EXPERIMENT 10 - Prometheus & Grafana

- INSTALL PREREQUISITES

```
dhyeypatel@Dhyeys-MacBook-Air Desktop % brew install minikube
brew install kubectl
brew install helm
Warning: minikube 1.37.0 is already installed and up-to-date.
To reinstall 1.37.0, run:
  brew reinstall minikube
Warning: kubernetes-cli 1.34.1 is already installed and up-to-date.
To reinstall 1.34.1, run:
  brew reinstall kubernetes-cli
==> Fetching downloads for: helm
==> Downloading https://ghcr.io/v2/homebrew/core/helm/manifests/3.19.0
######################################################################################################################################## 100.0%
==> Fetching helm
==> Downloading https://ghcr.io/v2/homebrew/core/helm/blobs/sha256:751fcced921cdf4b4b02643f035b9f27874bca9d7d9c3684b2564bd26980b0f4
######################################################################################################################################## 100.0%
==> Pouring helm--3.19.0.arm64_tahoe.bottle.tar.gz
🍺  /opt/homebrew/Cellar/helm/3.19.0: 66 files, 56MB
==> Running `brew cleanup helm`...
Disable this behaviour by setting `HOMEBREW_NO_INSTALL_CLEANUP=1`.
Hide these hints with `HOMEBREW_NO_ENV_HINTS=1` (see `man brew`).
==> No outdated dependents to upgrade!
==> Caveats
zsh completions have been installed to:
  /opt/homebrew/share/zsh/site-functions
dhyeypatel@Dhyeys-MacBook-Air Desktop %
```

- MINIKUBE CLUSTER INITIALIZATION

```
dhyeypatel@Dhyeys-MacBook-Air Desktop % minikube start --driver=docker
😄  minikube v1.37.0 on Darwin 26.0 (arm64)
✨  Using the docker driver based on existing profile
👍  Starting "minikube" primary control-plane node in "minikube" cluster
🚜  Pulling base image v0.0.48 ...
🔄  Restarting existing docker container for "minikube" ...
🐳  Preparing Kubernetes v1.34.0 on Docker 28.4.0 ...
🔎  Verifying Kubernetes components...
    ▪ Using image gcr.io/k8s-minikube/storage-provisioner:v5
🌟  Enabled addons: storage-provisioner, default-storageclass
🏄  Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
dhyeypatel@Dhyeys-MacBook-Air Desktop %
```

- HELM REPOSITORY CONFIGURATION

```
dhyeypatel@Dhyeys-MacBook-Air Desktop % helm repo add prometheus-community https://prometheus-community.github.io/helm-charts
"prometheus-community" has been added to your repositories
dhyeypatel@Dhyeys-MacBook-Air Desktop % helm repo update
Hang tight while we grab the latest from your chart repositories...
...Successfully got an update from the "prometheus-community" chart repository
Update Complete. ⎈Happy Helming!⎈
dhyeypatel@Dhyeys-MacBook-Air Desktop %
```

