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17	<b>Gym Management System</b>	React+Springboot+MySQL
18	<b>Bike/Car ental System Portal</b>	React+Springboot+MySQL
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25	RealEstate Property Project	React+Springboot+MySql
26	Marriage Hall Booking Project	React+Springboot+MySql
27	Online Student Management portal	React+Springboot+MySql
28	Resturant management System	React+Springboot+MySql
29	Solar Management Project	React+Springboot+MySql
30	OneStepService LinkLabourContractor	React+Springboot+MySql
31	Vehical Service Center Portal	React+Springboot+MySql
32	E-wallet Banking Project	React+Springboot+MySql
33	Blogg Application Project	React+Springboot+MySql
34	Car Parking booking Project	React+Springboot+MySql
35	OLA Cab Booking Portal	React+NextJs+Springboot+MySql
36	Society management Portal	React+Springboot+MySql
37	E-College Portal	React+Springboot+MySql
38	FoodWaste Management Donate System	React+Springboot+MySql
39	Sports Ground Booking	React+Springboot+MySql
40	BloodBank mangement System	React+Springboot+MySql

Project List

41	Bus Tickit Booking Project	React+Springboot+MySQL
42	Fruite Delivery Project	React+Springboot+MySQL
43	Woodworks Bed Shop	React+Springboot+MySQL
44	Online Dairy Product sell Project	React+Springboot+MySQL
45	Online E-Pharma medicine sell Project	React+Springboot+MySQL
46	FarmerMarketplace Web Project	React+Springboot+MySQL
47	Online Cloth Store Project	React+Springboot+MySQL
48	Train Ticket Booking Project	React+Springboot+MySQL
49	Quizz Application Project	JSP+Springboot+MySQL
50	Hotel Room Booking Project	React+Springboot+MySQL
51	Online Crime Reporting Portal Project	React+Springboot+MySQL
52	Online Child Adoption Portal Project	React+Springboot+MySQL
53	online Pizza Delivery System Project	React+Springboot+MySQL
54	Online Social Complaint Portal Project	React+Springboot+MySQL
55	Electric Vehical management system Project	React+Springboot+MySQL
56	Online mess / Tiffin management System Project	React+Springboot+MySQL
57		React+Springboot+MySQL
58		React+Springboot+MySQL
59		React+Springboot+MySQL
60		React+Springboot+MySQL

## Spring Boot + React JS + MySQL Project List

Sr.No	Project Name	YouTube Link
1	Online E-Learning Hub Platform Project	<a href="https://youtu.be/KMjyBaWmgzg?si=YckHuNzs7eC84-IW">https://youtu.be/KMjyBaWmgzg?si=YckHuNzs7eC84-IW</a>
2	PG Mate / Room sharing/Flat sharing	<a href="https://youtu.be/4P9clHg3wvk?si=4uEsi0962CG6Xodp">https://youtu.be/4P9clHg3wvk?si=4uEsi0962CG6Xodp</a>
3	Tour and Travel System Project Version 1.0	<a href="https://youtu.be/-UHOBywHaP8?si=KHHfE_A0uv725f12">https://youtu.be/-UHOBywHaP8?si=KHHfE_A0uv725f12</a>
4	Marriage Hall Booking	<a href="https://youtu.be/VXz0kZQi5to?si=IiOS-QG3TpAFP5k7">https://youtu.be/VXz0kZQi5to?si=IiOS-QG3TpAFP5k7</a>
5	Ecommerce Shopping project	<a href="https://youtu.be/vJ_C6LkhrZ0?si=YhcBylSErvdn7paq">https://youtu.be/vJ_C6LkhrZ0?si=YhcBylSErvdn7paq</a>
6	Bike Rental System Project	<a href="https://youtu.be/FIzsAmIBCbk?si=7ujQTJqEgkQ8ju2H">https://youtu.be/FIzsAmIBCbk?si=7ujQTJqEgkQ8ju2H</a>
7	Multi-Restaurant management system	<a href="https://youtu.be/pvV-pM2Jf3s?si=PgvnT-yFc8ktrDxB">https://youtu.be/pvV-pM2Jf3s?si=PgvnT-yFc8ktrDxB</a>
8	Hospital management system Project	<a href="https://youtu.be/lynLouBZvY4?si=CXzQs3BsRkjKhZCw">https://youtu.be/lynLouBZvY4?si=CXzQs3BsRkjKhZCw</a>
9	Municipal Corporation system Project	<a href="https://youtu.be/cVMx9NVyl4I?si=qX0oQt-GT-LR_5iF">https://youtu.be/cVMx9NVyl4I?si=qX0oQt-GT-LR_5iF</a>
10	Tour and Travel System Project version 2.0	<a href="https://youtu.be/_4u0mB9mHXE?si=gDiAhKBowi2gNUKZ">https://youtu.be/_4u0mB9mHXE?si=gDiAhKBowi2gNUKZ</a>

Sr.No	Project Name	YouTube Link
11	Tour and Travel System Project version 3.0	<a href="https://youtu.be/Dm7nOdpasWg?si=P_Lh2gcOFhlyudug">https://youtu.be/Dm7nOdpasWg?si=P_Lh2gcOFhlyudug</a>
12	Gym Management system Project	<a href="https://youtu.be/J8_7Zrkg7ag?si=LcxV51ynfUB7OptX">https://youtu.be/J8_7Zrkg7ag?si=LcxV51ynfUB7OptX</a>
13	Online Driving License system Project	<a href="https://youtu.be/3yRzsMs8TLE?si=JRI_z4FDx4Gmt7fn">https://youtu.be/3yRzsMs8TLE?si=JRI_z4FDx4Gmt7fn</a>
14	Online Flight Booking system Project	<a href="https://youtu.be/m755rOwdk8U?si=HURvAY2VnizlyJlh">https://youtu.be/m755rOwdk8U?si=HURvAY2VnizlyJlh</a>
15	Employee management system project	<a href="https://youtu.be/ID1iE3W_GRw?si=Y_jv1xV_BljhrD0H">https://youtu.be/ID1iE3W_GRw?si=Y_jv1xV_BljhrD0H</a>
16	Online student school or college portal	<a href="https://youtu.be/4A25aEKfei0?si=RoVgZtxMk9TPdQvD">https://youtu.be/4A25aEKfei0?si=RoVgZtxMk9TPdQvD</a>
17	Online movie booking system project	<a href="https://youtu.be/Lfjv_U74SC4?si=fiDvrhhrjb4KSISm">https://youtu.be/Lfjv_U74SC4?si=fiDvrhhrjb4KSISm</a>
18	Online Pizza Delivery system project	<a href="https://youtu.be/Tp3izreZ458?si=8eWA OzA8SVdNwlyM">https://youtu.be/Tp3izreZ458?si=8eWA OzA8SVdNwlyM</a>
19	Online Crime Reporting system Project	<a href="https://youtu.be/0UlzReSk9tQ?si=6vN0e70TVY1GOwPO">https://youtu.be/0UlzReSk9tQ?si=6vN0e70TVY1GOwPO</a>
20	Online Children Adoption Project	<a href="https://youtu.be/3T5HC2HKyT4?si=bntP78niYH802i7N">https://youtu.be/3T5HC2HKyT4?si=bntP78niYH802i7N</a>

## 1. Explain DevOps?

The **DevOps** is a combination of two words one is **software Development**, and second is **Operations**. It allows a single team to handle the entire application lifecycle, from development to **testing**, **deployment**, and **operations**. DevOps helps you to reduce the disconnection between software developers, **quality assurance (QA) engineers**, and system administrators.

Characteristics	DevOps
Basic premise	A collaboration of development and operations teams. It is more of a cultural shift.
Related to	Agile methodology
Priorities	Resource management, communication, and teamwork
Benefits	Speed, functionality, stability, and innovation

## 2 . Who is a DevOps engineer?

A **DevOps** engineer is a person who works with both software developers and the IT staff to ensure smooth code releases. They are generally developers who develop an interest in the deployment and operations domain or the system admins who develop a passion for coding to move towards the development side.

In short, a DevOps engineer is someone who has an understanding of **SDLC (Software Development Lifecycle)** and of automation tools for developing CI/CD pipelines.

## 3 . Why DevOps has become famous?

These days, the market window of products has reduced drastically. We see new products almost daily. This provides a myriad of choices to consumers but it comes at a cost of heavy competition in the market. Organizations can't afford to release big features after a gap. They tend to ship off small features as releases to the customers at regular intervals so that their products don't get lost in this sea of competition.

Customer satisfaction is now a motto to the organizations which has also become the goal of any product for its success. In order to achieve this, companies need to do the below things :

- \* Frequent feature deployments
- \* Reduce time between bug fixes
- \* Reduce failure rate of releases
- \* Quicker recovery time in case of release failures.
- \* In order to achieve the above points and thereby achieving seamless product delivery, DevOps culture acts as a very useful tool. Due to these advantages, multi-national companies like Amazon and Google have adopted the methodology which has resulted in their increased performance.

#### 4 . What are the fundamental differences between DevOps and Agile?

The differences between the two are listed down in the table below.

Features	DevOps	Agile
Agility	Agility in both Development & Operations	Agility in only Development
Processes/ Practices	Involves processes such as CI, CD, CT, etc.	Involves practices such as Agile Scrum, Agile Kanban, etc.
Key Focus Area	Timeliness & quality have equal priority	Timeliness is the main priority
Release Cycles/ Development Sprints	Smaller release cycles with immediate feedback	Smaller release cycles
Source of Feedback	Feedback is from self (Monitoring tools)	Feedback is from customers
Scope of Work	Agility & need for Automation	Agility only

#### 5 . What are the principles of DevOps?

The principles behind DevOps are :

- \* Continuous deployment
- \* Infrastructure as code
- \* Automation
- \* Monitoring
- \* Security

#### 6 . Explain some popular tools of DevOps?

Here are some popular tools of DevOps, such as :

**Jenkins** : Jenkins is a DevOps tool for monitoring the execution of repeated tasks. Jenkins is a software that allows continuous integration. And it will be installed on a server where the central build will take place.

**Ansible** : Ansible is a leading DevOps tool. Ansible is an open-source IT engine that automates application deployment, cloud provisioning, intra service orchestration, and other IT tools.

