

① Storage as a service (S3): It is a cloud based model that allows businesses and individuals to rent storage space from a third-party provider. This model offers flexibility, scalability and cost efficiency, making it an attractive option for organizations of all sizes. Or It is a cloud business model in which a company rents its storage area infrastructure to another company or individuals to store their data. The storage provider provides the client with the software required to access their stored data.

• SaaS eliminates the need for users to purchase and maintain their own storage infrastructure. It's providers offer a range of storage options based on the amount of data, type of data, and level of security required. The storage can be provided in the form of file, block, or object storage, depending on the need.

# Key Features of SaaS are :

1) Scalability: It's providers offer elastic storage solutions that can grow with our needs. Whether we need to increase capacity temporarily or permanently, it allows you to scale up or down as required.

- 2) Security: Ensuring its providers implement robust security measures, including encryption, access controls, and regular security audits, to ensure data is protected from unauthorized access and breaches.
- 3) In conclusion it is revolutionizing how the businesses manage their data storage needs. By offering scalable, secure, and cost effective storage solutions, it enables organizations to adapt to changing data requirements without the burden of managing physical infrastructure.

## ② Amazon S3 use cases:

- a) Data Backup and Recovery: It provides a highly durable storage infrastructure designed for mission-critical and primary data storage. Organizations use S3 to store and protect any data and to for backup, providing redundancy and data integrity with easy retrieval options.
- b) Big Data Analytics: S3 is a key component in big data ecosystems. Businesses use S3 to store massive amounts of raw data and then process and analyze it using other AWS services like EMR, Amazon Athena etc.

- c) Data Archiving: S3, especially with its Glacier and Glacier Deep Archive storage classes, is well-suited for long term data archiving. Businesses use S3 to store infrequently accessed data, regulatory archives, and compliance records cost effectively.
- d) Internet of Things (IoT): IoT devices generate vast amount of data that need to be stored reliably and analyzed. S3 provides a scalable storage solution for this data, allowing for real time analytics and processing using AWS IoT and other services.
- e) Application Hosting: Developers use S3 to host assets for web and mobile applications. S3's integration with AWS CloudFront CDN enhances application performance by delivering content to users with low latency.

③ steps for S3: following are the steps for S3:

- Step 1) Log on to your AWS console. If you don't have an account, create it.
- Step 2) In the search bar at the top of the AWS Management console, type "Amazon S3".

Step 3: Click on "S3 - Scalable storage in the cloud" and proceed further.

Step 4: Click on "Create Bucket". A new pane will open up, where you have to enter the details and configure our bucket.  
(Now in the general configuration)

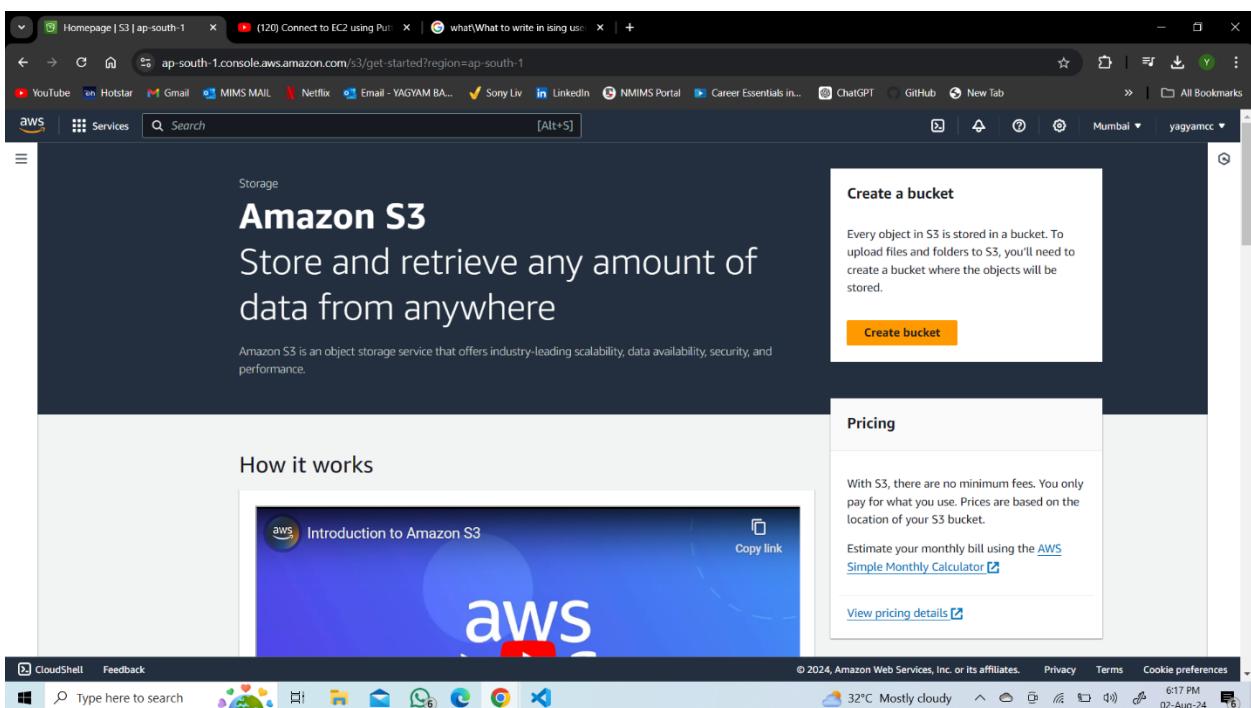
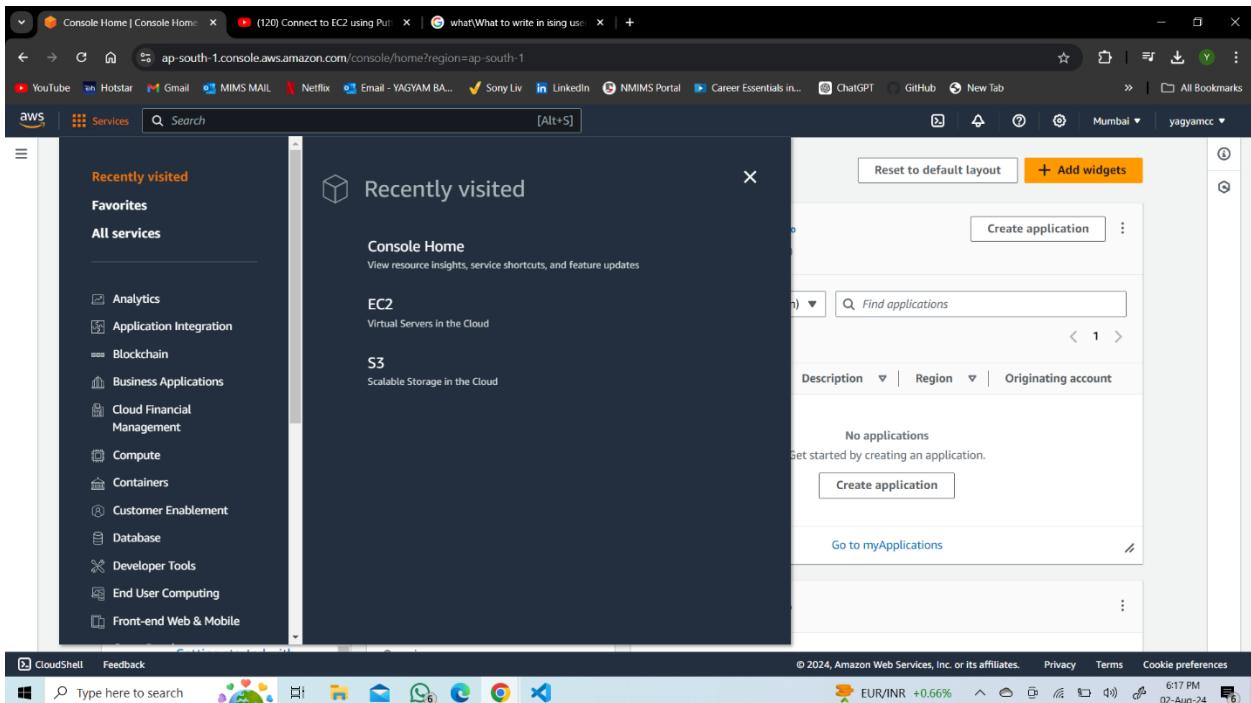
Step 5: Enter the name of your bucket. Do consider to follow the naming rules.

