

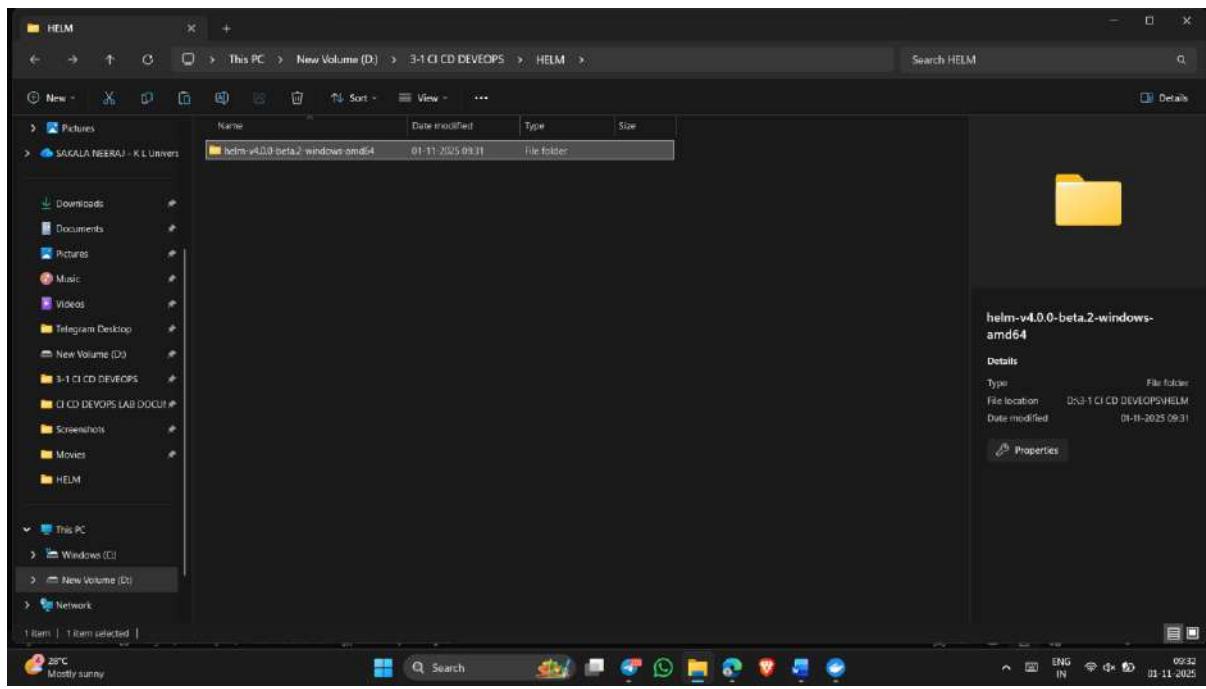
LAB 14

Kubernetes deployment using helm and ingress

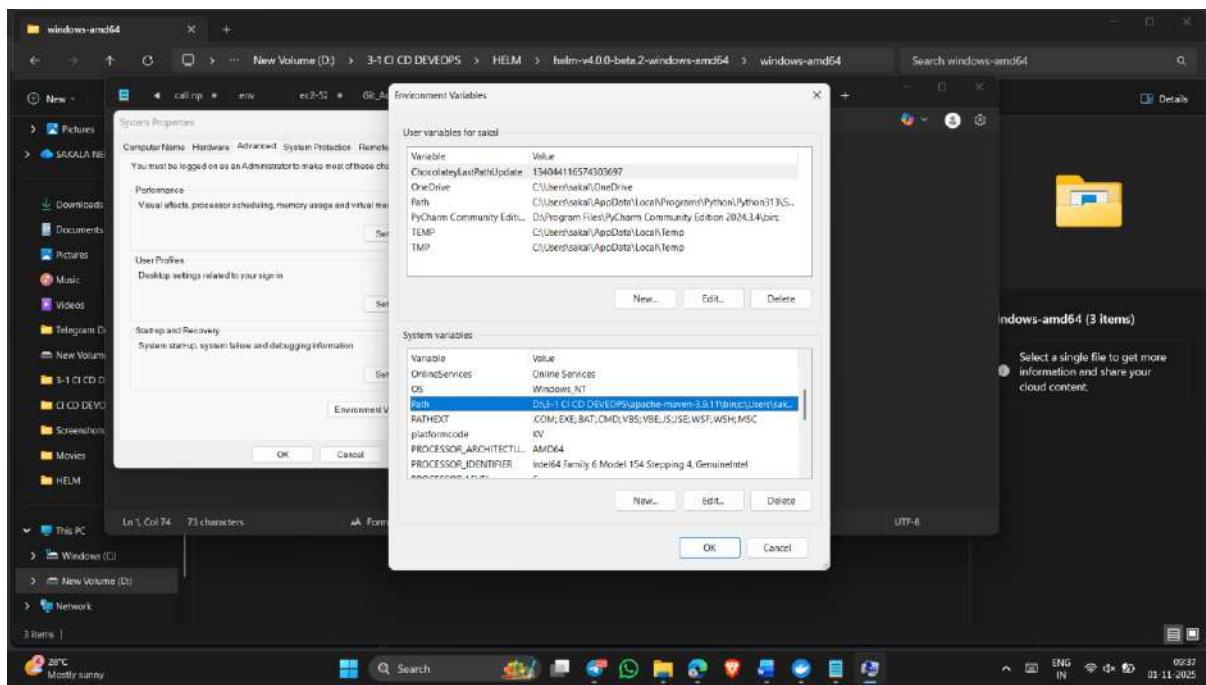
<https://github.com/helm/helm/releases>

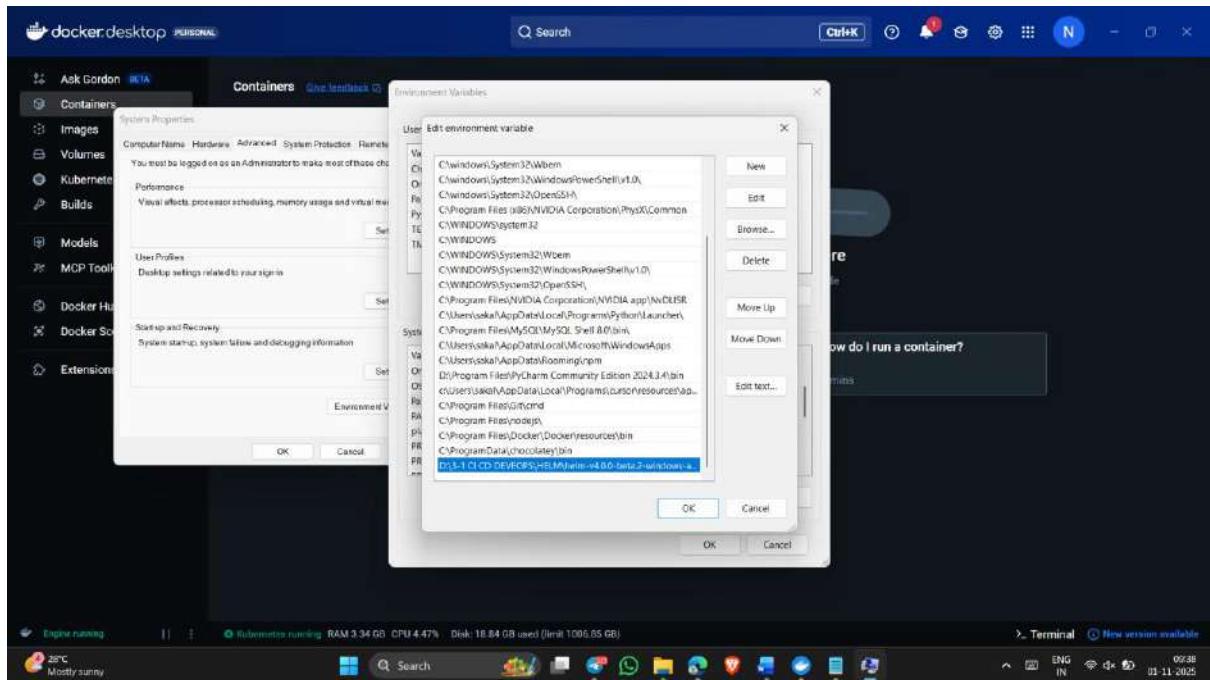
The screenshot shows the GitHub release page for Helm v4.0.0-beta.2. The page has a dark theme. At the top, it says "v4.0.0-beta.2" and "Pre-release". Below that, there's a message from the maintainer: "Helm v4.0.0-beta.2 is a pre-release for the next major version of Helm. This is a pre-release meant for testing. The beta testing phase is meant to test Helm v4. API breaking changes are no longer expected but could happen." There's also a note: "The community keeps growing, and we'd love to see you there!" followed by a list of ways to get involved. The list includes joining the Kubernetes Slack, hanging out at the Public Developer Call on Thursday, and testing, debugging, and contributing charts. Below this is a section titled "Installation and Upgrading" with a link to download common platform binaries. A scroll bar is visible on the right side of the page.

The screenshot shows a Windows File Explorer window with a dark theme. The path is "This PC > New Volume (D) > 3-1 CI CD DEVEOPS". The left sidebar shows various drives and folders like "Pictures", "Downloads", "Documents", etc. The main pane displays a folder structure for a CI/CD project. A file named "HELM" is selected and highlighted with a yellow border. On the right side, there is a "Properties" panel open for the selected file, showing details such as "Type: File folder", "File location: D:\3-1 CI CD DEVEOPS", and "Data modified: 01-11-2025 09:29". The status bar at the bottom shows the date and time as "01-11-2025 09:29".



D:\3-1 CI CD DEVEOPS\HELM\helm-v4.0.0-beta.2-windows-amd64\windows-amd64





The image shows three separate windows of the Windows Command Prompt (cmd) running on a Windows 10 desktop. Each window displays the same command and its output.

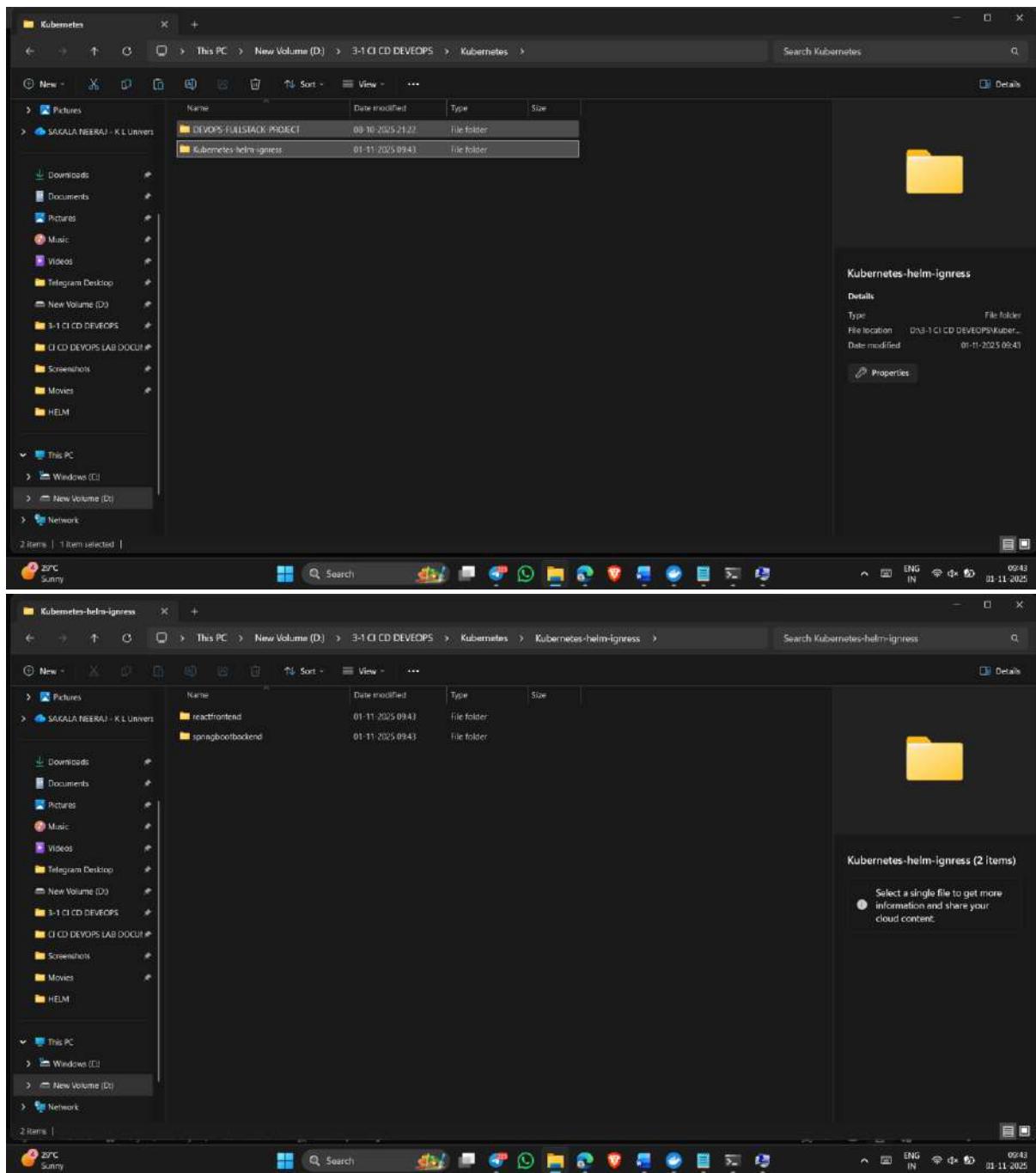
In each window, the command run is:

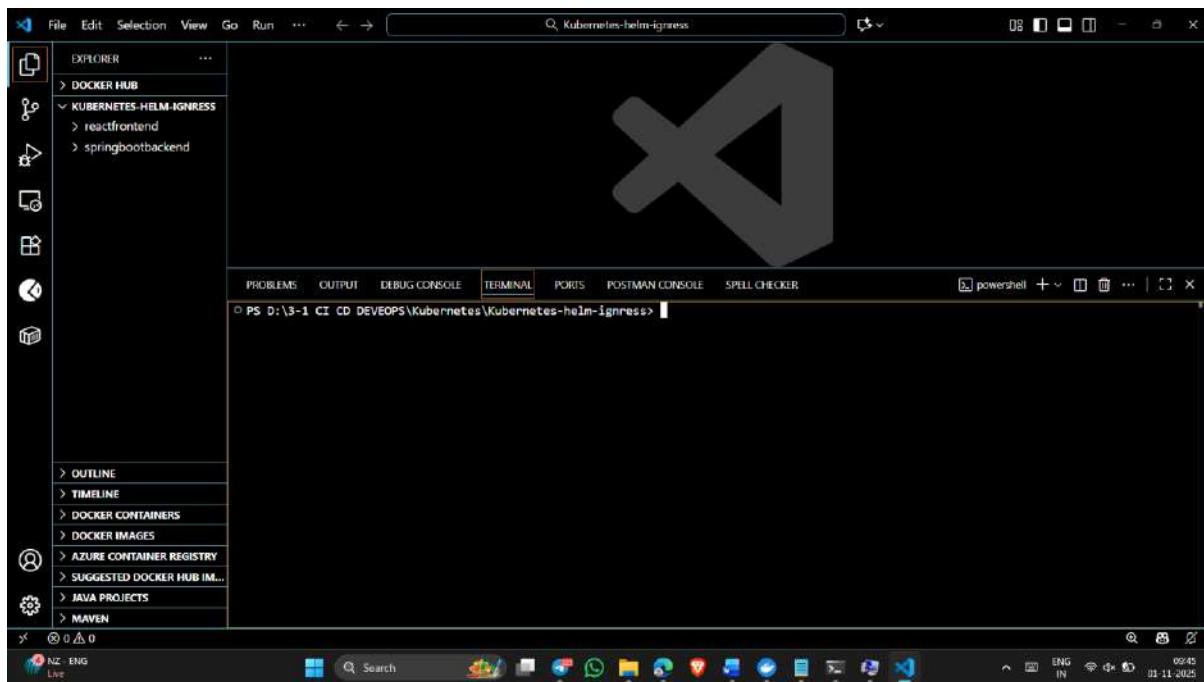
```
Administrator: Command Prompt  
Microsoft Windows [Version 10.0.26200.6899]  
(c) Microsoft Corporation. All rights reserved.  
C:\Windows\System32>helm version
```

The output from each command is:

```
version.BuildInfo{Version:"v4.0.0-beta.2", GitCommit:"1da2b0a6d41482e801bc590e83e9ac2260b92337", GitTreeState:"clean", GoVersion:"go1.24.7", KubeClientVersion:"v1.34"}
```

The desktop background is a standard Windows 10 image, and the taskbar at the bottom of the screen shows various pinned icons and the system tray indicating the date (11-11-2025), time (09:45), and battery level.





