**AWS Serverless Web Application**

**🚀 Project Overview**

This project is a **serverless web application** hosted on AWS using services like **S3, API Gateway, and Lambda**. It demonstrates how to deploy a fully functional, scalable web app without managing servers.

**🛠️ Tech Stack & AWS Services**

* **Amazon S3**: Hosting static website files (HTML, CSS, JavaScript).
* **API Gateway**: Handling API requests and routing them to Lambda functions.
* **AWS Lambda**: Serverless backend logic processing.
* **IAM**: Managing permissions and security.
* **CloudWatch**: Logging and monitoring.

**📂 Project Structure**

├── index.html # Main webpage

├── script.js # JavaScript logic

├── style.css # Styling for the web page

└── README.md # Project documentation

**⚙️ Setup Instructions**

1. **Create and Configure S3 Bucket:**
   * Create an S3 bucket with a unique name.
   * Enable static website hosting.
   * Upload index.html and any other assets.
   * Set the index document as index.html (ensure case sensitivity).
2. **Set Bucket Permissions:**
   * Update the bucket policy to allow public access:

{

"Version": "2012-10-17",

"Statement": [

{

"Sid": "PublicReadGetObject",

"Effect": "Allow",

"Principal": "\*",

"Action": "s3:GetObject",

"Resource": "arn:aws:s3:::your-bucket-name/\*"

}

]

}

1. **Deploy API using API Gateway:**
   * Create a new API.
   * Define resources and methods (e.g., GET, POST).
   * Integrate with AWS Lambda (if applicable).
   * Deploy the API to a stage (like prod).
2. **Test the API:**
   * Use tools like Postman or Curl to send requests.
   * Example Curl command:

curl -X GET https://your-api-id.execute-api.region.amazonaws.com/prod/resource

1. **Monitor Logs:**
   * Navigate to AWS CloudWatch to view API and Lambda logs for debugging.

**✅ How to Test the Website**

* Visit the S3 website endpoint:

http://your-bucket-name.s3-website.region.amazonaws.com

* Test the API by accessing the API Gateway URL.

**⚠️ Common Issues & Solutions**

* **403 Forbidden Error:** Ensure that the S3 bucket policy allows public read access.
* **404 Not Found Error:** Double-check file names (case-sensitive) and ensure the index document is correctly set.
* **CORS Errors:** Enable CORS in API Gateway if calling APIs from the frontend.

**🚩 Challenges Faced & Solutions**

* **Issue:** Received a 404 error because the index file was incorrectly named as Index.html instead of index.html.
  + **Solution:** Renamed the file to lowercase to match S3's case-sensitive configuration.
* **Issue:** API not responding correctly.
  + **Solution:** Checked CloudWatch logs to debug and fix the Lambda function permissions.

**💡 Future Improvements**

* Add authentication using AWS Cognito.
* Implement CI/CD for automated deployments.
* Integrate monitoring alerts for API and Lambda errors.

**📜 License**

This project is open-source and available under the [MIT License](https://chatgpt.com/c/LICENSE).

Feel free to fork this repo and contribute! 🚀