

A Course End Project
on
CLOUD HOSTED STATIC WEBSITE

Submitted in the Partial Fulfillment of the
Requirements
for the Award of the Degree of

BACHELOR OF TECHNOLOGY
IN
COMPUTER SCIENCE AND ENGINEERING (AI&ML)

Submitted

By

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (AI&ML)

VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

Affiliated to **JNTUH**, Approved by **AICTE**, Accredited by **NAAC**, with **A++** Grade, **ISO 9001:2015** Certified
Kacharam, Shamshabad, Hyderabad – 501218, Telangana, India

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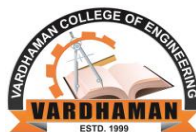
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Department of Computer Science and Engineering (AI&ML)

CERTIFICATE

This is to certify that the Course End Project report work entitled “**Cloud Hosted Static Website**” carried out by **A. Divya** , Roll Number **21881A6604**, **CH. Chandrakala**, Roll Number **21881A6615**, **CH. Poojitha Venkata Sai**, Roll Number **21881A6617**, **K. Laxmi Srina**, Roll Number **21881A6633** towards Course End Project and submitted to the Department of Computer Science and Engineering(AI&ML), in partial fulfillment of the requirements for the award of degree of **Bachelor of Technology in Computer Science and Engineering (AI&ML)** during the year 2023-24.

Signature of the Course Instructor

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ABSTRACT

Cloud-hosted static websites have become increasingly popular due to their efficiency, scalability, and cost-effectiveness. A static website, composed of pre-rendered HTML, CSS, and JavaScript files, does not require server-side processing and is ideal for content that doesn't need frequent updates or user interaction. Hosting static websites in the cloud involves deploying these files to a cloud service provider, which offers several advantages over traditional hosting methods. These benefits include scalability, where the cloud infrastructure automatically handles traffic spikes, ensuring accessibility during high-demand periods; cost-effectiveness, as static websites require fewer resources, reducing hosting costs, and many cloud providers offer pay-as-you-go pricing models. Performance is enhanced through content delivery networks (CDNs) that distribute static files across multiple global locations, minimizing latency and ensuring faster load times for users worldwide. Security is improved since static websites are less vulnerable to common attacks like SQL injection, and cloud providers implement robust security measures such as HTTPS and DDoS protection. Reliability is also guaranteed with high uptime and redundancy from cloud providers.

Keywords: Microsoft Azure, Cloud, Static Web Hosting, HTML, Scalability

ABBREVIATIONS

Abbreviation	Expansion
HTML	Hyper Text Markup Language
HTTPS	Hyper Text Transfer Protocol
CSS	Cascading Style Sheets
DDoS	Distributed Denial-of-Service
CDN	Content Delivery Network
AWS	Amazon Web Services
SQL	Structured Query Language

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CHAPTER-1

INTRODUCTION

In today's rapidly evolving digital landscape, the need for efficient, scalable, and cost-effective web hosting solutions is paramount. Cloud-hosted static websites have emerged as a preferred choice for developers and businesses alike, offering a streamlined approach to delivering web content. Unlike dynamic websites, static websites are composed of fixed content—pre-rendered HTML, CSS, and JavaScript files—that do not require server-side processing. This makes them ideal for use cases such as personal blogs, portfolios, and informational sites where content remains relatively unchanged. Hosting these static websites in the cloud leverages the power of cloud infrastructure, providing significant advantages in terms of performance, scalability, security, and cost-efficiency.

Cloud-hosted static websites offer numerous benefits over traditional hosting methods. They ensure scalability, as cloud infrastructure can automatically manage traffic spikes, maintaining accessibility during high-demand periods. These websites are also cost-effective since they require fewer resources, with many cloud providers offering pay-as-you-go pricing models. Performance is enhanced through content delivery networks (CDNs) that distribute static files globally, minimizing latency and ensuring faster load times. Additionally, static websites are inherently more secure, being less susceptible to common attacks like SQL injection, and cloud providers implement robust security measures such as HTTPS and DDoS protection. As businesses increasingly move towards digital platforms, cloud-hosted static websites provide a reliable and modern foundation for their online presence.

1.1 SCOPE

The scope of cloud-hosted static websites is broad and versatile, catering to a wide range of applications and users. These websites are particularly well-suited for personal blogs and portfolios, where individuals can showcase their work or share personal insights. Static websites offer quick load times and minimal maintenance, making them ideal for personal projects. Additionally, businesses can utilize static websites for their corporate presence, informational pages, or landing pages. These sites often feature content that doesn't change frequently, such as company information, service descriptions, and contact details, benefiting from the simplicity and cost-effectiveness of static hosting.

