Project Report

On

HOSTING A STATIC WEBSITE USING AWS S3

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CERTIFICATE

This is to certify that the project work titled "**HOSTING A STATIC WEBSITE USING AWS S3**" is a bonafied project work submitted by Saikumar Sripathi and Kishore Kothakota in the department of COMPUTER SCIENCE AND ENGINEERING in partial fulfillment of requirements for the award of degree of Bachelor of Technology in Computer science and engineering for the year 2020-2021 carried out the work under the supervision

GUIDE	HEAD OF THE DEPARTMENT
K VINOD KUMAR	P HARINATHA

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My sincere thanks to all the members who helped me directly and indirectly in the completion of project work. I express my profound gratitude to all our friends and family members for their encouragement.

INDEX

Abstract

This project is about hosting the static website using AWS S3.It stands for Amazon Simple Storage Service. It is a cloud-based storage that can scale to an enormous size and provide high performance, availability, reliability, and security It is a very cost-effective and secure replacement on your on-premises data center. The data is stored on cloud servers can be accessed through other web applications and websites globally. Apart from data storage functionality, the AWS S3 bucket provides a remarkable feature of static website hosting over it. A website that doesn't involve server-side communication is called a static website.

For that we create an Free tier account in AWS. AWS has developed a great idea to publicly provide an easy and simple solution for their users to host content using the S3 bucket. We host our website related files into Amazon S3 and it gives an URL to access the webpage. Finally we get an storage free services for an static website upto some limit in AWS. This project describes to upload and download files through a website in AWS S3.

Key words:AWS S3, static website, data centers, cloud servers, server-side, web-applications, Free tier.

Introduction

Static Website

A static website delivers content in the same format in which it is stored. No server-side code execution is required. For example, if a static website consists of HTML documents displaying images, it delivers the HTML and images as-is to the browser, without altering the contents of the files. Static websites can be delivered to web browsers on desktops, tablets, or mobile devices. They usually consist of a mix of HTML documents,images, videos, CSS style sheets, and JavaScript files. Static doesn't have to mean boring—static sites can provide client-side interactivity as well.
Some examples of static sites include:

•Marketing websites

• Product landing pages

• Micro sites that display the same content to all users

• Team homepages

Online quiz Website:

- The main aim of this online quiz website is to give a user friendly environment to practice basic quesitons on certain subjects.
- On this quiz platform,It is a game to test knowledge and contains brief assessment used in education to measure growth in knowledge, abilities, skills etc.,

MODULES:

1.Home page
2.Topics page
3.Quiz and Result page

AWS 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.

Purpose

The main purpose of Hosting a static website using AWS S3 is to make our content accessible publicly which means we can access the website anywhere by everyone at a time through the URL which is provided by the AWS S3. In this individual web pages include static content. They might contain client-side communication but it doesn't involve server-side communication. Mainly it is very cost-effective and secure replacement for your on-premises data center and the data is stored on cloud storage.

Scope

As AWS holds a **global 69% of the cloud computing market share. I**t was started way early in the year 2006, when no company, literally no company was ready to set foot in the cloud computing industry, because of the risk, since no one ever tried it! This basically means AWS as a cloud provider has more experience in the field of cloud computing, and hence becomes an obvious choice when people are looking for a reliable cloud provider. Flexible pricing was an option that AWS came up with pay-as-you-go, now a days every cloud provider is a copy of what AWS came up with. On the other hand, all of this was before Microsoft Azure and Google Cloud came into the picture. Therefore, AWS has it all covered for its future, it's competitors have build up their game. It will be really exciting to see these giants i.e Microsoft, Google and AWS fight the ultimate battle of cloud!

Advantages:

1)No server maintenance.

2)No server hosting cost.

3)Better page speed across different locations

4)With Amazon S3 you only pay for your what you use

5)AWS provides a free tier account with certain amount of storage.

6)Amazon S3 gives you the ability to store a large amount of data with a very low cost and data security.

Disadvantages:

1)If you need more immediate or intensive assistance, you'll have to opt for paid support packages among 3 which are-

Developer: $29/month.

Business: Greater of $100 .

Enterprise: Greater of $15,000 .

2)Amazon Web Services may have some common cloud computing issues when you move to a cloud. For example, downtime, limited control, and backup protection

3)AWS sets default limits on resources which vary from region to region. These resources consist of images, volumes, and snapshots. You can launch the limited number of instance per area.

Requirement Specification

Hardware Configuration:

Client Side:

Ram	512 MB
Hard disk	10 GB
Processor	1.0 GHz

Software Requirement:

Front end	HTML,CSS ,Java Script
Web Browser	Firefox , Google Chrome or any compatible browser
Operating System	Ubuntu,Windows or any equivalent OS
Tool	AWS S3
Technology	Cloud Computing

HTML:-

HTML is a *markup language t*hat defines the structure of your content. HTML consists of a series of elements, which you use to enclose, or wrap, different parts of the content to make it appear a certain way, or act a certain way. The enclosing tags can make a word or image hyperlink to somewhere else, can italicize words, can make the font bigger or smaller, and so on

The main parts of our element are as follows:

The opening tag

The closing tag

The content

The element

CSS:-

Cascading Style Sheets is a stylesheet language used to describe the presentation of a document written in HTML or XML . It describes how elements should be rendered on screen, on paper, in speech, or on other media. It helps Web developers create a uniform look across several pages of a Web site. Instead of defining the style of each table and each block of text within a page's HTML, commonly used styles need to be defined only once in a CSS document.It can be used to define the cell padding of table cells, the style, thickness, and color of a table's border, and the padding around images or other objects.This is why most Web pages today incorporate cascading style sheets.

Java Script:-

JavaScript is a scripting or programming language that allows you to implement complex features on web pages every time a web page does more than just sit there and display static information for you to look at displaying timely content updates, interactive maps, animated 2D/3D graphics, scrolling video jukeboxes, etc.,It is the third layer of the layer cake of standard web technologies, two of which HTML and CSS. A very common use of JavaScript is to dynamically modify HTML and CSS to update a user interface, via the Document Object Model API . Look at that the code in your web documents is generally loaded and executed in the order it appears on the page.

HTTP:-

HTTP is a protocol for fetching resources such as HTML documents. It is the foundation of any data exchange on the Web and it is a client-server protocol, which means requests are initiated by the recipient, usually the Web browser. A complete document is reconstructed from the different sub-documents fetched, for instance, text, layout description, images, videos, scripts, and more. Clients and servers communicate by exchanging individual message.

Analysis and Design

Analysis:

Now a days deploying or hosting a website or applications is high cost-effective,because we want to buy servers , memory and databases for hosting the website publicly. In earlier the management of website storage and databases is difficult. In sometimes the servers and memory will be wasted and sometimes it would get more servers and memory. Now by using the AWS S3 we can deploy the website with low cost . Because we can pay only for the what we use. The bill will be priced only for servers and memory or databases we used every month. In this project we analysed the AWS s3 by hosting static website called “Online Quiz Practice”.AWS provides all services to host websites using Cloud Computing Technology.

Design Introduction:

Design is the first step in the development phase for any techniques and principles for the purpose of defining a device, a process or system in sufficient detail to permit its physical realization. Once the software requirements have been analyzed and specified the software design involves three technical activities - design, coding, implementation and testing that are required to build and verify the software.

Design is the place where quality is fostered in development. Software design is a process through which requirements are translated into a representation of software. Software design is conducted in two steps. Preliminary design is concerned with the transformation of requirements into data. The design activities are of main importance in this phase, because in this activity, decisions ultimately affecting the success of the software implementation and its ease of maintenance are made. These decisions have the final bearing upon reliability and maintainability of the system. Design is the only way to accurately translate the customer's requirements into finished software or a system.

UML Diagrams:

Actor:

A coherent set of roles that users of use cases play when interacting with the use cases an observable result of value of an actor.

Use case:

A description of sequence of actions, including variants, that a system performs yields an observable result of value of an actor. actor diagram is drawned in a eclipse shape

UML stands for Unified Modeling Language. UML is a language for specifying, visualizing and documenting the system. This is the step while developing any product after analysis. The goal from this is to produce a model of the entities involved in the project which later need to be built. The representation of the entities that are to be used in the product being developed need to be designed.

