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at

Sathyabama Institute of Science and Technology

(Deemed to be University)

Submitted in partial fulfillment of the requirements for the award of

Bachelor of Engineering Degree in Computer Science and Engineering

By

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SATHYABAMA

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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **Varshinii Kasirajan (40111395)** who carried out the project entitled **STORAGE WITH S3-HOST STATIC WEBSITE** under my supervision from Aug 2022 to Oct 2022.

Internal Guide

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Submitted for Viva voce Examination held on _____

Internal Examiner **External Examiner**

DECLARATION

I **Varshinii Kasirajan** hereby declare that the Project Report entitled **STORAGE WITH S3-HOST STATIC WEBSITE** Done by me under the guidance **of N. UMASANKARI, M.Tech(Ph.D.,),** Is submitted in partial fulfillment of the requirements for the award of Bachelor of Engineering degree In Computer Science and Engineering.

DATE:

PLACE: **SIGNATURE OF THECANDIDATE**

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ABSTRACT

In recent years, whether you experience a natural disaster, power failure or other crisis, having your data stored in the cloud ensures it is backed up and protected in a secure and safe location. Being able to access your data again quickly allows you to conduct business as usual, minimizing any downtime and loss of productivity. The cloud enables users to access the same files and application from almost any device, because the computing and storage takes place on server in a data center, instead of locally on the user. So, I have created online static website to host in AWS it has store in cloud function up to lifetime of years.

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CHAPTER 1

INTRODUCTION

1.1 CLOUD COMPUTING:

Cloud computing is the use of off-site systems to help computers store, manage, process, and/or communicate information. These off-site systems are hosted on the cloud (or the internet) instead of on your computer or other local storage. They can encompass anything from email servers to software programs, data storage, or even increasing your computer's processing power. The "cloud" is a term that simply means "the internet." Computing involves the infrastructures and systems that allow a computer to run and build, deploy, or interact with information. In cloud computing, this means that instead of hosting infrastructure, systems, or applications on your hard drive or an on-site server, you're hosting it on virtual/online servers that connect to your computer through secure networks.

1.2 INTRODUCTION TO AMAZON S3:

Amazon S3 is one of the main building blocks of AWS. It's advertised as "infinitely scaling" storage many websites use Amazon S3 as a backbone. Many AWS services use Amazon S3 as an integration as well We'll have a step-by-step approach to S3. The CCP exam requires "deeper" knowledge about S3.

1.3 STATIC AND DYNAMIC WEBSITE:

A Static website is usually written in HTML using CSS and JavaScript. In a static website, the display content is the same for everyone. It does not involve any server-slide processing or databases. A Dynamic website involves more user interaction along with server-side processing and databases if required. Its content changes with every user depending on various factors. With that, let us also know a little about the AWS S3 objects.

CHAPTER 2

Amazon S3

2.1 WHAT IS AMAZON S3

Amazon Simple Storage Service (Amazon S3) is an object storage service that offers industry-leading scalability, data availability, security, and performance. Customers of all sizes and industries can use Amazon S3 to store and protect any amount of data for a range of use cases, such as data lakes, websites, mobile applications, backup and restore, archive, enterprise applications, IoT devices, and big data analytics. Amazon S3 provides management features so that you can optimize, organize, and configure access to your data to meet your specific business, organizational, and compliance requirements.

Fig 2.1 OVERVIEW OF AMAZON S3

2.2 ADVANTAGES OF AMAZON S3

If you're looking for secure storage that's simple and robust, Amazon S3 is a great choice. AWS built this tool with a minimal feature set that delivers big advantages.

- Scalability
- Durability and accessibility
- Cost-effective storage
- Versioning

- Powerful security

2.3 FEATURES OF AMAZON S3

2.3.1 storage classes

Amazon S3 offers a range of storage classes designed for different use cases. For example, you can store mission-critical production data in S3 Standard for frequent access, save costs by storing infrequently accessed data in S3 Standard-IA or S3 One Zone-IA, and archive data at the lowest costs in S3 Glacier Instant Retrieval, S3 Glacier Flexible Retrieval, and S3 Glacier Deep Archive.

You can store data with changing or unknown access patterns in S3 Intelligent-Tiering, which optimizes storage costs by automatically moving your data between four access tiers when your access patterns change. These four access tiers include two low-latency access tiers optimized for frequent and infrequent access, and two opt-in archive access tiers designed for asynchronous access for rarely accessed data.

2.3.2 storage management

Amazon S3 has storage management features that you can use to manage costs, meet regulatory requirements, reduce latency, and save multiple distinct copies of your data for compliance requirements.

- S3 LIFECYCLE– Configure a lifecycle policy to manage your objects and store them cost effectively throughout their lifecycle.
- S3 OBJECT LOCK – Prevent Amazon S3 objects from being deleted or overwritten for a fixed amount of time or indefinitely. You can use Object Lock to help meet regulatory requirements that require *write-once-read-many (WORM)* storage or to simply add another layer of protection against object changes and deletions.
- S3 REPLICATION – Replicate objects and their respective metadata and object tags to one or more destination buckets in the same or different AWS Regions for reduced latency, compliance, security, and other use cases.
- S3 BATCH OPERATIONS – Manage billions of objects at scale with a single S3 API request or a few clicks in the Amazon S3 console. You can use Batch

Operations to perform operations such as Copy, Invoke AWS Lambda function, and restore on millions or billions of objects.

