Creating a static webpage using S3(Simple storage service)

S3 (Simple Storage Service)

It is a highly scalable and durable **object storage**. It is designed to store and retrieve any amount of data from anywhere on the web.

Data is stored in containers called **buckets**. A bucket is a logical container that holds objects. You can create multiple buckets within an AWS account to organize and manage your data.

It stores data as **objects**. Each object consists of the data itself, a unique key that identifies the object within a bucket, and metadata associated with the object.

It **automatically scales** to handle any amount of data and can store billions of objects. It also replicates data across multiple Availability Zones within a region to ensure high durability and Navailability.

You can set **access control policies** to define who can access your data and how. S3 also supports **versioning**, which allows you to keep multiple versions of an object.

Lifecycle policies can be configured to automatically transition objects to different storage classes or delete them after a certain period.

You can use AWS Identity and Access Management **(IAM)** to manage access to your S3 resources. S3 also supports **server-side encryption** to encrypt your data at rest. Additionally, you can use **client-side encryption** to encrypt the data before uploading it to S3.

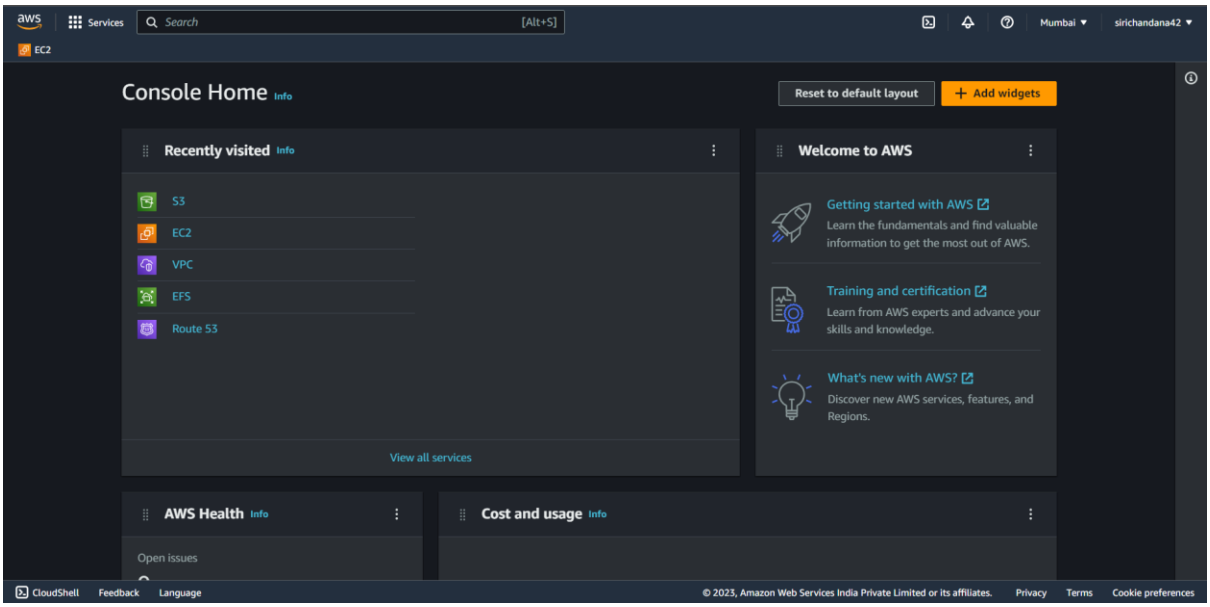
It provides features for fast and efficient data transfer.

You can use AWS **Direct Connect** or Virtual Private Network (**VPN**) to establish dedicated connections to S3.

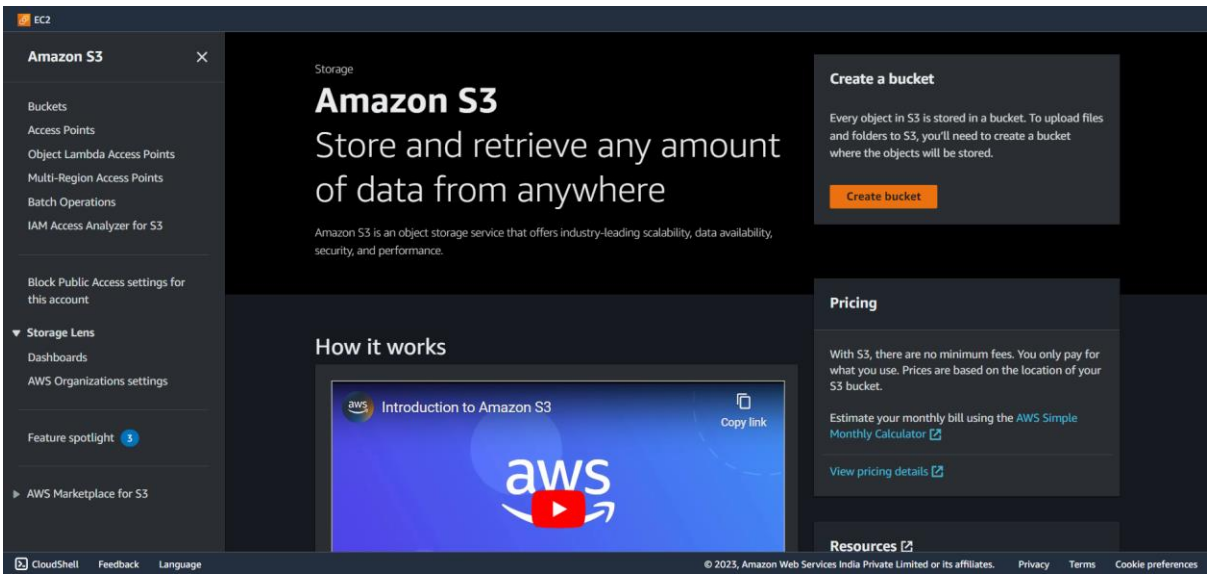
Additionally, S3 Transfer Acceleration utilizes Amazon **CloudFront's** content delivery network to accelerate data transfer to and from S3