- KUBE-PROMETHEUS-STACK HELM DEPLOYMENT

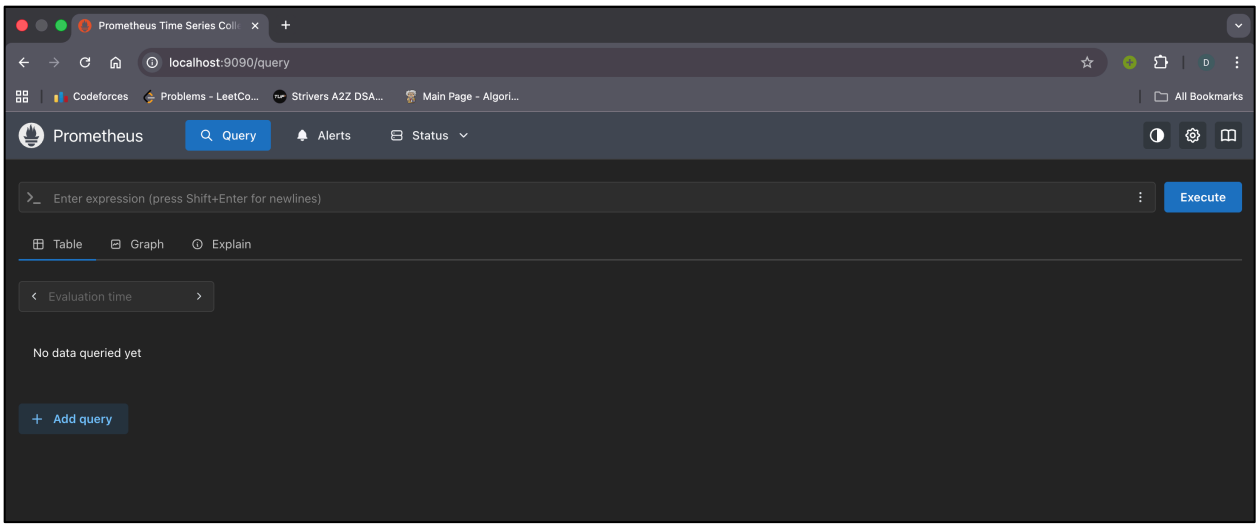
```
dhyeypatel@Dhyeys-MacBook-Air Desktop % helm install monitoring prometheus-community/kube-prometheus-stack --create-namespace --nam
espace monitoring
I1002 18:35:50.958577   67415 warnings.go:110] "Warning: unrecognized format \"int32\""
I1002 18:35:50.958607   67415 warnings.go:110] "Warning: unrecognized format \"int64\""
I1002 18:35:51.157511   67415 warnings.go:110] "Warning: unrecognized format \"int64\""
I1002 18:35:51.157546   67415 warnings.go:110] "Warning: unrecognized format \"int32\""
I1002 18:35:51.190326   67415 warnings.go:110] "Warning: unrecognized format \"int64\""
I1002 18:35:51.190355   67415 warnings.go:110] "Warning: unrecognized format \"int32\""
I1002 18:35:51.255171   67415 warnings.go:110] "Warning: unrecognized format \"int64\""
I1002 18:35:51.852311   67415 warnings.go:110] "Warning: unrecognized format \"int32\""
I1002 18:35:51.852349   67415 warnings.go:110] "Warning: unrecognized format \"int64\""
I1002 18:35:52.252927   67415 warnings.go:110] "Warning: unrecognized format \"int64\""
I1002 18:35:52.252962   67415 warnings.go:110] "Warning: unrecognized format \"int32\""
I1002 18:35:52.556218   67415 warnings.go:110] "Warning: unrecognized format \"int64\""
I1002 18:35:52.556252   67415 warnings.go:110] "Warning: unrecognized format \"int32\""
I1002 18:35:52.744445   67415 warnings.go:110] "Warning: unrecognized format \"int64\""
I1002 18:35:53.041931   67415 warnings.go:110] "Warning: unrecognized format \"int64\""
I1002 18:35:53.041964   67415 warnings.go:110] "Warning: unrecognized format \"int32\""
I1002 18:36:14.592833   67415 warnings.go:110] "Warning: spec.SessionAffinity is ignored for headless services"
I1002 18:36:14.593751   67415 warnings.go:110] "Warning: spec.SessionAffinity is ignored for headless services"
I1002 18:36:14.593767   67415 warnings.go:110] "Warning: spec.SessionAffinity is ignored for headless services"
I1002 18:36:14.593784   67415 warnings.go:110] "Warning: spec.SessionAffinity is ignored for headless services"
I1002 18:36:14.594710   67415 warnings.go:110] "Warning: spec.SessionAffinity is ignored for headless services"
NAME: monitoring
LAST DEPLOYED: Thu Oct  2 18:35:55 2025
NAMESPACE: monitoring
STATUS: deployed
REVISION: 1
NOTES:
kube-prometheus-stack has been installed. Check its status by running:
  kubectl --namespace monitoring get pods -l "release=monitoring"

Get Grafana 'admin' user password by running:

  kubectl --namespace monitoring get secrets monitoring-grafana -o jsonpath="{.data.admin-password}" | base64 -d ; echo

Access Grafana local instance:

  export POD_NAME=$(kubectl --namespace monitoring get pod -l "app.kubernetes.io/name=grafana,app.kubernetes.io/instance=monitoring
" -oname)
  kubectl --namespace monitoring port-forward $POD_NAME 3000

Visit https://github.com/prometheus-operator/kube-prometheus for instructions on how to create & configure Alertmanager and Prometh
eus instances using the Operator.
dhyeypatel@Dhyeys-MacBook-Air Desktop %
```

