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Department of Information Technology A.Y. 2024-25

Advance DevOps Lab
Assignment 01

Aim:

Part 1 : To develop a website and host it on your local machine on a VM

Part 2 : To host the website developed as part 1 of Assignment 1 using AWS.

Roll No.	42
Name	Naikwadi Yash Shivdas
Class	D15B
Subject	Advance DevOps Lab
LO Mapped	LO1: To understand the fundamentals of Cloud Computing and be fully proficient with Cloud based DevOps solution deployment options to meet your business requirements.
Grade:	

AIM : To develop a website and host it on your local machine on a VM Reference and hosting a static website on Amazon S3 (AWS).

THEORY :

Introduction

In DevOps, this experiment involves developing a website using a tech stack including HTML, CSS, JavaScript, and frameworks like React or Angular, and backend technologies such as Node.js or Python. The website is first hosted on a local development environment, then transitioned to Amazon S3 for scalable cloud-based hosting. This approach highlights the advantages of both local and cloud environments.

Hosting on a Local Machine Using Xampp

Setting Up a Local Development Environment with XAMPP :

XAMPP is an open-source cross-platform web server solution stack package developed by Apache Friends. It includes:

- Apache: A widely-used web server software.
- MySQL/MariaDB: Database management systems.
- PHP: A server-side scripting language.
- Perl: A high-level programming language.

Pros :

- Complete control over the development environment.
- Useful for development and testing phases.

Cons :

- Limited scalability.
- Requires manual management of infrastructure and updates.

Hosting a Static Website on Amazon S3 (AWS)

A static website consists of fixed content with HTML files and does not require server-side processing. This type of website is typically faster and easier to host.

Introduction to AWS S3

Amazon S3 (Simple Storage Service) is a scalable object storage service that provides a simple web services interface to store and retrieve any amount of data at any time from anywhere on the web.

Pros :

- Highly scalable and cost-effective.
- Minimal management required.
- High availability and durability of data.

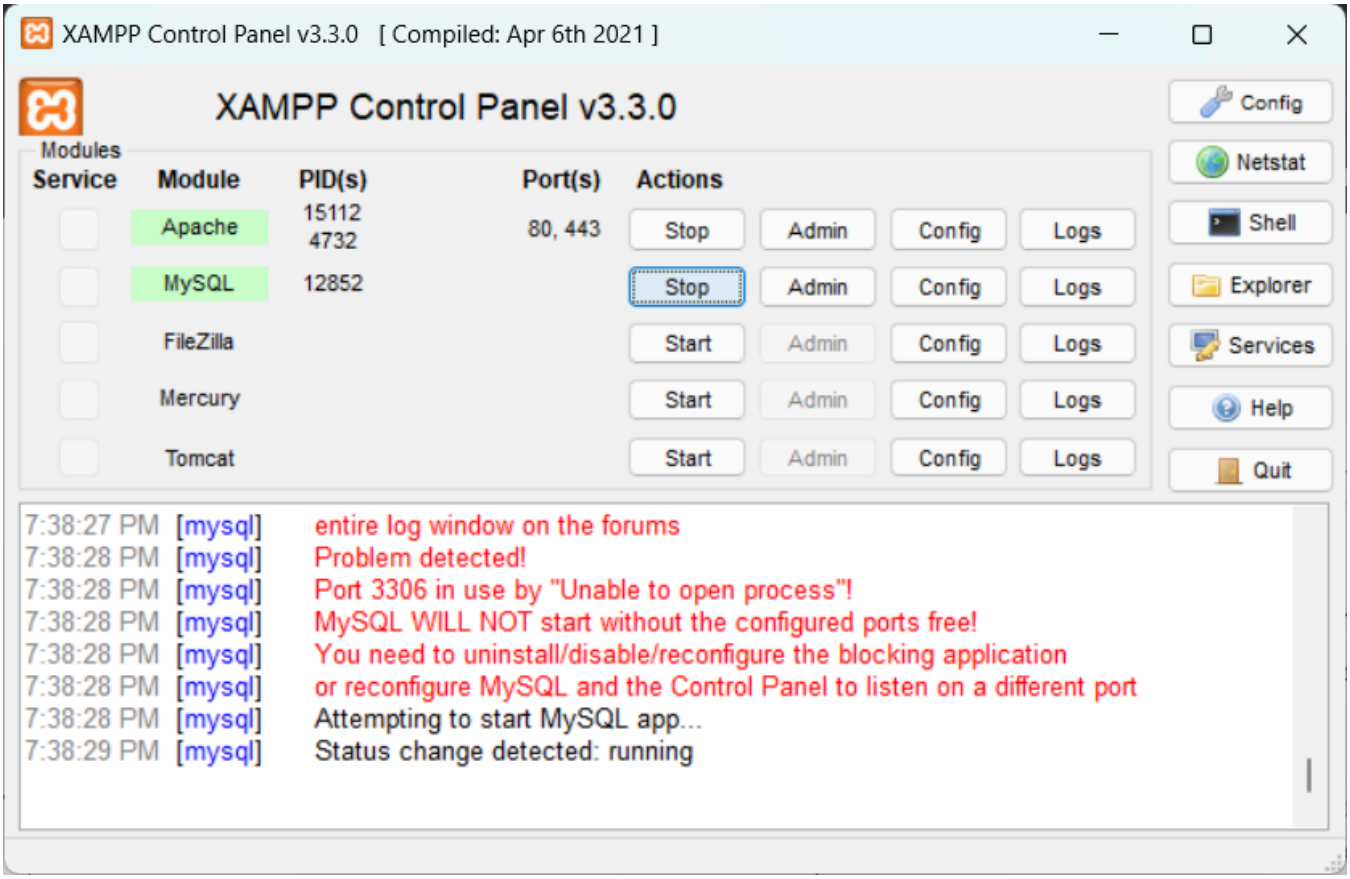
Cons :

- Limited to static content.
- Less control over the hosting environment compared to a VM.