2.3.3 access management

Amazon S3 provides features for auditing and managing access to your buckets and objects. By default, S3 buckets and the objects in them are private. You have access only to the S3 resources that you create. To grant granular resource permissions that support your specific use case or to audit the permissions of your Amazon S3 resources, you can use the following features.

- S3 block public access
- AWS identity and access management (IAM)
- Bucket policies
- Amazon S3 access points
- Access Control Lists (ACLs)
- S3 object ownership
- Access analyzer for S3

2.3.4 data processing

To transform data and trigger workflows to automate a variety of other processing activities at scale, you can use the following features.

- S3 Object Lambda – Add your own code to S3 GET, HEAD, and LIST requests to modify and process data as it is returned to an application. Filter rows, dynamically resize images, redact confidential data, and much more.
- Event Notification – Trigger workflows that use Amazon Simple Notification Service (Amazon SNS), Amazon Simple Queue Service (Amazon SQS), and AWS Lambda when a change is made to your S3 resources.

2.3.5 Storage logging and monitoring

Amazon S3 provides logging and monitoring tools that you can use to monitor and control how your Amazon S3 resources are being used.

- Automated monitoring tools: Amazon cloud watch metrics for amazon S3
  AWS CloudTrail
- Manual monitoring tools

Server access logging

2.4 HOW AMAZON S3 WORKS

Amazon S3 is an object storage service that stores data as objects within buckets. An *object* is a file and any metadata that describes the file. A *bucket* is a container for objects. To store your data in Amazon S3, you first create a bucket and specify a bucket name and AWS Region. Then, you upload your data to that bucket as objects in Amazon S3. Each object has a *key* (or *key name*), which is the unique identifier for the object within the bucket.

S3 provides features that you can configure to support your specific use case. For example, you can use S3 Versioning to keep multiple versions of an object in the same bucket, which allows you to restore objects that are accidentally deleted or overwritten.

Buckets and the objects in them are private and can be accessed only if you explicitly grant access permissions. You can use bucket policies, AWS Identity and Access Management (IAM) policies, access control lists (ACLs), and S3 Access Points to manage access.

2.5 S3 SYSTEM ARCHITECHURE:

Amazon S3 manages data with an object storage architecture which aims to provide scalability, high availability, and low latency with high durability. The basic storage units of Amazon S3 are objects which are organized into buckets. Each object is identified by a unique, user-assigned key.

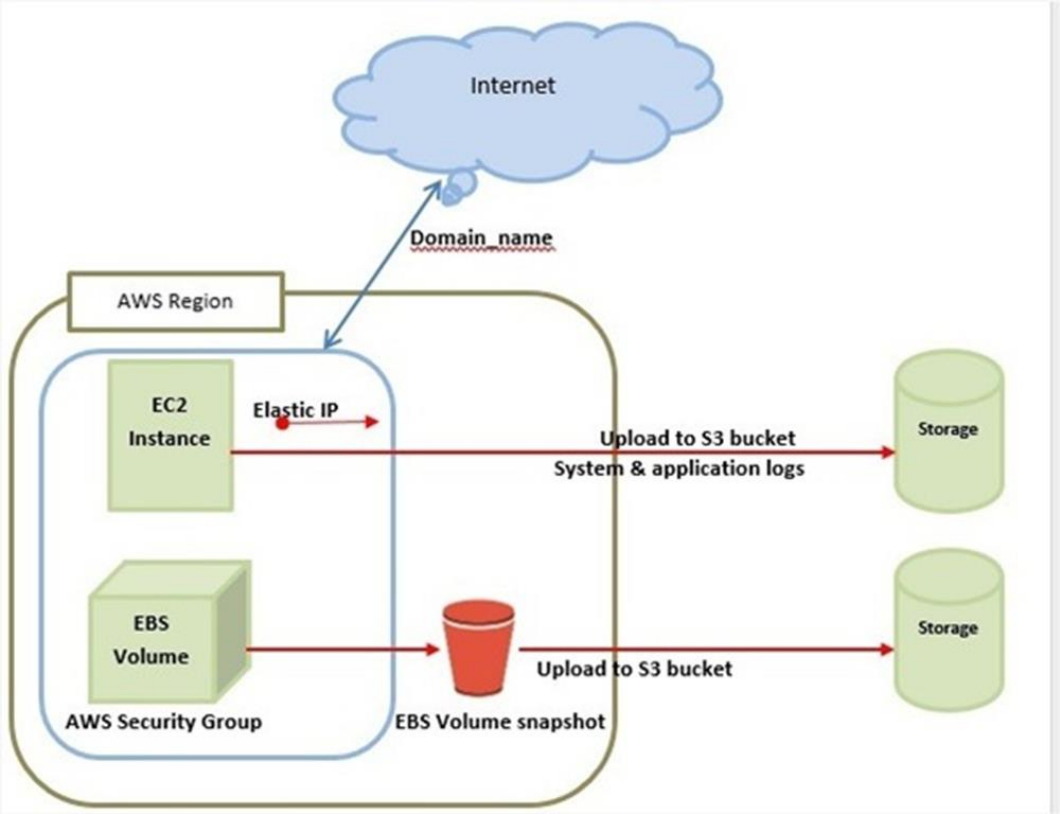

Fig 2.2 S3 System Architecture

CHAPTER 3

METHODOLOGY

3.1 HOSTING STATIC WEBSITE WITH AWS S3

Step 1: Creating a buckect in S3

Step1.1: Go to the S3 Management Console and click on “Create Bucket”.