->Build docker images for both frontend and backend push them into docker hub

The image displays two side-by-side screenshots of the Visual Studio Code (VS Code) interface, both titled "Kubernetes-helm-ingress".

Top Screenshot (Kubernetes-helm-ingress):

- Explorer:** Shows a "DOCKER HUB" section with "reactfrontend" and "springbootbackend" listed.
- Terminal:** Displays PowerShell output:

```
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> helm version
version.BuildInfo{Version:"v4.0.0-beta.2", GitCommit:"1da2b0a6d41482ed01bc590e83e9ac2260b92337", GitTreeState:"clean", GoVersion:"go1.24.7"
", KubeClientVersion:"v1.34"}
```

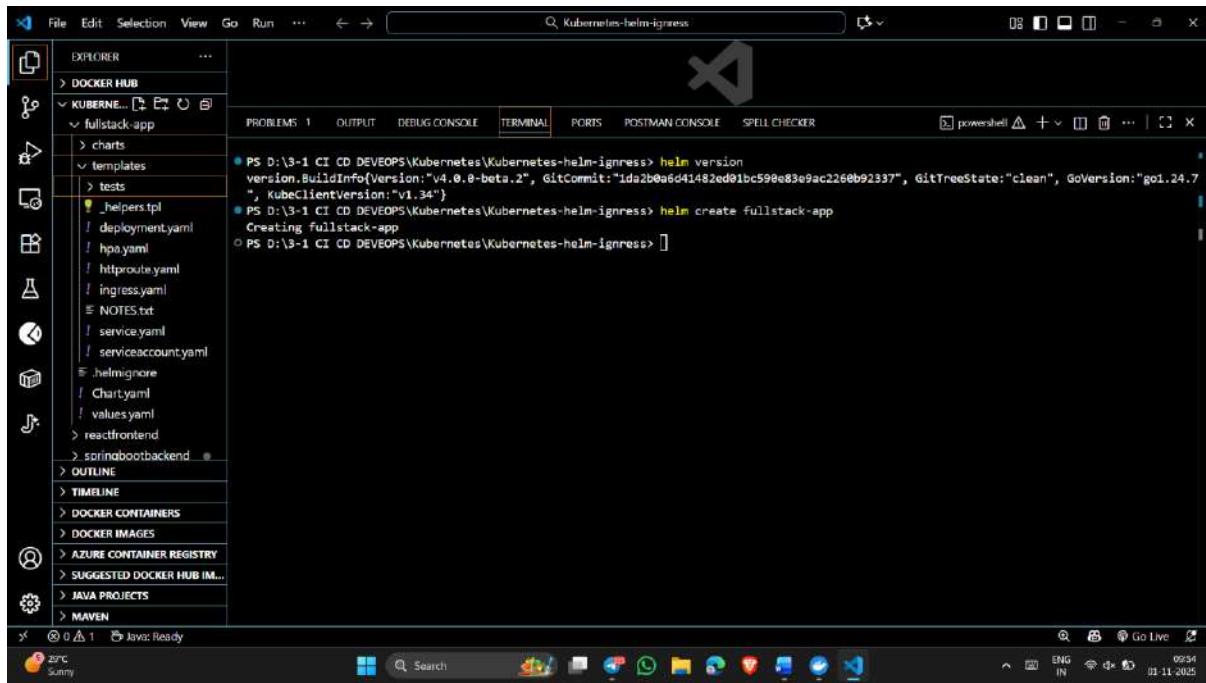
Bottom Screenshot (Kubernetes-helm-ingress):

- Explorer:** Shows a "KUBERNETES" section with "fullstack-app" expanded, displaying files like "charts", "templates", ".helmignore", "Chart.yaml", and "values.yaml". It also shows "reactfrontend" and "springbootbackend".
- Terminal:** Displays PowerShell output:

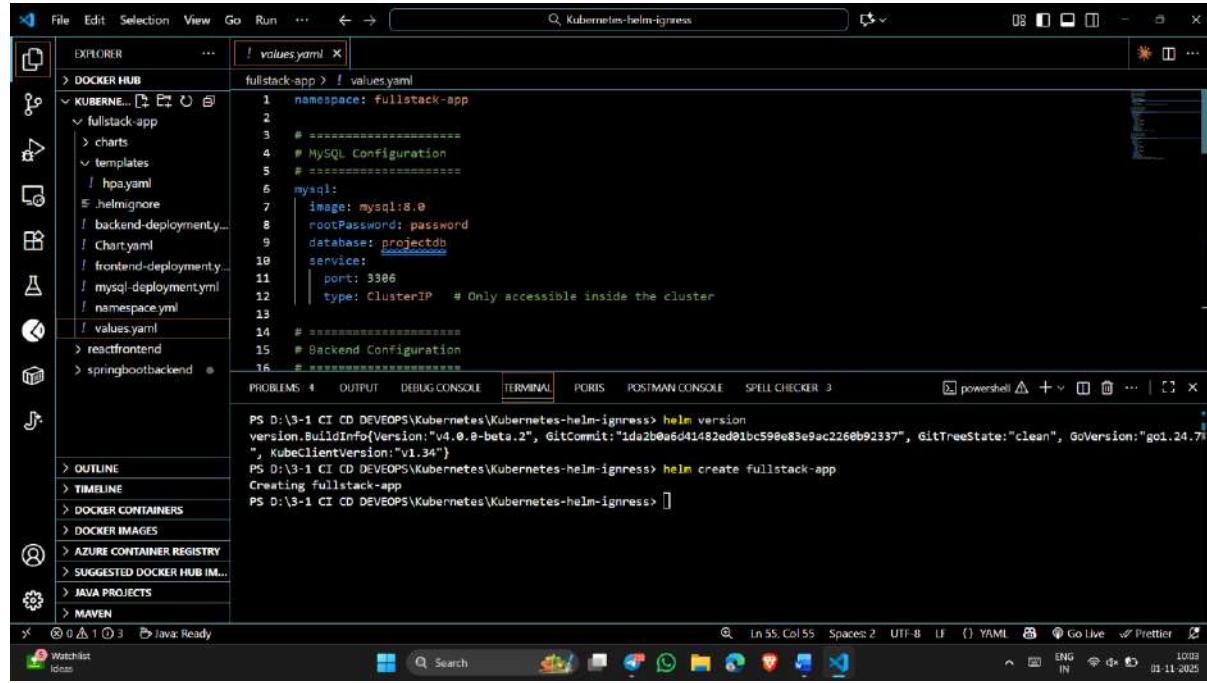
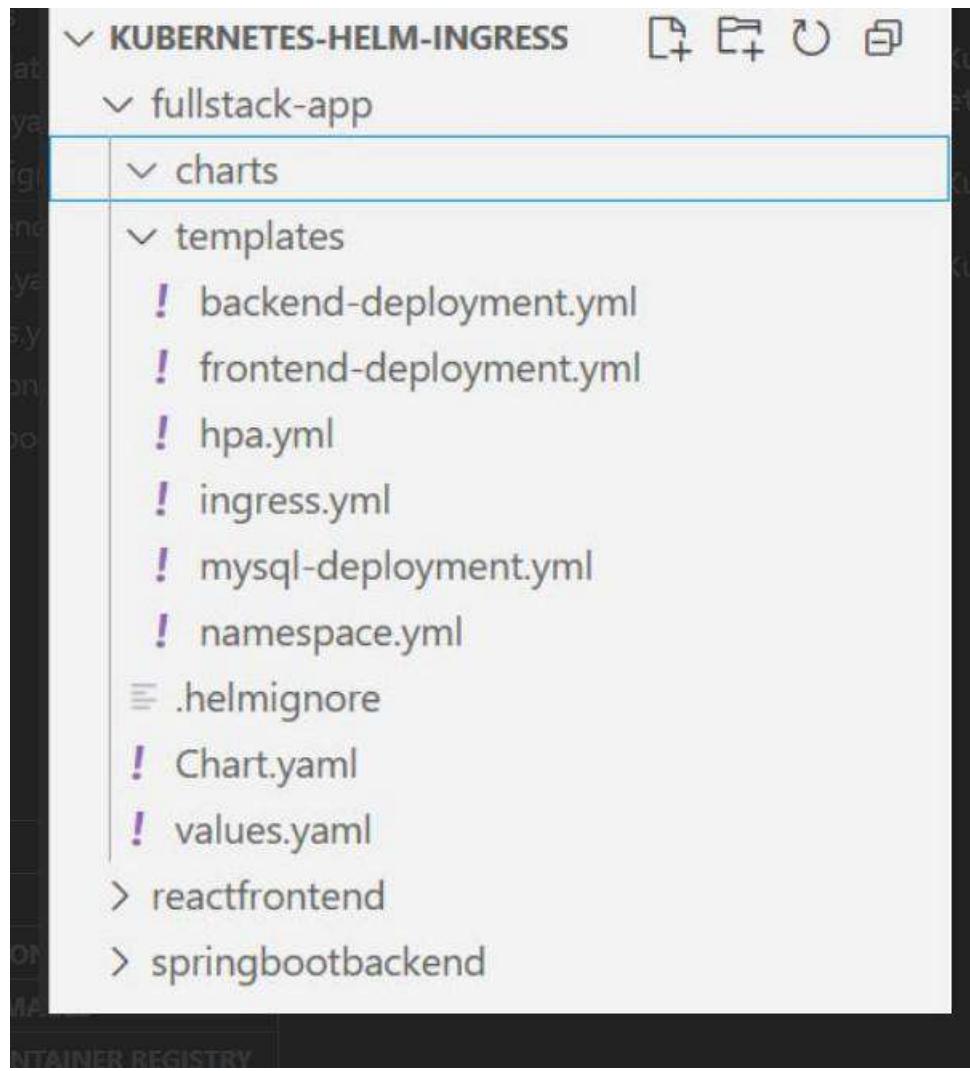
```
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> helm version
version.BuildInfo{Version:"v4.0.0-beta.2", GitCommit:"1da2b0a6d41482ed01bc590e83e9ac2260b92337", GitTreeState:"clean", GoVersion:"go1.24.7"
", KubeClientVersion:"v1.34"}
```

```
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> helm create fullstack-app
Creating fullstack-app
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress>
```

Both screenshots show a Windows taskbar at the bottom with various pinned icons and system status indicators.



->**remove tests , helpers,
deployment.yaml,httproute.yaml,nodes.txt,service.yaml,seriveaccount.yaml**



The screenshot shows the VS Code interface with the following details:

- Explorer View:** Shows the project structure under "KUBERNETES-HELM-INGRESS".
- Terminal View:** Displays the following command-line session:

```
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> helm version
version.BuildInfo{Version:"v4.0.8-beta.2", GitCommit:"1da2b0a6d41482ed01bc598e83e9ac2260b92337", GitTreeState:"clean", GoVersion:"go1.24.7"
", KubeClientVersion:"v1.34"}
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> helm create fullstack-app
Creating fullstack-app
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress>
```
- Bottom Status Bar:** Shows system information like battery level (37%), weather (Sunny), and date/time (11-11-2025).

->**helm install fullstack-app ./fullstack-app**

helm means cli tool

install means deploy a new release

fullstack-app means name of the release name

./fullstack-app/ means helm directory

The screenshot shows the VS Code interface with the following details:

- Explorer View:** Shows the project structure under "KUBERNETES-HELM-INGRESS".
- Terminal View:** Displays the following command-line session, showing an error:

```
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> helm install fullstack-app ./fullstack-app
Level=ERROR msg="release name check failed" error="cannot reuse a name that is still in use"
Error: INSTALLATION FAILED: release name check failed: cannot reuse a name that is still in use
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress>
```
- Bottom Status Bar:** Shows system information like battery level (37%), weather (Sunny), and date/time (10:13).

```
apiVersion: v1
kind: Namespace
metadata:
  name: {{.Values.namespace}}
```

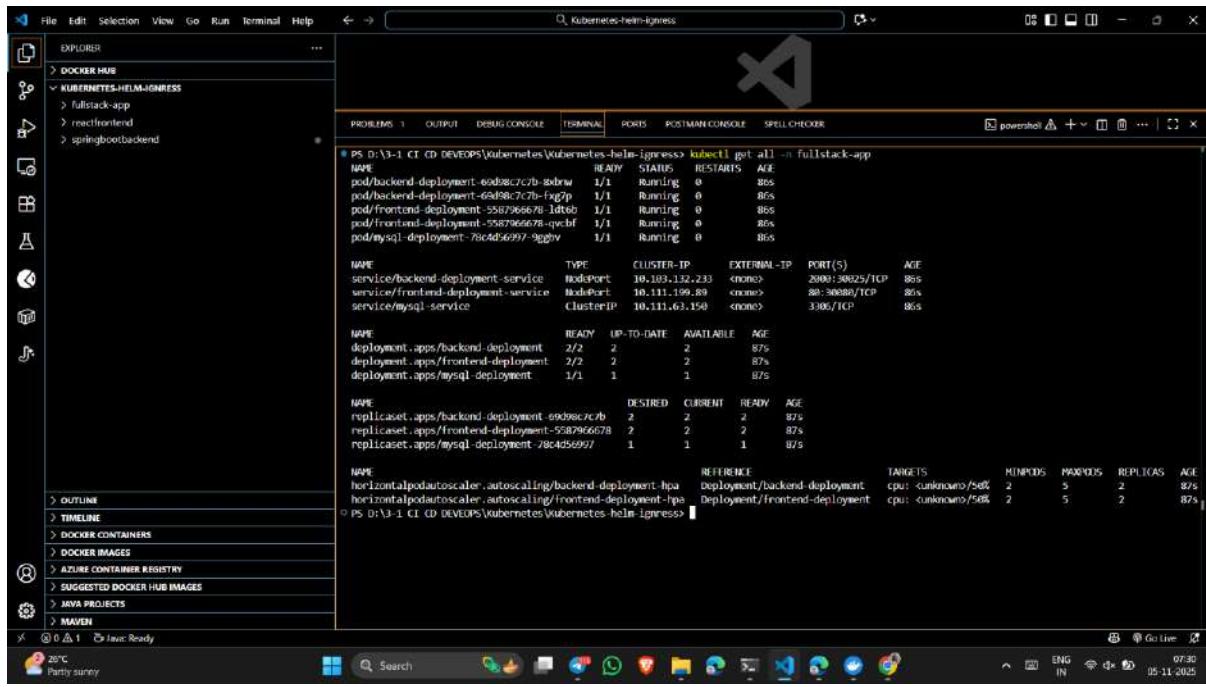
NAME	REFERENCE	TARGETS	MINPODS	MAXPODS	RE
horizontalpodautoscaler.autoscaling/backend-deployment-hpa	Deployment/backend-deployment	cpu: <unknown>/50%	2	5	8
horizontalpodautoscaler.autoscaling/frontend-deployment-hpa	Deployment/frontend-deployment	cpu: <unknown>/50%	2	5	8

helm upgrade fullstack-app ./fullstack-app

```
helm upgrade fullstack-app ./fullstack-app -n fullstack-app
Releas... "fullstack-app" has been upgraded. Happy Helm-ing!
```