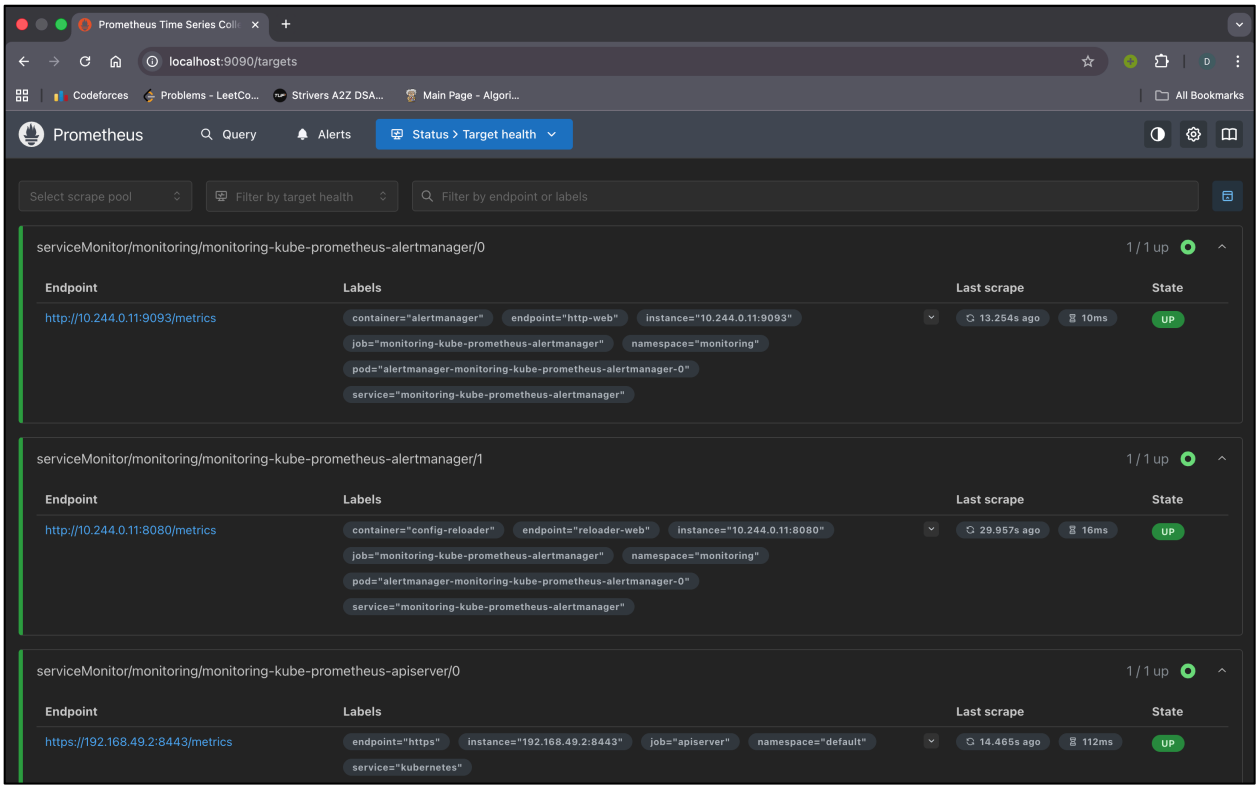
- VERIFYING MONITORING PODS

```
dhyeypatel@Dhyeys-MacBook-Air Desktop % kubectl get pods --namespace monitoring
NAME                                                     READY   STATUS    RESTARTS   AGE
alertmanager-monitoring-kube-prometheus-alertmanager-0   2/2     Running   0          3m30s
monitoring-grafana-56f4787c8b-xb7rc                      3/3     Running   0          4m20s
monitoring-kube-prometheus-operator-7d58ff67c4-jbkvb     1/1     Running   0          4m20s
monitoring-kube-state-metrics-5875f599c9-42tqf           1/1     Running   0          4m20s
monitoring-prometheus-node-exporter-x85ln                1/1     Running   0          4m20s
prometheus-monitoring-kube-prometheus-prometheus-0       2/2     Running   0          3m30s
dhyeypatel@Dhyeys-MacBook-Air Desktop %
```