Steps to create a S3 bucket

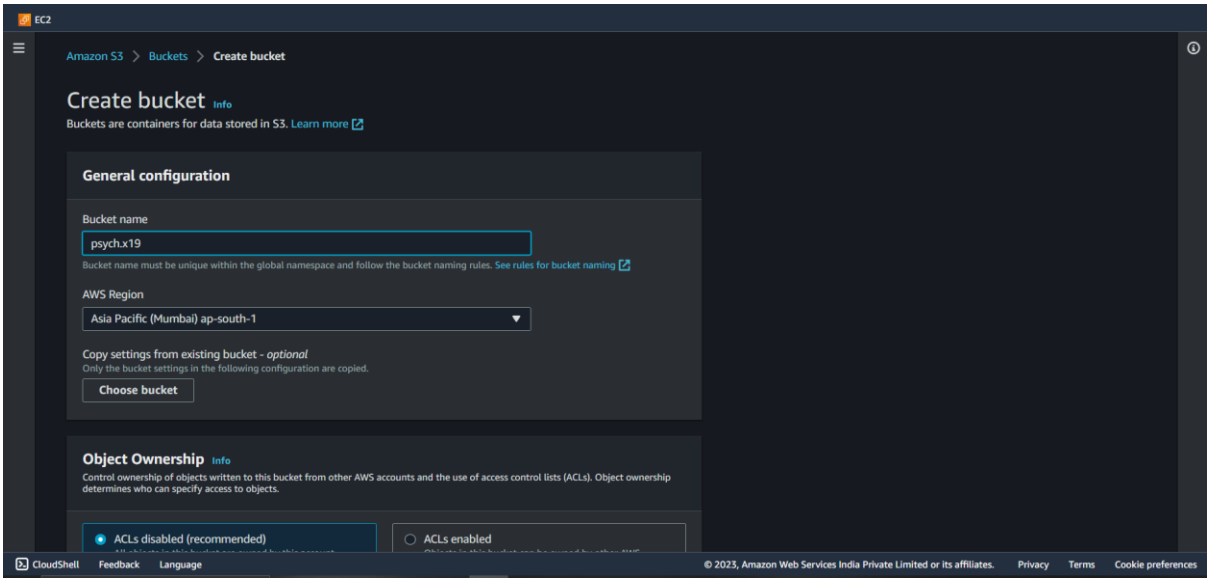
1. Firstly log in to you AWS free tier account click on services and select **S3**



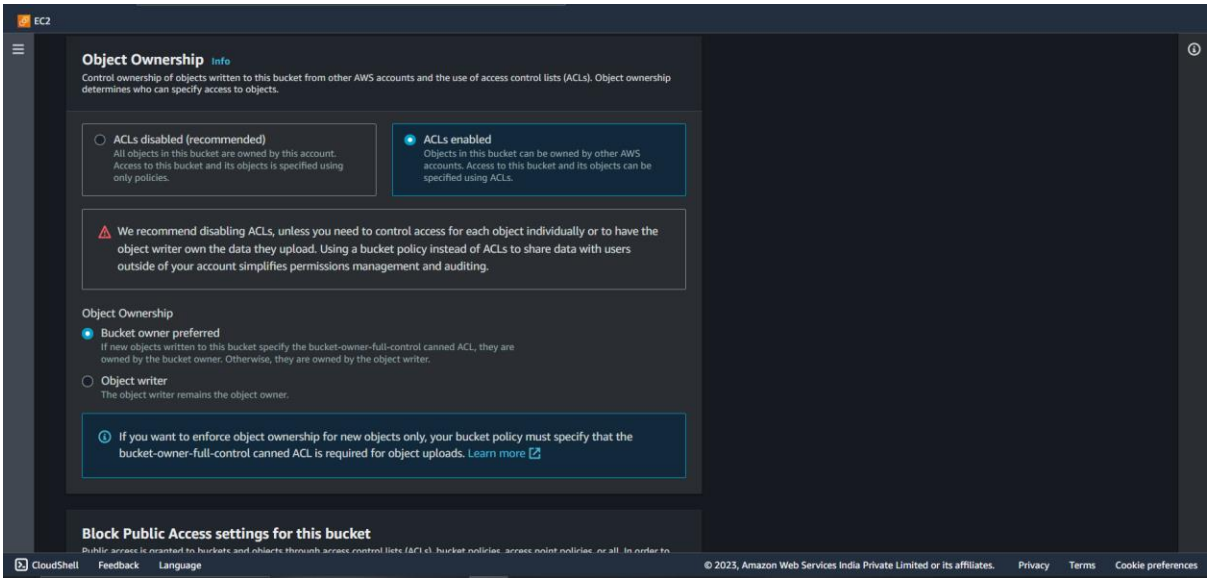
2. You will be redirected to S3 home page now click on create bucket to create a new **S3 bucket**.
   It acts as a **logical container** for storing objects. You can create multiple buckets within your AWS account to organize and manage your data.
   Each bucket has a unique name within the S3 service and is associated with a specific AWS region.
   The maximum size of an S3 bucket is **infinite**.



