
- Environment Setup (AWS EC2 and RDS configuration)
- Application Development

- Load Balancing Configuration
- Auto Scaling Implementation
- Blue/Green Deployment Setup
- Testing and Troubleshooting Connectivity
- Documentation and Result Evaluation
- Instance Termination and Cleanup

Expected Outcomes:

- Successful deployment of a highly available, fault-tolerant web application using AWS services.
- Zero-downtime application updates through Blue/Green deployment strategy.
- Automatic scaling to handle variable traffic loads without manual intervention. Hands-on experience in cloud infrastructure management.
- Hands-on experience in cloud infrastructure management and high-availability design patterns.
- Practical knowledge of database connectivity, troubleshooting, and performance optimization.