

Project id: cdsds561-project-1  
Bucket Name: hw2nirbhgsutil , gcf-check-files  
Bucket-2 Name:hw4nirbhgsutil  
Directory Name: test-dir , gcf-check-files/test-dir  
Github Link:[CDS-DS-561-hw2/hw9 at master · nirbhay221/CDS-DS-561-hw2 \(github.com\)](https://github.com/nirbhay221/CDS-DS-561-hw2)  
Topic name : projects/cdsds561-project-1/topics/hw3nirbhgsutil  
Topic Id: hw3nirbhgsutil  
Subscription Id: hw3nirbhgsutil-sub  
Service Account email for pub sub:  
pubsubserviceacc-hw3-nirbh@cdsds561-project-1.iam.gserviceaccount.com  
Service Account for pub sub: pubsubServiceAcc-hw3-nirbh  
Service Account for SQL:  
cloud-sql-authorize-vm@cdsds561-project-1.iam.gserviceaccount.com  
Reserved IP : 34.75.102.252  
Sql database instance: my-database  
Sql database: First-Trial , Second-Trial  
Sql Tables : Clients, main\_table, error\_logs.  
Vm-instance : 5 - directory - model-1 - main.py , main-1.py , 6 - main.py , main-1.py,  
Server VM - instance wser1, wser2, instance5 -> vm-check ->http-client.py  
Service account for kubernetes for logging, pubsub and cloud storage :  
[pubsub-plus-logging-docker@cdsds561-project-1.iam.gserviceaccount.com](mailto:pubsub-plus-logging-docker@cdsds561-project-1.iam.gserviceaccount.com)  
Vm-instances - vm-instance - 5 contains the http-client.py and the vm-instance-6 contains the app-2.py  
Docker Image: us-central1-docker.pkg.dev/cdsds561-project-1/quickstart-docker-repo/quickstart-image:tag1  
GKE Service Account Name : first-sa  
Namespace Name: first-namespace  
Directory Name: quickstart-docker  
Yaml File Name: myconfig.yaml  
Dockerfile name : Dockerfile  
Server code in bucket: main-2.py , key in bucket: key-2.json  
For the following homework , I first create the quickstart-docker directory on cloud shell and then to the following directory I added the following directory:

```

GNU nano 5.4
FROM python:3.8-slim-buster
WORKDIR /app
COPY . /app
RUN apt-get update -y && \
    apt-get install -y python3-distutils python3-lib2to3 && \
    apt-get install -y python3-pip && \
    pip install --upgrade pip && \
    pip install google-cloud-storage google-cloud-logging google-cloud-pubsub google-auth google-auth-oauthlib flask
# wget, gnupg, and dirmngr installation
RUN apt-get install -y wget gnupg dirmngr
# Google Cloud SDK installation
RUN wget -qO- https://dl.google.com/dl/cloudsdk/release/google-cloud-sdk.tar.gz | tar -xz -C /usr/local
RUN /usr/local/google-cloud-sdk/install.sh
ENV PATH $PATH:/usr/local/google-cloud-sdk/bin
ENV GCS_BUCKET="hw4nirbhgsutil"
ENV OBJECT_KEY="key-2.json"
ENV OBJECT_NAME_MAIN="main-2.py"
# Copying files
RUN gsutil cp gs://$GCS_BUCKET/$OBJECT_NAME_KEY . && \
    gsutil cp gs://$GCS_BUCKET/$OBJECT_NAME_MAIN .
# gcloud installation verification by listing files in the current directory
RUN gcloud auth activate-service-account --key-file=$OBJECT_NAME_KEY
EXPOSE 80
CMD ["python3", "main-2.py"]

```

Once the docker file is created, we create the quickstart-docker-repo which is one of the artifacts repository using the following command:

```

nmalhotr@cloudshell:~/quickstart-docker (cdsds561-project-1)$ gcloud artifacts repositories create quick
start-docker-repo --repository-format=docker      --location=us-central1 --description="Docker repository"
"
Create request issued for: [quickstart-docker-repo]
Waiting for operation [projects/cdsds561-project-1/locations/us-central1/operations/221ffcad-6a83-408e-
a402-2c2b583b5b66] to complete...done.
Created repository [quickstart-docker-repo].

```

We can also see the artifacts repositories list using the following command:

```
nmalhotr@cloudshell:~/quickstart-docker (cdsds561-project-1)$ gcloud artifacts repositories list
Listing items under project cdsds561-project-1, across all locations.

ARTIFACT_REGISTRY

REPOSITORY: gcf-artifacts
FORMAT: DOCKER
MODE: STANDARD_REPOSITORY
DESCRIPTION: This repository is created and used by Cloud Functions for storing function docker images.
LOCATION: us-east1
LABELS: goog-managed-by=cloudfunctions
ENCRYPTION: Google-managed key
CREATE_TIME: 2023-10-01T03:44:57
UPDATE_TIME: 2023-10-11T17:06:31
SIZE (MB): 0

REPOSITORY: quickstart-docker-repo
FORMAT: DOCKER
MODE: STANDARD_REPOSITORY
DESCRIPTION: Docker repository
LOCATION: us-central1
LABELS:
ENCRYPTION: Google-managed key
CREATE_TIME: 2023-11-28T05:11:50
UPDATE_TIME: 2023-11-28T05:11:50
SIZE (MB): 0
```

Now, we can build the following Dockerfile using the following command:

```
SIZE (MB): 0
nmalhotr@cloudshell:~/quickstart-docker (cdsds561-project-1)$ gcloud builds submit --region=us-central1
--tag us-central1-docker.pkg.dev/cdsds561-project-1/quickstart-docker-repo/quickstart-image:tag1
Creating temporary tarball archive of 7 file(s) totalling 4.1 KiB before compression.
Uploading tarball of [.] to [gs://cdsds561-project-1_cloudbuild/source/1701148418.102066-9d9da2acd44f4ec
58815a72fde9704fc.tgz]
Created [https://cloudbuild.googleapis.com/v1/projects/cdsds561-project-1/locations/us-central1/builds/3
88ac131-636b-4dea-9a82-5d8efb6b1a12].
Logs are available at [ https://console.cloud.google.com/cloud-build/builds;region=us-central1/388ac131-
636b-4dea-9a82-5d8efb6b1a12?project=494559990174 ].
----- REMOTE BUILD OUTPUT -----
starting build "388ac131-636b-4dea-9a82-5d8efb6b1a12"

FETCHSOURCE
Fetching storage object: gs://cdsds561-project-1_cloudbuild/source/1701148418.102066-9d9da2acd44f4ec5881
5a72fde9704fc.tgz#1701148418412560
[]
```

```
ae2d55769c5e: Preparing
e2ef8a51359d: Preparing
f17937a3a092: Waiting
23884371dd8b: Waiting
26dd3940ba36: Waiting
e6c5004ee77f: Waiting
997b8e79e84f: Waiting
3054512b6f71: Waiting
ae2d55769c5e: Waiting
e2ef8a51359d: Waiting
0f5b210c6f09: Pushed
88b7eb8e0981: Pushed
fdebab6230a6: Pushed
23884371dd8b: Pushed
26dd3940ba36: Pushed
997b8e79e84f: Pushed
e6c5004ee77f: Pushed
ae2d55769c5e: Pushed
3054512b6f71: Pushed
e2ef8a51359d: Pushed
f17937a3a092: Pushed
e4b2e90dbe01: Pushed
07becdfc350e: Pushed
tag1: digest: sha256:6b716a2d38765114f340d6d752dd9e627905abf964074ce451ec12ac1b20ebel size: 3057
DONE
-----
ID: 388ac131-636b-4dea-9a82-5d8efb6b1a12
CREATE_TIME: 2023-11-28T05:13:38+00:00
DURATION: 3M34S
SOURCE: gs://cdsds561-project-1_cloudbuild/source/1701148418.102066-9d9da2acd44f4ec58815a72fde9704fc.tgz
IMAGES: us-central1-docker.pkg.dev/cdsds561-project-1/quickstart-docker-repo/quickstart-image:tag1
STATUS: SUCCESS
```