USECASE DIAGRAMS:

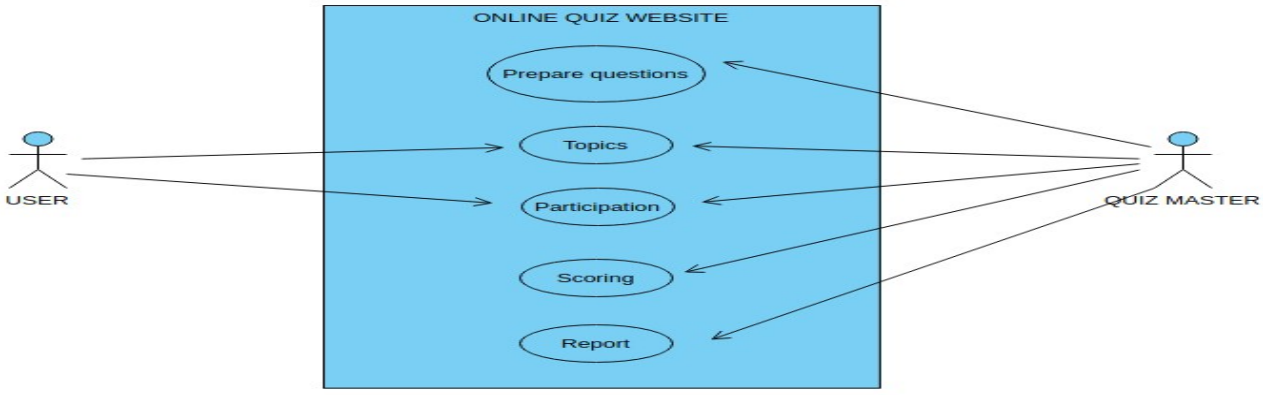
Use case diagrams model behavior within a system and helps the developers understand of what the user require. The stick man represents what's called an actor.

Use case diagram can be useful for getting an overall view of the system and clarifying that can do and more importantly what they can't do.

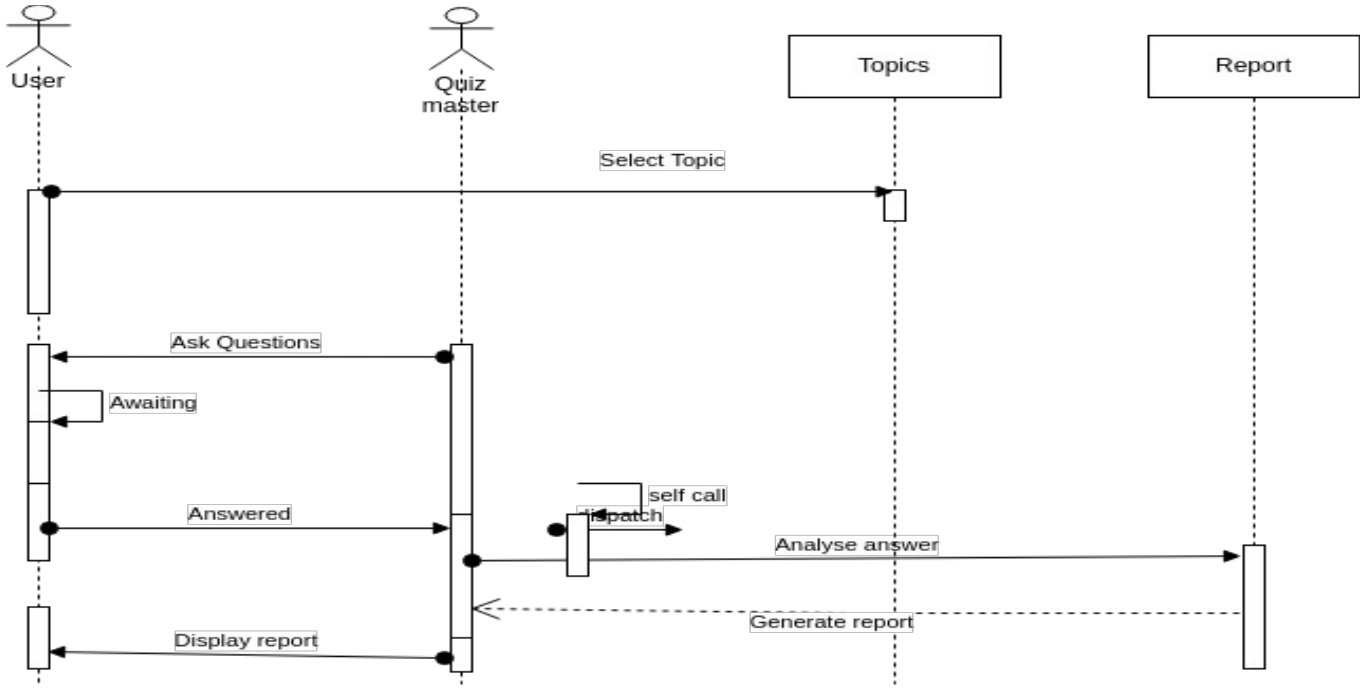
Use case diagram consists of use cases and actors and shows the interaction between the use case and actors.

- The purpose is to show the interactions between the use case and actor.
- To represent the system requirements from user's perspective.
- An actor could be the end-user of the system or an external system.

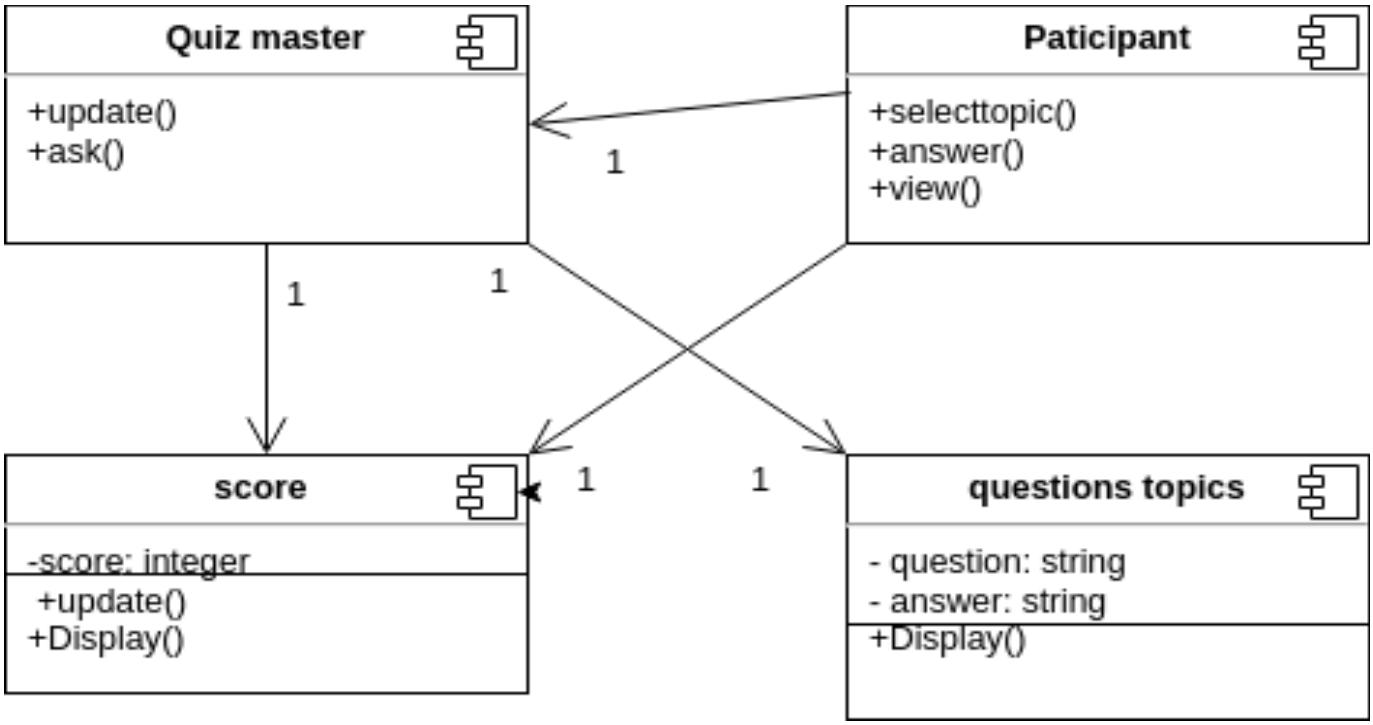
USECASE DIAGRAM: A Use case is a description of set of sequence of actions. Graphically it is rendered as an ellipse with solid line including only its name. Use case diagram is a behavioral diagram that shows a set of use cases and actors and their relationship. It is an association between the use cases and actors. An actor represents a real-world object. Primary Actor – Sender, Secondary Actor Receiver.



Sequence Diagram:



Class Diagram:



ER Diagram:

The Entity-Relationship (ER) model was originally proposed by Peter in 1976 [Chen76] as a way to unify the network and relational database views. Simply stated the ER model is a conceptual data model that views the real world as entities and relationships. A basic component of the model is the Entity-Relationship diagram which is used to visually represent data objects. Since Chen wrote his paper the model has been extended and today it is commonly used for database design for the database designer, the utility of the ER model is:

- It maps well to the relational model. The constructs used in the ER model can easily be transformed into relational tables.
- It is simple and easy to understand with a minimum of training. Therefore, the model can be used by the database designer to communicate the design to the end user.
- In addition, the model can be used as a design plan by the database developer to implement a data model in specific database management software.

ER Notation:

There is no standard for representing data objects in ER diagrams. Each modeling methodology uses its own notation. The original notation used by Chen is widely used in academics texts and journals but rarely seen in either CASE tools or publications by non-academics. Today, there are a number of notations used; among the more common are Bachman, crow's foot, and IDEFIX.