**Nagios** : Nagios is one of the more useful tools for DevOps. It can determine the errors and rectify them with the help of network, infrastructure, server, and log monitoring systems.

**Docker** : Docker is a high-end DevOps tool that allows building, ship, and run distributed applications on multiple systems.

**Git** : Git is an open-source distributed version control system that is freely available for everyone. It is designed to handle minor to major projects with speed and efficiency.

## 7 . What are the prerequisites for the DevOps implementation?

Following are some useful prerequisites for DevOps implementation :

- \* Proper communication between the team members.
- \* At least one version control software.
- \* Automated testing.
- \* Automated deployment.

## 8 . What are the core operation of DevOps with application development and infrastructure?

The core operation of DevOps with application development and infrastructure are :

### **Application development :**

- \* Code building
- \* Code coverage
- \* Unit testing
- \* Packaging
- \* Deployment

### **Infrastructure :**

- \* Provisioning
- \* Configuration
- \* Orchestration
- \* Deployment

## 9 . How does HTTP work?

HTTP or Hypertext Transfer Protocol works in a client–server model like the most other protocols. HTTP provides a way to interact with web resources by transmitting hypertext messages between clients and servers.

## 10 . What are some technical and business benefits of DevOps work culture?

### **Technical benefits :**

- \* Continuous software delivery
- \* Less complex problems to fix
- \* Faster bug resolution

### **Business benefits:**

- \* Faster delivery of features for customer satisfaction
- \* More stable operating environments

\* More time available to add product value

## 11 . What are the KPIs that are used for gauging the success of a DevOps team?

**KPI Means Key Performance Indicators** are used to measure the performance of a DevOps team, identify mistakes and rectify them. This helps the DevOps team to increase productivity and which directly impacts revenue.

There are many KPIs which one can track in a DevOps team. Following are some of them :

**Change Failure rates** : This is used to measure the number of failures in deployments.

**Meantime to recovery (MTTR)** : The time is taken to recover from a failed deployment.

**Lead time** : This helps to measure the time taken to deploy on the production environment.

**Deployment frequency** : This measures how frequently a new feature is deployed.

**Change volume** : This is used to measure how much code is changed from the existing code.

**Cycle time** : This is used to measure total application development time.

**Customer Ticket** : This helps us to measure the number of errors detected by the end-user.

**Availability** : This is used to determine the downtime of the application.

**Defect escape rate** : This helps us to measure the number of issues that are needed to be detected as early as possible.

**Time of detection** : This helps you understand whether your response time and application monitoring processes are functioning correctly.

## 12 . What is the difference between continuous deployment and continuous delivery?

Continuous deployment is fully automated, and the deployment to production needs no manual intervention in continuous deployment; whereas, in continuous delivery, the deployment to production requires some manual intervention for change management in the organization, and it needs to be approved by the manager or higher authorities to be deployed in production. According to your organization's application risk factor, continuous deployment/delivery approach will be chosen.

## Continuous Delivery



## Continuous Deployment



### 13 . Can you tell me the advantages of using Git?

- \* High availability
- \* Collaboration friendly
- \* Data redundancy and replication
- \* Only one Git directory per repository
- \* Superior disk utilization and network performance
- \* Can be used for any sort of projects

### 14 . Are git fetch and git pull the same?

The command 'git pull' pulls any new commits from a branch from the central repository and then updates the target branch in the local repository.

But, 'git fetch' is a slightly different form of 'git pull'. Unlike 'git pull', it pulls all new commits from the desired branch and then stores them in a new branch in the local repository.

In order to reflect these changes in your target branch, 'git fetch' must be followed with a 'git merge'. The target branch will only be updated after merging with the fetched branch (where we performed 'git fetch'). We can also interpret the whole thing with an equation like this:

$$\text{git pull} = \text{git fetch} + \text{git merge}$$

### 15 . Mention some of the core benefits of DevOps?

- \* Faster development of software and quick deliveries.
- \* Customer satisfaction is enhanced.
- \* DevOps methodology is flexible and adaptable to changes easily.
- \* Compared to the previous software development models confusion about the project is decreased due to which the product quality is increased.
- \* The gap between the development team and operation team is bridged. i.e, the communication between the teams has been increased.
- \* Efficiency is increased by the addition of automation of continuous integration and continuous deployment.

## 16 . What is the most important thing DevOps helps us achieve?

According to me, the most important thing that DevOps helps us achieve is to get the changes into production as quickly as possible while minimizing risks in software quality assurance and compliance. This is the primary objective of DevOps. Learn more in this DevOps tutorial blog.

However, you can add many other positive effects of DevOps. For example, clearer communication and better working relationships between teams i.e. both the Ops team and Dev team collaborate together to deliver good quality software which in turn leads to higher customer satisfaction.

## 17 . What is the use of SSH?

**SSH** stands for **Secure Shell** and is an administrative protocol that lets users have access and control the remote servers over the Internet to work using the command line.

SSH is a secured encrypted version of the previously known Telnet which was unencrypted and not secure. This ensured that the communication with the remote server occurs in an encrypted form.

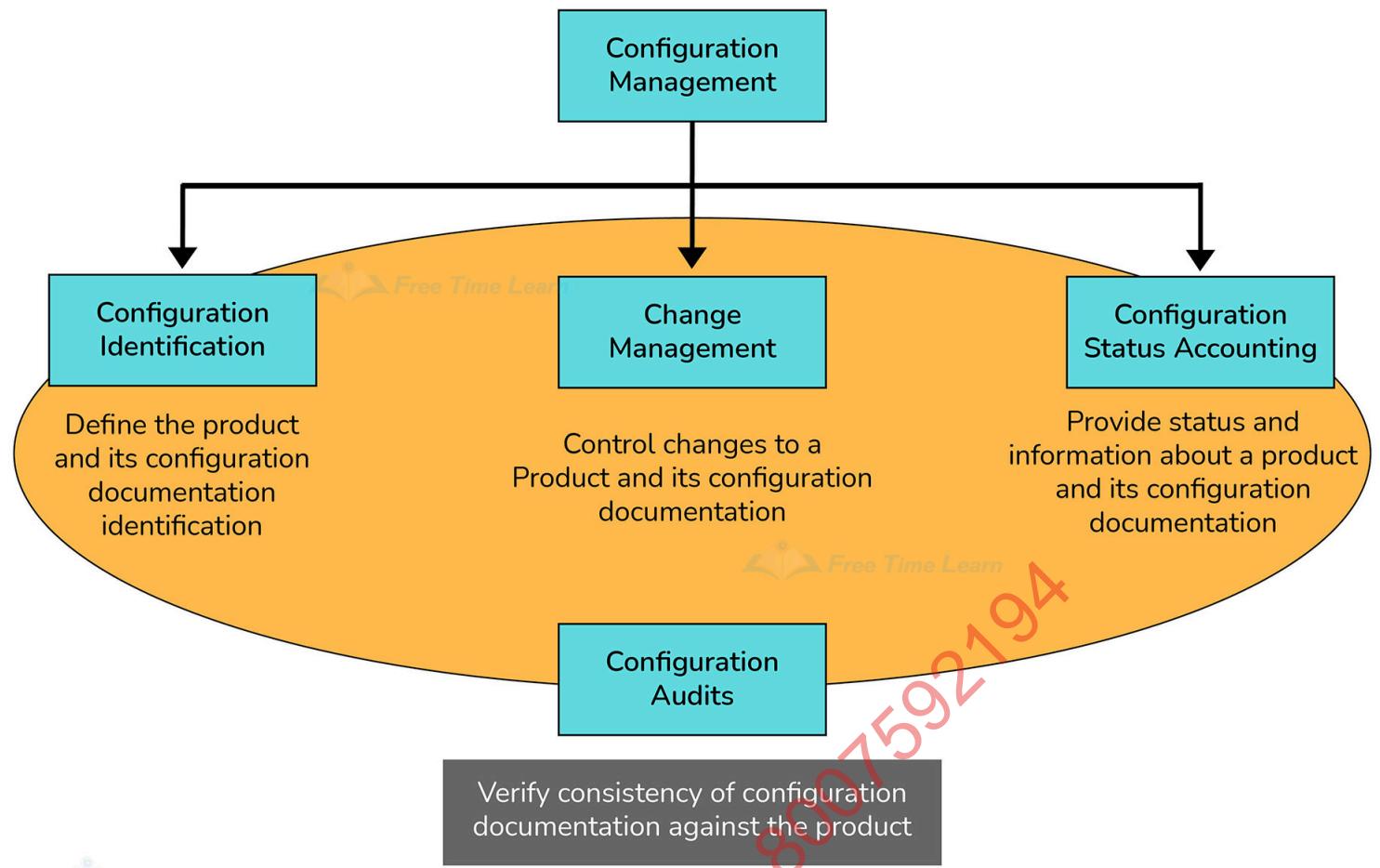
SSH also has a mechanism for remote user authentication, input communication between the client and the host, and sending the output back to the client.

## 18 . What is DevOps Configuration Management?

**Configuration management (CM)** is basically a practice of systematic handling of the changes in such a way that system does not lose its integrity over a period of time. This involves certain policies, techniques, procedures, and tools for evaluating change proposals, managing them, and tracking their progress along with maintaining appropriate documentation for the same.

CM helps in providing administrative and technical directions to the design and development of the appreciation.

The following diagram gives a brief idea about what CM is all about :



## 19 . What are the different phases in DevOps?

The various phases of the DevOps lifecycle are as follows:

**Plan** : Initially, there should be a plan for the type of application that needs to be developed. Getting a rough picture of the development process is always a good idea.