Now we can see the list of the artifact files in quickstart-docker-repo at us-central1 as follows:

```
OWNER:
nmalhotra@cloudshell:~/quickstart-docker (cdsds561-project-1)$ gcloud artifacts files list --location=us-central1 --repository=quickstart-docker-repo[]
```

The result for the following command is as follows:

```
FILE: sha256:8b91b88d557765cd8c6802668755a3f6dc4337b6ce15a17e4857139e5fc964f3
CREATE_TIME: 2023-11-26T17:44:31
UPDATE_TIME: 2023-11-26T17:44:31
SIZE (MB): 25.881
OWNER:

FILE: sha256:8f777578c172d018077d3dc22d6654911fff60066097943fe8c4697ecf8aac35
CREATE_TIME: 2023-11-26T17:44:24
UPDATE_TIME: 2023-11-26T17:44:24
SIZE (MB): 12.292
OWNER:

FILE: sha256:9d1bf57ff350de238ac31658c9ad566b139247476ecfb59e19a1fda0a70048ed
CREATE_TIME: 2023-11-26T17:44:08
UPDATE_TIME: 2023-11-26T17:44:08
SIZE (MB): 1.288
OWNER:

FILE: sha256:acbb5edb2ab17496403448bc5c76644d6e99df49b65c7750cac12e99e393b75
CREATE_TIME: 2023-11-26T17:44:10
UPDATE_TIME: 2023-11-26T17:44:10
SIZE (MB): 0.000
OWNER:

FILE: sha256:c9fe3efa349fbdd6f01aa9cd7a14383832d3ebcb244c980d8fc7e5dadf88a805
CREATE_TIME: 2023-11-26T17:44:13
UPDATE_TIME: 2023-11-26T17:44:13
SIZE (MB): 7.593
OWNER:

FILE: sha256:cbfea27109a8b1136059a7973ccb8243889faf162ebc173a05909dcb0bec03c9
CREATE_TIME: 2023-11-26T17:44:14
UPDATE_TIME: 2023-11-26T17:44:14
SIZE (MB): 0.000
OWNER:

FILE: sha256:cfec619dedc832a26be9d7f9a06ecfef713b02caf86af59df3ba7031dd66cb2c
CREATE_TIME: 2023-11-26T17:44:06
UPDATE_TIME: 2023-11-26T17:44:06
SIZE (MB): 0.954
OWNER:

FILE: sha256:ee91cf0deb12a881337b6f8edb2d99946cd73d63bce1ebb153d0616142dd4f1d
CREATE_TIME: 2023-11-26T17:44:54
UPDATE_TIME: 2023-11-26T17:44:54
SIZE (MB): 194.578
OWNER:
```

After this, if we search the artifact repositories list, we get the following results:

```

OWNER:
nmalhotr@cloudshell:~/quickstart-docker (cdsds561-project-1)$ gcloud artifacts repositories list
Listing items under project cdsds561-project-1, across all locations.

ARTIFACT_REGISTRY

REPOSITORY: gcf-artifacts
FORMAT: DOCKER
MODE: STANDARD_REPOSITORY
DESCRIPTION: This repository is created and used by Cloud Functions for storing function docker images.
LOCATION: us-east1
LABELS: goog-managed-by=cloudfunctions
ENCRYPTION: Google-managed key
CREATE_TIME: 2023-10-01T03:44:57
UPDATE_TIME: 2023-10-11T17:06:31
SIZE (MB): 0

REPOSITORY: quickstart-docker-repo
FORMAT: DOCKER
MODE: STANDARD_REPOSITORY
DESCRIPTION: Docker repository
LOCATION: us-central1
LABELS:
ENCRYPTION: Google-managed key
CREATE_TIME: 2023-11-28T05:11:50
UPDATE_TIME: 2023-11-28T05:17:12
SIZE (MB): 550.846

```

Now we can create the kubernetes autopilot cluster as follows:

```

nmalhotr@cloudshell:~/quickstart-docker (cdsds561-project-1)$ gcloud container clusters create-auto first-cluster --location=us-central1
Note: The Pod address range limits the maximum size of the cluster. Please refer to https://cloud.google.com/kubernetes-engine/docs/how-to/flexible-pod-cidr to learn how to optimize IP address allocation.
Creating cluster first-cluster in us-central1... Cluster is being health-checked (master is healthy)... done.
Created [https://container.googleapis.com/v1/projects/cdsds561-project-1/zones/us-central1/clusters/first-cluster].
To inspect the contents of your cluster, go to: https://console.cloud.google.com/kubernetes/workload_/cloud/us-central1/first-cluster?project=cdsds561-project-1
kubeconfig entry generated for first-cluster.
NAME: first-cluster
LOCATION: us-central1
MASTER_VERSION: 1.27.3-gke.100
MASTER_IP: 34.71.78.9
MACHINE_TYPE: e2-small
NODE_VERSION: 1.27.3-gke.100
NUM_NODES: 3
STATUS: RUNNING

```

Once the following cluster is created, we can now get the credentials of the following cluster as follows:

```

nmalhotr@cloudshell:~/quickstart-docker (cdsds561-project-1)$ gcloud container clusters get-credentials first-cluster --location us-central1
Fetching cluster endpoint and auth data.
kubeconfig entry generated for first-cluster.

```

Now after creating the repo, image and the cluster, and getting the cluster credentials,we can update the cluster for enabling the workload identity on an the following cluster as follows:

```

nmalhotr@cloudshell:~/quickstart-docker (cdsds561-project-1)$ gcloud container clusters update first-cluster --region=us-central1 --workload-pool=cdsds561-project-1.svc.id.goog
Default change: During creation of nodepools or autoscaling configuration changes for cluster versions greater than 1.24.1-gke.800 a default location policy is applied. For Spot and PVM it defaults to ANY, and for all other VM kinds a BALANCED policy is used. To change the default values use the `--location-policy` flag.
Updating first-cluster...done.
Updated [https://container.googleapis.com/v1/projects/cdsds561-project-1/zones/us-central1/clusters/first-cluster].
To inspect the contents of your cluster, go to: https://console.cloud.google.com/kubernetes/workload/gc
loud/us-central1/first-cluster?project=cdsds561-project-1

```

Now we get the credentials of the following cluster using the following command:

```

nmalhotr@cloudshell:~/quickstart-docker (cdsds561-project-1)$ gcloud container clusters get-credentials first-cluster --region=us-central1
Fetching cluster endpoint and auth data.
kubeconfig entry generated for first-cluster.

