**Project Report: Scalable Static Website using AWS S3, Cloudflare & GitHub Actions**

**Name of the Domain that is hosted – https://harshithamd.space/**

**Introduction**

This project aims to deploy a scalable and secure static website using free-tier services. It utilizes **Amazon S3** for storage and hosting, **Cloudflare** for CDN, HTTPS, and DNS management, and **GitHub Actions** for automated deployment. The solution offers a globally available, cost-efficient alternative for personal or portfolio websites.

**Abstract**

With the increasing demand for reliable and fast-loading websites, hosting static sites on a cloud platform has become a popular solution. This project demonstrates how to build and deploy a static site using HTML/CSS and automate its deployment using GitHub Actions to an Amazon S3 bucket. Cloudflare is integrated to manage DNS, enable HTTPS, and serve content through a global CDN. The entire workflow is automated to trigger on every code commit, ensuring continuous delivery without manual intervention.

**Tools Used**

* **Amazon S3 (Free Tier)** – Static website hosting and file storage
* **Cloudflare (Free Tier)** – DNS, SSL, CDN, and performance optimization
* **GitHub** – Version control and code hosting
* **GitHub Actions** – CI/CD pipeline for automatic deployment
* **HTML/CSS** – Frontend technologies used for building the static site
* **Bash** – Shell scripting for manual deployment and testing

**Steps Involved in Building the Project**

1. **Website Creation**  
   Developed a basic static site using HTML and CSS, including an index.html file.
2. **GitHub Setup**  
   Pushed the project to a GitHub repository to enable version control and CI/CD.
3. **Amazon S3 Bucket Configuration**
   * Created a public S3 bucket with the name matching the custom domain.
   * Enabled static website hosting and set index document.
   * Applied a bucket policy to allow public read access.
4. **GitHub Actions Workflow**
   * Created a workflow file in .github/workflows/deploy.yml.
   * Used jakejarvis/s3-sync-action to sync files from GitHub to S3.
   * Stored AWS credentials as encrypted secrets.
5. **Cloudflare Configuration**
   * Added the domain to Cloudflare and pointed nameservers.
   * Set a CNAME record to the S3 website endpoint.
   * Enabled SSL (Full mode), Always Use HTTPS, and Cache Everything.
6. **Optimization**
   * Set Cache-Control headers for browser caching.
   * Enabled S3 versioning for rollback capability.
   * Verified deployment and HTTPS functionality.

**Conclusion**

This project successfully demonstrates a low-cost and scalable method for hosting static websites using Amazon S3 and Cloudflare. It achieves global reach, performance enhancement, and secure delivery with HTTPS. The use of GitHub Actions ensures a fully automated deployment pipeline, reducing maintenance and enhancing productivity. This approach is ideal for developers, freelancers, and small businesses aiming to deploy static content efficiently.