INTERVIEW QUESTIONS ON AWS

AWS INTERVIEW Q&A

1. **Name 5 aws services you have used and what's the use cases?**
   - **Amazon EC2 (Elastic Compute Cloud):** It is a web service that provides resizable compute capacity in the cloud. I have used Amazon EC2 to deploy web applications, run batch jobs, and host web services.
   - **Amazon S3(Simple Storage Service**): S3 is an object storage service that offers industry-leading scalability, data availability, security, and performance. I have used S3 to store and retrieve files (such as images, videos, and documents) for my applications and websites.
   - **Amazon RDS (Relational Database Service):** RDS is a managed database service that makes it easy to set up, operate, and scale a relational database in the cloud. I have used RDS to deploy and manage MySQL and PostgreSQL databases for my applications.
   - **Amazon CloudFront:** It is a global content delivery network (CDN) service that securely delivers data, videos, applications, and APIs to customers around the world with low latency and high transfer speeds. I have used Amazon CloudFront to improve the performance of web applications by caching and delivering content from edge locations closer to the end-user.
   - **AWS Lambda:** It is a serverless computing service that lets you run code without provisioning or managing servers. I have used AWS Lambda to create serverless functions that process data, generate reports, and trigger other AWS services.

2. **What are the tools used to send logs to the cloud environment?**
   There are various tools that can be used to send logs to the cloud environment. Some popular tools include:
   - Amazon CloudWatch Logs
   - AWS CloudTrail
   - AWS Elastic Beanstalk
   - Logstash
   - Fluentd
   - Splunk

3. **What are IAM Roles? How do you create /manage them?**
   IAM roles in AWS are a way to grant permissions to entities (e.g., AWS services, users, or applications) without the need to create and manage AWS credentials or users. Roles eliminate the need to share long-term access keys, making them a more secure and flexible way to control access to AWS resources.
   To create and manage IAM roles programmatically, we can use the AWS Management Console, AWS CLI or SDKs.

4. **How to upgrade or downgrade a system with zero downtime?**
   To upgrade or downgrade a system with zero downtime, we can use techniques such as blue-green deployment, rolling deployment, or canary deployment. These techniques involve creating a duplicate environment, deploying the updated version to the duplicate environment, and gradually shifting traffic from the old environment to the new one.
   We 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.

5. **What is infrastructure as code and how do you use it?**
   Infrastructure as Code (IaC) is the managing and provisioning of infrastructure through code instead of through manual processes. With IaC, configuration files are created that contain our infrastructure specifications, which makes it easier to edit and distribute configurations. IaC tools such as AWS CloudFormation, AWS CDK, and Terraform enable developers to define infrastructure as code using a high-level language, version control the code, and automate the deployment and management of infrastructure. This approach helps to improve consistency, reduce errors, and increase agility.

6. **What is a load balancer? Give scenarios of each kind of balancer based on your experience.**
   A **load balancer** distributes workloads across multiple compute resources, such as virtual servers. Using a load balancer increases the availability and fault tolerance of your applications. There are several types of load balancers,
   - **Application Load Balancer:** used to route HTTP/HTTPS traffic to specific endpoints based on path, host, or query string.
   - **Network Load Balancer:** used to handle TCP and UDP traffic at the transport layer, providing low latency and high throughput for applications.
   - **Classic Load Balancer:** used to distribute traffic across multiple instances in one or more Availability Zones, supporting both HTTP and TCP traffic.

7. **What is CloudFormation and why is it used for?**
   - **AWS CloudFormation** is a service that allows you to define and manage your AWS infrastructure as code. It enables you to create and provision AWS resources using a YAML or JSON formatted file called a CloudFormation template. With CloudFormation, you can provision and manage a collection of AWS resources, such as EC2 instances, databases, and load balancers, in a repeatable and predictable way.
   - It helps in automating the creation of infrastructure, ensuring consistency across environments, enabling scalability, and integrating with various AWS services to securely create and manage infrastructure.

8. **Difference between AWS CloudFormation and AWS Elastic Beanstalk?**
   AWS CloudFormation and AWS Elastic Beanstalk are both AWS services used for deploying and managing applications on AWS. However, they serve different purposes and have different features.
   - AWS CloudFormation provides a common language for you to describe and provision all the infrastructure resources in your cloud environment, think Infrastructure as Code (IaC). AWS Elastic Beanstalk is an easy-to-use service for deploying and scaling web applications and services developed with a variety of languages.
   - AWS CloudFormation is focused on managing infrastructure while AWS Elastic Beanstalk is focused on managing applications.
   - CloudFormation is useful for managing large and complex AWS environments, while Elastic Beanstalk is useful for quickly deploying and scaling web applications without worrying about the underlying infrastructure.

