Task – 3

This project demonstrates how to set up monitoring and observability using Prometheus, Grafana, and Loki (with Promtail). It also includes creating dashboards and collecting Nginx logs.

1. Install and configure CloudWatch agent

```
1.sudo apt update && sudo apt install -y amazon-cloudwatch-agent
```

2.Create a CloudWatch agent config JSON- `config.json`

3.Start the agent (fetch and apply config):

```
sudo /opt/aws/amazon-cloudwatch-agent/bin/amazon-cloudwatch-agent-ctl
\
-a fetch-config -m ec2 -c file:/opt/aws/amazon-cloudwatch-agent/bin/c
 onfig.json -s
```

2. Install & Run Prometheus

1. Download Prometheus:
   wget
https://github.com/prometheus/prometheus/releases/latest/download/prometheus-*.linux-amd64.tar.gz
2. Extract and enter folder:
   tar xvf prometheus-*.tar.gz && cd prometheus-*
3. Start Prometheus:
   ./prometheus --config.file=prometheus.yml
4. Default port: http://localhost:9090

3. Install & Run Grafana

1. Install Grafana:
   sudo apt-get install -y apt-transport-https software-properties-common
   sudo mkdir -p /etc/apt/keyrings/
   wget -q -O - https://packages.grafana.com/gpg.key | sudo tee
/etc/apt/keyrings/grafana.gpg > /dev/null
   echo "deb [signed-by=/etc/apt/keyrings/grafana.gpg]
https://packages.grafana.com/oss/deb stable main" | sudo tee
/etc/apt/sources.list.d/grafana.list
   sudo apt-get update && sudo apt-get install grafana -y
2. Start Grafana:
   sudo systemctl start grafana-server

sudo systemctl enable grafana-server
3. Default port: http://<EC2-IP>:3000

4. Setup Promtail & Loki for Logs

1. Download Loki:
wget https://github.com/grafana/loki/releases/latest/download/loki-linux-amd64.zip
unzip loki-linux-amd64.zip
chmod +x loki-linux-amd64
2. Download Promtail:
wget https://github.com/grafana/loki/releases/latest/download/promtail-linux-amd64.zip
unzip promtail-linux-amd64.zip
chmod +x promtail-linux-amd64
3. Run Loki: ./loki-linux-amd64 --config.file=loki-config.yml
4. Run Promtail: ./promtail-linux-amd64 --config.file=promtail-config.yml
5. Promtail pushes logs → Loki → Grafana reads from Loki.

5. Create Dashboards in Grafana

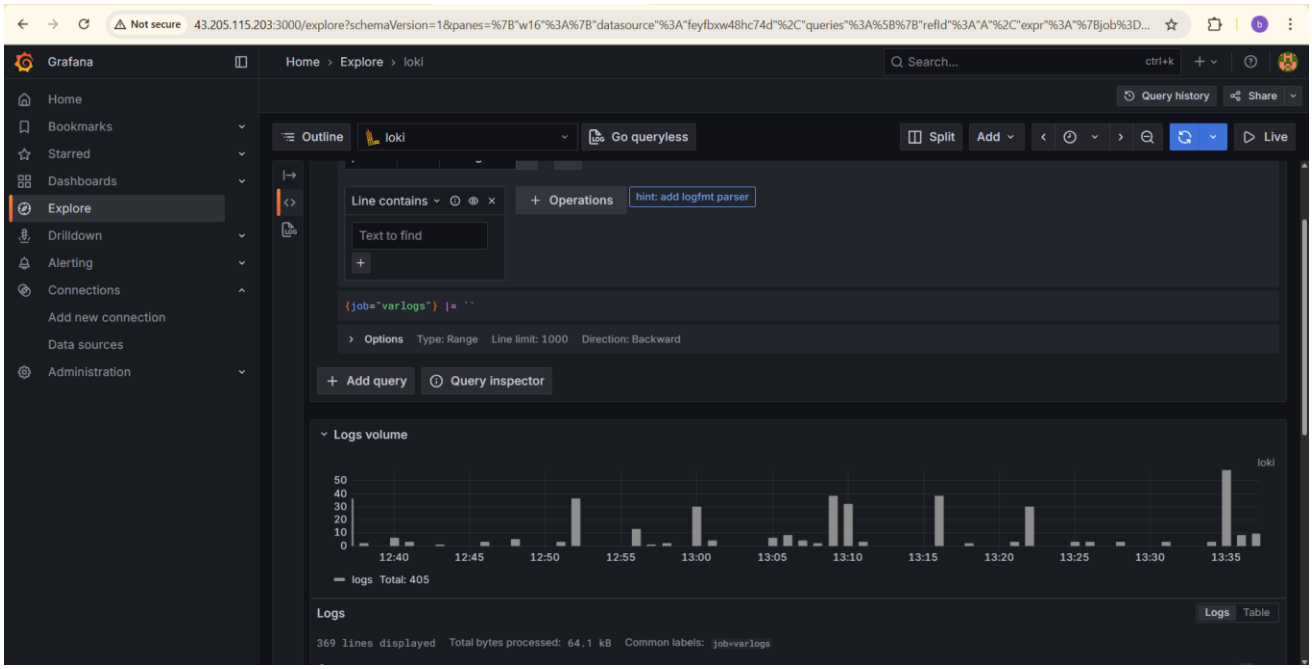
1. Open Grafana → Dashboards → New → Add Panel.
2. For Prometheus metrics, example queries:
- CPU: rate(node_cpu_seconds_total{mode="system"}[5m])
- Memory: node_memory_MemAvailable_bytes
3. For Nginx logs (via Loki):
- {job="nginx"}
- {filename="/var/log/nginx/access.log"}
4. Customize visualization (Graphs, Tables, Logs).