All notational styles represent entities as rectangular boxes and relationships as lines connecting boxes. Each style uses a special set of symbols to represent the cardinality of a connection. The notation used in this document is from Martin. The symbols used for the basic ER constructs are:

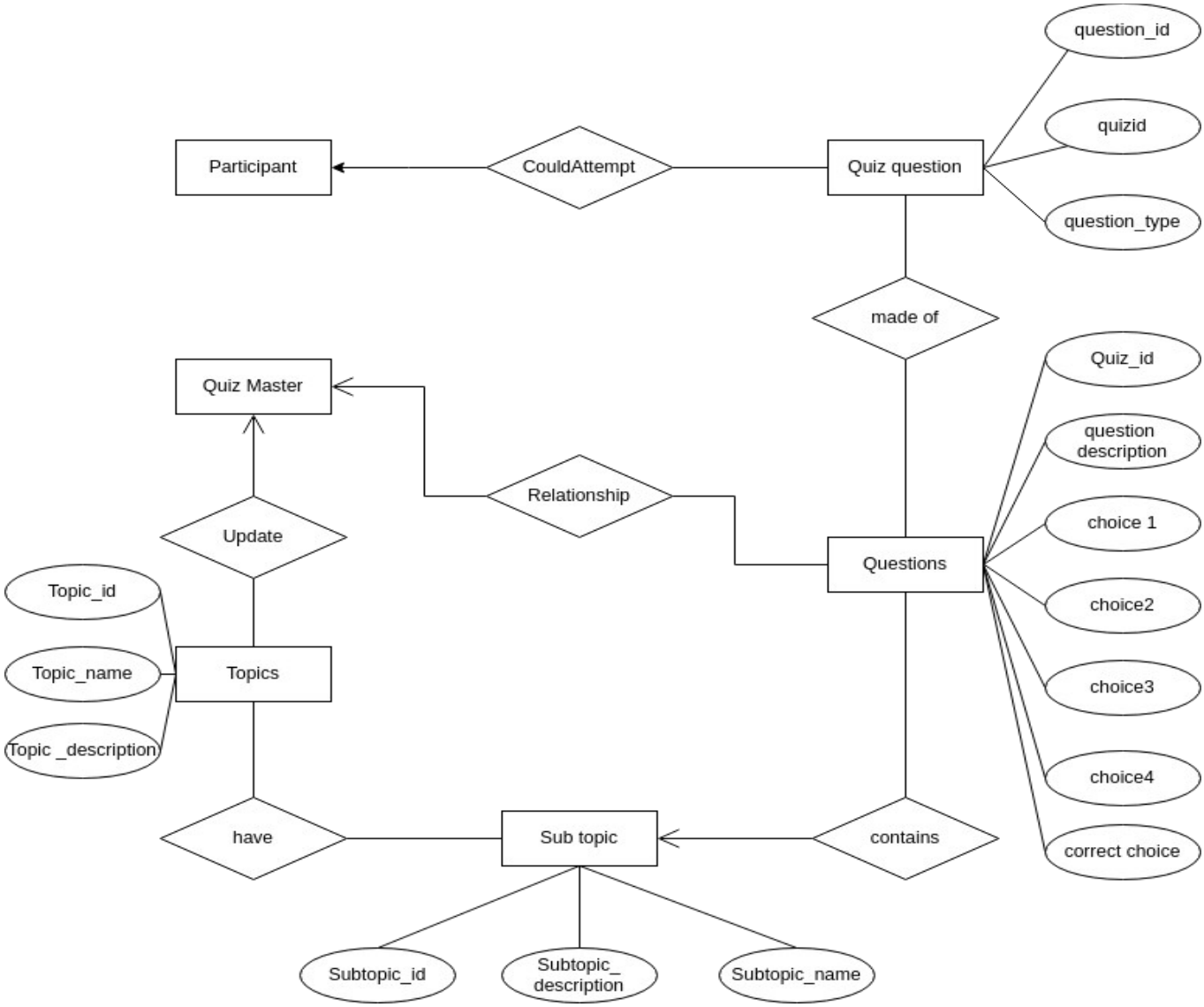
- **Entities** are represented by labeled rectangles. The label is the name of the entity. Entity names should be singular nouns.

- **Relationships** are represented by a solid line connecting two entities. The name of the relationship is written above the line. Relationship names should be verbs.

- **Attributes**, when included, are listed inside the entity rectangle. Attributes which are identifiers are underlined. Attribute names should be singular nouns.
- **Cardinality** of many is represented by a line ending in a crow's foot. If the crow's foot is omitted, the cardinality is one.

Existence is represented by placing a circle or a perpendicular bar on the line. Mandatory existence is shown by the bar (looks like a 1) next to the entity for an instance is required. Optional existence is shown by placing a circle next to the entity that is optional.

ER Diagram:



Implementation and System Testing

After all phase have been perfectly done, the system will be implemented to the server and the system can be used.

System Testing

The goal of the system testing process was to determine all faults in our project .The program was subjected to a set of test inputs and many explanations were made and based on these explanations it will be decided whether the program behaves as expected or not. Our Project went through two levels of testing

1. Unit testing

2 .Integration testing

Unit Testing

Unit testing is commenced when a unit has been created and effectively reviewed .In order to test a single module we need to provide a complete environment i.e. besides the section we would require The procedures belonging to other units that the unit under test calls Non local data structures that module accesses. A procedure to call the functions of the unit under test with appropriate parameters

1. Test for the Topics Page

Testing the selected topics - This page is used select the topics of certain subject or sub topics to attempt the quiz.

2.**Test for the Result Page**

Testing the Score display – This page is used to display the marks score by the user.

Integration Testing

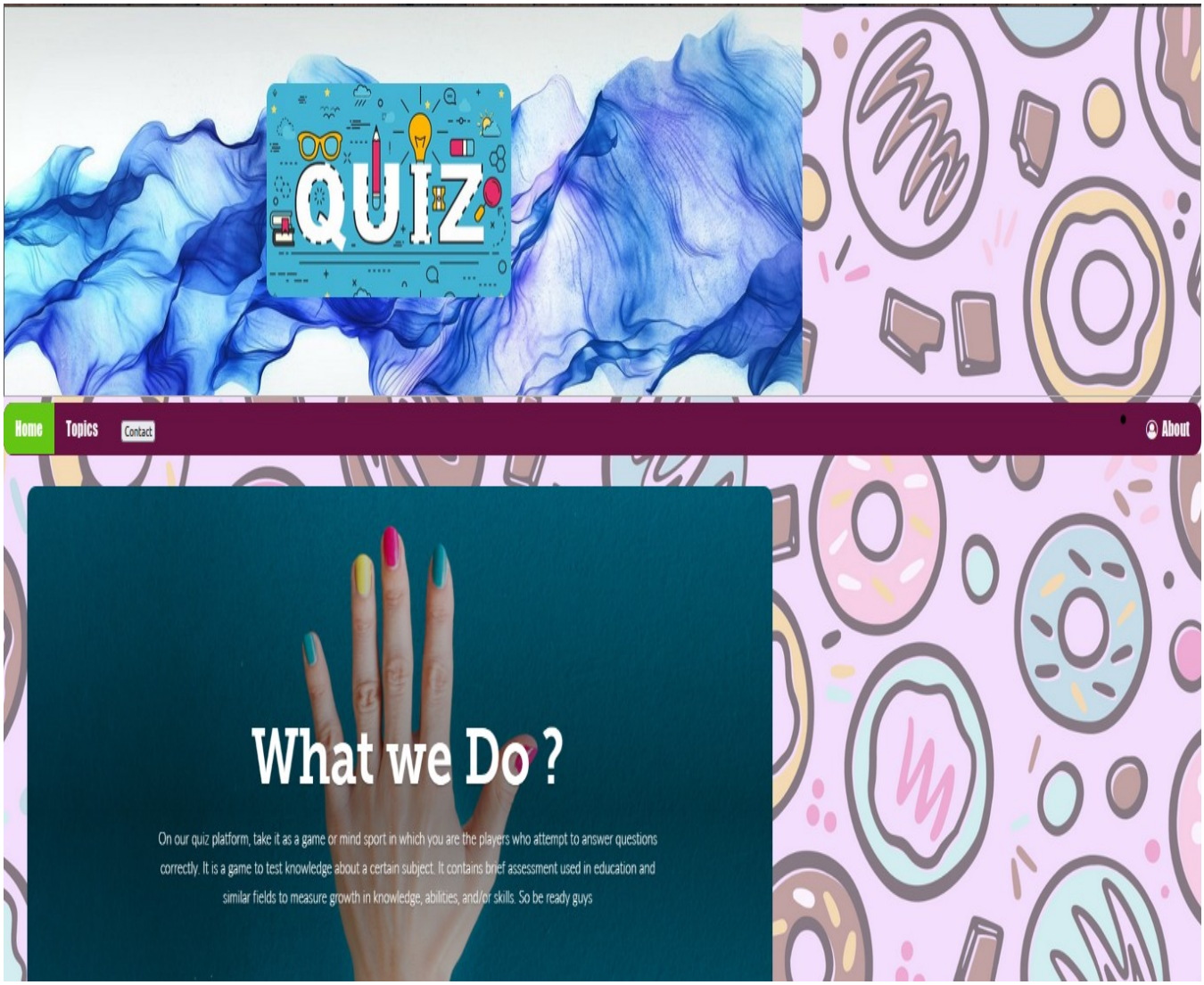
In the Integration testing we test various combination of the project module by providing the input.