9. **What are the kinds of security attacks that can occur on the cloud? And how can we minimize them?**
   There are various security attacks that can occur on the cloud, some of them are:
   - ✓ **Data breaches:** unauthorized access to data by an attacker.
   - ✓ **DDoS attacks:** a distributed denial of service (DDoS) attack can cause service interruptions or even downtime, by overwhelming the cloud infrastructure with excessive traffic.
   - ✓ **Man-in-the-middle attacks:** An attacker can intercept communications between cloud service providers and their customers.
   - ✓ **Malware attacks:** Malware can be introduced into the cloud environment, which can harm cloud infrastructure and services.
   - ✓ **Account hijacking:** Attackers can gain unauthorized access to cloud user accounts and misuse them.

To minimize these security threats, there are several measures you can take:

- **Strong access control:** Ensure that only authorized individuals have access to cloud resources.
- **Data encryption:** Data should be encrypted to protect against data breaches.
- **Multi-factor authentication:** Adding an additional layer of security to access control by using multi-factor authentication.
- **Regular audits**: Regular audits to ensure that the cloud environment is secure and compliant with security standards.
- **DDoS protection:** Use DDoS protection services to minimize the effects of DDoS attacks.
- **Employee training:** Provide regular training and awareness programs to employees about security threats and how to avoid them.
- **Use security tools:** Use security tools such as firewalls, antivirus software, and intrusion detection systems to protect the cloud infrastructure from malware and other security threats.

10. Can we recover the EC2 instance when we have lost the key?

If we have lost the private key associated with your Amazon Elastic Compute Cloud (EC2) instance, it may not be possible to recover the key or regain access to the instance. The private key is used to authenticate with the instance and without it, you will not be able to establish a secure connection to the instance.

However, there are some possible options to recover the EC2 instance or regain access to it:

- *Create a new key pair* & associate it with the instance.
- If you have previously set up a password for your instance, we may be able to *use that password* to log in to the instance.
- *AWS Systems Manager* provides a feature called Session Manager, which allows you to establish a remote session with your EC2 instance without the need for a private key.
- *Restore from a snapshot* of the instance.

11. What is a gateway?

- A **gateway** is a device or software application that connects two or more computer networks using different communication protocols, allowing them to communicate with each other.
- Gateways are often used to provide access to external networks or services, such as the Internet or cloud-based services. They can also be used to provide security by filtering and blocking unwanted traffic and preventing unauthorized access to a network.

12. What is the difference between the Amazon RDS, DynamoDB, and Redshift?

- **Amazon RDS (Relational Database Service)** is a fully-managed database service that makes it easy to set up, operate, and scale a relational database in the cloud. It supports several popular database engines, including MySQL, PostgreSQL, Oracle, and SQL Server. RDS is designed for applications that require complex SQL queries and transactions. It is a good choice for traditional relational database workloads, where data consistency and transactional integrity are crucial.
- **DynamoDB**, on the other hand, is a fully-managed NoSQL database service that provides fast and flexible document and key-value data storage. It is designed for applications that require low-latency, high-throughput access to data, such as gaming, IoT, and real-time bidding. DynamoDB is highly scalable and can handle millions of requests per second, making it a good choice for applications that need to scale rapidly.
- **Redshift** is a fully-managed data warehousing service that allows businesses to store and analyze large amounts of data using SQL queries. Redshift is optimized for performance and can handle petabyte-scale data warehouses. It is a good choice for organizations that need to store and analyze large amounts of data for business intelligence or data analytics purposes.

13. Do you prefer to host a website on S3? What's the reason if your answer is either yes or no?

- *Yes, S3 can also be used for hosting static websites* even though it was primarily designed for storing and retrieving data. A static website is one that is built using HTML, CSS, and JavaScript, and it does not require server-side processing or a database.

- One advantage of hosting a website on S3 is that it is a very cost-effective solution. S3 charges based on the amount of storage used and the amount of data transferred, and the rates are generally lower than those of other hosting solutions. Another advantage is that S3 is highly scalable and can handle large amounts of traffic.
- Since S3 is a part of AWS, you can easily integrate it with other AWS services, such as CloudFront (AWS's content delivery network), Route 53 (AWS's DNS service), and Lambda (AWS's serverless computing service), to create a more comprehensive web hosting solution. If you have a small, static website and want a cost-effective and scalable solution, S3 could be a good choice.