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## Adv DevOps Assignment 1

**Aim: To develop a website and host it on your local machine on a VM**

Theory:

To develop and host a website on your local machine using XAMPP and a virtual machine (VM), here are the theoretical steps and implementation details:

### 1. Understanding the Basics

- **Website Development:** This involves writing code (HTML, CSS, JavaScript, PHP, etc.) for the front-end and back-end (if applicable). For example, HTML for structure, CSS for styling, JavaScript for functionality, and PHP for server-side scripting.
- **Local Hosting:** XAMPP is a free and open-source cross-platform web server solution stack package developed by Apache Friends, consisting mainly of Apache HTTP Server, MySQL database, and interpreters for scripts written in PHP and Perl.
- **VM Setup:** You can use software like VirtualBox or VMware to create a virtual machine with an operating system to host your development environment.

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### 2. Installing XAMPP on the Virtual Machine

XAMPP includes Apache, MySQL (MariaDB), and PHP/Perl, which are essential for running a local server.

**Steps:**

1. **Download XAMPP:**
  - Visit Apache Friends and download XAMPP for the OS installed on your VM.

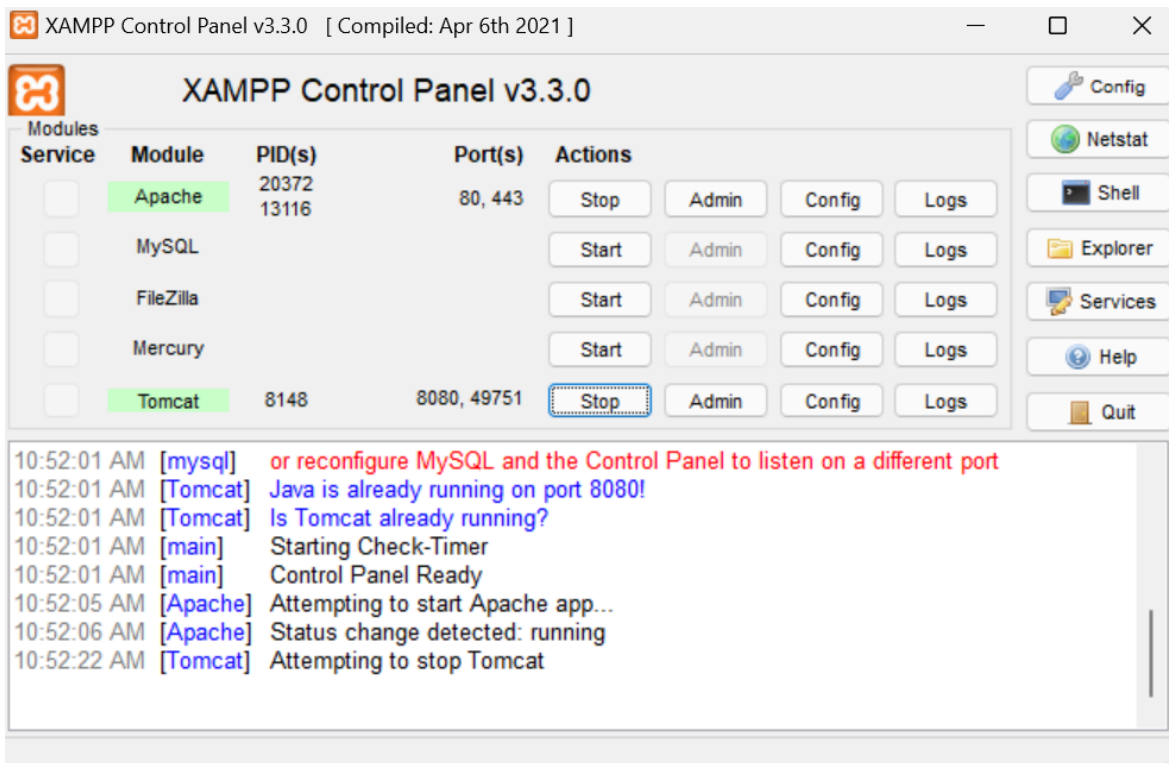
2. **Install XAMPP:**
  - Open the downloaded file and follow the installation instructions.
  - Install Apache, MySQL, and PHP components.
3. **Start XAMPP Services:**
  - Open the XAMPP Control Panel.
  - Start **Apache** (Web Server) and **MySQL** (Database) services.