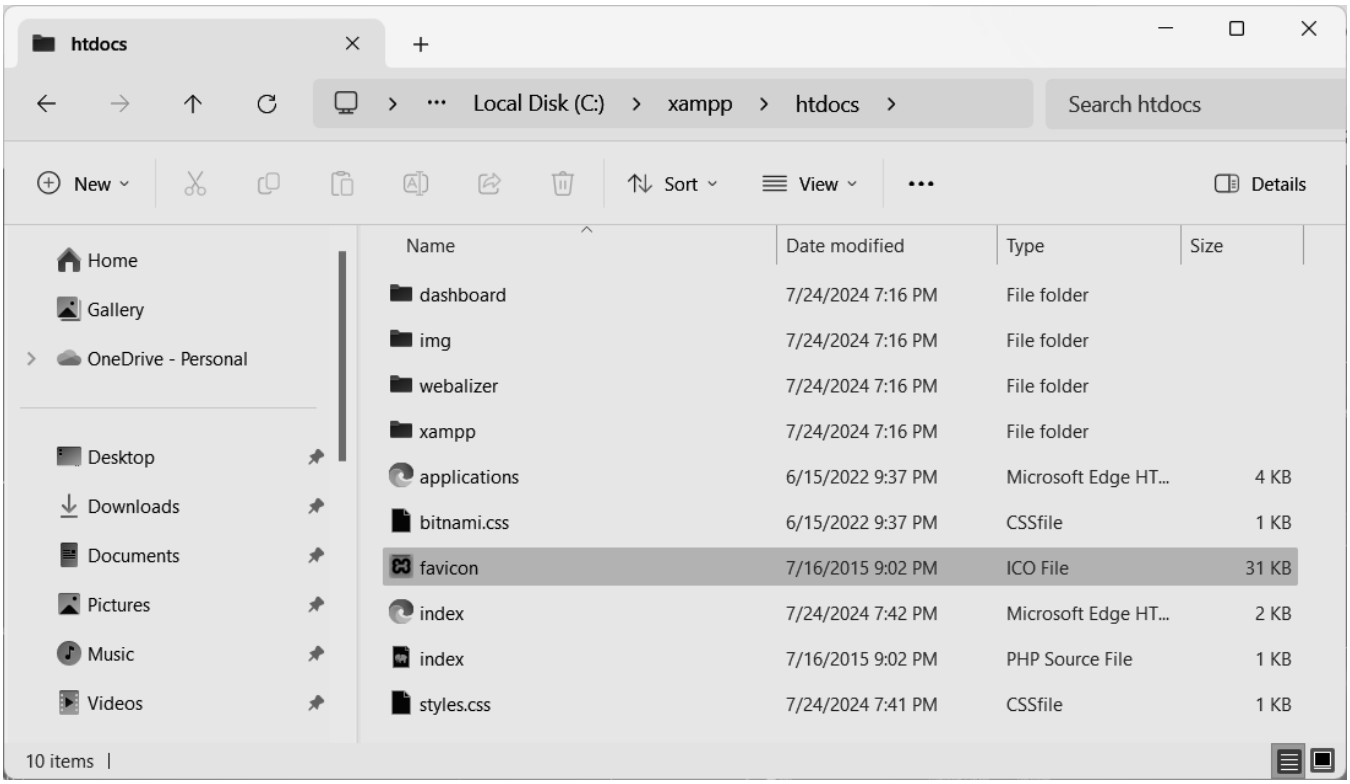
Aspect	Local Hosting (VM with XAMPP)	Cloud Hosting (AWS S3)
Performance	Works well for development but may struggle with high traffic in production.	Usually performs better with global access and fast content delivery.
Security	You're responsible for setting up and managing security.	AWS provides strong security features, reducing your management burden.
Accessibility	Only accessible on your local network unless configured otherwise.	Accessible from anywhere, great for public websites.
Cost	No extra hosting fees, but you handle all maintenance and updates.	Pay for what you use, which can be cost-effective but needs monitoring.
Deployment	Requires manual file transfers and updates.	Supports automated deployment with tools like AWS CodePipeline.
Continuous Integration	Less automated; may need custom scripts.	Easily integrates with CI/CD tools for automated updates.
Scalability	Limited; adding more servers is manual and complex.	Automatically adjusts to traffic changes and scales easily.
Maintenance	You handle all updates and server management.	AWS manages the infrastructure, so less manual work for you.

