PANDORA

INFRA MONITERING TOOL

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PROBLEM DESCRIPTION

Team Pandora successfully developed an innovative cloud observability platform as part of the STGI Hackathon.The project focused on building a robust solution to monitor applications deployed in a Kubernetes cluster, specifically targeting two databases—PostgreSQL and MySQL.

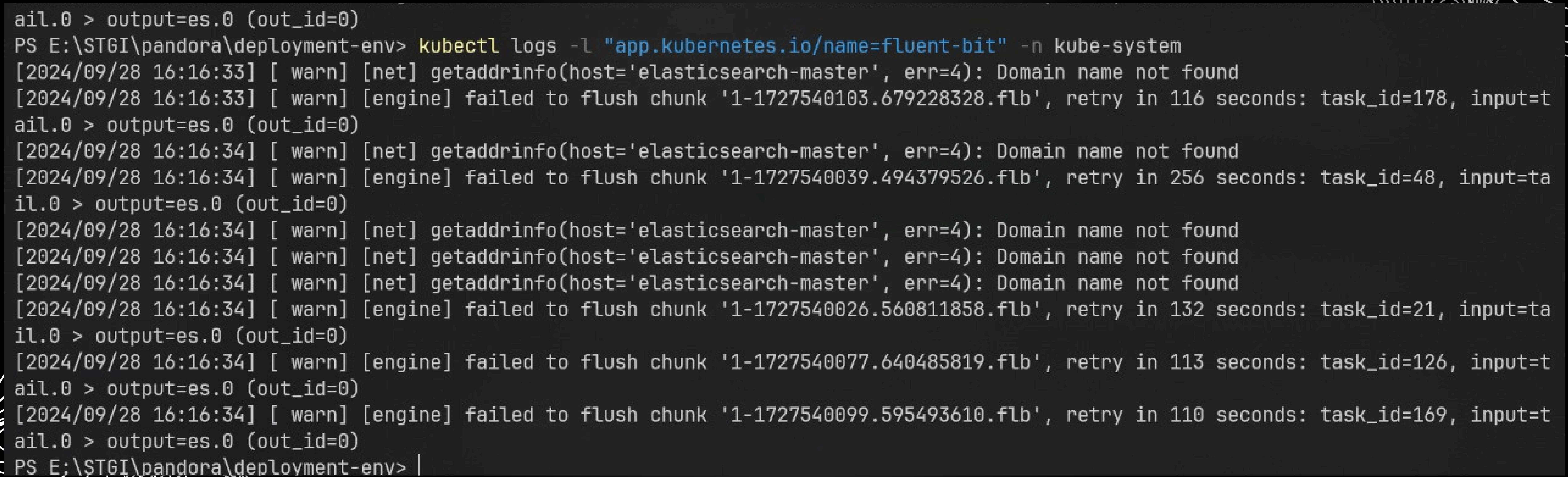
ROADMAP

- IDEA GENERATION
- GENERATION OF LOGS FROM MINIKUBE USING FLUENTBIT

- UI/UX USING NEXTJS
- FRONTEND

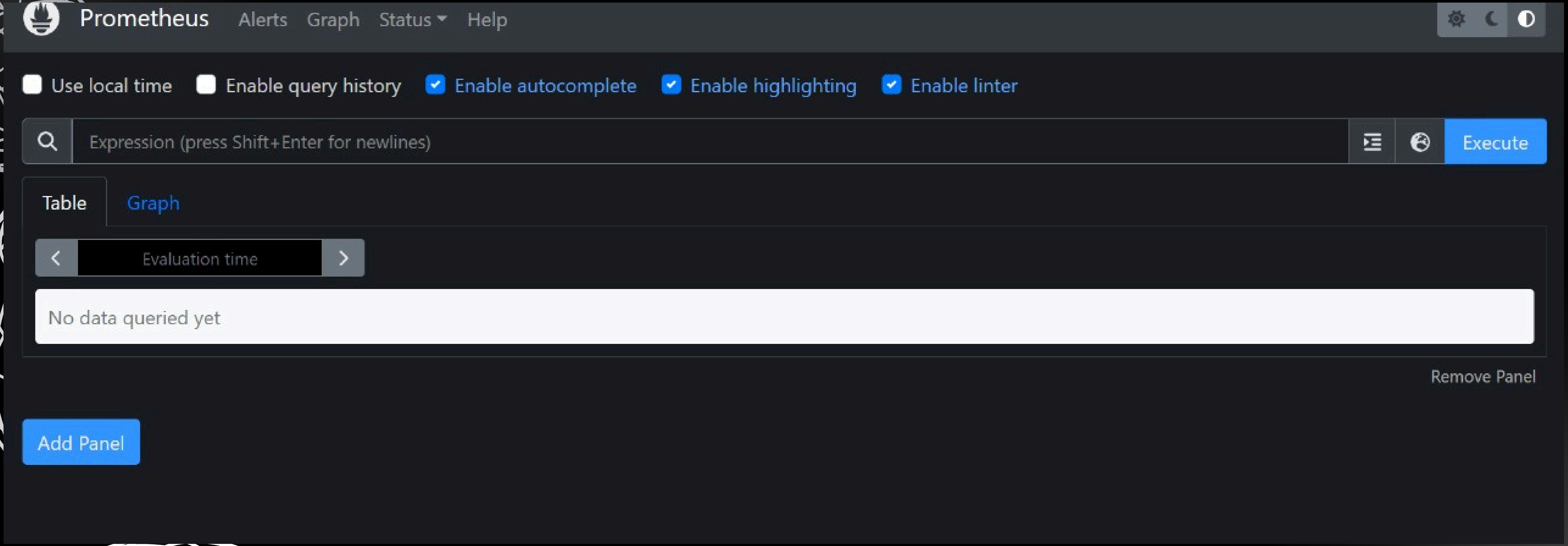
- LOGS STORAGE IN MONGODB
- ANALYTICAL DASHBOARD USING CHARTJS

LOGS FROM FLUENTBIT



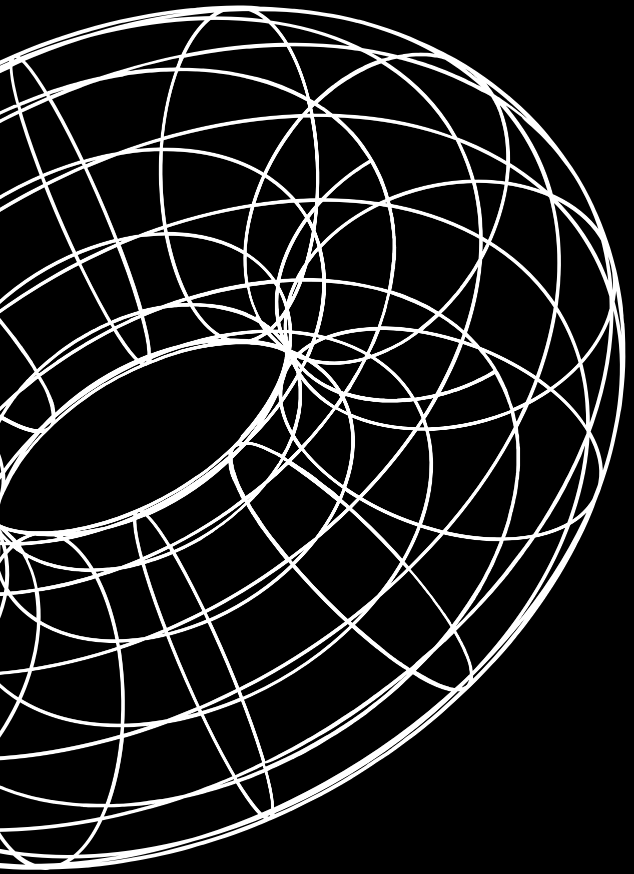
```
ail.0 > output=es.0 (out_id=0)
PS E:\STGI\pandora\deployment-env> kubectl logs -l "app.kubernetes.io/name=fluent-bit" -n kube-system
[2024/09/28 16:16:33] [ warn] [net] getaddrinfo(host='elasticsearch-master', err=4): Domain name not found
[2024/09/28 16:16:33] [ warn] [engine] failed to flush chunk '1-1727540103.679228328.flb', retry in 116 seconds: task_id=178, input=t
ail.0 > output=es.0 (out_id=0)
