

Q-1 Why is DevOps a major requirement in today's scenario?

→ It is a major requirement because it's a software development and operational approach that enables faster developments of new products & easy maintenance of existing deployments.

Some Imp. benefits of DevOps.

- 1) Faster delivery.
- 2) Increased efficiency.
- 3) Improved customer experience.
- 4) Faster ROI
- 5) Improved performance
- 6) Continuous improvements
- 7) Reduce the failures & Rollback

→ Great stability of IT software applications as it brings various departments such as IT, Product, Engineering, Cybersecurity, operations & more units then in common objective of achieving business targets.

Q-2 Explain all DevOps tools in detail.

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- 1) GIT - It is widely used across software industries. Git is a distributed SCM (Source Code Management) DevOps tool. It allows you to easily track the progress of your development work, where you can save different versions of source code and return to previous one as when required.
 - A free & open-source tool that supports most of the version control features of check-in, merging, labels, commit, branches, etc.
 - Requires a hosted repository such as github or bitbucket that offers unlimited private repositories.
 - Easy to learn & maintain with separate branches of source-code that can be merged through git.
- 2) Jenkins - It is an excellent devops automation tool being adopted by increased number of software development teams, its efficiency is an open source CI/CD server that helps in automating the different stages of delivery pipeline.

- Allows us to set up and customise CD pipeline as per individual needs.
- Runs on Linux, windows & Mac OS.
- Jenkins allows you to iterate & deploy new code with greater speed.

3) Nagios - It is one of the most popular free & open-source DevOps monitoring tools; Nagios allows you to monitor your infrastructure real time. So that identifying security threats, detection of outages & error becomes easier.

- Facilitates two methods of server monitoring
→ agent based or agentless.
- Allows for monitoring of windows, Unix, Linux & web apps as well.
- Different versions of Nagios are:-
 - i) Nagios Core → command line tool
 - ii) Nagios XI → web based GUI
 - iii) Nagios Log Server → searches log data with automatic alerts.
 - iv) Nagios Fusion → for simultaneously multiple network monitoring.

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4) Docker - It is one of widely used development tools of DevOps & is known to provide platform independent integrated ~~can~~ container security & agile operations for cloud native & legacy applications.

- Easily automates app deployment & make distributed development easy.
- Docker containers support virtual machine environments & are platform independent.
- Build-in support for Docker is available for both Google Cloud & AWS.

5) Kubernetes - It is a ideal for large teams, this DevOps tool is built on what Docker started in the field of containerization it is a powerful tool that can group containers by logical categorizations.

- It can be deployed to multiple computers through Automated distribution.
- Kubernetes is the first container orchestration tool.
- Extremely useful in the streamlining complex projects across large teams.

6) Ansible - It is primarily a design management & organization 5
DevOps tool. It is written in simple programming.
language .YAML. It makes easier for DevOps teams
to scale the process of automation & speed up productivity.

- Based on Master - slave Architecture.
- It is an ideal DevOps tool to manage complex deployment & speed up the process of development.

7) Chef - This DevOps tool is mainly used for checking the
configurations & it's helpful in automating the infrastructure

8) Puppet - It is a an open source configuration management
tool that is used for deploying, configuring &
Managing services.

- Offers master - slave architecture.
- puppet works smoothly for hybrid infra. & applications
- Compatible with Linux, windows & Unix OS.

9) Brook - It is an Extremely versatile DevOps tool, brook allows
you to write your code in various languages including
C++, Java, Python among others.

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It is supported by various IDE's such as NetBeans, Eclipse & IntelliJ

- The core model of gradle is based on tasks \rightarrow actions, inputs & outputs.
- The incremental builds of gradle allows you to save a substantial amount of compile time.