Cloud-hosted static websites are also perfect for documentation and educational sites, hosting software project documentation, tutorials, and other educational materials. They can be easily managed and updated using static site generators, ensuring that users always have access to the latest information. Marketers can create static landing pages for promotional campaigns, product launches, or event registrations, which can handle high traffic volumes during peak periods

without performance issues. Even in e-commerce, while core functionalities might be dynamic, static websites can be used for product catalogs and informational pages, offloading some traffic from the main e-commerce platform and improving overall performance.

Developers benefit significantly from cloud-hosted static websites due to the ease of deployment and the ability to use modern development tools and workflows, such as static site generators and CI/CD pipelines. This approach simplifies server-side coding and maintenance, allowing developers to focus more on the content and user experience. Businesses, on the other hand, gain from the reliability, scalability, and cost-efficiency that cloud-hosted static websites offer. These advantages make cloud-hosted static websites an attractive option for a wide array of web development needs, providing a robust and modern foundation for an online presence.

1.2 OBJECTIVES

The objectives of cloud-hosted static websites are centered around delivering an efficient, scalable, and secure web hosting solution that meets the diverse needs of individuals and businesses. These objectives include:

1. Enhance Performance and Speed

- Objective: To provide fast load times and a smooth user experience by leveraging content delivery networks (CDNs) that distribute static content globally.
- Benefit: Users can access websites quickly regardless of their geographical location, improving user satisfaction and engagement.

2. Ensure Scalability

- Objective: To automatically handle varying traffic levels without manual intervention, ensuring that websites remain accessible during high-demand periods.
- Benefit: Websites can accommodate growth and unexpected traffic spikes without compromising performance or requiring additional infrastructure investment.

3. Reduce Hosting Costs

- Objective: To offer a cost-effective web hosting solution by utilizing fewer server resources and taking advantage of pay-as-you-go pricing models offered by cloud providers.
- Benefit: Businesses and individuals can manage their budgets more effectively, only paying for the resources they use.

4. Improve Security

- Objective: To enhance website security by minimizing vulnerabilities associated with server-side processing and implementing robust security measures such as HTTPS and DDoS protection.
- Benefit: Static websites are less prone to common security threats, providing a safer browsing experience for users and reducing the risk of data breaches.

5. Increase Reliability and Uptime

- Objective: To ensure high availability and redundancy by leveraging the reliable infrastructure of cloud service providers.
- Benefit: Websites experience minimal downtime, ensuring consistent availability for users and maintaining business continuity.

6. Simplify Deployment and Maintenance

- Objective: To streamline the development, deployment, and maintenance processes through the use of modern tools like static site generators and continuous integration/continuous deployment (CI/CD) pipelines.
- Benefit: Developers can focus on creating content and improving user experience, reducing the time and effort spent on managing server infrastructure.