[2024/09/28 16:16:34] [ warn] [net] getaddrinfo(host='elasticsearch-master', err=4): Domain name not found
[2024/09/28 16:16:34] [ warn] [engine] failed to flush chunk '1-1727540039.494379526.flb', retry in 256 seconds: task_id=48, input=ta
il.0 > output=es.0 (out_id=0)
[2024/09/28 16:16:34] [ warn] [net] getaddrinfo(host='elasticsearch-master', err=4): Domain name not found
[2024/09/28 16:16:34] [ warn] [net] getaddrinfo(host='elasticsearch-master', err=4): Domain name not found
[2024/09/28 16:16:34] [ warn] [net] getaddrinfo(host='elasticsearch-master', err=4): Domain name not found
[2024/09/28 16:16:34] [ warn] [engine] failed to flush chunk '1-1727540026.560811858.flb', retry in 132 seconds: task_id=21, input=ta
il.0 > output=es.0 (out_id=0)
[2024/09/28 16:16:34] [ warn] [engine] failed to flush chunk '1-1727540077.640485819.flb', retry in 113 seconds: task_id=126, input=t
ail.0 > output=es.0 (out_id=0)
[2024/09/28 16:16:34] [ warn] [engine] failed to flush chunk '1-1727540099.595493610.flb', retry in 110 seconds: task_id=169, input=t
ail.0 > output=es.0 (out_id=0)
PS E:\STGI\pandora\deployment-env> |
```

