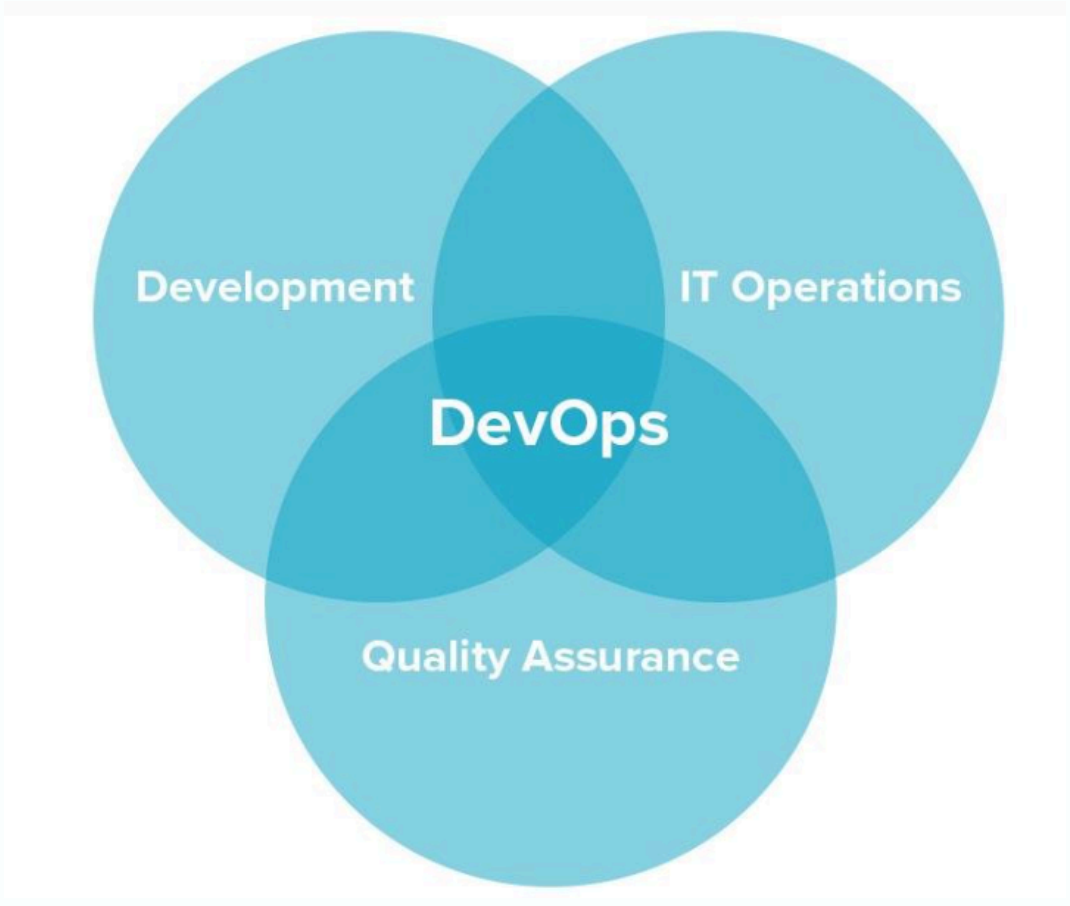
# Experiment - 1

**Aim:** To understand the Devops principles, practices and Devops engineer role and responsibilities.

**Theory:** DevOps stands for development and operations. It's a practice that aims at merging development, quality assurance, and operations (deployment and integration) into a single, continuous set of processes. This methodology is a natural extension of Agile and continuous delivery approaches.




By adopting DevOps companies gain three core advantages that cover technical, business, and cultural aspects of development.

Higher speed and quality of product releases. DevOps speeds up product release by introducing continuous delivery, encouraging faster feedback, and allowing developers to fix bugs in the

system in the early stages. Practicing DevOps, the team can focus on the quality of the product and automate a number of processes.

Faster responsiveness to customer needs. With DevOps, a team can react to change requests from customers faster, adding new and updating existing features. As a result, the time-to-market and Better working environment. DevOps principles and practices lead to better communication between team members, and increased productivity and agility. Teams that practice DevOps are considered to be more productive and cross-skilled. Members of a DevOps team, both those who develop and those who operate, act in concert.

These benefits come only with the understanding that DevOps isn’t merely a set of actions, but rather a philosophy that fosters cross-functional team communication. More importantly, it doesn’t require substantial technical changes as the main focus is put on altering the way people work. The whole success depends on adhering to DevOps principles.\

## DevOps principles

DevOps is initially the culture and mindset forging strong collaborative bonds between software development and infrastructure operations teams. This culture is built upon the following pillars.

Constant collaboration and communication. These have been the building blocks of DevOps since its dawn. Your team should work cohesively with the understanding of the needs and expectations of all members.

Gradual changes. The implementation of gradual rollouts allows delivery teams to release a product to users while having an opportunity to make updates and roll back if something goes wrong.

Shared end-to-end responsibility. When every member of a team moves towards one goal and is equally responsible for a project from beginning to end, they work cohesively and look for ways of facilitating other members' tasks

Early problem-solving. DevOps requires that tasks be performed as early in the project lifecycle as possible. So, in case of any issues, they will be addressed more quickly.

Automation of processes

Automating as many development, testing, configuration, and deployment procedures as possible is the golden rule of DevOps. It allows specialists to get rid of time-consuming repetitive work and focus on other important activities that can't be automated by their nature.

Measurement of KPIs (Key Performance Indicators)

Decision-making should be powered by factual information in the first place. To get optimal performance, it is necessary to keep track of the progress of activities composing the DevOps flow. Measuring various metrics of a system allows for understanding what works well and what can be improved.

Sharing

Sharing is caring. This phrase explains the DevOps philosophy better than anything else as it highlights the importance of collaboration. It is crucial to share feedback, best practices, and knowledge among teams since this promotes transparency, creates collective intelligence and eliminates constraints. You don't want to put the whole development process on pause just because the only person who knows how to handle certain tasks went on a vacation or quitted.

## DevOps Engineer Responsibilities

In a way, both definitions are fair. The main function of a DevOps engineer is to introduce the continuous delivery and continuous integration workflow, which requires the understanding of the mentioned tools and the knowledge of several programming languages. Depending on the organization, job descriptions differ. Smaller businesses look for engineers with broader skillsets and responsibilities. For example, the job description may require product building along with the developers. Larger companies may look for an engineer for a specific stage of the DevOps lifecycle that will work with a certain automation tool.

The basic and widely-accepted responsibilities of a DevOps engineer are:

- Writing specifications and documentation for the server-side features
- Management of continuous deployment and continuous integration (CI/CD)
- CI/CD script writing
- Performance assessment and monitoring

Additionally, a DevOps engineer can be responsible for IT infrastructure maintenance and management, which comprises hardware, software, network, storages, virtual and remote assets, and control over cloud data storage.

## Conclusion:

In conclusion, DevOps is a transformative approach that has reshaped how organizations develop and deploy software. The role of a DevOps engineer is crucial in maintaining a balance between development and operations, contributing to faster, more reliable software releases.