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Q1 Why is DevOps a major requirement in Today's Scenario?

DevOps is a collaboration b/w development and operation teams, which enables continuous delivery of applications and services to our end users.
DevOps is important because its a software development and operations approach that enable faster development of new products and easier maintenance of existing deployements.
By enabling organizations to create stronger bonds b/w DevOps and other stakeholders in the company, DevOps promotes shorter, more controllable iterations through the adoption of best practices, automation and new tools. DevOps is not a technology but it covers everything from the organization to culture, processes and tooling. Initial steps usually include Continuous Integration and Continuous Delivery (CI/CD), real-time monitoring, incident response systems and collaboration platforms.

→ Benefits of DevOps
(1) Continuous delivery of Software
(2) Better collaboration b/w teams
(3) Easy deployment
(4) Better efficiency and scalability
(5) Errors are fixed at initial stage
(6) More Security
(7) less manual intervention (⇒ Fewer chances of error)

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Q Explain all the Devops tools in Detail.

① **Git:** Git is a distributed version control tool used to Manage Source Code.
Git is used to tracking changes in source code
It allow multiple developers to work together
It supports non-linear development through its thousand of parallel branches.

Features:
① Tracks history
② free and open source
③ Creates Backups
④ Branching is easier
Distributed development

② **Maven:** Maven is an automation tool that helps teams Build and manage software projects quickly

Features:
① Supports parallel builds
② Easy to use
③ Instant access to new features with no additional configurations
④ Easy Build process

③ **Selenium:** Selenium open-source automation tool that is used to test web applications, mainly for regressions and functional testing. Regression testing is the process to make sure that older programming still works with new changes. Functional testing ensures that the application has adequately satisfied the requirements.

Feature:
① fast Execution
② High Accuracy
⑤ Allow scripting in several langs
④ Supports parallel test Execution

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(4) **Jenkins :** Jenkins is an open-source continuous Integration tool. It helps to automate continuous development, testing and deployment of newly created codes.

Features of Jenkins :

→ Easy installation and Configuration
→ Has Multiple plugins
→ Can be extended via plugins
→ Easily distributed across Multiple Machines

(5) **Docker :** Docker is an OS-level virtualization platform that enables developers and IT administrators to create, deploy and run applications and all their dependies in a Docker Container. A Docker Container is executable package of an application and its dependies together.

Features :

1. High Scalability and efficiency
2. Short boot-up uptime
3. Reusable data volumes
4. Isolated applications

(6) **Ansible :** Ansible is Configuration Management tool allowing applications to be deployed automatically in a variety of environments.

Features

1. Push-Based Configuration tool
2. Agentless tool
3. Maintains Consistency of product's performance
4. Uses SSH for Secure Connections

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(7) **Nagios:** Nagios is an opensource tool that is used to monitor systems, servers, Networks and storage Infrastructure.

Features:

(1) Easy to use
(2) Comprehensive Monitoring
(3) High availability
(4) Problem remediation — enables an automatic restart of failed applications and services