CHAPTER-2

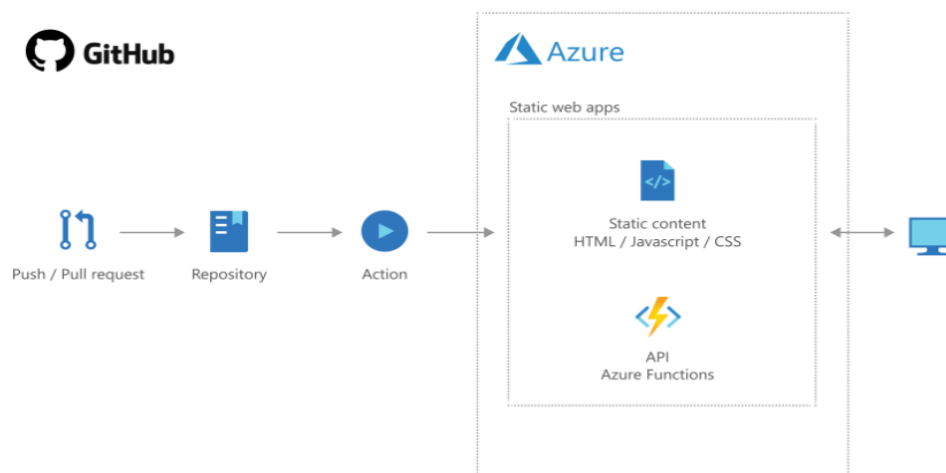
PROBLEM DEFINITION AND PROPOSED SYSTEM METHODOLOGY

2.1 PROBLEM STATEMENT

Cloud-hosted static websites offer a clear solution to the challenges posed by traditional web hosting models. These websites are designed to deliver enhanced performance through optimized content delivery networks (CDNs) and global caching mechanisms, ensuring fast load times and consistent user experiences across different geographical regions. By leveraging cloud infrastructure provided by platforms like Amazon Web Services (AWS), Google Cloud Platform (GCP), or Microsoft Azure, static websites benefit from scalable resources that automatically adjust to fluctuating traffic demands. This scalability not only improves website performance during peak periods but also eliminates the need for manual intervention, thereby enhancing reliability and user satisfaction.

In addition to performance advantages, cloud-hosted static websites prioritize security by implementing robust measures such as HTTPS encryption, distributed denial-of-service (DDoS) protection, and regular security updates. Unlike dynamic websites that rely on server-side processing vulnerable to exploits like SQL injection, static websites minimize security risks by limiting interaction with backend systems. This approach enhances data integrity and protects sensitive information, crucial for maintaining user trust and compliance with stringent data protection regulations.

2.2 PROPOSED SYSTEM METHODOLOGY



2.3 CODE

HTML CODE

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>iMac</title>
  <script src="https://cdnjs.cloudflare.com/ajax/libs/gsap/3.12.3/gsap.min.js"
defer></script></head>

<body>
  <div class="body">
    <div class="head1"><b>iMac</b>
    <p id="b1">The world's best all-in-one computer, now supercharged by the M3 chip.
</p></div>

    
</div>

<div class="wrapper">

  <div class="container scrollx">
    <section class="sec1 pin">
      <span class="anim">Available in seven different colours</span>

      
      <h1 class="anim" style="color: rgb(209, 13, 13);">Red</h1>

    </section>
```

```

<section class="sec2 pin">
  <span class="anim">Available in seven different colours</span>

  
  <h1 class="anim" style="color: rgb(13, 13, 176);">Blue</h1>
</section>
<section class="sec3 pin">
  <span class="anim">Available in seven different colours</span>
  <div class="gallery">
<div class="left">
  <div class="desktopContent">
    <div class="desktopContentSection">
      <h1>Safari</h1>
      <p>The world's fastest browser, Safari runs up to 30% faster.7 Create personalised
profiles and securely share your passwords and passkeys.</p>
    </div>
    <div class="desktopContentSection">
      <h1>Editing</h1>
      <p>Fly through edits up to two times faster in Adobe Photoshop.9 And work with
massive 100-megapixel images without a hitch.</p>
    </div>
    <div class="desktopContentSection">
      <h1>Gaming</h1>
      <p>M3 makes gaming an absolute blast with up to 50% faster frame rates and
hardware-accelerated ray tracing for more lifelike lighting and reflections.</p>

    </div>
    <div class="desktopContentSection">
      <h1>And many more...</h1>
      <p>Productivity apps like Microsoft Excel perform up to 30 percent faster.</p>
    </div>

```

```

</div>
</div>

<div class="right">

  <!-- mobile content -->
  <div class="mobileContent">
    <div class="mobilePhoto red"></div>
    <h1>Safari</h1>
    <p>The world's fastest browser, Safari runs up to 30% faster.7 Create personalised
profiles and securely share your passwords and passkeys.</p>

    <div class="mobilePhoto green"></div>
    <h1>Editing</h1>
    <p>Fly through edits up to two times faster in Adobe Photoshop.9 And work with
massive 100-megapixel images without a hitch.</p>

    <div class="mobilePhoto pink"></div>
    <h1>Gaming</h1>
    <p>M3 makes gaming an absolute blast with up to 50% faster frame rates and hardware-
accelerated ray tracing for more lifelike lighting and reflections.</p>

    <div class="mobilePhoto blue"></div>
    <h1>And many more...</h1>
    <p>Productivity apps like Microsoft Excel perform up to 30 percent faster.</p>
  </div>

