SDLC

DevOps

Introduction to SDLC & Waterfall

By Mr. Vikram Kumar

Part - 1

This module contains below contents -

- About Software Project Development
- Software Development Teams
- Generic Workflow of a Software Project Process
- Ideologies of Teams in Software Project Development
- Generic Model of SDLC
- Waterfall model - Architecture
- Waterfall Model - Advantages
- Waterfall Model - Concerns
- Use Cases of Waterfall Model
- Expected Interview Questions

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ABOUT SOFTWARE PROJECT DEVELOPMENT

Let us say , we got a project to development a software.

- Then we do below steps -
- Strategy analysis - Decision on take the project or not
- Capacity analysis - To understand gaps
- Hire Resources - Developers, testers, Tech's tec
- Infrastructure setup - Software, hardware etc
- Select right model for software development process (Waterfall model, Agile model)

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SOFTWARE DEVELOPMENT TEAMS

- Software industry generally divided into two parts - Developers, Operations

Teams	Developers (Dev)	Operations (Ops)
People	• Developers, Software testers, DB Developers, Architects, etc	• System Admins, Cloud Engineers, DB admins, Security Professionals etc
Objective of job	• Create a software, testing software	• Deliver the software in form of web app or standalone installable software
After Delivery of software	• Develop a feature and testing feature	• Deliver the new feature with stability
Goal of job	• Want new features to be applied soon, " Quick Change"	• Want Stability of software/product

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GENERIC WORK FLOW THAT IS FOLLOWED IN ANY SOFTWARE PROJECT

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IDEOLOGY OF TEAMS IN SOFTWARE PROJECT DEVELOPMENT

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Developers (Dev)	• Quick Changes • Develop new features	• Do not worry about stability of deployment • still go ahead with new features development
Operations (Ops)	• Keep Software Delivery Stable • Environment Stable after further Deployments	• Worry about stability of Software • Not Ready to implement changes further, as it may disturb current working functionality of deployed software
Client	• Quick Changes with Stability	

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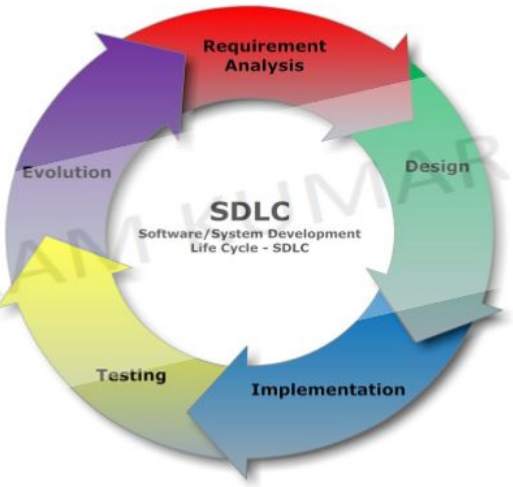
GENERIC SOFTWARE DEVELOPMENT LIFE CYCLE (SDLC)



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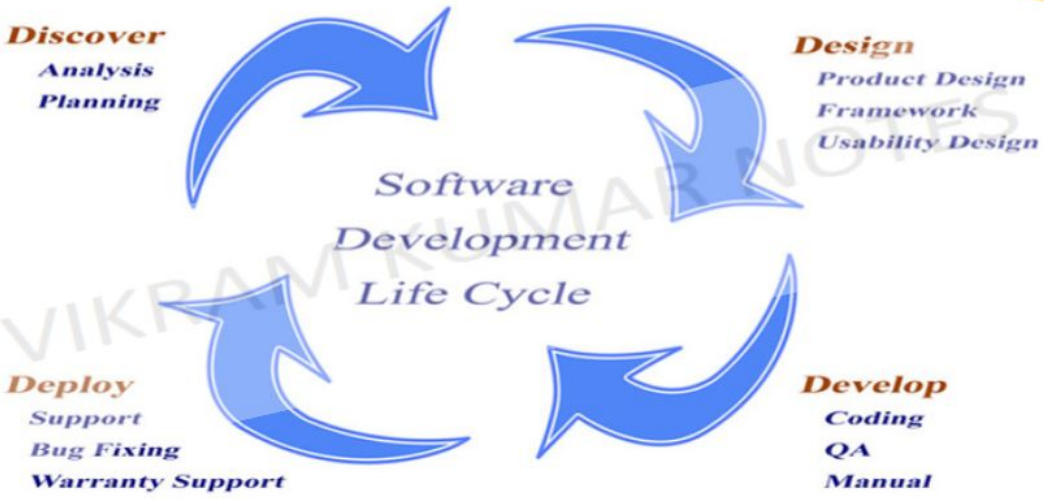

