

# **CLOUD COMPUTING**

## **PRACTICAL-2**

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## CLOUD COMPUTING - A2

### \* STORAGE AS A SERVICE - S3

Amazon Simple Storage Services (S3) is a scalable, high speed, web-based cloud storage service designed for online backup and archiving of data and application programs. As part of AWS, S3 allows businesses to store and retrieve any amount of data at any time; from anywhere on the web. It provides a simple web services interface that can be used to store and retrieve any amount of data, at any time, from anywhere on the web, which gives developers access to the same highly scalable, reliable, fast and inexpensive data storage infrastructure that Amazon uses to run its global network of websites.

S3 storage provides key features -

- 1) Buckets
- 2) Elastic scalability
- 3) Flexible data structure
- 4) API
- 5) Permissions

### \* S3 Use Cases -

1. Backup & Restore - Businesses can use S3 for storing backup copies of their critical data. S3's durability and redundancy ensure that data is safe and can be restored quickly in case of data loss or disaster.
2. Content storage & distribution - Companies like media organizations use S3 to store and distribute content globally. S3's integration with CloudFront, Amazon's content delivery network (CDN), ensures fast delivery of content to users worldwide.
3. Data archiving - S3 provides a cost-effective sol'n for long-term data archiving. With features like S3 Glacier and S3 Glacier Deep Archive, businesses can archive large amounts of data at a very low cost.
4. Big data analytics - S3 is used as a data lake, where raw data is stored in its native format and processed by various big data analytics tools.
5. Disaster recovery - S3 is an integral part of disaster recovery plans. We can replicate their data across multiple AWS regions to recover fast.

### \* STEPS FOR USING S3 -

1. creating an S3 Bucket.
2. uploading objects
3. managing access Permissions
4. setting up Lifecycle Policies
5. monitoring & logging

By following these steps, businesses can effectively utilize Amazon S3 for a wide range of use cases, ensuring that their data is stored securely, is easily accessible, and can be managed efficiently.

# S3 (FILE)

The screenshot shows the AWS CloudWatch Metrics Insights interface. A search bar at the top contains the query: `File Metrics`. Below the search bar, there's a table with columns: `Time`, `File Metrics`, and `Value`. The table displays data points for various file metrics over time.

