

Devops Interview Questions

GIT

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- * What is GIT ?
- * What is difference between GIT & Github ?
- * Why we use GIT ?
- * What is SCM & VCS ?
- * What are the process of pushing the code to Github Repository ?
- * Why do we commit ?
- * What are the commands of GIT to push the code ?
- * How you can merge a git repository with another ?
- * What is branching in git ?
- * Different types of branching in GIT ?
- * What is merge conflict in git ?
- * How you can resolve merge conflict if you are merging same project and in the same branch ?

Jenkins

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- * What is Jenkins ?
- * Why we use Jenkins ?
- * What are the other tools/technologies present in market other than Jenkins for CI/CD ?
- * How to move Jenkins from one server to another ?
- * How to create Jenkins backup ?
- * What are plugins in Jenkins ?
- * What are the default plugins installed in Jenkins ?
- * How to schedule builds in Jenkins ?

- * Difference between Ant, Maven, Gradle ?
- * Difference between Jenkins, Teamcity and Bamboo ?
- * How to configure a cloud access in Jenkins ?
- * What is Jenkins slaves ?
- * How to run a groovy script in Jenkins ?
- * What is Jenkins Pipeline ?
- * What are different types of Jenkins Pipeline ?
- * What is Declarative pipeline in Jenkins ?
- * Is Jenkins a CI tool or both CI/CD ?
- * How to install Jenkins with non root access in Linux ?
- * If you have 200 employees in your company, how you can assign Jenkins access to these employee how you can give permission in Jenkins ?

Jenkins Task

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Task 1

Write the Jenkins pipeline code for Java & Php application

Task 2

Write the Jenkinsfile code to build a Java application with Maven with error handling

Task 3

Complete the following tasks:

1. Jenkins setup on linux
2. Setup app server with apache to deploy an app.
3. create three jobs on jenkins
4. Pull the code from git repo
5. Build the application
6. deploy an app on apache using ansible.
7. app deploy should work with single trigger hit(git pull job -> build app -> deploy on apache server)
8. job should get triggered on git push on git repo

Ansible

#####

- * What is Ansible ?
- * What is Configuration Management ?
- * Is Ansible only a tool for Configuration Management ?
- * What are the components of Ansible ?
- * How Ansible works ?
- * What are the other tools in market other than Ansible ?
- * How Ansible is different from Chef & Puppet ?
- * What is Inventory in Ansible ?
- * What are the types of Inventories ?
- * What is play & playbook ?
- * Difference between hosts & groups ?
- * What is Roles ?
- * How to install a Role ?
- * How to install multiple roles ?
- * How to create roles ?
- * What is Dynamic Inventory & when we use it & for what ?
- * Where is the Ansible Configuration file located ?
- * What are the different ways other than SSH by which Ansible can connect to remote hosts ?
- * What is variable in Ansible ?
- * What are different types of variables ?
- * How to assign variables in group vars & hosts vars ?
- * Difference between File & Template directory in Roles ?
- * Difference between default & vars directory in Roles ?
- * What is Jinja 2 template ?
- * What is modules in Ansible ?

- * Difference between COPY & FILE modules ?
- * Difference between SHELL & COMMAND modules ?
- * What is Setup module ? what it does ?
- * What is register & debug in Ansible ?
- * What is changed_when in Ansible ?
- * Can we disable automatic facts gathering in Ansible ?
- * How error handling can be done in Ansible ?
- * How to ignore failed commands in Ansible ?
- * What is handlers ? Why we use Handlers in Ansible ?
- * What is Privilege Escalation in Ansible ?
- * Task to connect(SSH) Ansible to remote host using another user & run the playbook to the remote host using with another user ?
- * What is Ansible vault ?
- * How to decrypt a vault file ?
- * How to encrypt a string in Ansible using Ansible Vault ?
- * If a string is encrypted in a file with a password then how to pass the password using parameter while decrypting ?
- * If a file is encrypted using password & password is stored in a file how to pass the file to decrypt the file ?
- * If a file is encrypted using password & password is also encrypted then how to provide the password while decrypting the file ?
- * What is Ansible galaxy ?
- * What is Tags in Ansible ? Why it is used ?
- * What is lookup in Ansible playbook ?
- * How to control the command failure in Ansible ?
- * How to debug your playbook ?
- * What is diff mode ?
- * What is Dry Run in Ansible & how to do that ?