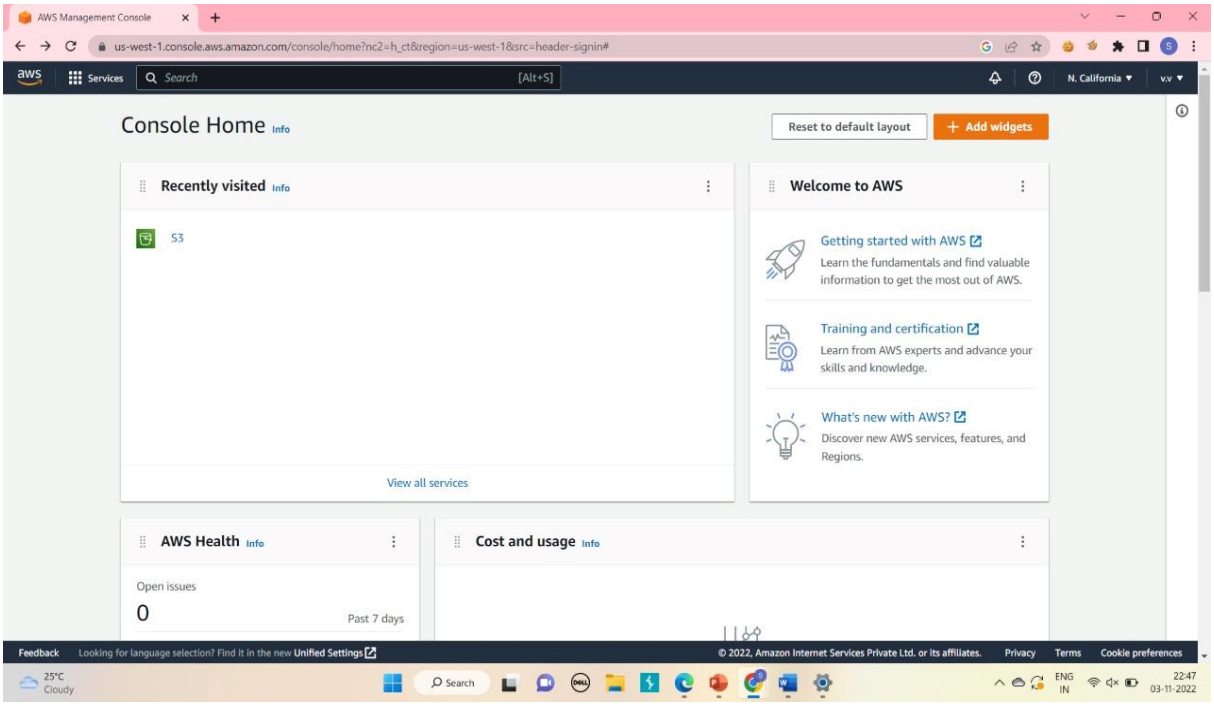

Fig 3.1 S3 Management Console

Step 2: enter the bucket name. Note that the bucket name should be unique. Add something at the end to get a unique bucket name. Select the region where the data must be stored. Click on create and the bucket should be created as shown below. A bucket is a container for storing folders and files.

