1. **Cloud**

**Ans:** A cloud is to delivery the services through the internet. And its includes servers, storage, databases, networking etc.

1. **Cloud Computing**

**Ans:** The cloud computing is providing the two services

1.Service mode

2.Deployement mode

1. The service mode cloud computing services are

* SaaS
* PaaS
* IaaS
* FaaS

**SaaS:** The SaaS is known as Software as a service and its provides the access to the software application through the internet Ex: Google workspace, Dropbox.

**PaaS:** The PaaS is known as Platform as a service and its provides the platform to the developers to build and manage the applications Ex: Google App Engine, Heroku

**IaaS:** The IaaS is known as Infrastructure as a service and its provides the virtualized computing resources, such as virtual machines and storage. Ex: AWS EC2 , Microsoft Azure.

**FaaS:** The FaaS is known as Function as a service and its allows to a developer to execute small and single purpose functions in response to specific events without managing the underlying infrastructure

2.The deployment mode cloud computing services are

* Private cloud
* Public cloud
* Hybrid cloud
* Community cloud

**Public cloud:** Hosted by third-party providers and shared across multiple users

**Private cloud:** Dedicated to infrastructure for a single organization

**Hybrid cloud:** combine the both public and private cloud environments for greater flexibility

**Community cloud:** the cloud infrastructure is shared among multiple organizations with similar goals ,security ,compliance , or operational needs.

Summary; it offers scalability , cost-efficiency , accessibility , and reliability . Example storing the files on google drive using online collaboration like Microsoft Teams, or streaming movies via Netflix.

1. **What is AWS (Amazon web service)**

**Ans:** amazon web services is a comprehensive and widely adopted the cloud computing platform offered by Amazon.

* It provides a broad range of on-demand services such as compute power, storage, databases, machine learning, networking, and more, to delivered through the internet
* AWS is allows business and developers to build and scale applications without investing in physical and hardware or managing infrastructure.
* It is a top and most used cloud provider currently in the market. And it is the first cloud which is introduced in the market.
* And it will using both Software as a service (SaaS) and Platform as a Service (PaaS) Combination to providing the services.
* Without any physical space this AWS is allows people to store the data
* “Pay as you go” means users will pay only for the resources the consume with no upfront of costs
* The AWS is covering 18 geographical regions to provide the services

Use cases: Hosting the web applications. , Running the big data analytics, developing the machine learning tools , storage and backup solutions , and Internet of things (IoT)applications. AWS is used by startups , enterprises, and government organizations worldwide,

1. **What is DevOps**

**Ans:** it is an combination of a developer team and operational team, and the devops is a set of practices that integrate software development (Dev) and IT operations (Ops) to enable faster, more reliable, and high-quality software delivery.

* It focuses on to improving the collaboration between the developers team and operational team , automating processes, and ensuring the continuous feedback throughout the software lifecycle.
* It is a way of software development to given the fast delivery with 100% quality product.
* Automates repetitive tasks like testing , deployment , and monitoring to improve efficiency.
* Continuous integrations and continuous delivery facilitates frequent code integration and automated deployment for faster updates.
* Uses tools to gather real-time insights into system performance ,quick resolution for feedback and monitoring
* The benefits of devops is faster delivery to automating processes to release software quickly.
* Improved the product quality for doing a continuous testing and monitoring reduce errors to enhance reliability.
* And its gives the efficiency scalability and the tools are using in devops are git ,github, Jenkins, docker ,Kubernetes
* The devops is the process of delivering the product or project by ensuring the automation in place, ensuring the quality with continuous monitoring and continuous testing

Why devops: to deliver the software application or project or product on time. And this process the devops are using continuous integration (CI) and continuous deployment (CD)

1. **Software development life cycle?**

**Ans:** software team will follow the software development life cycle to build a software application then to release the final product to the end users. In the SDLC the companies are mostly using two methodologies 1. Waterfall model 2. Agile Model

**Waterfall Model:** The waterfall model is traditional software development life cycle (SDLC) methodology where development is progress sequentially through this phases :

* Requirement analysis : collect the client requirements and to analyzed the process.
* System design: design the software with specification under client requirements
* Implementation: develop the software application using the design reference.
* Deployment: after develop the product will deploy the production environment.
* Maintenance: take the feedback from the user and also monitor the performance of the software application.

**Agile Model:** The agile model is an iterative and flexible SDLC approach that delivers software incrementally. Development occurs in short cycles called sprints (Usually 2-4 weeks), where teams continuously prioritize , develop, test, and deliver working software and agile is focuses on collaboration, user feedback , and adapting to change the requirements. And this progress sequentially through this phases:

* Requirement analysis : take the client requirements and documents based on business need.
* System design: to design the software application as per client requirements
* Development: write the code for software application as per the design and specifications
* Testing: after develop the software application to test the software for quality and working conditions under client requirements
* deployment: development and testing will be done the product will be ready to deploy in the production environment so the deployment phase the product will be deployed.
* Review : review the code everything will be working or not like functionality based on the client requirements
* Delivery: released the software application in live for end users
* Feedback : take the feedback and user experience and errors after deployment
* System design : again design the software If client changes the requirements so this cycle continuously repeat until the software will give the 100% as per the client requirements.

Day-2

**1.Waterfall model**

* It is linear and sequential development model
* And non iterative model

**Requirement Analysis**: SRC Document

**System Design:** design – planning – assigning works /tasks to the teams low level and high level ----- (first phase), Coding will be done with implementation (second phase)

**Implementation:**

* Integrates all the coding done in the pervious step
* Start testing

**Deployment:**

* Complete software will be moved and shifted to the global server from local server

**Maintenance:**

* Maintaining the software or application.

**2.Agile Model**

* Software applications like amazon, flipkart, myntra, ajio, social media facebook, twitter, Instagram, whatsapp.
* Agile -> means “the ability to respond to the change from requirements, technology and people”
* Incremental and iterative to develop a software or application
* Its release the new versions on every week like v1---🡪 v2 -------🡪 release.

**Advantages:**

* Requirement changes are allowed at any stage of development
* Releases will be too fast -> 1 week
* Customers no need of waiting for longtime
* Good communication will be there b/w all the teams.
* It is very easy to adopt

**Dis advantages:**

* Less focus on design and documentation

**Testing:** manual testing -> 3 types

1.white box testing

2.black box -> 2 types -> functional and non-functional

3.grey box

1.**white box:**

* Developers will test each and every line of code
* Need programming skills to design test cases.
* Developer fixes bugs and perform 1 round of white box testing send it to the testing team
* Fixing bugs clearing the errors deleting the bugs.

**2.Black box :**

* Black box testing is two types 1. Functional and non-functional -> 3 types -> unit , integrating and system testing
* Examine the functionality of software.

**Bugs:** developer and operations team (testing – finds any error)

**Errors:** mistakes in coding done by the developer

**Defects:** error accepted by the developer

**Failures**: total wrong

**Types of other models in SDLC :**

* V- Model
* Spiral model
* Prototype
* Incremental

**Top 10 cloud providers with usage:**

* AWS - 36%
* Azure – 27%
* GCP - 15%
* Alibaba -10%
* Tencent – 7%
* Oracle – 3%
* IBM - 7%
* Digital Ocean
* Salesforce – 11%
* VM ware

**Tools required for DevOps:**

* Planning / coding /SCM : GIT , JIRA
* Building code: Maven, Gradle, Apache ANT
* Testing: selenium testing with python
* Integration : Jenkins (CI/CD)
* Deployment: Docker, Kubernetes
* Operations: Ansible , … (managing)
* Monitoring : Terraform