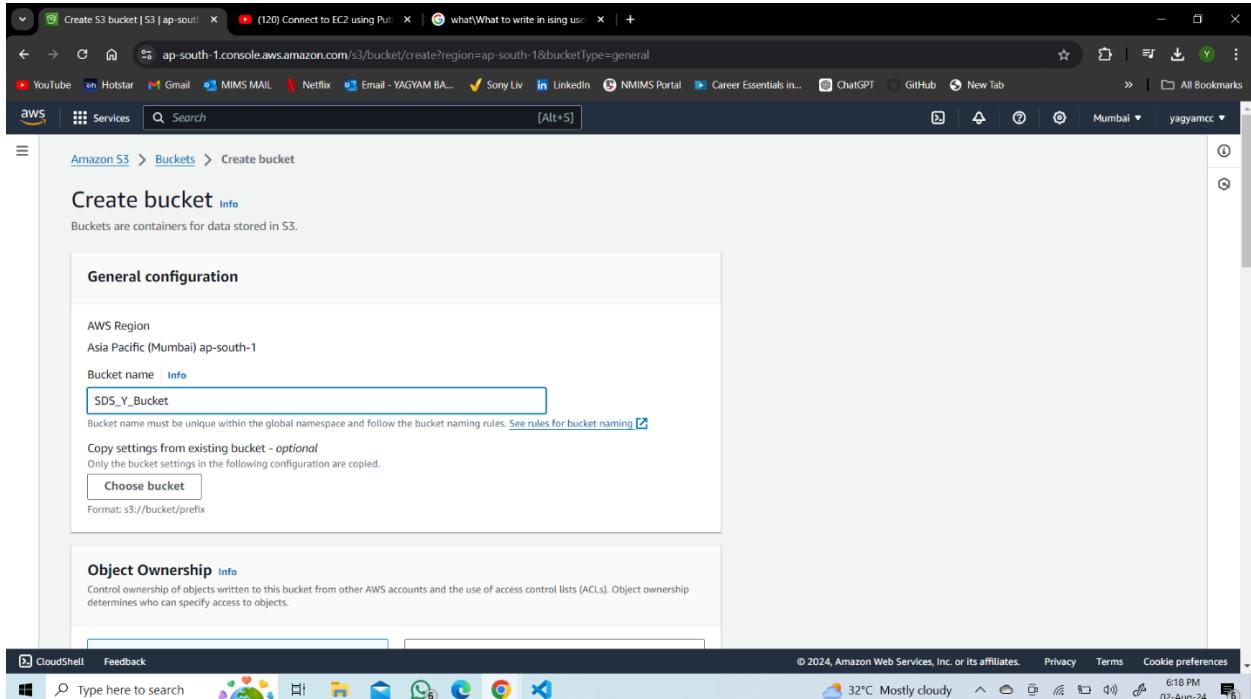
Step 6: Now choose an AWS region nearest to your location or where you want your data to reside.

- In the Object ownership category, leave it as recommended.
- In Block Public Access, settings for this bucket category, ensure that BLOCK ALL PUBLIC ACCESS has been checked. (can be changed later)
- In the Bucket Versioning category, choose disabled. Leave other advanced settings as default.

Step 7: Click on Create Bucket. and voila! your bucket is created.

## STORAGE AS A SERVICE (FILE)



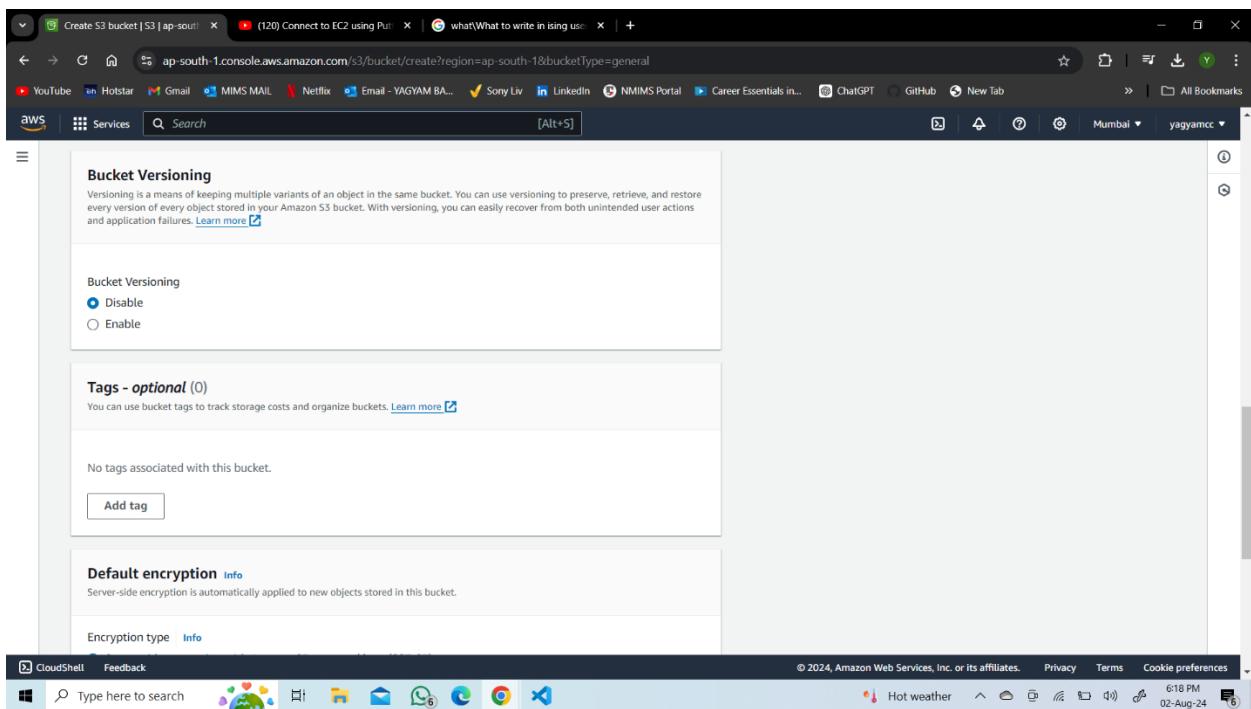


The screenshot shows the 'Create bucket' configuration page on the AWS S3 console. The 'General configuration' section is active, showing the following details:

- AWS Region:** Asia Pacific (Mumbai) ap-south-1
- Bucket name:** SDS\_Y\_Bucket
- Copy settings from existing bucket - optional:** Only the bucket settings in the following configuration are copied. A 'Choose bucket' button is present.

The 'Object Ownership' section is also visible, indicating that control ownership of objects written to this bucket from other AWS accounts and the use of access control lists (ACLs). Object ownership determines who can specify access to objects.

The browser's address bar shows the URL: ap-south-1.console.aws.amazon.com/s3/bucket/create?region=ap-south-1&bucketType=general. The status bar at the bottom right shows the date as 02-Aug-24 and the time as 6:18 PM.