- * What is pre task & post task ?
- * How you can run your all tasks at once ?
- * What is block in Ansible ?
- * What are different variable scopes ?
- * How variable precedence takes place ?
- * Difference between include & import ?
- * How to include custom modules in Ansible ?
- * Describe the role directory structure ?

Ansible Task

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Task 1

Part 1. Write Ansible playbook to automate Jenkins deployment

Part 2. Write Ansible role to install Docker & setup Kubernetes cluster

Automate the pipeline creation in Jenkins to create docker container & deploy on Kubernetes cluster

Task 2

Write ansible playbook for below tasks:

1. Install apache server and deploy sample html application
2. Create /var/www/example.com
3. deploy a sample application to the above directory
4. create a virtual host for deploy application and set it as default virtualhost

Dockers & Containers

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- * Whats is docker ?
- * Difference between container & VMs ?
- * Difference between Docker & Virtualization ?
- * Difference between container and image ?
- * How image builds ?
- * What are image layers ?

- * How image layers work ?
- * What is overlayfs ?
- * Where the image layers can be found in which directory ?
- * How can we check the content of each layer ?
- * How to check the layers stacked with image ?
- * What is Union Mount & AUFS ?
- * Why use Union mount system for Docker ?
- * What are the 3 different directories in `/var/lib/docker/aufs` ?
- * How to run an image ?
- * How to tag an image ?
- * How to Link one container with another ?
- * How do you sequence the containers? A first then B should execute after that ?
- * How to create a volume in docker container to store data ?
- * How to mount a local directory into a container ?
- * How to expose a port no to access container ?
- * What is entrypoint in docker ?
- * What is dockerfile ?
- * Difference between ADD & COPY parameters in dockerfile ?
- * How to create a bridge in container ?
- * How a container gets an internal IP ?
- * Can we check the process of a container inside as well as outside the container ?
- * Can we check the container process on docker host ?
- * How kernel isolates to run the container and how resources managed by the kernel ?
- * What is namespace and cgroups ?
- * What is docker-compose and docker-swarm ?
- * How you can give different network IP to the container ?
- * What are the parameters of dockerfile ?
- * Is there any windows container also available ?

* How to stop a container ?

How to run a container in background ?

* How to go inside a container if container is running in background ?

* How to check running containers ?

* How to remove an image ?

* How to run an image which is in tar format ?

* Command to check the process of a container ?

* How to check resource utilisation of a container ?

* How to create an image ?

* How to save changes of a container ?

* What are registries ?

* Can we reduce the image size while building ? If yes how ?

* What is multi-stage build ?

* Difference between docker commands: up, run & start ?

* Can we run more than one process in a container ?

Docker Task

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Part 1. Write a Docker file to create a Docker image which should have Wordpress installed

Part 2. Write a Docker file to create a Docker image for database

Now, use Docker compose to bring up the above Docker images as containers. Database container should mount the local host's "/etc/mysql" volume into it's (containers) /etc/mysql directory.

Kubernetes

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* What is Kubernetes ?

* What are Kubernetes Components ?

* What is etcd ?

* What is master & minion ?

* How to make quorum of cluster?

- * What is Replication controller & what it does ?
- * What is ingress ?
- * Difference between Kubernetes & Docker Swarm ?
- * How can you rollbk the previous version of application in Kuberntes?
- * Scenario: There are 2 tables, emp, empsal if there schema changes,
How does that deployment happens into containers/POD automatically?
- * How does container know that application is getting failure ?
- * Difference between nodeport, clusterIP, load balancer & ingress ?
- * What is kubectI & kubelet ?
- * What is the use of Kube-controller manager ?
- * What is pod ?
- * How many containers can run in a pod ?
- * How many containers can be launched in a node ?
- * What is the role of Kube-Scheduler ?
- * How the 2 pods communicate with each other ?
- * How 2 containers inside a pod communicate with each other ?
- * What is Flannel & why we use it ?
- * Difference between Flannel & Calico ?

AWS

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- * What is Amazon RDS ?
- * What is EC2, S3, EBS ?
- * What is VPC & why we require to create VPC ?
- * Is is possible to scale an Ec2 Instance vertically ?
- * How is Amazon RDS, Redshift & DynamoDB different ?
- * How is a spot Instance different from an On-demand Instance ?
- * How Infrastructure As Code processed & executes in AWS ?
- * If your Linux-build server getting slow down, what will you do to check ?