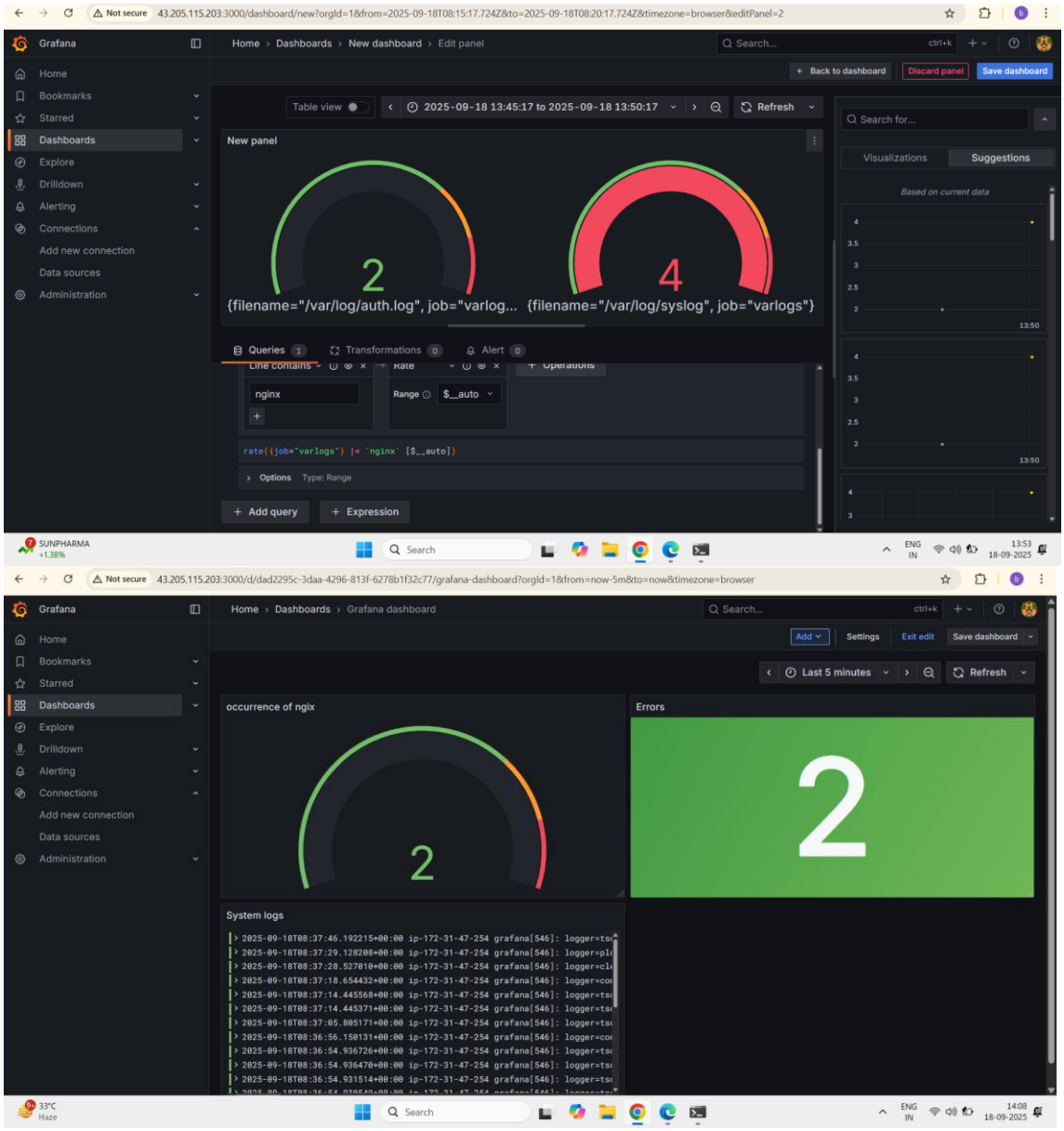
6. Setup Alerts

1. In Grafana → Alerting → Add new rule.
2. Example:
IF CPU usage > 80% for 5m THEN send alert.

7. Errors Faced

- Prometheus config YAML error: fixed by correcting indentation.
- Grafana not connecting Prometheus: Prometheus not running (fixed by restarting).
- Nginx failed restart: issue in config syntax (fixed with sudo nginx -t).


Not secure
43.205.115.203:3000/explore?schemaVersion=1&panes=%7B"w16"%3A%7B"datasource"%3A"feyfbxw48hc74d"%2C"queries"%3A%5B%7B"refId"%3A"A"%2C"expr"%3A"%7Bjob%3D...
Grafana
Home
Bookmarks
Starred
Dashboards
Explore
Drilldown
Alerting
Connections
Add new connection
Data sources
Administration
Home › Explore › loki
Search...
ctrl+k
Query history
Share
Outline
loki
Go queryless
Split
Add
Live
Line contains
Operations
hint: add logfmt parser
Text to find
{job="varlogs"} |= ``
Options
Type: Range
Line limit: 1000
Direction: Backward
Add query
Query inspector
Logs volume
loki
50
40
30
20
10
0
12:40
12:45
12:50
12:55
13:00
13:05
13:10
13:15
13:20
13:25
13:30
13:35
logs Total: 405
Logs
Logs
Table
369 lines displayed
Total bytes processed: 64.1 kB
Common labels:
job=varlogs


Not secure 43.205.115.203:3000/dashboard/new?orgId=1&from=2025-09-18T08:15:17.724Z&to=2025-09-18T08:20:17.724Z&timezone=browser&editPanel=2
Grafana
Home › Dashboards › New dashboard › Edit panel
Search...
Back to dashboard
Discard panel
Save dashboard
Home
Bookmarks
Starred
Dashboards
Explore
Drilldown
Alerting
Connections
Add new connection
Data sources
Administration
Table view
