

## **SaaS Application Deployment & DevOps Pipeline Setup**

### Objective:

The goal of this assignment is to evaluate your understanding of **SaaS application deployment**, **DevOps practices**, and the **automation of continuous integration and continuous delivery (CI/CD)** processes in a cloud environment.

### Task Description:

You are given a simple web application and tasked with deploying it to AWS (Amazon Web Services), setting up a basic **DevOps pipeline**, and ensuring that the application can be maintained and updated efficiently. You will implement a complete workflow for deploying, monitoring, and updating the application.

1. **Create a Simple SaaS Application:**
2. **Deploy the Application to a Cloud Platform AWS**
  - Deploy your application using **Infrastructure as Code (IaC)** tools like **Terraform** or **CloudFormation**.
  - Ensure that your application can scale horizontally, and deploy it in a **containerized** environment (e.g., Docker, Kubernetes).
  - Set up a **load balancer** and configure **auto-scaling**.
3. **Set Up CI/CD Pipeline:**
  - Set up a **CI/CD pipeline** using tools such as **GitLab CI**.
  - The pipeline should automate the following tasks:
    - Code linting and testing (e.g., unit tests).
    - Build the application.
    - Deploy to a staging environment upon successful build.
    - If staging tests pass, automatically deploy to production.
4. **Monitor and Log the Application:**
  - Implement basic monitoring using tools like **AWS CloudWatch** to keep track of application health and performance.
  - Set up logging with **ELK stack** (Elasticsearch, Logstash, Kibana) or use cloud-native logging solutions.

### Deliverables:

1. **Submission Link** - <https://forms.gle/AXJQbWTQkxNhJCs37>
2. **A video walkthrough of (max 15 mins)** the design, workflow, and code of the solution. Ensure your video is on as well. Upload it to Google Drive or Microsoft One Drive and share the link.
3. **Create a presentation (PowerPoint or Word document) of your solution** addressing the above requirement and share the same.
4. If you've written any code (optional), please share the **GitHub link**.
5. Please inform [hr@grafyn.ai](mailto:hr@grafyn.ai) once you submit the assignment.