Time	File Metrics	Value
2024-07-27T10:00:00Z	File Metrics	100
2024-07-27T10:01:00Z	File Metrics	105
2024-07-27T10:02:00Z	File Metrics	110
2024-07-27T10:03:00Z	File Metrics	115
2024-07-27T10:04:00Z	File Metrics	120
2024-07-27T10:05:00Z	File Metrics	125
2024-07-27T10:06:00Z	File Metrics	130
2024-07-27T10:07:00Z	File Metrics	135
2024-07-27T10:08:00Z	File Metrics	140
2024-07-27T10:09:00Z	File Metrics	145
2024-07-27T10:10:00Z	File Metrics	150
2024-07-27T10:11:00Z	File Metrics	155
2024-07-27T10:12:00Z	File Metrics	160
2024-07-27T10:13:00Z	File Metrics	165
2024-07-27T10:14:00Z	File Metrics	170
2024-07-27T10:15:00Z	File Metrics	175
2024-07-27T10:16:00Z	File Metrics	180
2024-07-27T10:17:00Z	File Metrics	185
2024-07-27T10:18:00Z	File Metrics	190
2024-07-27T10:19:00Z	File Metrics	195
2024-07-27T10:20:00Z	File Metrics	200
2024-07-27T10:21:00Z	File Metrics	205
2024-07-27T10:22:00Z	File Metrics	210
2024-07-27T10:23:00Z	File Metrics	215
2024-07-27T10:24:00Z	File Metrics	220
2024-07-27T10:25:00Z	File Metrics	225
2024-07-27T10:26:00Z	File Metrics	230
2024-07-27T10:27:00Z	File Metrics	235
2024-07-27T10:28:00Z	File Metrics	240
2024-07-27T10:29:00Z	File Metrics	245
2024-07-27T10:30:00Z	File Metrics	250
2024-07-27T10:31:00Z	File Metrics	255
2024-07-27T10:32:00Z	File Metrics	260
2024-07-27T10:33:00Z	File Metrics	265
2024-07-27T10:34:00Z	File Metrics	270
2024-07-27T10:35:00Z	File Metrics	275
2024-07-27T10:36:00Z	File Metrics	280
2024-07-27T10:37:00Z	File Metrics	285
2024-07-27T10:38:00Z	File Metrics	290
2024-07-27T10:39:00Z	File Metrics	295
2024-07-27T10:40:00Z	File Metrics	300
2024-07-27T10:41:00Z	File Metrics	305
2024-07-27T10:42:00Z	File Metrics	310
2024-07-27T10:43:00Z	File Metrics	315
2024-07-27T10:44:00Z	File Metrics	320
2024-07-27T10:45:00Z	File Metrics	325
2024-07-27T10:46:00Z	File Metrics	330
2024-07-27T10:47:00Z	File Metrics	335
2024-07-27T10:48:00Z	File Metrics	340
2024-07-27T10:49:00Z	File Metrics	345
2024-07-27T10:50:00Z	File Metrics	350
2024-07-27T10:51:00Z	File Metrics	355
2024-07-27T10:52:00Z	File Metrics	360
2024-07-27T10:53:00Z	File Metrics	365
2024-07-27T10:54:00Z	File Metrics	370
2024-07-27T10:55:00Z	File Metrics	375
2024-07-27T10:56:00Z	File Metrics	380
2024-07-27T10:57:00Z	File Metrics	385
2024-07-27T10:58:00Z	File Metrics	390
2024-07-27T10:59:00Z	File Metrics	395
2024-07-27T11:00:00Z	File Metrics	400
2024-07-27T11:01:00Z	File Metrics	405
2024-07-27T11:02:00Z	File Metrics	410
2024-07-27T11:03:00Z	File Metrics	415
2024-07-27T11:04:00Z	File Metrics	420
2024-07-27T11:05:00Z	File Metrics	425
2024-07-27T11:06:00Z	File Metrics	430
2024-07-27T11:07:00Z	File Metrics	435
2024-07-27T11:08:00Z	File Metrics	440
2024-07-27T11:09:00Z	File Metrics	445
2024-07-27T11:10:00Z	File Metrics	450
2024-07-27T11:11:00Z	File Metrics	455
2024-07-27T11:12:00Z	File Metrics	460
2024-07-27T11:13:00Z	File Metrics	465
2024-07-27T11:14:00Z	File Metrics	470
2024-07-27T11:15:00Z	File Metrics	475
2024-07-27T11:16:00Z	File Metrics	480
2024-07-27T11:17:00Z	File Metrics	485
2024-07-27T11:18:00Z	File Metrics	490
2024-07-27T11:19:00Z	File Metrics	495
2024-07-27T11:20:00Z	File Metrics	500
2024-07-27T11:21:00Z	File Metrics	505
2024-07-27T11:22:00Z	File Metrics	510
2024-07-27T11:23:00Z	File Metrics	515
2024-07-27T11:24:00Z	File Metrics	520
2024-07-27T11:25:00Z	File Metrics	525
2024-07-27T11:26:00Z	File Metrics	530
2024-07-27T11:27:00Z	File Metrics	535
2024-07-27T11:28:00Z	File Metrics	540
2024-07-27T11:29:00Z	File Metrics	545
2024-07-27T11:30:00Z	File Metrics	550
2024-07-27T11:31:00Z	File Metrics	555
2024-07-27T11:32:00Z	File Metrics	560
2024-07-27T11:33:00Z	File Metrics	565
2024-07-27T11:34:00Z	File Metrics	570
2024-07-27T11:35:00Z	File Metrics	575
2024-07-27T11:36:00Z	File Metrics	580
2024-07-27T11:37:00Z	File Metrics	585
2024-07-27T11:38:00Z	File Metrics	590
2024-07-27T11:39:00Z	File Metrics	595
2024-07-27T11:40:00Z	File Metrics	600
2024-07-27T11:41:00Z	File Metrics	605
2024-07-27T11:42:00Z	File Metrics	610
2024-07-27T11:43:00Z	File Metrics	615
2024-07-27T11:44:00Z	File Metrics	620
2024-07-27T11:45:00Z	File Metrics	625
2024-07-27T11:46:00Z	File Metrics	630
2024-07-27T11:47:00Z	File Metrics	635
2024-07-27T11:48:00Z	File Metrics	640
2024-07-27T11:49:00Z	File Metrics	645
2024-07-27T11:50:00Z	File Metrics	650
2024-07-27T11:51:00Z	File Metrics	655
2024-07-27T11:52:00Z	File Metrics	660
2024-07-27T11:53:00Z	File Metrics	665
2024-07-27T11:54:00Z	File Metrics	670
2024-07-27T11:55:00Z	File Metrics	675
2024-07-27T11:56:00Z	File Metrics	680
2024-07-27T11:57:00Z	File Metrics	685
2024-07-27T11:58:00Z	File Metrics	690
2024-07-27T11:59:00Z	File Metrics	695
2024-07-27T12:00:00Z	File Metrics	700