WORKING PROMETHEUS



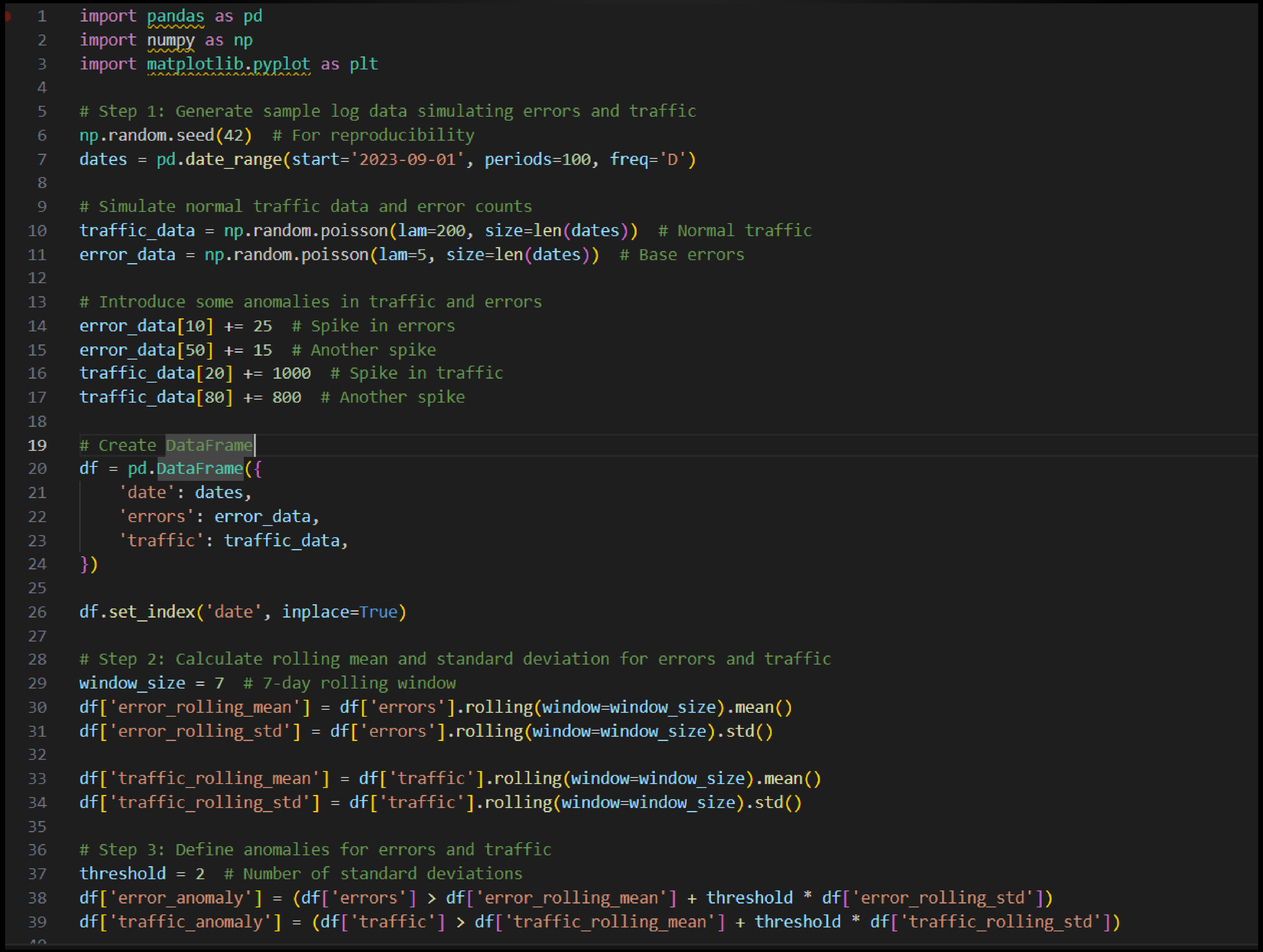
☐ Use local time ☐ Enable query history ☑ Enable autocomplete ☑ Enable highlighting ☑ Enable linter

