Types of cloud computing:

1. **SaaS** : A completed software product that is run and managed by the service provider. (*Dont need to worry about how the service is maintained, It just works and is available*)
2. **PaaS**: Removes the need for your org to manage the underlying infrastructure. Can develop and deploy your application (*Dont have to worry about provisioning, configuring and understanding OS and hardware*)
3. **IaaS**: Basic building blocks. Provides access to networking features, compute and data storage. (*Dont have to worry about data centers, serves and IT staff managing the servers*)

AWS Services:

IAM:

IAM allows you to control who can access your AWS resources (authentication) and what actions they can perform on those resources (authorization). With IAM, you can create and manage users, groups, and roles to grant or deny permissions for AWS services and resources. IAM provides a centralized control over access management, allowing you to define fine-grained permissions and policies.

Using IAM, you can also control other security options such as MFA and Password policies

IAM Roles:
IAM roles in AWS provide a way to delegate permissions to entities within your AWS environment. These entities can be AWS services, applications, or even other AWS accounts. IAM roles allow you to grant temporary

access to resources without the need for long-term credentials, such as access keys or passwords.

EC2:

EC2 is short for Elastic Compute Cloud, and it provides scalable computing capacity.
Using Amazon EC2 eliminates the need to invest in hardware, leading to faster development and deployment of applications.
You can use Amazon EC2 to launch as many or as few virtual servers as needed, configure security and networking, and manage storage.
It can scale up or down to handle changes in requirements, reducing the need to forecast traffic.
EC2 provides virtual computing environments called "instances."
There are many use cases for EC2 such as hosting websites and web applications, data processing and analytics, content delivery and more.

S3:

Amazon S3 is a program that's built to store, protect, and retrieve data from "buckets" at any time from anywhere on any device.
Organizations of any size in any industry can use this service. Use cases include websites, mobile apps, archiving, data backups and restorations, IoT devices, enterprise application storage, and providing the underlying storage layer for your data lake.

Organizing, storing and retrieving data in Amazon S3 focuses on two key components: **buckets** and **objects** that work together to create the storage system. As AWS describes it, an S3 environment is a flat structure — a user creates a bucket; the bucket stores objects in the cloud.

Objects are data files, including documents, photos, and videos. Each object is identified by a unique key within the S3 environment that differentiates it from other stored objects.

A Bucket is a container or a logical storage unit where you can store and organize your data. It acts as a top-level folder or directory within S3 and is used to group related objects (files) together.

RDS:

AWS RDS is like having a managed database in the cloud. It takes care of the heavy lifting of setting up, patching, and backing up your database, allowing you to focus on using and querying the data. RDS supports popular relational database engines like MySQL, PostgreSQL, Oracle, and SQL Server, among others. It is used for storing and managing structured data, such as customer information, product catalogs, or transaction records, providing reliability, scalability, and automated backups for your databases.
RDS allows us to automate all the time consuming database administration tasks so that we can focus on optimizing our application

Glue:

AWS Glue is like having an automated data transformation and preparation tool in the cloud. It helps you extract data from various sources, such as databases or data lakes, transform it to match your desired format and structure, and load it into target destinations for analysis. Glue takes care of tasks like data cataloging, schema inference, and job orchestration, reducing the time and effort required for data preparation. It is used for tasks like data integration, data warehousing, and building data pipelines to enable efficient analytics and business intelligence.

AWS Glue enables us to deploy crawlers to our data stores which infer schemas and automatically catalog the data for us whether it be structured or semi structured. AWS Glue is serverless which means we do not have to provision any servers or resources in advance and can simply define our jobs and all the provisioning and resource management happens in the background by amazon.

Redshift:

AWS Redshift is like having a powerful data warehouse in the cloud. It allows you to store and analyze large amounts of structured data, such as customer records, sales data, or log files. Redshift provides fast query performance by leveraging columnar storage and parallel query execution. It integrates with popular business intelligence tools and analytics services, enabling you to derive insights and perform complex data analysis. Redshift is used for data warehousing, business intelligence, reporting, and data exploration, helping organizations make data-driven decisions efficiently.

Athena:

AWS Athena is like having an interactive query engine in the cloud. It enables you to run ad-hoc queries on data stored in S3 using familiar SQL syntax. Athena automatically scales resources based on your query workload and provides fast query results, even on large datasets. It eliminates the need for managing infrastructure or complex ETL processes. Athena is used for interactive data analysis, business intelligence, log analysis, and exploring large volumes of structured and semi-structured data in S3.

Quicksight:

AWS QuickSight is like having a powerful BI tool in the cloud. It allows you to visually explore and analyze data from various sources, such as databases, data warehouses, or S3. With QuickSight, you can create interactive dashboards, charts, and reports, and easily share them with others. It provides intuitive drag-and-drop features, smart data discovery, and automatic visualizations, making it accessible to business users and data analysts without requiring complex coding or technical expertise. QuickSight is used for data visualization, business reporting, and gaining insights from data to support data-driven decision-making.

Lambda:

AWS Lambda is like having a computing engine in the cloud that executes your code on demand. You can write your code and upload it to Lambda, and it will automatically run the code in response to triggers or events, such as changes to data, API calls, or scheduled tasks. Lambda takes care of scaling, managing server resources, and maintaining high availability, allowing you to focus solely on writing your code. It is used for building serverless applications, automating tasks, creating microservices, and integrating with other AWS services, enabling you to build scalable and cost-effective solutions without the need for server management.