**Code** : The application is coded as per the end-user requirements.

**Build** : Build the application by integrating various codes formed in the previous steps.

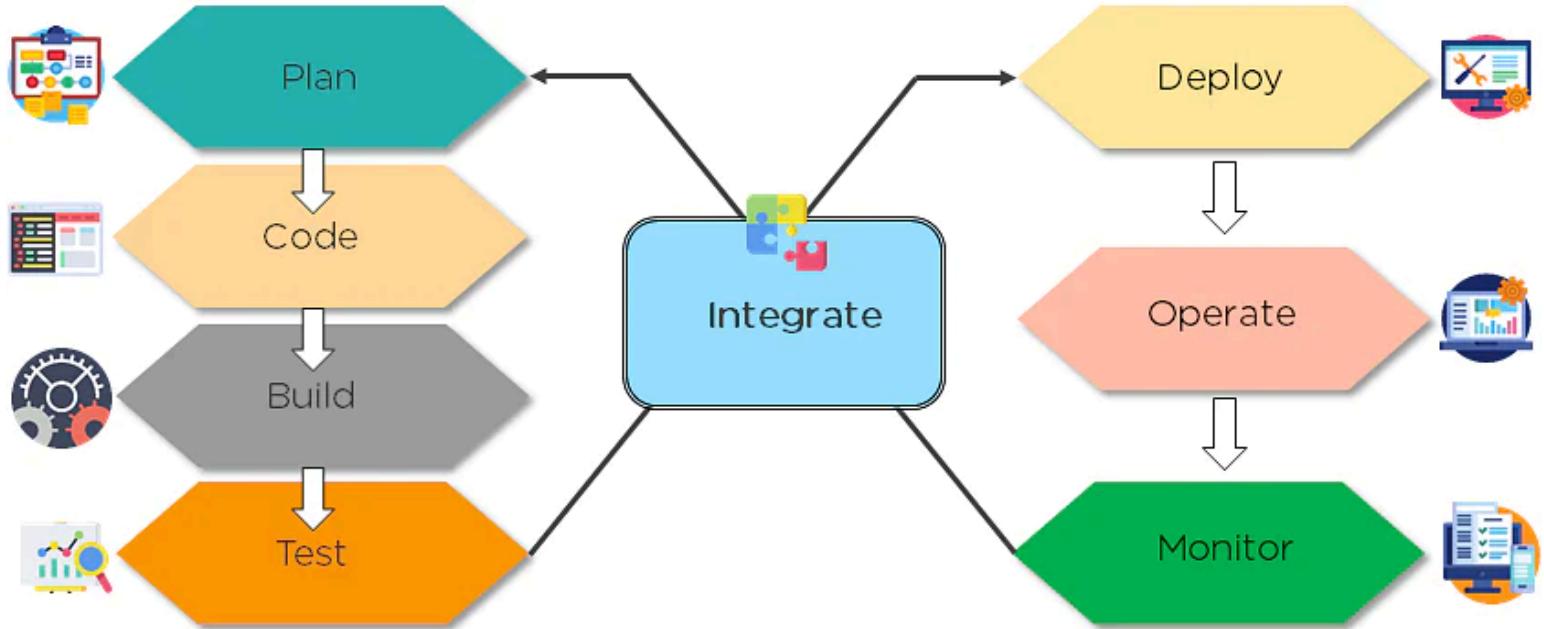
**Test** : This is the most crucial step of the application development. Test the application and rebuild, if necessary.

**Integrate** : Multiple codes from different programmers are integrated into one.

**Deploy** : Code is deployed into a cloud environment for further usage. It is ensured that any new changes do not affect the functioning of a high traffic website.

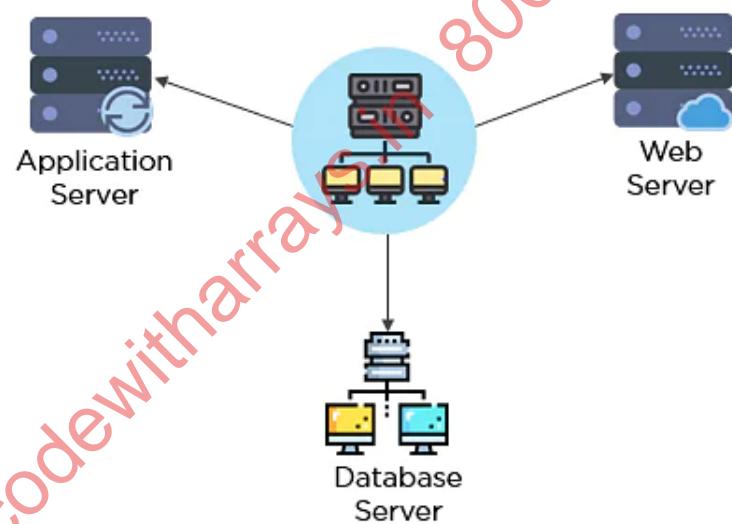
**Operate** : Operations are performed on the code if required.

**Monitor** : Application performance is monitored. Changes are made to meet the end-user requirements.



The above figure indicates the DevOps lifecycle.

## 20 . How does continuous monitoring help you maintain the entire architecture of the system?



Continuous monitoring in DevOps is a process of detecting, identifying, and reporting any faults or threats in the entire infrastructure of the system.

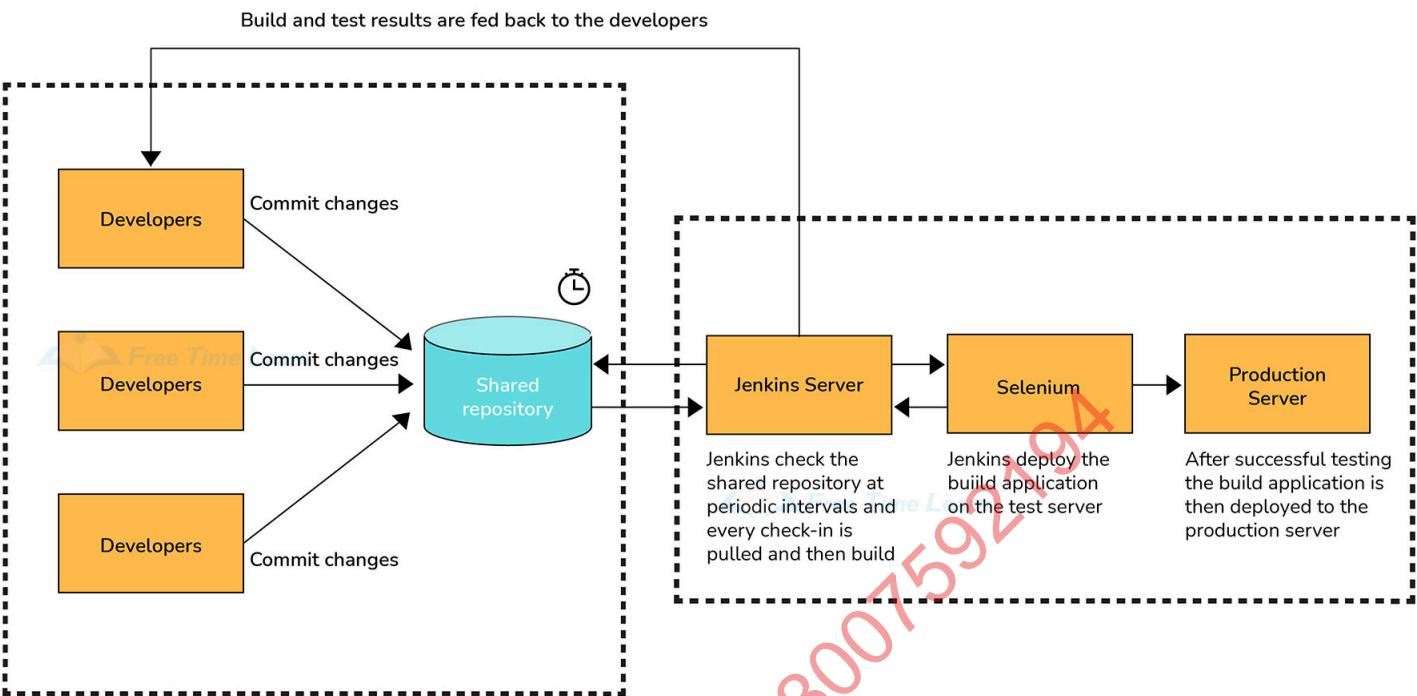
- \* Ensures that all services, applications, and resources are running on the servers properly.
- \* Monitors the status of servers and determines if applications are working correctly or not.
- \* Enables continuous audit, transaction inspection, and controlled monitoring.

## 21 . What does CAMS stand for in DevOps?

CAMS stands for Culture, Automation, Measurement, and Sharing. It represents the core deeds of DevOps.

## 22 . What is Continuous Integration (CI) in DevOps?

Continuous Integration (CI) is a software development practice that makes sure developers integrate their code into a shared repository as soon as they are done working on the feature. Each integration is verified by means of an automated build process that allows teams to detect problems in their code at a very early stage rather than finding them after the deployment.



Based on the above flow, we can have a brief overview of the CI process.

- \* Developers regularly check out code into their local workspaces and work on the features assigned to them.
- \* Once they are done working on it, the code is committed and pushed to the remote shared repository which is handled by making use of effective version control tools like git.
- \* The CI server keeps track of the changes done to the shared repository and it pulls the changes as soon as it detects them.
- \* The CI server then triggers the build of the code and runs unit and integration test cases if set up.
- \* The team is informed of the build results. In case of the build failure, the team has to work on fixing the issue as early as possible, and then the process repeats.

## 23 . What is Continuous Testing (CT)?

Continuous Testing (CT) is that phase of DevOps which involves the process of running the automated test cases as part of an automated software delivery pipeline with the sole aim of getting immediate feedback regarding the quality and validation of business risks associated with the automated build of code developed by the developers.

Using this phase will help the team to test each build continuously (as soon as the code developed is pushed) thereby giving the dev teams a chance to get instant feedback on their work and ensuring that these problems don't arrive in the later stages of SDLC cycle.

Doing this would drastically speed up the workflow followed by the developer to develop the project due to the lack of manual intervention steps to rebuild the project and run the automated test cases every time the changes are made.

## 24 . Explain with a use case where DevOps can be used in industry/ real-life.

There are many industries that are using DevOps so you can mention any of those use cases, you can also refer the below example :

Etsy is a peer-to-peer e-commerce website focused on handmade or vintage items and supplies, as well as unique factory-manufactured items. Etsy struggled with slow, painful site updates that frequently caused the site to go down. It affected sales for millions of Etsy's users who sold goods through online market place and risked driving them to the competitor.

With the help of a new technical management team, Etsy transitioned from its waterfall model, which produced four-hour full-site deployments twice weekly, to a more agile approach. Today, it has a fully automated deployment pipeline, and its continuous delivery practices have reportedly resulted in more than 50 deployments a day with fewer disruptions.