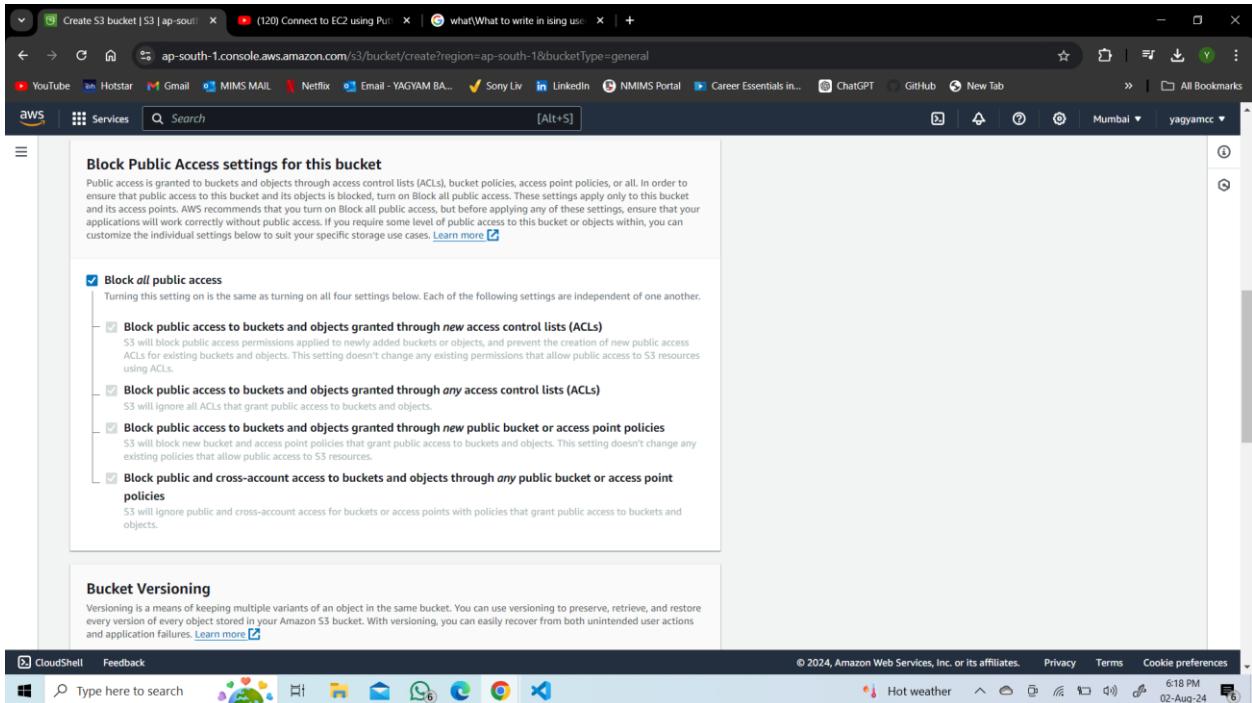
The screenshot shows the 'Bucket Versioning' configuration page on the AWS S3 console. The 'Bucket Versioning' section is active, showing the following details:

- Bucket Versioning:** A radio button is selected for 'Disable'.

The 'Tags - optional (0)' section indicates that no tags are associated with this bucket, with a 'Add tag' button available.

The 'Default encryption' section notes that server-side encryption is automatically applied to new objects stored in this bucket.

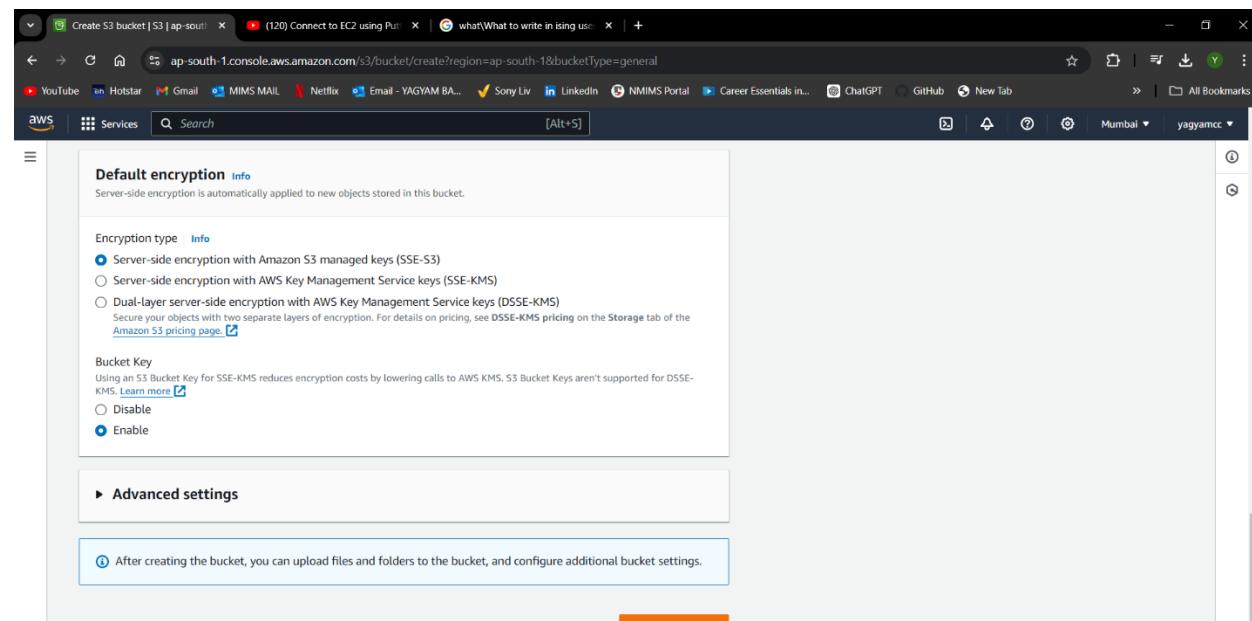
The browser's address bar shows the URL: ap-south-1.console.aws.amazon.com/s3/bucket/create?region=ap-south-1&bucketType=general. The status bar at the bottom right shows the date as 02-Aug-24 and the time as 6:18 PM.



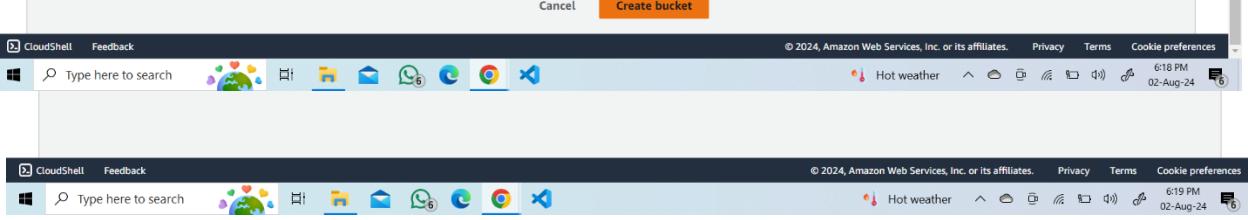
The screenshot shows the 'Block Public Access settings for this bucket' section. A checkbox for 'Block all public access' is checked. Below it, several other options are listed with descriptions:

- Block public access to buckets and objects granted through new access control lists (ACLs)**: S3 will block public access permissions applied to newly added buckets or objects, and prevent the creation of new public access ACLs for existing buckets and objects. This setting doesn't change any existing permissions that allow public access to S3 resources using ACLs.
- Block public access to buckets and objects granted through any access control lists (ACLs)**: S3 will ignore all ACLs that grant public access to buckets and objects.
- Block public access to buckets and objects granted through new public bucket or access point policies**: S3 will block new bucket and access point policies that grant public access to buckets and objects. This setting doesn't change any existing policies that allow public access to S3 resources.
- Block public and cross-account access to buckets and objects through any public bucket or access point policies**: S3 will ignore public and cross-account access for buckets or access points with policies that grant public access to buckets and objects.