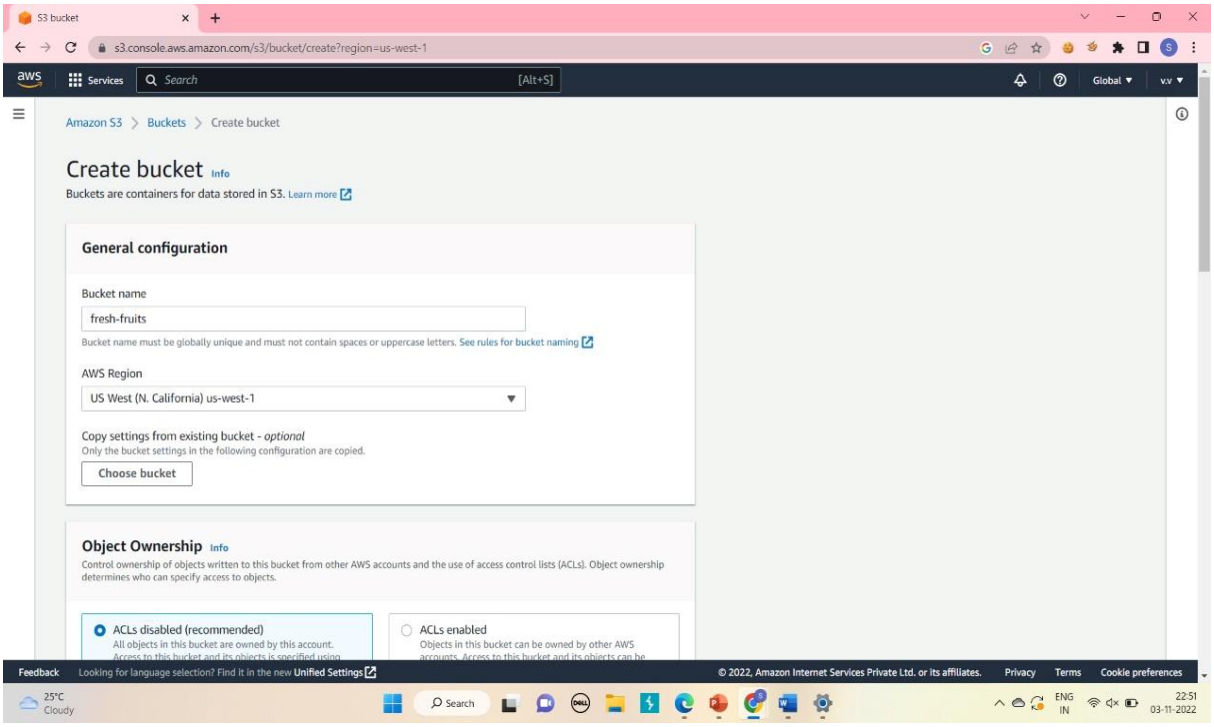

Fig 3.2 General Configuration

Step 3: giving public permission to S3 bucket

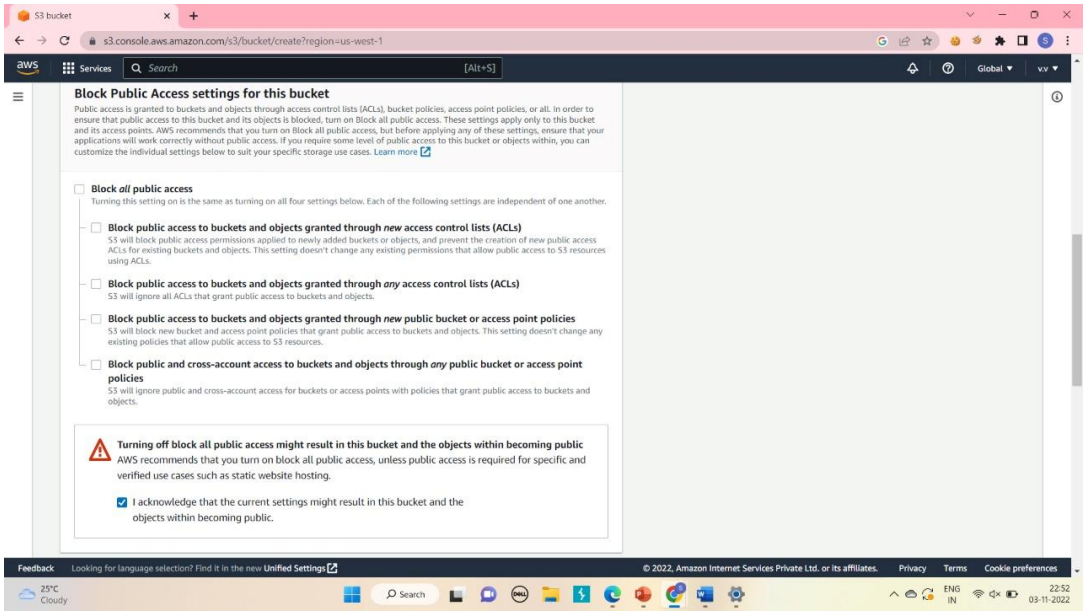

Fig 3.3 Giving Public Access

Step 4: Bucket is successfully created

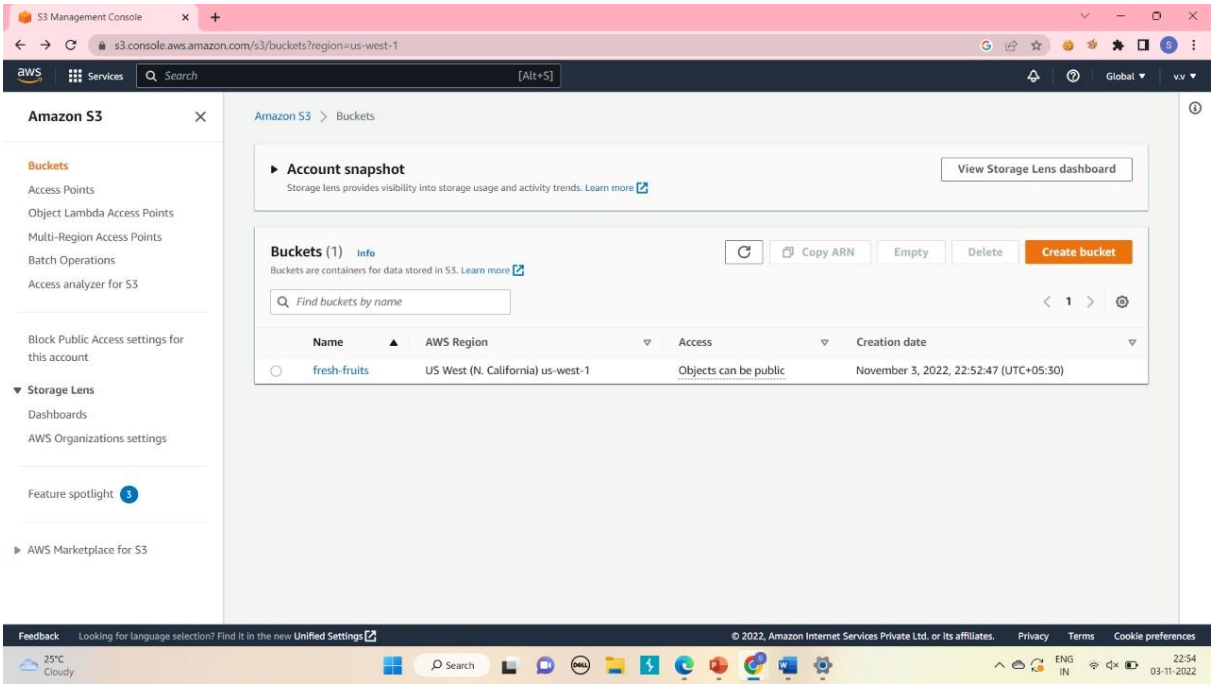