## 25 . What are the anti-patterns of DevOps?

A pattern is common usage usually followed. If a pattern commonly adopted by others does not work for your organization and you continue to blindly follow it, you are essentially adopting an anti-pattern. There are myths about DevOps. Some of them include:

- \* DevOps is a process
- \* Agile equals DevOps?
- \* We need a separate DevOps group
- \* Devops will solve all our problems
- \* DevOps means Developers Managing Production
- \* DevOps is Development-driven release management
  - i) DevOps is not development driven.
  - ii) DevOps is not IT Operations driven.
- \* We can't do DevOps – We're Unique
- \* We can't do DevOps – We've got the wrong people

## 26 . Can you tell me something about Memcached?

Memcached is an open-source and free in-memory object caching system that has high performance and is distributed and generic in nature. It is mainly used for speeding the dynamic web applications by reducing the database load.

**Memcached can be used in the following cases :**

- \* Profile caching in social networking domains like Facebook.
- \* Web page caching in the content aggregation domain.
- \* Profile tracking in Ad targeting domain.
- \* Session caching in e-commerce, gaming, and entertainment domain.
- \* Database query optimization and scaling in the Location-based services domain.

**Benefits of Memcached :**

- \* Using Memcached speeds up the application processes by reducing the hits to a database and reducing the I/O access.
- \* It helps in determining what steps are more frequently followed and helps in deciding what to cache.

**Some of the drawbacks of using Memcached are :**

- \* In case of failure, the data is lost as it is neither a persistent data store nor a database.

- \* It is not an application-specific cache.
- \* Large objects cannot be cached.

## 27 . What are the various branching strategies used in the version control system?

Branching is a very important concept in version control systems like git which facilitates team collaboration. Some of the most commonly used branching types are:

### Feature branching

- \* This branching type ensures that a particular feature of a project is maintained in a branch.
- \* Once the feature is fully validated, the branch is then merged into the main branch.

### Task branching

- \* Here, each task is maintained in its own branch with the task key being the branch name.
- \* Naming the branch name as a task name makes it easy to identify what task is getting covered in what branch.

### Release branching

- \* This type of branching is done once a set of features meant for a release are completed, they can be cloned into a branch called the release branch. Any further features will not be added to this branch.
- \* Only bug fixes, documentation, and release-related activities are done in a release branch.
- \* Once the things are ready, the releases get merged into the main branch and are tagged with the release version number.
- \* These changes also need to be pushed into the develop branch which would have progressed with new feature development.

The branching strategies followed would vary from company to company based on their requirements and strategies.

## 28 . What is CBD in DevOps?

CBD stands for Component-Based Development. It is a unique way for approaching product development. Here, developers keep looking for existing well-defined, tested, and verified components of code and relieve the developer of developing from scratch.

## 29 . What is Resilience Testing?

Resilience Testing is a software process that tests the application for its behavior under uncontrolled and chaotic scenarios. It also ensures that the data and functionality are not lost after encountering a failure.

## 30 . Can you differentiate between continuous testing and automation testing?

The difference between continuous testing and automation testing is given below :

Continuous Testing	Automation Testing
This is the process of executing all the automated test cases and is done as part of the delivery process.	This is a process that replaces manual testing by helping the developers create test cases that can be run multiple times without manual intervention.
This process focuses on the business risks associated with releasing software as early as	This process helps the developer to know whether the features they have developed are bug-free or not by having set of

<b>Continuous Testing</b>	<b>Automation Testing</b>
possible.	pass/fail points as a reference.

### 31. Explain how you can move or copy Jenkins from one server to another?

I will approach this task by copying the jobs directory from the old server to the new one. There are multiple ways to do that; I have mentioned them below:

You can:

- \* Move a job from one installation of Jenkins to another by simply copying the corresponding job directory.
- \* Make a copy of an existing job by making a clone of a job directory by a different name.
- \* Rename an existing job by renaming a directory. Note that if you change a job name you will need to change any other job that tries to call the renamed job.

### 32 . Explain how can create a backup and copy files in Jenkins?

To create a backup, all you need to do is to periodically back up your JENKINS\_HOME directory. This contains all of your build jobs configurations, your slave node configurations, and your build history. To create a back-up of your Jenkins setup, just copy this directory. You can also copy a job directory to clone or replicate a job or rename the directory.

### 33 . Explain how you can setup Jenkins job?

My approach to this answer will be to first mention how to create Jenkins job. Go to Jenkins top page, select "New Job", then choose "Build a free-style software project".

Then you can tell the elements of this freestyle job:

- \* Optional SCM, such as CVS or Subversion where your source code resides.
- \* Optional triggers to control when Jenkins will perform builds.
- \* Some sort of build script that performs the build (ant, maven, shell script, batch file, etc.) where the real work happens.
- \* Optional steps to collect information out of the build, such as archiving the artifacts and/or recording javadoc and test results.
- \* Optional steps to notify other people/systems with the build result, such as sending e-mails, IMs, updating issue tracker, etc..

### 34 . How many cloud platform which is used for DevOps implementation?

Here are some cloud computing platform used for DevOps implementation, such as:

- \* Google Cloud
- \* Amazon Web Services
- \* Microsoft Azure

### 35 . What is Azure DevOps?

Azure DevOps is also known as Microsoft visual studio team services (VSTS). It is a set of collaborative development tools built for the cloud. VSTS was commonly used as a standalone term, and Azure DevOps is a platform which is made up of a few different products, such as:

- \* Azure Test Plans
- \* Azure Boards
- \* Azure Repos
- \* Azure Pipeline
- \* Azure Artifacts

## 36 . Which makes AWS DevOps highly accessible?

Here are some reasons which make AWS DevOps a highly popular, such as :

- \* AWS CloudFormation
- \* AWS EC2
- \* AWS CloudWatch
- \* AWS CodePipeline

## 37 . How to launch a browser using WebDriver?

For Chrome :

```
WebDriver driver = new ChromeDriver();
```

For Internet Explorer (IE):

```
WebDriver driver = new InternetExplorerDriver();
```

For Firefox :

```
WebDriver driver = new FirefoxDriver();
```

## 38 . Are there any technical challenges with Selenium?

- \* It supports only web-based applications.
- \* It does not support the Bitmap comparison.
- \* No vendor support is available for Selenium compared to commercial tools like HP UFT.
- \* As there is no object repository concept, maintainability of objects becomes very complex.

## 39 . Describe the difference between driver.close() and driver.quit().

The **driver.close** command closes the focused browser window. But, the **driver.quit** command calls the **driver.dispose** method which closes all browser windows and also ends the WebDriver session.

## 40 . Where do you find codedir in Puppet?

It is found at one of the following locations :

Unix/Linus Systems :

```
/etc/puppetlabs/code
```

Windows :

```
%PROGRAMDATA%\PuppetLabs\code (usually, C:\ProgramData\PuppetLabs\code)
```

Non-root users :

```
~/.puppetlabs/etc/code
```

## 41 . How does Ansible work?

Ansible is an open-source automation tool, which is categorized into two types of servers :

- \* Controlling machines
- \* Nodes

Ansible will be installed on the controlling machine, and using that machine nodes are managed with the help of SSH. Nodes' locations are specified by inventories in that controlling machine.

Since Ansible is an agentless tool, it doesn't require any mandatory installations on remote nodes. So, there is no need of background programs to be executed while it is managing any nodes.

Ansible can handle a lot of nodes from a single system over an SSH connection with the help of Ansible Playbooks. Playbooks are capable of performing multiple tasks, and they are in the YAML file format.

## 42 . Why should I use Ansible?

Ansible can help in :

- \* Configuration Management
- \* Application Deployment
- \* Task Automation

## 43 . What are handlers in Ansible?

Handlers in Ansible are just like regular tasks inside an Ansible Playbook, but they are only run if the task contains a 'notify' directive. Handlers are triggered when it is called by another task.

## 44 . What is the concept of sudo in Linux?

Sudo is a program for Unix/Linux-based systems that provides the ability to allow specific users to use specific system commands in the system's root level. It is an abbreviation of 'superuser do', where 'super user' means the

'root user'.

## 45 . What is the significance of NRPE in Nagios?

"Nagios Remote Plugin executor" popularly known as NERP enables us to execute the Nagios plugins remotely. With the help of this mechanism, we can check the performance parameters of the remote Machine.

## 46 . Explain Nagios working?

Nagios runs on a server either as a background process or as a service. Nagios will run the plugins regularly with the help of the hosts or servers present in your Network. We can check the status information by using the web interface. It will execute the scripts based on a schedule.

## 47 . What are the benefits of Automation Testing?

The major benefits of automation testing are listed below :

- \* Supports wider test coverage of application features
- \* Ensures consistency
- \* Allows parallel execution
- \* Improves efficiency
- \* Reusable test scripts
- \* Saves money and time
- \* Reliable results

## 48 . Why is Infrastructure as code important?

Infrastructure as code (IaC) is a method to manage and provision IT infrastructure (networks, databases, connection topology, etc.) through source code, rather than manual process or interactive configuration tools.

It helps you to automate the infrastructure deployment process easily, consistently, and reliably.

## 49 . How does configuration management differ from provisioning infrastructure?

Configuration management and provisioning infrastructure, both are important for the DevOps toolchain. While configuration management is best when it comes to employing desired configurations for target machines or groups of machines, provisioning helps you to create, modify, delete, and track infrastructure using APIs or code.

## 50 . How Ansible playbook is different from ad-hoc commands?

- \* **Ansible playbook** is a structured unit of scripts that describes work for server configuration. It is used for repeated actions.
- \* An **ad-hoc command** is used to do something quicker, mostly one-time use.

## 51 . What is a Docker Container and how do you create it?

- \* A Docker container is an open-source software development platform that stores the code and all of its dependencies and runs the application quickly and reliably from one computing environment to the other.
- \* Docker containers are not specified to any particular infrastructure; they can run on any infrastructure, on any computer, and in any cloud.
- \* A Docker container image is a standalone, lightweight, and executable package of software that has everything to run the application such as code, system tools, runtime, system libraries, and settings.