The primary objective is to test the module interfaces in order to confirm that no errors are occurring when one module invokes the other module.

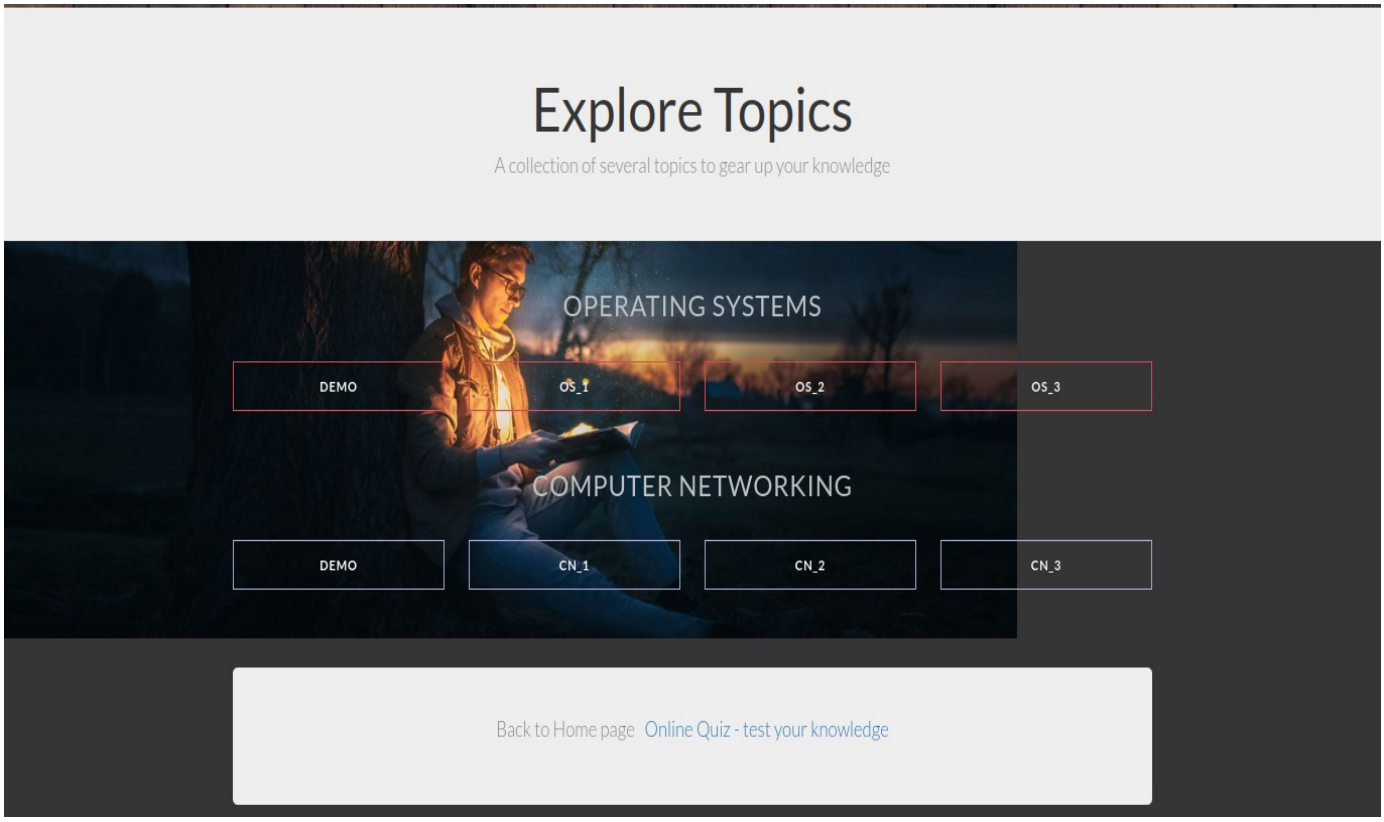
Evaluation

Project:-https://onlinequiz01.s3.ap-south-1.amazonaws.com/Online-Quiz-Static-Website/index.html

