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, **December 5th, 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 access and read files in a S3 bucket on a different AWS account and store the files in their own AWS account.

You are assigned this specific task to read a JSON file from a S3 bucket in DataGrokr's AWS account, append data to the file and store the modified file to a S3 bucket in your AWS account that meets the following requirements:

1. Create a Lambda function that will assume the IAM role arn:aws:iam::001082169132:role/S3GetObjectAccess to read devops-assignment.json file from datagrokr-devops-technical-assignment-june-2021 DataGrokr's S3 bucket in us-east-1 region.
   Hint: Use AWS SDK for Python (boto3) to assume cross account role.

2. The JSON file currently has one key - "message". Your lambda function should read the JSON file and add one more key - "user". Value for the "user" key should be your name. The Lambda function should store the modified file to a S3 bucket in your account.

File in DataGrokr's S3 bucket:

```
{
   "message": "Hello from the DevOps internship hiring team."
}
```

File in your AWS's S3 bucket should look like this:

```
{
  "message": "Hello from the DevOps internship hiring team."
  "user": "Bob"
```

3. Non-functional requirements:
    a. The Lambda function code should be properly formatted and readable with proper naming conventions.
    b. While you can use any language, Python is strongly preferred.
4. Useful resources:
    a. Assume role from another AWS account
    b. Amazon S3 sample Python Code

    Boto3 library reference.
    c. S3

Deliverables:

1. A document containing the names of the resources that are involved in your solution:
    a. IAM role for Lambda execution
    b. Lambda function
    c. S3 bucket

Part-2:

You can assign metadata to your AWS resources in the form of tags. Each tag is a label consisting of a user-defined key and value. Tags can help you manage, identify, organize, search for, and filter resources. You can create tags to categorize resources by purpose, owner, environment, or other criteria.

Each tag has two parts:

1. A tag key (for example, CostCenter, Environment, or Project). Tag keys are case sensitive.
2. A tag value (for example, 111122223333 or Production). Like tag keys, tag values are case sensitive.

As part of cloud governance exercise, our client had asked us to put new rules and protocols to enhance data security, manage risks, and keep running things smoothly. One of the rules is to create new S3 buckets with a mandatory tag – Environment, if a S3 bucket is created and if the **Environment** tag is missing, that bucket should be deleted. This rule will be enforced on new S3 buckets only.

The Environment tag can contain values such as dev, test, UAT and production.

You are assigned to this project and your manager has asked you to :

1. Create a Lambda function that is triggered by S3's CreateBucket event.
   Hint: Search for CloudWatch Event rule that can listen to CloudTrail's S3 CreateBucket event
2. The lambda function upon invocation should parse the event and identify the bucket that was just created and should check if the **Environment** tag is present, if the tag is missing then the lambda function should delete the bucket.
   Hint: Use boto3 client for S3 to get the tags that are added to the bucket
3. No action is needed from the lambda function if the **Environment** tag is present.
4. Non-functional requirements:
   a. The Lambda function code should be properly formatted and readable with proper naming conventions.
   b. While you can use any language, Python is strongly preferred.
5. Useful resources:
   a. Tagging AWS resources
   b. What is CloudTrail?
   c. CloudWatch Events rule for an Amazon S3 source

Deliverables:

1. A document containing the names of the resources that are involved in your solution:
   a. IAM role for Lambda execution
   b. Lambda function
   c. CloudWatch Event Rule

Logistics of submission:

1. Please send all your submissions to cloud@datagrokr.com on or before **December 5th**.
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!