```
=================================
AWS S3 (Simple Storage Service)
=================================
```

-> S3 is a storage service in AWS cloud.

-> S3 supports unlimited storage.

-> Using S3 we can store any amount of data from anywhere at anypoint of time.

-> S3 supports object based storage (files)

                    One Object = file

Note: We can store any type of file in s3

   Ex: .txt, .mp4, .png, .jpeg, .doc, .pdf, .xls ......

-> In S3, we need to create buckets to store objects (files)

Note: In one bucket we can store group of objects.

Note: Every bucket should have unique name.

-> When we create a bucket, end-point url will be generated to access bucket.

-> When we upload object into bucket, every object will get its own end-point url.

Note: By default, buckets and objects are private (we can them as public).

```
==========================
Realtime Usecases of S3
==========================
```

1) Application files (images, audios, videos, docs...)

2) Database backup files

3) EBS Volume Snapshots (EC2 VM backup)

4) Server log files

```
===============
S3 Lab Task
===============
```

1) Create Bucket

2) Upload Object into bucket

3) Access Object using Object URL

```
============
Versioning
============
```

=> It is used to maintain multiple variants of same file.

=> By default versioning will be disabled for S3 bucket.

=> As versioning is disabled, when we upload file again with same name then it will override old file.

=> If we don't want to replace old objects from bucket then we can enable Versioning.

=> Versioning we will enable at bucket level and it is applicable at object level.

```
================
Object Locking
================
```

-> It is used to enable the feature WORM (Write once read many times) model.

-> We can enable object lock on versioning enabled buckets.

-> Object Lock will be enabled at bucket level and it is applicable at object level.

NOte: If we enable object locking then versionining will be enabled by default.

```
================================
What is Transfer Accelaration
================================
```

=> It is used to speed up data transfer process in s3 bucket.

=> When we enable Transfer Accelaration it provides endpoint url to upload the data to s3 bucket quickly.

Note: If we enable Transfer Accelaration bill will be generated.

```
                            Janmabhoomi (6 hrs, 300 RS)
        Hyd ----------------------------------> Vijayawada

                            Vande Bharat (3 hrs, 1000 Rs)
        Hyd ----------------------------------> Vijayawada
```

```
===================
S3 Storage Classes
===================
```

=> Storage classes are used to specify how frequently we want to access our objects from S3.

=> At the time of uploading object into S3 bucket we can select storage class for that object.

=> We have several storage classes in s3 like below..

1) Standard (default) : To access object more than once in a month with in milli seconds access.

   Example: Websites, mobile applications, gaming data, and big data analytics

2) Intelligent Tiering : Unknown access patterns

Example : Machine learning datasets, IoT sensor data, and financial records with fluctuating access needs

3) Standard-IA : Infrequent Accesed Data (Only once in month)

Example: Backup data, disaster recovery, and long-term storage for critical business data.

4) One Zone-IA : Stored in single availability zone (once in a month)

Example: Secondary backups, easily re-creatable data, or internal reports

5) Glacier Instant Retrieval : Long Live Archieve Data
   (once in quarter -> Milli Seconds)

   Example: Medical images, media assets, and regulatory compliance records.

6) Glacier Flexible Retrieval : Once in a year (Minutes to Hours)

        Example: Historical logs, legal documents, and long-term digital preservation

7) Glacier Deep Archieve : Less Than once in a year (Hours to download)

        Example : Compliance archives, government records, and old media backups

================================
Static Website Hosting using S3
================================

-> Website nothing but collection of web pages.

Ex: login page, regiter page, services, about-us page, contact-us page...

-> Websites are divided into 2 types

   1) static website

   2) dynamic website

-> The website which gives same response/content for all users is called as static website.

-> The website which gives response based on user is called as Dynamic website.

=> Static websites we can deploy in 2 ways

   1) Create EC2 Linux VM and Install HTTPD Webserver and Deploy

   2) Deploy using S3 bucket

Step-1 : Create S3 bucket with unique name

Step-2 : Upload website files and folders into bucket with public read access.

Step-3: Enable Static website hosting (in bucket properties)

        index-document : index.html
        error-document : error.html

Note: After enabling static website hosting, it generates end-point URL for our website.

Step-4: Access our website using website endpoint url.

===============
AWS S3 Limits
===============

=> By default we can create upto 100 s3 buckets per aws account. However we can request AWS support team to increase the limit.

=> Individual object size can be upto 5TB.

Note: For uploading large object we can use multipart upload.

Note: In one bucket we can upload unlimited objects.