</body>
</html>

```

CHAPTER-3

SOFTWARE REQUIREMENTS

1. Content Management System (CMS):

- Ability to manage and update static content (HTML, CSS, JavaScript) through a user-friendly interface.
- Support for version control and rollback mechanisms for content changes.

2. Deployment Automation:

- Continuous Integration/Continuous Deployment (CI/CD) pipelines to automate deployment from version control systems (e.g., Git).
- Integration with cloud platforms (e.g., AWS, GCP) for seamless deployment and rollback capabilities.

3. Scalability and Performance Optimization:

- Utilization of Content Delivery Networks (CDNs) to distribute static files globally and optimize load times.
- Horizontal and vertical scaling capabilities to handle varying traffic loads effectively.

4. Security Measures:

- Implementation of HTTPS encryption for secure data transmission.
- Secure access controls and authentication mechanisms to protect website resources.
- Protection against common web vulnerabilities such as XSS (Cross-Site Scripting) and CSRF (Cross-Site Request Forgery).

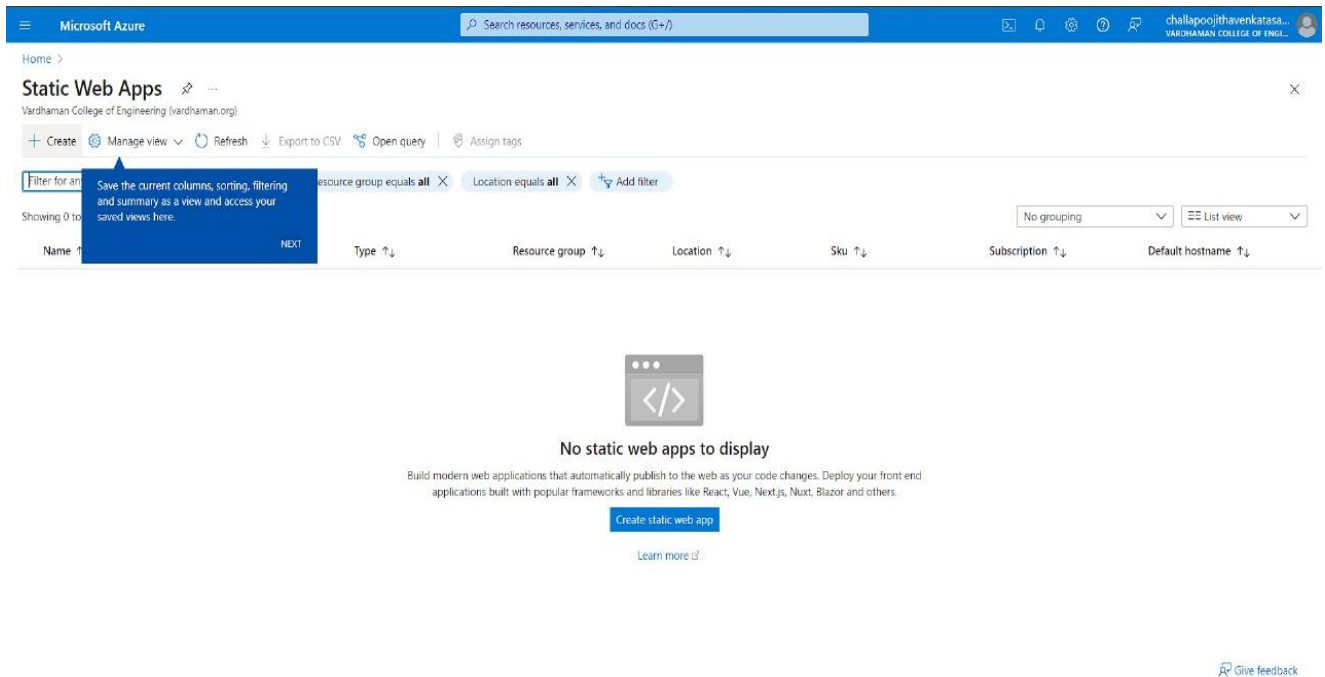
5. Monitoring and Logging:

- Integration of monitoring tools to track website performance, uptime, and security incidents.
- Logging mechanisms to capture and analyze events for troubleshooting and audit purposes.

CHAPTER-4

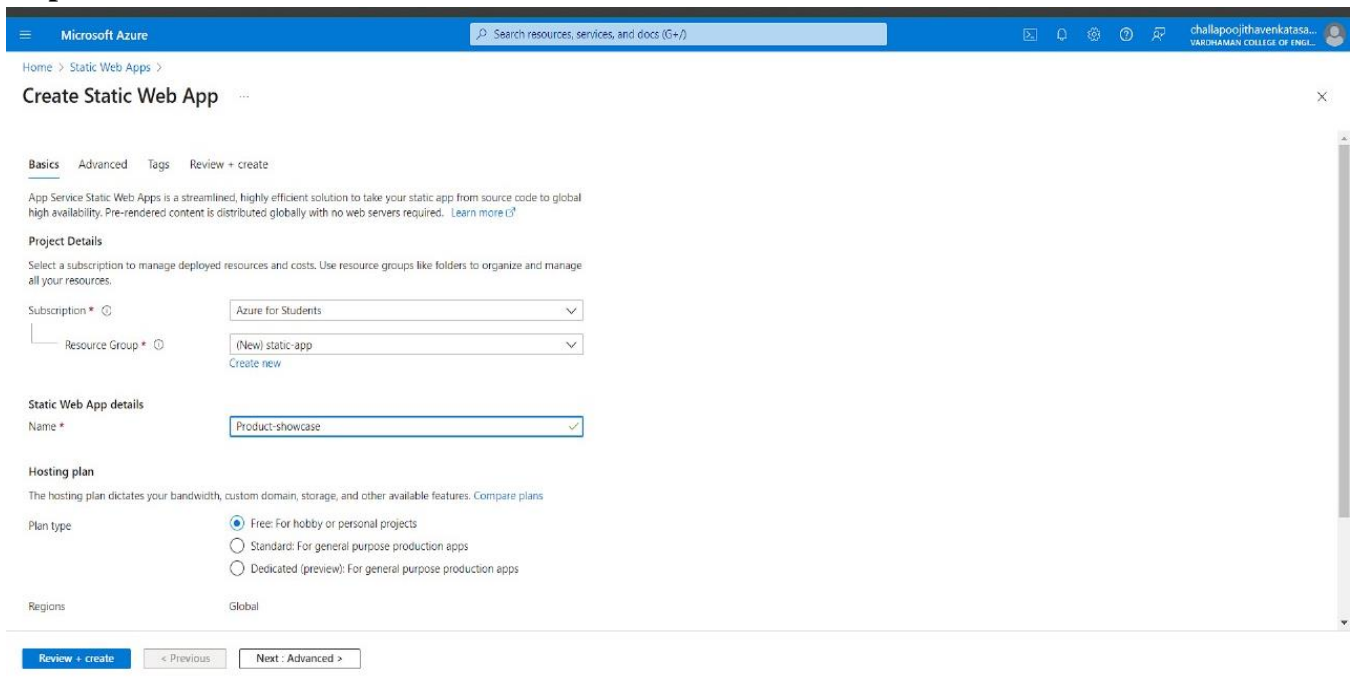
PROCEDURE

Step-1:



Click on static web apps and click on create.

Step-2:



Give name to the static web app “Product Showcase” and select plan type as “Free for personal projects”.

Step-3:

The screenshot shows the 'Create Static Web App' page in the Microsoft Azure portal. The 'Deployment details' section has 'Source' set to 'GitHub'. The 'GitHub account' is 'poojitha-ch'. A message states: 'If you can't find an organization or repository, you might need to enable additional permissions on GitHub. You must have write access to your chosen repository to deploy with GitHub Actions.' The 'Organization' is 'poojitha-ch', the 'Repository' is 'productshowcase', and the 'Branch' is 'main'. The 'Build Details' section has 'Build Presets' set to 'Custom (detected)'. A note says: 'These fields will reflect the app type's default project structure. Change the values to suit your app. Learn more'. The 'App location' is '/'. At the bottom, there are buttons for 'Review + create', '< Previous', and 'Next: Advanced >'.

Select source as “GitHub” so that the projects in your GitHub account can be deployed in cloud.

After linking your GitHub account, select the repository of your project.

Step-4 :