Fig 3.4 Bucket is Created

Step 5: Go to the object tab and click on upload.

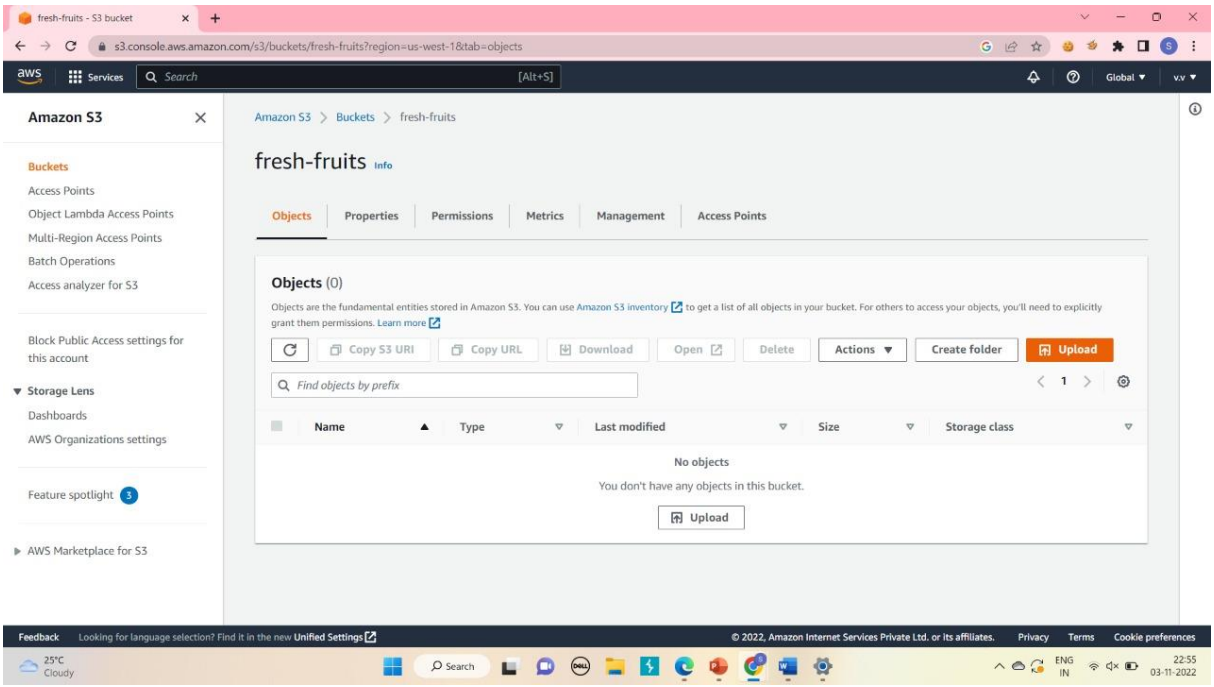

Fig 3.5 Object Writer

Step 6: Click on “add files” and then upload files and then same steps must be followed for uploading folders.