No data queried yet

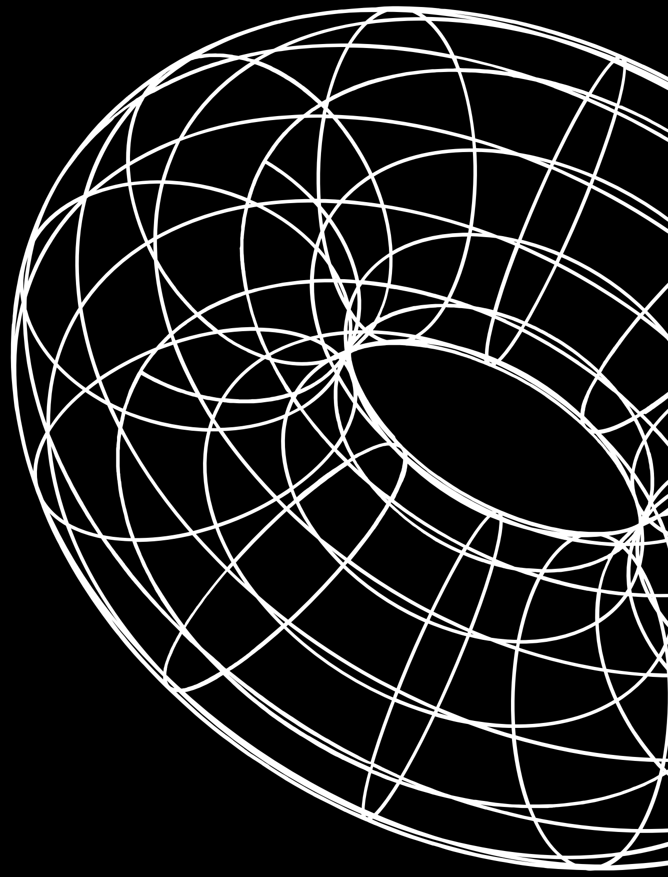


FEATURES

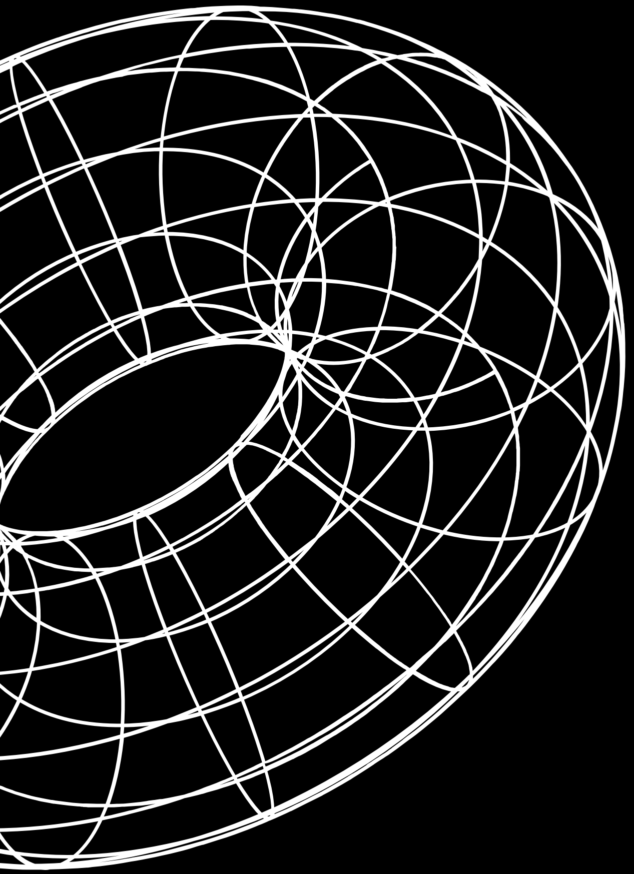
Real-Time Alerting System

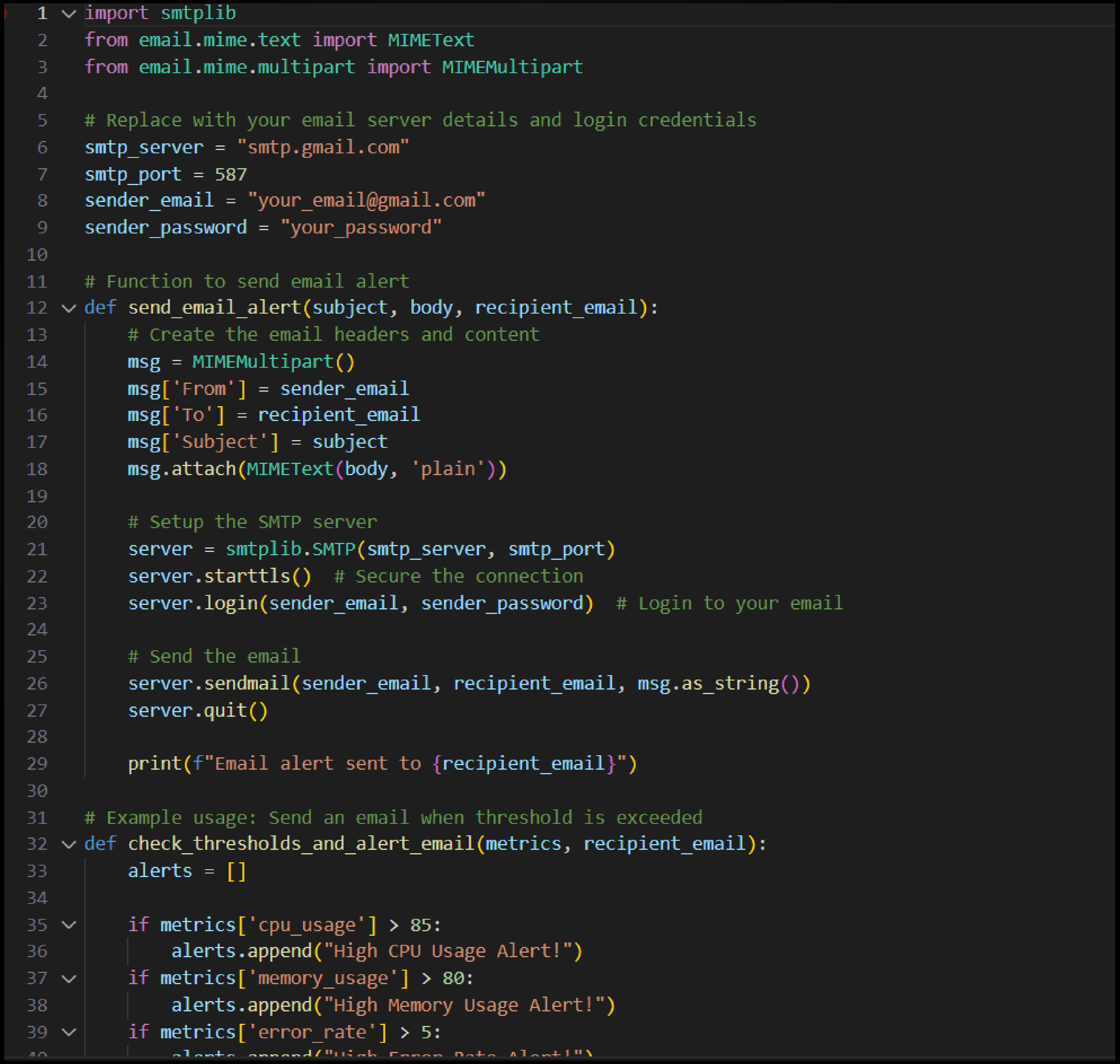


```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt

# Step 1: Generate sample log data simulating errors and traffic
np.random.seed(42)  # For reproducibility
dates = pd.date_range(start='2023-09-01', periods=100, freq='D')

# Simulate normal traffic data and error counts
traffic_data = np.random.poisson(lam=200, size=len(dates))  # Normal traffic
error_data = np.random.poisson(lam=5, size=len(dates))  # Base errors

# Introduce some anomalies in traffic and errors
error_data[10] += 25  # Spike in errors
error_data[50] += 15  # Another spike
traffic_data[20] += 1000  # Spike in traffic
traffic_data[80] += 800  # Another spike

# Create DataFrame
df = pd.DataFrame({
    'date': dates,
    'errors': error_data,
    'traffic': traffic_data,
})

df.set_index('date', inplace=True)

# Step 2: Calculate rolling mean and standard deviation for errors and traffic
window_size = 7  # 7-day rolling window
df['error_rolling_mean'] = df['errors'].rolling(window=window_size).mean()
df['error_rolling_std'] = df['errors'].rolling(window=window_size).std()

df['traffic_rolling_mean'] = df['traffic'].rolling(window=window_size).mean()
df['traffic_rolling_std'] = df['traffic'].rolling(window=window_size).std()

# Step 3: Define anomalies for errors and traffic
threshold = 2  # Number of standard deviations
df['error_anomaly'] = (df['errors'] > df['error_rolling_mean'] + threshold * df['error_rolling_std'])
df['traffic_anomaly'] = (df['traffic'] > df['traffic_rolling_mean'] + threshold * df['traffic_rolling_std'])
```