- * Types of EBS storage ?
- * How to backup a running instance ?
- * How to secure s3 bucket ?
- * What are the security available for users to access S3 ?
- * How to create AMI ?
- * What are the main components of CloudFormation ?
- * What is mapping in cloudformation template ?
- * How is YAML different from JSON ?
- * Different types of ELB ?
- * What is autoscaling group ?
- * Which type of ELB is good for application load ?
- * What is difference between application load balancer & classic load balancer ?
- * What is metrics in cloudwatch ?
- * Is it possible to recover your lost private key ?
- * How can you connect your EC2 Instance if you lost your key ?
- * While connecting to your EC2 instances, what are the possible connection issues one might face ?
- * What is Subnet & how many subnets are there in a VPC ?
- * Why do we make subnets ?
- * What is routing table ?
- * How you can connect a private subnet with a public subnet ?
- * Can VPC peering possible in two different region ?

AWS Task

#####

Task 1

Write a script which will based on “Number of requests” metric of the ALB/ELB scale up webapp EC2 instances under the Load Balancer, increase AWS Elasticsearch Nodes count, and change the instance size of a MongoDB EC2 instance from m4.large to m4.xlarge. (without using ASG).

Task 2

Architecture Diagram for a PHP/JAVA/Python based application to be hosted on AWS with all mentions like VPC, AWS/any other cloud platform services, well defined network segregation.

CI/CD

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- * What is CI & CD ?
- * What is CI/CD pipeline ?
- * Difference between Continuous Delivery & Deployment ?
- * List the important tools & technologies used in Devops ?

Linux (RHEL)

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- * What is Linux ?
- * What are Linux OS Flavors ?
- * Difference between Debian & RPM based OS ?
- * What is Kernel ?
- * Explain the boot process of Linux OS ?
- * How is RHEL different from CentOS ?
- * What is the Latest version of RHEL ?
- * What is Grub ?
- * Difference between Grub & Grub2 ?
- * What is boot loader ?
- * Do you think the boot process in RHEL 7 is faster than RHEL 6 ? If yes, How ?
- * What is .rpm & .deb ?
- * What is RPM ?
- * What is YUM ?
- * Different methods to install the rpm based packages ?
- * What is Bash ?
- * What is SHell ?

- * How many types of SHells are there ? * Explain the daily used basic commands like cp, mv, rm ?
- * What is the significance of touch command ?
- * In how many ways you can create a file ?
- * How to delete the content from a file ?
- * Explain the process/work behind hitting the google.com ? how you access google.com ?
- * How many types of permissions are there ? What is chmod ?
- * What is sticky bit ?
- * What is ACLs ?
- * What is SetGID, SetUID & Stickybit ?
- * Location where all the user information are stored ?
- * File where user password are stored ?
- * What is the default permission of a file ?
- * What is the significance of -rvf ?
- * What is PV, VG & LV ?
- * What are the types of file system ?
- * What is XFS ?
- * Can we reduce XFS file system ?
- * How can we extend LV ?
- * Command to check running process ?
- * Command to check RAM usage ?
- * Command to check Disk usage ?
- * Difference between ps -aux & top command ?
- * What are the ways to check CPU usage ?
- * How to check CPU details ?
- * Explain the steps to create a partition & how to format with file system ?
- * Explain the steps to create LV ?
- * Explain steps to reduce XFS & EXT files systems ?
- * Significance of .bashrc file ?

- * How you check the kernel version ?
- * How you check the Red hat release version ?
- * Significance of resolv.conf file ?
- * What is DNS ? How you resolve DNS ? Types of DNS records ?
- * Difference between Nginx & HTTP Server ?
- * Port no of HTTP, FTP, SSH, HTTPS ?
- * What is SSH ? How you generate SSH-keys ?
- * What is Private & public key ? How they authenticate ?
- * Configuration file of SSH ?
- * Configuration file of HTTP ?
- * What is Virtual Hosting ? How you configure virtual hosting ?
- * Explain ifconfig command ?
- * Difference between IPv4 & IPv6 ?
- * What is MAC address ? can we change the physical address ?
- * How to check system uptime ?
- * How to check memory information ?
- * What is SWAP ?
- * What is the exact memory free in your system ?
- * What is cache memory ?
- * What if you can do rm -rvf / ?
- * Kinds of permission in Linux ?
- * What is vim & vi ?
- * What is pipe | ?
- * What is grep command ?
- * What Find command does ?
- * How to redirect commands output ?
- * What is systemd in Linux ?
- * What does systemctl do ?