Hosting on a Local Machine Using Xampp

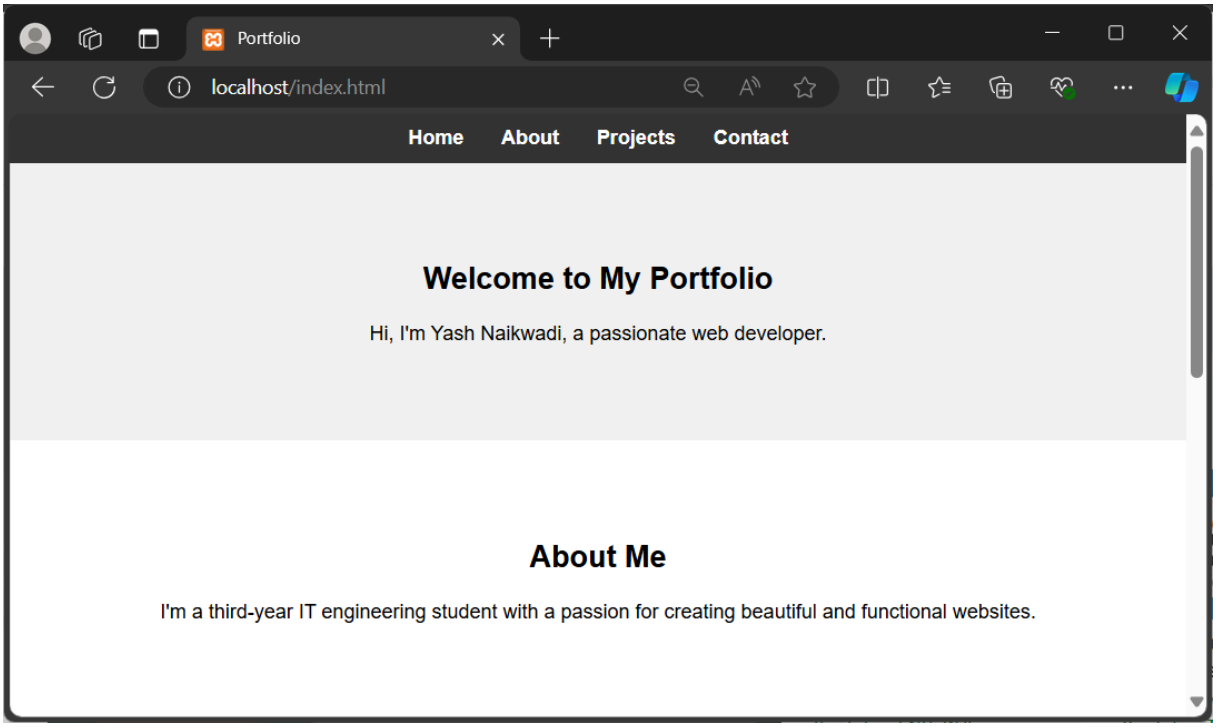
1. Download, Install and Launch Xampp. Start the actions of Apache and MySQL.



2. Create an index.html and its corresponding css file. Save both files in an appropriate folder as xampp => htdocs => index.html.