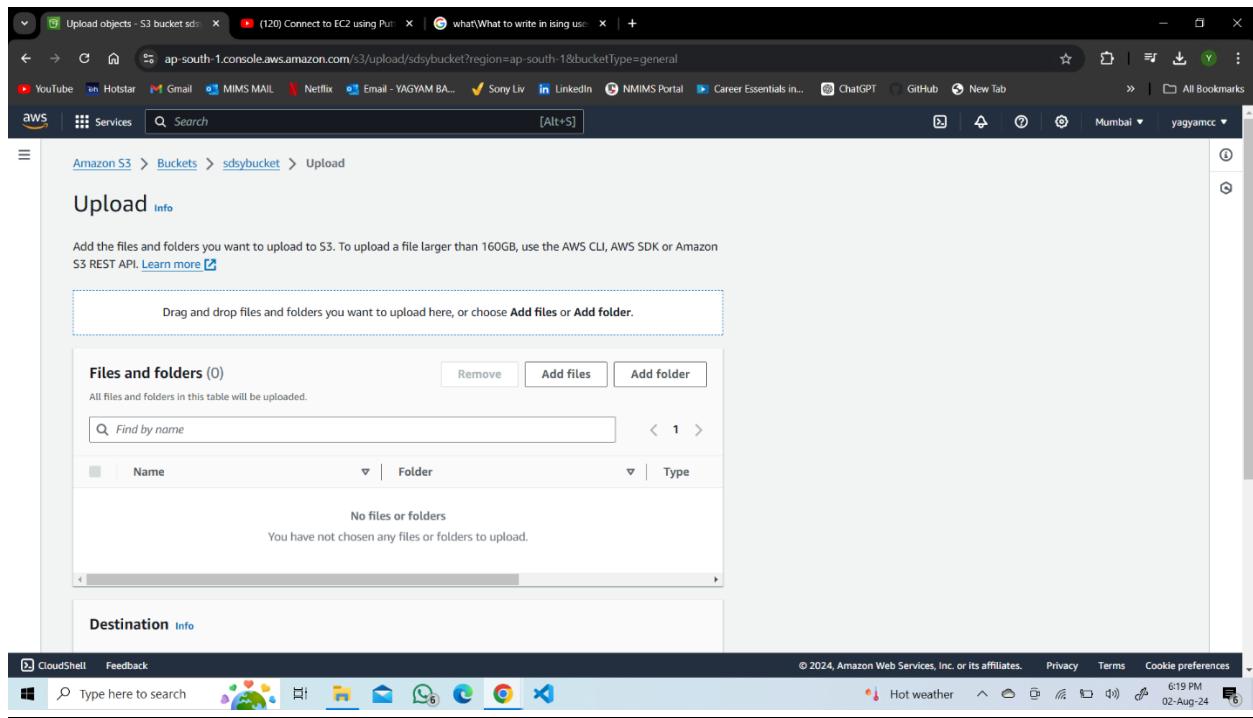
**Bucket Versioning**  
Versioning is a means of keeping multiple variants of an object in the same bucket. You can use versioning to preserve, retrieve, and restore every version of every object stored in your Amazon S3 bucket. With versioning, you can easily recover from both unintended user actions and application failures. [Learn more](#)



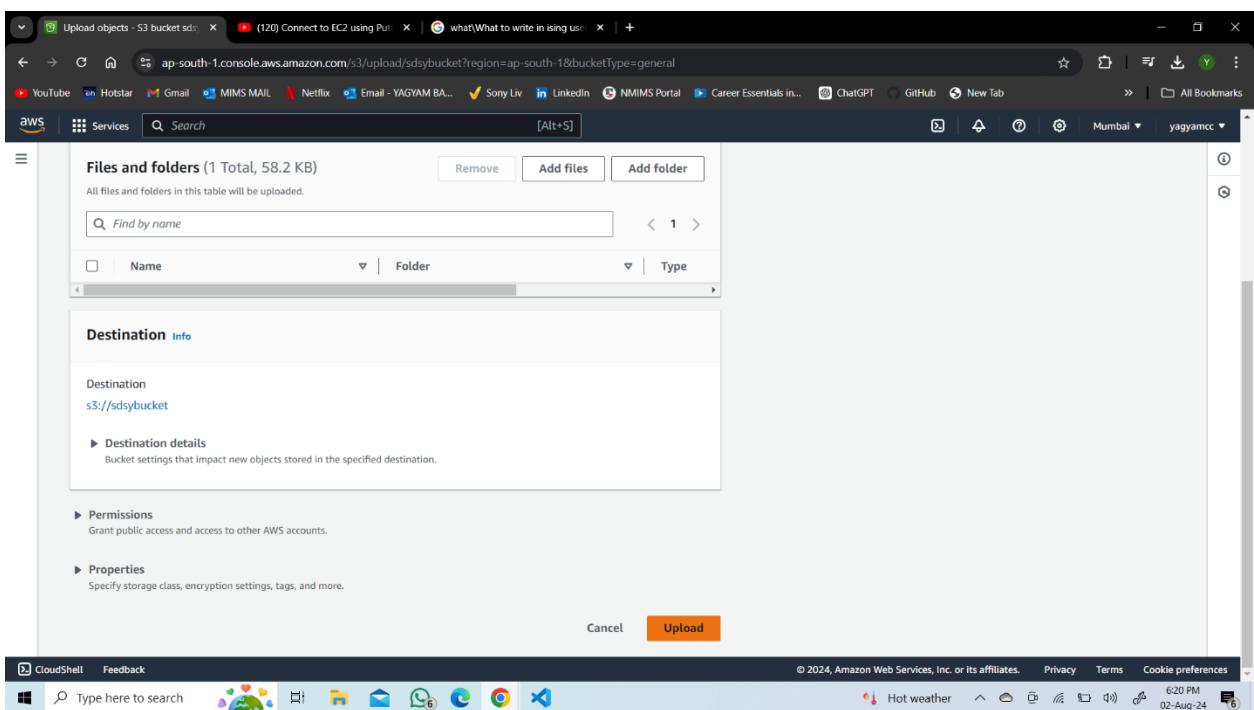
The screenshot shows the 'Default encryption' section. It indicates that server-side encryption is automatically applied to new objects stored in the bucket. The 'Encryption type' dropdown is set to 'Server-side encryption with Amazon S3 managed keys (SSE-S3)'. Other options include 'Server-side encryption with AWS Key Management Service keys (SSE-KMS)' and 'Dual-layer server-side encryption with AWS Key Management Service keys (DSSE-KMS)'. The 'Bucket Key' section notes that using an S3 Bucket Key for SSE-KMS reduces encryption costs by lowering calls to AWS KMS. Bucket Keys aren't supported for DSSE-KMS. The 'Advanced settings' button is visible below.