- * If you run a command like nautilus in terminal, whether it will block your terminal or not ?
- * If yes, whats the solution of this to not to unblock the terminal without closing the command application?
- * What is rsyslog ?
- * What is SSH-tunnel ?
- * How to set history size ?
- * How to extend VG ?
- * What are logical & extended partitions ?
- * Explain the steps to reset root password at boot time ?
- * What are run-levels ? How many types of run levels are there ?
- * How we change the run level ?
- * How to check the logs ?
- * Difference between Journalctl & tail command ?
- * What does the subscription-manager do ?
- * How to archive a file ?
- * What is umask ?
- * How to kill a process ?
- * How to assign IP address manually ?
- * How to assign static IP address to a system ?
- * Explain the different types of Linux process states ?
- * What is a Zombie process ?
- * What is KVM ?
- * What is hypervisor ?
- * Difference between MBR & GPT ?
- * How you can mount a file system permanently ?
- * What is cron ? How to setup a cron job ?
- * What is Kickstart ?
- * How to create a network bridge in Linux ?
- * Difference between iptables & firewalld

- * What is SELinux ?
- * What is ISCSI & targetcli ?
- * Difference between NFS & SAMBA ?
- * What is nfsnobody ?
- * What is SSHFS ?
- * What is Kerberos ?
- * How to secure NFS with Kerberos ?
- * What is the difference between telnet & SSH ?
- * What is DHCP ?
- * What is Kickstart file ?
- * What is NTP Server ? How to configure NTP ?



ANSIBLE

INTERVIEW QUESTIONS

1) What is Ansible ?

Ans: Ansible is an open source IT Configuration Management, Deployment & Orchestration tool.

2) What is Configuration Management ?

Ans: Managing all the configurations of the environments that the software application hosts upon.

or

Configuration management is an automated method for maintaining computer systems and software in a known, consistent state.

3) Is Ansible only a tool for Configuration Management ?

Ans: Popular tools are:

- Red Hat Ansible
- Chef
- Puppet

4) What are the components of Ansible ?

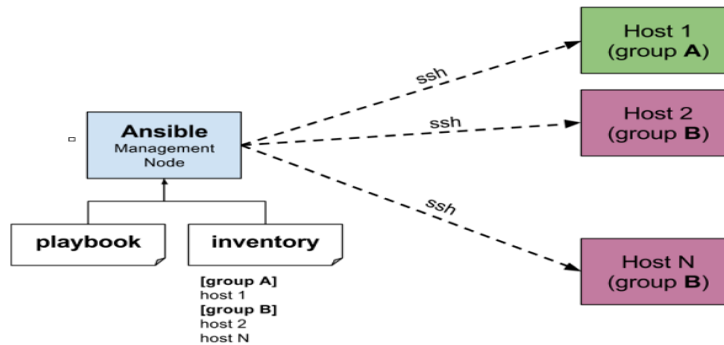
Ans: Components of Ansible are:

- Control node
- Managed nodes
- Inventory
- Modules
- Tasks
- Playbooks

Control node: Any machine with Ansible installed. You can run commands and playbooks, invoking `/usr/bin/ansible` or `/usr/bin/ansible-playbook`, from any control node.

5) How Ansible works ?

Ans:





Ansible works by connecting to your nodes and pushing out small programs, called "Ansible modules" to them. Ansible then executes these modules (over SSH by default), and removes them when finished.

6) What are the other tools in market other than Ansible ?

1. SolarWinds Server Configuration Monitor
2. Puppet Configuration Tool
3. CHEF Configuration Tool
4. SALTSTACK Configuration Tool
5. RUDDER

7) How Ansible is different from Chef & Puppet ?

	 Puppet	 Ansible
Architecture	Server/ Client	Client only
Ease of setup	Moderate	Very easy
Language	Declarative: specify only what to do	Procedural: specify how to do a task
Scalability	Scalable	Scalable
Management	Tough as it requires one to learn Puppet DSL	Very easy
Interoperability	High	High
Cloud availability	Amazon, Azure	none
Communication	SSL	SSH

8) What is Inventory in Ansible ? or What are the types of Inventories ?