Docker Containers can be created with the Docker image using the following command :

```
docker run -t -i <image name> <command name>
```

This will create and start the container.

If you want to check the list of all running containers with status on the host, use the following command:

```
docker ps -a
```

If you have any additional DevOps questions and are unable to find the answers, please do mention them in the comment section below. We'll get back to you at the earliest.

## 52 . How to turn off the auto-deployment feature?

The auto-deployment feature is used for determining whether there are any new applications or changes in existing applications and dynamically deploy them.

It is enabled for servers that run in development mode.

To turn off the auto-deployment feature, follow one of the methods to place servers in production mode :

- \* In the Administration Console, click the name of the domain in the left pane and select the Production Mode checkbox in the right pane.
- \* At the command line, include the following argument when starting the domain's Administration Server:

```
-Dweblogic.ProductionModeEnabled=true
```

\* Production mode is set for all WebLogic Server instances in a given domain.

## 53 . Explain how to enable startup sound in Ubuntu?

To enable startup sound

- \* Click control gear and then click on Startup Applications
- \* In the Startup Application Preferences window, click Add to add an entry
- \* Then fill the information in comment boxes like Name, Command, and Comment

```
/usr/bin/canberra-gtk-play -id= "desktop-login" -description= "play login sound"
```

\* Logout and then login once you are done

You can also open it with shortcut key **Ctrl+Alt+T**.

## 54 . Explain how you can update Memcached when data changes?

When data changes you can update Memcached by

**Clearing the Cache proactively :** Clearing the cache when an insert or update is made

**Resetting the Cache :** It is similar to the first method but rather than just deleting the keys and waiting for the next request for the data to refresh the cache, reset the values after the insert or update.

## 55 . Explain what Dogpile effect is? How can you prevent this effect?

Dogpile effect is referred to the event when a cache expires, and websites are hit by the multiple requests made by the client at the same time. This effect can be prevented by using a semaphore lock. In this system when value expires, the first process acquires the lock and starts generating new value.

## 56 . Explain Blue/Green Deployment Pattern

Blue/Green coloring pattern addresses the most important challenges faced during the automatic deployment process. In Blue/ Green Deployment approach, you need to ensure two identical production environment. However, only one among them is LIVE at any given point of time. The LIVE environment is called Blue environment.

When the team prepares the next release of their software, they conduct their final stage of testing in an environment which is known as Green environment. Once verified, the traffic is routed to the Green environment.

## 57 . What is git stash?

Git stash command is used to save the changes temporarily in the working directory. This gives developers a clean directory to work on. They can later merge the changes in the git workflow. If this command is used, the changes in the tracked files are merged in the working directory. Git stash command can be used many times in the git directory. It is used as git stash

## 58 . What is kubectl?

By definition, kubectl is a command-line interface for running commands against Kubernetes clusters. Here, 'ctl' stands for 'control'. This 'kubectl' command-line interface can be used to deploy applications, inspect and manage cluster resources, and view logs.

## 59 . Explain the different Selenium components.

Following are the different components of Selenium :

**Selenium Integrated Development Environment (IDE) :** The Selenium IDE consists of a simple framework and comes with a Firefox plug-in that can be easily installed. This Selenium component should be used for prototyping.

**Selenium Remote Control (RC) :** It is a testing framework for developers and QA that supports coding in any programming language like Java, PHP, C#, Perl, etc. This helps automate the UI testing process of web applications against any HTTP website.

**Selenium WebDriver** : It has a better approach to automating the testing process of web-based applications and does not rely on JavaScript. This web framework allows cross-browser tests to be performed.

**Selenium Grid** : This proxy server works with Selenium RC and with the help of browsers, it is able to run parallel tests on different nodes or machines.

## 60 . What are the advantages of Docker over virtual machines?

Below are the differences in multiple criteria that show why Docker has advantages over virtual machines.

**Memory Space** : In terms of memory, Docker occupies lesser space than a virtual machine.

**Boot-up Time** : Docker has a shorter boot-up time than a virtual machine.

**Performance** : Docker containers show better performance as they are hosted in a single Docker engine, whereas, performance is unstable if multiple virtual machines are run.

**Scaling** : Docker is easy to scale up compared to virtual machines.

**Efficiency** : The efficiency of docker is higher, which is an advantage over virtual machines.

**Portability** : Docker doesn't have the same cross-platform compatibility issues with porting as virtual machines do.

**Space Allocation** : Data volumes can be shared and used repeatedly across multiple containers in Docker, unlike virtual machines that cannot share data volumes.

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## 1. What is AWS?

**Amazon Web Services(AWS)** provides **cloud computing solutions** and **APIs** to firms and individuals around the globe. It is a service which is provided by the Amazon that uses distributed IT infrastructure to provide different IT resources on demand. It provides different services such as an infrastructure as a service, platform as a service, and software as a service.

## 2 . What are the components of AWS?

The following are the main components of AWS are :

**Simple Storage Service** : S3 is a service of aws that stores the files. It is object-based storage, i.e., you can store the images, word files, pdf files, etc. The size of the file that can be stored in S3 is from 0 Bytes to 5 TB. It is an unlimited storage medium, i.e., you can store the data as much you want. S3 contains a bucket which stores the files. A bucket is like a folder that stores the files. It is a universal namespace, i.e., name must be unique globally. Each bucket must have a unique name to generate the unique DNS address.

**Elastic Compute Cloud** : Elastic Compute Cloud is a web service that provides resizable compute capacity in the cloud. You can scale the compute capacity up and down as per the computing requirement changes. It changes the economics of computing by allowing you to pay only for the resources that you actually use.

**Elastic Block Store** : It provides a persistent block storage volume for use with EC2 instances in aws cloud. EBS volume is automatically replicated within its availability zone to prevent the component failure. It offers high durability, availability, and low-latency performance required to run your workloads.

**CloudWatch** : It is a service which is used to monitor all the AWS resources and applications that you run in real time. It collects and tracks the metrics that measure your resources and applications.

**Identity Access Management** : It is a service of aws used to manage users and their level of access to the aws management console. It is used to set users, permissions, and roles. It allows you to grant permission to the different parts of the aws platform.

**Simple Email Service** : Amazon Simple Email Service is a cloud-based email sending service that helps digital marketers and application developers to send marketing, notification, and transactional emails. This service is very reliable and cost-effective for the businesses of all the sizes that want to keep in touch with the customers.

**Route53** : It is a highly available and scalable DNS (Domain Name Service) service. It provides a reliable and cost-effective way for the developers and businesses to route end users to internet applications by translating domain names into numeric IP addresses.

### 3 . What is Amazon S3?

**Amazon S3 (Simple Storage Service)** is object storage with a simple web service interface to store and retrieve any amount of data from anywhere on the web.

### 4 . What is AWS SNS?

**Amazon Simple Notification Service (Amazon SNS)** is a push notification service used in sending individual messages to a big group of mobile or email subscriber systems including Amazon SQS queues, AWS Lambda functions, and HTTPS endpoints. It is both **application-to-application (A2A)** and **application-to-person (A2P)** communication.

### 5 . What is AMI?

**AMI** stands for **Amazon Machine Image**. It's a template that provides the information (an operating system, an application server, and applications) required to launch an instance, which is a copy of the AMI running as a virtual server in the cloud. You can launch instances from as many different AMIs as you need.

### 6 . Mention what the relationship between an instance and AMI is?

From a single AMI, you can launch multiple types of instances. An instance type defines the hardware of the host computer used for your instance. Each instance type provides different computer and memory capabilities. Once you launch an instance, it looks like a traditional host, and we can interact with it as we would with any computer.

### 7 . What does an AMI include?

An AMI includes the following things

- \* A template for the root volume for the instance
- \* Launch permissions decide which AWS accounts can avail the AMI to launch instances
- \* A block device mapping that determines the volumes to attach to the instance when it is launched

### 8 . What are the top product categories of AWS?

The top product categories of AWS are :

- \* Compute
- \* Storage
- \* Database
- \* Networking and Content Delivery
- \* Analytics
- \* Machine Learning
- \* Security

- \* Identity
- \* Compliance

## 9 . What is a Data lake?

It is a centralized data repository to store all your structured and unstructured data at any volume. The core aspect of Data lake is that you can apply various analytical tools to data, derive analytics, and uncover useful insights without structuring the data. Also, Data lake stores data coming from various sources such as business applications, mobile applications, and IoT devices.

## 10 . What is the difference between Data Warehouse and Data Lake?

Data Warehouse	Data Lake
Data is relational from transactional systems and operational databases.	Data is both non-relational and relational from various sources such as IoT devices, mobile apps, websites, and social media.
Provides fastest query results at high cost of storage.	Provides faster query results at low storage cost.
Used by Business analysts.	Used by Data scientists, Data developers, and Business analysts.
Helps in Batch reporting, BI and visualizations	Helps to perform various analytics such as <b>Machine Learning</b> , Predictive analytics, data discovery and profiling

## 11 . What is Snowball?

Snowball is a transporting option available in AWS to transport the data in and out of AWS. Snowball helps to transfer immense data at low networking cost.

## 12 . What are key-pairs?

Key Pairs are used to connect to the virtual machines. The secure login credentials used to connect to virtual machines are known as Key pairs.

## 13 . What are the various types of AWS cloud products?

There are mainly three kinds of cloud service types that AWS products offer. These are:

**Computing :** Auto-scaling, EC2, Lightsat, Elastic Beanstalk, and Lambda

**Storage :** S3, Elastic File System, Elastic Block Storage, and Glacier

**Networking :** VPC, Route53, and Amazon CloudFront

## 14 . What is Auto Scaling?

Auto Scaling is a feature in aws that automatically scales the capacity to maintain steady and predictable performance. While using auto scaling, you can scale multiple resources across multiple services in minutes. If you are already using Amazon EC2 Auto-scaling, then you can combine Amazon EC2 Auto-Scaling with the Auto-Scaling to scale additional resources for other AWS services.

### Benefits of Auto Scaling

**Setup Scaling Quickly :** It sets the target utilization levels of multiple resources in a single interface. You can see the average utilization level of multiple resources in the same console, i.e., you do not have to move to the different console.

