Name: Aditya Ratwi
Section: C
University Roll No.: 1918149
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Assignment - 2

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

In a nutshell the DevOps model allows companies to create viable application and programmes within a much shorter time frame, thus accelerating the speed of innovation.
It is a major requirement because it is a software development and operational approach that enables faster developments of new products and easy maintainance of existing deployments.

Some important benefits of devops as a major requirements:

- Faster solution
- Increased efficiency
- Improved customer experience
- Faster ROI
- Improved performance
- continuous improvements
- Reduce failures and roll back

Greater stability of IT software applications. As it brings various departments such as IT, product, engineering, cyber security, operations and more and

unites them in common objectives of achieving business target.

In this approach the software is seen a tool. To improve organizational efficiency and security by automating several key processes.

Q.2 Explain all DevOps tools in details

Since no single tool work across all areas of development and delivery. The need is to first understand the process and accordingly map the tool to be successfully establish devops culture in organization.

1. Jenkins: an excellent devops automation tool being adopted by increased number of software development teams, it is essentially 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 and mac os.
   - Jenkins allows you to iterate and deploy new code with greater speed.

2. Git: It is 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 and return to previous one as when required.

- A free and 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 bit bucket that offers unlimited private repositories.
- Easy to learn and maintain with seperate branches of source code that can be merged through git.

3. Nagios: One of the most popular free and open-source DevOps monitoring tool. Nagios allows you to monitor your infrastructure real time so that identifying security threats, detection of outages and errors becomes easier.
   - Facilitates two methods of server monitoring agent based or agentless.
   - Allow for monitoring of windows, unix, linux and web apps as well.
   - Free open source with various adds on available.

   Different version of Nagios are:

   Nagios core → command line tool.
   Nagios XI → web based GUI
   Log server → searches log data with automatic alerts
   Nagios fusion → for simultaneous multiple network

monitoring.

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

- Easily automates app deployment and make distributed development easy.
- Docker container support virtual machine. Environments and are platform independent.
- Build-in support for docker available for both Google cloud and 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 categorisation.

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

6. Ansible: It is primiraly a design management & organization DevOps tool. It is written in simple programming language YAML. It make easier for DevOps teams to scale the process of automation and speed up productivity.

- Based on master slave architecture.
- it is an ideal DevOps tool to manage complex deployments and speed up the process of development.

7. Chef: This DevOps tool is mainly used for checking the configurations and it is helpful in automating the infrastructure.
   - Assist in standardizing and enforcing the configuration continuously
   - Chef automates the whole process and make sure that the systems are correctly configured.
   - Chef helps you ensure that the configuration policies remains completly flexible, readable & testable.

8. Puppet: It is an open source configuration management tool that is used for deploying, configuring and managing seevers.
   - Offers master-slave architecture.
   - Puppet works smoothly for hybrid infrastructure and applications.
   - Compatible with linux, windows and unix OS.

9. Splunk: 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.

- Splunk delivers a more central & collective view of IT services.
- Easily detects patterns, highlights, anomalies and area 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 and IntelliJ IDEA.
    - The core model of gradle is based on tasks-actions, inputs and outputs.
    - The incremental builds of gradle allow you to save a substantial amount of compile time.