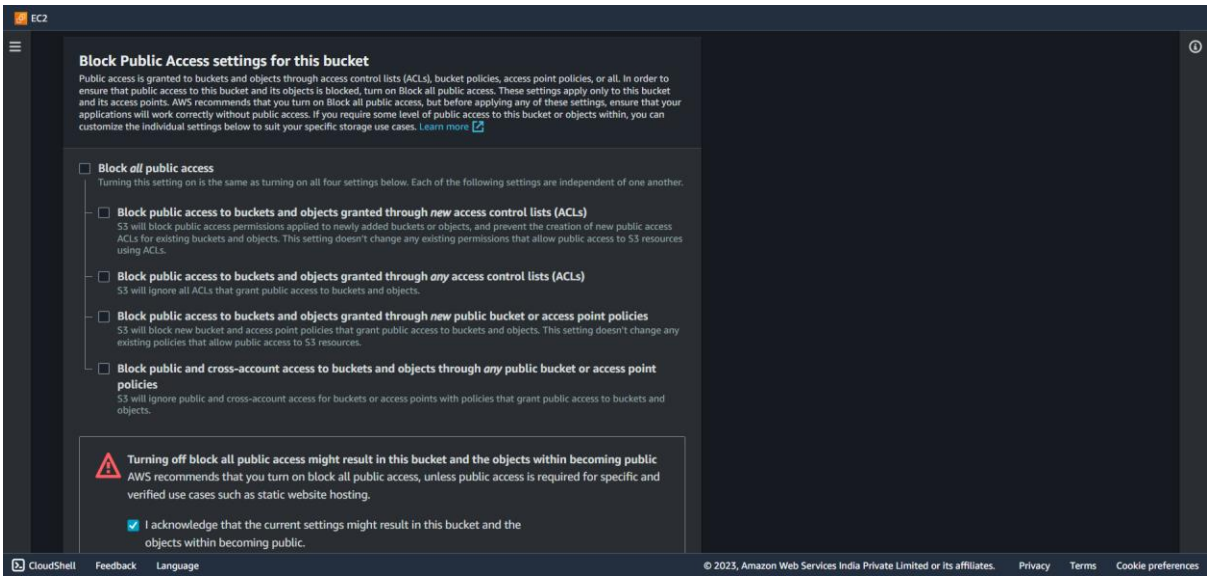
3. Select a **name** for your bucket which has to be globally unique and there are also few **naming guidelines** for bucket
    - It can contain lowercase letters, numbers, hyphens (-), and periods (.) but cannot start or end with a hyphen or period.
    - Must be between 3 and 63 characters long.
    - Should not resemble IP addresses (e.g., 192.168.5.4) or end with a regional identifier such as ".amazonaws.com".



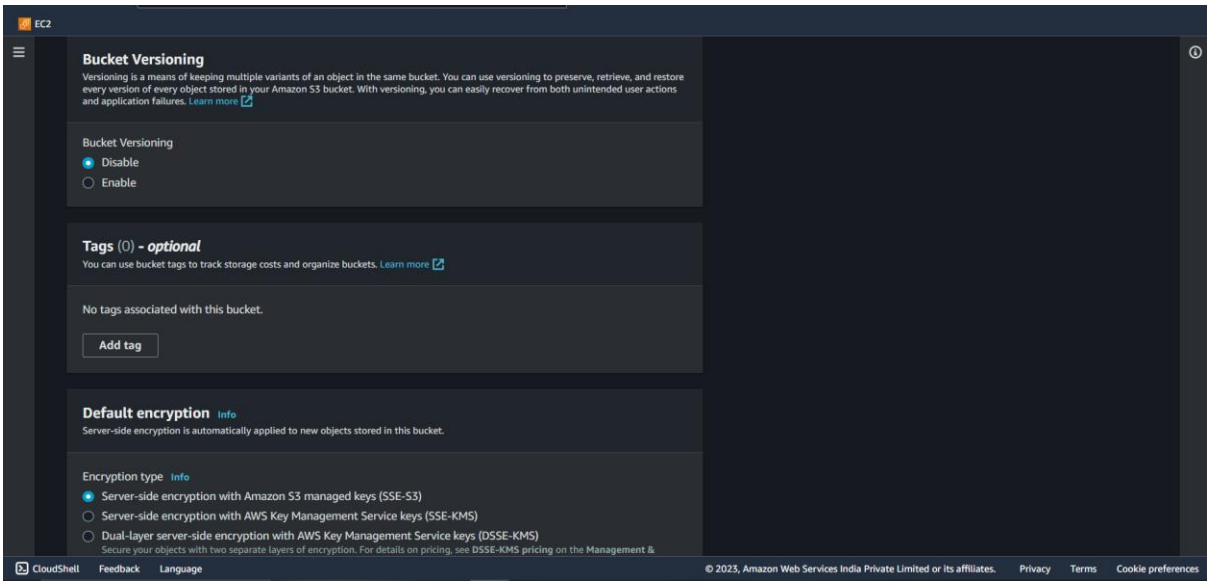
4. **Object ownership** refers to the ownership of the objects stored within an S3 bucket. Ownership determines who has control and permissions to manage and access the objects. Understanding object ownership is crucial for managing access control and permissions within S3.