**Make Smart Scaling Decisions :** It makes the scaling plans that automate how different resources respond to the changes. It optimizes the availability and cost. It automatically creates the scaling policies and sets the targets based on your preference. It also monitors your application and automatically adds or removes the capacity based on the requirements.

**Automatically maintain performance :** Auto Scaling automatically optimize the application performance and availability even when the workloads are unpredictable. It continuously monitors your application to maintain the desired performance level. When demand rises, then Auto Scaling automatically scales the resources.

## 15 . What are difference between region and availability zones in AWS?

**Regions :** A region is a geographical area which consists of 2 or more availability zones. A region is a collection of data centers which are completely isolated from other regions.

**Availability zones :** An Availability zone is a data center that can be somewhere in the country or city. Data center can have multiple servers, switches, firewalls, load balancing. The things through which you can interact with the cloud reside inside the Data center.

## 16 . What do you understand by geo-targeting in CloudFront?

Geo-targeting in the CloudFront supports the creation of customized content for a target audience as suggested by demand and the needs of a specific geographical area. This helps businesses showcase their personalized content to the target audience in different geographic locations without changing its URL.

## 17 . What are the steps involved in CloudFront?

There are four steps involved in CloudFront. These are :

**Step 1 :** Creating a CloudFormation template in YAML or JSON format

**Step 2 :** Saving the code in an S3 bucket so that it serves the repository for the code

**Step 3 :** Using the AWS CloudFormation to call the bucket and thereby creating a new stack on the template

**Step 4 :** CloudFormation reads the file and thus understands the services required that are called along with their order details, relationships with services and associated provisions

## 18 . What are the main differences between 'horizontal' and 'vertical' scales?

The main differences between 'horizontal' and 'vertical' scales are :

Horizontal Scale	Vertical Scale
Provides new resources along with new hardware devices to support the infrastructure	You would need to increase power resources by upgrading the current machine
Used in distributed systems	Used in virtualization
Resilient to system failure	Single point of failure
Utilizes network calls	Interprocess communication
Increases the capacity of existing hardware or software by adding additional resources	Connects multiple system entities, both hardware, and software such that they work as a single logical unit
Difficult to implement	Easy to implement

## 19 . What is geo-targeting in CloudFront?

Geo-Targeting is a concept where businesses can show personalized content to their audience based on their geographic location without changing the URL. This helps you create customized content for the audience of a specific geographical area, keeping their needs in the forefront.

## 20 . How do you upgrade or downgrade a system with near-zero downtime?

You can upgrade or downgrade a system with near-zero downtime using the following steps of migration:

- \* Open EC2 console
- \* Choose Operating System AMI
- \* Launch an instance with the new instance type
- \* Install all the updates
- \* Install applications
- \* Test the instance to see if it's working
- \* If working, deploy the new instance and replace the older instance
- \* Once it's deployed, you can upgrade or downgrade the system with near-zero downtime.

## 21 . Mention what is the difference between Amazon S3 and EC2?

The difference between EC2 and Amazon S3 is that

EC2	S3
<ul style="list-style-type: none"> <li>It is a cloud web service used for hosting your application</li> </ul>	<ul style="list-style-type: none"> <li>It is a data storage system where any amount of data can be stored</li> </ul>
<ul style="list-style-type: none"> <li>It is like a huge computer machine which can run either Linux or Windows and can handle applications like PHP, Python, Apache, or any databases</li> </ul>	<ul style="list-style-type: none"> <li>It has a REST interface and uses secure HMAC-SHA1 authentication keys</li> </ul>

## 22 . Explain the advantages of AWS's Disaster Recovery (DR) solution.

This is also among the most popular AWS interview questions asked in an AWS interview.

Following are the advantages of AWS's Disaster Recovery (DR) solution :

- \* AWS offers a cost-effective backup, storage, and DR solution, helping the companies to reduce their capital expenses
- \* Fast setup time and greater productivity gains
- \* AWS helps companies to scale up even during seasonal fluctuations
- \* It seamlessly replicates on-premises data to the cloud
- \* Ensures fast retrieval of files

## 23 . What are the different types of load balancers in EC2?

There are three types of load balancers in EC2 :

**Application Load Balancer** : These balancers are designed to make routing decisions at the application layer.

**Network Load Balancer** : Network load balancer handles millions of requests per second and helps in making routing decisions at the transport layer.

**Classic Load Balancer** : Classic Load Balancer is mainly used for applications built within the EC2-Classic network. It offers basic load balancing at varying Amazon EC2 instances.

## 24 . What is DynamoDB?

DynamoDB is a NoSQL database. It is very flexible and performs quite reliably – and can be integrated with AWS! It offers fast and predictable performance with seamless scalability. With the help of DynamoDB, you do not need to worry about hardware provisioning, setup, and configuration, replication, software patching, or cluster scaling.

## 25 . What is AWS CloudFormation?

AWS CloudFormation is an Amazon service, dedicated to solving the need to standardize and replicate the architectures to facilitate their execution and optimize resources and costs in the delivery of applications, or compliance with the requirements of the organization. CloudFormation allows creating a proprietary library of

instance templates or architectures capable of being delivered at any time and in an organized manner, through programming.

## 26 . What are the advantages of using AWS CloudFormation?

It is one of the most popular AWS interview questions. There are many advantages of AWS CloudFormation including the following.

- \* Reduces infrastructure deployment time
- \* Increases confidence in deployments
- \* Replicates complex environments, for example, have complex environments for development, pre-production, and production, that are the same, or almost the same, simply by scaling up resources
- \* Reuses the definitions between different products
- \* Reduces environment repair time

## 27 . What is Elastic Beanstalk?

Elastic Beanstalk is an orchestration service by AWS, used in various AWS applications such as EC2, S3, Simple Notification Service, CloudWatch, autoscaling, and Elastic Load Balancers. It is the fastest and simplest way to deploy your application on AWS using either AWS Management Console, a Git repository, or an **integrated development environment (IDE)**.

## 28 . What is a T2 instance?

T2 instances are designed to provide moderate baseline performance and the capability to burst to higher performance as required by workload.

## 29 . What is Amazon EC2 Auto Scaling?

This AWS service automatically adds or removes **EC2 instances** as per the changing demands in workloads. Also, this service detects the unhealthy EC2 instances in the cloud infrastructure and replaces them with new instances, consequently. In this service, scaling is achieved in dynamic scaling and Predictive scaling. They can be used separately as well as together to manage the workloads.

## 30 . What is fleet management in Amazon EC2 Auto Scaling?

Amazon EC2 auto-scaling service continuously monitors the health of Amazon EC2 instances and other applications. When EC2 auto-scaling identifies unhealthy instances, it automatically replaces the unhealthy EC2 instances with new EC2 instances. Also, this service ensures the seamless running of applications and balances EC2 instances across the zones in the cloud.

## 31 . What is Amazon VPC?

Amazon VPC is known as Amazon Virtual Private Cloud (VPC), allowing you to control your virtual private cloud. Using this service, you can design your VPC right from resource placement and connectivity to security. And you can add Amazon EC2 instances and Amazon Relational Database Service (RDS) instances according to your needs. Also, you can define the communication between other VPCs, regions, and availability zones in the cloud.

## 32 . What is Amazon SQS?

Amazon Simple Queuing Service (SQS) is a fully managed message queuing service. Using this service, you can send, receive and store any quantity of messages between the applications. This service helps to reduce complexity and eliminate administrative overhead. In addition to that, it provides high protection to messages through the encryption method and delivers them to destinations without losing any message.

## 33 . What are the two types of queues in SQS?

There are two types of queues known :

**Standard Queues** : It is a default queue type. It provides an unlimited number of transactions per second and at least one message delivery option.

**FIFO Queues** : FIFO queues are designed to ensure that the order of messages is received and sent is strictly preserved as in the exact order that they sent.

## 34 . What are the Storage Classes available in Amazon S3?

The Storage Classes that are available in the Amazon S3 are the following:

- \* Amazon S3 Glacier Instant Retrieval storage class
- \* Amazon S3 Glacier Flexible Retrieval (Formerly S3 Glacier) storage class
- \* Amazon S3 Glacier Deep Archive (S3 Glacier Deep Archive)
- \* S3 Outposts storage class
- \* Amazon S3 Standard-Infrequent Access (S3 Standard-IA)
- \* Amazon S3 One Zone-Infrequent Access (S3 One Zone-IA)
- \* Amazon S3 Standard (S3 Standard)
- \* Amazon S3 Reduced Redundancy Storage
- \* Amazon S3 Intelligent-Tiering (S3 Intelligent-Tiering)

## 35 . What is Amazon Redshift?

Amazon Redshift helps analyze data stored in data warehouses, databases, and data lakes using **Machine Learning (ML)** and **AWS-designed hardware**. It uses SQL to analyze structured and semi-structured data to yield the best performance from the analysis. This service automatically creates, trains, and deploys Machine Learning models to create predictive insights.

## 36 . How are Spot Instance, On-demand Instance, and Reserved Instance different from one another?

Both Spot Instance and On-demand Instance are models for pricing.

Spot Instance	On-demand Instance
With Spot Instance, customers can purchase compute capacity with no upfront commitment at all.	With On-demand Instance, users can launch instances at any time based on the demand.
Spot Instances are spare Amazon instances that you can bid for.	On-demand Instances are suitable for the high-availability needs of applications.

When the bidding price exceeds the spot price, the instance is automatically launched, and the spot price fluctuates based on supply and demand for instances.	On-demand Instances are launched by users only with the pay-as-you-go model.
When the bidding price is less than the spot price, the instance is immediately taken away by Amazon.	On-demand Instances will remain persistent without any automatic termination from Amazon.
Spot Instances are charged on an hourly basis.	On-demand Instances are charged on a per-second basis

## 37 . What is Cross Region Replication?

\* Cross Region Replication is a feature that replicates the data from one bucket to another bucket which could be in a different region.

\* It provides asynchronous copying of objects across buckets. Suppose X is a source bucket and Y is a destination bucket. If X wants to copy its objects to Y bucket, then the objects are not copied immediately.

**Some points to be remembered for Cross Region Replication**

**Create two buckets :** Create two buckets within AWS Management Console, where one bucket is a source bucket, and other is a destination bucket.