- PROMETHEUS SERVICE DISCOVERY TARGETS

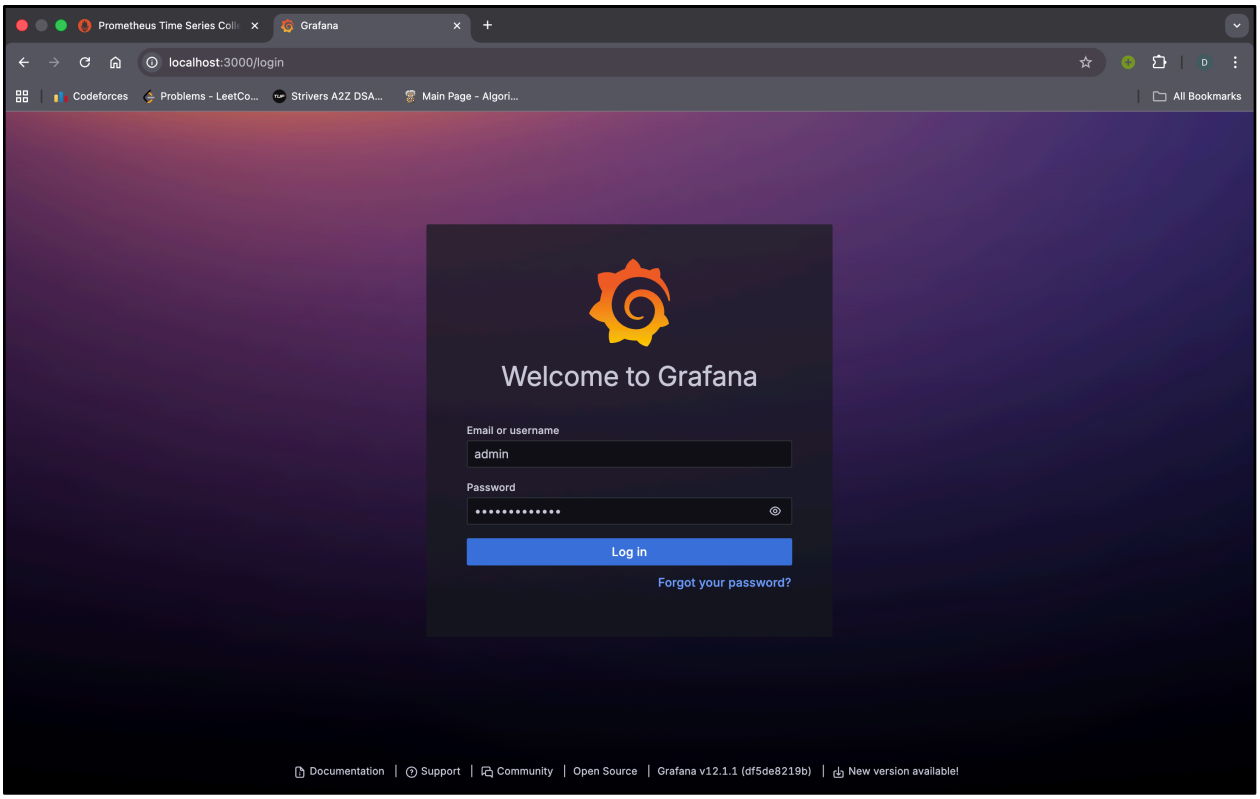
```
Last login: Thu Oct  2 12:18:02 on ttys000
dhyeypatel@Dhyeys-MacBook-Air Desktop % kubectl port-forward svc/monitoring-kube-prometheus-prometheus 9090:9090 --namespace monito
ring
Forwarding from 127.0.0.1:9090 -> 9090
Forwarding from [::1]:9090 -> 9090
Handling connection for 9090
Handling connection for 9090
Handling connection for 9090
Handling connection for 9090
```