LAST DEPLOYED: Sat Nov 1 10:26:45 2025
NAME: fullstack-app
NAMESPACE: fullstack-app
STATUS: deployed
REVISION: 2
DESCRIPTION: Upgrade complete
TEST SUITE: None

kubectl get all -n fullstack-app

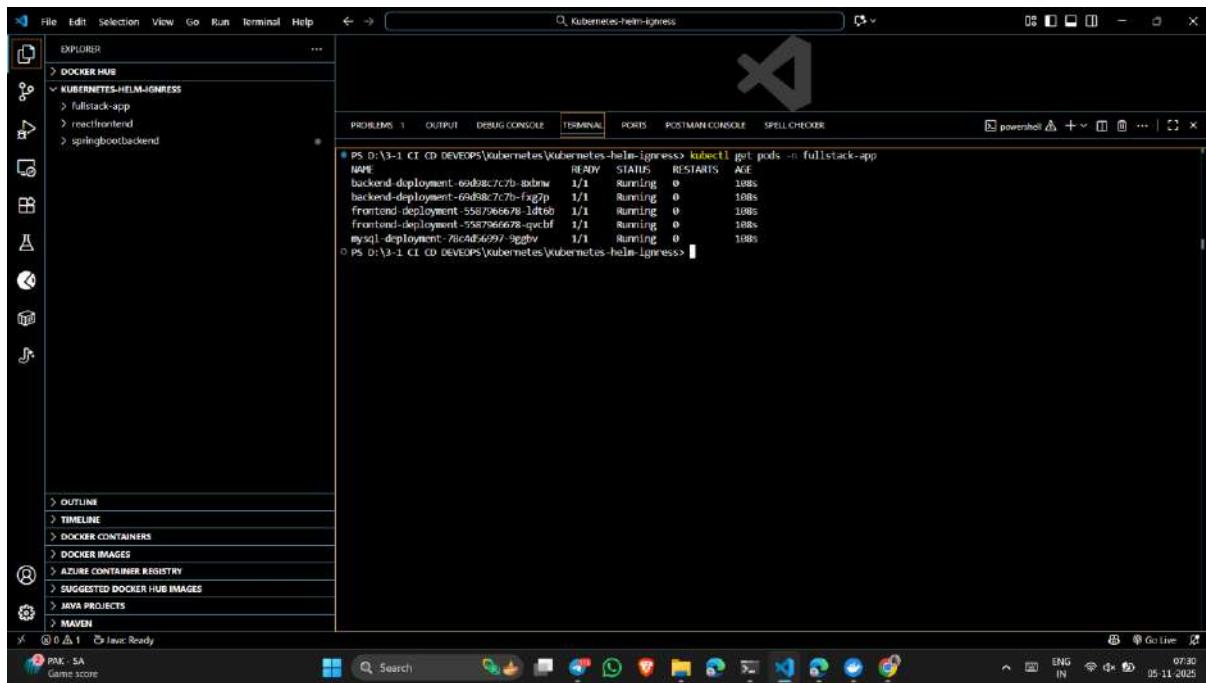


```
PS D:\V3-1\CI_CD\DEVEOPS\kubernetes\helm-ingress> kubectl get all -n fullstack-app
NAME                                         READY   STATUS    RESTARTS   AGE
pod/backend-deployment-6dd98cc7cb-sxbnw   1/1    Running   0          86s
pod/backend-deployment-69d98cc7cb-fxg7p   1/1    Running   0          86s
pod/frontend-deployment-558796678-1dt6b   1/1    Running   0          86s
pod/frontend-deployment-558796678-qvcbf   1/1    Running   0          86s
pod/mysql-deployment-784d456997-9ggqv   1/1    Running   0          86s

NAME                                         TYPE        CLUSTER-IP      EXTERNAL-IP   PORT(S)   AGE
service/backend-deployment-service       NodePort   10.103.132.233 <none>        2099:30825/TCP   86s
service/frontend-deployment-service     NodePort   10.111.199.89  <none>        80:30680/TCP    86s
service/mysql-service                   ClusterIP  10.111.163.150 <none>        3306/TCP      86s

NAME                                         DESIRED   CURRENT   READY   UP-TO-DATE   AVAILABLE   AGE
replicaset.apps/backend-deployment-6dd98cc7cb   2         2         2        2           2           87s
replicaset.apps/frontend-deployment-558796678   2         2         2        2           2           87s
replicaset.apps/mysql-deployment-784d456997    1         1         1        1           1           87s

NAME                                         REFERENCE  TARGETS   MINPODS   MAXPODS   REPLICAS   AGE
horizontalpodautoscaler.autoscaling/backend-deployment   deployment/backend-deployment   cpu: unknown/50%   2         5         2           87s
horizontalpodautoscaler.autoscaling/frontend-deployment   deployment/frontend-deployment   cpu: unknown/50%   2         5         2           87s
○ PS D:\V3-1\CI_CD\DEVEOPS\kubernetes\helm-ingress>
```



```
PS D:\V3-1\CI_CD\DEVEOPS\kubernetes\helm-ingress> kubectl get pods -n fullstack-app
NAME                                         READY   STATUS    RESTARTS   AGE
backend-deployment-6dd98cc7cb-sxbnw   1/1    Running   0          188s
backend-deployment-69d98cc7cb-fxg7p   1/1    Running   0          188s
frontend-deployment-558796678-1dt6b   1/1    Running   0          188s
frontend-deployment-558796678-qvcbf   1/1    Running   0          188s
mysql-deployment-784d456997-9ggqv   1/1    Running   0          188s
○ PS D:\V3-1\CI_CD\DEVEOPS\kubernetes\helm-ingress>
```

React App

localhost:30080

Knowledge TryHackMe | Getting Started Salab Neeraj - Activities Live DSA Course | L... Interview specific Q... [4] Discord | Java p...

All Bookmarks

Task Manager

Dashboard Task Board

Add Task

Title:

Description:

Start Date:

End Date:

Priority:

All Tasks

ID	TITLE	DESCRIPTION	START	END	PRIORITY	STATUS	ACTIONS
No matching tasks found							

PAK - SA Game score Search ENG IN 07:30 05-11-2023

React App

localhost:30080

Knowledge TryHackMe | Getting Started Salab Neeraj - Activities Live DSA Course | L... Interview specific Q... [4] Discord | Java p...

All Bookmarks

Add Task

Title:

Description:

Start Date:

End Date:

Priority:

Task updated successfully!

All Tasks

ID	TITLE	DESCRIPTION	START	END	PRIORITY	STATUS	ACTIONS
84499	CICD	LABS	2025-11-05	2025-11-06	MEDIUM	ASSIGNED	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
96937	CICD	MOOCS	2025-11-05	2025-11-06	HIGH	ASSIGNED	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

PAK - SA Game score Search ENG IN 07:31 05-11-2023

ASSIGNED

CICD LABS
Priority: MEDIUM
Start: 2025-11-05
End: 2025-11-06
Start

CICD MOOCs
Priority: HIGH
Start: 2025-11-05
End: 2025-11-06
Start

PROGRESS

COMPLETED

REJECTED

PAK - SA Game Score

React App

localhost:3002/api/tasks/

Task API Demo

Watchlist Ideas

React App

localhost:3002/api/tasks/

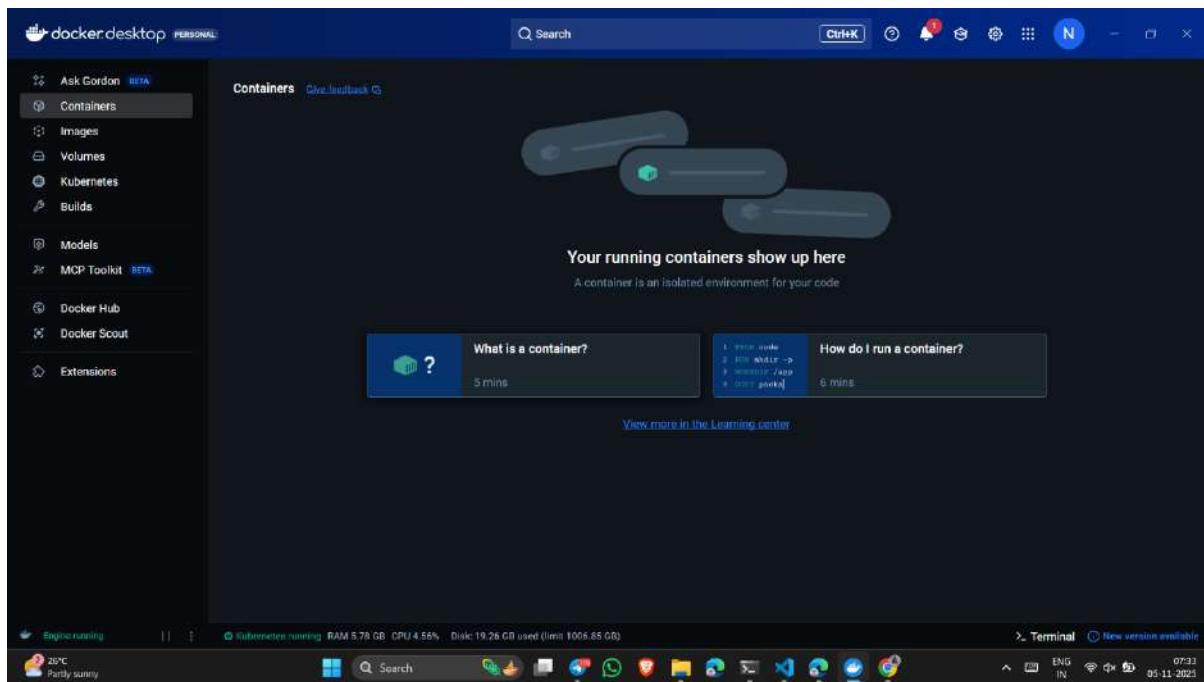
A screenshot of a Microsoft Edge browser window. The address bar shows the URL `localhost:3002/api/tasks/all`. The page content displays a JSON array of task objects. Each task has fields: _id, title, description, startDate, endDate, priority, and status. The first task's _id is 84499, title is "CIOP", and description is "LAB5". The second task's _id is 96937, title is "CIOP", and description is "MOOCs". The JSON is formatted with indentation and line breaks.

```
[{"_id": 84499, "title": "CIOP", "description": "LAB5", "startDate": "2025-11-05", "endDate": "2025-11-06", "priority": "MEDIUM", "status": "ASSIGNED"}, {"_id": 96937, "title": "CIOP", "description": "MOOCs", "startDate": "2025-11-05", "endDate": "2025-11-06", "priority": "HIGH", "status": "ASSIGNED"}]
```

The screenshot shows a Windows desktop environment with two main windows open:

- Browser Window (Top):** Displays the Swagger UI for a "Task Management API". The title bar says "React App" and "Swagger UI". The address bar shows "localhost:30025/swagger-ui/index.html?". The page content includes:
 - A "Task Controller" section listing various REST endpoints:
 - PUT /api/tasks/updatestatus/{id}
 - PUT /api/tasks/update/{id}
 - POST /api/tasks/add
 - GET /api/tasks/get/{id}
 - GET /api/tasks/all
 - GET /api/tasks/
 - DELETE /api/tasks/delete/{id}
 - A "Schemas" section.
- VS Code Terminal Window (Bottom):** Shows a terminal session in a "Kubernetes-helm-ingress" workspace. The command "kubectl delete namespace fullstack-app" is run, resulting in the output:

```
PS D:\V3-1 CI CD DEVEOPS\kubernetes\kubernetes-helm-ingress> kubectl delete namespace fullstack-app
namespace "fullstack-app" deleted
```



The screenshot shows the VS Code interface with the title bar "Kubernetes-helm-ingress". The Explorer sidebar on the left lists a "fullstack-app" folder under "KUBERNETES-HELM-INGRESS". Inside "fullstack-app", there are "charts" and "templates" folders, which contain files like "backend-deployment.yaml", "frontend-deployment.yaml", "hpa.yaml", and "ingress.yaml". The "TERMINAL" tab at the bottom shows a PowerShell session with the following commands:

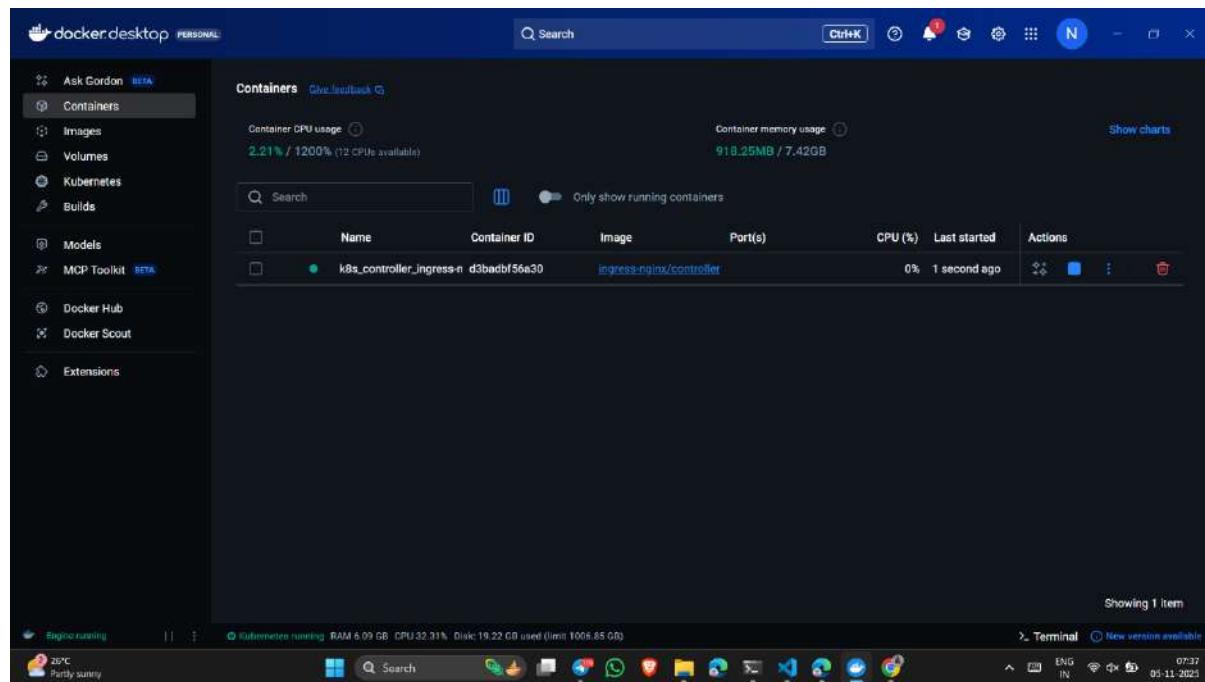
```
PS D:\3-1\CI\CD\DEVOPS\Kubernetes\Kubernetes-helm-ingress> helm repo add ingress-nginx https://kubernetes.github.io/ingress-nginx
"ingress-nginx" has been added to your repositories
PS D:\3-1\CI\CD\DEVOPS\Kubernetes\Kubernetes-helm-ingress> helm repo update
Hang tight while we grab the latest from your chart repositories...
...Successfully got an update from the "ingress-nginx" chart repository
Update Complete. Happy Helming!
```