```

After this, we first create the namespace using the following command:

```

nmalhotr@cloudshell:~/quickstart-docker (cdsds561-project-1)$ kubectl create namespace first-namespace
namespace/first-namespace created

```

Once, the namespace is created, we create the Kubernetes service account for my application to use as follows:

```

nmalhotr@cloudshell:~/quickstart-docker (cdsds561-project-1)$ kubectl create serviceaccount first-sa --namespace first-namespace
serviceaccount/first-sa created

```

Once, the kubernetes service account is created, we allow the kubernetes service account to impersonate the IAM service account by adding an IAM policy binding between the two service accounts which allows the Kubernetes service account to act as the IAM service account.

```

nmalhotr@cloudshell:~/quickstart-docker (cdsds561-project-1)$ gcloud iam service-accounts add-iam-policy \
    --binding pubsub-plus-logging-docker@cdsds561-project-1.iam.gserviceaccount.com --role roles/iam.workloadIdentityUser \
    --member "serviceAccount:cdsds561-project-1.svc.id.goog[first-namespace/first-sa]"
Updated IAM policy for serviceAccount [pubsub-plus-logging-docker@cdsds561-project-1.iam.gserviceaccount.com].
bindings:
- members:
  - serviceAccount:cdsds561-project-1.svc.id.goog[first-namespace/first-sa]
    role: roles/iam.workloadIdentityUser
etag: BwYLMBERxHA=
version: 1

```

Now, we annotate the kubernetes service account with the email address of the IAM service account as follows:

```

nmalhotr@cloudshell:~/quickstart-docker (cdsds561-project-1)$ kubectl annotate serviceaccount first-sa \
    --namespace first-namespace iam.gke.io/gcp-service-account=pubsub-plus-logging-docker@cdsds561-project-1.iam.gserviceaccount.com
serviceaccount/first-sa annotated

```

Now, we create the deployment as follows:

```

nmalhotr@cloudshell:~/quickstart-docker (cdsds561-project-1)$ kubectl create deployment first-server \
    --image=us-central1-docker.pkg.dev/cdsds561-project-1/quickstart-docker-repo/quickstart-image:tag1
Warning: autopilot-default-resources-mutator:Autopilot updated Deployment default/first-server: defaulted unspecified resources for containers [quickstart-image] (see http://g.co/gke/autopilot-defaults)
deployment.apps/first-server created

```

Once the deployment is created,we need to modify the yaml file as follows:

```

deploy_file deploy_file.yaml Dockerfile first-server.yaml wi-test.yaml wi-test.yml
nmalhotr@cloudshell:~/quickstart-docker (cdsds561-project-1)$ kubectl get deployment first-server -o yaml \
> myconfig.yaml

```

We modify the following yaml config file by adding the kubernetes service account under the spec:containers section as follows:

```
app: first-server
spec:
  containers:
    - image: us-central1-docker.pkg.dev/cdsds561-project-1/quickstart-docker-repo/quickstart-image:tag
      imagePullPolicy: IfNotPresent
      name: quickstart-image
      resources:
        limits:
          cpu: 500m
          ephemeral-storage: 1Gi
          memory: 2Gi
      securityContext:
        capabilities:
          drop:
            - NET_RAW
        terminationMessagePath: /dev/termination-log
        terminationMessagePolicy: File
      serviceAccountName: first-sa
    dnsPolicy: ClusterFirst
    restartPolicy: Always
    schedulerName: default-scheduler
    securityContext:
      seccompProfile:
        type: RuntimeDefault
    terminationGracePeriodSeconds: 30
  tolerations:
    - effect: NoSchedule
      key: kubernetes.io/arch
```

Now, we apply the following config yaml file as follows:

```
nmalhotr@cloudshell:~/quickstart-docker (cdsds561-project-1)$ kubectl apply -f myconfig.yaml
Warning: resource deployment/first-server is missing the kubectl.kubernetes.io/last-applied-configuration annotation which is required by kubectl apply. kubectl apply should only be used on resources created declaratively by either kubectl create --save-config or kubectl apply. The missing annotation will be patched automatically.
deployment.apps/first-server configured
```

Now, we continue with the exposition of the service. We can expose the following deployment using the following command:

```
deployment.apps/first-server configured
nmalhotr@cloudshell:~/quickstart-docker (cdsds561-project-1)$ kubectl expose deployment first-server --type LoadBalancer --port 80 --target-port 80
service/first-server exposed
```

I exposed it on the 80 external port which forwards it to the port : 80 on which the server is running. Now, we can see the pods status as follows:

```
service/first-server exposed
nmalhotr@cloudshell:~/quickstart-docker (cdsds561-project-1)$ kubectl get pods
NAME                  READY   STATUS    RESTARTS   AGE
first-server-7d48949bbb-ffsbl   1/1     Running   0          10m
```

Now we can get the external IP of the service as follows:

```
nmalhotr@cloudshell:~/quickstart-docker (cdsds561-project-1)$ kubectl get service first-server
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
first-server   LoadBalancer   34.118.237.108   35.223.94.57   80:30624/TCP   55s
```

## **Browser Results:**

### **GET REQUEST:**

We can search the following link(<http://35.223.94.57/hw2nirbhgsutil/test-dir/102.html>) on the browser to check for the result of the get request as follows:

The screenshot shows the Network tab of a browser developer tools interface. A single request is listed: "102.html" with a status of "200 OK". The Headers section shows the following details:

- Request URL: http://35.223.94.57/hw2nirbhgsutil/test-dir/102.html
- Request Method: GET
- Status Code: 200 OK
- Remote Address: 35.223.94.57:80
- Referrer Policy: strict-origin-when-cross-origin

The Response Headers section includes:

- Connection: close
- Content-Length: 86706
- Content-Type: text/html; charset=utf-8
- Date: Tue, 28 Nov 2023 06:22:46 GMT
- Server: Werkzeug/3.0.1 Python/3.8.17

The Issues tab shows one message: "GET http://35.223.94.57/favicon.ico 400 (BAD REQUEST)".