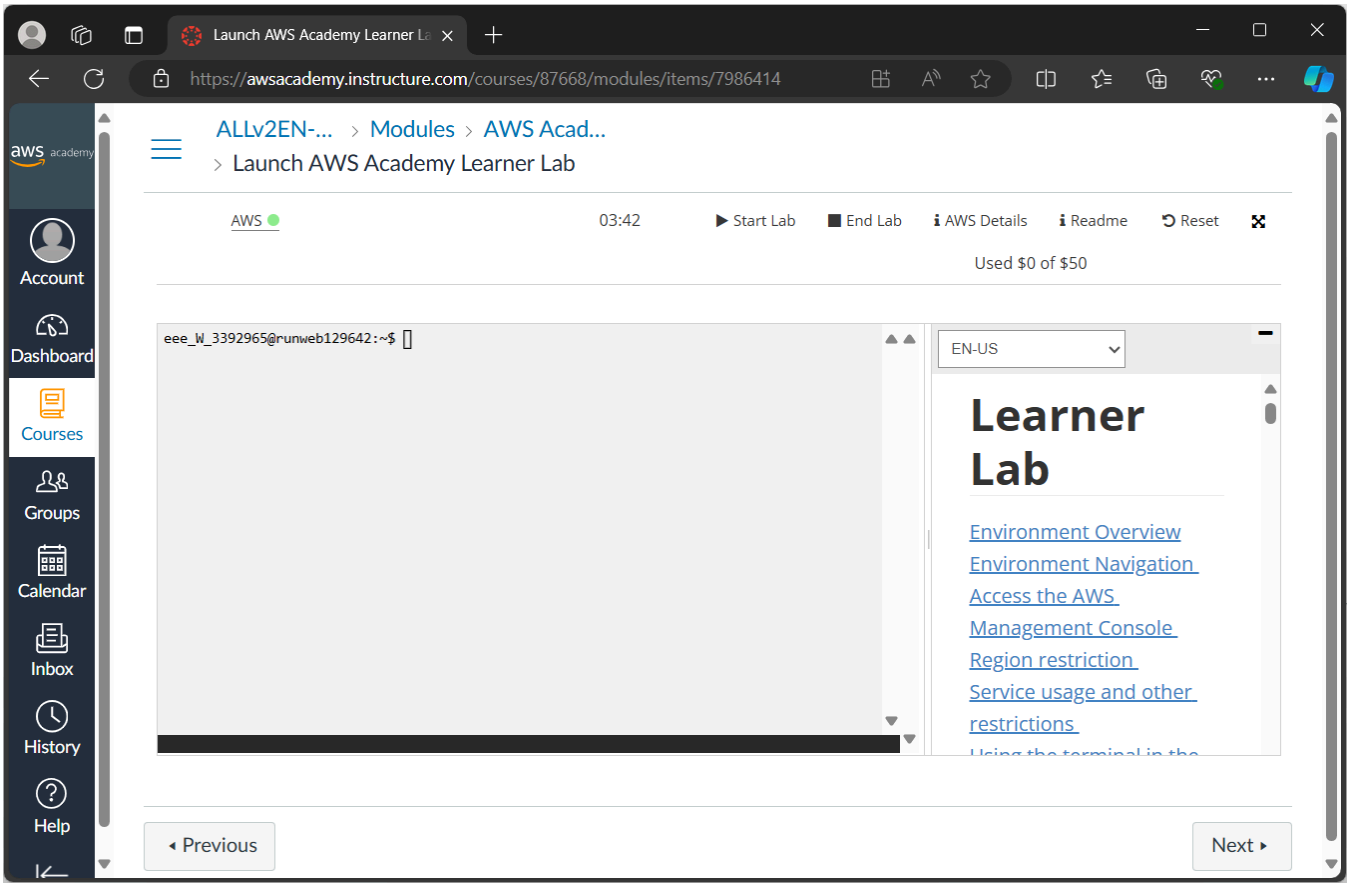


3. Go to any browser and search for http://localhost/index.html

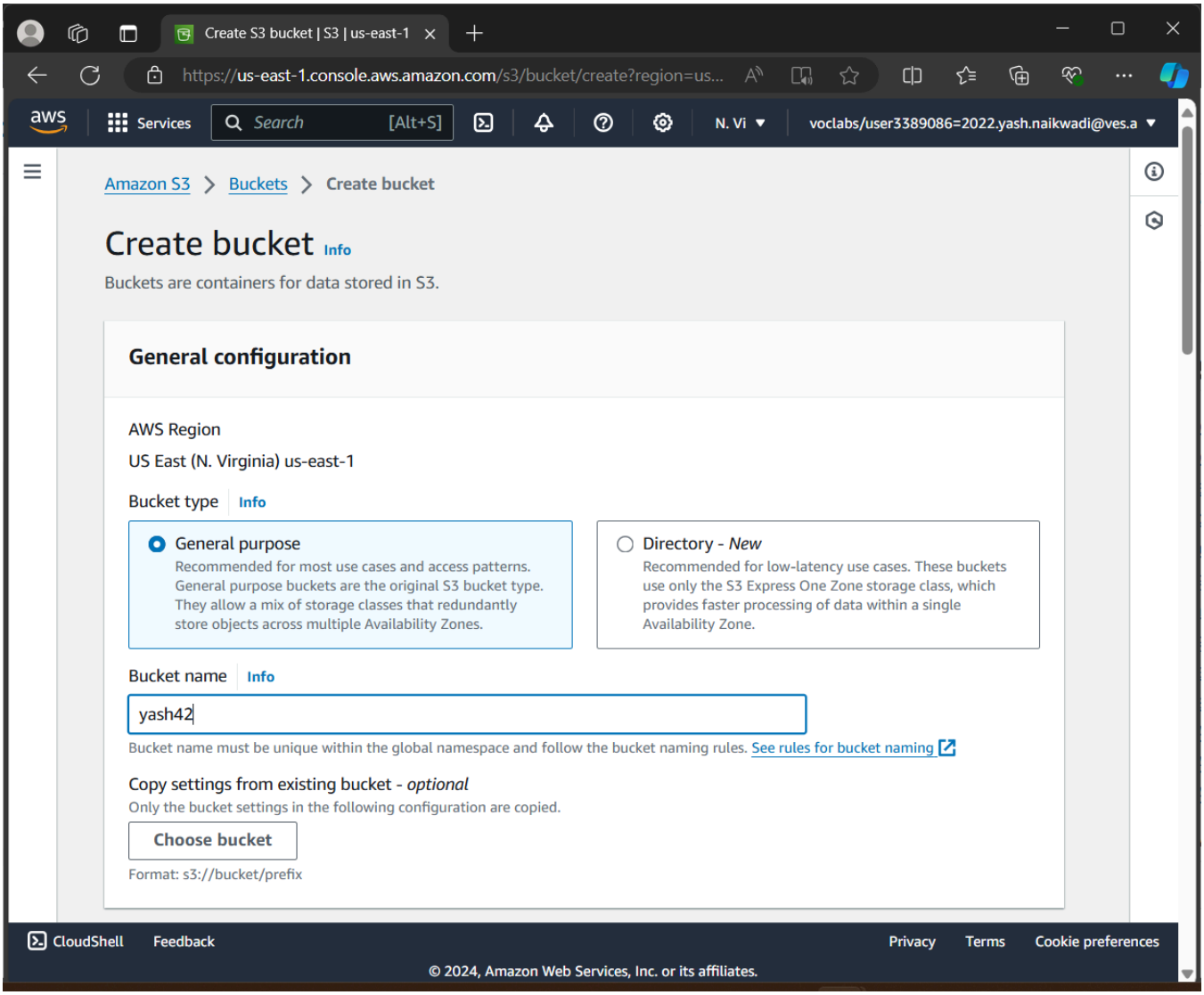


Hosting a Static Website on Amazon S3 (AWS)