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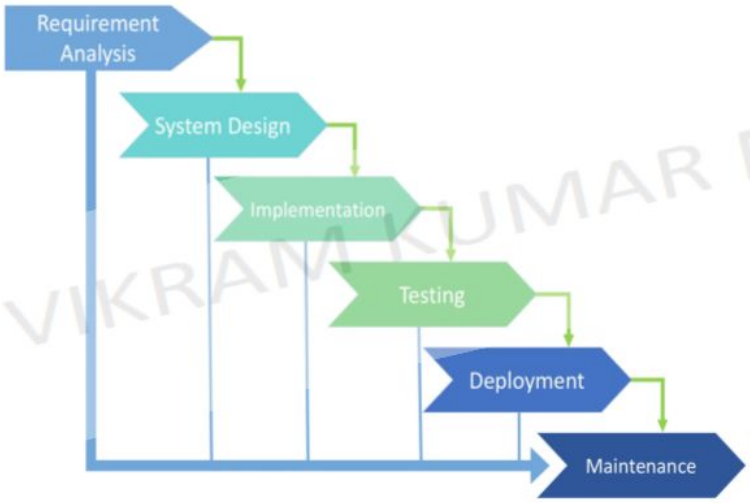
ARCHITECTURE OF WATERFALL MODEL (1970)- by Winston W. Royce



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Advantages of Waterfall Model -

- Simple Model
- Easy to understand and to use
- Each phases are processed and completed one Step at a time
- Phases do not overlap
- Suitable for - Smaller Projects
- when Project is stable (static) in nature.

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Disadvantages of Waterfall Model -

- Ops team need to wait until testing stage is complete.
- Uncertainty and Risk is involved.
- Difficult to go back frequently if any bugs are detected in previous stages.
- High amounts of risk and uncertainty.
- Not suitable for bigger projects and software delivery is of dynamic nature.
- ** No communication/collaboration/integration between Dev and Ops teams until product/software is ready
- Operations team resources sit ideal, there is no proper utilization of Operations team

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Use cases for the Waterfall SDLC model:

- The requirements are precisely documented
- Product definition is stable
- The technologies stack is predefined which makes it not dynamic
- No ambiguous requirements
- The project is short

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Expected Interview Questions -

Q. What is SDLC ?

Q. Why SDLC is required in Software Development ?

Q. About Waterfall model ?

Q. Phases of Waterfall Model ?

Q. What do you know about software delivery model ?

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AGILE

DevOps

Agile - Phases, Advantages & concerns

By Mr. Vikram Kumar

Part - 2

This module contains below contents -

DevOps

- About Agile
- Architecture of Agile Development
- Phases of Agile SDLC
- Agile Advantages
- Agile concerns
- Case Study on Agile Development Process real time issues
- Expected Interview Questions

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AGILE MODEL -

- Here the software is developed in small iterations instead of developing entire software at once.
- The software features are divided into multiple list of features.
- Developers work on developing those each features list separately in a iterative manner to complete final product/software.
- Example - total features 50 ;; 1st iteration 25; 2nd iteration 15 ; 3rd iteration 10 etc.