5. By enabling the **block public access settings** and configuring a bucket policy, you can effectively block public access to an S3 bucket and its objects. These measures help ensure that only authorized users or applications have access to the bucket, enhancing the security and privacy of your data.



6. **Bucket versioning** allows you to keep multiple versions of an object in an S3 bucket. When versioning is enabled for a bucket, every time an object is modified or deleted, a new version of the object is created and stored in the bucket. Each version has a unique **version ID** associated with it.



7. **Server-Side Encryption (SSE):**

a. **SSE-S3**: Amazon S3 manages the encryption and decryption of your objects. Data is encrypted at rest using AES-256 encryption.

b. **SSE-KMS**: AWS Key Management Service (KMS) is used to manage the encryption keys.

SSE-KMS provides additional features like key rotation, audit logs, and fine-grained access control.

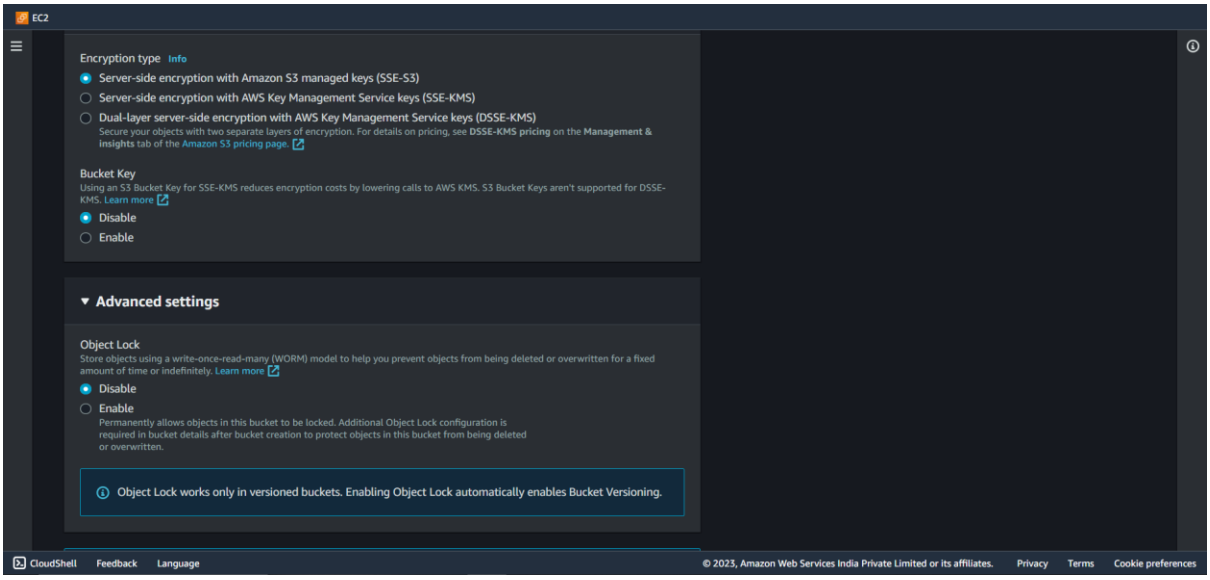
c. **SSE-C**: You manage the encryption keys outside of AWS and provide them during object upload. SSE-C uses AES-256 encryption.

Client-Side Encryption:

With client-side encryption, you encrypt the data on the client-side before uploading it to AWS. The encrypted data is then stored in S3.

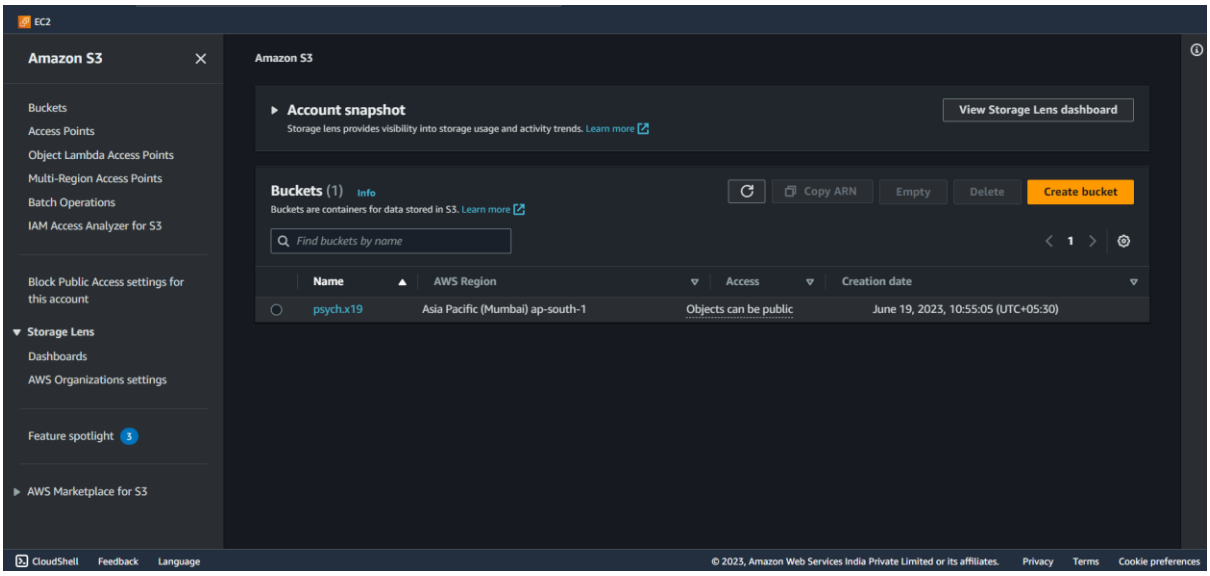
You can use your own encryption libraries or AWS SDKs to perform client-side encryption.