### 3. Website Development

#### Steps:

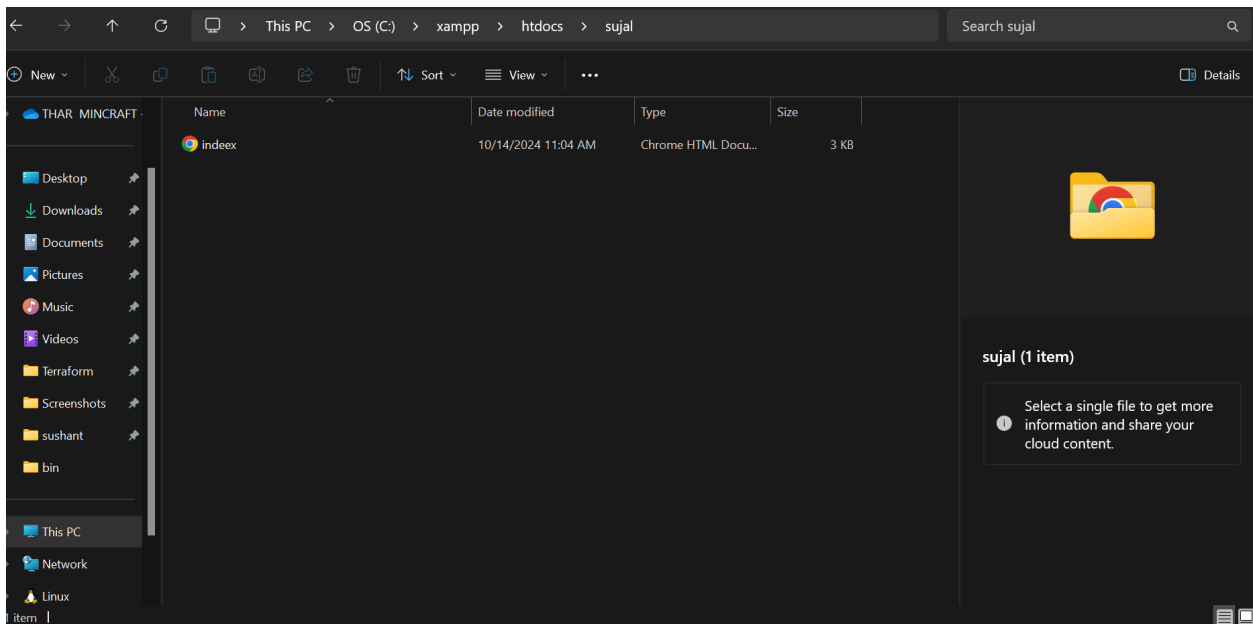
1. **Website Files:**
  - Place your website files (HTML, CSS, JS, PHP) in the **htdocs** folder located in the XAMPP installation directory (e.g., `/opt/lampp/htdocs/` on Linux or `C:\xampp\htdocs\` on Windows).
2. **Database Setup** (Optional):
  - If your website requires a database, you can set it up using **phpMyAdmin**, which is bundled with XAMPP.
  - Open your browser and visit `http://localhost/phpmyadmin` to access the MySQL database management interface.
  - Create a new database and import/export tables if necessary.