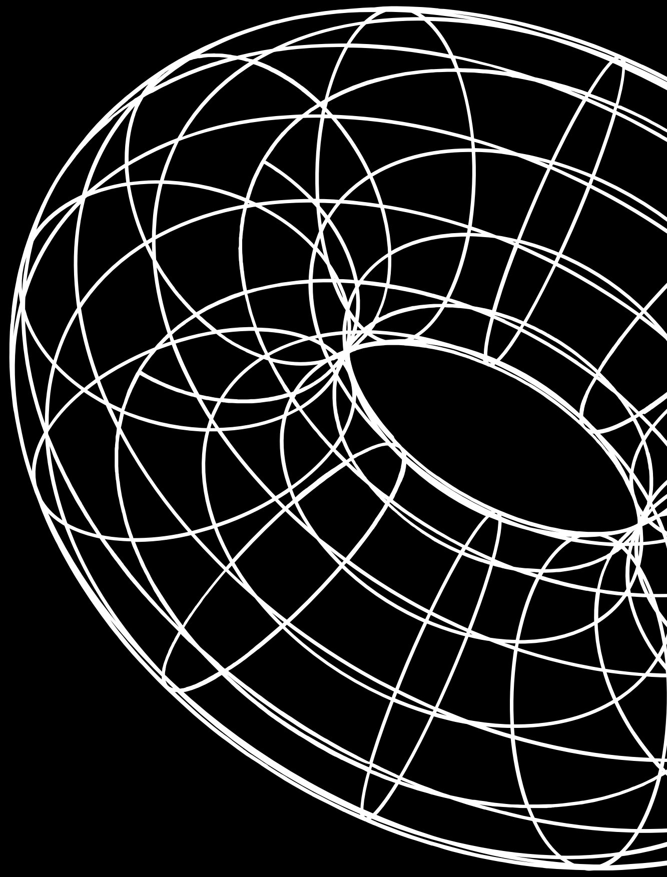


Log Anomaly Detection

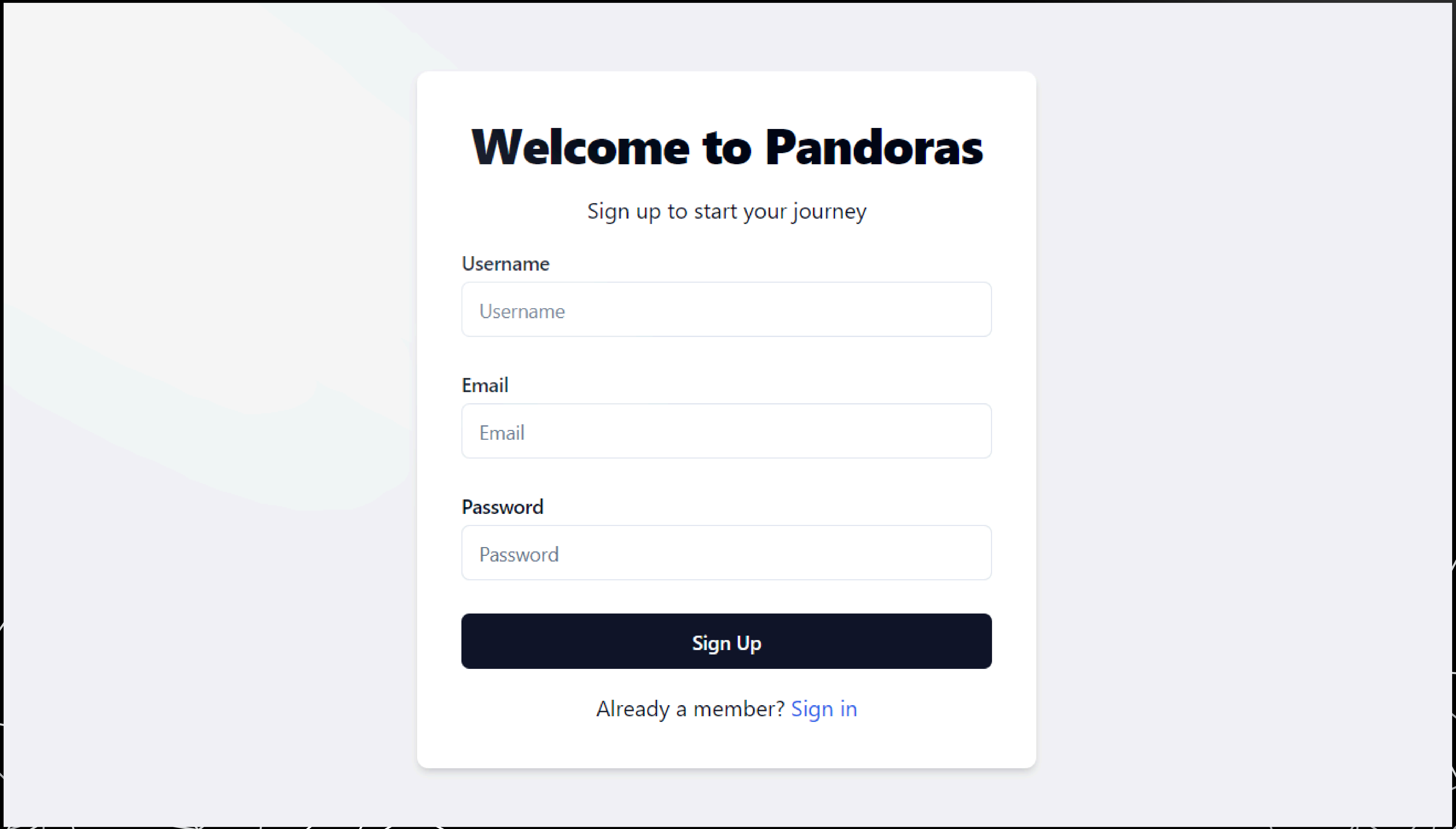




```python
import smtplib
from email.mime.text import MIMEText
from email.mime.multipart import MIMEMultipart

# Replace with your email server details and login credentials
smtp_server = "smtp.gmail.com"
smtp_port = 587
sender_email = "your_email@gmail.com"
sender_password = "your_password"

# Function to send email alert
def send_email_alert(subject, body, recipient_email):
    # Create the email headers and content
    msg = MIMEMultipart()
    msg['From'] = sender_email
    msg['To'] = recipient_email
    msg['Subject'] = subject
    msg.attach(MIMEText(body, 'plain'))

    # Setup the SMTP server
    server = smtplib.SMTP(smtp_server, smtp_port)
    server.starttls()  # Secure the connection
    server.login(sender_email, sender_password)  # Login to your email

    # Send the email
    server.sendmail(sender_email, recipient_email, msg.as_string())
    server.quit()

    print(f"Email alert sent to {recipient_email}")

# Example usage: Send an email when threshold is exceeded
def check_thresholds_and_alert_email(metrics, recipient_email):
    alerts = []

    if metrics['cpu_usage'] > 85:
        alerts.append("High CPU Usage Alert!")
    if metrics['memory_usage'] > 80:
        alerts.append("High Memory Usage Alert!")
    if metrics['error_rate'] > 5:
        alerts.append("High Error Rate Alert!")
```