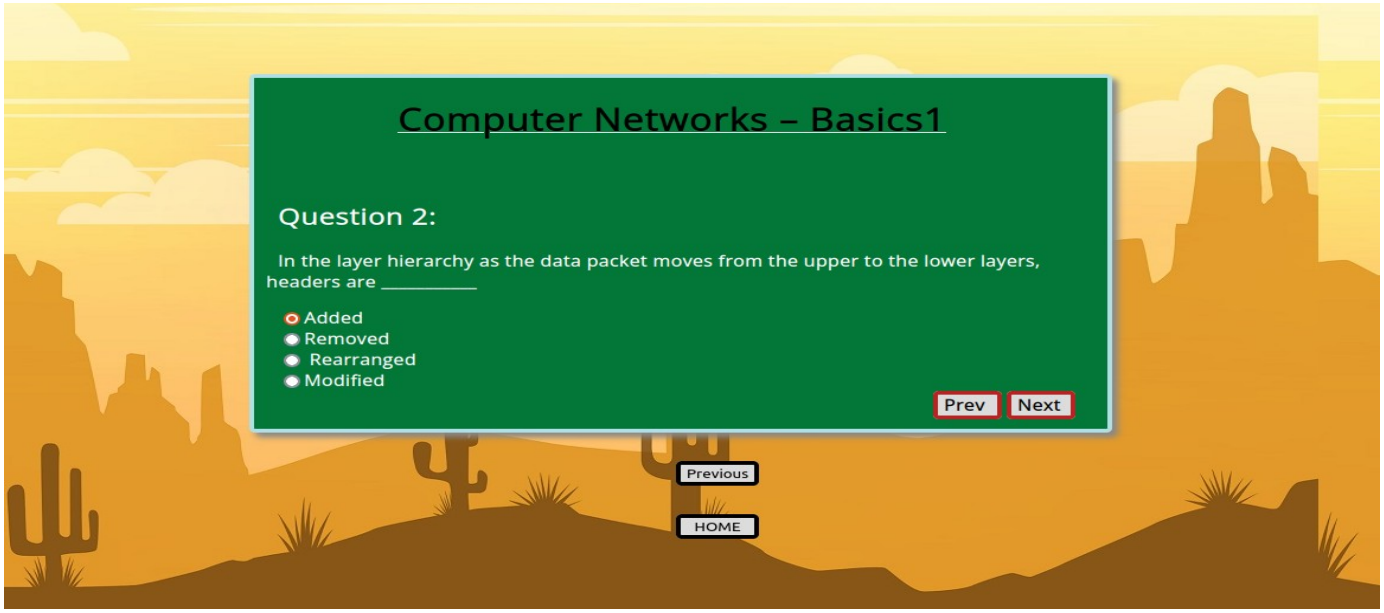
HOMEPAGE:-



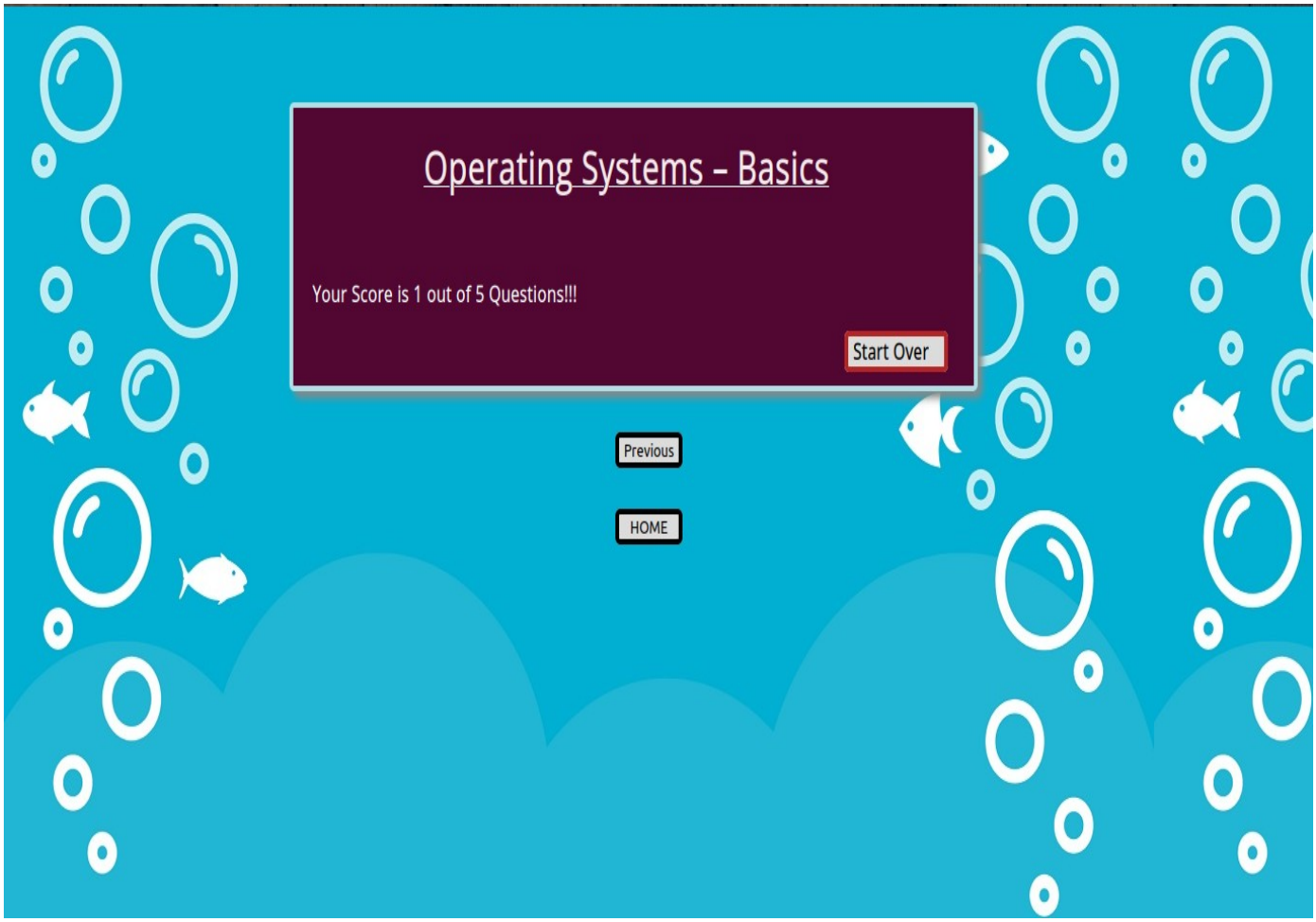
TOPICS (selecting topics):-



QUIZ ATTEMPT:-



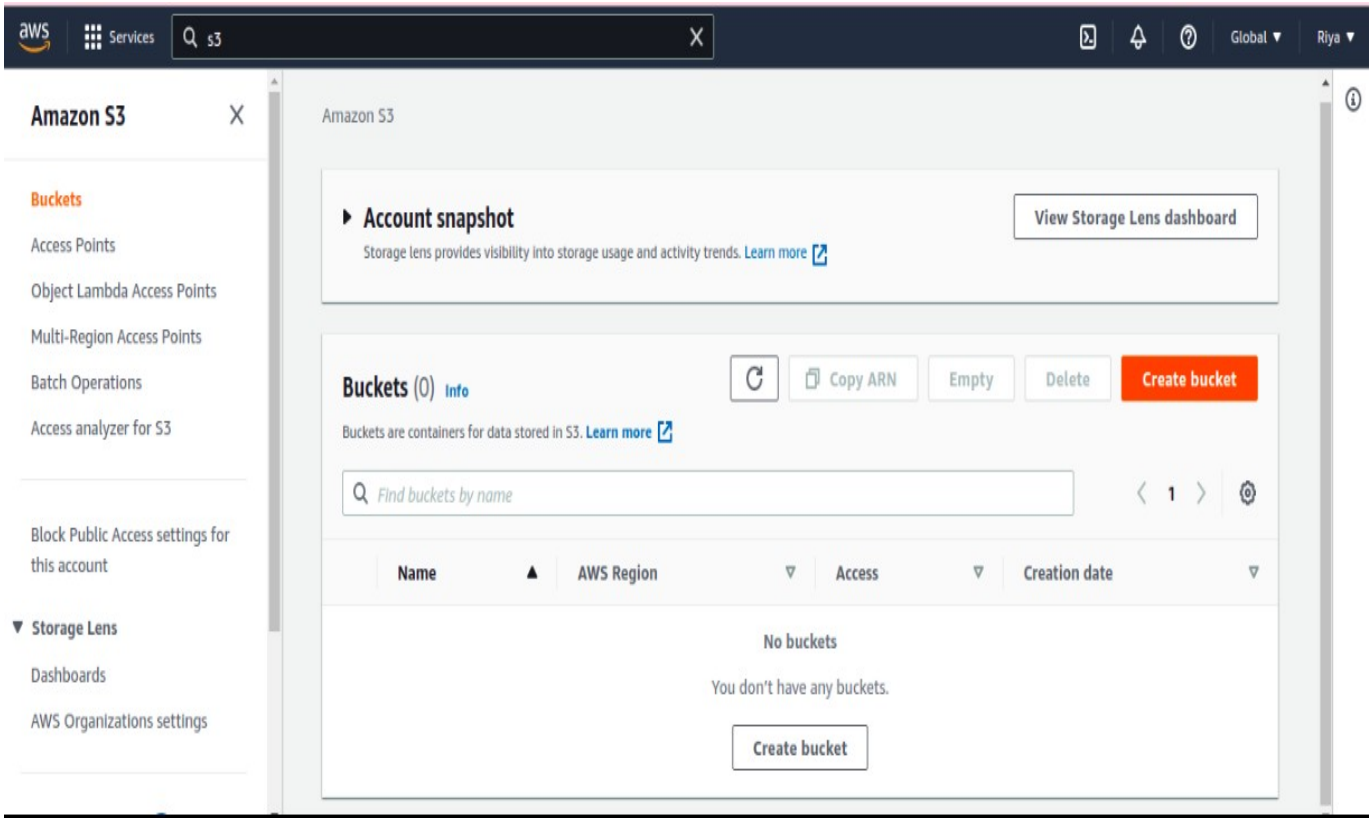
SCORE:-


Operating Systems – Basics
Your Score is 1 out of 5 Questions!!!
Start Over
Previous
HOME

Steps to Host the Website in AWS S3

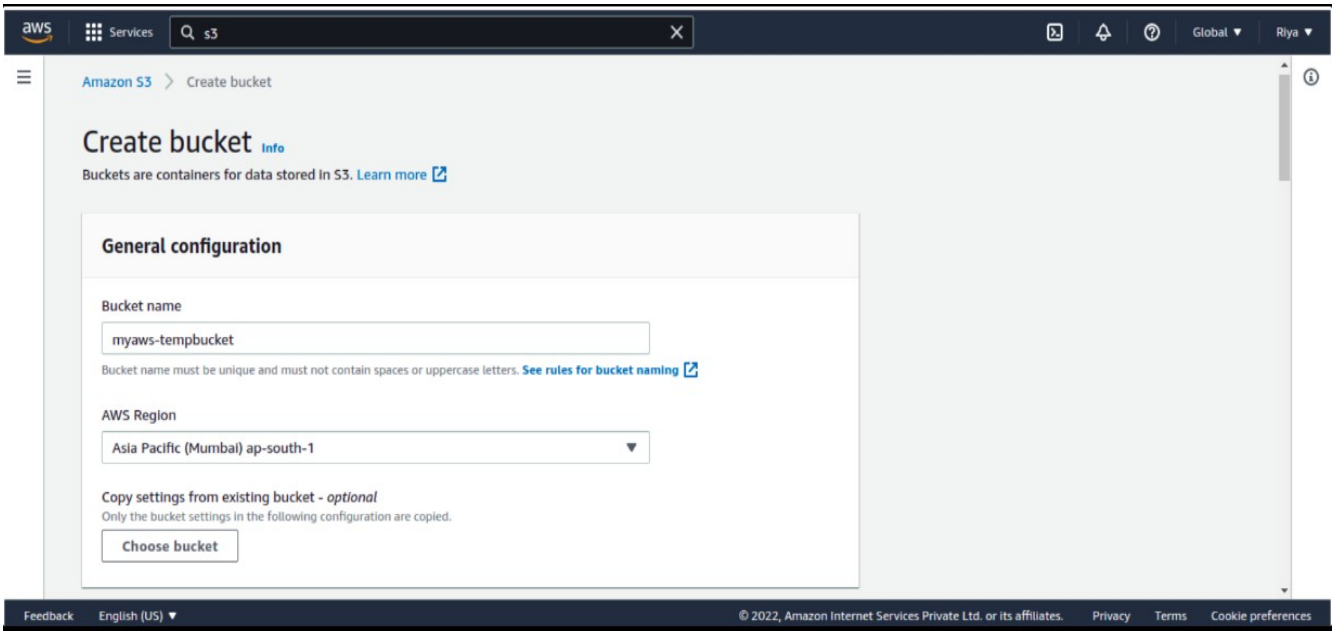
1.Open your AWS console and create a S3 bucket.

First, login into your AWS console, and in the search bar [Alt + s] type S3. And you'll be directed to the following page.