## LOG RESULTS:

The screenshot shows a log entry from CloudWatch Logs. The log message is:

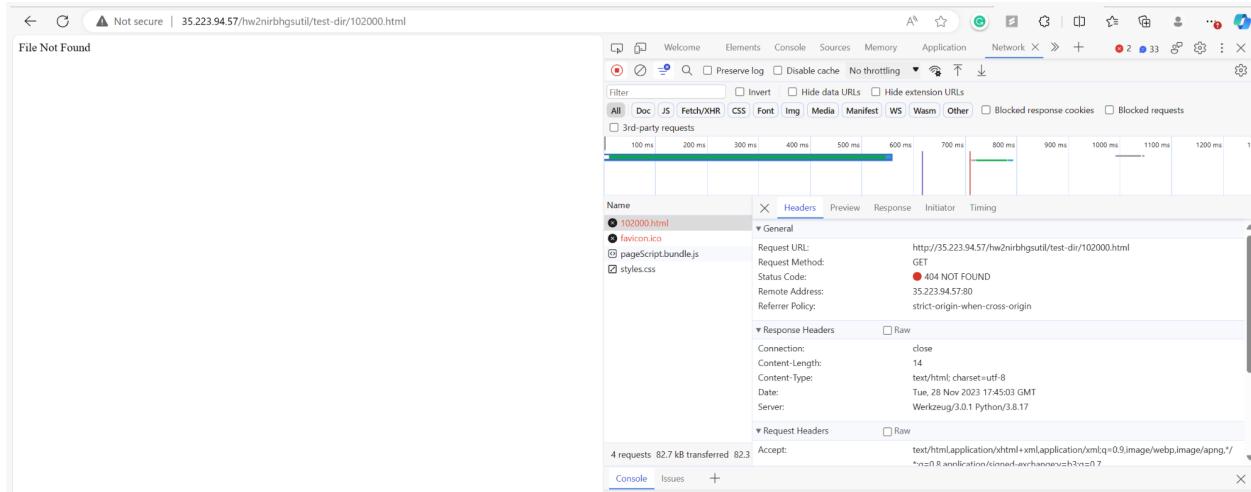
```

{
    insertId: "rh5jowfydvcqd"
    logName: "projects/cdsds561-project-1/logs/my-function-log"
    receiveTimestamp: "2023-11-28T19:49:50.209545763Z"
    resource: {
        labels: {6}
        type: "k8s_container"
    }
    textPayload: "File Found."
    timestamp: "2023-11-28T19:49:50.209545763Z"
}

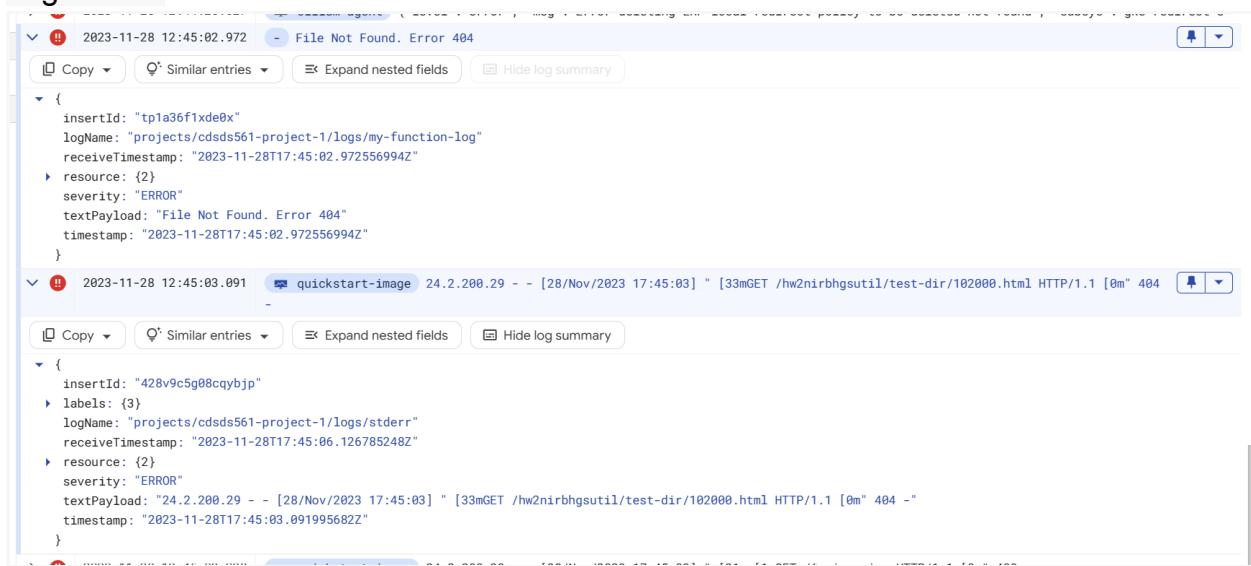
```

## File Not Found Request:

Now if we try to request for a file that doesn't exist in the following bucket we get the following results :



## Log result :



## 501 Method Not Implemented:

Now when we use any other method than the get, we get the 501 method not implemented response which we can see below:

### HEAD REQUEST:

The screenshot shows the Werkzeug Werkzeug UI interface. The Network tab is active, displaying a list of requests. A HEAD request to `/hw2nirbhgsutil/test-dir/102.html` is selected. The status bar indicates a 501 NOT IMPLEMENTED response. The Headers section shows the raw response headers, including `Content-Type: text/html; charset=utf-8` and `Date: Tue, 28 Nov 2023 18:00:34 GMT`. The Request Headers section shows the raw request headers, including `Accept: */*` and `User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:120.0) Gecko/20100101 Firefox/120.0`.

## Log Results:

The screenshot shows the Log Results page. It displays two log entries. The first entry is for an unsupported HTTP method (HEAD) at timestamp 2023-11-28 13:00:34.368. The second entry is for an unsupported HTTP method (GET) at timestamp 2023-11-28 13:00:34.461. Both logs include detailed fields such as insertId, logName, severity, textPayload, and timestamp.

## POST REQUEST:

The screenshot shows the Network tab in the Werkzeug Werkzeug UI. A POST request to `/hw2nirbhgsutil/test-dir/102.html` is selected. The status bar indicates a 501 NOT IMPLEMENTED response. The Headers section shows the raw response headers, including `Content-Type: text/html; charset=utf-8` and `Date: Tue, 28 Nov 2023 18:38:56 GMT`. The Request Headers section shows the raw request headers, including `Accept: */*` and `User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:120.0) Gecko/20100101 Firefox/120.0`.