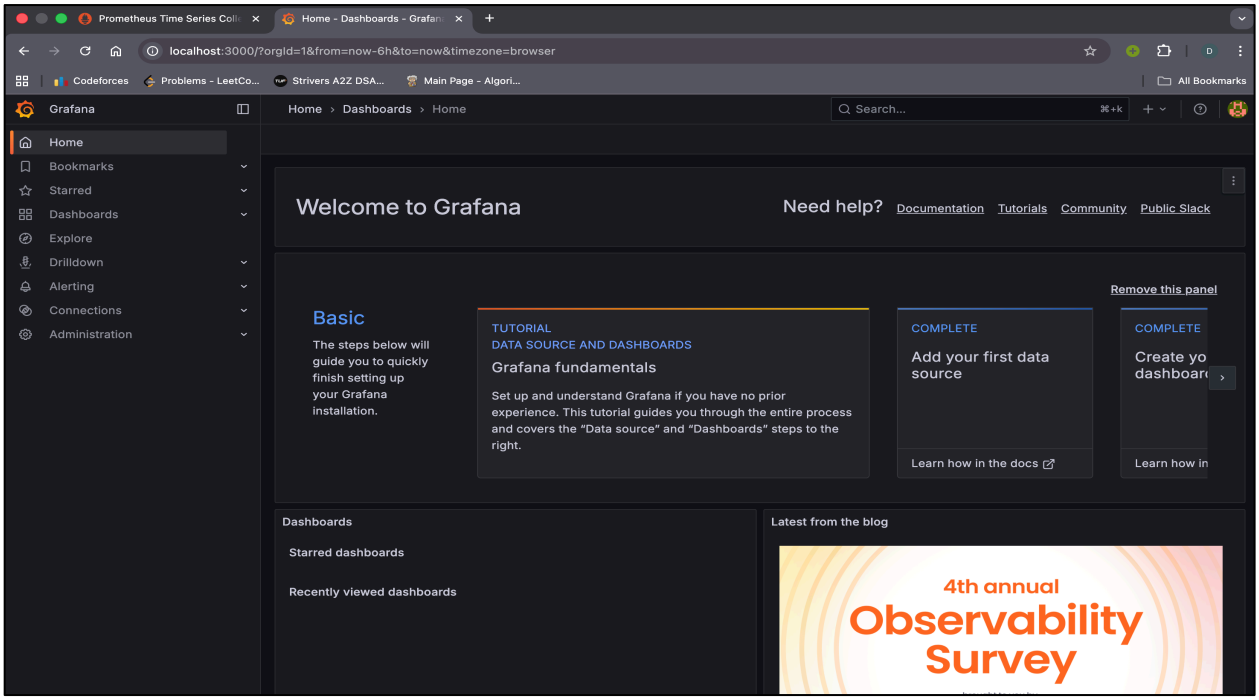




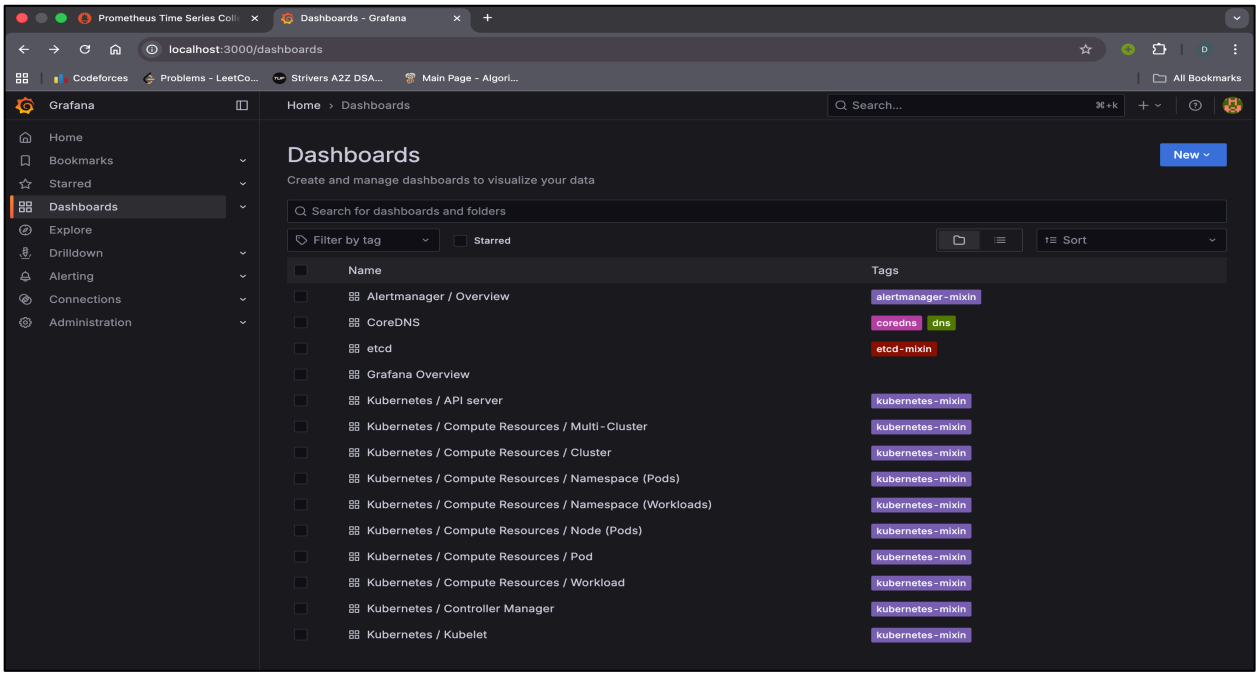
- GRAFANA LOGIN

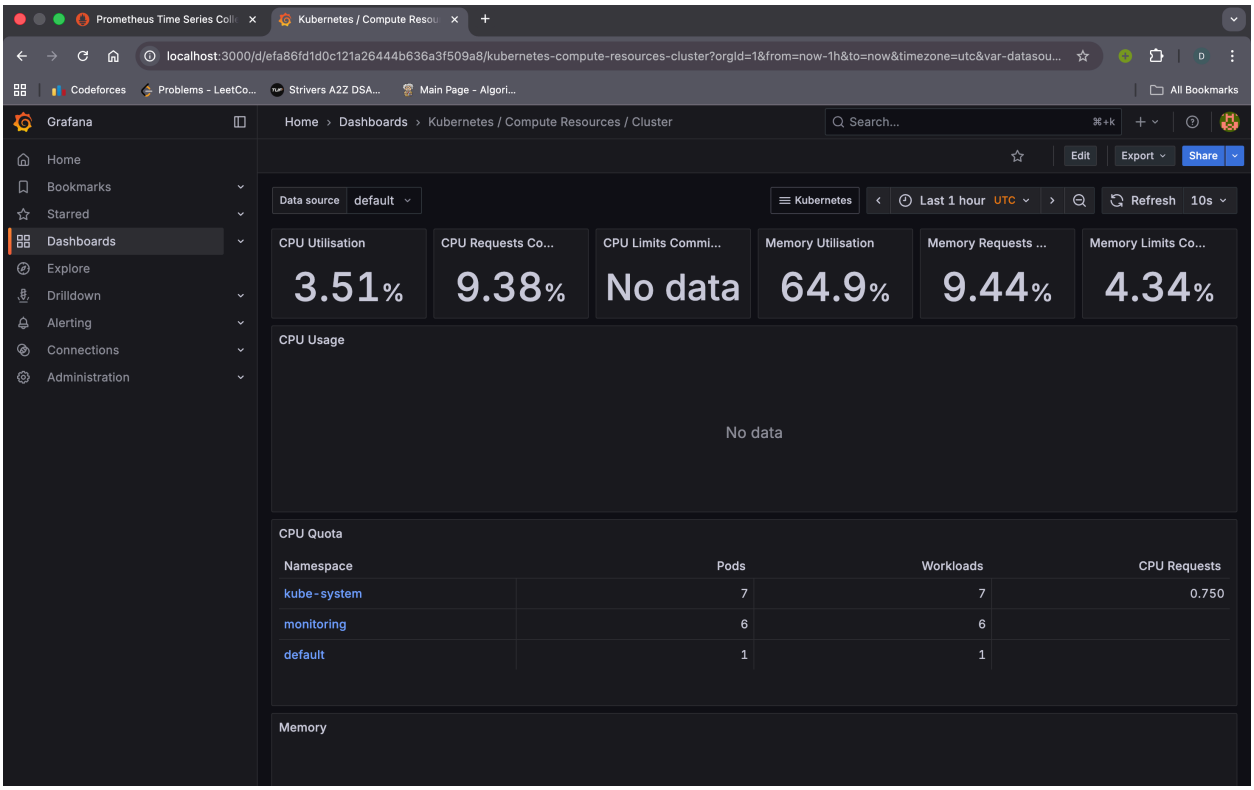
```
dhyeypatel@Dhyeys-MacBook-Air Desktop % kubectl get secret monitoring-grafana -n monitoring -o jsonpath="{.data.admin-password}" | 
base64 --decode
prom-operator%
dhyeypatel@Dhyeys-MacBook-Air Desktop %
```


Prometheus Time Series Colli
Grafana
localhost:3000/login
Codeforces
Problems - LeetCo...
Strivers A2Z DSA...
Main Page - Algori...
All Bookmarks
Welcome to Grafana
Email or username
admin
Password
Log in
Forgot your password?
Documentation
Support
Community
Open Source
Grafana v12.1.1 (df5de8219b)
New version available!