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ARCHITECTURE OF AGILE DEVELOPMENT PROCESS

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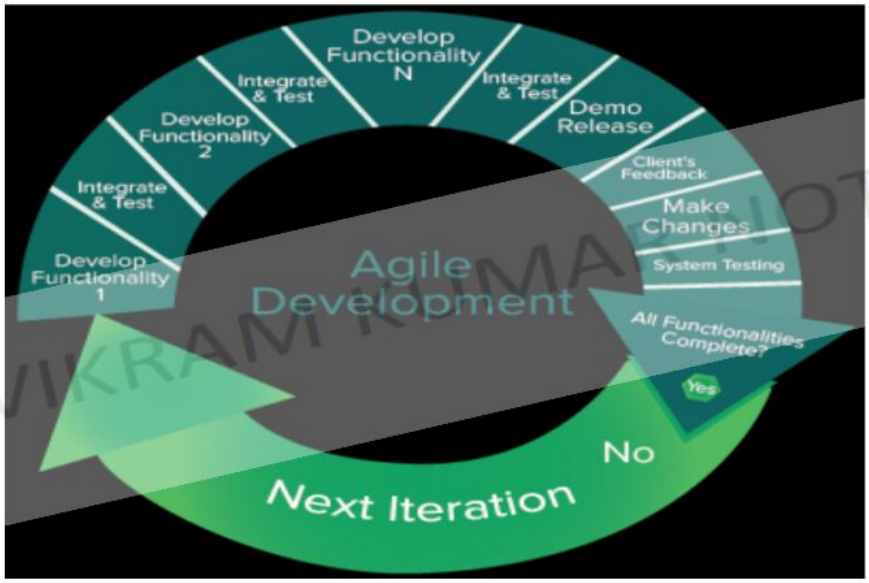

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AGILE ADVANTAGES

1. Fast delivery
2. Better communication and integration between teams
3. Agile projects generally complete in 6 months or 1 year
4. Usage of License based apps for product development

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AGILE CONCERNS

1. Ops team waits until they receive Procedural Document on deployment to production Servers
2. Still Dev does not understand how Ops works and Vice versa, Ops does not understand how dev works.
3. Mind sets of Dev and Ops operate differently.
   - Dev thinks of faster changes and wants to look a how new changes are working
   - ops wants stability, therefore they will be restrictive to changes
4. Finally, time delay, loss of business and opportunity

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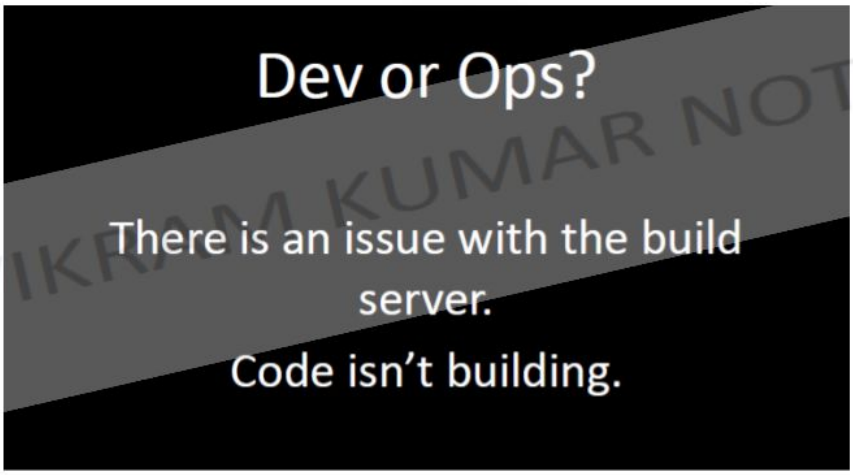
Case Study on Agile Development Process real time issues



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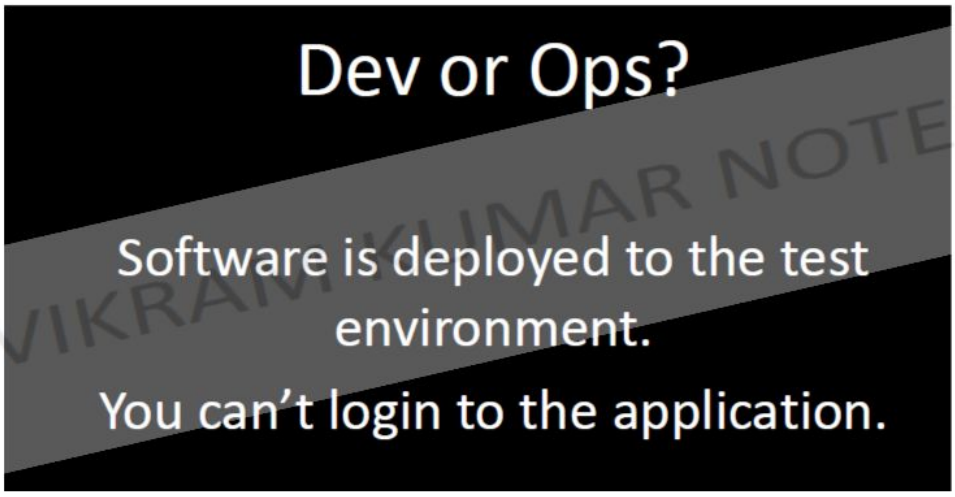

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"It works on my machine..."