## LOG RESULTS:

```

{
  insertId: "atqhtfw5daza"
  logName: "projects/cdsds561-project-1/logs/my-function-log"
  receiveTimestamp: "2023-11-28T18:38:56.773417631Z"
  resource: {}
  severity: "ERROR"
  textPayload: "Unsupported HTTP method: POST"
  timestamp: "2023-11-28T18:38:56.773417631Z"
}

{
  insertId: "gvj34fzq35t00t8q"
  labels: {}
  logName: "projects/cdsds561-project-1/logs/stderr"
  receiveTimestamp: "2023-11-28T18:39:01.134615188Z"
  resource: {}
  severity: "ERROR"
  textPayload: "24.2.200.29 - - [28/Nov/2023 18:38:56] \"[35m [1mPOST /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m\" 501 -"
  timestamp: "2023-11-28T18:38:56.834618486Z"
}

```

## PUT REQUEST:

Status	M...	Domain	File	Initiator	Type	Transferred	Size
200	GET	35.223.94.57	102.html	vH document	html	86.88 kB	86.71 kB
204	P...	www.google.com	gen_204?atyp=&el=rpnz2_mattcdoscrwchm..	html		653 B	0 B
200	GET	35.223.94.57	faviconico	FaviconLoader.sys.mjs...	html	201 B	19 B
201	H...	35.223.94.57	102.html	NetUtil.sys.mjs144 (other)	html	186 B	0 B
201	P...	35.223.94.57	102.html	NetUtil.sys.mjs144 (other)	html	208 B	22 B
501	PUT	35.223.94.57	102.html	NetUtil.sys.mjs144 (other)	html	208 B	22 B

**Headers**

```

PUT http://35.223.94.57/hw2nirbhgsutil/test-dir/102.html
Status: 501 NOT IMPLEMENTED
Version: HTTP/1.1
Transfered: 208 B (2 B size)
DNS Resolution: System

```

**Response Headers (186 B)**

```

Connection: close
Content-Length: 22
Content-Type: text/html; charset=UTF-8
Date: Tue, 28 Nov 2023 18:48:40 GMT
Server: Werkzeug/3.0.1 Python/3.8.17

```

**Request Headers (357 B)**

```

Accept: */*
Accept-Encoding: gzip, deflate
Accept-Language: en-US,en;q=0.5
Cache-Control: no-cache
Connection: keep-alive
Content-Length: 0
Host: 35.223.94.57
Origin: http://35.223.94.57
Pragma: no-cache
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/120.0.0.0 Safari/537.36

```

## LOG RESULTS:

```

{
  insertId: "1qzqycwffyxxha"
  logName: "projects/cdsds561-project-1/logs/my-function-log"
  receiveTimestamp: "2023-11-28T18:48:40.752875097Z"
  resource: {}
  severity: "ERROR"
  textPayload: "Unsupported HTTP method: PUT"
  timestamp: "2023-11-28T18:48:40.752875097Z"
}

{
  insertId: "7kogi3kyyhbidi6"
  labels: {}
  logName: "projects/cdsds561-project-1/logs/stderr"
  receiveTimestamp: "2023-11-28T18:48:41.125651855Z"
  resource: {}
  severity: "ERROR"
  textPayload: "24.2.200.29 - - [28/Nov/2023 18:48:40] \"[35m [1mPUT /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m\" 501 -"
  timestamp: "2023-11-28T18:48:40.809329994Z"
}

```

## DELETE REQUEST:

The screenshot shows the NetworkMiner interface with a list of network traffic. A specific DELETE request to `/test-dir/102.html` is selected. The response details pane shows the following information:

- Status:** 501 NOT IMPLEMENTED
- Version:** HTTP/1.1
- Transferred:** 208 B (22 B size)
- DNS Resolution:** System
- Response Headers (186 B):**
  - Connection: close
  - Content-Length: 22
  - Content-Type: text/html; charset=utf-8
  - Date: Tue, 28 Nov 2023 19:03:34 GMT
  - Server: Werkzeug/3.0.1 Python/3.8.17
- Request Headers (341 B):**
  - Accept: \*/\*
  - Accept-Encoding: gzip, deflate
  - Accept-Language: en-US,en;q=0.5
  - Cache-Control: no-cache
  - Connection: keep-alive
  - Host: 35.223.94.57
  - Origin: http://35.223.94.57
  - Pragma: no-cache
  - User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:120.0) Gecko/20100101 Firefox/120.0

## LOG RESULTS:

The screenshot shows CloudWatch Logs with two log entries:

- 2023-11-28T19:03:34.484Z:** Unsupported HTTP method: DELETE
  - insertId: "59xgmtfwssi3"
  - logName: "projects/cdsds561-project-1/logs/my-function-log"
  - receiveTimestamp: "2023-11-28T19:03:34.484873722Z"
  - resource: {  
  severity: "ERROR"  
  textPayload: "Unsupported HTTP method: DELETE"  
  timestamp: "2023-11-28T19:03:34.484873722Z"
- 2023-11-28T19:03:34.591Z:** quickstart-image 24.2.200.29 - - [28/Nov/2023 19:03:34] " [35m [1mDELETE /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -
  - insertId: "8fiycid440tww145"
  - labels: {  
  logName: "projects/cdsds561-project-1/logs/stderr"
  - receiveTimestamp: "2023-11-28T19:03:36.209025605Z"
  - resource: {  
  severity: "ERROR"  
  textPayload: "24.2.200.29 - - [28/Nov/2023 19:03:34] " [35m [1mDELETE /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -"  
  timestamp: "2023-11-28T19:03:34.591452619Z"

## OPTIONS REQUEST:

The screenshot shows the NetworkMiner interface with a list of network traffic. An OPTIONS request to `/test-dir/102.html` is selected. The response details pane shows the following information:

- Status:** 501 NOT IMPLEMENTED
- Version:** HTTP/1.1
- Transferred:** 208 B (22 B size)
- DNS Resolution:** System
- Response Headers (186 B):**
  - Connection: close
  - Content-Length: 22
  - Content-Type: text/html; charset=utf-8
  - Date: Tue, 28 Nov 2023 19:07:21 GMT
  - Server: Werkzeug/3.0.1 Python/3.8.17
- Request Headers (342 B):**
  - Accept: \*/\*
  - Accept-Encoding: gzip, deflate
  - Accept-Language: en-US,en;q=0.5
  - Cache-Control: no-cache
  - Connection: keep-alive
  - Host: 35.223.94.57
  - Origin: http://35.223.94.57
  - Pragma: no-cache
  - User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:120.0) Gecko/20100101 Firefox/120.0

## Log results:

```

2023-11-28 14:07:21.572 - Unsupported HTTP method: OPTIONS
{
  insertId: "1y9m7rfadqg78"
  logName: "projects/cdsds561-project-1/logs/my-function-log"
  receiveTimestamp: "2023-11-28T19:07:21.572354900Z"
  resource: {}
  severity: "ERROR"
  textPayload: "Unsupported HTTP method: OPTIONS"
  timestamp: "2023-11-28T19:07:21.572354900Z"
}

2023-11-28 14:07:21.679 quickstart-image 24.2.200.29 - - [28/Nov/2023 19:07:21] " [35m [1mOPTIONS /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -
{
  insertId: "4jbc3d2tnnej0zwx"
  labels: {}
  logName: "projects/cdsds561-project-1/logs/stderr"
  receiveTimestamp: "2023-11-28T19:07:26.127910873Z"
  resource: {}
  severity: "ERROR"
  textPayload: "24.2.200.29 - - [28/Nov/2023 19:07:21] " [35m [1mOPTIONS /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -"
  timestamp: "2023-11-28T19:07:21.679850520Z"
}