Helm with ingress

This screenshot is identical to the one above, showing the same VS Code interface and terminal output. It displays the configuration of the Helm repository for the ingress-nginx chart.

```
File Edit Selection View Go Run Terminal Help < > Q Kubernetes-helm-ingress
EXPLORER PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE SPELL CHECKER powershell A + - | x
KUBERNETES-HELM-INGRESS
fullstack-app
charts
templates
backend-deployment.yml
frontend-deployment.yml
hpayaml
ingress.yml
mysql-deployment.yml
namespace.yml
helmignore
Chart.yaml
values.yaml
reactfrontend
springbootbackend
OUTLINE
TIMELINE
DOCKER CONTAINERS
DOCKER IMAGES
AZURE CONTAINER REGISTRY
SUGGESTED DOCKER HUB IMAGES
JAVA PROJECTS
MAVEN
If TLS is enabled for the Ingress, a Secret containing the certificate and key must also be provided:
PS D:\A-1\CL\DEVOPS\kubernetes\kubernetes-helm-ingress> helm install ingress-nginx ingress-nginx/ingress-nginx --create-namespace
-->
level-WARN msg="unable to find exact version; falling back to closest available version" chart-ingress-nginx requested="" selected=4.14.0
NAME: ingress-nginx
LAST DEPLOYED: Wed Nov 5 07:36:14 2025
NAMESPACE: ingress-nginx
STATUS: deployed
REVISION: 1
DESCRIPTION: install complete
TEST SUITE: None
NOTES:
The Ingress-nginx controller has been installed.
It may take a few minutes for the load balancer IP to be available.
You can watch the status by running 'kubectl get service --namespace ingress-nginx ingress-nginx-controller --output wide --watch'
An example Ingress that makes use of the controller:
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: example
  namespace: foo
spec:
  ingressClassName: nginx
  rules:
    host: www.example.com
    http:
      paths:
        - pathType: Prefix
          backend:
            service:
              name: exampleservice
              port:
                number: 80
            path: /
# This section is only required if TLS is to be enabled for the Ingress
  tls:
    - hosts:
      - www.example.com
      secretName: example-tls
If TLS is enabled for the Ingress, a Secret containing the certificate and key must also be provided:
ENG IN 07:36 15-11-2025
```

```
File Edit Selection View Go Run Terminal Help < > Q Kubernetes-helm-ingress
EXPLORER PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE SPELL CHECKER powershell A + - | x
KUBERNETES-HELM-INGRESS
fullstack-app
charts
templates
backend-deployment.yml
frontend-deployment.yml
hpayaml
ingress.yml
mysql-deployment.yml
namespace.yml
helmignore
Chart.yaml
values.yaml
reactfrontend
springbootbackend
OUTLINE
TIMELINE
DOCKER CONTAINERS
DOCKER IMAGES
AZURE CONTAINER REGISTRY
SUGGESTED DOCKER HUB IMAGES
JAVA PROJECTS
MAVEN
If TLS is enabled for the Ingress, a Secret containing the certificate and key must also be provided:
PS D:\A-1\CL\DEVOPS\kubernetes\kubernetes-helm-ingress> helm install ingress-nginx ingress-nginx/ingress-nginx --create-namespace
-->
level-WARN msg="unable to find exact version; falling back to closest available version" chart-ingress-nginx requested="" selected=4.14.0
NAME: ingress-nginx
LAST DEPLOYED: Wed Nov 5 07:36:14 2025
NAMESPACE: ingress-nginx
STATUS: deployed
REVISION: 1
DESCRIPTION: install complete
TEST SUITE: None
NOTES:
The Ingress-nginx controller has been installed.
It may take a few minutes for the load balancer IP to be available.
You can watch the status by running 'kubectl get service --namespace ingress-nginx ingress-nginx-controller --output wide --watch'
An example Ingress that makes use of the controller:
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: example
  namespace: foo
spec:
  ingressClassName: nginx
  rules:
    - host: www.example.com
      http:
        paths:
          - pathType: Prefix
            backend:
              service:
                name: exampleservice
                port:
                  number: 80
            path: /
# This section is only required if TLS is to be enabled for the Ingress
  tls:
    - hosts:
      - www.example.com
      secretName: example-tls
If TLS is enabled for the Ingress, a Secret containing the certificate and key must also be provided:
apiVersion: v1
kind: Secret
metadata:
  name: example-tls
  namespace: foo
data:
  tls.crt: base64 encoded cert
  tls.key: base64 encoded key
type: kubernetes.io/tls
ENG IN 07:36 15-11-2025
```



The screenshot shows the Visual Studio Code (VS Code) interface with the following details:

- File Explorer (Left):** Shows the project structure:
 - DOCKER HUB**
 - KUBERNETES-HELM-IGNITION**
 - fullstack-app
 - reactfrontend
 - public
 - src
 - .env
 - gitignore
 - eslint.config.js
 - frontend.Dockerfile
 - index.html
 - nginx.conf
 - package-lock.json
 - package.json
 - README.md
 - vite.config.js
 - springbootbackend
 - OUTLINE**
 - TIMELINE**
 - DOCKER CONTAINERS**
 - DOCKER IMAGES**
 - AZURE CONTAINER REGISTRY**
 - SUGGESTED DOCKER HUB IMAGES**
 - JAVA PROJECTS**
 - MAVEN**

Editor (Top): The current file is `nginx.conf`, which contains the following configuration for a React frontend:

```
server {
    listen 80;
    server_name localhost;
    root /usr/share/nginx/html;
    index index.html;

    # add proper MIME type handling
    include /etc/nginx/mime.types;

    # Set default type
    default_type application/octet-stream;

    # Add Javascript module MIME type
    location ~* \.js {
        add_header Content-Type "application/javascript";
    }

    location / {
        # try to serve file directly, if not found + send to index.html
        try_files $uri /index.html;

        # add CORS headers
        add_header 'Access-Control-Allow-Origin' '*' always;
        add_header 'Access-Control-Allow-Methods' 'GET, POST, OPTIONS' always;
        add_header 'Access-Control-Allow-Headers' 'DNT,User-Agent,X-Requested-With,If-Modified-Since,Cache-Control,Content-Type,Content-Length,Content-Language' always;
        add_header 'Access-Control-Expose-Header' 'Content-Length,Content-Language' always;
    }
}
```

Terminal (Bottom): The terminal shows the following command history in PowerShell:

```
PS D:\3-1\CI\CD\DEVOPS\kubernetes\kubernetes-helm-ignition>
PS D:\3-1\CI\CD\DEVOPS\kubernetes\kubernetes-helm-ignition>
```

Bottom Bar: Includes tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, PORTS, POSTMAN CONSOLE, and SPELL CHECKER. It also features icons for PowerShell, a search bar, and system status indicators.

File Edit Selection View Go Run Terminal Help ← → Q Kubernetes-helm-ingress

EXPLORER DOCKER HUB KUBERNETES-HELM-INGRESS fullstack-app

- charts
- templates
- backend-deployment.yaml
- frontend-deployment.yaml
- hpas.yaml
- ingress.yaml
- mysql-deployment.yaml
- namespace.yaml
- .helmignore
- Chart.yaml
- values.yaml
- > reactfrontend
- > springbootbackend

```
fullstack-app > / values.yaml
22 # Backend
23 #   "neeraj": Unknown word, cspell
24 backend: View Problem (Alt+F1) Click File (Ctrl+F)
25   image: neeraj2005/k8-backend:latest
26   replicas: 2
27   port: 2000
28   nodePort: 30025
29   resources:
30     requests:
31       cpu: "100m"
32       memory: "128Mi"
33     limits:
34       cpu: "500m"
35       memory: "256Mi"
36   autoscaling:
37     enabled: true
38     minReplicas: 2
39     maxReplicas: 5
40     targetCPUUtilizationPercentage: 50
41
42 # -----
43 # Frontend configuration
44 # -----
45 frontend:
46   image: neeraj2005/k8-frontend:latest
47   replicas: 2
```

PROBLEMS 4 OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE SPELL CHECKER

PS D:\3-1\CI\CD\DEVEOPS\kubernetes\kubernetes-helm-ingress>

File Edit Selection View Go Run Terminal Help ← → Q Kubernetes-helm-ingress

EXPLORER DOCKER HUB KUBERNETES-HELM-INGRESS fullstack-app

- charts
- templates
- backend-deployment.yaml
- frontend-deployment.yaml
- hpas.yaml
- ingress.yaml
- mysql-deployment.yaml
- namespace.yaml
- .helmignore
- Chart.yaml
- values.yaml
- > reactfrontend
- > springbootbackend

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE SPELL CHECKER

PS D:\3-1\CI\CD\DEVEOPS\kubernetes\kubernetes-helm-ingress> cd ..\reactfrontend

PS D:\3-1\CI\CD\DEVEOPS\kubernetes\kubernetes-helm-ingress\reactfrontend> docker build -f ./frontend.dockerfile -t neeraj2005/k8-frontend:latest .

DEPRECATED: The legacy builder is deprecated and will be removed in a future release.
Install the buildx component to build images with buildkit:
<https://docs.docker.com/guide/buildkit/>

Sending build context to Docker daemon 362.8kB
Step 1/11 : FROM node:12-alpine AS build
--> 6178e78597f2
Step 2/11 : WORKDIR /app
--> Using cache
--> 5dka2915de7
Step 3/11 : COPY package*.json ./
--> Using cache
--> 822bc42666ea
Step 4/11 : RUN npm install
--> Using cache
--> 658f5991a241
Step 5/11 : COPY . .

File Edit Selection View Go Run Terminal Help ← → Q Kubernetes-helm-ingress

EXPLORER DOCKER HUB KUBERNETES-HELM-INGRESS fullstack-app

- charts
- templates
- backend-deployment.yaml
- frontend-deployment.yaml
- hpas.yaml
- ingress.yaml
- mysql-deployment.yaml
- namespace.yaml
- .helmignore
- Chart.yaml
- values.yaml
- > reactfrontend
- > springbootbackend

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE SPELL CHECKER

PS D:\3-1\CI\CD\DEVEOPS\kubernetes\kubernetes-helm-ingress>

Kubernetes Helm Ignress

```

File Edit Selection View Go Run Terminal Help ← → ⌂ Kubernetes-helm-ingress
EXPLORER
KUBERNETES-HELM-INGRESS
fullstack-app
charts
templates
backend-deployment.yaml
frontend-deployment.yaml
ingress.yaml
mysql-deployment.yaml
namespace.yaml
helmignore
Chart.yaml
values.yaml
reactfrontend
springbootbackend
PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE SPELL CHECKER
powershell - mactfrontend ▲ + - ⌂ ... | x
PS D:\3-1 CI CD DEVEOPS\kubernetes\helm-ingress\reactfrontend docker build . \frontend.dockerfile : neeraj2005/k8s-frontend:latest .
dist/assets/index-89a0a022.js 269.96 KB | gzip: 88.88 KB
✓ built in 4.73s
npm notice New major version of npm available! 6.10.2 > v11.0.0
npm notice Change log: https://github.com/npm/cli/releases/tag/v11.0.0
npm notice To update run: npm install -g npm@11.0.0
npm notice
--> removed intermediate container f9b8a746def
--> ffd1d2d0935
Step 7/11 : FROM nginx:alpine
--> 61a01287e566
Step 8/11 : COPY nginx.conf /etc/nginx/conf.d/default.conf
--> 62a3c47349b3
Step 9/11 : COPY --from=build /app/dist /usr/share/nginx/html
--> 56d12341c19f
Step 10/11 : EXPOSE 80
--> Running in 5d1d84ed38d
--> removed intermediate container b5d5b7b00cc5
Step 11/11 : CMD ["nginx", "-g", "daemon off;"]
--> Running in b5d5b7b00cc5
--> removed intermediate container b5d5b7b00cc5
--> 2c4224223170
Successfully built 2c4224223170
Successfully tagged neeraj2005/k8s-frontend:latest
SECURITY WARNING: You are building a Docker image from Windows against a non-Windows Docker host. All files and directories added to build context will have '-rwxr-xr-x' permissions. It is recommended to double check and reset permissions for sensitive files and directories.
PS D:\3-1 CI CD DEVEOPS\kubernetes\helm-ingress\reactfrontend