Create S3 bucket | S3 | ap-soutl | +

ap-southeast-2.console.aws.amazon.com/s3/bucket/create?region=ap-southeast-2&bucketType=general

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AWS Services Search [Alt+S]

## Create bucket

Buckets are containers for data stored in S3.

**General configuration**

AWS Region: Asia Pacific (Sydney) ap-southeast-2

Bucket name: **sdsruchika19**

Bucket name must be unique within the global namespace and follow the bucket naming rules. [See rules for bucket naming](#)

Copy settings from existing bucket - optional  
Only the bucket settings in the following configuration are copied.

Choose bucket

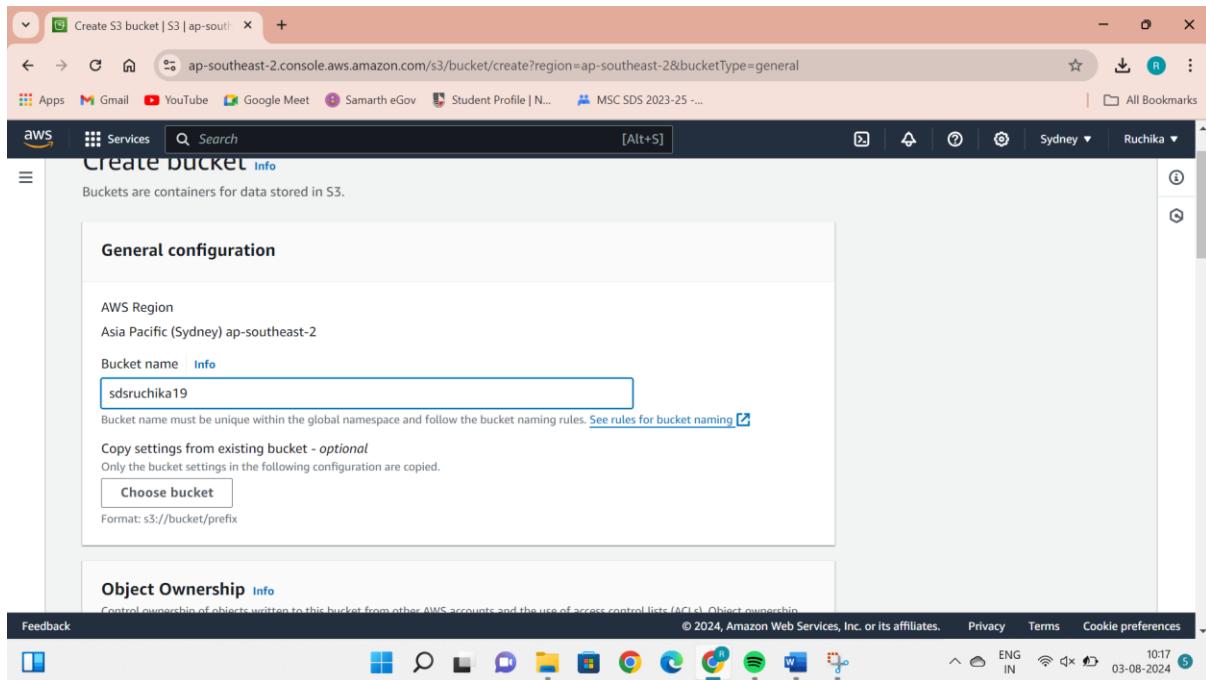
Format: s3://bucket/prefix

**Object Ownership** [Info](#)

Control ownership of objects written to this bucket from other AWS accounts and the use of access control lists (ACLs). Object ownership