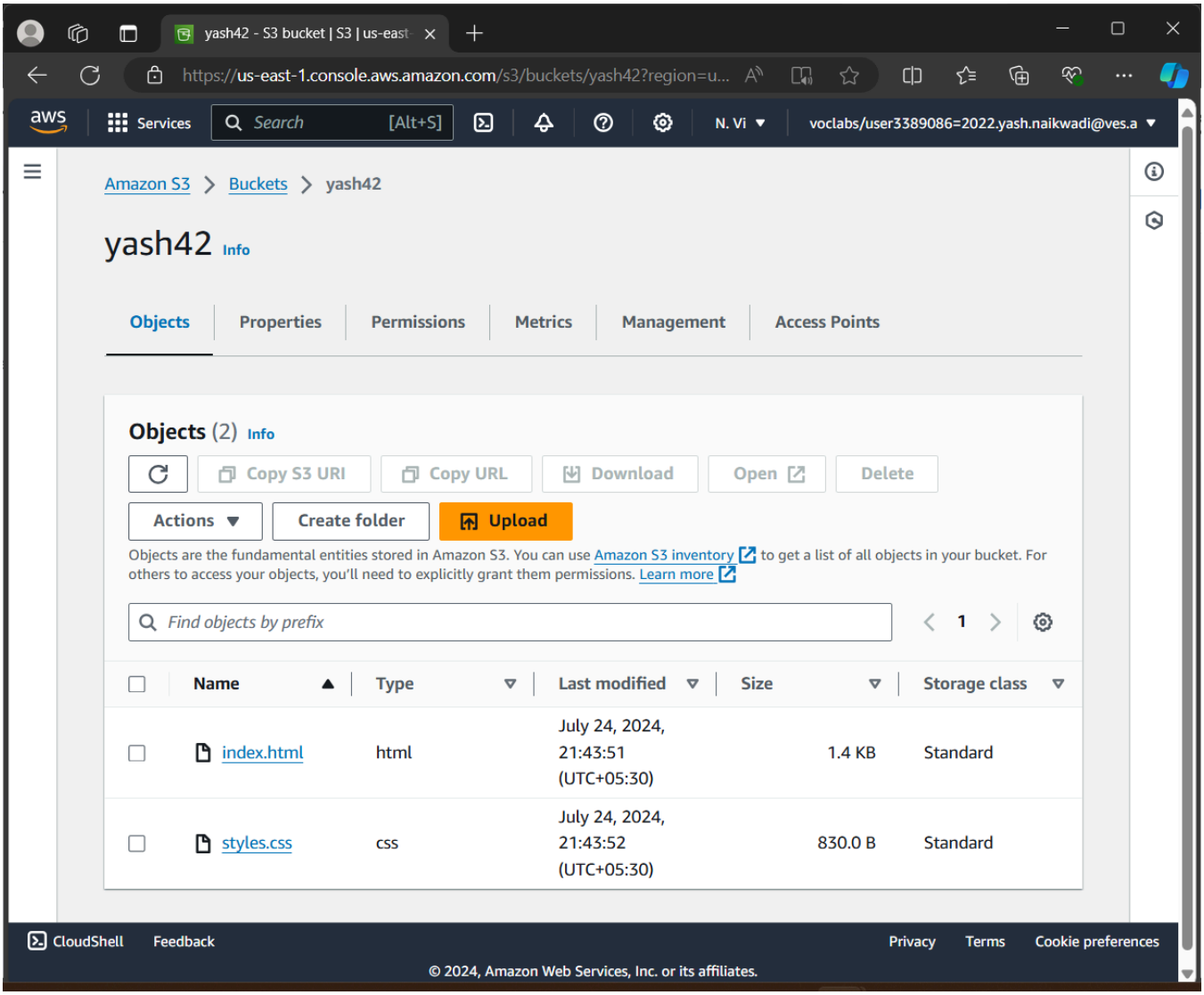
1. Go to AWS academy website. Solve the Module Knowledge Check. Launch AWS Academy Learner Lab and click on **AWS** beside the green logo. (logo will become green once the start lab is clicked.)



