Application Architecture
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-> In every application/project we can see below tiers

1) Presentation : It contains user interface

2) Application Tier : It contains core business logic

3) Data Tier : Database is used to store our application data permanently

Note: Every application should be deployed into a webserver so that users can access our application through internet

Load Balancing
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-> If we run our application in one server then burden will increase on that server

-> To reduce burden on the server, we will run our application in multiple servers to handle the load

Infrastructure Setup
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1) We have to purchase computers
2) We have to purchase Web servers
3) We have to purchase Database Servers
4) We have to purchase Network
5) We have to purchase Storage
6) We have to purchase Power & Power Backup
7) We need to setup Server room
8) We need to setup Air Conditioner (AC)

9) We need to hire Network Admin to setup network
10) We need to hire Server admin to setup servers
11) We need to hire DB admin to setup Database

12) We need to take a room for rent
13) We need a security guard to monitor our server room
14) We need to keep high security for our server room

=> To run our application we need do all the above activities i.e Infrastructure setup
=> Infrastructure setup is costly & time taking process.

=> To ovecome all the above challenges we can go for Cloud Computing

What is Cloud Computing?
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=> It is the process of delivering IT resources on demand basis

        Ex: Computing, Storage, Network, Database, Security etc...

=> There are several cloud providers available in the market

        Ex: AWS, Azure, GCP, Salesforce, Alibaba, Oracle Cloud, IBM Cloud etc....

=> Cloud Providers will provide Infrastructure based on 'Pay As You Go' model

Note: Pay As you Go means Pay for use

Cloud Advantages
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1) Cost Effective

2) Security

3) Scalability

4) Availability

5) Realiability

6) Backup

7) Easy to use

8) Unlimited Storage

Cloud Services
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-> Cloud Services are divided into 3 types

1) IaaS : infrastructure as a service

2) PaaS : Platform as a service

3) SaaS : Software as a service

-> In IaaS model cloud provider will give infrastructure then we will setup environment to run our application

-> In PaaS model cloud provider will give platform to run our application

-> In SaaS model cloud provider will give their application to use

AWS Introduction
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-> AWS stands for Amazon Webservices

-> AWS cloud managing by Amazon company

-> AWS is one of the leading Cloud Provider in the market

-> AWS started providing IT resources over internet from 2006 onwards

-> 190+ countries using AWS Cloud

-> AWS providing 200+ Services

-> AWS providing Cloud Services based on 'Pay As You Go' model

AWS Services Names
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EC2 : Elastic Compute Cloud : To create virtual machines

EBS : Elastic Block Store (External HD)

EFS : Elastic File System

S3 : Simple Storage Service : Unlimited Storage

RDS : Relational Database System : To create SQL Databases (Oracle, MySQL, Postgres, MS SQL etc..)

VPC : Virtual Private Cloud : Isolated Network

Route 53 : Domain Name Mapping (URL Mapping)

BeanStalk : For Paas Model

IAM : Identity & Access Management (who can access which service in AWS)

ECS : Elastic Container service (To run containers)

ELB : Elastic Load Balancer (Load Balancing)

Lambda : Serverless Computing (run the code without thinking about servers)

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-> To use AWS provided cloud services we need to create one account in AWS

Note: It will ask debit / credit card for account creation

-> AWS will charge 2 rs for account creation and they will send 2 rs back to our account after account verified

-> In AWS few services are free and few services are paid

-> As part of our training we will use both free and paid services

Note: When we use paid services, after practise completion we need to delete those service to avoid billing

-> If bill got generated we can request AWS Support team to waveoff our bill because we are AWS learners and we are exploring AWS Cloud services.

-> AWS will not deduct bill amount from our card directley. We need to pay that bill manually.

-> If we don't pay AWS bill amount then our AWS account will be terminated.

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-> AWS providing global infrastructure

-> 190+ contries are using AWS Cloud through internet

-> To provide Global Infrastructure AWS using Regions & Availability Zones concept

-> Region means one geograhical location

-> Availability Zone means data center

-> Data Center means a big building which contains servers with network

-> One Region can have multiple Availability Zones (AZ)

-> AWS Having 26 Regions and 84 Availability Zones in the world

-> In india AWS having 1 region (Mumbai) ---- ap-south-1

-> Mumbai region having 3 availability zones

- ap-south-1a
- ap-south-1b
- ap-south-1c

Note: Hyd Region Coming Soon

Note: It is recommended to use Nearest Region in AWS to setup our infrastructure

Note: In AWS few services are global (S3, Route 53 etc...) and few services regional (EC2, VPC etc...)