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Create S3 bucket | S3 | ap-soutl | +

ap-southeast-2.console.aws.amazon.com/s3/bucket/create?region=ap-southeast-2&bucketType=general

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AWS Services Search [Alt+S]

customize the individual settings below to suit your specific storage use cases. [Learn more](#)

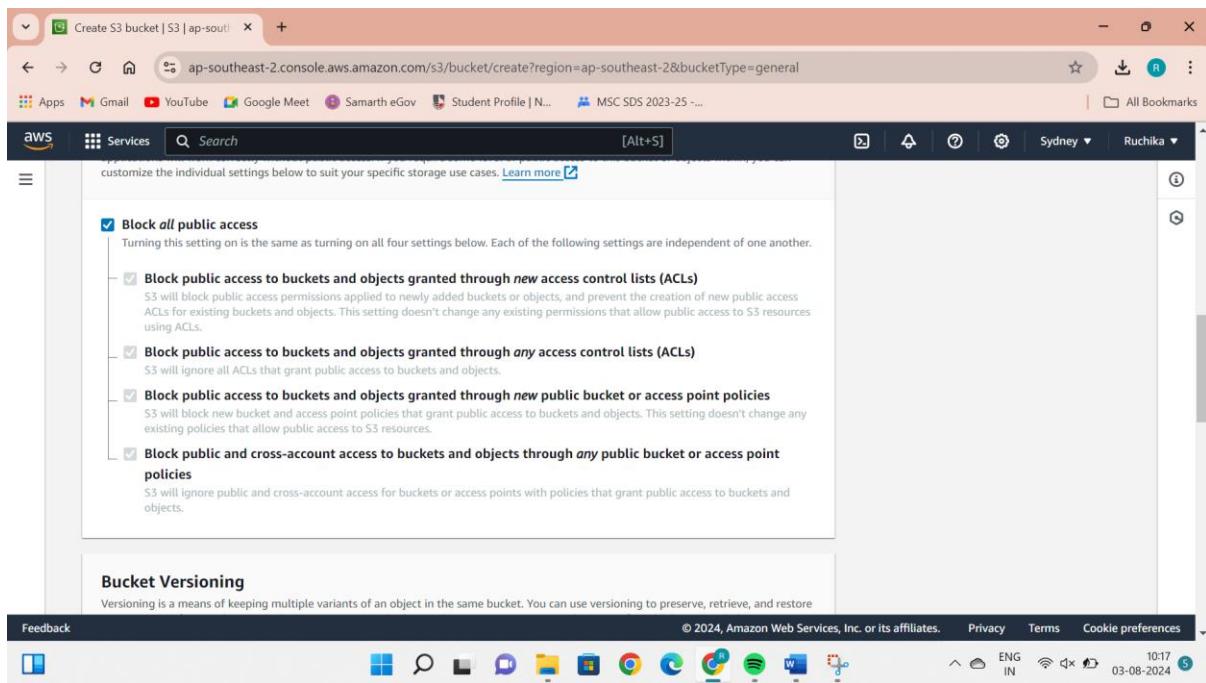
**Block all public access**  
Turning this setting on is the same as turning on all four settings below. Each of the following settings are independent of one another.

- 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

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Create S3 bucket | S3 | ap-soutl | +

ap-southeast-2.console.aws.amazon.com/s3/bucket/create?region=ap-southeast-2&bucketType=general

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**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](#)

**Bucket Versioning**

Disable  
 Enable

**Tags - optional (0)**

You can use bucket tags to track storage costs and organize buckets. [Learn more](#)

No tags associated with this bucket.

Add tag

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Create S3 bucket | S3 | ap-soutl | +

ap-southeast-2.console.aws.amazon.com/s3/bucket/create?region=ap-southeast-2&bucketType=general

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**Add tag**

**Default encryption** [Info](#)

Server-side encryption is automatically applied to new objects stored in this bucket.

**Encryption type** [Info](#)

Server-side encryption with Amazon S3 managed keys (SSE-S3)  
 Server-side encryption with AWS Key Management Service keys (SSE-KMS)  
 Dual-layer server-side encryption with AWS Key Management Service keys (DSSE-KMS)  
Secure your objects with two separate layers of encryption. For details on pricing, see [DSSE-KMS pricing](#) on the Storage tab of the [Amazon S3 pricing page](#).