An inventory file is the source of truth for Ansible. It follows the INI format and tells Ansible whether the remote host or hosts provided by the user are genuine or not.

1) **Hosts and Groups** : `/etc/ansible/hosts`

mail.example.com

[webservers]

foo.example.com

bar.example.com

[dbservers]

one.example.com

two.example.com

three.example.com

2) Default groups

There are two default groups: all and ungrouped. The all group contains every host. The ungrouped group contains all hosts that don't have another group aside from all

3) Hosts in multiple groups

You can (and probably will) put each host in more than one group. For example a production webserver in a datacenter in Atlanta might be included in groups called [prod] and [atlanta] and [webservers].

4) Adding ranges of hosts

If you have a lot of hosts with a similar pattern, you can add them as a range rather than listing each hostname separately:

In INI:

[webservers]

www[01:50].example.com

In YAML:

...

webservers:

hosts:

www[01:50].example.com:

You can also define alphabetic ranges:

[databases]

db-[a:f].example.com

5) Inventory aliases

In INI:

```
jumper ansible_port=5555 ansible_host=192.0.2.50
```

In YAML:

...

hosts:

jumper:

ansible_port: 5555

ansible_host: 192.0.2.50

Q:-9) What is play & playbook ?

Ans: Playbook

- Playbooks are the files where Ansible code is written.
- Playbooks are written in YAML format. YAML stands for Yet Another Markup Language.
- **Playbooks** are one of the core features of Ansible and tell Ansible what to execute.
- They are like a to-do list for Ansible that contains a list of tasks.

The **play** is the element that ties tasks to the servers where they'll run. The key element here is the mandatory keyword hosts. This is the part of Ansible that tells which hosts are being affected and how.

Q:- 10) Difference between hosts & groups ?

Ans:

Description	Pattern(s)	Targets
All hosts	all (or *)	
One host	host1	
Multiple hosts	host1:host2 (or host1,host2)	
One group	webserver	
Multiple groups	webserver:dbserver	all hosts in webserver plus all hosts in dbserver
Excluding groups	webserver:!atlanta	all hosts in webserver except those in atlanta
Intersection of groups	webserver:&staging	any hosts in webserver that are also in staging

Q:11) What is Roles ?

Ans: Ansible also lets you organize tasks in a directory structure called a **Role**. In this configuration, playbooks invoke roles instead of tasks, so you can still group tasks together and then reuse roles in other playbooks. Roles also allow you to collect templates, static files, and variables along with your tasks in one structured format.

Q:12) How to install a Role ?

Q: 13) How to install multiple roles ?

Q:13) How to create roles ?

Q:14) What is Dynamic Inventory & when we use it & for what ?

Ans:

Static Inventory: In **Ansible**, a static inventory file is a plain text file that contains a list of managed hosts declared under a host group using either hostnames or IP addresses.

Dynamic Inventory: In a configuration – especially a cloud setup such as **AWS** where the inventory file keeps constantly changing as you add or decommission servers, keeping tabs on the hosts defined in the inventory file becomes a real challenge. It becomes inconvenient going back to the host file and updating the list of hosts with their IP addresses.

And this is where a **dynamic inventory** comes to play. So what is a dynamic inventory? A dynamic inventory is a script written in Python, PHP or any other programming language. It comes in handy in cloud environments such as AWS where IP addresses change once a virtual server is stopped and started again.

Q:15) Where is the Ansible Configuration file located ?

Ans: /etc/ansible/ansible.cfg

Q:16) What are the different ways other than SSH by which Ansible can connect to remote hosts ?

Ans: Ansible can use a variety of connection methods beyond SSH. You can select any connection plugin, including managing things locally and managing chroot, lxc, and jail containers. A mode called 'ansible-pull' can also invert the system and have systems 'phone home' via scheduled git checkouts to pull configuration directives from a central repository.

Q:17) What is variable in Ansible ?

Ans: Variables are used to store values in programs and as the name suggests the values can be changed throughout the program. These values are essential to deciding the code flow. Ansible variables help to determine how the tasks execute on different systems based on the values assigned to these variables.

I am declaring a variable python which has 3 key-value pairs inside. The following task would print the whole dictionary structure.

```
- hosts: all
vars:
  python:
    Designer: 'Guido van Rosum'
    Developer: 'Python Software Foundation'
    OS: 'Cross-platform'
tasks:
- name: Ansible Dictionary Example
  debug:
    msg: "{{ python }}"
```