Hi,

Thank you for showing interest in the DevOps Engineer Internship at DataGrokr.

DataGrokr provides solutions to our global clients in the fields of Cloud enablement, IT Automation (DevOps), Data Management and Big Data Analytics. We work on several different technologies, and we must adapt very quickly to our clients' demands.

Learning agility and ability to deal with new technologies on the fly is a **must-have** requirement to succeed at DataGrokr. It is a great place to work if you love challenges.

As such, our selection process is geared to identify candidates who will enjoy this type of work and thrive in this environment. As a part of our selection process, we ask interested candidates to complete a technical assignment. Given the nature of the DevOps internship, this technical assignment requires some familiarity with the AWS platform.

The details for the technical assignment are provided in the attached document. The document contains detailed instructions on what you need to do as well as the deliverables expected.

Your submissions are due by end of the day, **March 14th, 2022**. Based on your submissions, we will shortlist some candidates and schedule technical interview in the following week through Google Meet/Skype.

Good luck and we hope you enjoy the assignment and learn something new in the process.

Thanks,
Cloud Hiring Team,
DataGrokr Analytics Private Limited.

Assignment Instructions

The assignment will test your knowledge of AWS services. If you do not have any familiarity with AWS, you may find this assignment difficult.

You will need an AWS account to solve the assignment. You create and manage your AWS resources in an AWS account. Please create an AWS Free Tier account if you do not have one already. You can use AWS Free tier resources and services, so that you do not incur any cost to solve the assignment. For example, use **t2.micro** EC2 instance which is free of cost. You will be able to solve the assignment questions using free tier account and resources.

AWS Free Tier account
How do I create and activate a new AWS account?

This technical assessment contains two parts.

Part-1:

Our client wants to store and retrieve employee information from a DynamoDB Table in AWS account. You are assigned to this project and your manager has asked you to create a DynamoDB table, Lambda function and API gateway to store and retrieve the information:

1. Create DynamoDB table named Emp_Master with the following attributes:
   Emp_Id, First_Name, Last_Name and Date_Of_Joining

2. Create a Lambda function to store and retrieve data from the above DynamoDB table. (Lambda function Execution Role should have granular access not full access for services.)

3. Create an API gateway with 2 methods that will integrate with the lambda function created in step 2 and return the response. The methods should be invoked to retrieve (GET) and insert (POST) data to the DynamoDB table.

Non-functional requirements:

- The Lambda function code should be properly formatted and readable with proper naming conventions.
- While you can use any language to develop the lambda code, Python is strongly preferred.

Useful resources:

- What is AWS Lambda?
- Building Lambda functions with Python
- CRUD Operations in DynamoDB with Python
- API Gateway
- Boto3 library reference: DynamoDB

Deliverables:

1. Create an IAM user (datagrokr) with ReadOnly permission and send us your AWS account alias, username and password so we can log into your account.
2. A document containing the names of the AWS resources that are involved in your solution:
    I. IAM role Name for Lambda execution
    II. API Gateway URL & Region Name
    III. Lambda function Name & Region Name
    IV. DynamoDB table Name & Region Name

Part-2:

Our client wants to replicate objects in S3 bucket to different regions to meet compliance requirements and disaster recovery objectives.

You are assigned this specific task to create a Lambda function which will replicate the objects from source bucket to destination buckets in other regions in your AWS account that meets the following requirements:

1. Create three S3 buckets in 3 different AWS regions given below.
    a) us-east-1 (N. Virginia) - Source Bucket
    b) us-east-2 (Ohio) – Destination Bucket - 1
    c) us-west-1 (N. California) - Destination Bucket - 2

2. Create a Lambda function to sync data from the source bucket to destination buckets. Lambda function should be triggered on any change to source bucket (S3 events) as listed below
    a. Addition of new object
    b. Deletion of existing object

3. At any given point of time, all the three S3 buckets must be in Sync and should have the same objects once the replication is completed.

4. Don't use the default option available in AWS S3 to replicate the objects. Replication should happen through the custom code written in the Lambda function.

Note:
As part of the AWS Free Tier, you can get started with Amazon S3 for free. Upon sign-up, new AWS customers receive 5GB of Amazon S3 storage in the S3 Standard storage class; 20,000 GET Requests; 2,000 PUT, COPY, POST, or LIST Requests; and 100 GB of Data Transfer Out each month.

Non-functional requirements:

1. The Lambda function code should be properly formatted and readable with proper naming conventions.
2. While you can use any language, Python is strongly preferred.

Useful resources:

1. S3 Cross Region Replication
2. Amazon S3 sample Python Code
3. S3 Events
4. Boto3 library reference: S3

Deliverables:

1. A document containing the names of the AWS resources that are involved in your solution:
    a. Lambda Function Name & Region Name
    b. S3 bucket Names

Logistics of submission:

1. Please send all your submissions to cloud@datagrokr.com on or before **March 14th**.
2. The subject of the email should be "DevOps: Your Name"
3. The email should have two attachments:
    a. Your latest resume
    b. One comprehensive document
4. The comprehensive document should have the following sections:
    a. IAM Credentials for us to login into your account
    b. Part-1 resource names
    c. Part-2 resource names

If you have any questions about the assignments, please drop a mail to cloud@datagrokr.com with a clear description of the issues/question. Please mention the subject line of the email as "DevOps: Need Help" to get a timely response. Please remember to Google the issue/question before asking us!

Caution on copying assignments:

If we find any two assignments to be similar, we will disqualify both the applications. Please do not share your assignments with your friends or store them on public repos like GitHub and risk getting disqualified.

Good luck and we hope you learn something new in this process!