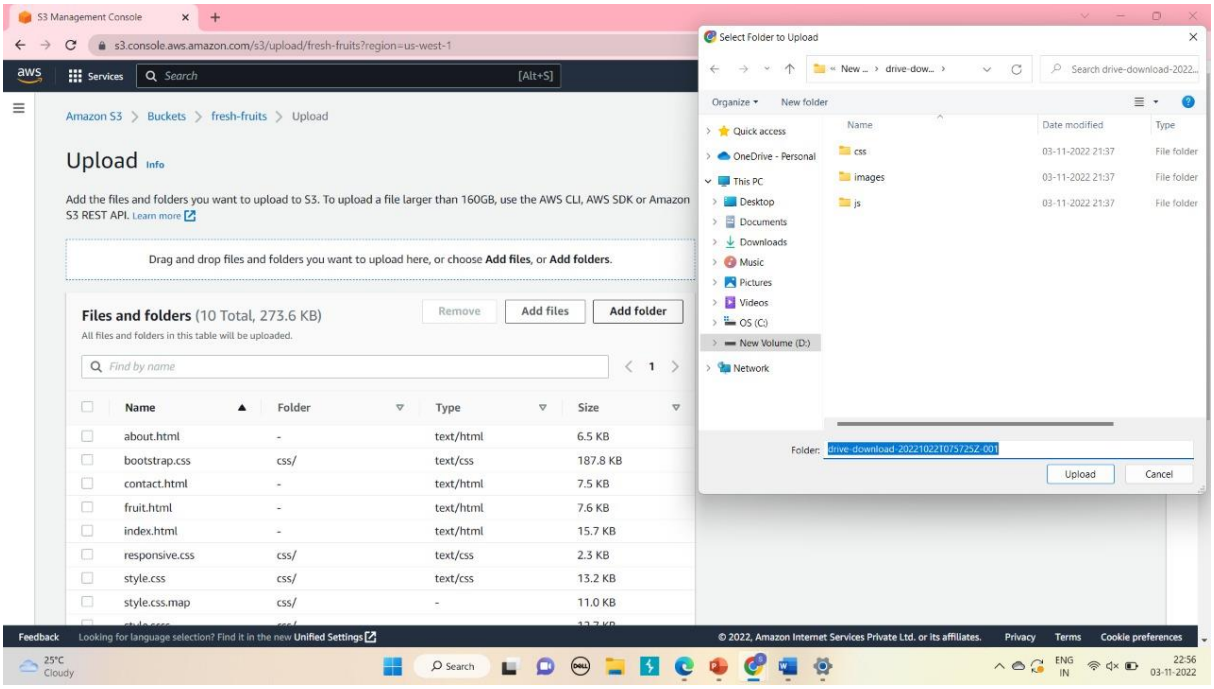

Fig 3.6 Upload Files and Folders

Step 6.1: All the files and folders of the website are uploaded successfully.

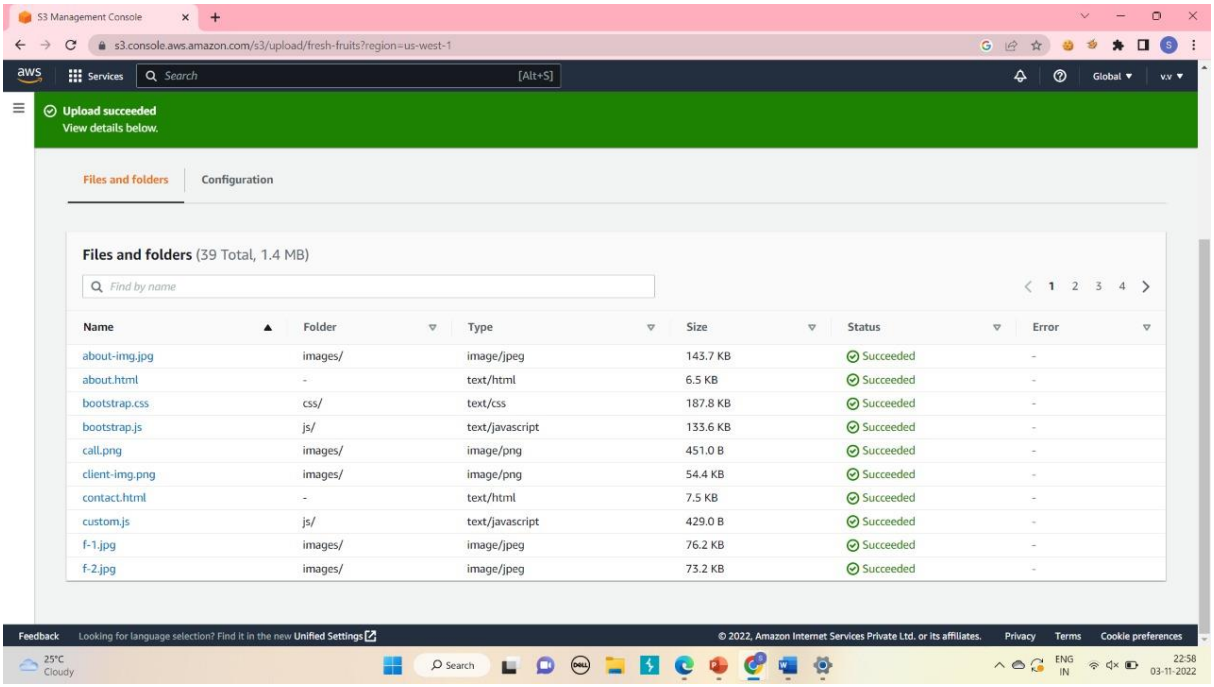

Fig 3.7 Files and Folders Uploaded

Step 7: Select all files and folders, click action and select “Make public using ACL”.