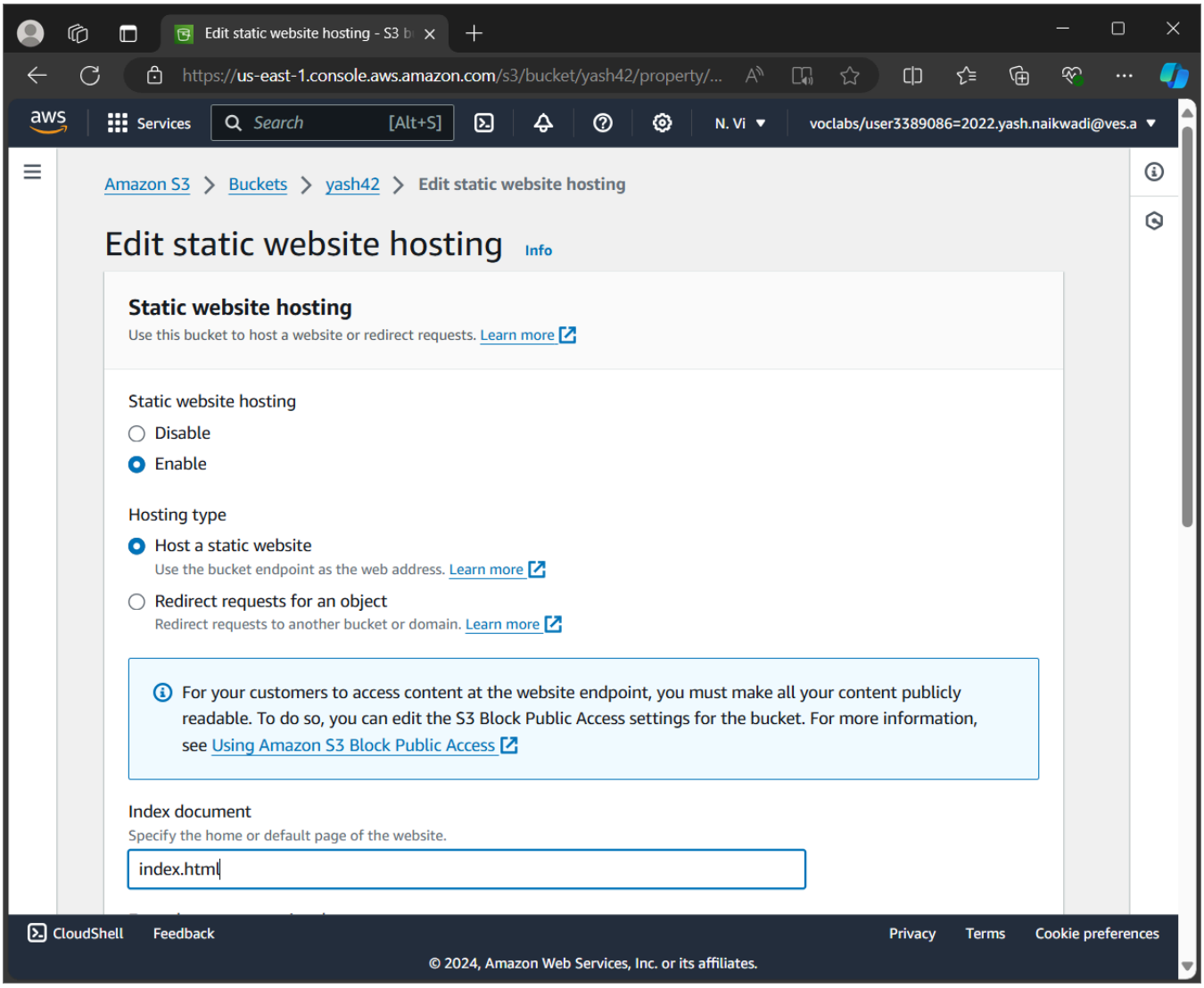
2. Search for S3 and create a bucket.