#### Steps:

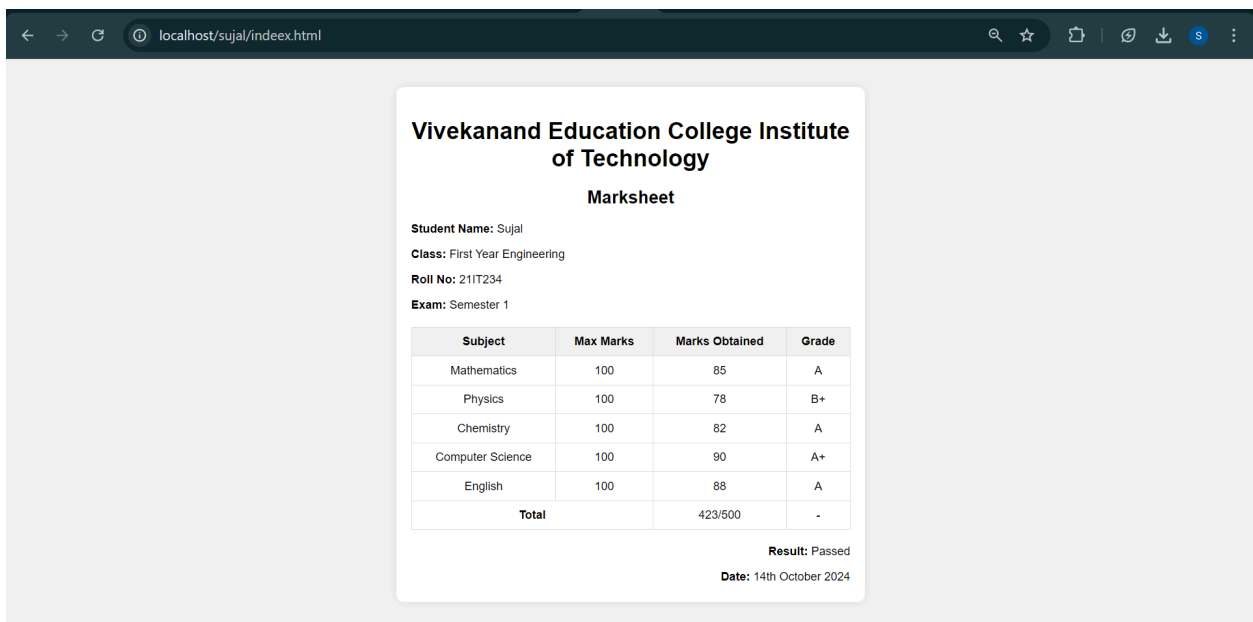


1)

2)



3)



## Uploading a Website on AWS S3 Bucket: Theory and Steps

Amazon S3 (Simple Storage Service) is a cloud storage service that can host static websites. Unlike local hosting (e.g., with XAMPP), AWS S3 is used for deploying websites on the cloud, making them globally accessible. Here's the theory and the steps involved in uploading and hosting a website using an S3 bucket.

### 1. Understanding the Basics

- **Static Website Hosting:** Amazon S3 can only host static websites, meaning the website contains files like HTML, CSS, JavaScript, and images. It doesn't support server-side scripting (PHP, Python, etc.).
- **Cloud Hosting:** Using AWS S3, your website files are stored in a cloud bucket, and they can be accessed via a unique URL assigned to the bucket.
- **Global Accessibility:** Once hosted on S3, your website is accessible globally, making it suitable for users who need fast and reliable hosting.

### 2. Setting Up AWS S3

To host a website on S3, you'll need to create an S3 bucket and configure it for static website hosting.

Steps:

1. Create an AWS Account:
  - Sign up at [aws.amazon.com](https://aws.amazon.com).
2. Access S3 Service:
  - Log in to the AWS Management Console.
  - Search for "S3" in the services search bar and open the Amazon S3 dashboard.

### 3. Create an S3 Bucket

Steps:

1. Create a New Bucket:
  - Click on Create Bucket.

- Enter a unique bucket name (this name will form part of the website URL).
- Select a region (preferably close to your target audience).
- Uncheck the "Block all public access" option, as this is required to make the website publicly accessible.
- Confirm by clicking Create Bucket.

## 4. Upload Your Website Files

### Steps:

1. Upload Static Files:
  - Click on the newly created bucket name.
  - Click Upload and add all your static website files (HTML, CSS, JavaScript, images).
  - Once the files are added, click Upload to finish the process.
2. Set Permissions:
  - To make your files publicly accessible, you need to configure the permissions:
    - Select the files you uploaded.
    - Click on Actions > Make public.

## 5. Configure Static Website Hosting

### Steps:

1. Enable Static Website Hosting:
  - In the S3 bucket, go to the Properties tab.
  - Scroll down to Static Website Hosting.
  - Select Enable.
  - Enter the name of your index document (usually `index.html`), and optionally an error document (like `404.html`).
2. Save the Changes:
  - Save the configuration. Once saved, AWS S3 will generate a website endpoint URL (e.g., `http://your-bucket-name.s3-website-region.amazonaws.com`).

## 6. Testing the Website

- Open the website endpoint URL that was generated when you enabled static website hosting.
- Your website should be live, and you can access it from any browser using the URL.

## 7. Configure Bucket Policy for Public Access

If you get an error when accessing your site, you may need to adjust the bucket policy to allow public access to your files.

Steps:

1. Go to Permissions:
  - In the bucket, navigate to the Permissions tab.
2. Add a Bucket Policy:
  - Click Bucket Policy and add the following JSON policy to allow public access:

json

Copy code

```
{  
  
  "Version": "2012-10-17",  
  
  "Statement": [  
  
    {  
  
      "Sid": "PublicReadGetObject",  
  
      "Effect": "Allow",  
  
      "Principal": "*",  
  
      "Action": "s3:GetObject",  
  
      "Resource": "arn:aws:s3:::your-bucket-name/*"
```

```
}  
  
]  
  
}
```

3.

- Replace your-bucket-name with the actual bucket name.
- Save the policy.

## 8. Optional: Custom Domain and SSL

If you want to use a custom domain for your website, you can do the following:

- Custom Domain: Use Amazon Route 53 or your own DNS provider to map your domain to the S3 website.
- SSL/TLS Encryption: You can use Amazon CloudFront (AWS's CDN service) to add SSL/TLS support and improve performance by serving content from global edge locations.