**Bucket Key**

Using an S3 Bucket Key for SSE-KMS reduces encryption costs by lowering calls to AWS KMS. S3 Bucket Keys aren't supported for DSSE-KMS. [Learn more](#)

Disable  
 Enable

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S3 buckets | S3 | ap-southeast-2

ap-southeast-2.console.aws.amazon.com/s3/buckets?region=ap-southeast-2

Services Search [Alt+S]

Amazon S3

Buckets

- Access Grants
- Access Points
- Object Lambda Access Points
- Multi-Region Access Points
- Batch Operations
- IAM Access Analyzer for S3

Block Public Access settings for this account

▼ Storage Lens

- Dashboards
- Storage Lens groups

General purpose buckets (2) Info All AWS Regions

Storage lens provides visibility into storage usage and activity trends. [Learn more](#)

Copy ARN Empty Delete Create bucket

Buckets are containers for data stored in S3.

Find buckets by name

Name	AWS Region	IAM Access Analyzer	Creation date
myprettybucket0	Asia Pacific (Mumbai) ap-south-1	<a href="#">View analyzer for ap-south-1</a>	July 27, 2024, 15:00:50 (UTC+05:30)
sdsruchika19	Asia Pacific (Sydney) ap-southeast-2	<a href="#">View analyzer for ap-southeast-2</a>	August 3, 2024, 10:18:11 (UTC+05:30)

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sdsruchika19 - S3 bucket | S3 | ap-southeast-2

ap-southeast-2.console.aws.amazon.com/s3/buckets/sdsruchika19?region=ap-southeast-2&bucketType=general&tab=objects

Services Search [Alt+S]

Amazon S3 > Buckets > sdsruchika19

Buckets

- Access Grants
- Access Points
- Object Lambda Access Points
- Multi-Region Access Points
- Batch Operations
- IAM Access Analyzer for S3

Block Public Access settings for this account

▼ Storage Lens

- Dashboards
- Storage Lens groups

Objects (0) Info

Upload

Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 inventory](#) to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. [Learn more](#)

Find objects by prefix

Name	Type	Last modified	Size	Storage class
------	------	---------------	------	---------------

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Upload objects - S3 bucket sdsruchika19

ap-southeast-2.console.aws.amazon.com/s3/upload/sdsruchika19?region=ap-southeast-2&bucketType=general

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 (1 Total, 261.5 KB)**

All files and folders in this table will be uploaded.

Name	Folder	Type
SQL Notes by Apna College (1).pdf	-	application/pdf

**Destination** [Info](#)

Destination: `s3://sdsruchika19`

**Destination details**  
Bucket settings that impact new objects stored in the specified destination.

**Permissions**  
Grant public access and access to other AWS accounts.

**Properties**  
Specify storage class, encryption settings, tags, and more.

Cancel **Upload**

Upload objects - S3 bucket sdsr

ap-southeast-2.console.aws.amazon.com/s3/upload/sdsruchika19?region=ap-southeast-2&bucketType=general

aws Services Search [Alt+S]

Uploading 0%

Total remaining: 1 file: 261.5 KB(100.00%)  
Estimated time remaining: calculating...  
Transfer rate: 0 B/s