```

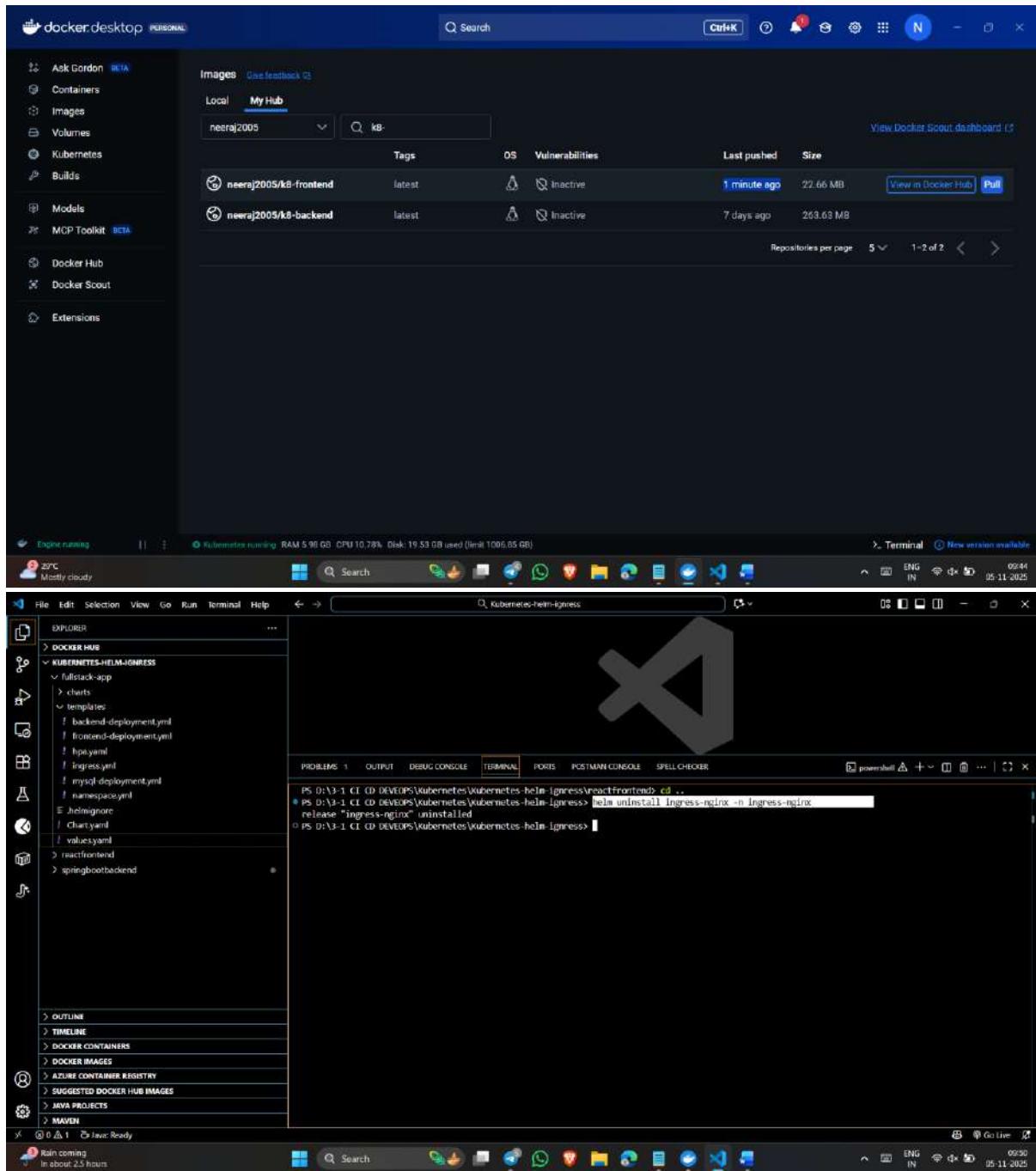
Java Ready

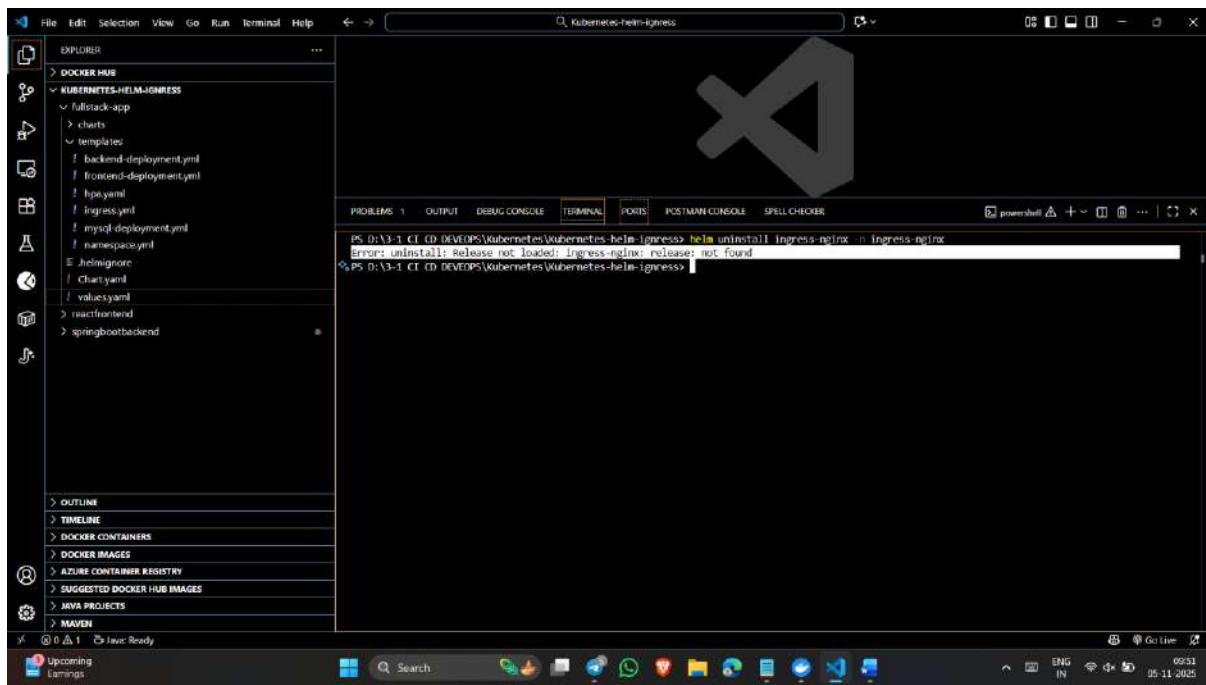
20°C Mostly cloudy

File Edit Selection View Go Run Terminal Help ← → ⌂ Kubernetes-helm-ingress
EXPLORER
KUBERNETES-HELM-INGRESS
fullstack-app
charts
templates
backend-deployment.yaml
frontend-deployment.yaml
ingress.yaml
mysql-deployment.yaml
namespace.yaml
helmignore
Chart.yaml
values.yaml
reactfrontend
springbootbackend
PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE SPELL CHECKER
powershell - mactfrontend ▲ + - ⌂ ... | x
PS D:\3-1 CI CD DEVEOPS\kubernetes\helm-ingress\reactfrontend docker push neeraj2005/k8s-frontend:latest
The push refers to repository [docker.io/neeraj2005/k8s-frontend]
8e22924f5518: Pushed
621a5198ed07: Layer already exists
76c5bcaa163: Layer already exists
091ab0d02a2e: Layer already exists
2d35eb0d57d9: Layer already exists
7fb0c2f28b: Layer already exists
cd0e02d369b: Layer already exists
01ec3548f20b: Layer already exists
fbb0ba05e0ad: Layer already exists
83cc83cd9960: Layer already exists
latest: digest: sha256:c22422317008724d2154cb43e9168e91a5cad8994913105e0f38d7e948 size: 2483
PS D:\3-1 CI CD DEVEOPS\kubernetes\helm-ingress\reactfrontend

Java Ready

20°C Mostly cloudy





Kubernetes-helm-ingress

File Edit Selection View Go Run Terminal Help ⏪ ⏩

EXPLORER

Docker Hub

KUBERNETES-HELM-INGRESS

fullstack-app

charts

templates

backend-deployment.yaml

frontend-deployment.yaml

hpas.yaml

ingress.yaml

mysql-deployment.yaml

namespace.yaml

helmignore

Chart.yaml

values.yaml

reactfrontend

springbootbackend

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE SPELL CHECKER

PS D:\V3-1\CL\CD\DEVOPS\kubernetes\helm-ingress> kubectl delete namespace fullstack-app
Error from server (NotFound): namespaces "fullstack-app" not found
\$ PS D:\V3-1\CL\CD\DEVOPS\kubernetes\helm-ingress>

Watchlist

Java Ready

Search

File Edit Selection View Go Run Terminal Help ⏪ ⏩

EXPLORER

Docker Hub

KUBERNETES-HELM-INGRESS

fullstack-app

charts

templates

backend-deployment.yaml

frontend-deployment.yaml

hpas.yaml

ingress.yaml

mysql-deployment.yaml

namespace.yaml

helmignore

Chart.yaml

values.yaml

reactfrontend

springbootbackend

PROBLEMS Focus folder in explorer (ctrl + click) TERMINAL PORTS POSTMAN CONSOLE SPELL CHECKER

PS D:\V3-1\CL\CD\DEVOPS\kubernetes\helm-ingress> kubectl delete namespace ingress-inginx
namespace "Ingress-inginx" deleted
\$ PS D:\V3-1\CL\CD\DEVOPS\kubernetes\helm-ingress>

Java Ready

Kubernetes-helm-ingress

File Edit Selection View Go Run Terminal Help ⏪ ⏩

EXPLORER

Docker Hub

KUBERNETES-HELM-INGRESS

fullstack-app

charts

templates

backend-deployment.yaml

frontend-deployment.yaml

hpas.yaml

ingress.yaml

mysql-deployment.yaml

namespace.yaml

helmignore

Chart.yaml

values.yaml

reactfrontend

springbootbackend

PROBLEMS Focus folder in explorer (ctrl + click) TERMINAL PORTS POSTMAN CONSOLE SPELL CHECKER

PS D:\V3-1\CL\CD\DEVOPS\kubernetes\helm-ingress> kubectl delete namespace ingress-inginx
namespace "Ingress-inginx" deleted
\$ PS D:\V3-1\CL\CD\DEVOPS\kubernetes\helm-ingress>

Java Ready

Search

File Edit Selection View Go Run Terminal Help ⏪ ⏩

EXPLORER

Docker Hub

KUBERNETES-HELM-INGRESS

fullstack-app

charts

templates

backend-deployment.yaml

frontend-deployment.yaml

hpas.yaml

ingress.yaml

mysql-deployment.yaml

namespace.yaml

helmignore

Chart.yaml

values.yaml

reactfrontend

springbootbackend

PROBLEMS Focus folder in explorer (ctrl + click) TERMINAL PORTS POSTMAN CONSOLE SPELL CHECKER

PS D:\V3-1\CL\CD\DEVOPS\kubernetes\helm-ingress> kubectl delete namespace ingress-inginx
namespace "Ingress-inginx" deleted
\$ PS D:\V3-1\CL\CD\DEVOPS\kubernetes\helm-ingress>

Java Ready

The screenshot shows a Microsoft Visual Studio Code (VS Code) window with the title bar "File Edit Selection View Go Run Terminal Help" and the tab "Kubernetes-helm-ingress". The left sidebar has sections for "EXPLORER", "DOCKER HUB", and "KUBERNETES-HELM-INGRESS". Under "KUBERNETES-HELM-INGRESS", there is a "fullstack-app" folder containing "charts", "templates", "backend-deployment.yaml", "frontend-deployment.yaml", "hp.yaml", "ingress.yaml", "mysql-deployment.yaml", "namespaces.yaml", "values.yaml", and "Chart.yaml". Below these are "reactfrontend", "springbootbackend", "OUTLINE", "TIMELINE", "DOCKER CONTAINERS", "DOCKER IMAGES", "AZURE CONTAINER REGISTRY", "SUGGESTED DOCKER HUB IMAGES", "JAVA PROJECTS", and "MAVEN". The main area shows a terminal window with the following output:

```
PS D:\X3-1\CT\CD\DEVOPS\kubernetes-helm-ingress> helm repo add ingress-nginx https://kubernetes.github.io/ingress-nginx
"ingress-nginx" already exists with the same configuration, skipping
PS D:\X3-1\CT\CD\DEVOPS\kubernetes-helm-ingress>
```

PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> **helm** repo update
Hang tight while we grab the latest from your chart repositories...
...Successfully got an update from the "ingress-nginx" chart repository
Update Complete. Happy Helming!
○ PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress>

The image shows two side-by-side instances of Microsoft Visual Studio Code (VS Code) running on a Windows operating system. Both instances have dark themes and are displaying terminal outputs from a PowerShell session.

Top Window Terminal Output:

```
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> helm repo list
NAME          URL
ingress-nginx https://kubernetes.github.io/ingress-nginx
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress>
```

Bottom Window Terminal Output:

```
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> helm install ingress-nginx ingress-nginx/ingress-nginx --create-namespace
--namespace ingress-nginx
level=WARNING msg="unable to find exact version; falling back to closest available version" chart=ingress-nginx requested="" selected=4.1
4.0
NAME: ingress-nginx
LAST DEPLOYED: Wed Nov 5 10:01:01 2025
NAMESPACE: ingress-nginx
STATUS: deployed
REVISION: 1
DESCRIPTION: Install complete
TEST SUITE: None
NOTES:
The ingress-nginx controller has been installed.
It may take a few minutes for the load balancer IP to be available.
You can watch the status by running 'kubectl get service --namespace ingress-nginx ingress-nginx-controller --output wide --watch'

An example Ingress that makes use of the controller:
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: example
  namespace: foo
spec:
  ingressClassName: nginx
  rules:
    - host: www.example.com
```

Both windows also show standard Windows taskbars at the bottom with icons for various applications like File Explorer, Task View, and Start.

```
File Edit Selection View ... < > Kubernetes-helm-ingress
PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE SPELL CHECKER powershell ▲ + ⌂ ⌂ ... x

paths:
  - pathType: Prefix
    backend:
      service:
        name: exampleService
        port:
          number: 80
    path: /
# This section is only required if TLS is to be enabled for the Ingress
tls:
  - hosts:
    - www.example.com
  secretName: example-tls

If TLS is enabled for the Ingress, a Secret containing the certificate and key must also be provided:

apiVersion: v1
kind: Secret
metadata:
  name: example-tls
  namespace: foo
data:
  tls.crt: <base64 encoded cert>
  tls.key: <base64 encoded key>
type: kubernetes.io/tls
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress>

File Edit Selection View Go Run ... < > Kubernetes-helm-ingress
PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE SPELL CHECKER powershell ▲ + ⌂ ⌂ ... x

PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> helm upgrade ingress-nginx ingress-nginx/ingress-nginx --namespace ingress-nginx
level=INFO msg="unable to find exact version; falling back to closest available version" chart=ingress-nginx requested="" selected=4.14.0
Release "ingress-nginx" has been upgraded. Happy Helming!
NAME: ingress-nginx
LAST DEPLOYED: Wed Nov 5 10:04:50 2025
NAMESPACE: ingress-nginx
STATUS: deployed
REVISION: 2
DESCRIPTION: Upgrade complete
TEST SUITE: None
NOTES:
The ingress-nginx controller has been installed.
It may take a few minutes for the load balancer IP to be available.
You can watch the status by running 'kubectl get service --namespace ingress-nginx ingress-nginx-controller --output wide --watch'

An example Ingress that makes use of the controller:
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: example
  namespace: foo
spec:
  ingressClassName: nginx
  rules:
    - host: www.example.com
      http:
        paths:
          - pathType: Prefix
            backend:
              service:
                name: exampleService
                port:
                  number: 80
```

```
File Edit Selection View Go Run ... ← → Q: Kubernetes-helm-ingress
PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE SPELL CHECKER
powershell + - ×
name: example
namespace: foo
spec:
  ingressClassName: nginx
  rules:
    - host: www.example.com
      http:
        paths:
          - pathType: Prefix
            backend:
              service:
                name: exampleService
                port:
                  number: 80
            path: /
  # This section is only required if TLS is to be enabled for the Ingress
  tls:
    - hosts:
      - www.example.com
      secretName: example-tls
If TLS is enabled for the Ingress, a Secret containing the certificate and key must also be provided:
apiVersion: v1
kind: Secret
metadata:
  name: example-tls
  namespace: foo
data:
  tls.crt: <base64 encoded cert>
  tls.key: <base64 encoded key>
type: kubernetes.io/tls
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress>
```

```
File Edit Selection View Go Run ... ← → Q: Kubernetes-helm-ingress
PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE SPELL CHECKER
powershell + - ×
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> kubectl get pods -n ingress-nginx
NAME           READY   STATUS    RESTARTS   AGE
ingress-nginx-controller-668c4fc947-9v8n4   1/1     Running   0          4m48s
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress>
```