Object Lock is a feature provided by Amazon S3 that enables you to enforce retention periods and protect objects from being deleted or modified for a specified duration. It helps you meet compliance requirements, such as **data immutability** and **long-term data retention.**

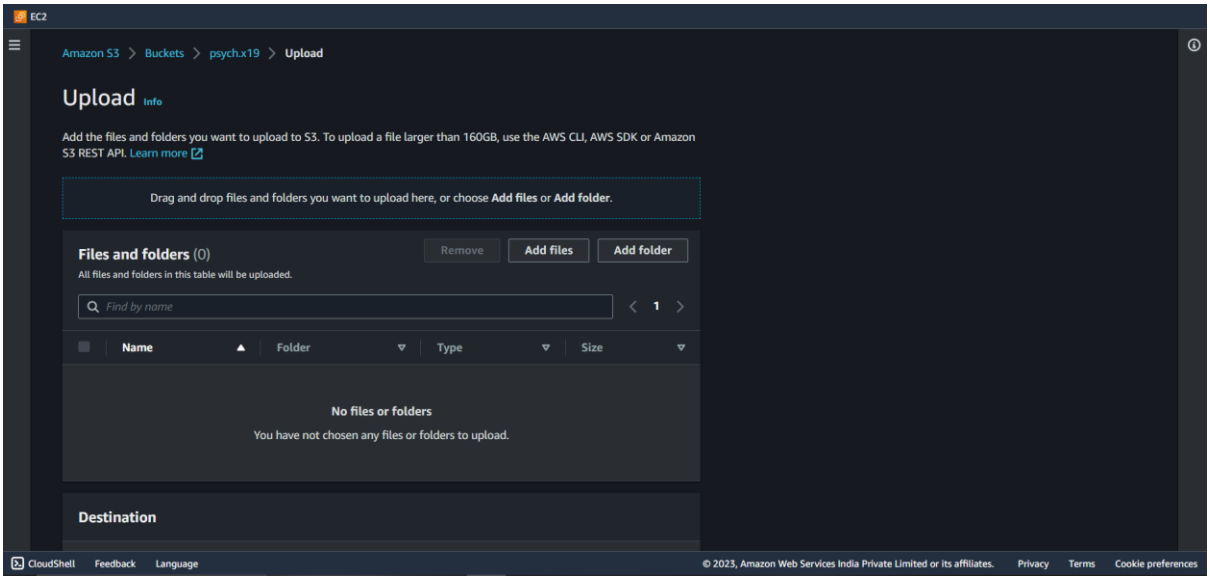


Then click on create bucket to create an S3 bucket.

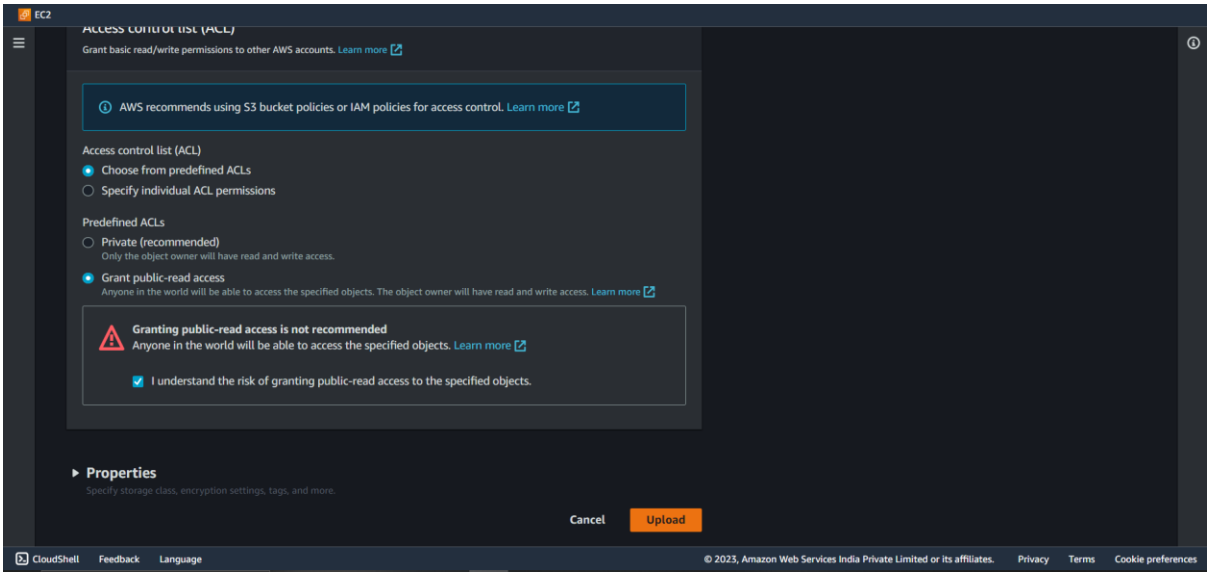
8. Now a bucket has been successfully created now you can upload objects into the bucket but clicking on the bucket and **selecting “upload”.**



