**Capstone Project Documentation**

1. **Introduction**

This document provides an overview of the capstone project, detailing the GitHub repository, deployed application, Docker configurations, Jenkins setup, AWS EC2 configurations, and the monitoring setup using Prometheus and Grafana.

**2.GitHub Repository**

● **GitHub Repository URL:** https://github.com/lakshmimadhan9794/capstone.git

**3.Deployed Application**

The application has been successfully deployed and is accessible at the following URL:

● **Deployed Site URL:** http://54.204.156.107:8080

1. **Docker Images**

Docker images have been created and pushed to Docker Hub for both development and production environments.

* + **Development Image:** lakshmimadhan/dev:latest
  + **Production Image:** lakshmimadhan/prod:latest

1. **Jenkins Configuration**

Jenkins is configured with the GitHub repository for continuous integration and deployment. The following configurations have been set up:

* + **Jenkins Login Page:** Screenshot provided.
  + **Pipeline Configuration:**
    - **Branch Sources:** Configured to monitor the master and dev branches.
    - **Build Configuration:** Utilizes the Jenkinsfile from the repository to define the build steps.
  + **Build Execution Logs:** Successful builds for both dev and master branches have been executed.

**6.AWS EC2 Configuration**

The application is deployed on an AWS EC2 instance with the following details:

* + **EC2 Instance Details:** Screenshot provided.
  + **Security Group Configuration:**
    - **SSH (Port 22):** Access restricted to your IP address.
    - **HTTP (Port 80):** Open to all for accessing the application.
  + **Security Group Inbound Rules:** Screenshot provided.

**7.Docker Hub Repositories**

Docker images are available in Docker Hub with the following details:

* + **Development Image Repository:** lakshmimadhan/dev
  + **Production Image Repository:** lakshmimadhan/prod
  + **Image Tags:** latest
  + **Docker Hub Repository Screenshots:** Provided.

**8.Deployed Site Page**

The application is live and accessible at the deployed site URL. A screenshot of the deployed application is provided.

**9.Monitoring Setup**

Prometheus and Grafana have been set up for monitoring the application.

* + **Prometheus Configuration:**
    - Configured to scrape metrics from the application and Nginx exporter.
    - **Prometheus Targets Page:** Screenshot provided showing all targets are UP.
  + **Grafana Configuration:**
    - Connected to Prometheus as a data source.
    - Dashboards have been created to visualize application metrics. o **Grafana Dashboard**

**Screenshot:** Provided.

**10..Submission Checklist**

* + **GitHub Repository URL, Deployed Site URL, and Docker Image Names:**
    - All URLs and image names are included above.
  + **Screenshots Included:**
    - **Jenkins:**

▪ Login page, configuration settings, and build execution logs.

* + - **AWS EC2:**

▪ Instance details and Security Group configurations.

* + - **Docker Hub:**

▪ Repository pages showing image tags.

* + - **Deployed Site:**

▪ Screenshot of the live application.

* + - **Monitoring Health Check:**

▪ Prometheus targets page and Grafana dashboard.

**11.Conclusion**

The capstone project has been successfully deployed, integrated with Jenkins for CI/CD, and monitored using Prometheus and Grafana. The application is stable, and health checks indicate all services are operational



















