What is DevOps?

DevOps is a combination of two words:

Dev→Development
Ops → Operations

DevOps is an approach that automates and integrates software development and IT operations to deliver applications quickly and with high quality.

Why DevOps?

Before DevOps, companies followed the **traditional model**:

- Developers only wrote code
- Operations only deployed and maintained servers
- Work was slow
- Many errors during deployment
- No proper communication
- Software releases took months

This caused:
Delays
More failures
Higher cost Customer dissatisfaction

DevOps is needed to remove this gap between Development and Operations.

DevOps helps to:

- Automate work
- Improve collaboration
- Deliver software faster
- Reduce errors

3.How DevOps Works?

DevOps works through a **continuous cycle** called the **DevOps lifecycle**:

🔁 **DevOps Lifecycle:**

Plan → Code → Build → Test → Release → Deploy → Operate → Monitor → Feedback

Explanation:

- Plan → decide features
- Code → developers write code
- Build → code is compiled
- Test → automated testing

- Release → prepare software
- Deploy → move to production
- Operate → run the application
- Monitor → check performance
- Feedback → improve product

This cycle keeps repeating automatically using tools like: **Git, Jenkins, Docker, Kubernetes, AWS, etc.**

4.DevOps Benefits :-

1.Faster Software Delivery: Automates build, test, and deployment pipeline, releases happen in minutes not instead of minutes or weeks

2.Improved Collaboration: breaks slices between dev and ops teams shared responsibility for product success

3.Highest Deployment frequently: small and frequent release reduce the risk and easier rollback if failures occur

4.Better product Quality: Continues counting catches bugs early and automated monitoring ensures stability

5.Reduced failure rate: Infrastructure as code ensured consistent environment and eliminates manual configuration errors

6.Faster issue recovery: Monitoring and logging detect problems quickly and auto healing and rollback reduce downtime.

7.Cost efficiency: Cloud automation reduces manual labour

8.Scalability: applications scale automatically with app demand and supports modern cloud notice architecture

9.Enhanced Security: Security integrated into CiCd Pipeline and early vulnerability detections

10.Customer satisfaction: Faster feature delivers and more stable and reliable applications.

5.DevOps Principles:-

1.Culture: Collaboration between dev & Ops, shared ownership

2.Automation: automate build, test, deploy and infra and monitoring

3.Lean: Deliver small changes frequently and remove waste – manual work, long approvals

4.Measurement: Track system & team performance

5.Sharing: Share Knowledge, tools and responsibility