9. After clicking on the "Upload" button you can either **add files** or **drag and drop** files from your local machine to the designated area. You can configure settings like permissions, metadata, and storage class before initiating the upload.

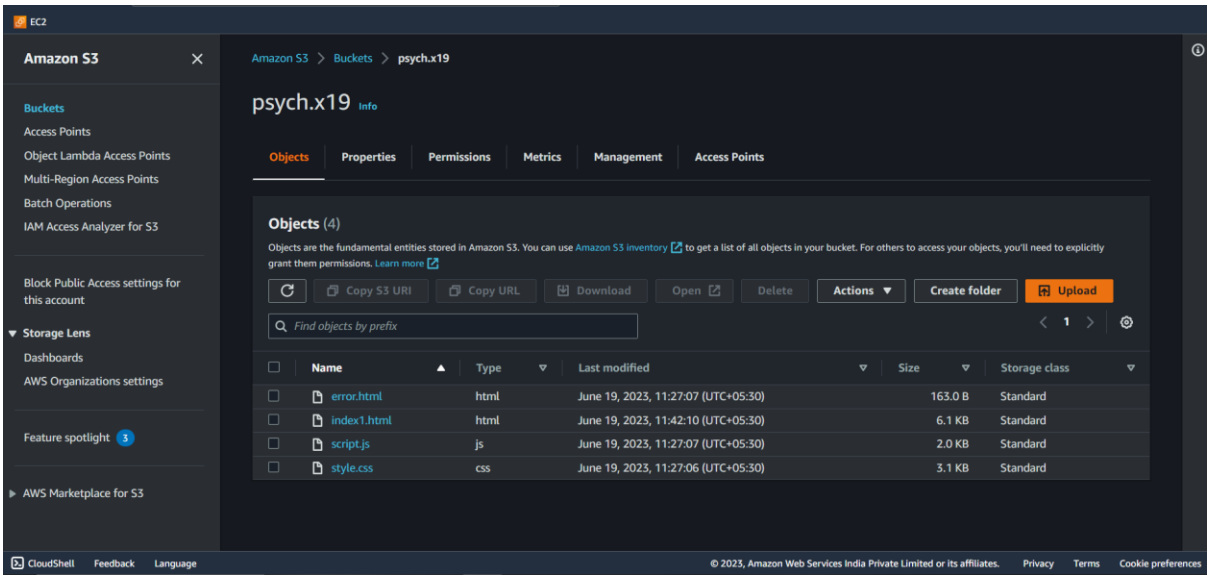


10. **Access Control List (ACL)** is a mechanism provided by Amazon S3 that allows you to manage access permissions for your S3 buckets and objects at a granular level. ACLs define who can perform specific actions (such as read, write, delete) on your S3 resources.