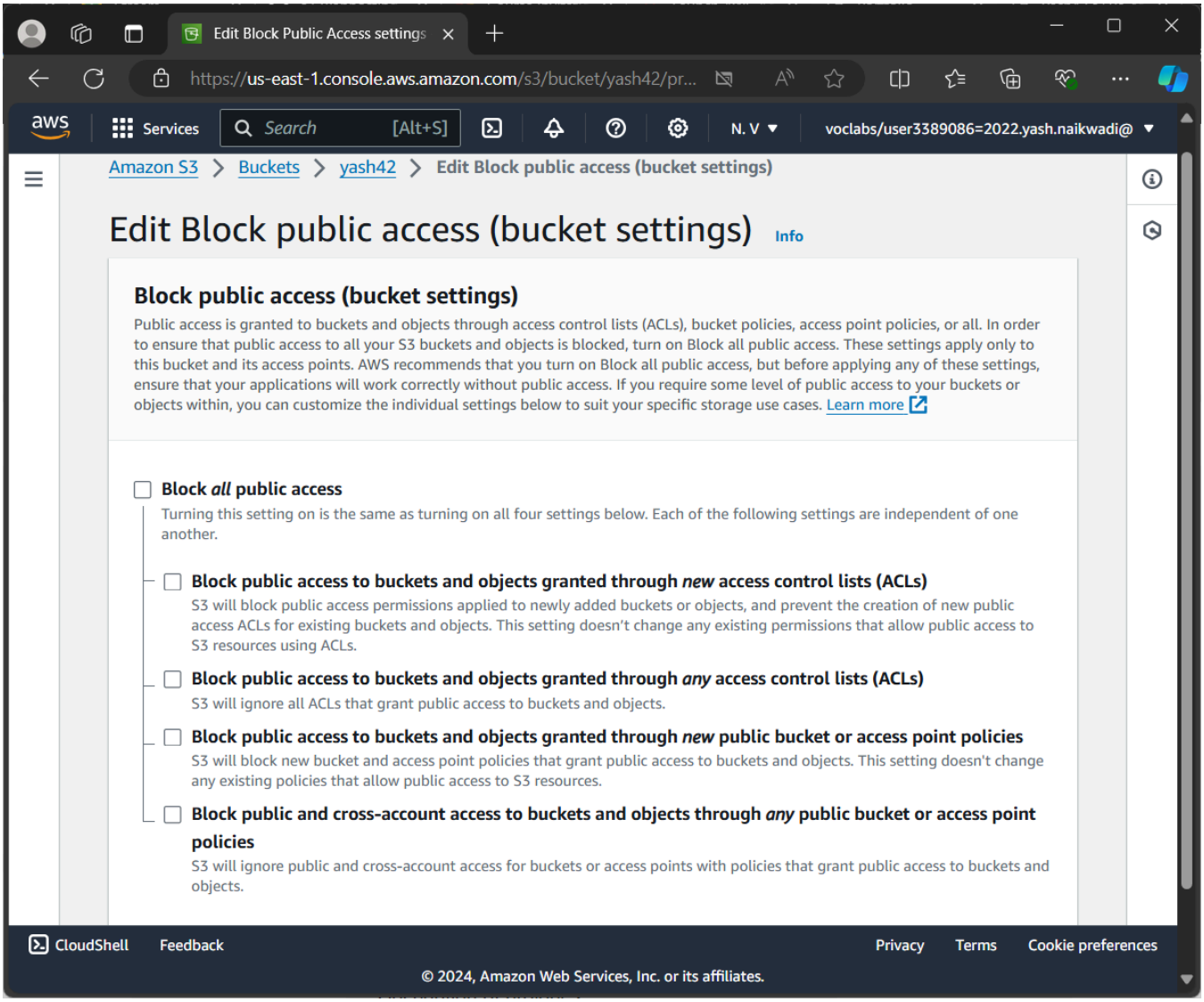
3. Click on the created bucket and upload the index.html and its corresponding css.



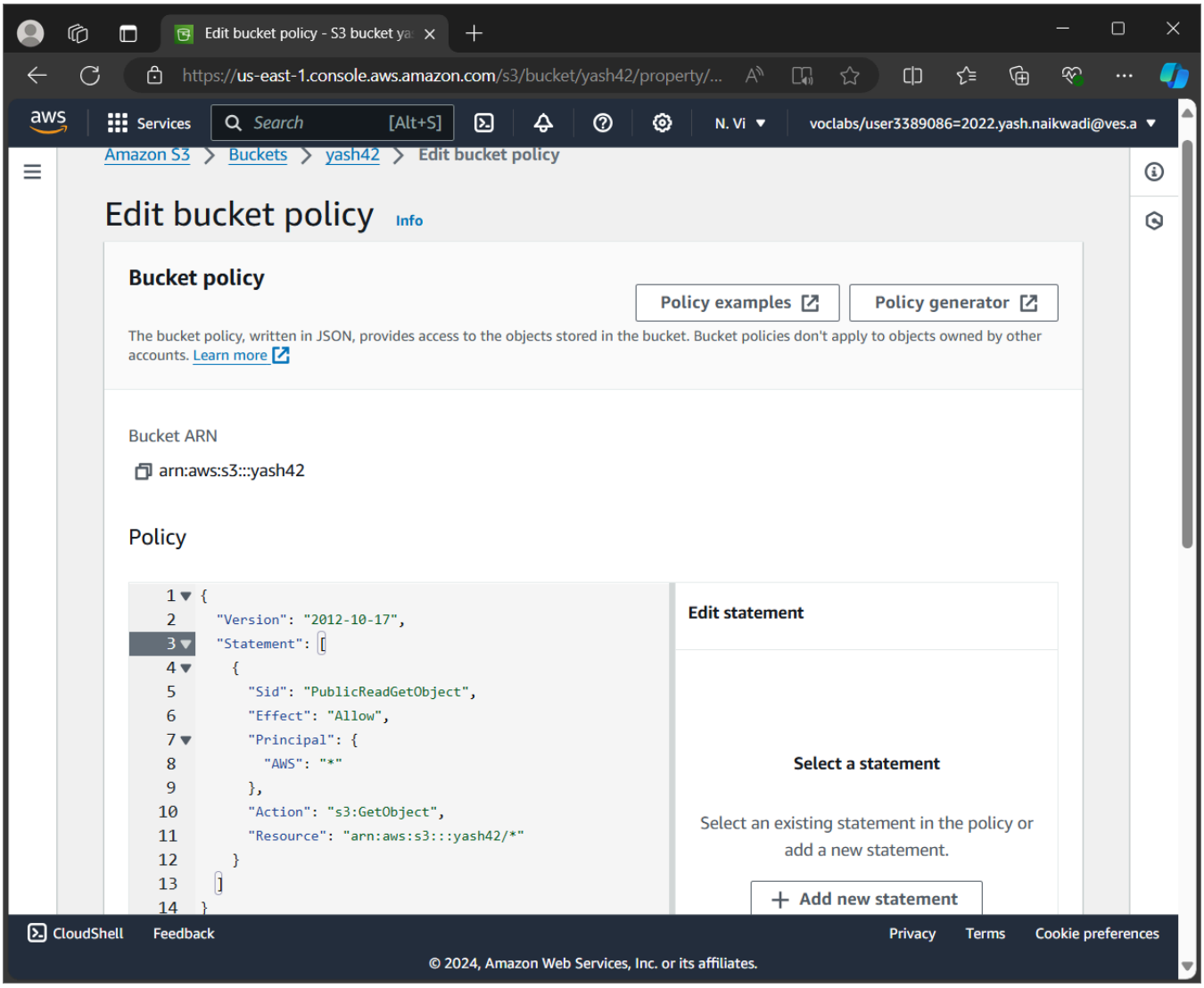
4. Go to the Properties section and enable the static website hosting.