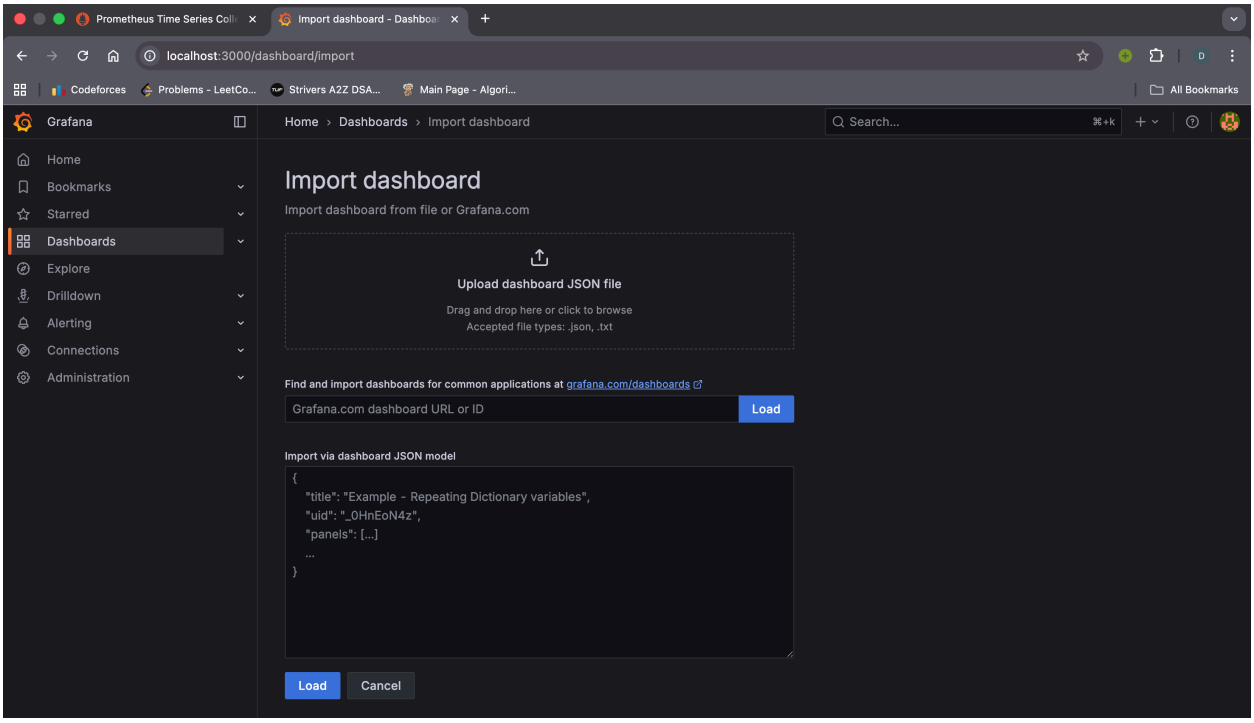

Prometheus Time Series Colli
Home - Dashboards - Grafan
localhost:3000/?orgId=1&from=now-6h&to=now&timezone=browser
Codeforces
Problems - LeetCo...
Strivers A2Z DSA...
Main Page - Algori...
All Bookmarks
Grafana
Home
Bookmarks
Starred
Dashboards
Explore
Drilldown
Alerting
Connections
Administration
Home › Dashboards › Home
Search...
Welcome to Grafana
Need help?
Documentation
Tutorials
Community
Public Slack
Remove this panel
Basic
The steps below will guide you to quickly finish setting up your Grafana installation.
TUTORIAL
DATA SOURCE AND DASHBOARDS
Grafana fundamentals
Set up and understand Grafana if you have no prior experience. This tutorial guides you through the entire process and covers the "Data source" and "Dashboards" steps to the right.
COMPLETE
Add your first data source
Learn how in the docs
COMPLETE
Create yo dashboar
Learn how in
Dashboards
Starred dashboards
Recently viewed dashboards
Latest from the blog
4th annual
Observability
Survey