```

## TRACE REQUEST:

New Request	Search	Blocking	Status	M..	Domain	File	Initiator	Type	Transferred	Size
TRACE	http://35.223.94.57/hw2nirbhgsutil/test-dir/102.html		200	GET	35.223.94.57	102.html	✓ document	html	86.88 kB	86.71 kB
URL Parameters			200	P..	www.google.com	gen_2047alhyp=i&ei=rpmZ_m:attn:docs.google.com	html	653 B	0 B	
Headers			200	GET	35.223.94.57	favicon.ico	FaviconLoader.js(m:1)	html	201 B	19 B
Body			200	H..	35.223.94.57	102.html	NetUtil.js(m:144)	html	186 B	0 B
payload			200	P..	35.223.94.57	102.html	NetUtil.js(m:144)	html	208 B	22 B
			200	PUT	35.223.94.57	102.html	NetUtil.js(m:144)	html	208 B	22 B
			200	D..	35.223.94.57	102.html	NetUtil.js(m:144)	html	208 B	22 B
			200	O..	35.223.94.57	102.html	NetUtil.js(m:144)	html	208 B	22 B
			200	T..	35.223.94.57	102.html	NetUtil.js(m:144)	html	208 B	22 B

Response Headers (186 B)

- Connection: close
- Content-Length: 22
- Content-Type: text/html; charset=utf-8
- Date: Tue, 28 Nov 2023 19:08:30 GMT
- Server: Werkzeug/2.0.1 Python/3.8.17

Request Headers (340 B)

- Accept: \*/\*
- Accept-Encoding: gzip, deflate
- Accept-Language: en-US,en;q=0.5
- Cache-Control: no-cache
- Connection: keep-alive
- Host: 35.223.94.57
- Origin: http://35.223.94.57
- Pragma: no-cache
- User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/120.0.0.0 Safari/120.0

## LOG RESULTS:

```

2023-11-28 14:08:30.719 - Unsupported HTTP method: TRACE
{
  insertId: "q3k2gyfzgzn1"
  logName: "projects/cdsds561-project-1/logs/my-function-log"
  receiveTimestamp: "2023-11-28T19:08:30.719543261Z"
  resource: {}
  severity: "ERROR"
  textPayload: "Unsupported HTTP method: TRACE"
  timestamp: "2023-11-28T19:08:30.719543261Z"
}

2023-11-28 14:08:30.813 quickstart-image 24.2.200.29 - - [28/Nov/2023 19:08:30] " [35m [1mTRACE /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -
{
  insertId: "7diau8grjdgtk6v5"
  labels: {}
  logName: "projects/cdsds561-project-1/logs/stderr"
  receiveTimestamp: "2023-11-28T19:08:31.137765873Z"
  resource: {}
  severity: "ERROR"
  textPayload: "24.2.200.29 - - [28/Nov/2023 19:08:30] " [35m [1mTRACE /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -"
  timestamp: "2023-11-28T19:08:30.813105935Z"
}

```

## PATCH REQUEST:

## LOG RESULTS:

## CURL FUNCTION:

### GET REQUEST:

We can curl the following link (<http://35.223.94.57/hw2nirbhgsutil/test-dir/102.html>) on the vm instance to check for the result of the get request as follows:

```

nmalhotr@instance-5:~$ curl -X GET http://35.223.94.57/hw2nirbhgsutil/test-dir/102.html
<!DOCTYPE html>
<html>
<body>


Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.



This is a link <a href="2729.html">



Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.



This is a link <a href="8430.html">



Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.



This is a link <a href="3505.html">



Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.



This is a link <a href="5355.html">



Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.



This is a link <a href="5096.html">



Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.



This is a link <a href="523.html">



Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.



This is a link <a href="4045.html">



Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.


```

## LOG RESULTS:

```

{
  insertId: "kj5a9fnntw8j"
  logName: "projects/cdds561-project-1/logs/my-function-log"
  receiveTimestamp: "2023-11-28T19:47:20.159155081Z"
  resource: {
    labels: {6}
    type: "k8s_container"
  }
  textPayload: "File Found."
  timestamp: "2023-11-28T19:47:20.159155081Z"
}

```

## File Not Found Request:

Now if we try to request for a file that doesn't exist in the following bucket we get the following results :

```

</html>
nmalhotr@instance-5:~$ curl -X GET http://35.223.94.57/hw2nirbhgsutil/test-dir/1020000.html
File Not Foundnmalhotr@instance-5:~$ []

```

## Log Results:

```

2023-11-28 14:51:13.966 - File Not Found. Error 404
{
  insertId: "lxii45f3dt1mg"
  logName: "projects/cdsds561-project-1/logs/my-function-log"
  receiveTimestamp: "2023-11-28T19:51:13.966763681Z"
  resource: {}
  severity: "ERROR"
  textPayload: "File Not Found. Error 404"
  timestamp: "2023-11-28T19:51:13.966763681Z"
}

2023-11-28 14:51:14.039 quickstart-image 35.237.39.25 - - [28/Nov/2023 19:51:14] " [33mGET /hw2nirbhgsutil/test-dir/102000.html HTTP/1.1 [0m" 404 -
{
  insertId: "bvuy5viroqmtjxn3"
  labels: {
    compute.googleapis.com/resource_name: "gk3-first-cluster-pool-2-7f44c9a6-f9w2"
    k8s-pod/app: "first-server"
    k8s-pod/pod-template-hash: "7d48949bb"
  }
  logName: "projects/cdsds561-project-1/logs/stderr"
  receiveTimestamp: "2023-11-28T19:51:16.134577443Z"
  resource: {}
  severity: "ERROR"
  textPayload: "35.237.39.25 - - [28/Nov/2023 19:51:14] " [33mGET /hw2nirbhgsutil/test-dir/102000.html HTTP/1.1 [0m" 404 -"
  timestamp: "2023-11-28T19:51:14.039857234Z"
}

```

## 501 METHOD NOT IMPLEMENTED:

### PUT REQUEST:

```
nmalhotr@instance-5:~$ curl -X PUT http://35.223.94.57/hw2nirbhgsutil/test-dir/102.html
Method Not Implementednmalhotr@instance-5:~$ 
```

### LOG RESULTS:

```

2023-11-28 15:11:56.542 - Unsupported HTTP method: PUT
{
  insertId: "v322ypf2hyj8s"
  logName: "projects/cdsds561-project-1/logs/my-function-log"
  receiveTimestamp: "2023-11-28T20:11:56.542517409Z"
  resource: {}
  severity: "ERROR"
  textPayload: "Unsupported HTTP method: PUT"
  timestamp: "2023-11-28T20:11:56.542517409Z"
}

2023-11-28 15:11:56.627 quickstart-image 35.237.39.25 - - [28/Nov/2023 20:11:56] " [35m [1mPUT /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -
{
  insertId: "j9iirtpgsmbpzfxr"
  labels: {}
  logName: "projects/cdsds561-project-1/logs/stderr"
  receiveTimestamp: "2023-11-28T20:12:01.167115583Z"
  resource: {}
  severity: "ERROR"
  textPayload: "35.237.39.25 - - [28/Nov/2023 20:11:56] " [35m [1mPUT /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -"
  timestamp: "2023-11-28T20:11:56.627084970Z"
}

