**What is Cloud:**

* It is the distributed Collection of servers that are hosted on the internet, instead of local servers.
* Processes the data and uses the application.

**What is Cloud Computing**

Cloud computing is an on demand delivery of resources and services over the internet allowing users to access storage,applications and other resources without owning the infrastructure.

Cloud computing offers pay as you use.

Studying of cloud services.

**Key characteristics of cloud computing**

**On-Demand Self-Service:**Users resources as needed without requiring human interaction with the service provider.

**Broad Network Access:** Resources are available over the internet and accessible from various devices.

**Two Types Of cloud Computing models**

**Service Model:**Cloud models in cloud computing define how cloud providers deliver resources and services to users.There are 4 service models.

1. Iaas
2. Paas
3. Saas
4. Faas

**Iaas(Infrastucture as Service):**

* It is computing Infrastructure managed over the internet.
* The main advantage of using Iaas is it helps users to avoid cost and complexity of purchasing and managing the physical servers.

Ex:AWS

**Paas(Platform as Service):**Paas is created for the programmer to develop,test,run and manage the applications.

**Saas(Software as Service):**it is a software in which applications are hosted by a cloud service provider.Usrs can access these applications with the help of internet connection and browser.

**Faas(Functional as Service):**Faas allows customers to run code in response to events,without managing the complex infrastructure associated with building and managing applications.

**2. Deployment Model:** The deployment model is a way of how resources are available to the users and how they are managed. There are 4 types of Deployment model:

1. **Private Cloud:** In the Private cloud the resources are shared with the single organization.

**Example:** College Website for checking the attendance

1. **Public Cloud:** In the public cloud the cloud resources are shared to the industry group by the cloud service provider.

**Example:** Social media

1. **Hybrid Cloud:** Hybrid Cloud combines elements of both public and private clouds, allowing data and applications to be shared between them.

**Example:** Netflix

1. **Community Cloud:** Community cloud that combines two organizations that may have the same interests and objectives.

**Example:**Two Organizations combine and work on the research paper.

**AWS**

* AWS is one of the top and best cloud providers started in 2005 offered by Amazon..
* Aws is the first cloud introduced into the market.
* AWS offers tools such as computing, storage and content delivery
* The advantage of AWS is without any physical space it allows people to store the data.
* Around 18 geographical locations, AWS is located.
* 36% of the companies are using the AWS Cloud Platform.
* In 2006, it offered the IaaS Infrastructure services.
* With more than 200 services, AWS offering for individuals and the public as well as private organizations to create applications.
* The first company that introduced the “pay as you go” how much service they are used for that they need to pay the cost.

**DevOps**

* DevOps is a combination of the development team and the Operation team.
* DevOps is a methodology.
* It is a set of tools.
* It is a way to automate tools.
* DevOps is a process of delivering a project/product or application by ensuring the automation in place, by ensuring quality with continuous monitoring and continuous testing.
* DevOps is a software development approach by emphasizes communication, automating, and delivering the application to the customers in a high-quality manner as quickly as possible.
* It allows to handle the complete application from development to testing and operations to development.

**Why DevOps**

The main goal of DevOps is as follows:

**To Provide High-quality Software/projects:** DevOps is a continuous testing and continuous monitoring that can deliver high-quality applications.

**Delivers product Quickly:** Both the Development team and operations team combine and deliver the product fast.

**Continuous Improvement:** By continuous monitoring, collect the feedback from the client and given the developer team to minimize it.

**Improved Customer Satisfaction:** By Continuous Improvement of the application customers will be satisfied with the product.

**SDLC**

Software Development Life Cycle is a structured process used by the developers to develop,test,deploy,monitor high quality applications.There are basically 2 models used by the developers to create and manage application according to the complexity of the project.There are 2 models used:

1. Waterfall model
2. Agile model

**1. Waterfall Model:**

* Waterfall is a linear sequential model in the software development life cycle that consists of several phases.
* It is one of the simplest models, used for smaller projects.
* In each phase where the output of the current phase is the input to the next phase.
* The waterfall model is used when the project requirements and goals are clear.

**Phases in the Waterfall model**

**1. Requirement Analysis:** Gathering and collecting the data from stakeholders and understanding the scope and objective of the application.SRS(System Requirement Specification) is documented which contains the requirements, scope, and objectives and is used for designing in the next phase.

**2. System Design**: Based on the requirements gathered ,the system architectures,components and designs are planned.It includes high level design and low level design.The low level which contains all the modules and components and high contains overall structure.

**3.Development:** The actual development of the code starts in this phase.The design documents are tuned into software code.Unit testing is done simultaneously in order to find any bugs.

**4.Testing:**After System is developed we need to test the application whether it is meeting the client requirements.It includes various testing strategies Integration testing,Regression testing and so on.

**5.Deployment:**The Tested application is released to the clients in the form of phases if it runs smoothly then total application is deployed into the production environment.

**6.Maintenance:**The last phase in waterfall model where monitoring bug fixes,adding new features to the application and collect feedback from clients and try to improve overall product.