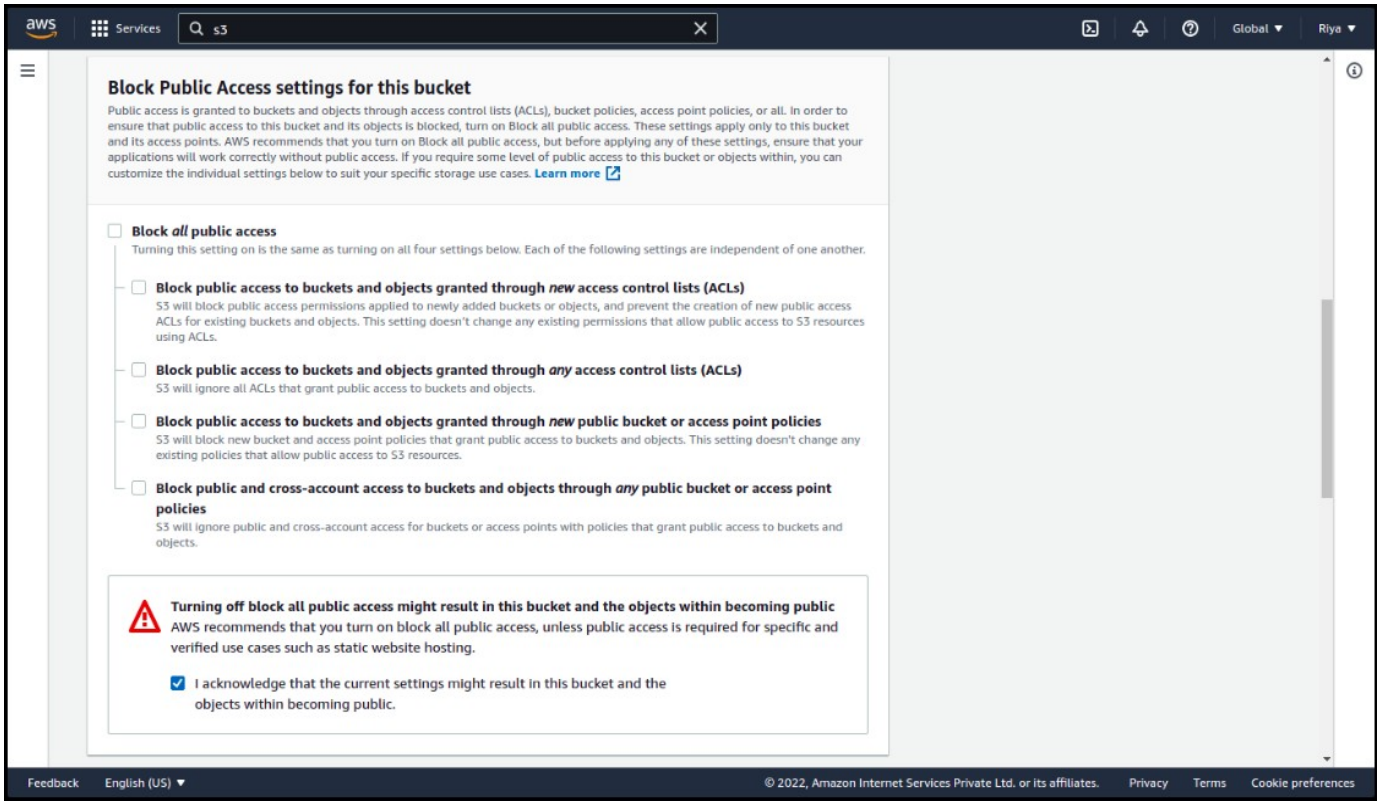


2. Provide required configurations

Now, you'll be asked to provide some configurations. First of all, under the **General Configurations** section, give a name to your S3 bucket. Remember, the Bucket name must be unique and must not contain spaces or uppercase letters. Then, provide an AWS region. We're going to continue with the *Asia Pacific (Mumbai) ap-south-1* for this tutorial.

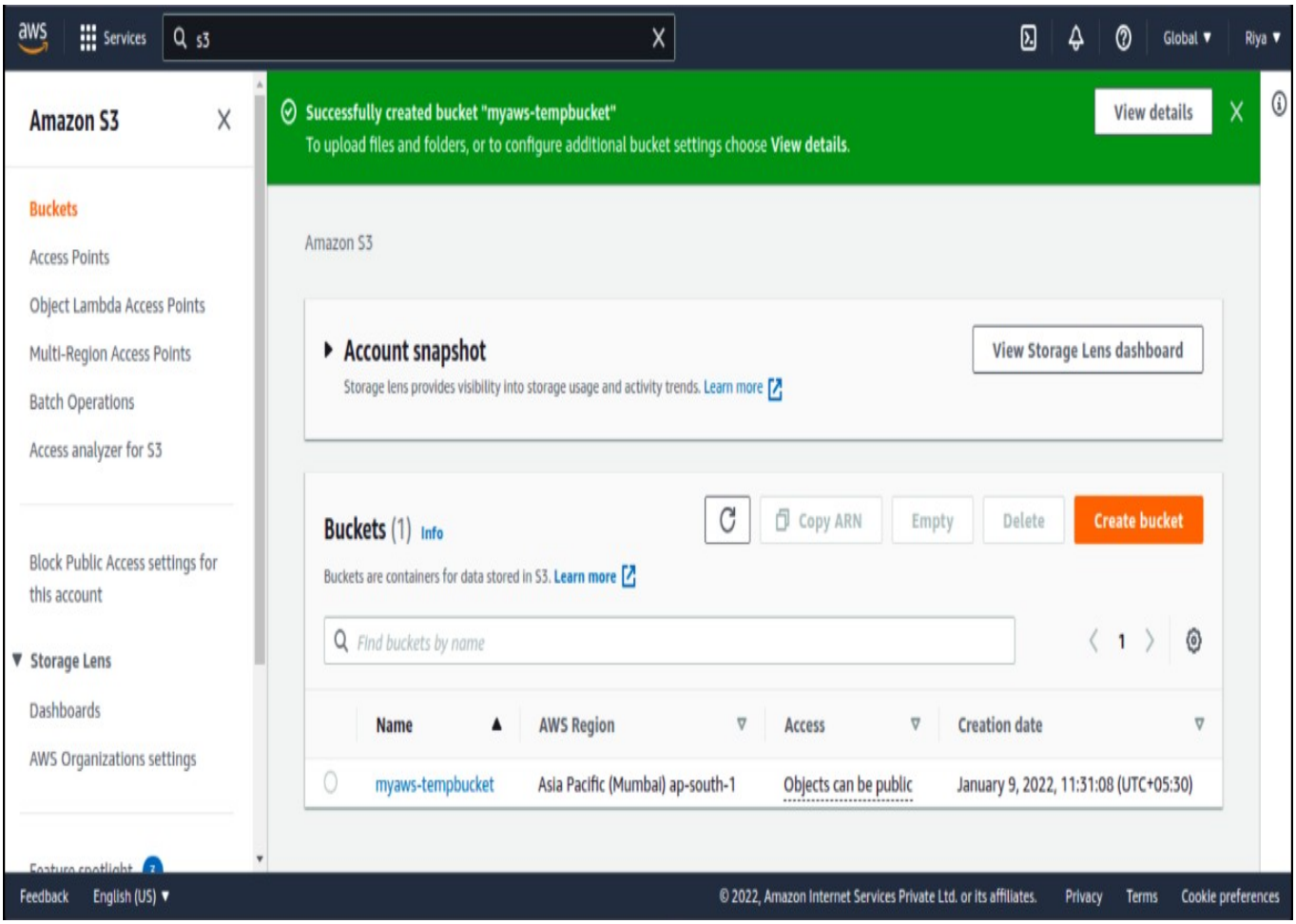


Now, scroll down and head over to **Block Public Access settings for this bucket** section and uncheck the following box to give your website public access. Also, click on the acknowledgment message just below that.