```

### POST REQUEST:

```
nmalhotr@instance-5:~$ curl -X POST http://35.223.94.57/hw2nirbhgsutil/test-dir/102.html
Method Not Implementednmalhotr@instance-5:~$ curl -X POST http://35.223.94.57/hw2nirbhgsutil/test-dir/102.html
Method Not Implementednmalhotr@instance-5:~$ 
```

### LOG RESULTS:

```

2023-11-28 15:14:23.314 - - [28/Nov/2023 20:14:23] " [35m [1mPOST /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -
2023-11-28 15:14:23.400 - - [28/Nov/2023 20:14:23] " [35m [1mPOST /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -

```

## DELETE REQUEST:

```

nmalhotr@instance-5:~$ curl -X DELETE http://35.223.94.57/hw2nirbhgsutil/test-dir/102.html
Method Not Implementednmalhotr@instance-5:~$ 

```

## LOG RESULTS:

```

2023-11-28 15:21:42.729 - - [28/Nov/2023 20:21:42] " [35m [1mDELETE /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -
2023-11-28 15:21:42.776 - - [28/Nov/2023 20:21:42] " [35m [1mDELETE /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -

```

## HEAD REQUEST:

```

nmalhotr@instance-5:~$ curl -I HEAD http://35.223.94.57/hw2nirbhgsutil/test-dir/102.html
curl: (6) Could not resolve host: HEAD
HTTP/1.1 501 NOT IMPLEMENTED
Server: Werkzeug/3.0.1 Python/3.8.17
Date: Tue, 28 Nov 2023 20:23:20 GMT
Content-Type: text/html; charset=utf-8
Content-Length: 22
Connection: close

```

## LOG RESULTS:

2023-11-28 15:23:20.536 - Unsupported HTTP method: HEAD

Copy Similar entries Expand nested fields Hide log summary

```
{
  insertId: "tyy8s2g10xzhtb"
  logName: "projects/cdsds561-project-1/logs/my-function-log"
  receiveTimestamp: "2023-11-28T20:23:20.536352137Z"
  resource: {}
  severity: "ERROR"
  textPayload: "Unsupported HTTP method: HEAD"
  timestamp: "2023-11-28T20:23:20.536352137Z"
}
```

2023-11-28 15:23:20.656 quickstart-image 35.237.39.25 - [28/Nov/2023 20:23:20] " [35m [1mHEAD /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -

Copy Similar entries Expand nested fields Hide log summary

```
{
  insertId: "aha8jln81qopg4rb"
  labels: {}
  logName: "projects/cdsds561-project-1/logs/stderr"
  receiveTimestamp: "2023-11-28T20:23:21.137316500Z"
  resource: {}
  severity: "ERROR"
  textPayload: "35.237.39.25 - [28/Nov/2023 20:23:20] " [35m [1mHEAD /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -"
  timestamp: "2023-11-28T20:23:20.656756988Z"
}
```

## CONNECT REQUEST:

```
nmalhotr@instance-5:~$ curl -X CONNECT http://35.223.94.57/hw2nirbhgsutil/test-dir/102.html
Method Not Implementednmalhotr@instance-5:~$
```

## LOG RESULTS:

2023-11-28 15:25:47.593 - Unsupported HTTP method: CONNECT

Copy Similar entries Expand nested fields Hide log summary

```
{
  insertId: "of3bpjf60nsez"
  logName: "projects/cdsds561-project-1/logs/my-function-log"
  receiveTimestamp: "2023-11-28T20:25:47.593080139Z"
  resource: {}
  severity: "ERROR"
  textPayload: "Unsupported HTTP method: CONNECT"
  timestamp: "2023-11-28T20:25:47.593080139Z"
}
```

2023-11-28 15:25:47.691 quickstart-image 35.237.39.25 - [28/Nov/2023 20:25:47] " [35m [1mCONNECT /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -

Copy Similar entries Expand nested fields Hide log summary

```
{
  insertId: "fwidwrfaae1hhgzq"
  labels: {}
  logName: "projects/cdsds561-project-1/logs/stderr"
  receiveTimestamp: "2023-11-28T20:25:51.150211048Z"
  resource: {}
  severity: "ERROR"
  textPayload: "35.237.39.25 - [28/Nov/2023 20:25:47] " [35m [1mCONNECT /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -"
  timestamp: "2023-11-28T20:25:47.691680725Z"
}
```

## OPTIONS REQUEST:

```
Method Not Implementednmalhotr@instance-5:~$ curl -X OPTIONS http://35.223.94.57/hw2nirbhgsutil/test-dir/102.html
Method Not Implementednmalhotr@instance-5:~$
```

## LOG RESULTS:

```

▼ ⓘ 2023-11-28 15:27:37.117 [-] Unsupported HTTP method: OPTIONS
Copy Similar entries Expand nested fields Hide log summary
{
  insertId: "f9h3o1f3gehr"
  logName: "projects/cdsds561-project-1/logs/my-function-log"
  receiveTimestamp: "2023-11-28T20:27:37.117339749Z"
  resource: {}
  severity: "ERROR"
  textPayload: "Unsupported HTTP method: OPTIONS"
  timestamp: "2023-11-28T20:27:37.117339749Z"
}

▼ ⓘ 2023-11-28 15:27:37.200 [quickstart-image] 35.237.39.25 - - [28/Nov/2023 20:27:37] " [35m [1mOPTIONS /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -
Copy Similar entries Expand nested fields Hide log summary
{
  insertId: "bfj1d1cka1lanbzev"
  labels: {}
  logName: "projects/cdsds561-project-1/logs/stderr"
  receiveTimestamp: "2023-11-28T20:27:41.139321182Z"
  resource: {}
  severity: "ERROR"
  textPayload: "35.237.39.25 - - [28/Nov/2023 20:27:37] " [35m [1mOPTIONS /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -"
  timestamp: "2023-11-28T20:27:37.200869467Z"
}

```

## TRACE REQUEST:

```

nmalhotr@instance-5:~$ curl -X TRACE http://35.223.94.57/hw2nirbhgsutil/test-dir/102.html
Method Not Implementednmalhotr@instance-5:~$ []

```

## LOG RESULTS:

```

▼ ⓘ 2023-11-28 15:29:33.876 [-] Unsupported HTTP method: TRACE
Copy Similar entries Expand nested fields Hide log summary
{
  insertId: "qxebmug13kr410"
  logName: "projects/cdsds561-project-1/logs/my-function-log"
  receiveTimestamp: "2023-11-28T20:29:33.876681236Z"
  resource: {}
  severity: "ERROR"
  textPayload: "Unsupported HTTP method: TRACE"
  timestamp: "2023-11-28T20:29:33.876681236Z"
}

▼ ⓘ 2023-11-28 15:29:33.984 [quickstart-image] 35.237.39.25 - - [28/Nov/2023 20:29:33] " [35m [1mTRACE /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -
Copy Similar entries Expand nested fields Hide log summary
{
  insertId: "qpq4x5fcfbx7hw67"
  labels: {}
  logName: "projects/cdsds561-project-1/logs/stderr"
  receiveTimestamp: "2023-11-28T20:29:36.136550108Z"
  resource: {}
  severity: "ERROR"
  textPayload: "35.237.39.25 - - [28/Nov/2023 20:29:33] " [35m [1mTRACE /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -"
  timestamp: "2023-11-28T20:29:33.984489250Z"
}

