BMS College of Engineering

Department of Information Science and Engineering

Capstone Project – AY- 2023-2024

Batch No: 24	Project Title: Automation in Devops(cloud deployment)

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1. ABSTRACT :

The combination of cloud computing with DevOps practises is not only a necessity for organizations looking to improve the agility and efficiency of their deployment operations, but also a choice in today's fast changing software development landscape. In order to meet this urgent demand, our idea aims to build a comprehensive DevOps solution that is housed on a cloud platform. The main goals of this solution are to increase monitoring capabilities for various resources and applications and to streamline deployment procedures.

Our project's main goal is to improve DevOps monitoring and streamline deployment processes. Our strategy is centered on automation, which tries to minimize manual intervention and lower the risks related to human mistake during the deployment process. Our goal is to create a flexible and resilient platform that can handle a wide range of deployment scenarios by utilizing cloud technologies. Our platform will offer unmatched flexibility for static web pages, web applications, databases, and containerized apps.

This broader aim aligns with the growing trend in the industry towards democratizing DevOps practices. It recognizes that small and emerging organizations may not have the resources to maintain a dedicated DevOps team, yet they can greatly benefit from efficient deployment processes. Our solution offers a bridge between development and deployment, allowing developers to take charge of the entire application lifecycle, from coding to deployment..

This strategy could be a practical and affordable means for new companies and small enterprises to quickly launch their products. It guarantees that the people who know the application's internal workings the best are in charge of its deployment and lessens the complexity involved with handovers. Our platform's automation features and user-friendliness facilitate inclusivity and make deployment easier for a broad variety of users—including those without a lot of DevOps experience.

The proposed solution offers several advantages over traditional devops approaches:

- Simplified Deployment Workflows: By automating deployment processes, the solution lessens the need for labor-intensive, mistake-prone manual interventions. Because the bottlenecks frequently associated with traditional methods are eliminated, this process streamlining leads to deployments that are faster and more reliable.
- Cloud Integration: Scalability and cost-effectiveness are provided by utilizing cloud infrastructure. Dynamic resource allocation is made possible by the solution's integration with cloud services, guaranteeing high availability and effective resource use. This is a big change from conventional on-premises infrastructure configurations.
- User-Friendly Interface: A greater variety of users can access the solution due to its user-friendly interface, which streamlines deployment and configuration procedures. The accessibility of traditional DevOps approaches may be limited by their steeper learning curve.
- Democratising DevOps: By streamlining deployment procedures to such an extent, the solution enables businesses to forgo hiring a dedicated DevOps team. Since developers are the ones who wrote the code, they can handle deployment tasks, which eliminates the need for specialized DevOps knowledge.

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2. INTRODUCTION:

2.1 Background work:

The adoption of DevOps practices and cloud computing has become increasingly popular in recent years. DevOps is a set of practices that automates and streamlines the software development lifecycle, while cloud computing provides a scalable and flexible platform for hosting and deploying applications.

A number of research papers have been published on the topic of DevOps and cloud computing. One such paper is "DEVOPS FOR CLOUD COMPUTING: AN OVERVIEW" by Tesma et al. (2022). This paper provides a comprehensive overview of DevOps, cloud computing, and the benefits of using DevOps in the cloud.

Another relevant research paper is "Research on Intelligent Cloud Native Architecture and Key Technologies Based on DevOps Concept" by Wang et al. (2022). This paper proposes an intelligent cloud native architecture that leverages DevOps concepts to improve the agility and efficiency of software development and deployment.

2.2 Motivation

A more efficient and flexible approach to software deployment is now required due to the industry's transformation caused by the growing adoption of DevOps practices and cloud computing. Even though they work well, traditional DevOps techniques sometimes have difficult scalability issues, intricate workflows, and manual interventions. Simplifying deployment procedures, improving flexibility, and embracing cloud-based automation are the driving forces behind this project.

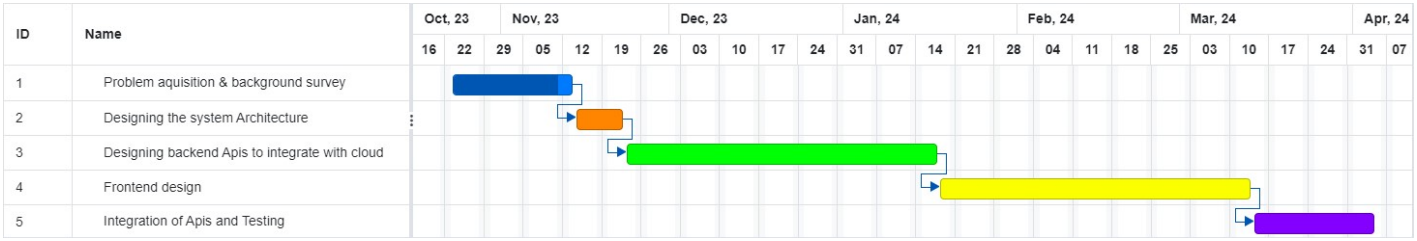
The project also addresses the growing need for real-time software deployment monitoring. Furthermore, democratizing DevOps by empowering developers to handle deployment tasks seeks to increase accessibility to DevOps practices for a wider range of users, particularly startups and small businesses. The goal of the project is to develop a DevOps solution that is easy to use, effective, and economical so that businesses can maintain their competitiveness in the ever-evolving software development industry.

3. PROBLEM DEFINITION:

The inherent complexity of traditional DevOps practices, which frequently involve complex and manual deployment workflows, is one of the main challenges. These intricacies may cause mistakes and delays. The project's objective is to optimize these workflows in order to decrease the possibility of human error while increasing deployment speed and reliability.

Furthermore, accessing and implementing DevOps practices presents special challenges for startups and smaller organizations, frequently because of resource constraints. These difficulties can be lessened and DevOps techniques made more widely available by democratizing the process by giving developers the authority to oversee deployment tasks. The project's goals are to simplify deployment workflows, improve flexibility, maximize resource utilization, and democratize DevOps practices.

4. GANTT Chart:



Synopsis : Accepted

Yes No

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