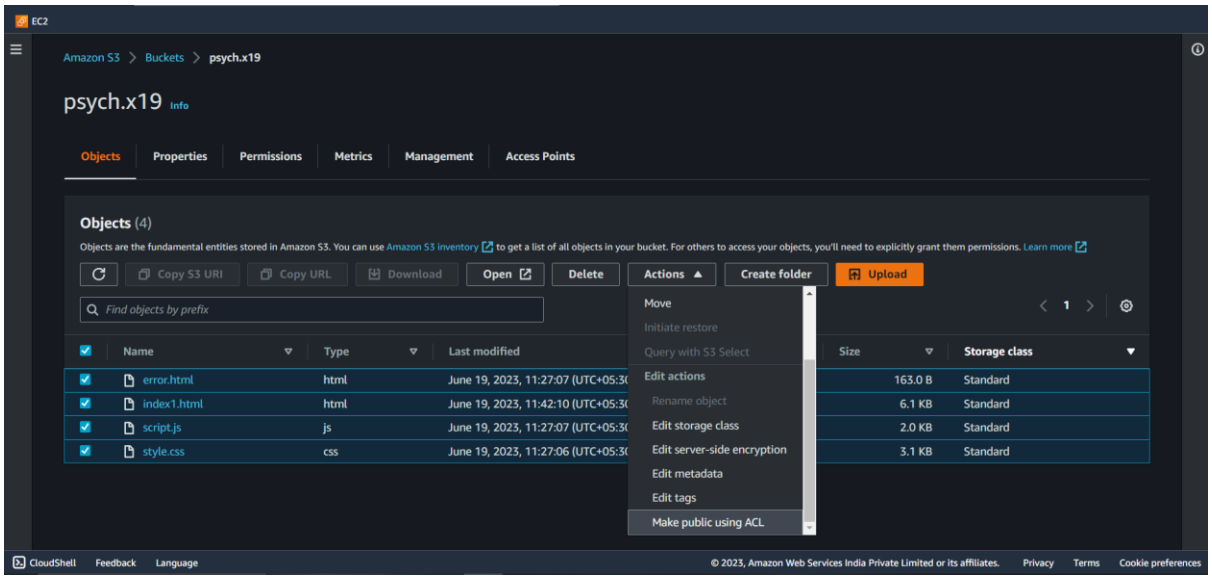


Creating Static Web page

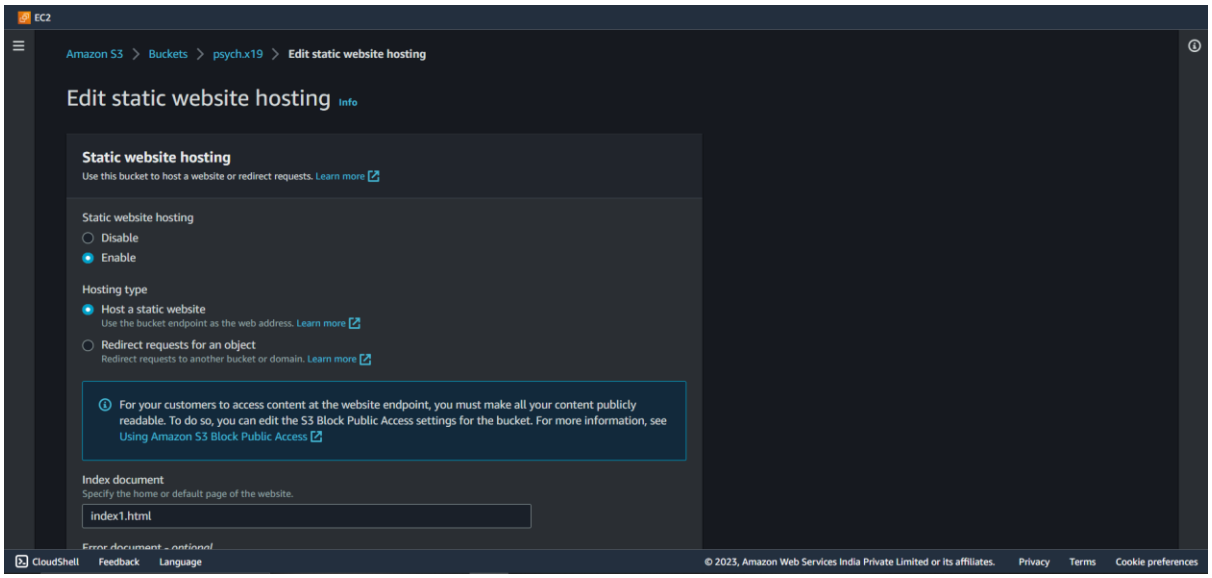
11. Upload required html files to host a static web page from your S3 bucket.



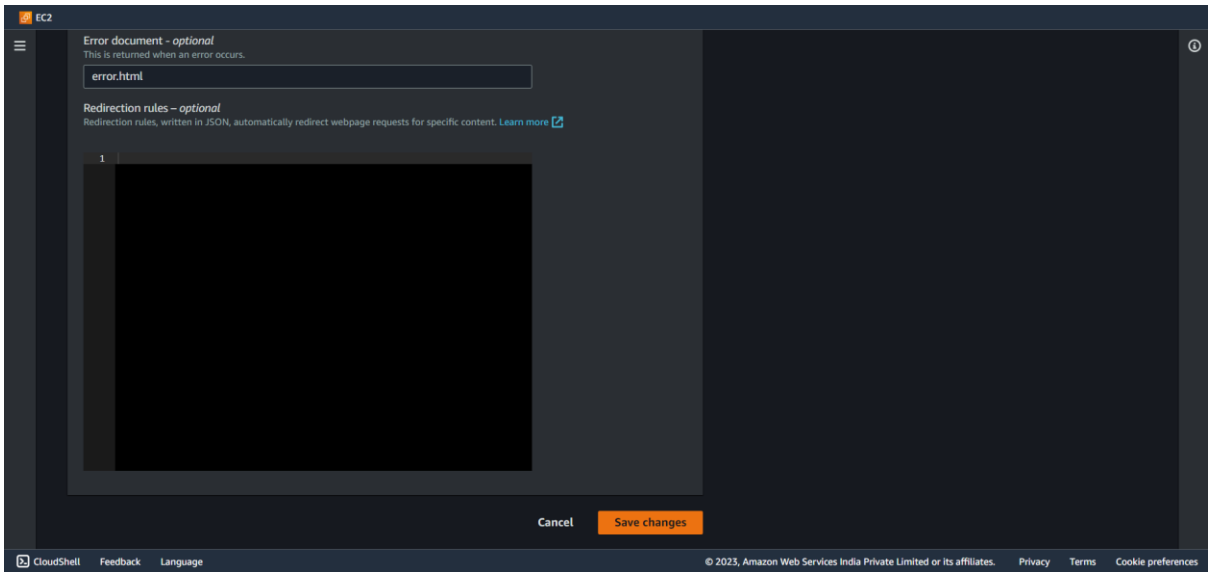
12. To access your page you have to allow them to be public using ACL