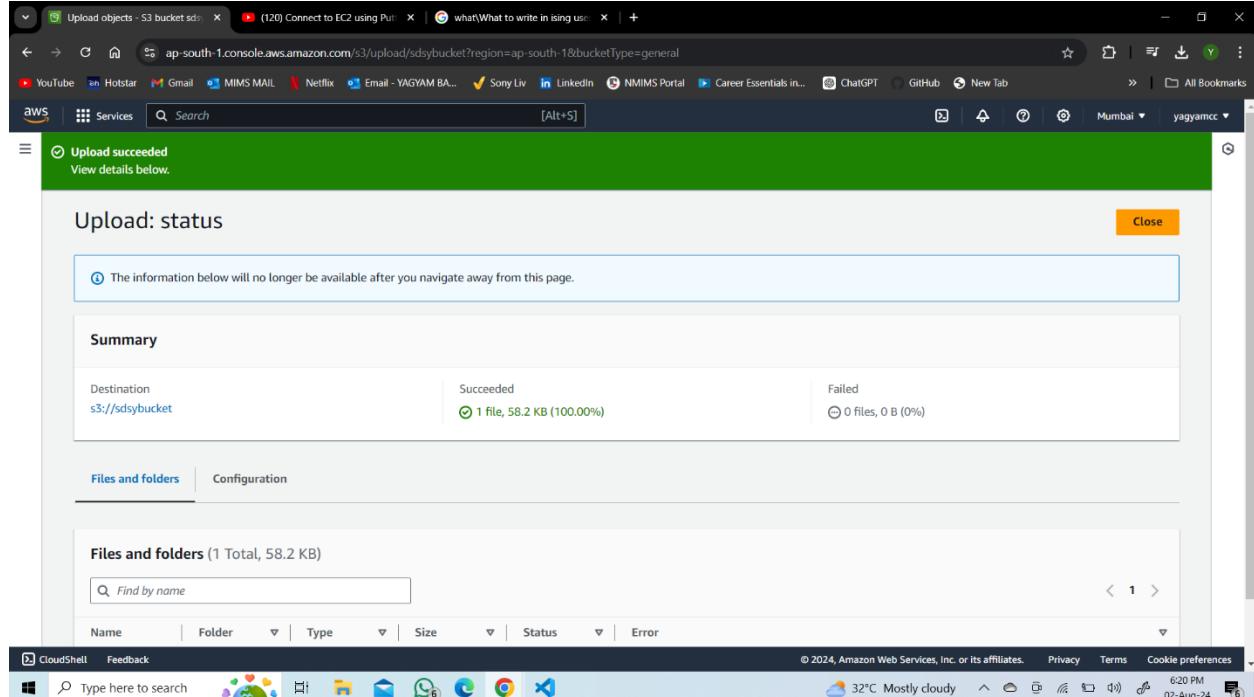
The screenshot shows the final step of creating the bucket. A message at the bottom left says: 'After creating the bucket, you can upload files and folders to the bucket, and configure additional bucket settings.' At the bottom right are 'Cancel' and 'Create bucket' buttons. The status bar at the bottom right shows the date and time: 6:19 PM 02-Aug-24.



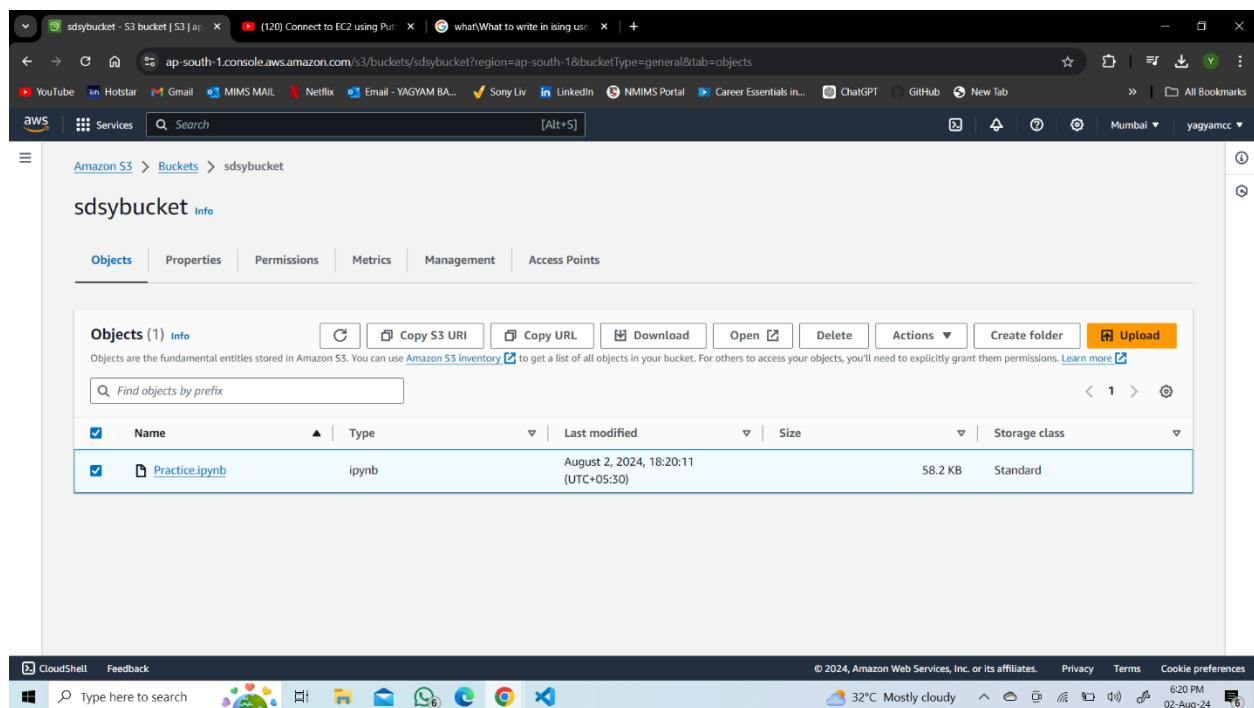
The screenshot shows the AWS S3 'Upload objects' interface. At the top, there are three tabs: 'Upload objects - S3 bucket sdsybucket', '(120) Connect to EC2 using Putt', and 'whatWhat to write in using use'. The main content area shows the path: 'Amazon S3 > Buckets > sdsybucket > Upload'. Below this, a large box says 'Upload' and 'Add files or Add folder'. A message reads: 'Add the files and folders you want to upload to S3. To upload a file larger than 160GB, use the AWS CLI, AWS SDK or Amazon S3 REST API. [Learn more](#)'. Below this is a dashed box for dragging files. Under 'Files and folders (0)', there are 'Remove', 'Add files', and 'Add folder' buttons. A search bar 'Find by name' is present. The table below has columns for 'Name' and 'Type'. A message at the bottom says 'No files or folders' and 'You have not chosen any files or folders to upload.' At the bottom right, there's a 'Destination' section with 'Info' and a table.



This screenshot shows the same AWS S3 'Upload objects' interface as the previous one, but now it displays a single file in the queue. The 'Files and folders' table shows '1 Total, 58.2 KB'. The 'Destination' section is expanded, showing 's3://sdsybucket' as the destination. The 'Destination details' section is visible, stating 'Bucket settings that impact new objects stored in the specified destination.' Below this, the 'Permissions' and 'Properties' sections are partially visible. At the bottom, there are 'Cancel' and 'Upload' buttons. The Windows taskbar at the bottom includes icons for CloudShell, Feedback, and various apps like Mail, Calendar, and File Explorer.