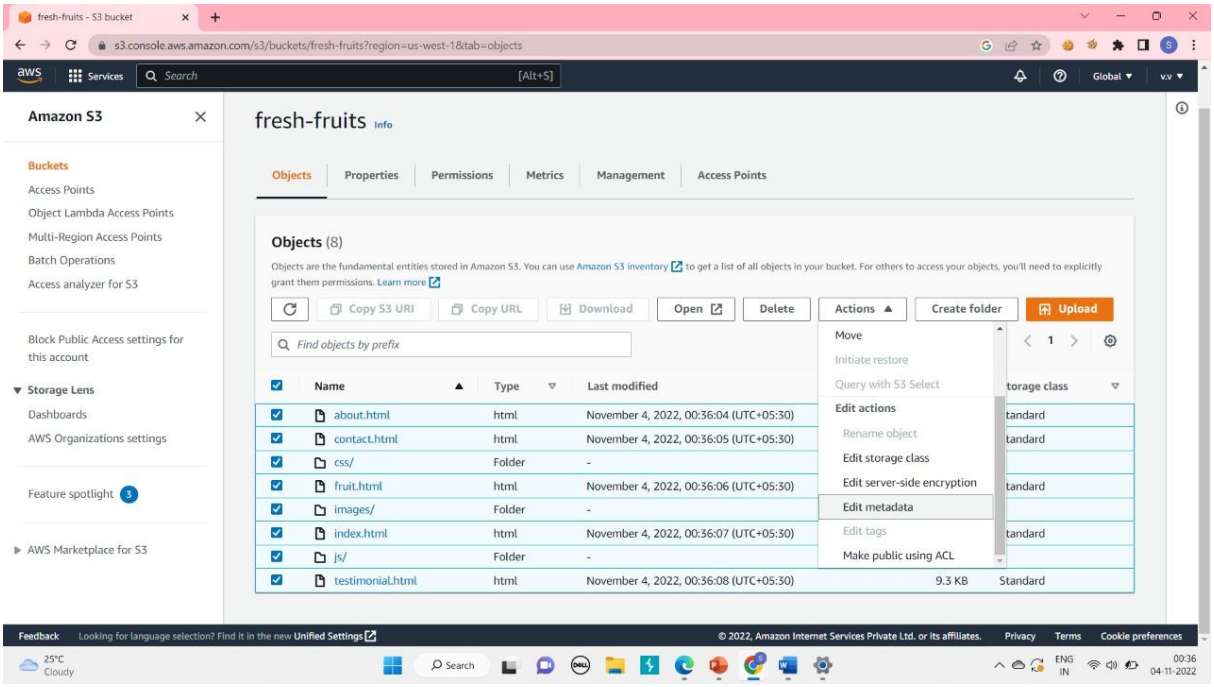

Fig 3.8 Enabling ACLs

Step 8: Now is the time to enable “Static website hosting” for S3. Notice that by default, it is disabled. Click on the card and select “Use this Bucket to host a website”. Enter the Index document as index.html and the Error document as error.html. Make sure to note down the Endpoint, this is the URL used to access the S3 website. Click on Save.

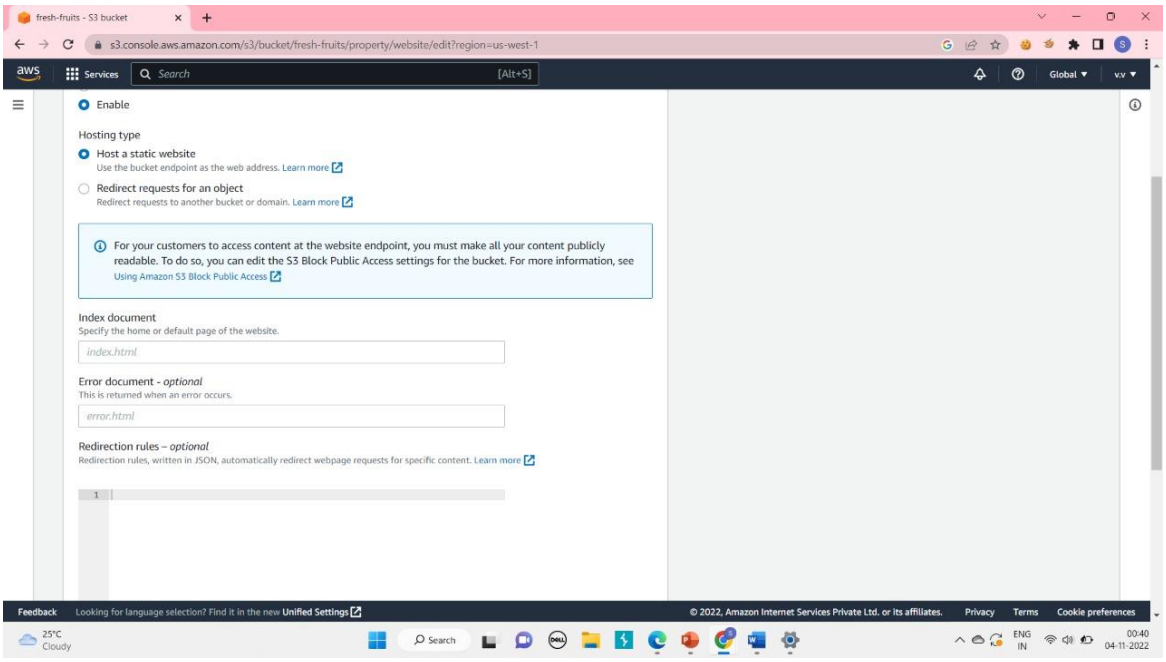

Fig 3.9 Enabling Static Website Hosting

3.2 TESTING WEBSITE END POINT:

After you configure static website hosting for your bucket, you can test your website endpoint.