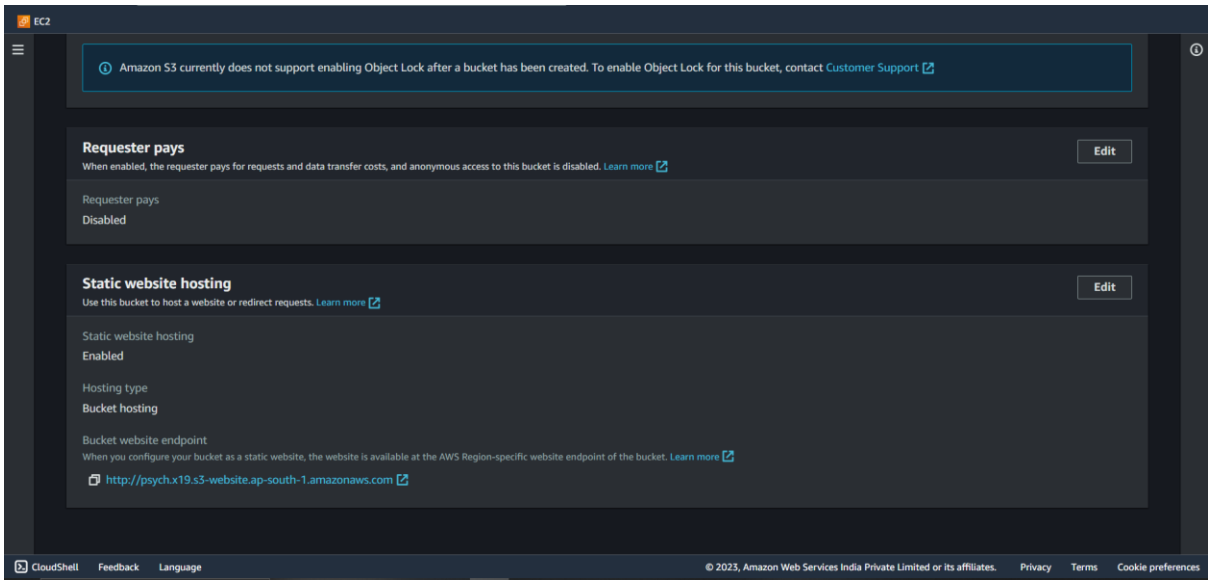
13. To be able to host a static web page we must enable the **static web page hosting** and enter the Index and error documents in the console.



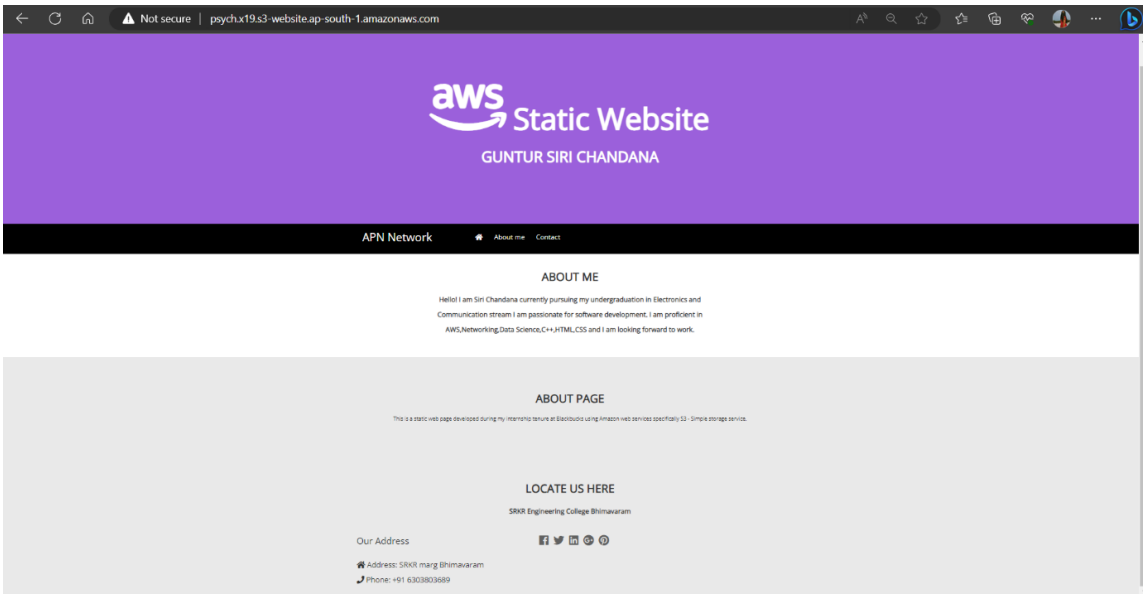
14. Apply any redirection rules if needed and click on save changes.
    Redirection rules allows you to configure rules to redirect requests made to a specific S3 object or bucket to another destination. These rules help you control the behaviour of your S3 objects and provide a flexible way to handle requests and direct traffic.



15. Now that your static web page is launched a unique domain name that is automatically created by AWS copy the link and search for it on any web browser.



16. This is a simple static web page created using html, css, js.



Cleaning up workspace

In order to delete a bucket we must first empty the bucket i.e., all objects must be deleted and and then permanently delete the bucket.