2025-09-18 13:45:17 to 2025-09-18 13:50:17
Refresh
New panel
2
{filename="/var/log/auth.log", job="varlog...
4
{filename="/var/log/syslog", job="varlogs"}
Search for...
Visualizations
Suggestions
Based on current data
Queries 1
Transformations 0
Alert 0
Line contains
nginx
Rate
Range
$__auto
rate({job="varlogs"} |= `nginx` [$__auto])
Options Type: Range
+ Add query
+ Expression
SUNPHARMA +1.38%
Search
ENG IN
13:53 18-09-2025
Not secure 43.205.115.203:3000/d/dad2295c-3daa-4296-813f-6278b1f32c77/grafana-dashboard?orgId=1&from=now-5m&to=now&timezone=browser
Grafana
Home › Dashboards › Grafana dashboard
Search...
Add
Settings
Exit edit
Save dashboard
Last 5 minutes
Refresh
occurrence of ngix
2
Errors
2
System logs
2025-09-18T08:37:46.192215+00:00 ip-172-31-47-254 grafana[546]: logger=ts
2025-09-18T08:37:29.128208+00:00 ip-172-31-47-254 grafana[546]: logger=pl
2025-09-18T08:37:28.527010+00:00 ip-172-31-47-254 grafana[546]: logger=cl
2025-09-18T08:37:18.654432+00:00 ip-172-31-47-254 grafana[546]: logger=co
2025-09-18T08:37:14.445568+00:00 ip-172-31-47-254 grafana[546]: logger=ts
2025-09-18T08:37:14.445371+00:00 ip-172-31-47-254 grafana[546]: logger=ts
2025-09-18T08:37:05.805171+00:00 ip-172-31-47-254 grafana[546]: logger=ts
2025-09-18T08:36:56.150131+00:00 ip-172-31-47-254 grafana[546]: logger=co
2025-09-18T08:36:54.936726+00:00 ip-172-31-47-254 grafana[546]: logger=ts
2025-09-18T08:36:54.936470+00:00 ip-172-31-47-254 grafana[546]: logger=ts
2025-09-18T08:36:54.931514+00:00 ip-172-31-47-254 grafana[546]: logger=ts
33°C Haze
Search
ENG IN
14:08 18-09-2025