



Explain the basic concepts of S3: Bucket, Object, Key, Version ID.

Basic Concepts of Amazon S3

Concept	What it is	Example
Bucket	A container that holds your data (like a folder at the top level).	A bucket named my-app-uploads
Object	The actual file/data you store inside a bucket.	A photo, a PDF, a video, etc.
Key	The unique name (full path) of an object inside a bucket.	images/2025/profile1.jpg
Version ID	A unique identifier for different versions of the same object (if versioning is enabled).	Version 1: abc123, Version 2: xyz456

◆ Simple example:

Imagine S3 like a **giant online drive**:

- **Bucket** = my-travel-photos
- Inside the bucket, you store:
 - /india/2025/tree.jpg
 - /usa/2024/mango.jpg

Here:

- tree.jpg is an **object**.
- india/2025/tree.jpg is the **key** (the path and name combined).
- If you **replace** tree.jpg later (say, edited it), S3 can keep **multiple versions**:
 - Old photo: Version ID = v1

- New photo: Version ID = v2

◆ Quick Definitions:

Term	Short Definition
Bucket	Like a main folder.
Object	The actual stored file.
Key	The path+filename that identifies the object uniquely inside a bucket.
Version ID	ID to track multiple versions of the same object over time.

◆ Imp points:

- **Bucket names must be globally unique** across all AWS accounts.
 - **Keys are case-sensitive** (`image.jpg` and `Image.jpg` are different keys).
 - **Versioning is optional**, but very useful to prevent accidental overwrites/deletes.
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◆ Basic S3 URL format:

`https://<bucket-name>.s3.<region>.amazonaws.com/<key>`

◆ Example:

Suppose:

- **Bucket** = `my-travel-photos`
- **Region** = `ap-south-1` (Mumbai)
- **Object** = a photo file
- **Key** = `india/2025/tree.jpg`

The S3 URL would be:

```
bash
CopyEdit
https://my-travel-photos.s3.ap-south-1.amazonaws.com/india/2025/tree.jpg
```

✅ This URL will directly fetch your uploaded file!

◆ If Versioning is enabled:

You can add the **Version ID** as a query parameter:

`https://my-travel-photos.s3.ap-south-1.amazonaws.com/india/2025/tree.jpg?versionId=abc123xyz456`

✅ This URL will fetch **that specific version** of `tree.jpg`.

◆ Quick Visual:

S3 Structure:

```
Bucket: my-travel-photos
├── Key: india/2025/tree.jpg (Object: photo file)
│   └── Version ID: abc123xyz456 (optional)
```

What does the "key" represent in object storage?

- A) The encryption used for an object
- B) The public access URL
- C) The unique name or full path of the object inside a bucket
- D) The metadata of the object

Correct Answer: C

Which of the following is a valid example of a key?

- A) my-app-uploads
- B) abc123
- C) profile1.jpg
- D) images/2025/profile1.jpg

Correct Answer: D

Which of the following statements about a key is NOT true?

- A) A key uniquely identifies an object in a bucket.
- B) A key can include folder-like paths such as `images/2025/profile.jpg`.
- C) The key is the physical storage path on the server's hard drive.
- D) Each object in a bucket must have a unique key.

Correct Answer: C

(Keys represent logical paths, not actual physical file paths on disk.)

Which of the following is NOT true regarding object storage systems?

- A) Each object is stored inside a bucket and has a key.
- B) You can store multiple versions of the same object if versioning is enabled.

- C) The object's key changes automatically every time a new version is uploaded.
- D) Objects can include metadata like content type and size.

Correct Answer: C

(The key remains the same; only the version ID changes for new versions.)