"It's not the server, it's your code."

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Finally on day of Software/Changes delivery --- Practical scene's

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Finally on day of Software/Changes delivery --- Practical scene's

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Q. What should be the solution for this approach/culture ?

1. Still Should we keep Dev and Ops team separately
2. Should we make approach to integrate both teams
3. Look for new approach/culture that integrates both teams in all stages right from Plan, code, design, test, deployment etc.

What is the right option : ???

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Expected Interview Questions -

Q. What is SDLC ?

Q. About Agile model ?

Q. Explain how Agile model works in SDLC ?

Q. Difference between Waterfall and Agile Implementation?

Q. Concerns of Agile Implementation?

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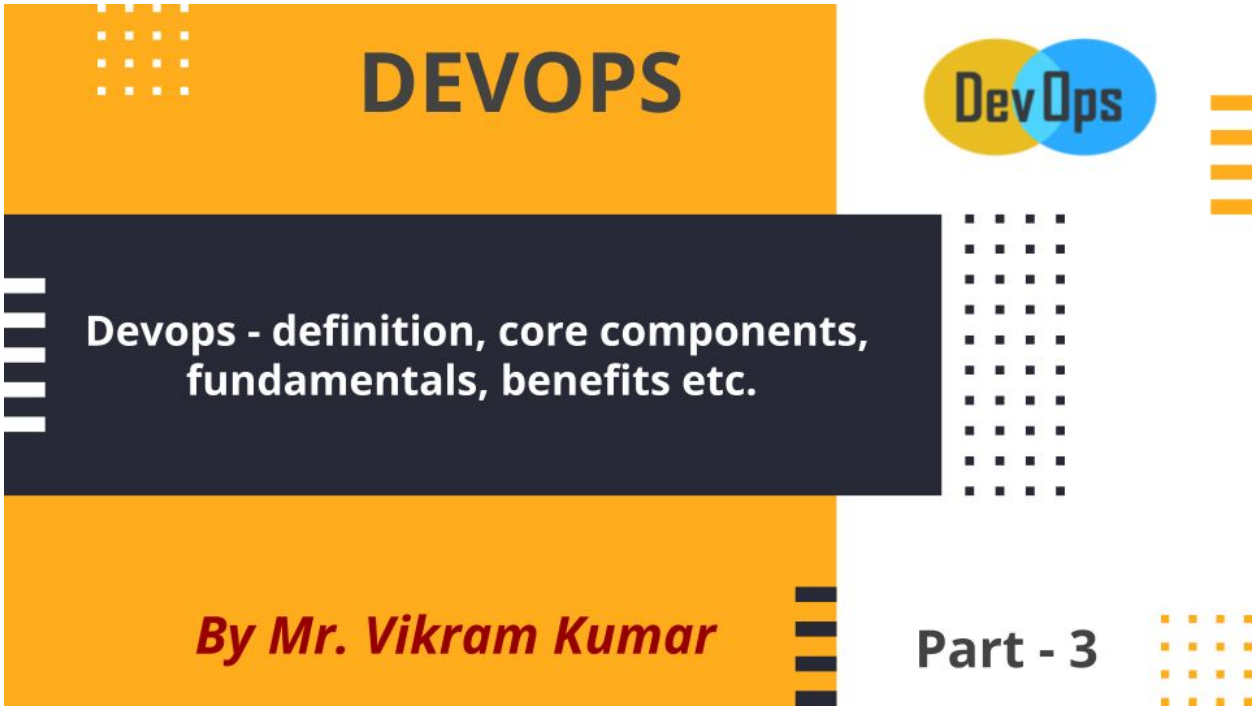

This Module contains -

- What is Devops
- Core Components of Devops
- Fundamental Principles of Devops
- Why Devops Use Tools for Automation
- Definition of Devops
- Evolution of Devops
- Values of Devops
- Benefits of Devops After Implementation
- Benefits of Devops for Business Organisations
- Expected Questions for Interviews

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What Is DevOps?