The screenshot shows the Docker Desktop interface. On the left, the sidebar includes options like Ask Gordon, Containers, Images, Volumes, Kubernetes, Builds, Models, MCP Toolkit, Docker Hub, Docker Scout, and Extensions. The main area displays a single container named "kbs_controller_nginx-n_f3008f651cbb" with a status of "Running". The terminal window below shows the logs for this container, which are as follows:

```
PS D:\b-1 CI\DEVEOPS\Kubernetes\Kubernetes-helm-ingress> kubectl logs -f ingress-nginx-controller-668c4fc947-9v8n4 -n ingress-nginx
NGINX Ingress controller
  Release:          v1.14.0
  Build:           52c0a83a9bc72e9ce1b9fe4f2d6dcc8854516a8
  Repository:      https://github.com/kubernetes/ingress-nginx
  nginx version:   nginx/1.27.1

W1105 04:31:07.434428    7 client_config.go:667] Neither --kubeconfig nor --master was specified. Using the inClusterConfig. This might not work.
I1105 04:31:07.344651    7 main.go:285] "Creating API client" host="https://10.96.0.1:443"
I1105 04:31:07.351515    7 main.go:248] "Running in Kubernetes cluster" major="1" minor="32" git="v1.32.2" state="clean" commit="67a30c0adcf52bd3f56ff0893ce19966be29914f" platform="linux/amd64"
I1105 04:31:07.434728    7 main.go:181] "SSL fake certificate created" file="/etc/ingress-controller/ssl/default-fake-certificate.pem"
I1105 04:31:07.446287    7 ssl.go:555] "Loading tls certificate" path="/usr/local/certificates/cert" key="/usr/local/certificates/key"
I1105 04:31:07.453894    7 nginx.go:273] "Starting NGINX Ingress controller"
I1105 04:31:07.461396    7 event.go:377] Event{vl.ObjectReference{kind:"ConfigMap", Namespace:"ingress-nginx", Name:"ingress-nginx-controller", UID:"c252536e-e99a-4413-9f92-c102fd4c8f5", APIVersion:"v1", ResourceVersion:"158868", FieldPath:""}}, type: 'Normal' reason: 'CREATE' ConfigMap ingress-nginx/ingress-nginx-controller
I1105 04:31:09.570720    7 nginx.go:319] "Starting NGINX process"
I1105 04:31:09.571032    7 leadelection.go:257] attempting to acquire leader lease ingress-nginx/ingress-nginx-leader...
I1105 04:31:09.571236    7 nginx.go:339] "Starting validation webhook" address=:8443 certPath="/usr/local/certificates/cert" keyPath="/usr/local/certificates/key"
I1105 04:31:09.571754    7 controller.go:214] "Configuration changes detected, backend reload required"
I1105 04:31:09.580643    7 leadelection.go:271] successfully acquired lease ingress-nginx/ingress-nginx-leader
I1105 04:31:09.580735    7 status.go:85] "New leader elected" identity="ingress-nginx-controller-668c4fc947-9v8n4"
I1105 04:31:09.598452    7 controller.go:228] "Backend successfully reloaded"
I1105 04:31:09.598607    7 controller.go:240] "Initial sync, sleeping for 1 second"
I1105 04:31:09.598679    7 event.go:377] Event{vl.ObjectReference{kind:"Pod", Namespace:"ingress-nginx", Name:"ingress-nginx-controller-668c4fc947-9v8n4", UID:"f5d18f42-61ad-4a20-acbc-99773edaa75f", APIVersion:"v1", ResourceVersion:"158895", FieldPath:""}}, type: 'Normal' reason: 'RELOAD' NGINX reload triggered due to a change in configuration
```

```
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> helm install fullstack-app ./fullstack-app --create-namespace --namespace fullstack-app
NAME: fullstack-app
LAST DEPLOYED: Wed Nov  5 10:08:38 2025
NAMESPACE: fullstack-app
STATUS: deployed
REVISION: 1
DESCRIPTION: Install complete
TEST SUITE: None
○ PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress>
```

```
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> helm upgrade fullstack-app ./fullstack-app --namespace fullstack-app
Release "fullstack-app" has been upgraded. Happy Helm-ing!
NAME: fullstack-app
LAST DEPLOYED: Wed Nov  5 10:09:44 2025
NAMESPACE: fullstack-app
STATUS: deployed
REVISION: 2
DESCRIPTION: Upgrade complete
TEST SUITE: None
○ PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress>
```

```
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> helm upgrade fullstack-app ./fullstack-app --namespace fullstack-app
```

The screenshot shows a Windows desktop environment with several open windows:

- VS Code Terminal:** The terminal window is titled "Kubernetes-helm-ingress" and displays the command output of "kubectl get pods -n fullstack-app". The output lists the following pods:

NAME	READY	STATUS	RESTARTS	AGE
backend-deployment-69d98c7c7b-6ddfk	1/1	Running	0	2m18s
backend-deployment-69d98c7c7b-sfvzg	1/1	Running	0	2m18s
frontend-deployment-5587966678-4lqnq	1/1	Running	0	2m18s
frontend-deployment-5587966678-wnbjv	1/1	Running	0	2m18s
mysql-deployment-78c4d56997-w269k	1/1	Running	0	2m18s

- Docker Desktop:** The main interface shows the "Containers" tab. It displays usage statistics: Container CPU usage (1.14% / 1200%) and Container memory usage (1.02GB / 7.42GB). A table lists the running containers:

Name	Container ID	Image	Port(s)	CPU (%)	Last started	Actions
k8s_controller_ingress-n	f3008f651cbb	ed127065d021		0.09%	11 minutes ago	[Actions]
k8s_mysql_mysql-deploy	b95dec2fad7a	fa7951c07783		0.73%	4 minutes ago	[Actions]
k8s_backend_backend-d	afb63e8154bd	neera2005/k8s-backend		0.17%	3 minutes ago	[Actions]
k8s_backend_backend-d	59f61486b906	neera2005/k8s-backend		0.15%	3 minutes ago	[Actions]
k8s_frontend_frontend-d	9539c91d542d	neera2005/k8s-frontend		0%	3 minutes ago	[Actions]
k8s_frontend_frontend-d	d8b5b6617a0b	neera2005/k8s-frontend		0%	3 minutes ago	[Actions]

- System Tray:** Shows icons for battery level (partly sunny), network connection, volume, and system status.
- Taskbar:** Displays the Start button, search bar, and pinned icons for File Explorer, Task View, and other system tools.

Kubernetes-helm-ingress

```

File Edit Selection View Go Run ... ← → Q: Kubernetes-helm-ingress
PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE SPELL CHECKER kubectl + - ×
NAME READY STATUS RESTARTS AGE
mysql-deployment-78c4d56997-w269k 1/1 Running 0 2m18s
PS D:\3-1 CI CD DEVOPS\Kubernetes-helm-ingress> kubectl logs -f backend-deployment-69d98c7c7b-6ddf8 -n fullstack-app

:: Spring Boot :: (v3.5.6)

2025-11-05T04:38:50.533Z INFO 1 --- [springbootbackend] [main] c.klef.dev.SpringbootbackendApplication : Starting SpringbootbackendApplication v0.0.1-SNAPSHOT using Java 21.0.8 with PID 1 (/app/app.jar started by root in /app)
2025-11-05T04:38:50.605Z INFO 1 --- [springbootbackend] [main] c.klef.dev.SpringbootbackendApplication : No active profile set, falling back to 1 default: "default"
2025-11-05T04:38:55.192Z INFO 1 --- [springbootbackend] [main] .s.d.r.c.RepositoryConfigurationDelegate : Bootstrapping Spring Data JPA repositories in DEFAULT mode
2025-11-05T04:38:55.401Z INFO 1 --- [springbootbackend] [main] .s.d.r.c.RepositoryConfigurationDelegate : Finished Spring Data repository scanning in 198ms. Found 1 JPA repository interface.
2025-11-05T04:38:57.912Z INFO 1 --- [springbootbackend] [main] o.apache.catalina.core.StandardService : Starting service [Tomcat]
2025-11-05T04:38:57.980Z INFO 1 --- [springbootbackend] [main] o.apache.catalina.core.StandardEngine : Starting Servlet engine: [Apache Tomcat/10.1.46]
2025-11-05T04:38:58.765Z INFO 1 --- [springbootbackend] [main] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring embedded WebApplicationContext
2025-11-05T04:38:58.680Z INFO 1 --- [springbootbackend] [main] w.s.c.ServletWebServerApplicationContext : Root WebApplicationContext: initialization completed in 7853 ms
2025-11-05T04:39:01.392Z INFO 1 --- [springbootbackend] [main] o.hibernate.jpa.internal.util.LogHelper : HHH000204: Processing PersistenceUnitInfo [name : default]
2025-11-05T04:39:01.983Z INFO 1 --- [springbootbackend] [main] org.hibernate.Version : HHH000412: Hibernate ORM core version 6.6.29.Final
2025-11-05T04:39:02.390Z INFO 1 --- [springbootbackend] [main] o.h.c.internal.RegionFactoryInitiator : HHH000026: Second-level cache disabled
Java: Ready

```

ZNC Party sunny

Kubernetes-helm-ingress

```

File Edit Selection View Go Run ... ← → Q: Kubernetes-helm-ingress
PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE SPELL CHECKER kubectl + - ×
PS D:\3-1 CI CD DEVOPS\Kubernetes-helm-ingress> kubectl logs -f backend-deployment-69d98c7c7b-6ddf8 -n fullstack-app
at org.springframework.boot.SpringApplication.run(SpringApplication.java:1361) ~[spring-boot-3.5.6.jar!/3.5.6]
at org.springframework.boot.SpringApplication.run(SpringApplication.java:1350) ~[spring-boot-3.5.6.jar!/3.5.6]
at com.klef.dev.SpringbootbackendApplication.main(SpringbootbackendApplication.java:11) ~[!/:8.0.1-SNAPSHOT]
at java.base/jdk.internal.reflect.DirectMethodHandleAccessor.invoke(DirectMethodHandleAccessor.java:103) ~[na:na]
at java.base/java.lang.reflect.Method.invoke(Method.java:580) ~[na:na]
at org.springframework.boot.loader.launch.Launcher.launch(Launcher.java:102) ~[app.jar:8.0.1-SNAPSHOT]
at org.springframework.boot.loader.launch.Launcher.launch(Launcher.java:64) ~[app.jar:8.0.1-SNAPSHOT]
at org.springframework.boot.loader.JarLauncher.main(JarLauncher.java:40) ~[app.jar:8.0.1-SNAPSHOT]
Caused by: java.sql.SQLSyntaxErrorException: Table 'task_table' already exists
at com.mysql.cj.jdbc.exceptions.SQLException.createSQLException(SQLException.java:112) ~[mysql-connector-j-9.4.0.jar!/9.4.0]
at com.mysql.cj.jdbc.exceptions.SQLExceptionsMapping.translateException(SQLExceptionsMapping.java:114) ~[mysql-connector-j-9.4.0.jar!/9.4.0]
at com.mysql.cj.jdbc.StatementImpl.executeInternal(StatementImpl.java:837) ~[mysql-connector-j-9.4.0.jar!/9.4.0]
at com.mysql.cj.jdbc.StatementImpl.execute(StatementImpl.java:685) ~[mysql-connector-j-9.4.0.jar!/9.4.0]
at com.zaxxer.hikari.pool.ProxyStatement.execute(ProxyStatement.java:95) ~[HikariCP-6.3.3.jar!/na]
at com.zaxxer.hikari.pool.HikariProxyStatement.execute(HikariProxyStatement.java) ~[HikariCP-6.3.3.jar!/na]
at org.hibernate.tool.schema.internal.exec.GenerationTargetToDatabase.accept(GenerationTargetToDatabase.java:86) ~[hibernate-core-6.6.29.Final.jar!/6.6.29.Final]
... 42 common frames omitted
2025-11-05T04:39:10.595Z INFO 1 --- [springbootbackend] [main] j.LocalContainerEntityManagerFactoryBean : Initialized JPA EntityManagerFactory for persistence unit 'default'
2025-11-05T04:39:12.895Z WARN 1 --- [springbootbackend] [main] JpaBaseConfiguration$JpaWebConfiguration : spring.jpa.open-in-view is enabled by default. Therefore, database queries may be performed during view rendering. Explicitly configure spring.jpa.open-in-view to disable this warning
2025-11-05T04:39:12.296Z INFO 1 --- [springbootbackend] [main] o.s.v.b.OptionalValidatorFactoryBean : Failed to set up a Bean Validation provider: jakarta.validation.NoProviderFoundException: Unable to create a Configuration, because no Jakarta Bean Validation provider could be found. Add a provider like Hibernate Validator (HV) to your classpath.
2025-11-05T04:39:14.093Z INFO 1 --- [springbootbackend] [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on port 8080 (http) with context path '/'
2025-11-05T04:39:14.194Z INFO 1 --- [springbootbackend] [main] c.klef.dev.SpringbootbackendApplication : Started SpringbootbackendApplication in 27.369 seconds (process running for 38.574)
Project Backend is Running Successfully ...
Java: Ready

```

ZNC Party sunny

The image displays three vertically stacked instances of Microsoft Visual Studio Code (VS Code) running on a Windows operating system. Each instance has a dark theme and is focused on a terminal window showing command-line output related to a Kubernetes environment.

Top Window:

```
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> helm list -n fullstack-app
NAME        NAMESPACE   REVISION  UPDATED             STATUS      CHART
fullstack-app  fullstack-app  2        2025-11-05 10:09:44.5437061 +0530 IST  deployed  fullstack-app-1.0.0
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress>
```

Middle Window:

```
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> helm list -n fullstack-app
NAME        NAMESPACE   REVISION  UPDATED             STATUS      CHART
fullstack-app  fullstack-app  2        2025-11-05 10:09:44.5437061 +0530 IST  deployed  fullstack-app-1.0.0
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> kubectl get svc -n fullstack-app
NAME          TYPE    CLUSTER-IP      EXTERNAL-IP   PORT(S)        AGE
backend-deployment-service  NodePort  10.99.183.118  <none>        2000:30025/TCP  9m16s
frontend-deployment-service  NodePort  10.103.242.133  <none>        80:30898/TCP    9m16s
mysql-service   ClusterIP  10.99.3.3     <none>        3306/TCP      9m16s
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress>
```

Bottom Window:

```
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress>
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress>
```

The taskbar at the bottom of the screen shows several pinned icons, including File Explorer, Task View, and various application icons. The system tray indicates the date as 15-11-2025 and the time as 10:17.

The screenshot shows a Windows desktop environment with a Visual Studio Code (VS Code) window open. The title bar of the window reads "Kubernetes-helm-ingress". The terminal tab is active, showing the output of a "helm status" command for a "fullstack-app" deployment.

```
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> helm status fullstack-app -n fullstack-app
NAME: fullstack-app
LAST DEPLOYED: Wed Nov  5 10:09:44 2025
NAMESPACE: fullstack-app
STATUS: deployed
REVISION: 2
DESCRIPTION: Upgrade complete
RESOURCES:
--> v1/Namespaces
NAME STATUS AGE
fullstack-app Active 10m

--> v1/Service
NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
backend-deployment-service NodePort 10.99.183.110 <none> 2000:30025/TCP 10m
frontend-deployment-service NodePort 10.183.242.133 <none> 80:30088/TCP 10m
mysql-service ClusterIP 10.99.3.3 <none> 3306/TCP 10m

--> v1/Deployment
NAME READY UP-TO-DATE AVAILABLE AGE
backend-deployment 2/2 2 2 10m
frontend-deployment 2/2 2 2 10m
mysql-deployment 1/1 1 1 10m

--> v1/Pod(related)
NAME READY STATUS RESTARTS AGE
backend-deployment-69d98c7c7b-6ddfk 1/1 Running 0 10m
backend-deployment-69d98c7c7b-sfvzg 1/1 Running 0 10m
frontend-deployment-5587966678-4lqnq 1/1 Running 0 10m
frontend-deployment-5587966678-wbjv 1/1 Running 0 10m
mysql-deployment-78c4d56997-w269k 1/1 Running 0 10m

--> v2/HorizontalPodAutoscaler
```

The terminal output details the deployment status across three namespaces: fullstack-app, v1, and v2. It lists services, deployments, and their corresponding pods, along with their current status, update counts, and creation times.

The image shows two side-by-side instances of Microsoft Visual Studio Code (VS Code) running on a Windows operating system. Both windows have the title bar "Kubernetes-helm-ingress".

