System Architecture: Static Website Hosting with Amazon S3

Project Description

This project demonstrates how to host a static website using **Amazon S3**, showcasing a **serverless**, **scalable**, and **cost-effective** approach to web deployment. The website consists of **HTML**, **CSS**, and **JavaScript** files stored and served directly from an S3 bucket. The architecture can be extended with services like **CloudFront** (for CDN and HTTPS) and **Route 53** (for custom domains) to create a production-grade deployment setup.

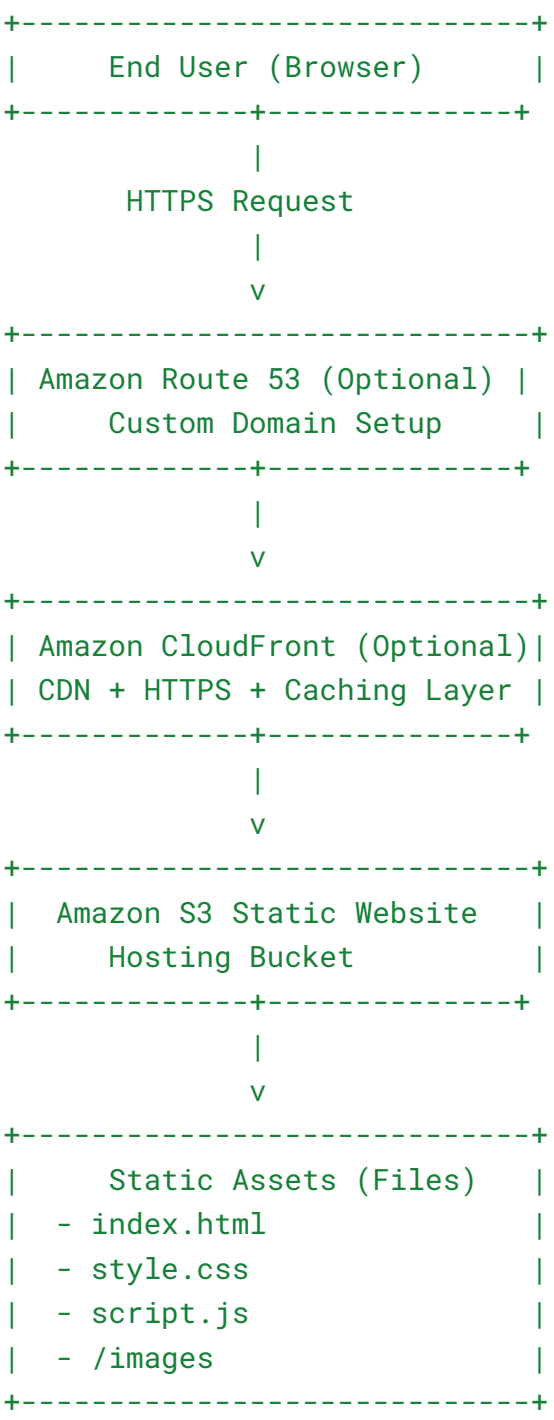
Core Components

- **Amazon S3** – Stores and serves static content (HTML, CSS, JS, images)
- **Bucket Policy** – Grants public read access or restricts access to CloudFront
- **IAM Policy** – Manages user and service permissions securely
- **Static Assets** – Files like `index.html`, `style.css`, `script.js`, and images

Optional Components (Recommended Enhancements)

- **CloudFront** – Global CDN for faster delivery and HTTPS support
- **AWS Certificate Manager (ACM)** – Provides free SSL certificates for HTTPS
- **Route 53** – Maps custom domains like `www.yoursite.com` to CloudFront
- **GitHub Actions** – Automates deployment (CI/CD) to S3 on code push

System Architecture Flow



Key Features

- Serverless – No backend infrastructure needed
- Scalable – Auto-scales with user traffic
- Secure – HTTPS via CloudFront and ACM
- Global Performance – Fast delivery via CDN
- Automated Deployment – CI/CD with GitHub Actions
- Cost-Efficient – Pay only for what you use

Summary

This architecture provides a robust, secure, and globally available platform for hosting static websites using AWS. Students can start with basic static site deployment on S3, and progressively enhance it with optional services like CloudFront, ACM, and GitHub Actions for a real-world, enterprise-ready deployment experience.