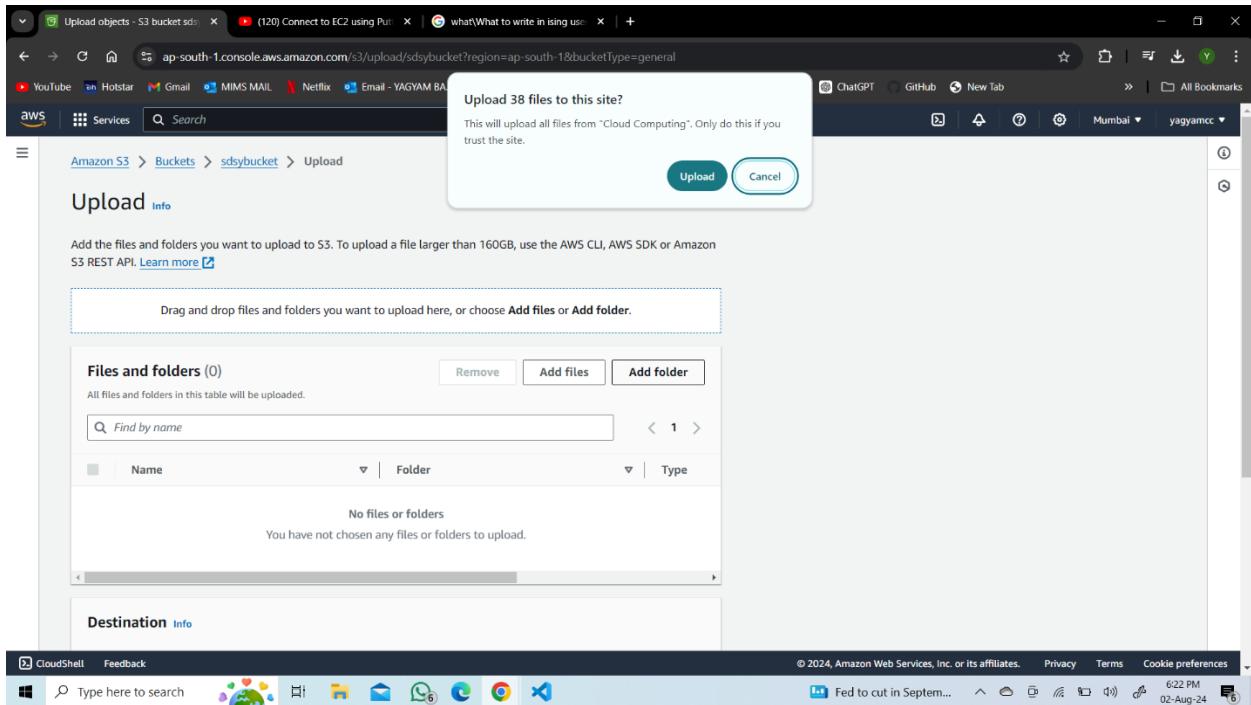


The screenshot shows a web browser window with multiple tabs open. The active tab is titled "Upload objects - S3 bucket sds" and displays the AWS S3 console. A green banner at the top indicates "Upload succeeded". Below it, a summary table shows the destination as "s3://sdsybucket" with one file uploaded successfully (100.00%). The "Files and folders" tab is selected, showing a single item: "Practice.ipynb" (1 Total, 58.2 KB). The browser's address bar shows the URL "ap-south-1.console.aws.amazon.com/s3/upload/sdsybucket?region=ap-south-1&bucketType=general". The status bar at the bottom right shows the date and time as "02-Aug-24".



The screenshot shows a web browser window with multiple tabs open. The active tab is titled "sdsybucket - S3 bucket | S3" and displays the AWS S3 console. The left sidebar shows the navigation path: "Amazon S3 > Buckets > sdsybucket". The main area is titled "sdsybucket info" and shows the "Objects" tab selected. It lists one object: "Practice.ipynb". The table provides detailed information about the object, including its name, type (ipynb), last modified (August 2, 2024, 18:20:11 (UTC+05:30)), size (58.2 KB), and storage class (Standard). The browser's address bar shows the URL "ap-south-1.console.aws.amazon.com/s3/buckets/sdsybucket?region=ap-south-1&tab=objects". The status bar at the bottom right shows the date and time as "02-Aug-24".

## **STORAGE AS A SERVICE (FOLDER)**



Upload objects - S3 bucket sdsybucket | (120) Connect to EC2 using Put | what|What to write in sing use | +

ap-south-1.console.aws.amazon.com/s3/upload/sdsybucket?region=ap-south-1&bucketType=general

Amazon S3 > Buckets > sdsybucket > Upload

Upload [Info](#)

Add the files and folders you want to upload to S3. To upload a file larger than 160GB, use the AWS CLI, AWS SDK or Amazon S3 REST API. [Learn more](#)

Drag and drop files and folders you want to upload here, or choose [Add files](#) or [Add folder](#).

Files and folders (0)

All files and Folders in this table will be uploaded.

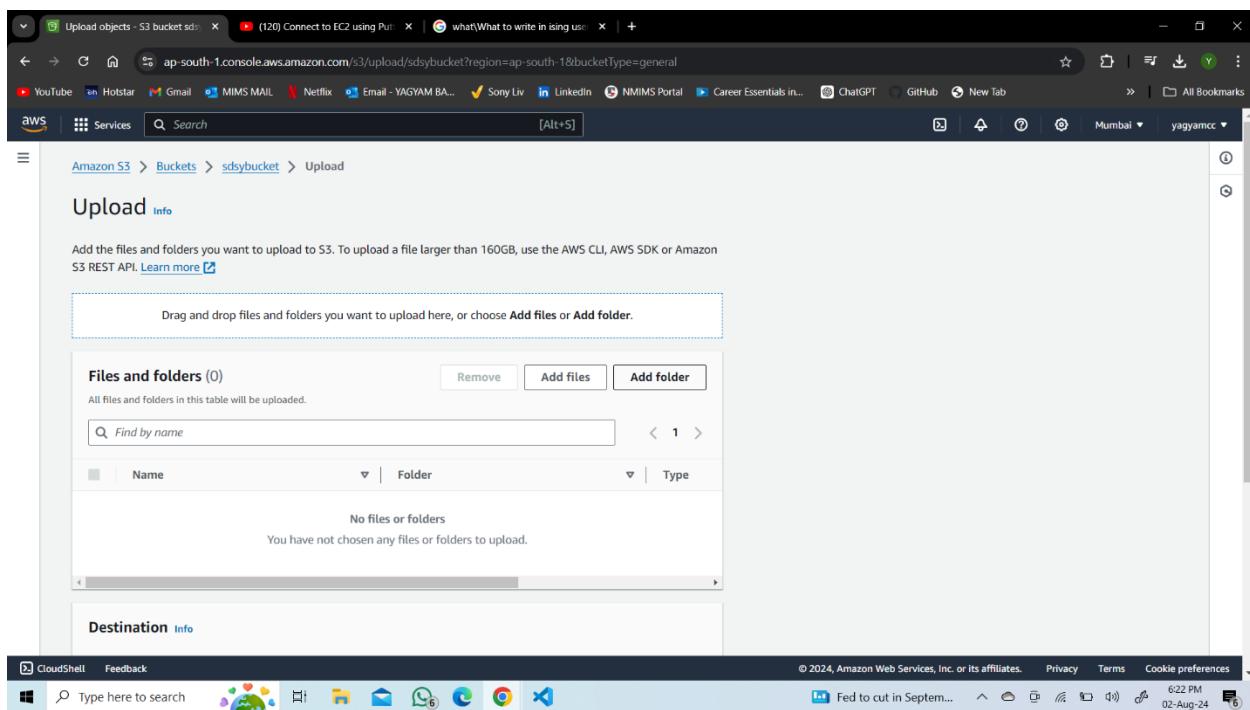
Find by name

Name	Folder	Type
No files or folders		
You have not chosen any files or folders to upload.		

Destination [Info](#)

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Type here to search



Upload objects - S3 bucket sdsybucket | (120) Connect to EC2 using Put | what|What to write in sing use | +

ap-south-1.console.aws.amazon.com/s3/upload/sdsybucket?region=ap-south-1&bucketType=general

Amazon S3 > Buckets > sdsybucket > Upload

Upload [Info](#)

Add the files and folders you want to upload to S3. To upload a file larger than 160GB, use the AWS CLI, AWS SDK or Amazon S3 REST API. [Learn more](#)

Drag and drop files and folders you want to upload here, or choose [Add files](#) or [Add folder](#).

Files and folders (0)

All files and Folders in this table will be uploaded.

