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Assignment - DevOps

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

Ans - In a nutshell, the DevOps model allows companies to create viable applications & programmers within a much shorter time frame, thus accelerating the speed of innovation.

It is a major requirement because its a software development and operational approach that enables faster developments of new products & easy maintainence of existing deployments. Some important benefits of DevOps as a major requirement:

- > faster solution
- > improved customer experience
- > increased efficiency
- > faster ROI
- > improved performance
- > continuous improvements
- > reduce failures & rollback.

- Greater stability of IT Software applications: as it being various departments such as IT, product engineering, Cybersecurity, Operations. & more & unites them in common objectives of achieving several key processes.

② Explain all DevOps tools in detail?

Ans - Since no single tool work across all areas of development & dilevery. The need is to first understan the process & accordingly map the tool to be successfull establish devOps culture in organization.

1) Jenkins - an excellent devOps automation tool being adopted by increased no. of software development teams, it is essentially an open source CI/CD server that helps in automating the different stages of delivery pipelines.

* Allows us to setup 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.

2 - Git - widely used across software industries. Git is an 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 & 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.

3 - Nagios - One of the most popular free & open-source DevOps monitoring tool; Nagios allows you to monitor your infrastructure realtime so that identifying security threats, detection of outages & errors becomes easier.
* facilitates two methods of server monitoring
  → agent based or agentless
* allows for monitoring of Windows, UNIX, Linux & web apps as well.
* free open source with various add on available.

Different versions of Nagios are:
i - Nagios Core → Command line tool
ii - Nagios XI → web based GUI
iii - log server → searches log data with automatic alerts
iv - Nagios fusion → for simultaneous multiple network monitoring.

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

* Easily automates app deployment & makes distributed development easy.
* Docker container supports virtual machine. Environments & are platform independent.
* Build-in support for docker available for both Google cloud & AWS.

5) Kubernetes - 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 categorization.

* It can be deployed to multiple computers through ~~compact~~ automated distribution.
* Kubernetes is the 1st container orchestration tool.
* Extremely useful in the streamlining complex projects across large teams.

6) Ansible - It is primarily a design management & any DevOps tools it is written in simple programming lang 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 developments.

7) Chef: This DevOps tool is mainly used for checking the configurations & its helpful in automating the infrastructure.

* Assist in standardizing and enforcing the configurations continuously.

* Chef automates the whole process & make sure that the systems are correctly configured.
* Chef helps you ensure that the configuration policies remains completely flexible, readable & testable.

8) Puppet: It is an open-source configuration management tool that is used for deploying, configuring & managing servers.
* offers master-slave architecture.
* puppet seamlessly works smoothly for hybrid infrastructure & & application.
* compatible with Linux, Windows, UNIX OS.

9) Spoint - It is designed to make machine data usable as well as accessible to everyone by delivering operational intelligence to DevOps teams.
It is an excellent choice of tool that make companies more secure, productive, competitive.
* Spunk delivers a more central & collective view of IT services.
* Easily detects patterns, highlights, anomalies, and areas of impact.

10) Gradle: an extremely versatile DevOps tool, gradle allows you to write your code in various languages including C++, java, python among others. It is supported by various IDE's such as netbeans, Eclipse, Intelli J IDEA.
* The case model of gradle is based on tasks - actions, i/ps & o/p.
* The incremental builds of gradle allow you to save a substantial amount of compile time.