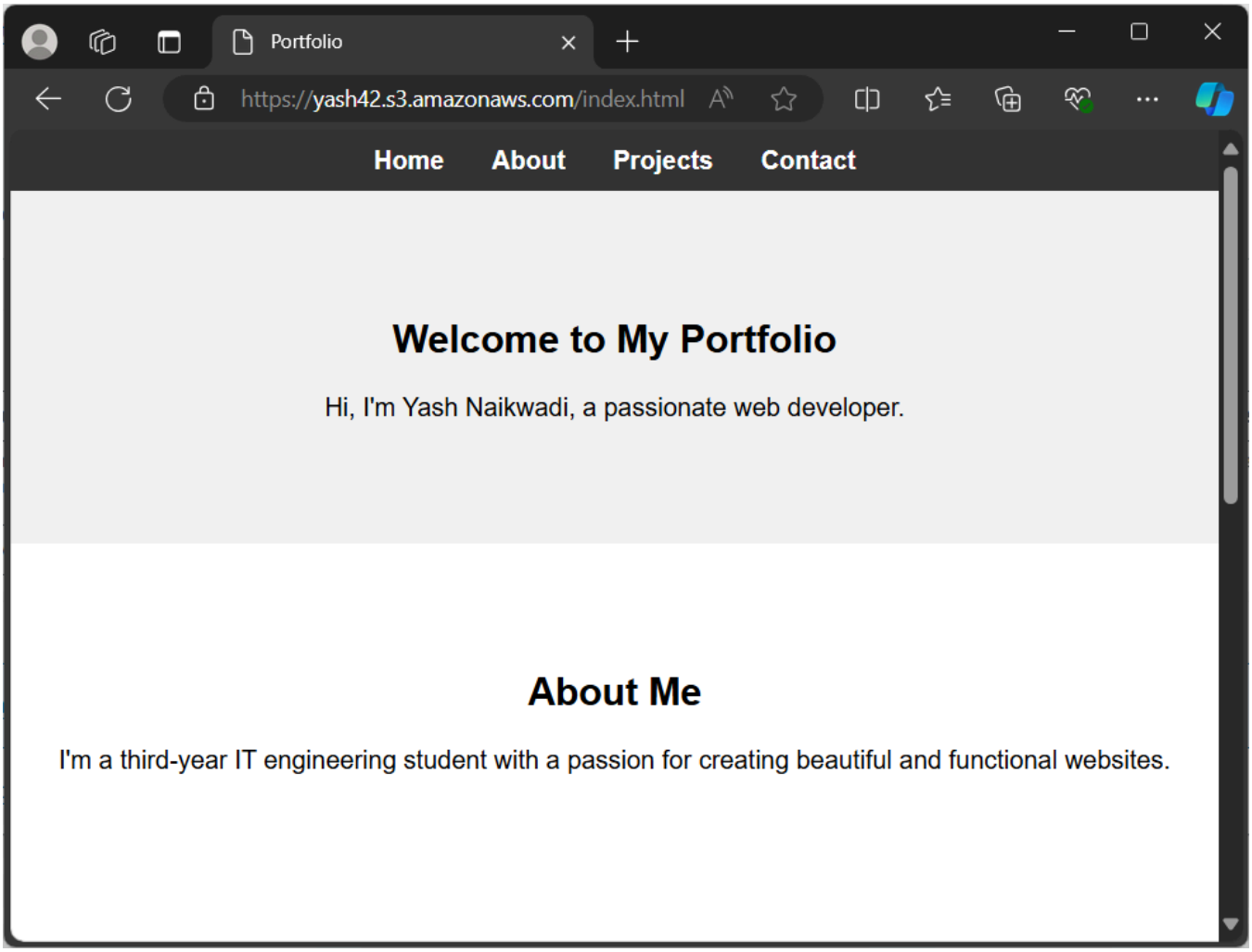
5. Unselect the (main) option of Block public access. (By default, it is selected while creating the bucket). It gives public access to use our website.



6. Go to the permission section in the new created bucket and edit bucket policy.



7. Go to the Objects section and select the index.html file. Then the Copy URL option will get activated. Click on it and paste it on the new tab.



CONCLUSION :

This experiment demonstrates the process of developing a website and the flexibility of hosting it on different platforms. Hosting on a local VM provides insights into infrastructure management, while hosting on AWS S3 showcases the benefits of cloud-based solutions. Understanding both approaches equips one with the skills to choose the appropriate hosting solution based on the project requirements and scalability needs.