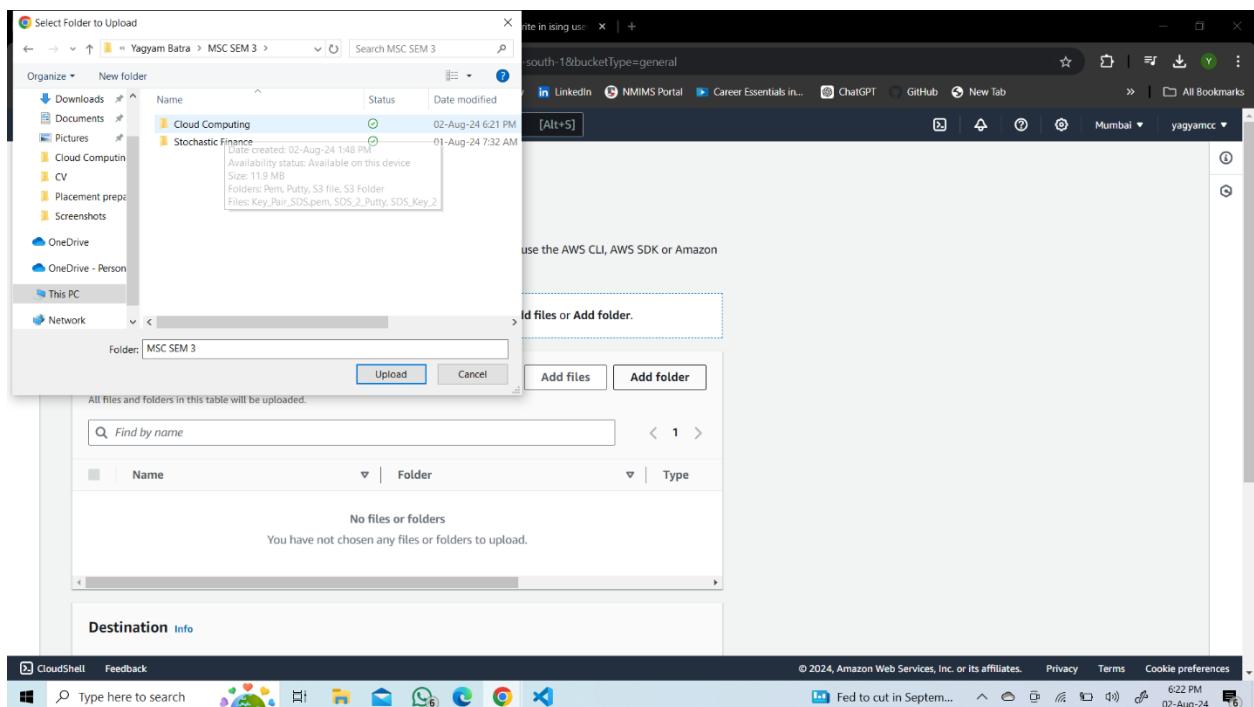
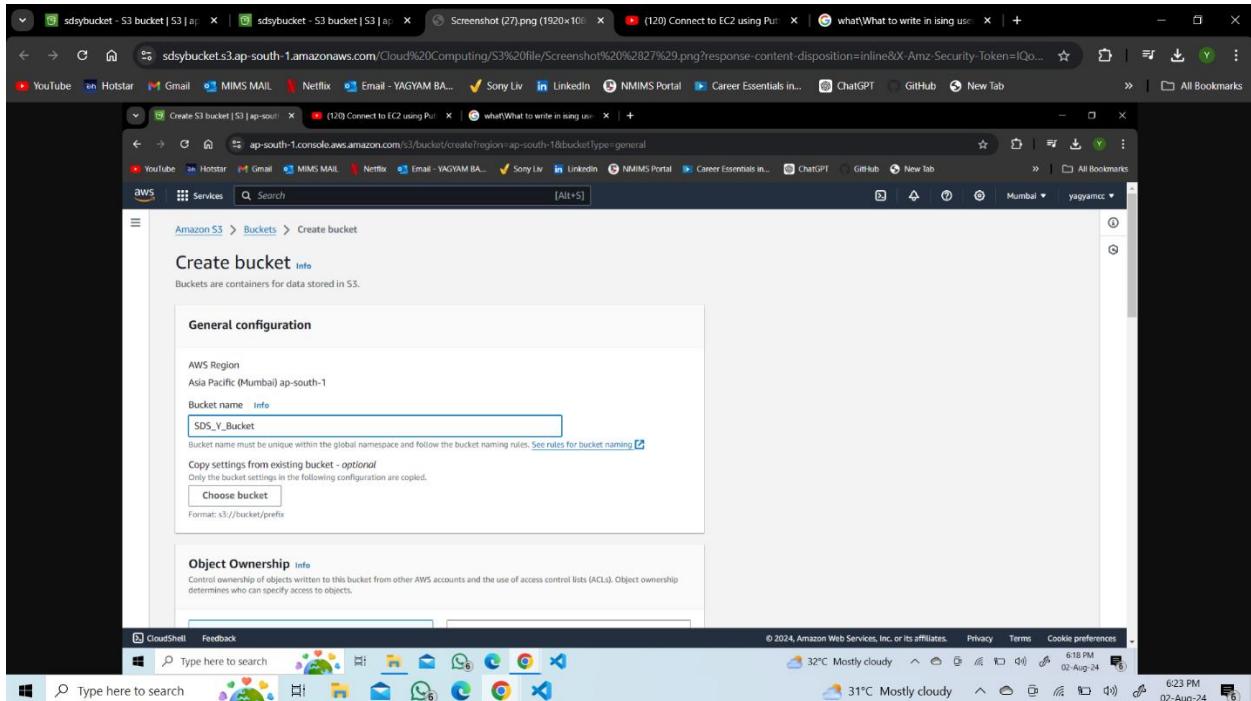
Find by name

Name	Folder	Type
No files or folders		
You have not chosen any files or folders to upload.		

Destination [Info](#)

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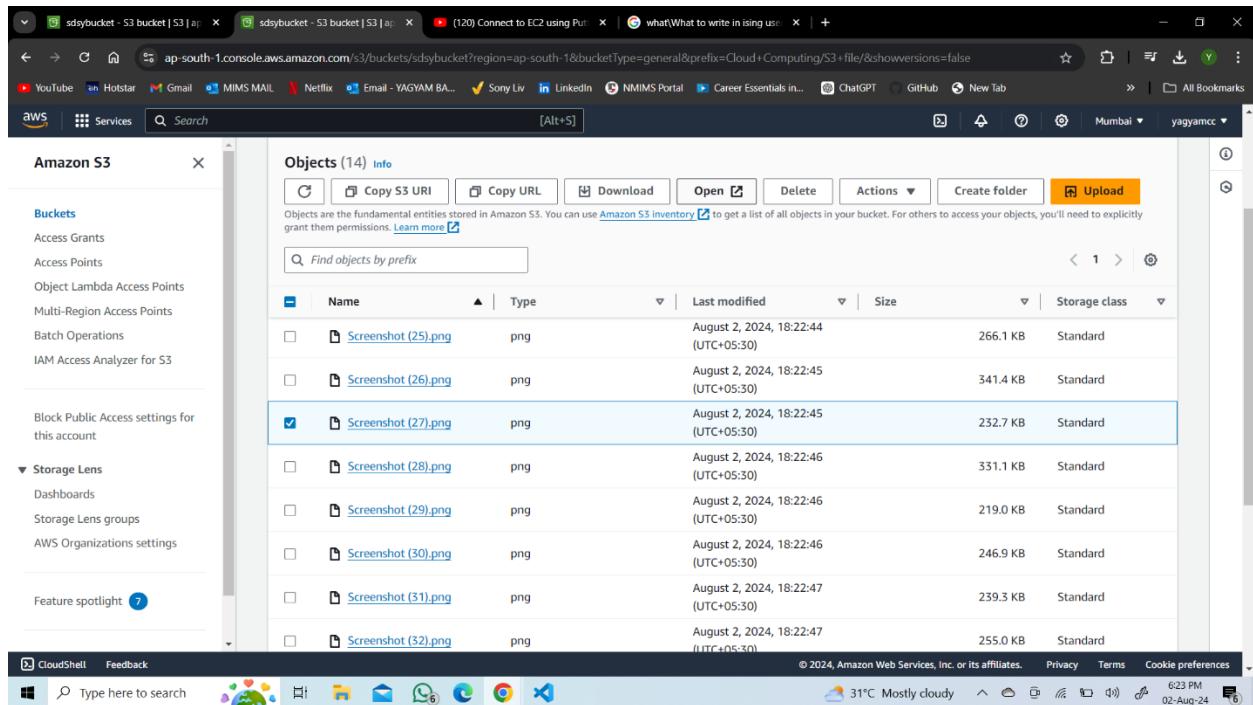
Type here to search



The screenshot shows the AWS S3 console with the 'sdsybucket' bucket selected. The 'Objects' tab is active, displaying a single item: 'Cloud Computing/' (Folder). The sidebar on the left provides access to other AWS services.