**Enable versioning :** Cross Region Replication can be implemented only when the versioning of both the buckets is enabled.

**Amazon S3 encrypts the data in transit across AWS regions using SSL :** It also provides security when data traverse across the different regions.

**Already uploaded objects will not be replicated :** If any kind of data already exists in the bucket, then that data will not be replicated when you perform the cross region replication.

**Use cases of Cross Region Replication**

**Compliance Requirements :** By default, Amazon S3 stores the data across different geographical regions or availability zone to have the availability of data. Sometimes there could be compliance requirements that you want to store the data in some specific region. Cross Region Replication allows you to replicate the data at some specific region to satisfy the requirements.

**Minimize Latency :** Suppose your customers are in two geographical regions. To minimize latency, you need to maintain the copies of data in AWS region that are geographically closer to your users.

**Maintain object copies under different ownership:** Regardless of who owns the source bucket, you can tell to Amazon S3 to change the ownership to AWS account user that owns the destination bucket. This is referred to as an owner override option.

## 38 . What are EBS Volumes?

Elastic Block Store is a service that provides a persistent block storage volume for use with EC2 instances in aws cloud. EBS volume is automatically replicated within its availability zone to prevent from the component failure. It offers high durability, availability, and low-latency performance required to run your workloads.

## 39 . How can you secure the access to your S3 bucket?

S3 bucket can be secured in two ways:

**ACL (Access Control List)** : ACL is used to manage the access of resources to buckets and objects. An object of each bucket is associated with ACL. It defines which AWS accounts have granted access and the type of access. When a user sends the request for a resource, then its corresponding ACL will be checked to verify whether the user has granted access to the resource or not.

When you create a bucket, then Amazon S3 creates a default ACL which provides a full control over the AWS resources.

**Bucket Policies** : Bucket policies are only applied to S3 bucket. Bucket policies define what actions are allowed or denied. Bucket policies are attached to the bucket not to an S3 object but the permissions define in the bucket policy are applied to all the objects in S3 bucket.

The following are the main elements of Bucket policy :

**Sid** : A Sid determines what the policy will do. **For example**, if an action that needs to be performed is adding a new user to an Access Control List (ACL), then the Sid would be AddCannedAcl. If the policy is defined to evaluate IP addresses, then the Sid would be IPAllow.

**Effect** : An effect defines an action after applying the policy. The action could be either to allow an action or to deny an action.

**Principal** : A Principal is a string that determines to whom the policy is applied. If we set the principal string as '\*', then the policy is applied to everyone, but it is also possible that you can specify individual AWS account.

**Action** : An Action is what happens when the policy is applied. **For example**, s3:Getobject is an action that allows to read object data.

**Resource** : The Resource is a S3 bucket to which the statement is applied. You cannot enter a simply bucket name, you need to specify the bucket name in a specific format.

**For example**, the bucket name is freetimelearn-bucket, then the resource would be written as "arn:aws:s3:::freetimelearn-bucket/\*".

## 40 . Difference between Stopping and Terminating the instances?

**Stopping** : You can stop an EC2 instance and stopping an instance means shutting down the instance. Its corresponding EBS volume is still attached to an EC2 instance, so you can restart the instance as well.

**Terminating** : You can also terminate the EC2 instance and terminating an instance means you are removing the instance from your AWS account. When you terminate an instance, then its corresponding EBS is also removed. Due to this reason, you cannot restart the EC2 instance.

## 41 . What are NAT Gateways?

\* NAT stands for Network Address Translation.

\* If you want your EC2 instance in a private subnet can access the internet, this can be achieved only when it can communicate to the internet. However, we do not want to make a subnet public as we want to maintain the degree of control. To overcome the problem, we need to create either NAT Gateways or NAT Instances.

\* In real time, NAT Gateways are highly used than NAT instances as NAT instances are an individual EC2 instances, and NAT Gateways are highly available across multiple availability zones, and they are not on a single EC2 instance.

## 42 . How can you control the security to your VPC?

You can control the security to your VPC in two ways:

**Security Groups** : It acts as a virtual firewall for associated EC2 instances that control both inbound and outbound traffic at the instance level.

**Network access control lists (NACL)** : It acts as a firewall for associated subnets that control both inbound and outbound traffic at the subnet level.

## 43 . What are the different database types in RDS?

Following are the different database types in RDS :

### Amazon Aurora

It is a database engine developed in RDS. Aurora database can run only on AWS infrastructure not like MySQL database which can be installed on any local device. It is a MySQL compatible relational database engine that combines the speed and availability of traditional databases with the open source databases.

### PostgreSQL

- \* PostgreSQL is an open source relational database for many developers and startups.
- \* It is easy to set up, operate, and can also scale PostgreSQL deployments in the cloud.
- \* You can also scale PostgreSQL deployments in minutes with cost-efficient.
- \* PostgreSQL database manages time-consuming administrative tasks such as PostgreSQL software installation, storage management, and backups for disaster recovery.

### MySQL

- \* It is an open source relational database.
- \* It is easy to set up, operate, and can also scale MySQL deployments in the cloud.
- \* By using Amazon RDS, you can deploy scalable MySQL servers in minutes with cost-efficient.

### MariaDB

- \* It is an open source relational database created by the developers of MySQL.
- \* It is easy to set up, operate, and can also scale MariaDB server deployments in the cloud.
- \* By using Amazon RDS, you can deploy scalable MariaDB servers in minutes with cost-efficient.
- \* It frees you from managing administrative tasks such as backups, software patching, monitoring, scaling and replication.

### Oracle

- \* It is a relational database developed by Oracle.
- \* It is easy to set up, operate, and can also scale Oracle database deployments in the cloud.
- \* You can deploy multiple editions of Oracle in minutes with cost-efficient.
- \* It frees you from managing administrative tasks such as backups, software patching, monitoring, scaling and replication.
- \* You can run Oracle under two different licensing models: "License Included" and "Bring Your Own License (BYOL)". In License Included service model, you do not have to purchase the Oracle license separately as it is

already licensed by AWS. In this model, pricing starts at \$0.04 per hour. If you already have purchased the Oracle license, then you can use the BYOL model to run Oracle databases in Amazon RDS with pricing starts at \$0.025 per hour.

## SQL Server

- \* SQL Server is a relational database developed by Microsoft.
- \* It is easy to set up, operate, and can also scale SQL Server deployments in the cloud.
- \* You can deploy multiple editions of SQL Server in minutes with cost-efficient.
- \* It frees you from managing administrative tasks such as backups, software patching, monitoring, scaling and replication.

## 44 . Describe RTO & RPO from AWS perspective?

RTO (Recovery Time Objective) refers to the maximum waiting time for resumption of AWS services/operations during an outage/disaster. Due to unexpected failure, firms have to wait for the recovery process, and the maximum waiting time for an organization is defined as the RTO. When an organization starts using AWS, they have to set their RTO, which can also be called a metric. It defines the time firms can wait during disaster recovery of applications and business processes on AWS. Organizations calculate their RTO as part of their BIA (Business Impact Analysis).

Like RTO, RPO (Recovery Point Objective) is also a business metric calculated by a business as part of its BIA. RPO defines the amount of data a firm can afford to lose during an outage or disaster. It is measured in a particular time frame within the recovery period. RPO also defines the frequency of data backup in a firm/organization. For example, if a firm uses AWS services and its RPO is 3 hours, then it implies that all its data/disk volumes will be backed up every three hours.

## 45 . What is multi-AZ RDS?

Multi-AZ RDS is helpful to make a replica of the production database to be available in other availability zones. They come handy in case of disaster recovery and primary database shutdown, to have a complete set of database as a backup.

## 46 . How will you use the processor state control feature available on the c4.8xlarge instance?

The processor state control has 2 states, namely :

**The C State :** Represents the sleep state. Varies from c0 to c6, where c6 is the deepest sleep state for a processor.

**The P State :** Represents the performance state. Varies from p0 to p15, where p15 is the lowest possible frequency.

A processor has multiple cores, and each of them requires thermal headroom for gaining a boost in performance. Hence, the temperature needs to be kept at an optimal level so that the cores can perform at their highest.

When a core is put into the sleep state then it results in a reduction of the overall temperature of the processor. This gives an opportunity to other cores for giving out a better performance. Hence, a strategy can be devised by properly putting some cores to sleep and others in a performance state to get an overall performance boost from the processor.

Instances like the c4.8xlarge allow customizing the C and P states for customizing the processor performance according to the workload.

## 47 . Which instance type can be used for deploying a 4 node cluster of Hadoop in AWS?

While the c4.8xlarge instance will be preferred for the master machine, the i2.large instance seems fit for the slave machine. Another way is to launch the Amazon EMR instance that automatically configures the servers.

Hence, you need not deal with manually configuring the instance and installing Hadoop cluster while using Amazon EMR instance. Simply dump the data to be processed in S3. EMR picks it up from there, processes the same, and then dumps it back into S3.

## 48 . What is a Stateful and a Stateless Firewall?

A **Stateful Firewall** is the one that maintains the state of the rules defined. It requires you to define only inbound rules. Based on the inbound rules defined, it automatically allows the outbound traffic to flow.

On the other hand, a **Stateless Firewall** requires you to explicitly define rules for inbound as well as outbound traffic.

For example, if you allow inbound traffic from **Port 80**, a Stateful Firewall will allow outbound traffic to **Port 80**, but a Stateless Firewall will not do so.

## 49 . What is a Power User Access in AWS?

An Administrator User will be similar to the owner of the AWS Resources. He can create, delete, modify or view the resources and also grant permissions to other users for the AWS Resources.

A Power User Access provides Administrator Access without the capability to manage the users and permissions. In other words, a user with Power User Access can create, delete, modify or see the resources, but he cannot grant permissions to other users.

## 50 . What is an Instance Store Volume and an EBS Volume?

An Instance Store Volume is temporary storage that is used to store the temporary data required by an instance to function. The data is available as long as the instance is running. As soon as the instance is turned off, the Instance Store Volume gets removed and the data gets deleted.

On the other hand, an EBS Volume represents a persistent storage disk. The data stored in an EBS Volume will be available even after the instance is turned off.

## 51 . What are Recovery Time Objective and Recovery Point Objective in AWS?

**Recovery Time Objective** : It is the maximum acceptable delay between the interruption of service and restoration of service. This translates to an acceptable time window when the service can be unavailable.

