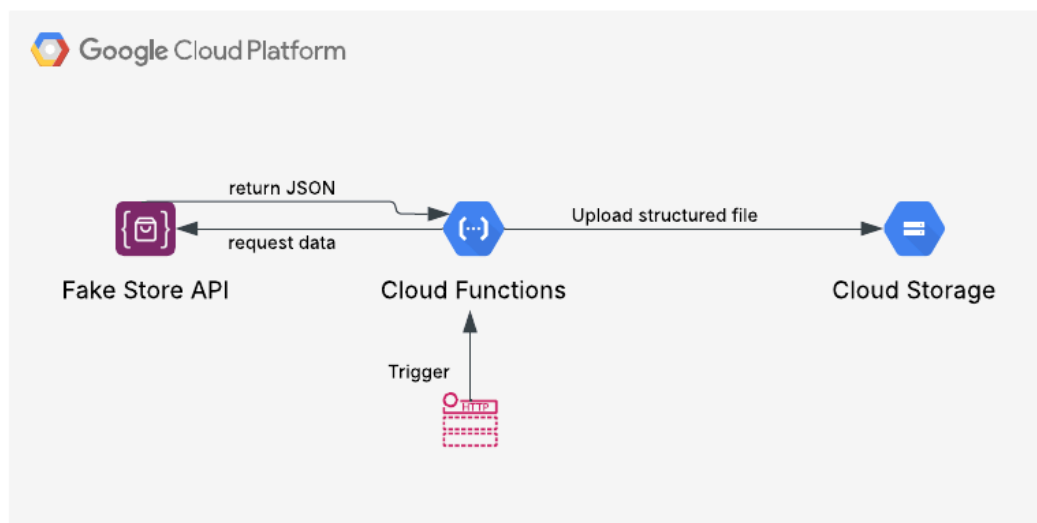# Data Ingestion: Fetching and Storing Product Data

I tackled this task using two different approaches. In the first approach, I manually created the required GCP resources via the console. In the second, I implemented a CI/CD pipeline to automate the provisioning of resources.

Architecture Diagram of the Data Ingestion Pipeline :

I chose a serverless solution using **Cloud Functions (2nd generation)**, which is well-suited for lightweight, event-driven processing and benefits from improved performance and scalability. The function is an **HTTP-triggered Gen 2 Cloud Function**, meaning it is deployed on **Cloud Run**, and it is invoked via an HTTP call using its generated URL.

Once triggered, the function sends a request to the **Fake Store API**, retrieves the **JSON response**, extracts and transforms the data into a **CSV file**, then uploads that structured file to a **Cloud Storage bucket**.

Steps I took to create and execute the pipeline :

Setting IAM roles :

Defined permissions to allow public invocation of the function and **Cloud Storage access** by ensuring the Cloud Function has the appropriate role to **upload the structured file to the target bucket**.

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IAM & Admin / IAM

Edit access to "My First Project"

IAM

Allow Deny Recommendations history

Permissions for project "My First Project"

These permissions affect this project and all of its resources.

View by principals   View by roles

Grant access   Remove access

Filter Enter property name or value

	Type	Principal ↑
☐		84391613042-compute@developer.gservice
☐		inssafcourses@gmail.com

Principal ⓘ
84391613042-compute@developer.gserviceaccount.com

Project
My First Project

Assign roles

Roles are composed of sets of permissions and determine what the principal can do with this resource. Learn more ↗

Role
Editor

IAM condition (optional) ⓘ
+ Add IAM condition

View, create, update, and delete most Google Cloud resources. See the list of included permissions.

Role
Storage Object Creator

IAM condition (optional) ⓘ
+ Add IAM condition

Allows users to create objects. Does not give permission to view, delete, or replace objects.