Cancel

Files and folders Configuration

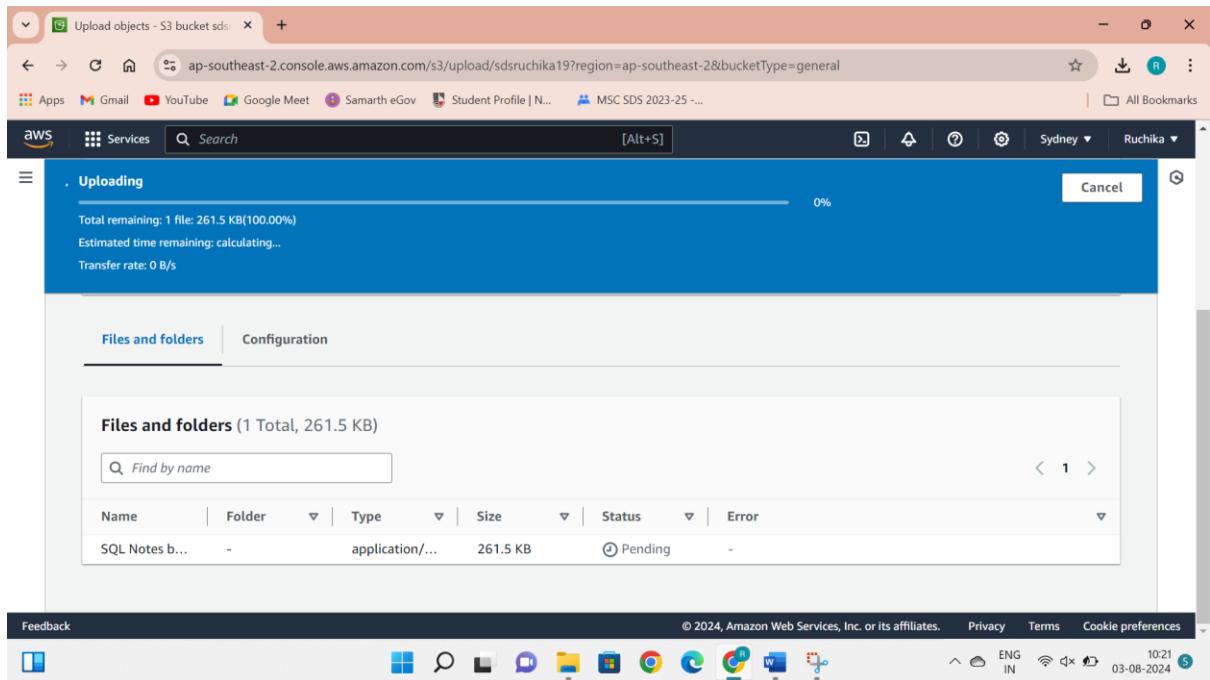
Files and folders (1 Total, 261.5 KB)

Find by name

Name	Folder	Type	Size	Status	Error
SQL Notes b...	-	application/...	261.5 KB	Pending	-

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10:21 ENG IN 03-08-2024



Upload objects - S3 bucket sdsruchika19

ap-southeast-2.console.aws.amazon.com/s3/upload/sdsruchika19?region=ap-southeast-2&bucketType=general

Upload succeeded

View details below.

Destination	Succeeded	Failed
s3://sdsruchika19	1 file, 261.5 KB (100.00%)	0 files, 0 B (0%)

Files and folders Configuration

Files and folders (1 Total, 261.5 KB)

Name	Folder	Type	Size	Status	Error
SQL Notes b...	-	application/...	261.5 KB	Succeeded	-

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SQL Notes by Apna College (1)

ap-southeast-2.console.aws.amazon.com/s3/object/sdsruchika19?region=ap-southeast-2&bucketType=general&prefix=SQL+Notes+by+Apna+Col...