**Recover Point Objective** : It is the maximum acceptable amount of time since the last data restore point. It translates to the acceptable amount of data loss which lies between the last recovery point and the interruption of service.

## 52 . Is there a way to upload a file that is greater than 100 Megabytes in Amazon S3?

Yes, it is possible by using the Multipart Upload Utility from AWS. With the Multipart Upload Utility, larger files can be uploaded in multiple parts that are uploaded independently. You can also decrease upload time by uploading these parts in parallel. After the upload is done, the parts are merged into a single object or file to create the original file from which the parts were created.

## 53 . What are the policies that you can set for your user's passwords?

Following are the policies that can be set for user's passwords :

- \* You can set a minimum length of the password.
- \* You can ask the users to add at least one number or special character to the password.
- \* Assigning the requirements of particular character types, including uppercase letters, lowercase letters, numbers, and non-alphanumeric characters.
- \* You can enforce automatic password expiration, prevent the reuse of old passwords, and request for a password reset upon their next AWS sign-in.
- \* You can have the AWS users contact an account administrator when the user has allowed the password to expire.

## 54 . What are the native AWS Security logging capabilities?

Most of the AWS services have their logging options. Also, some of them have an account level logging, like in AWS CloudTrail, AWS Config, and others. Let's take a look at two services in specific:

**AWS CloudTrail** : This is a service that provides a history of the AWS API calls for every account. It lets you perform security analysis, resource change tracking, and compliance auditing of your AWS environment as well. The best part about this service is that it enables you to configure it to send notifications via AWS SNS when new logs are delivered.

**AWS Config** : This helps you understand the configuration changes that happen in your environment. This service provides an AWS inventory that includes configuration history, configuration change notification, and relationships between AWS resources. It can also be configured to send information via AWS SNS when new logs are delivered.

## 55 . What is a DDoS attack, and what services can minimize them?

DDoS is a cyber-attack in which the perpetrator accesses a website and creates multiple sessions so that the other legitimate users cannot access the service. The native tools that can help you deny the DDoS attacks on your AWS services are:

- \* AWS Shield
- \* AWS WAF
- \* Amazon Route53
- \* Amazon CloudFront
- \* ELB
- \* VPC

## 56 . What are the different types of virtualization in AWS, and what are the differences between them?

The three major types of virtualization in AWS are :

**Hardware Virtual Machine (HVM)** : It is a fully virtualized hardware, where all the virtual machines act separate from each other. These virtual machines boot by executing a master boot record in the root block device of your image.

**Paravirtualization (PV)** : Paravirtualization-GRUB is the bootloader that boots the PV AMIs. The **PV-GRUB** chain loads the kernel specified in the menu.

**Paravirtualization on HVM** : PV on HVM helps operating systems take advantage of storage and network I/O available through the host.

## 57 . What are Solaris and AIX operating systems? Are they available with AWS?

Solaris is an operating system that uses SPARC processor architecture, which is not supported by the public cloud currently.

AIX is an operating system that runs only on Power CPU and not on Intel, which means that you cannot create AIX instances in EC2.

Since both the operating systems have their limitations, they are not currently available with AWS.

## 58 . What are the advantages of AWS IAM?

**AWS Identity and Access Management (IAM)** allows an administrator to provide multiple users and groups with granular access. Various user groups and users may require varying levels of access to the various resources that have been developed. We may assign roles to users and create roles with defined access levels using IAM.

It further gives us Federated Access, which allows us to grant applications and users access to resources without having to create IAM Roles.

## 59 . Which AWS services suit the real-time analysis of eCommerce data?

DynamoDB is an appropriate choice for collecting eCommerce data as it is an unstructured form of data. Real-time analysis of the collected eCommerce data can be carried out using Amazon Redshift.

## 60 . Can you explain how AWS Elastic Beanstalk applies updates?

Before updating the original instance, AWS Elastic Beanstalk readies a duplicate copy of the instance. Thereafter, it routes the traffic to the duplicate instance so as to avoid a scenario where the update application fails.

In case there is a failure in the update process, the AWS Elastic Beanstalk will switch back to the original instance using the very same duplicate copy it created before beginning the update process.

## 61 . What happens if an application stops responding to requests in AWS Elastic Beanstalk?

Even though the underlying infrastructure appears healthy, Beanstalk is able to detect if the application isn't responding on the custom link. It then logs the situation as an environmental event, which can then be checked in detail and thus, acted upon.

AWS Elastic Beanstalk apps have a built-in system for avoiding underlying infrastructure failures. The Beanstalk uses the Auto Scaling feature to automatically launch a new instance in case an Amazon EC2 instance fails.

## 62 . What happens when one of the resources in a stack can't be created successfully in AWS OpsWorks?

The automatic rollback on error feature is enabled when one of the resources in a stack can't be created successfully in AWS OpsWorks. The feature results in the deletion of all the successfully created AWS resources until the point of the occurrence of the error.

Doing so ensures that no error-causing data is left behind as well as abiding by the principle that the stacks are either created completely or not created at all.

The automatic rollback on error feature is useful especially in cases where one might unknowingly exceed the limit of the total number of Elastic IP addresses or does not have access to the EC2 AMI.

## 63 . What is the purpose of lifecycle hooks in AutoScaling?

Lifecycle hooks help to add wait time before launch or termination of an instance for extraction of log files or installation of necessary software respectively.

## 64 . Which Automation Gears helps in Spinup Services?

API tools such as API Fortress, Scripting languages like Perl and hybrid cloud management tools like Scarl are few such automation gears helpful for Spin Up Services.

## 65 . Explain Stateful and Stateless firewall.

Any security group that regulates traffic among instances and various AWS resources is a Stateful firewall.

A Stateless firewall is an Access Control List on a network at the subnet level and can allow or deny traffic based on rules.

## 66 . What do you know about Amazon Kinesis Firehose?

It is a Data Firehouse that can help in stacking information in Information Stores or devices without the need for a continuous organization.

## 67 . What is Amazon Lightsail?

**Amazon Lightsail** is a service that helps to build and manage websites and applications faster and with ease. It provides easy-to-use virtual private server instances, storage, and databases cost-effectively. Not just that, you can create and delete development sandboxes using this service, which will help to test new ideas without taking any risk.

## 68 . What is Amazon ECS?

It is known as Amazon Elastic Container Registry (ECR). It provides high-performance hosting so that you can store your application images securely in ECR. Amazon ECS compresses and encrypts images and controls access to images. The images can be simply stored in containers; also, they can be accessed from the containers without the support of any management tools.

## 69 . What is Amazon EFS?

Amazon EFS is a simple and serverless Elastic File System. It allows adding or removing files on the file system without provisioning and management. This service creates file systems using EC2 launch instance wizard, EFS Console, CLI, and API. You can reduce costs significantly since accessed files will be moved automatically over a period.

## 70 . What is Amazon Neptune?

It is a purpose-built graph database that helps execute queries with easy navigation on datasets. Here, you can use graph query languages to execute queries, which will perform effectively on connected datasets. Moreover, Amazon Neptune's graph database engine can store billions of relationships and query the graph with milliseconds latency. This service is mainly used in fraud detection, knowledge graphs, and network security.

## 71 . What is Amazon Network Firewall?

This AWS service helps to protect VPCs (Virtual Private Cloud) against attacks. In this service, scaling is carried out automatically as per the traffic flow in the network. You can define your firewall rules using Network Firewall's flexible rules engine; therefore, you can get reasonable control over the network traffic. Network Firewall can work alongside AWS firewall manager to build and apply security policies on all VPCs and accounts.

## 72 . What are the Snow family members?

- \* AWS Snowcone
- \* AWS Snowball
- \* AWS Snowmobile

## 73 . What are Throughput Optimised HDD and Cold HDD volume types?

Throughput optimized HDDs are magnetic type storage that defines performance based on throughput. It is suitable for frequently accessed, large and sequential workloads.

Cold HDD volumes are also magnetic-type storages where performance is calculated based on throughput. These storages are inexpensive and best suitable for infrequent sequential and large cold workloads.

## 74 . What is AWS Copilot CLI?

AWS Copilot CLI is known as 'Copilot Command-Line Interface', which helps users deploy and manage containerized applications. Here, each step in the deployment lifecycle is automated; the steps include pushing to a registry, creating a task definition, and clustering. Therefore, it saves time for planning the necessary infrastructure to run applications.

## 75 . How are AWS Elastic Disaster Recovery and Cloud Endure Disaster Recovery related?

Generally, AWS Elastic Disaster Recovery is built on Cloud Endure Disaster Recovery; therefore, both services have similar capabilities. They help you to:

- \* Ease the setup, operation, and recovery processes for many applications
- \* Perform non-disruptive disaster recovery testing and drills
- \* Recover RPOs in seconds and TROs in minutes
- \* Recover from a previous point-in-time

## 76 . What are the features of Amazon cloud search?

Amazon cloud search features :

- \* AutoComplete advice
- \* Boolean Searches
- \* Entire text search
- \* Faceting term boosting
- \* Highlighting
- \* Prefix Searches
- \* Range searches

## 77 . How to update AMI tools at the Boot-Time on Linux?

To update AMI tools at the Boot-Time on Linux, you will have to do the following :

- \* # Update to Amazon EC2 AMI tools
- \* echo " + Updating EC2 AMI tools"
- \* yum update -y aws-amitools-ec2
- \* echo " + Updated EC2 AMI tools"

## 78 . How many Subnets can you have per VPC?

Currently you can create 200 subnets per VPC.

## 79 . What is Amazon VPC flow logs?

VPC flow logs is a feature that enables you to capture information about the IP traffic going to and from network interfaces in your VPC. Flow logs data can be published to either Amazon CloudWatch Logs or Amazon S3. You can monitor your VPC flow logs to gain operational visibility about your network dependencies and traffic patterns, detect anomalies and prevent data leakage, or troubleshoot network connectivity and configuration issues. The enriched metadata in flow logs help you gain additional insights about who initiated your TCP connections, and the actual packet-level source and destination for traffic flowing through intermediate layers such as the NAT Gateway. You can also archive your flow logs to meet compliance requirements.



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