The screenshot shows the GitHub Actions page for the 'productshowcase' repository. The left sidebar has 'Actions' selected, with 'All workflows' and 'New workflow' options. The main area shows 'All workflows' with a search bar and a 'Filter workflow runs' button. A message says 'Help us improve GitHub Actions'. Below, there are '3 workflow runs' listed in a table:

Event	Status	Branch	Actor
ci: add Azure Static Web Apps workflow file	Success	main	Azure Static Web Apps CI/CD #1: Commit 9238d43 pushed by poojitha-ch
pages build and deployment	Success		pages-build-deployment #2: by poojitha-ch
pages build and deployment	Success		pages-build-deployment #1: by poojitha-ch

After clicking on Review+Create, we can see that our deployment is in progress in your GitHub account.

Step-5:

Microsoft Azure

Search resources, services, and docs (G+/I)

Home > Microsoft.Web-StaticApp-Portal-a76931d1-9eac | Overview

Deployment

Search

Delete Cancel Redeploy Download Refresh

Overview

Inputs

Outputs

Template

Your deployment is complete

Deployment name : Microsoft.Web-StaticApp-Portal-a76931d1-9eac

Subscription : Azure for Students

Resource group : static-app

Start time : 6/8/2024, 8:43:27 PM

Correlation ID : fe118433-f766-48a2-bafd-a91beb8dd32a

Deployment details

Next steps

Go to resource

Give feedback

Tell us about your experience with deployment

Cost management

Get notified to stay within your budget and prevent unexpected charges on your bill. Set up cost alerts >

Microsoft Defender for Cloud

Secure your apps and infrastructure. Go to Microsoft Defender for Cloud >

Free Microsoft tutorials

Start learning today >

Work with an expert

Azure experts are service provider partners who can help manage your assets on Azure and be your first line of support. Find an Azure expert >

The deployment is successful. To get details of your project click on Overview.

Step-6:

Microsoft Azure

Search resources, services, and docs (G+/I)

Home > Microsoft.Web-StaticApp-Portal-a76931d1-9eac | Overview >

Product-showcase

Static Web App

Search

View app in browser Delete Manage deployment token Send us your feedback

Overview

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Monitoring

Automation

Help

Thank you for using Azure Static Web Apps! We have not received any content for your site yet.

JSON View

Essentials

Resource group (move) : static-app

Subscription (move) : Azure for Students

Subscription ID : dfa58732-c441-4b58-addc-898a43fe4a93

Location : Global

SKU : Free

Tags (edit) : Add tags

URL : https://icy-sand-073398f105.azurestaticapps.net

Source : main (GitHub)

Deployment history : GitHub Action runs

View workflow : azure-static-web-apps-icy-sand-073398f105

Get started Monitoring

View your application

Status : Waiting for deployment