The left window displays the output of a Helm command, specifically `helm get manifest fullstack-app -n fullstack-app`. The output is organized into several sections:

- DESCRIPTION:** Upgrade complete
- RESOURCES:**
 - v1/Namespace**: Shows a single entry for `fullstack-app` with status "Active" and age "10m".
 - v1/Service**: Lists three services:
 - backend-deployment-service: NodePort, Cluster-IP 10.99.183.110, External-IP <none>, Port(s) 2000:30025/TCP, Age 10m
 - frontend-deployment-service: NodePort, Cluster-IP 10.99.242.133, External-IP <none>, Port(s) 80:30088/TCP, Age 10m
 - mysql-service: ClusterIP, Cluster-IP 10.99.3.3, External-IP <none>, Port(s) 3306/TCP, Age 10m
 - v1/Deployment**: Lists three deployments:
 - backend-deployment: 2/2 ready, up-to-date, available, age 10m
 - frontend-deployment: 2/2 ready, up-to-date, available, age 10m
 - mysql-deployment: 1/1 ready, up-to-date, available, age 10m
 - v1/Pod(related)**: Lists the pods corresponding to the deployments, all in a "Running" state with age 10m.
 - v2/HorizontalPodAutoscaler**: Lists two HPA objects, both targeting the backend-deployment with a minimum of 2 pods, maximum of 5, and a target CPU utilization of 50%.
 - v1/Ingress**: Shows no entries.

The right window shows the same command-line interface, but the output is truncated at the bottom. It also includes a status bar at the bottom with system information like battery level (100%), language (ENG IN), and date/time (10:20 15/11/2025).

The screenshot shows two terminal windows side-by-side, both titled "Kubernetes-helm-ingress".

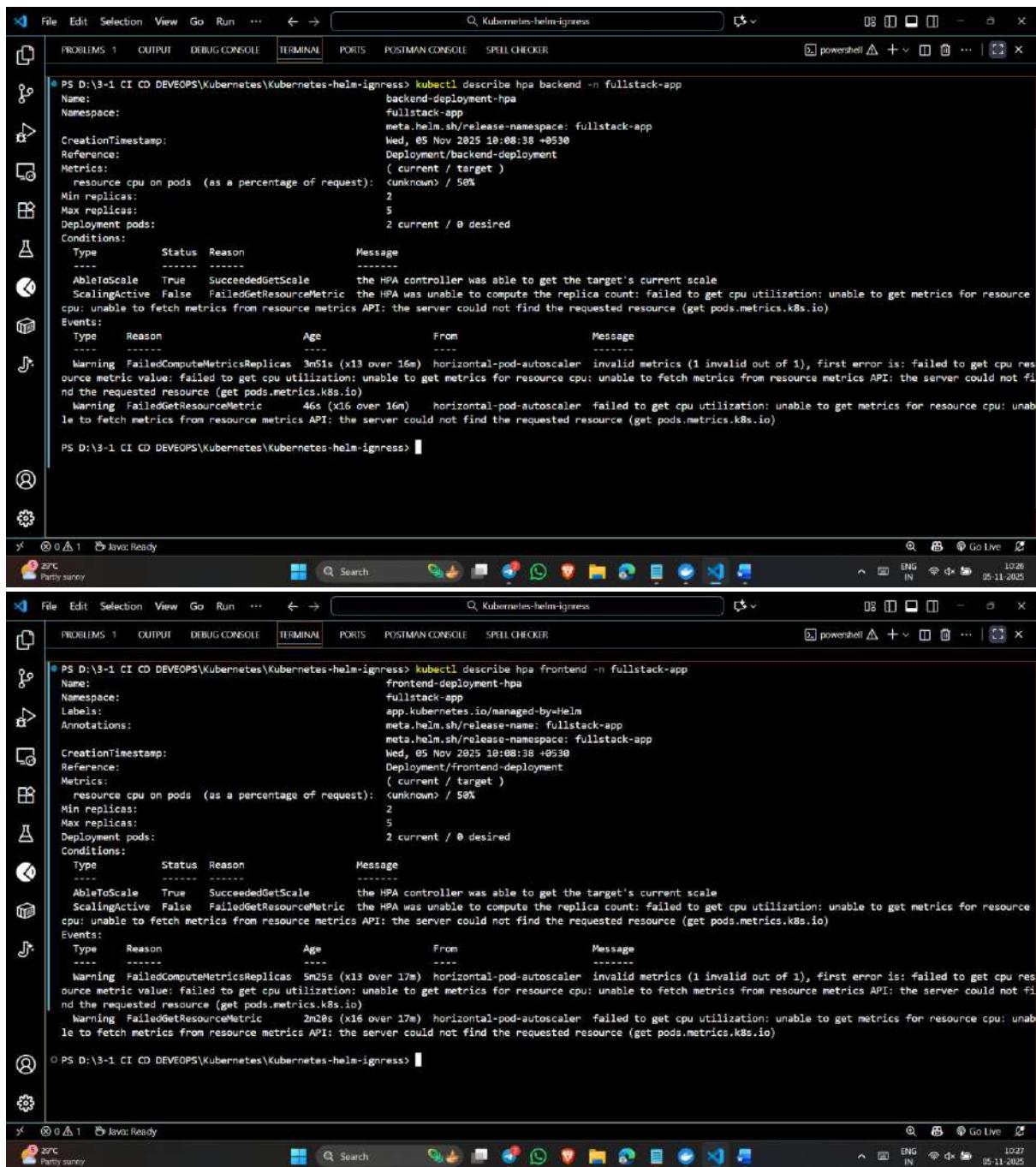
Top Terminal:

```
PS D:\3-1 CI CD DEVEOPS\Kubernetes-helm-ingress> helm history fullstack-app -n fullstack-app
  REVISION UPDATED STATUS CHART APP VERSION DESCRIPTION
  1       Wed Nov 5 10:08:38 2025 superseded fullstack-app-1.0.0 1.0   Install complete
  2       Wed Nov 5 10:09:44 2025 deployed  fullstack-app-1.0.0 1.0   Upgrade complete
  PS D:\3-1 CI CD DEVEOPS\Kubernetes-helm-ingress>
```

Bottom Terminal:

```
PS D:\3-1 CI CD DEVEOPS\Kubernetes-helm-ingress> kubectl get hpa -n fullstack-app
  NAME          REFERENCE  TARGETS           MINPODS  MAXPODS  REPLICAS  AGE
  backend-deployment-hpa  Deployment/backend-deployment  cpu: <unknown>/50%  2        5        2        16m
  frontend-deployment-hpa Deployment/frontend-deployment  cpu: <unknown>/50%  2        5        2        16m
  PS D:\3-1 CI CD DEVEOPS\Kubernetes-helm-ingress>
```

Horizontal pod autoscaling



```
PS D:\3-1 CI CD DEVOPS\Kubernetes\Kubernetes-helm-ingress> kubectl describe hpa backend -n fullstack-app
Name:          backend-deployment-hpa
Namespace:     fullstack-app
meta.helm.sh/release-name: fullstack-app
CreationTimestamp: Wed, 05 Nov 2025 10:08:38 +0530
Reference:    Deployment/backend-deployment
              ( current / target )
Metrics:      resource cpu on pods (as a percentage of request): <unknown> / 50%
Min replicas: 2
Max replicas: 5
Deployment pods: 2 current / 0 desired
Conditions:
  Type      Status  Reason           Message
  ----      ----  ----           -----
  AbleToScale True   SucceededGetScale   the HPA controller was able to get the target's current scale
  ScalingActive False  FailedGetResourceMetric  the HPA was unable to compute the replica count: failed to get cpu utilization: unable to get metrics for resource
cpu: unable to fetch metrics from resource metrics API: the server could not find the requested resource (get pods.metrics.k8s.io)
Events:
  Type      Reason           Age           From            Message
  ----      ----           --           --            -----
  Warning  FailedComputeMetricsReplicas  3m51s (x13 over 16m)  horizontal-pod-autoscaler  invalid metrics (1 invalid out of 1), first error is: failed to get cpu res
ource metric value: failed to get cpu utilization: unable to get metrics for resource cpu: unable to fetch metrics from resource metrics API: the server could not fi
nd the requested resource (get pods.metrics.k8s.io)
  Warning  FailedGetResourceMetric       46s (x16 over 16m)   horizontal-pod-autoscaler  failed to get cpu utilization: unable to get metrics for resource cpu: unab
le to fetch metrics from resource metrics API: the server could not find the requested resource (get pods.metrics.k8s.io)

PS D:\3-1 CI CD DEVOPS\Kubernetes\Kubernetes-helm-ingress>
```

Java Ready

zinc Party sunny

File Edit Selection View Go Run ... PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE SPELL CHECKER powerhell

PS D:\3-1 CI CD DEVOPS\Kubernetes\Kubernetes-helm-ingress> kubectl describe hpa frontend -n fullstack-app
Name: frontend-deployment-hpa
Namespace: fullstack-app
Labels: app.kubernetes.io/managed-by=Helm
Annotations: meta.helm.sh/release-name: fullstack-app
 meta.helm.sh/release-namespace: fullstack-app
CreationTimestamp: Wed, 05 Nov 2025 10:08:38 +0530
Reference: Deployment/frontend-deployment
 (current / target)
Metrics: resource cpu on pods (as a percentage of request): <unknown> / 50%
Min replicas: 2
Max replicas: 5
Deployment pods: 2 current / 0 desired
Conditions:
 Type Status Reason Message
 ---- ---- ---- -----
 AbleToScale True SucceededGetScale the HPA controller was able to get the target's current scale
 ScalingActive False FailedGetResourceMetric the HPA was unable to compute the replica count: failed to get cpu utilization: unable to get metrics for resource
cpu: unable to fetch metrics from resource metrics API: the server could not find the requested resource (get pods.metrics.k8s.io)
Events:
 Type Reason Age From Message
 ---- ---- -- -- -----
 Warning FailedComputeMetricsReplicas 5m25s (x13 over 17m) horizontal-pod-autoscaler invalid metrics (1 invalid out of 1), first error is: failed to get cpu res
ource metric value: failed to get cpu utilization: unable to get metrics for resource cpu: unable to fetch metrics from resource metrics API: the server could not fi
nd the requested resource (get pods.metrics.k8s.io)
 Warning FailedGetResourceMetric 2m20s (x16 over 17m) horizontal-pod-autoscaler failed to get cpu utilization: unable to get metrics for resource cpu: unab
le to fetch metrics from resource metrics API: the server could not find the requested resource (get pods.metrics.k8s.io)

PS D:\3-1 CI CD DEVOPS\Kubernetes\Kubernetes-helm-ingress>

Java Ready

zinc Party sunny

File Edit Selection View Go Run ... PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE SPELL CHECKER powerhell

```
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> kubectl get hpa -n fullstack-app -w
NAME          REFERENCE          TARGETS          MINPODS   MAXPODS   REPLICAS   AGE
backend-deployment-hpa   Deployment/backend-deployment   cpu: <unknown>/50%  2          5          2          19m
frontend-deployment-hpa Deployment/frontend-deployment  cpu: <unknown>/50%  2          5          2          19m

PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> kubectl get hpa -n fullstack-app -w
NAME          REFERENCE          TARGETS          MINPODS   MAXPODS   REPLICAS   AGE
backend-deployment-hpa   Deployment/backend-deployment   cpu: <unknown>/50%  2          5          2          19m
frontend-deployment-hpa Deployment/frontend-deployment  cpu: <unknown>/50%  2          5          2          19m

PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> kubectl get pods -n fullstack-app
NAME                  READY   STATUS    RESTARTS   AGE
backend-deployment-69d98c7c7b-6ddfk   1/1     Running   0          28m
backend-deployment-69d98c7c7b-sfvzg   1/1     Running   0          28m
frontend-deployment-5587966678-4lqnj   1/1     Running   0          28m
frontend-deployment-5587966678-wnbjv   1/1     Running   0          28m
mysql-deployment-78c4d56997-w269k    1/1     Running   0          28m

PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress>
```

```
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> kubectl get hpa -n fullstack-app -w
NAME          REFERENCE   TARGETS  MINPODS  MAXPODS  REPLICAS  AGE
backend-deployment-hpa  Deployment/backend-deployment  cpu: <unknown>/50%  2        5        2        19m
frontend-deployment-hpa Deployment/Frontend-deployment  cpu: <unknown>/50%  2        5        2        19m

PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> kubectl get pods -n fullstack-app
NAME           READY   STATUS    RESTARTS   AGE
backend-deployment-69d98c7c7b-6ddfk  1/1    Running   0          28m
backend-deployment-69d98c7c7b-sfvzg  1/1    Running   0          28m
frontend-deployment-5587966678-4lqnj  1/1    Running   0          28m
frontend-deployment-5587966678-wnbjv  1/1    Running   0          28m
mysql-deployment-78c4d56997-w269k   1/1    Running   0          28m

PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> kubectl scale deployment backend-deployment --replicas=5 -n fullstack-app
deployment.apps/backend-deployment scaled

PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress>
```



```
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> kubectl get hpa -n fullstack-app -w
NAME          REFERENCE   TARGETS  MINPODS  MAXPODS  REPLICAS  AGE
backend-deployment-hpa  Deployment/backend-deployment  cpu: <unknown>/50%  2        5        2        19m
frontend-deployment-hpa Deployment/Frontend-deployment  cpu: <unknown>/50%  2        5        2        19m

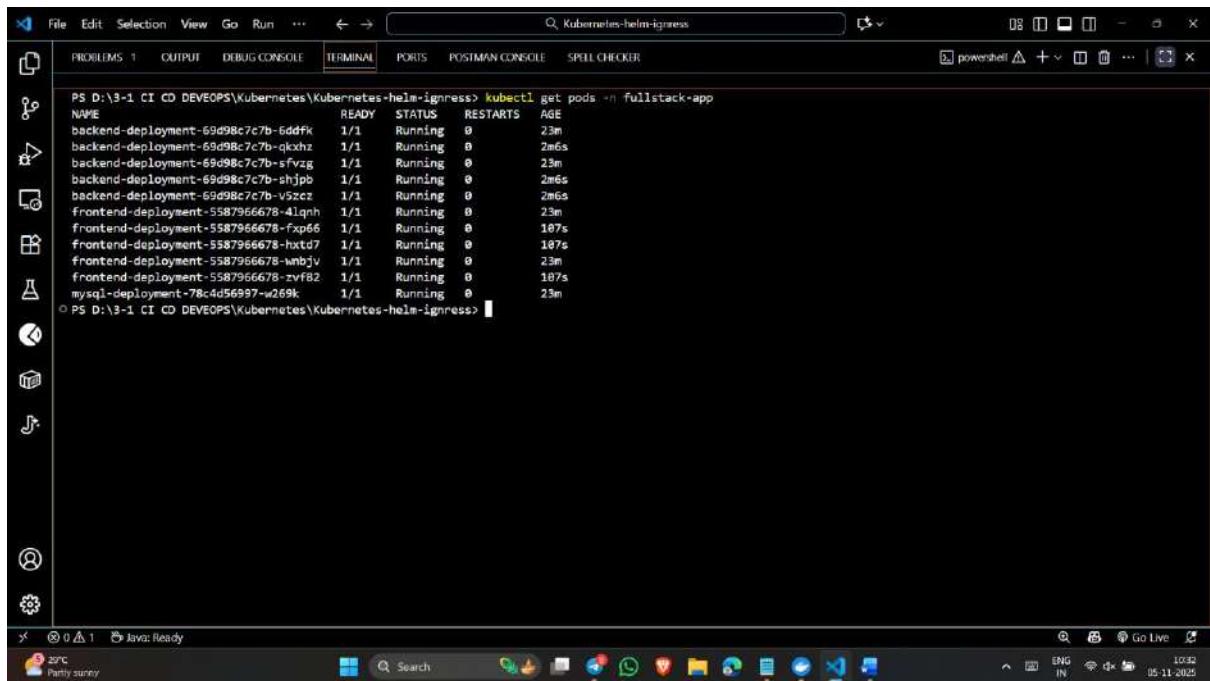
PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> kubectl get pods -n fullstack-app
NAME           READY   STATUS    RESTARTS   AGE
backend-deployment-69d98c7c7b-6ddfk  1/1    Running   0          28m
backend-deployment-69d98c7c7b-sfvzg  1/1    Running   0          28m
frontend-deployment-5587966678-4lqnj  1/1    Running   0          28m
frontend-deployment-5587966678-wnbjv  1/1    Running   0          28m
mysql-deployment-78c4d56997-w269k   1/1    Running   0          28m

PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> kubectl scale deployment backend-deployment --replicas=5 -n fullstack-app
deployment.apps/backend-deployment scaled

PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress> kubectl scale deployment frontend-deployment --replicas=5 -n fullstack-app
deployment.apps/frontend-deployment scaled

PS D:\3-1 CI CD DEVEOPS\Kubernetes\Kubernetes-helm-ingress>
```

->If Image Pull back off there in the status make sure to run the command again and wait for running status



```
PS D:\3-1 CI CD DEVOPS\Kubernetes-helm-ingress> kubectl get pods -n fullstack-app
NAME                      READY   STATUS    RESTARTS   AGE
backend-deployment-69d98c7c7b-6ddfk   1/1     Running   0          23m
backend-deployment-69d98c7c7b-qkxhz   1/1     Running   0          2m6s
backend-deployment-69d98c7c7b-sfvzg   1/1     Running   0          23m
backend-deployment-69d98c7c7b-shjpb   1/1     Running   0          2m6s
backend-deployment-69d98c7c7b-v5zcz   1/1     Running   0          2m6s
frontend-deployment-5587966678-4lqnj  1/1     Running   0          23m
frontend-deployment-5587966678-fxp66  1/1     Running   0          187s
frontend-deployment-5587966678-hxtd7  1/1     Running   0          187s
frontend-deployment-5587966678-wnbjv  1/1     Running   0          23m
frontend-deployment-5587966678-zvf82  1/1     Running   0          187s
mysql-deployment-78c4d56937-w269k    1/1     Running   0          23m
PS D:\3-1 CI CD DEVOPS\Kubernetes-helm-ingress>
```

Screenshot of a Task Manager application running on localhost:3000.