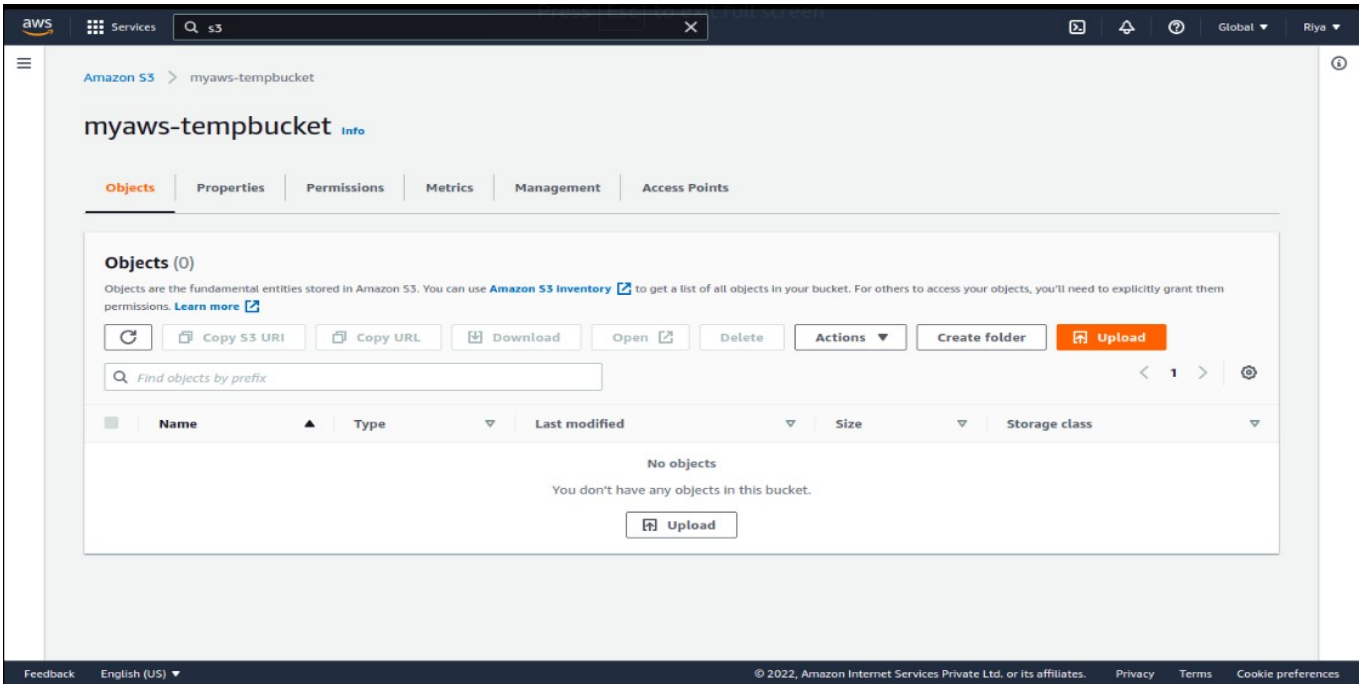
.

Leave the rest of the configurations for now and directly scroll down to the bottom of the page and click on create the bucket. Your bucket will now be successfully created as shown below

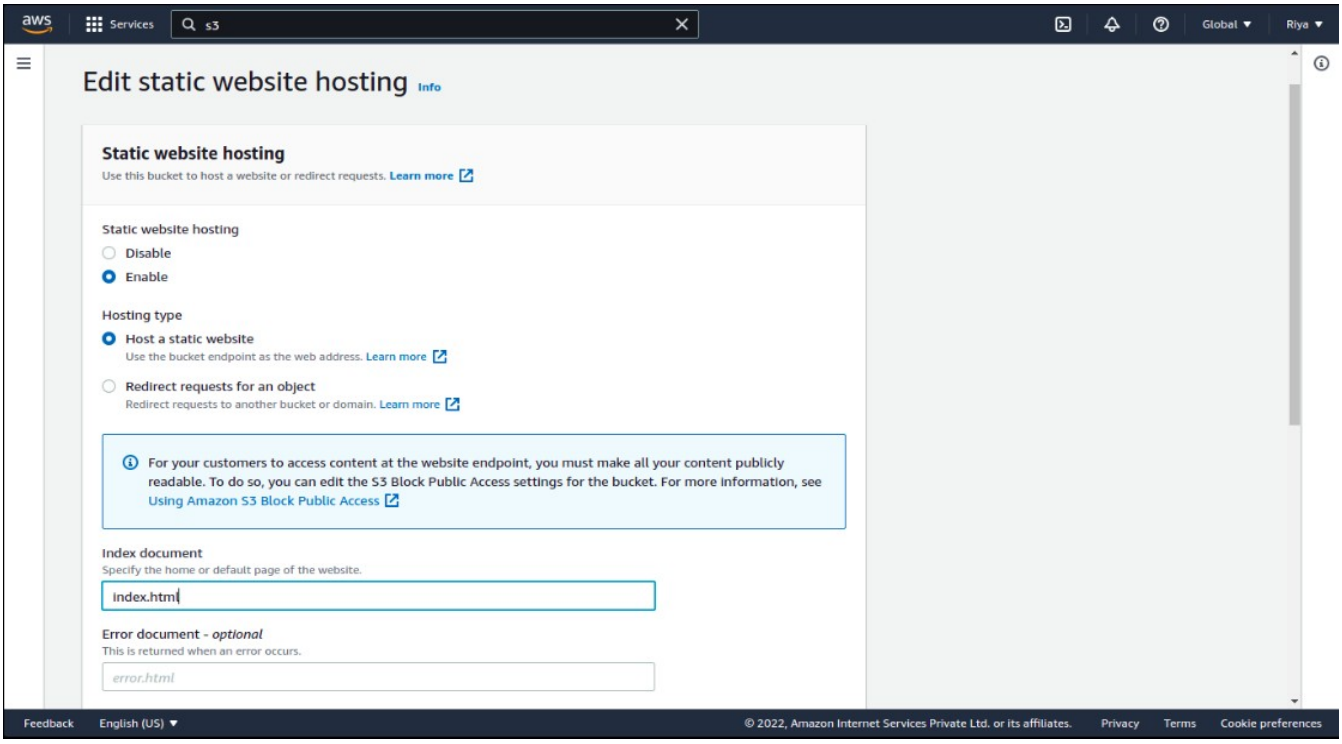


3. Upload your files

Click on the name of your bucket and you'll be headed over to this page.



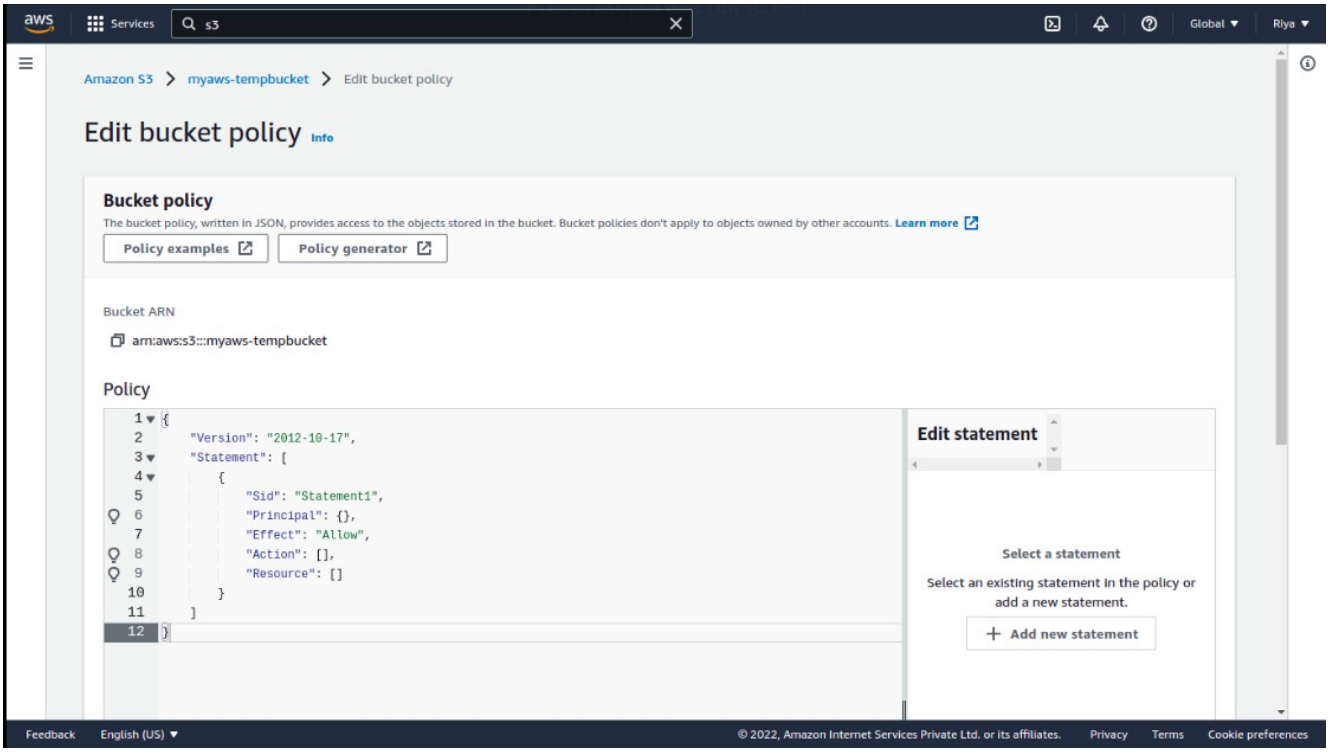
Now, click on the **Upload o**ption and start uploading your files or folders. It's going to take a minute or so to upload depending on the size of your files. Once done, head over to the **Properties** section and scroll to the end to **Static Website Hosting,** and click on edit. You'll be directed to the page shown below



Now, change the **Static Website Hosting** to enable. Specify the home or default page of your website under the **Index Document** section. You can also provide an error page that is returned when an error occurs. Save changes when you're done.