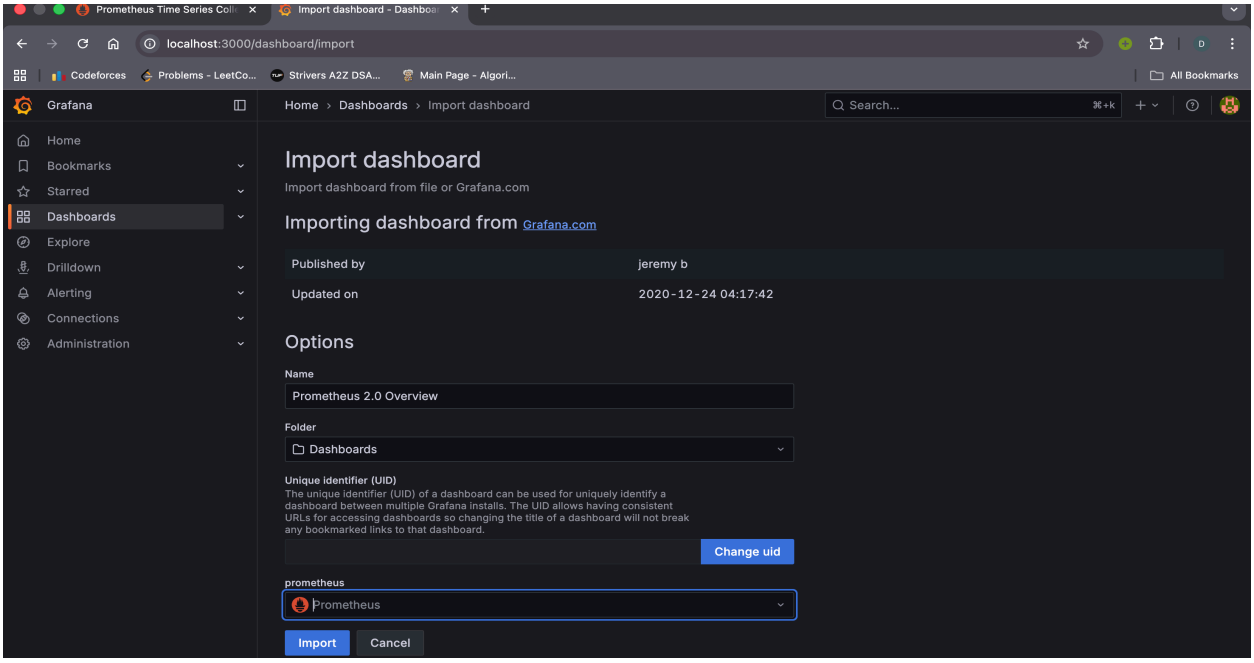
- DEFAULT KUBERNETES CLUSTER DASHBOARD

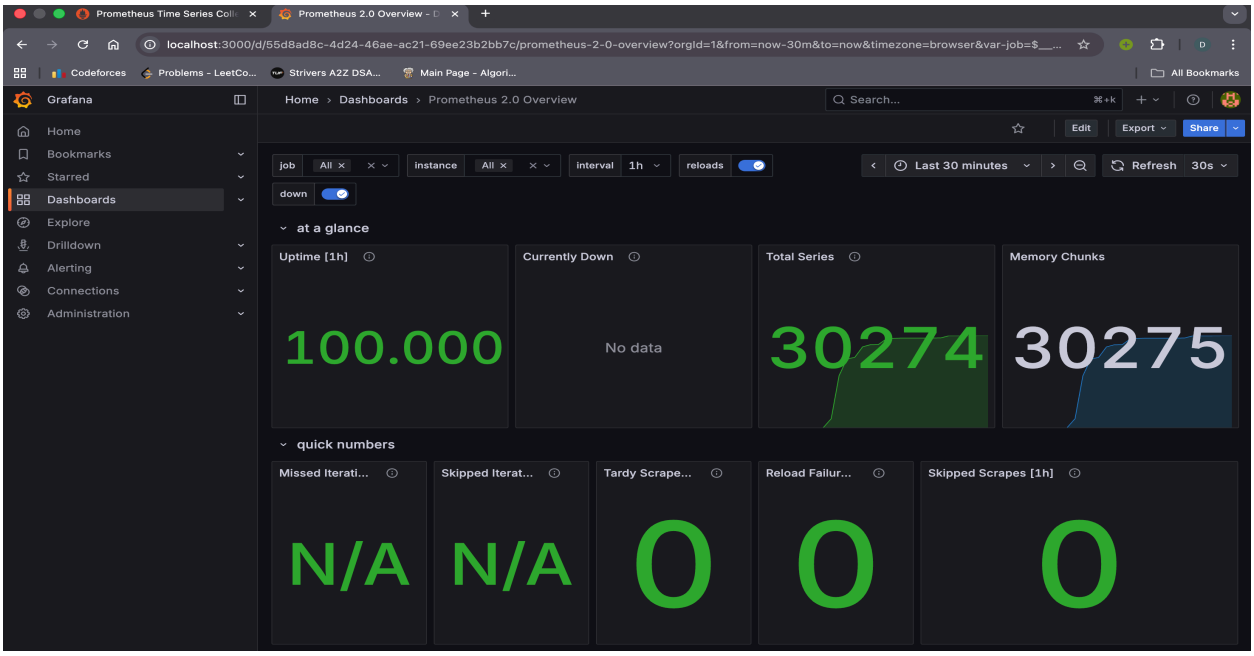




- IMPORTED PROMETHEUS STATS DASHBOARD






Prometheus Time Series Coll
Prometheus 2.0 Overview - D
localhost:3000/d/55d8ad8c-4d24-46ae-ac21-69ee23b2bb7c/prometheus-2-0-overview?orgId=1&from=now-30m&to=now&timezone=browser&var-job=$__...
Codeforces
Problems - LeetCo...
Strivers A2Z DSA...
Main Page - Algori...
All Bookmarks
Grafana
Home
Bookmarks
Starred
Dashboards
Explore
Drilldown
Alerting
Connections
Administration
Home › Dashboards › Prometheus 2.0 Overview
Search...
Edit
Export
Share
job All
instance All
interval 1h
reloads
Last 30 minutes
Refresh 30s
down
at a glance
Uptime [1h]
100.000
Currently Down
No data
Total Series
30274
Memory Chunks
30275
quick numbers
Missed Iterati...
N/A
Skipped Iterat...
N/A
Tardy Scrape...
0
Reload Failur...
0
Skipped Scrapes [1h]
0