"DevOps is the union of people, process, and products to enable continuous delivery of value to our end users.

You cannot buy DevOps and install it. DevOps is not just automation or infrastructure as code. DevOps is people following a process enabled by products to deliver value to end users."

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CORE COMPONENTS OF DEVOPS

PEOPLE

Collaborate more
Share common goals
Focus on improvement
BRINGING PEOPLE TOGETHER

PROCESS

Eliminate waste
Increase efficiency
Streamline feedback
DELIVERING VALUE FASTER

TOOLS

Enhance productivity
Enable collaboration
Facilitate experimentation
EXECUTING A DEVOPS STRATEGY

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FUNDAMENTAL PRINCIPLES OF DEVOPS

- It is a Culture, a SDLC Model
- A new way in delivery of Software Project
- Automation using tools
- Faster changes with stability
- *Measure of success is, that we do more for our end users and for that, we need the feedback and we need continuous feedback from those users, so that we can deliver value faster and continuously.*

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WHY DEVOPS USE TOOLS FOR AUTOMATION

- The tools provide automation
- The automation eliminates mistakes or human errors
- It eliminates waste.
- It eliminates rework
- It allows us to measure that feedback, so that we can enhance productivity.
- We can improve the collaboration and Experimentation
- we can test whether the things we believe in advance,

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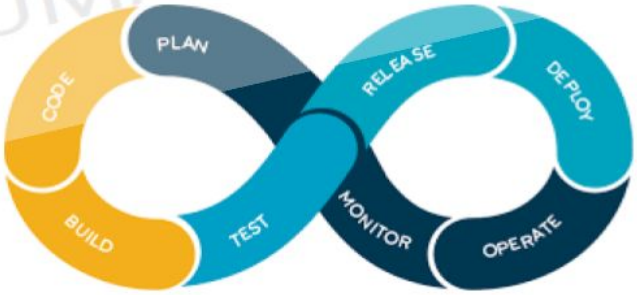
DEFINITION OF DEVOPS -

- "Devops is the practice of Operations, Development engineers, all other stakeholders participating together in the entire service life cycle from design, development process to production support"
- Simply → Dev + Ops = working together → Devops
- Slogan → " From code to Prod"



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DEVOPS DEFINITION

A term coined by Patrick Debois

To encourage people to think about software development and software support in a **holistic way**, as opposed to **two separate activities**.

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EVOLUTION OF DEVOPS -

Year : 2007	• Patrick Debois, a software development consultant • Over fifteen years, in different roles in IT as a developer, network specialist, system administrator, tester and project manager. • Patrick had always been bothered by the differences between how Dev and Ops worked.
Year 2008	• Andrew Shafer posted an idea for an agile infrastructure "birds of a feather" session at the Agile 2008 Conference.
Year 2009 (BUZZ)	• John Allspaw, senior vice president of technical operations at Flickr, gave a presentation at the O'Reilly Velocity Conference in San Jose, • "10+ Deploys per Day: Dev and Ops Cooperation at Flickr.
2009- 2012 (movement)	• Conferences and webinars held on this approach under tag name "DEVOPS"
2012	• Boom started
2014	• Large Companies started to implement

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Patrick Dubois

Andrew Shafer

John Allspaw

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VALUES OF DEVOPS

- Devops is an approach or culture to bridge the gap between Agile software Development and operations
- **Collaborate Mindsets of dev and ops**
- establishing collaborative cross-functional teams
- **Share responsibility** for maintaining the system
- Increased quality feedback
- **Automation**
- Solved issue -- Each group has opposing goals that can lead to inefficiency and finger pointing when something goes wrong.