4. Edit Bucket Policy

For this, head over to the **Permissions** section of your bucket and go to the option **Bucket Policy**. Again, What is Bucket Policy? So it's basically a policy, written in JSON which provides access to the objects stored in the bucket.
For hosting our website, we need to provide our own custom-defined policy. Don't worry, it's pretty easy. Click on Edit and a page like this will show up.



Click on the **Policy Generator** option. This page will let you define your own policy required to host the website.

Step 1, select policy type as *S3 Bucket Policy*.

In Step 2,

— Select Effect as *Allow*.

— Write * in the Principal section.

— Under Actions, select *GetObject*.

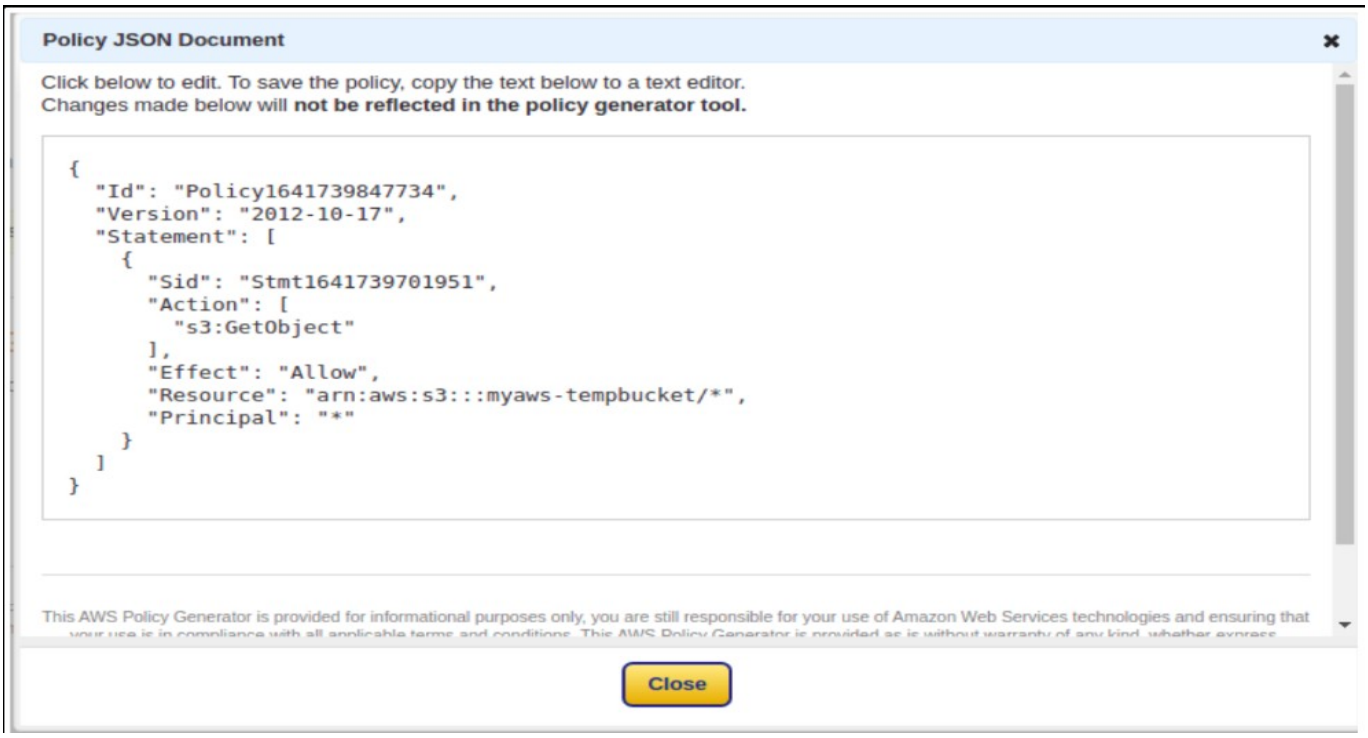
— In the Amazon Resource Name (ARN), give the ARN of your bucket which you can find under the Properties section.

— Also, add a */** in the end for the policy to be applied to every object in your bucket.

— In our case, the ARN looks like this – *arn:aws:s3:::myaws-tempbucket/**

— Now, click on add statement.

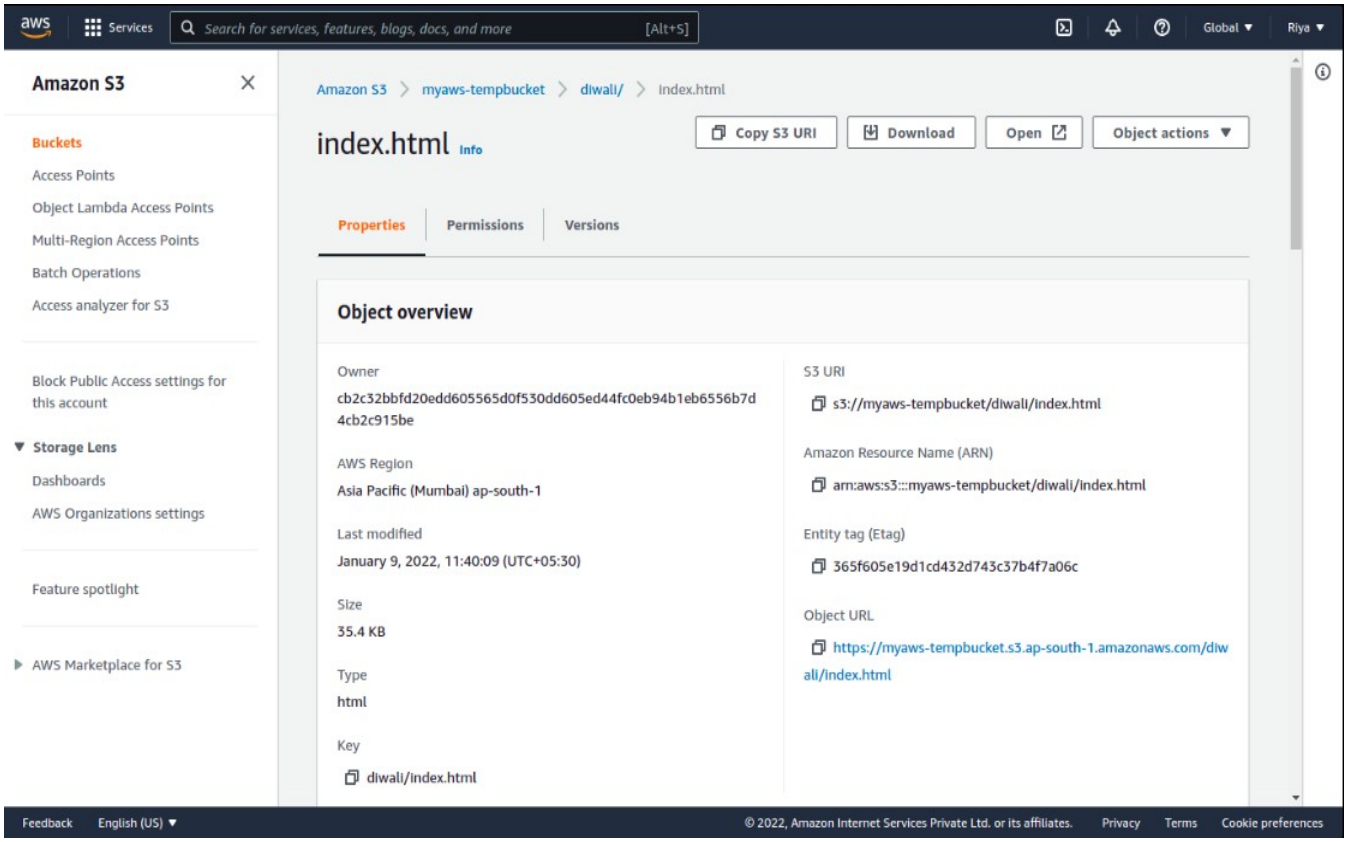
Finally in Step 3, click on Generate policy and you'll see a page like this.



Now, copy this policy, paste it in the Edit Policy section overwrite the default one, and save your changes

5. Get the link for your website

We are almost done. Just head over to your objects and select the home or default page of your website as specified earlier. You will see an object URL for your website as shown below.



Open this URL in a new tab and You will now be able to see your website. You can also share this link with anyone and they'll also be able to see your website.

Conclusion

Creating, managing, and hosting websites and webpages and sharing data publicly is very important and crucial as AWS S3 provides. It has developed a great idea to publicly provide an easy and simple solution for their users to host content using the S3 bucket. This project describes simple steps to host your static website using the AWS S3 bucket. Finally we can access the website via link. In this tutorial, we looked at the different options for setting up a website using AWS and explored in detail about using AWS S3 for creating a website. As seen, S3 is one of the easiest approaches to create a static website. With S3 there is no need to do the capacity planning as S3 scales up and down automatically.

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For Java Script

- https://www.tutorialspoint.com/javascript/javascript_overview.html

For AWS

- https://aws.amazon.com/

****************************THANKYOU**************************