Amazon S3 > Buckets > sdsruchika19 > SQL Notes by Apna College (1).pdf

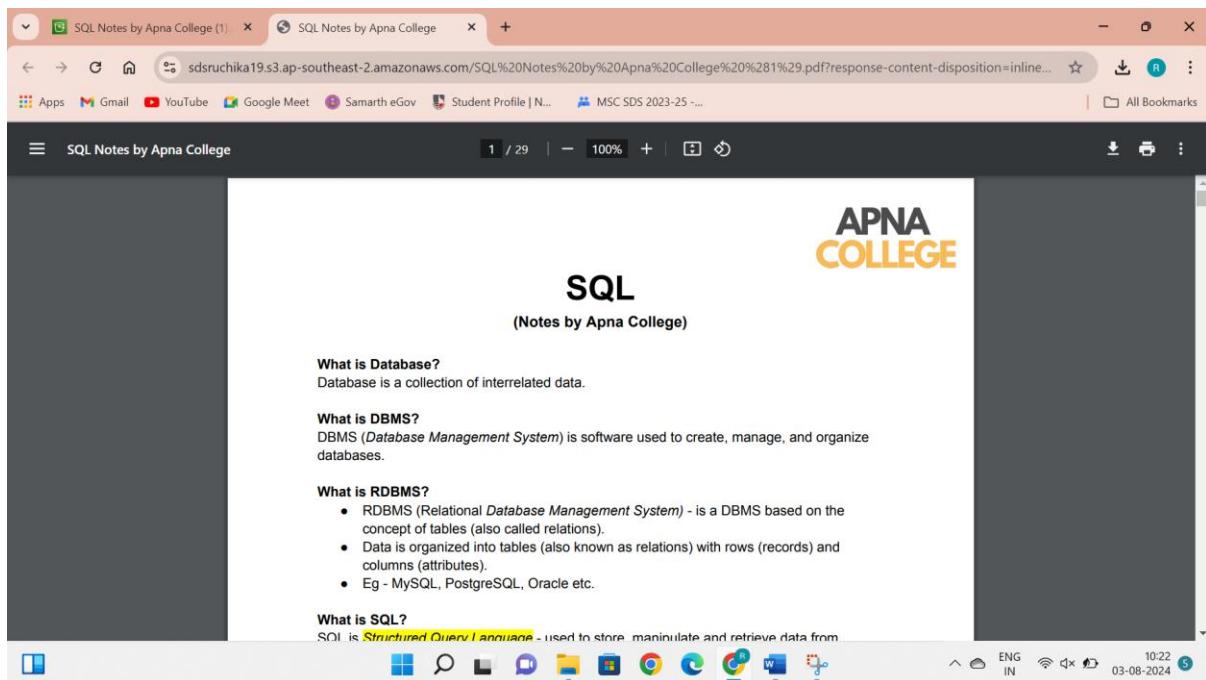
SQL Notes by Apna College (1).pdf

Properties Permissions Versions

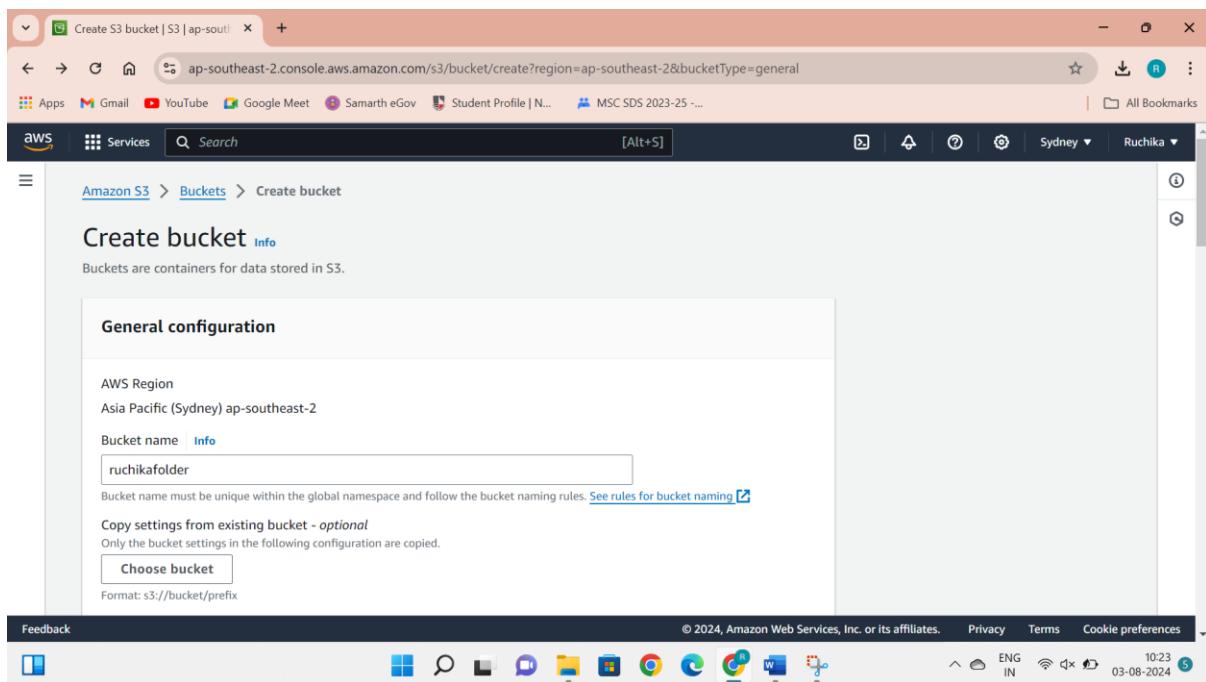
Object overview

Owner	s3 URI
ruchikasas52	<a href="s3://sdsruchika19/SQL Notes by Apna College (1).pdf">s3://sdsruchika19/SQL Notes by Apna College (1).pdf</a>
AWS Region	Amazon Resource Name (ARN)
Asia Pacific (Sydney) ap-southeast-2	<a href="#">arn:aws:s3:::sdsruchika19/SQL Notes by Apna College (1).pdf</a>
Last modified	Entity tag (Etag)
August 3, 2024, 10:21:14 (UTC+05:30)	<a href="#">11aef1e207b757e5ebe295c2062947a</a>
Size	