OUR SIGNUP PAGE



Welcome to Pandoras

Sign up to start your journey

Username

Username

Email

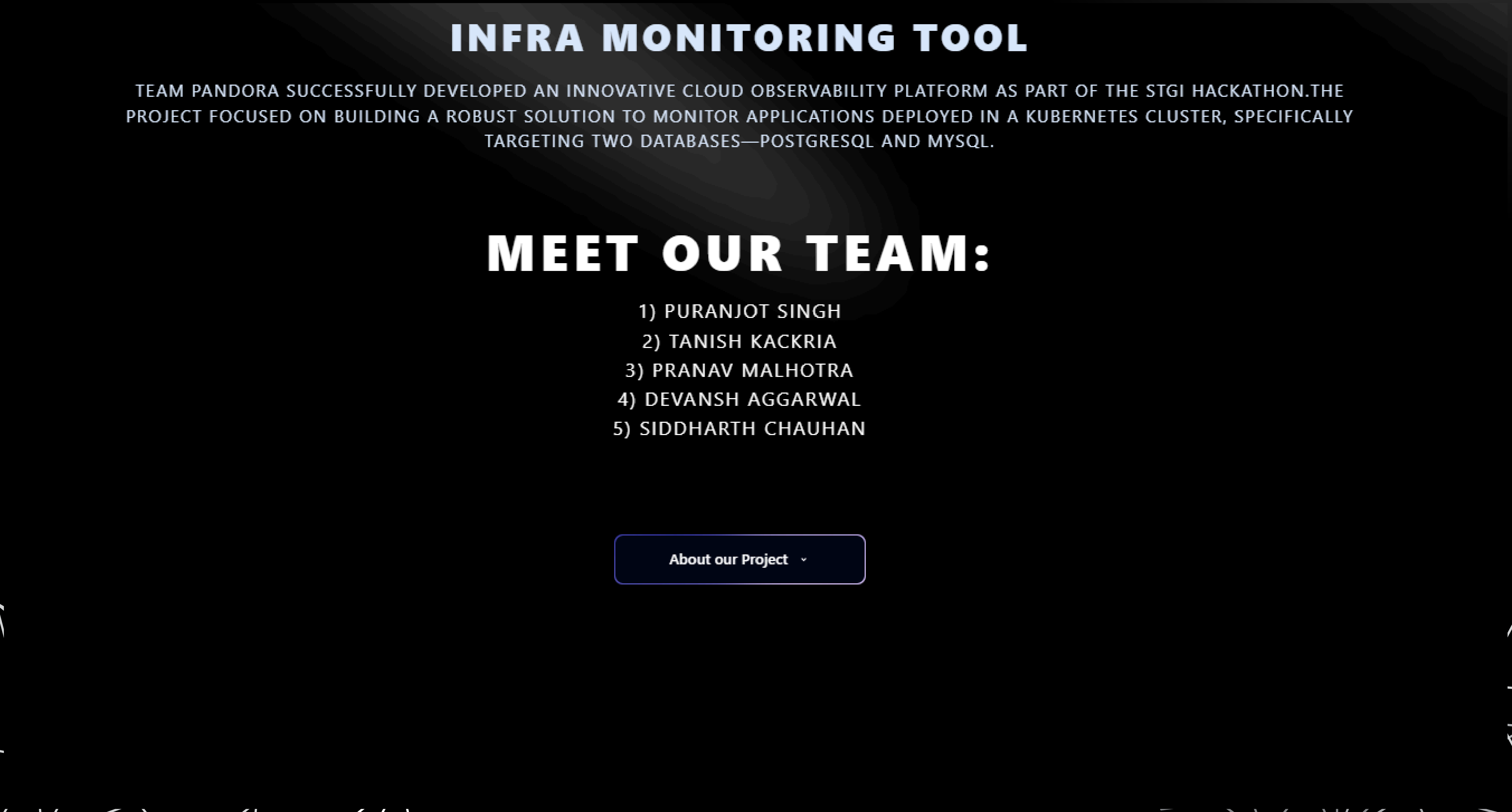
Email

Password

Password

Already a member? Sign in

OUR LANDING PAGE



INFRA MONITORING TOOL

TEAM PANDORA SUCCESSFULLY DEVELOPED AN INNOVATIVE CLOUD OBSERVABILITY PLATFORM AS PART OF THE STGI HACKATHON.THE PROJECT FOCUSED ON BUILDING A ROBUST SOLUTION TO MONITOR APPLICATIONS DEPLOYED IN A KUBERNETES CLUSTER, SPECIFICALLY TARGETING TWO DATABASES—POSTGRESQL AND MYSQL.

MEET OUR TEAM:

1) PURANJOT SINGH
2) TANISH KACKRIA
3) PRANAV MALHOTRA
4) DEVANSH AGGARWAL
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THANK YOU