Environment : Production

Domain : https://icy-sand-073398f105.azurestaticapps.net

Hosting plan : Free

Visit your site

Prepare for production (0/3 completed)

Add a custom domain

Upgrade your hosting plan

Enable enterprise grade edge

We can find the url of the website that is deployed on cloud.

Copy and paste the URL in a web browser. We can see the website.

CHAPTER-5

RESULTS AND DISCUSSIONS

Safari

The world's fastest browser,
Safari runs up to 30% faster.⁷
Create personalised profiles and
securely share your passwords
and passkeys.



Cloud-hosted static websites are highly beneficial due to their scalability, cost-effectiveness, performance, security, and reliability. They automatically handle traffic spikes, ensuring accessibility during high-demand periods, and their pay-as-you-go pricing models reduce overall hosting costs. Content Delivery Networks (CDNs) improve load times by distributing files globally, while enhanced security measures like HTTPS and DDoS protection mitigate risks. Additionally, cloud providers offer high uptime and redundancy, ensuring your site remains online even if a server fails.

CHAPTER-6

CONCLUSION :

In conclusion, the deployment of a cloud-hosted static website represents a significant advancement in modern web hosting, offering a plethora of benefits to both developers and users alike. Through the utilization of cloud storage, Content Delivery Networks (CDNs), Domain Name Systems (DNS), and SSL/TLS certificates, static websites can deliver a seamless and secure browsing experience.

The journey of creating and deploying a cloud-hosted static website has been enlightening, revealing the power and versatility of cloud computing technologies. By leveraging scalable infrastructure, reliability guarantees, and cost-effective pricing models provided by cloud service providers, we have been able to establish a robust online presence with minimal overhead.

One of the standout advantages of a cloud-hosted static website is its scalability, allowing us to effortlessly accommodate surges in traffic without compromising performance or availability. Moreover, the reliability offered by cloud providers ensures that our website remains accessible to users around the clock, fostering trust and credibility.

In essence, the deployment of a cloud-hosted static website signifies not only a technological achievement but also a testament to our commitment to delivering high-quality online experiences. As we continue to refine and iterate upon our website, we remain dedicated to harnessing the full potential of cloud computing to enrich the lives of our users and stakeholders.

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