```

## PATCH REQUEST:

```

Method Not Implementednmalhotr@instance-5:~$ curl -X TRACE http://35.223.94.57/hw2nirbhgsutil/test-dir/102.html
nmalhotr@instance-5:~$ curl -X PATCH http://35.223.94.57/hw2nirbhgsutil/test-dir/102.html
Method Not Implementednmalhotr@instance-5:~$ []

```

## LOG RESULTS:

```
⑤ !! 2023-11-28 15:30:45.801 - Unsupported HTTP method: PATCH
Copy Similar entries Expand nested fields Hide log summary
{
  insertId: "12kqcwqf42fsef"
  logName: "projects/cdsds561-project-1/logs/my-function-log"
  receiveTimestamp: "2023-11-28T20:30:45.801427800Z"
  resource: {2}
    severity: "ERROR"
    textPayload: "Unsupported HTTP method: PATCH"
    timestamp: "2023-11-28T20:30:45.801427800Z"
  }
  ...
⑥ !! 2023-11-28 15:30:45.855 quickstart-image 35.237.39.25 - - [28/Nov/2023 20:30:45] " [35m [1mPATCH /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -
Copy Similar entries Expand nested fields Hide log summary
{
  insertId: "n5dduqle0ant83k2"
  labels: {3}
  logName: "projects/cdsds561-project-1/logs/stderr"
  receiveTimestamp: "2023-11-28T20:30:46.139128259Z"
  resource: {2}
    severity: "ERROR"
    textPayload: "35.237.39.25 - - [28/Nov/2023 20:30:45] " [35m [1mPATCH /hw2nirbhgsutil/test-dir/102.html HTTP/1.1 [0m" 501 -
    timestamp: "2023-11-28T20:30:45.855262758Z"
}
```

Now, we can demonstrate the functionality of the web server in the bucket using the http client running on the vm instance - 5 where we can run the http client as follows to generate at least 1000 requests and request for at least few hundreds of files as follows :

HTTP CLIENT COMMAND:

When we use the following HTTP client command we get the following multiple requests and responses. Response displayed below is just for requesting one of the HTML files of the 1000 requests as follows:

Once again we can use the above command again and if we get the following result :

```

odo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\r\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\r\n< p >\r\n< a href = "4083.html" > This is a link </a>\r\n< p >\r\nLorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad\r\nminim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\r\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\r\n< p >\r\n< a href = "1760.html" > This is a link </a>\r\n< p >\r\nLorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad\r\nminim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\r\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\r\n< p >\r\n< a href = "5279.html" > This is a link </a>\r\n< p >\r\nLorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad\r\nminim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\r\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\r\n< p >\r\n< a href = "1967.html" > This is a link </a>\r\n< p >\r\nLorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad\r\nminim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\r\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\r\n< p >\r\n< a href = "5379.html" > This is a link </a>\r\n< p >\r\nLorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad\r\nminim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse\r\ncillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.\r\n< p >\r\n< a href = "1358.html" > This is a link </a>\r\n< p >\r\n</body>\r\n</html>\r\n\r\n'
Requesting /hw2nirbhgsutil/test-dir/94.html from 35.223.94.57 80
403 FORBIDDEN
Server: Werkzeug/3.0.1 Python/3.8.17
Date: Tue, 28 Nov 2023 21:15:06 GMT
Content-Type: text/html; charset=utf-8
Content-Length: 13
Connection: close

b'Access Denied'
Requesting /hw2nirbhgsutil/test-dir/190.html from 35.223.94.57 80

```

then on the instance-6 , we can start the app-2 on that instance and start listening to the server and we get the following display for it :

```

nmalhotr@instance-6:~/hw-9-docker-app2$ python3 app-2.py
Listening for messages on projects/cdsds561-project-1/subscriptions/hw3nirbhgsutil-sub..

```

And once one of the forbidden requests are sent from the web server, we get the following display for the app-2 as follows :

```

app-2.py  key.json
nmalhotr@instance-6:~/hw-9-docker-app2$ python3 app-2.py
Listening for messages on projects/cdsds561-project-1/subscriptions/hw3nirbhgsutil-sub..

Received forbidden request from country: Iran
Error: Access is prohibited. Error 403
Received forbidden request from country: Zimbabwe
Error: Access is prohibited. Error 403
Received forbidden request from country: Iraq
Error: Access is prohibited. Error 403
Received forbidden request from country: Iran
Error: Access is prohibited. Error 403
Received forbidden request from country: Syria
Error: Access is prohibited. Error 403
Received forbidden request from country: Iran
Error: Access is prohibited. Error 403
Received forbidden request from country: Myanmar
Error: Access is prohibited. Error 403
Received forbidden request from country: Zimbabwe
Error: Access is prohibited. Error 403
Received forbidden request from country: Syria
Error: Access is prohibited. Error 403
Received forbidden request from country: Iran
Error: Access is prohibited. Error 403
Received forbidden request from country: Zimbabwe
Error: Access is prohibited. Error 403
Received forbidden request from country: Syria
Error: Access is prohibited. Error 403
Received forbidden request from country: Syria
Error: Access is prohibited. Error 403
Received forbidden request from country: Myanmar
Error: Access is prohibited. Error 403
Received forbidden request from country: Iran
Error: Access is prohibited. Error 403
Received forbidden request from country: North Korea
Error: Access is prohibited. Error 403
Received forbidden request from country: Myanmar

```

This means app-2 successfully registers the countries of the forbidden requests as displayed above. We can also see the log results for the forbidden requests as follows:



The screenshot shows a log entry from CloudWatch Logs. The log entry details a 403 error from the application app-2. The log message is: "2023-11-28 15:49:19.021 quickstart-image 35.237.39.25 - - [28/Nov/2023 20:49:19] \"[31m [1mGET /hw2nirbhgsutil/test-dir/119.html HTTP/1.1 [0m\" 403 -". Below the log message, the log payload is expanded, showing nested fields such as insertId, labels, logName, receiveTimestamp, resource, severity, textPayload, and timestamp.

```

{
  insertId: "3bikhxywdt1lat7r"
  labels: {}
  logName: "projects/cdsds561-project-1/logs/stderr"
  receiveTimestamp: "2023-11-28T20:49:21.125290026Z"
  resource: {}
  severity: "ERROR"
  textPayload: "35.237.39.25 - - [28/Nov/2023 20:49:19] \"[31m [1mGET /hw2nirbhgsutil/test-dir/119.html HTTP/1.1 [0m\" 403 -"
  timestamp: "2023-11-28T20:49:19.021694556Z"
}

```