Amazon S3 does not support HTTPS access to the website. If you want to use HTTPS, you can use Amazon Cloud Front to serve a static website hosted on Amazon S3.

For more information, see how do I use Cloud Front to serve a static website hosted on Amazon S3? And Requiring HTTPS for communication between viewers and Cloud Front.

1. Under Buckets, choose the name of your bucket.
2. Choose Properties.
3. At the bottom of the page, under Static website hosting, choose your Bucket website endpoint. Your index document opens in a separate browser window.

CHAPTER 4

RESULT AND DISCUSSION

4.1 BUCKET WEBSITE ENDPOINT

Static website has been uploaded to S3 website bucket. After configuring bucket as a static website, the website is available at the AWS Region-specific website endpoint of the bucket.

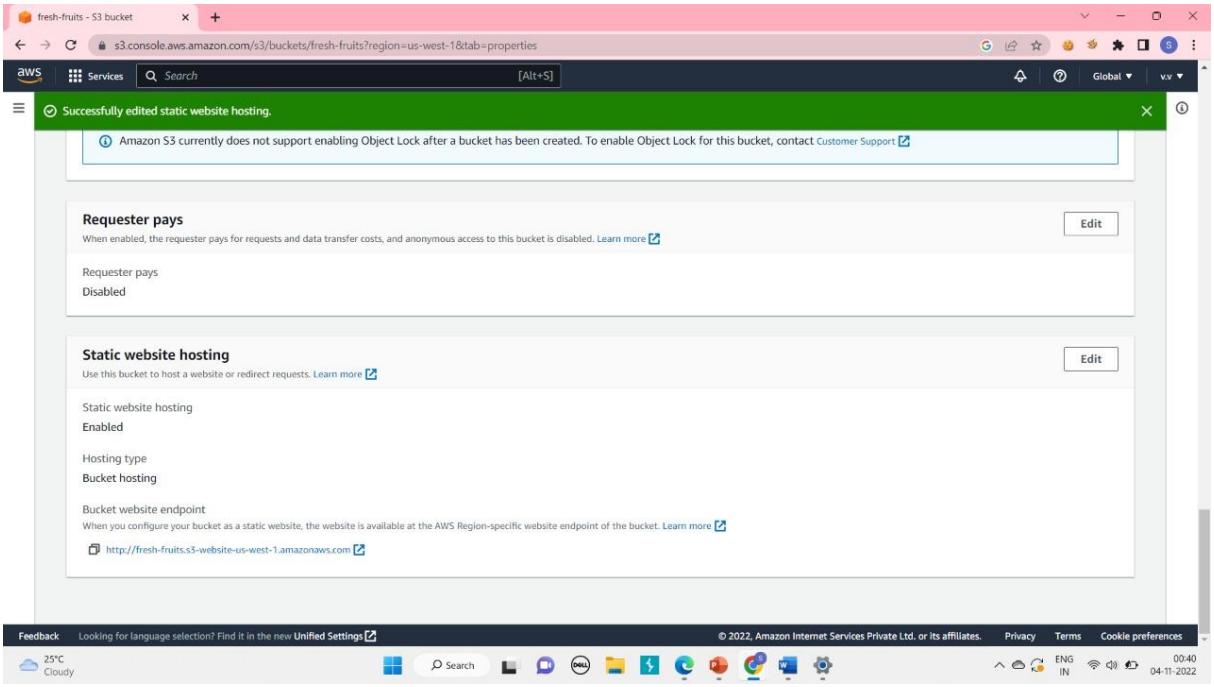

Fig 4.1 Website Uploaded to S3

CHAPTER 5

CONCLUSION AND FUTURE WORK

Amazon S3 cloud storage is a good solution for high-load platforms that require a high level of reliability, scalability and accessibility. However, Amazon S3 storage is also affordable for individual users. This blog post has explained how Amazon S3 works, its features, how data is stored is S3, and how you can use this service. Amazon S3 is the object-based storage that provides versioning, data redundancy, access management and security options for data management.

- Cloud computing is outpacing the IT industry real business value can be realized by customers of all sizes.
- Cloud solutions are simple to acquire, don't require long term contracts and are easier to scale up and down as needed.
- Public and private clouds can be deployed together to leverage the best of both.
- Security compliance and monitoring is achievable with careful planning and analysis.
- Sampling of IT skills likely to be demand in the future. Functional application development and support.
- Leveraging data to make strategic business decisions.

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