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## S3 (WEBSITE)



Create S3 bucket | S3 | ap-soutl | +

ap-southeast-2.console.aws.amazon.com/s3/bucket/create?region=ap-southeast-2&bucketType=general

Services Search [Alt+S]

Bucket Key

Using an S3 Bucket Key for SSE-KMS reduces encryption costs by lowering calls to AWS KMS. S3 Bucket Keys aren't supported for DSSE-KMS. [Learn more](#)

Disable  Enable

Advanced settings

After creating the bucket, you can upload files and folders to the bucket, and configure additional bucket settings.

Cancel Create bucket

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ruchikafolder - S3 bucket | S3 | +

ap-southeast-2.console.aws.amazon.com/s3/buckets/ruchikafolder?region=ap-southeast-2&bucketType=general&tab=objects

Services Search [Alt+S]

Objects Properties Permissions Metrics Management Access Points

Objects (0) [Info](#)

Copy S3 URI  Copy URL  Download  Open  Delete  Actions  Create folder  Upload

Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 inventory](#) to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. [Learn more](#)

Find objects by prefix

No objects  
You don't have any objects in this bucket.

Upload

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Upload objects - S3 bucket ruchi

ap-southeast-2.console.aws.amazon.com/s3/upload/ruchikafolder?region=ap-southeast-2&bucketType=general

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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Upload objects - S3 bucket ruchi

ap-southeast-2.console.aws.amazon.com/s3/upload/ruchikafolder?region=ap-southeast-2&bucketType=general

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 (1 Total, 115.0 B)**

All files and folders in this table will be uploaded.

Find by name

Name	Folder	Type
website.html	-	text/html

**Destination** [Info](#)

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Upload objects - S3 bucket ruchi

ap-southeast-2.console.aws.amazon.com/s3/upload/ruchikafolder?region=ap-southeast-2&bucketType=general

Name | Folder | Type

**Destination** Info

Destination  
s3://ruchikafolder

▶ Destination details  
Bucket settings that impact new objects stored in the specified destination.

▶ Permissions  
Grant public access and access to other AWS accounts.

▶ Properties  
Specify storage class, encryption settings, tags, and more.

Cancel Upload

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Upload objects - S3 bucket ruchi

ap-southeast-2.console.aws.amazon.com/s3/upload/ruchikafolder?region=ap-southeast-2&bucketType=general

Name | Folder | Type | Size | Status | Error

website.html - text/html 115.0 B Pending -

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Upload objects - S3 bucket ruchi

ap-southeast-2.console.aws.amazon.com/s3/upload/ruchikafolder?region=ap-southeast-2&bucketType=general

Succeeded

View details below.

Destination	Succeeded	Failed
s3://ruchikafolder	1 file, 115.0 B (100.00%)	0 files, 0 B (0%)

Files and folders Configuration

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Find by name

Name	Folder	Type	Size	Status	Error
website.html	-	text/html	115.0 B	Succeeded	-

Upload objects - S3 bucket ruchi

ap-southeast-2.console.aws.amazon.com/s3/object/ruchikafolder?region=ap-southeast-2&bucketType=general&prefix=website.html

website.html - Object in S3 bucket

Amazon S3 Buckets ruchikafolder website.html

Properties Permissions Versions

Object overview

Owner	ruchikasas52	S3 URI	s3://ruchikafolder/website.html
AWS Region	Asia Pacific (Sydney) ap-southeast-2	Amazon Resource Name (ARN)	arn:aws:s3:::ruchikafolder/website.html
Last modified	August 3, 2024, 10:28:18 (UTC+05:30)	Entity tag (Etag)	54b88f18b768eeb8a3efe5a771840abf

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