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BENEFITS OF DEVOPS AFTER IMPLEMENTATION -

- Improve deployment frequency
- Delivery at faster rate
- Lower failure rate of new releases
- Shorten lead time between fixes
- Improve mean time to recovery
- Faster Changes with Stability
- Enhanced customer experience
- Increased capacity to innovate
- Faster time to value

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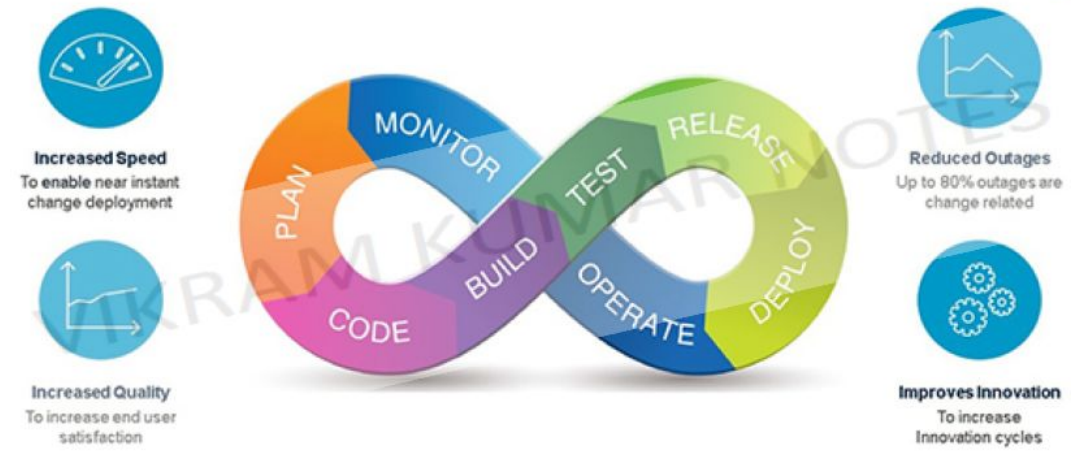

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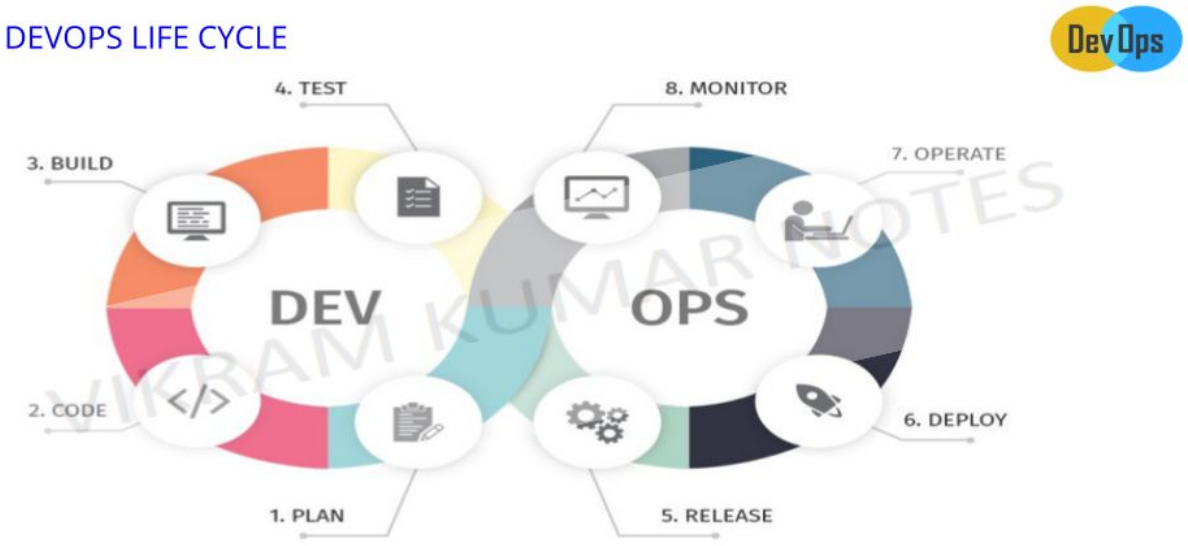

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Expected Interview Questions -

Q. What is Devops ?

Q. Core Components of Devops ?

Q. Benefits of Devops ?

Q. What do you mean by Outage ?

Q. What do you mean by Lead Time ?

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