Steps:

1)

The screenshot displays the AWS S3 console's 'Upload: status' page. At the top, a green banner indicates 'Upload succeeded' with a link to 'View details below.' Below this, the page title 'Upload: status' is shown with a 'Close' button. A light blue box contains a warning: 'The information below will no longer be available after you navigate away from this page.' The 'Summary' section shows the destination 's3://sujal63-bucket', 'Succeeded' status with '1 file, 4.2 KB (100.00%)', and 'Failed' status with '0 files, 0 B (0%)'. The 'Files and folders' tab is active, showing a search bar and a table with one file: 'index.html' (4.2 KB, text/html, Succeeded). The table has columns for Name, Folder, Type, Size, Status, and Error.

Name	Folder	Type	Size	Status	Error
<a href="#">index.html</a>	-	text/html	4.2 KB	Succeeded	-

☑ Successfully edited bucket policy.

[Amazon S3](#) > [Buckets](#) > sujal63-bucket

## sujal63-bucket [Info](#)

[Objects](#) | [Properties](#) | [Permissions](#) | [Metrics](#) | [Management](#) | [Access Points](#)

### Permissions overview

#### Access finding

Access findings are provided by IAM external access analyzers. Learn more about [How IAM analyzer findings work](#).  
[View analyzer for us-east-1](#)

### Block public access (bucket settings) [Edit](#)

Public access is granted to buckets and objects through access control lists (ACLs), bucket policies, access point policies, or all. In order to ensure that public access to all your S3 buckets and objects is blocked, turn on Block all public access. These settings apply only to this bucket and its access points. AWS recommends that you turn on Block all public access, but before applying any of these settings, ensure that your applications will work correctly without public access. If you require some level of public access to your buckets or objects within, you can customize the individual settings below to suit your specific storage use cases. [Learn more](#)

#### Block *all* public access

⚠ Off

► [Individual Block Public Access settings for this bucket](#)

### Bucket policy [Edit](#) [Delete](#)

The bucket policy, written in JSON, provides access to the objects stored in the bucket. Bucket policies don't apply to objects owned by other accounts. [Learn more](#)

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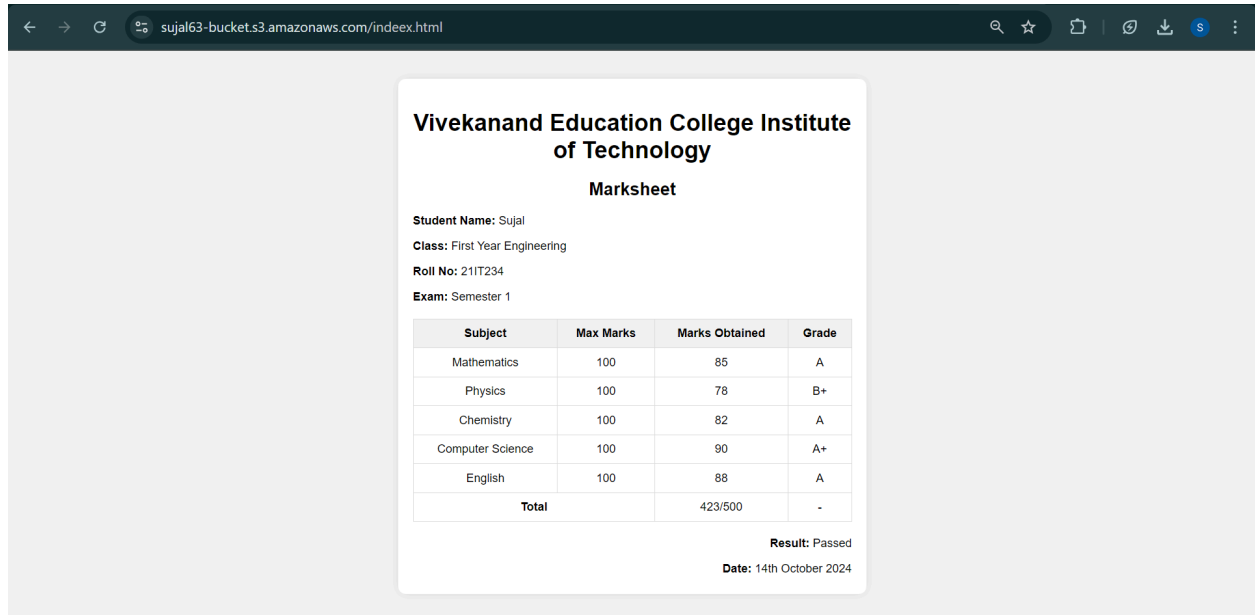
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## Conclusion

XAMPP is great for local development of dynamic websites with server-side functionality, while AWS S3 is perfect for hosting static websites globally with high scalability and reliability. Use XAMPP for development and testing, and deploy to S3 for static content hosting in production.