+ Add another role

Save   Test changes ⓘ   Cancel

Summary of changes

Roles removed
n/a

Role added
Storage Object Creator

Test changes ⓘ

Manage Resources

Release Notes

Now viewing project "My organization"

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IAM

Allow Deny Recommendations history

Permissions for project "My First Project"

These permissions affect this project and all of its resources. Learn more ↗

☐ Include Google-provided role grants

View by principals   View by roles

Grant access   Remove access

Filter Enter property name or value

	Type	Principal ↑	Name	Role	Security insights ⓘ	
☐		84391613042-compute@developer.gserviceaccount.com	Default compute service account	Cloud Run Admin		✏
				Editor		
				Storage Object Creator		
☐		inssafcourses@gmail.com	Inssaf Cherki	Owner		✏
☐		nomadic-freedom-454920-v8@appspot.gserviceaccount.com	App Engine default service account	Editor		✏

Policy updated ✕

IAM
PAM
Principal Access Boun…
Organizations
Identity & Organization
Policy Troubleshooter
Policy Analyzer
Organization Policies
Service Accounts
Workload Identity Fede…
Workforce Identity Fed…
Labels
Manage Resources
Release Notes

Bucket creation :

Creating and executing the function :

Successfully uploaded gs://fakestore-products-data/products.csv

Result :

The function successfully fetched product data from the **Fake Store API**. It transformed the JSON response into a **CSV file** and automatically uploaded it to the designated Cloud Storage bucket.

Architecture Diagram of the CI/CD Data Ingestion Pipeline :
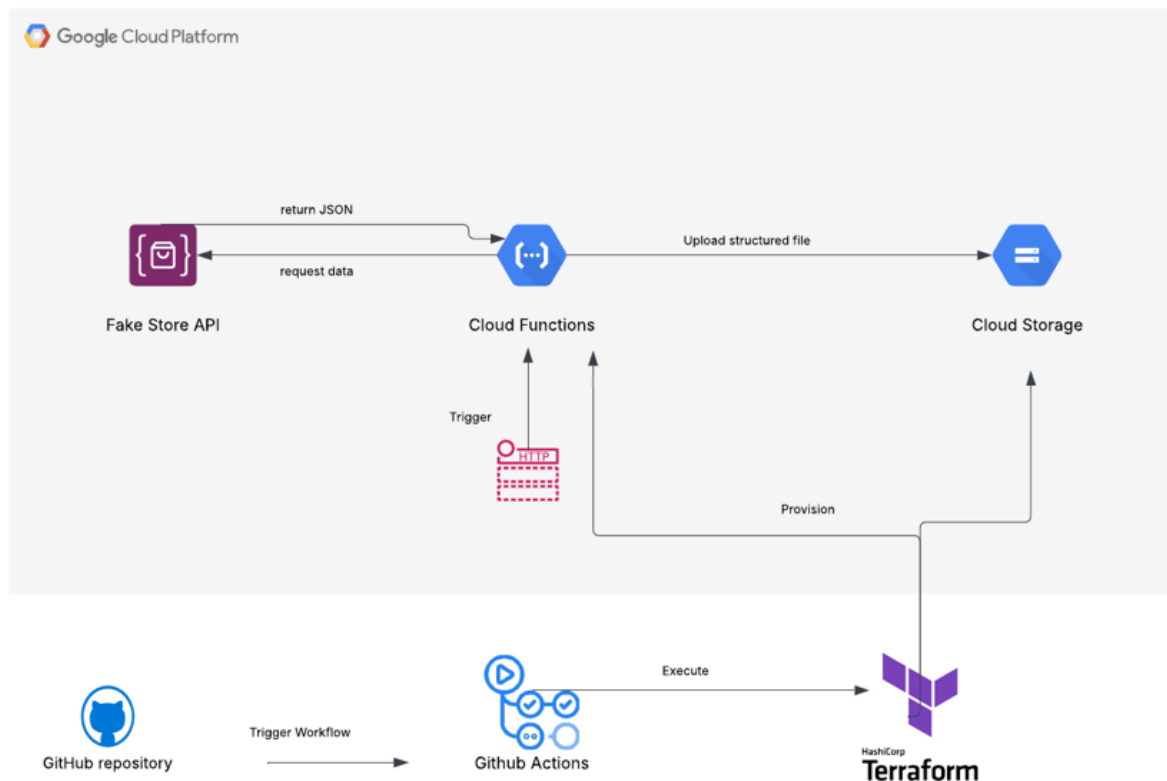
This pipeline automates the provisioning and execution of the serverless data ingestion process using **Terraform**, and **GitHub Actions**.

Services created via Terraform :

Result :