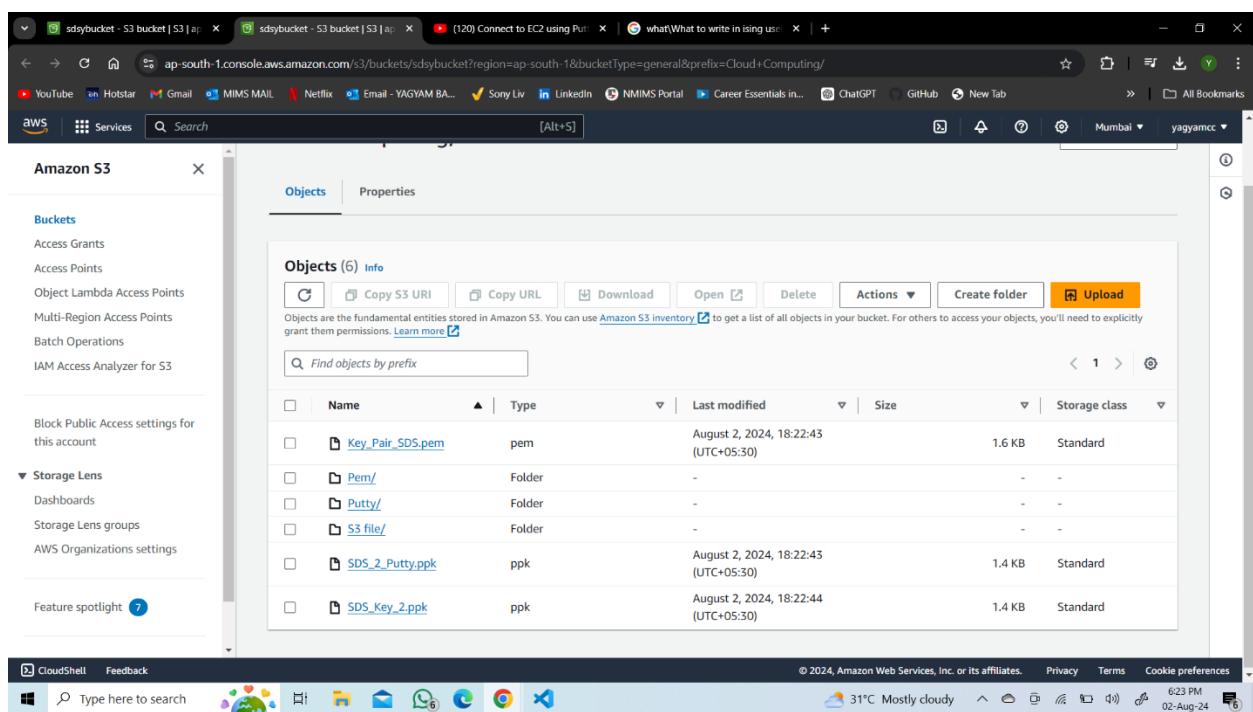
The screenshot shows the AWS S3 console during a file upload process. The progress bar indicates 62% completion. Below the progress bar, a table lists the uploaded files and folders, all of which have a status of 'Succeeded'.

Name	Folder	Type	Size	Status	Error
SDS_2_Put...	Cloud Comp...	application/...	1.4 KB	Succeeded	-
SDS_Key_2....	Cloud Comp...	application/...	1.4 KB	Succeeded	-
Screenshot (...)	Cloud Comp...	image/png	266.1 KB	Succeeded	-
Screenshot (...)	Cloud Comp...	image/png	341.4 KB	Succeeded	-
Screenshot (...)	Cloud Comp...	image/png	232.7 KB	Succeeded	-
Screenshot (...)	Cloud Comp...	image/png	331.1 KB	Succeeded	-
Screenshot (...)	Cloud Comp...	image/png	219.0 KB	Succeeded	-
Screenshot (...)	Cloud Comp...	image/png	246.9 KB	Succeeded	-
Screenshot (...)	Cloud Comp...	image/png	239.3 KB	Succeeded	-



The screenshot shows the AWS S3 console interface. On the left, there's a sidebar with navigation links like 'Buckets', 'Storage Lens', and 'Feature spotlight'. The main area is titled 'Objects (14) Info' and displays a table of files. One file, 'Screenshot (27).png', is selected and highlighted with a blue border. The table includes columns for Name, Type, Last modified, Size, and Storage class. At the bottom of the table, there's a note about granting permissions.

Name	Type	Last modified	Size	Storage class
Screenshot (25).png	png	August 2, 2024, 18:22:44 (UTC+05:30)	266.1 KB	Standard
Screenshot (26).png	png	August 2, 2024, 18:22:45 (UTC+05:30)	341.4 KB	Standard
<b>Screenshot (27).png</b>	png	August 2, 2024, 18:22:45 (UTC+05:30)	232.7 KB	Standard
Screenshot (28).png	png	August 2, 2024, 18:22:46 (UTC+05:30)	331.1 KB	Standard
Screenshot (29).png	png	August 2, 2024, 18:22:46 (UTC+05:30)	219.0 KB	Standard
Screenshot (30).png	png	August 2, 2024, 18:22:46 (UTC+05:30)	246.9 KB	Standard
Screenshot (31).png	png	August 2, 2024, 18:22:47 (UTC+05:30)	239.3 KB	Standard
Screenshot (32).png	png	August 2, 2024, 18:22:47 (UTC+05:30)	255.0 KB	Standard



This screenshot shows the same AWS S3 interface as the first one, but with a different set of objects listed. It includes several folders ('Pem/', 'Putty/', 'S3 file/') and two ppk files ('SDS\_2\_Putty.ppk' and 'SDS\_2\_Key\_2.ppk'). The 'Properties' tab is visible at the top of the main content area.

Name	Type	Last modified	Size	Storage class
Key_Pair_SDS.pem	pem	August 2, 2024, 18:22:43 (UTC+05:30)	1.6 KB	Standard
Pem/	Folder	-	-	-
Putty/	Folder	-	-	-
S3 file/	Folder	-	-	-
SDS_2_Putty.ppk	ppk	August 2, 2024, 18:22:43 (UTC+05:30)	1.4 KB	Standard
SDS_2_Key_2.ppk	ppk	August 2, 2024, 18:22:44 (UTC+05:30)	1.4 KB	Standard

The screenshot shows a web browser window with multiple tabs open. The active tab is titled "Delete objects - S3 bucket sdsybucket" and displays the URL "ap-south-1.console.aws.amazon.com/s3/buckets/sdsybucket/object/delete?region=ap-south-1&bucketType=general&showVersions=false". The browser's address bar also shows this URL. The page content indicates that 38 objects, totaling 12.0 MB, were successfully deleted from the source "s3://sdsybucket". There are no failed deletions listed. A summary table provides this information:

Source	Successfully deleted	Failed to delete
s3://sdsybucket	38 objects, 12.0 MB	0 objects

Below the summary, there are tabs for "Failed to delete" (selected) and "Configuration". The "Failed to delete" section shows 0 entries. The browser's status bar at the bottom right shows the date and time as "02-Aug-24 6:24 PM".