# InfluxDB-Grafana Monitoring System for top-universities service

This project demonstrates a monitoring system that collects, stores, and visualizes metrics for a service using InfluxDB and Grafana deployed on an OpenShift (Rahti) cluster. It integrates data collection from a microservice (top-universities) and displays insights through a Grafana dashboard.

## Features

InfluxDB: Stores metrics collected from the top-universities microservice.
Grafana: Provides a dashboard to visualize metrics from InfluxDB.
Kubernetes Deployment: Fully containerized and deployed on Rahti/OpenShift. T
oken-Based Authentication: Secures access to InfluxDB data.

## Architecture

top-universities: A microservice that collects university ranking data and tracks API request counts.
InfluxDB: A time-series database used to store request count metrics.
Grafana: A visualization tool used to build real-time dashboards.
Kubernetes: Deploys and manages the services in Rahti/OpenShift.

## Prerequisites

Rahti/OpenShift Cluster. oc CLI installed and configured. Docker for local development.

## Setup

git clone https://github.com/bdafahim/Final-Project-SDS.git

## Build and Push Docker Images

docker build -t /university-list:tag-f Dockerfile .
docker push /university-list: tag
docker build -t /top-universities:tag -f Dockerfile .
docker push /top-universities:tag

## Deploy InfluxDB

1. Apply the InfluxDB deployment configuration:
   oc apply -f influxdb.yaml
1. Verify the InfluxDB service:
   oc get pods oc get svc influxdb-service
1. Expose InfluxDB to create a route: oc expose svc influxdb-service

## Deploy Grafana

1. Apply the Grafana deployment configuration:
   oc apply -f grafana.yaml
1. Verify the Grafana service:
   oc get pods oc get svc grafana-service oc get route grafana-route

## Configure Grafana

Configure Grafana Access Grafana via the route URL: http:// Log in with default credentials (admin/admin123). Add InfluxDB as a data source: Select query language as flux provide the organization and bucket name Save and test the data source.

## Trigger the top-universities Service

To send a request to the top-universities service and collect metrics, run the following curl command:
curl "http://localhost:4201/top?n=50"
Here: n=50: Fetches the top 50 universities from the ranking data. Metrics for this request will be stored in InfluxDB.

## Create Dashboards in Grafana

After, Save and test the data source. Click 'building a dashboard' Copy the query script from influxdb explore paste it in the query of the dashboard builde of grafana Select which range of data you want to see