Add Task Form:

Title:	Description:	Start Date:	End Date:
<input type="text" value="Enter task title"/>	<input type="text" value="Enter task description"/>	<input type="text" value="dd-mm-yyyy"/>	<input type="text" value="dd-mm-yyyy"/>

Priority: Add Task

Clear

All Tasks Table:

ID	TITLE	DESCRIPTION	START	END	PRIORITY	STATUS	ACTIONS
No matching tasks found							

Screenshot of the same Task Manager application after adding a task.

Add Task Form:

Title:	Description:	Start Date:	End Date:
<input type="text" value="Enter task title"/>	<input type="text" value="Enter task description"/>	<input type="text" value="dd-mm-yyyy"/>	<input type="text" value="dd-mm-yyyy"/>

Priority: Add Task

Task added successfully! Clear

All Tasks Table:

ID	TITLE	DESCRIPTION	START	END	PRIORITY	STATUS	ACTIONS
5932	Ingress LAB	LAB 14	2025-11-05	2025-11-07	HIGH	ASSIGNED	<button>Edit</button> <button>Delete</button>
75113	demo	demo	2025-11-05	2025-11-20	MEDIUM	ASSIGNED	<button>Edit</button> <button>Delete</button>

React App

localhost:30060/board

All Bookmarks

Task Board

ASSIGNED	PROGRESS	COMPLETED	REJECTED
<p>Ingress LAB</p> <p>LAB 14</p> <p>Priority: HIGH</p> <p>Start: 2025-11-05</p> <p>End: 2025-11-07</p> <p>Start</p> <p>demo</p> <p>demo</p> <p>Priority: MEDIUM</p> <p>Start: 2025-11-05</p> <p>End: 2025-11-20</p> <p>Start</p>			

Party survey

Search

ENG IN

10:38 15-11-2025



```
Pretty print □
[{"id": 5902, "title": "Ingress L4", "description": "L4B 14", "startDate": "2025-11-05", "endDate": "2025-11-07", "priority": "HIGH", "status": "ASSIGNED"}, {"id": 75113, "title": "demo", "description": "demo", "startDate": "2025-11-05", "endDate": "2025-11-20", "priority": "MEDIUM", "status": "ASSIGNED"}]
```

Task Management API 1.0.0 CAS 3.0

Spring Boot REST API for managing tasks

Developer Team - Website
Send email to Developer Team
Apache 2.0

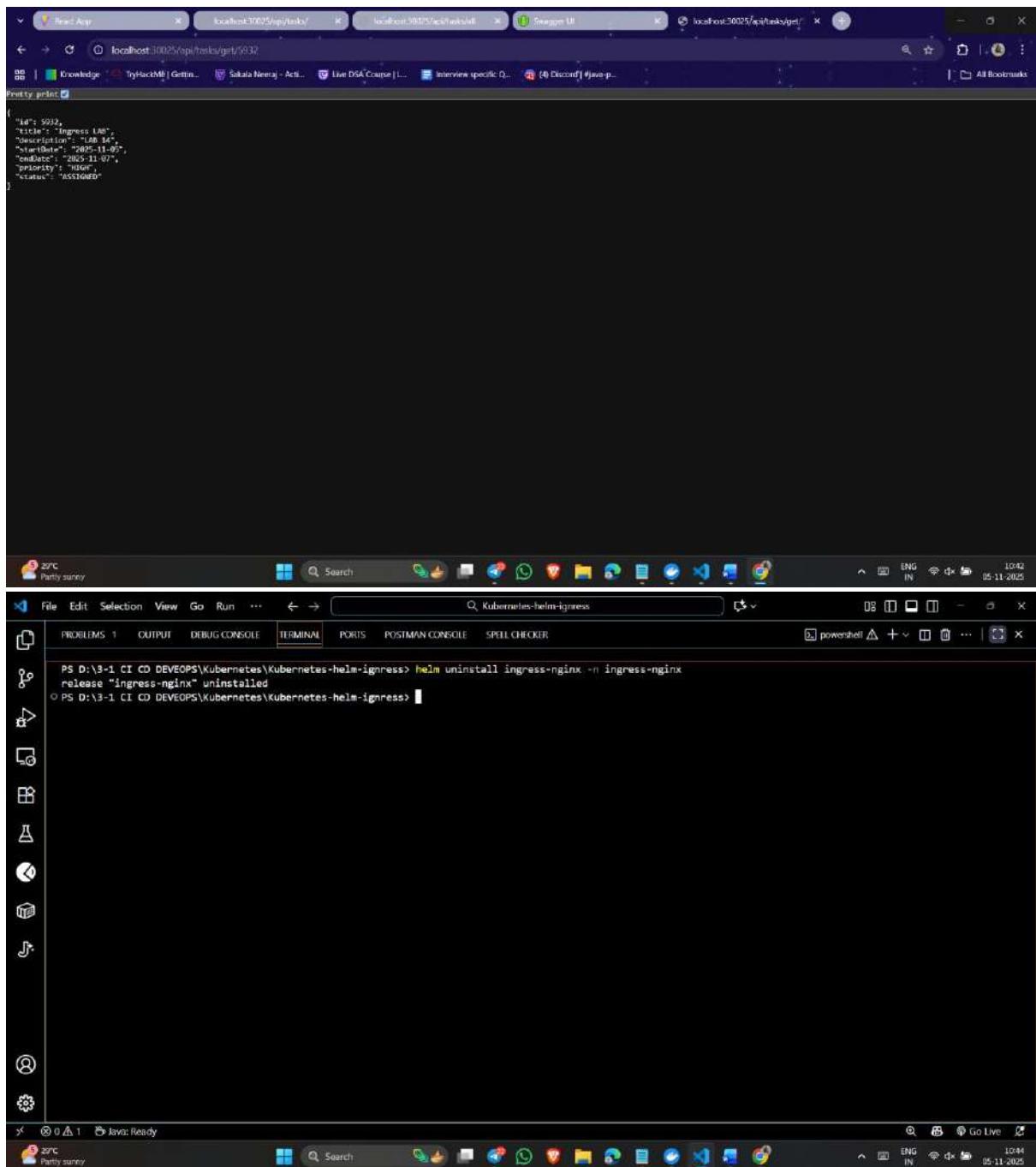
Servers: http://localhost:30026 - Generated server url: ▾

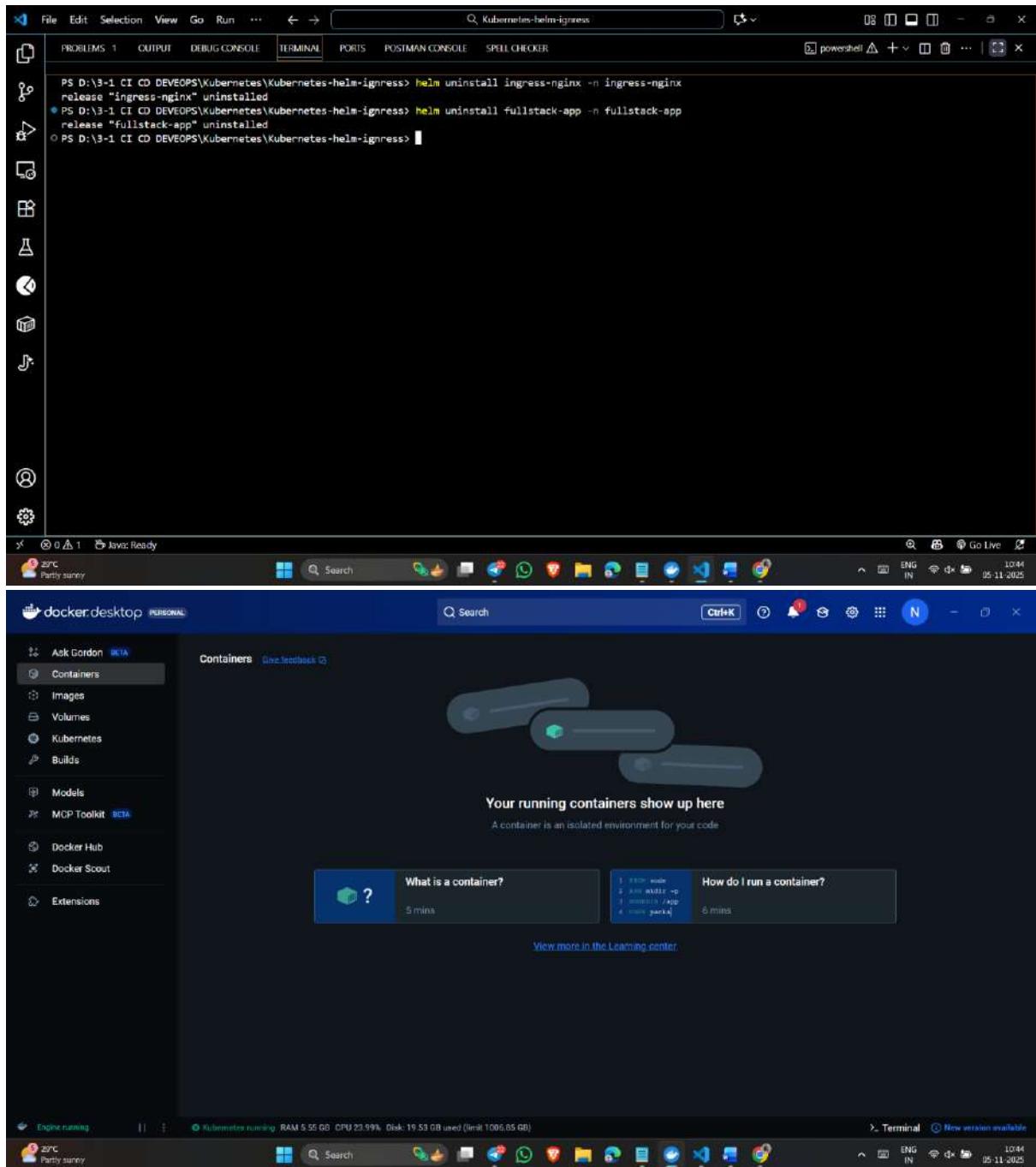
task-controller

- PUT /api/tasks/updatestatus/{id}
- PUT /api/tasks/update/{id}
- POST /api/tasks/add
- GET /api/tasks/get/{id}
- GET /api/tasks/all
- GET /api/tasks/
- DELETE /api/tasks/delete/{id}

Task with ID 3345 not found







The screenshot shows a terminal window in Visual Studio Code. The title bar says "Kubernetes-helm-ingress". The terminal tab is selected. The command history shows:

```
PS D:\3-1 CI CD DEVEOPS\Kubernetes\helm-ingress> kubectl delete namespace fullstack-app
Error from server (NotFound): namespaces "fullstack-app" not found
● PS D:\3-1 CI CD DEVEOPS\Kubernetes\helm-ingress> kubectl delete namespace ingress-nginx
namespace "ingress-nginx" deleted
○ PS D:\3-1 CI CD DEVEOPS\Kubernetes\helm-ingress>
```

■ Step 1: helm create fullstack-app [This command for one time only]

This will generate a folder named **fullstack-app/** with the following structure:

fullstack-app/

```
|--- charts/
|--- templates/
|--- Chart.yaml
|--- values.yaml
```

You can then modify **values.yaml** and **templates** as per your **fullstack app (frontend, backend, MySQL, etc.)**.

■ Step 2: Add and Update Helm Repositories [These commands for first time only]

```
helm repo add ingress-nginx https://kubernetes.github.io/ingress-nginx
```

```
helm repo update
```

```
helm repo list
```

```
-----
```

■ Step 3: Install NGINX Ingress Controller

● First time (creates namespace)

```
helm install ingress-nginx ingress-nginx/ingress-nginx --create-namespace --  
namespace ingress-nginx
```

⟳ Next time (upgrade without creating namespace)

```
helm upgrade ingress-nginx ingress-nginx/ingress-nginx --namespace ingress-  
nginx
```

⌚ Check Ingress Controller Pods

```
kubectl get pods -n ingress-nginx
```

🌲 View Ingress Logs

```
kubectl logs -f <ingress-pod-name> -n ingress-nginx
```

■ Step 4: Install or Upgrade Your Fullstack App

● First time (creates namespace)

```
helm install fullstack-app ./fullstack-app --create-namespace --namespace  
fullstack-app
```

⟳ Next time (upgrade without recreating namespace)

```
helm upgrade fullstack-app ./fullstack-app --namespace fullstack-app
```

🔍 Check Application Pods

```
kubectl get pods -n fullstack-app
```

🖨️ View Application Logs

```
kubectl logs -f <backend-pod-name> -n fullstack-app [this one important]
```

```
kubectl logs -f <frontend-pod-name> -n fullstack-app
```

```
kubectl logs -f <mysql-pod-name> -n fullstack-app
```

 **Step 5: List Helm Releases**

```
helm list -n fullstack-app
```

 **Step 6: List the services (svc) in the namespace (fullstack-app)**

```
kubectl get svc -n fullstack-app
```

 **Step 7: Check Release Status**

```
helm status fullstack-app -n fullstack-app
```

 **Step 8: View Manifest**

```
helm get manifest fullstack-app -n fullstack-app
```

Step 9: Check Release History

```
helm history fullstack-app -n fullstack-app
```

Step 10: Horizontal Pod Autoscaler (HPA)

Check All HPAs

```
kubectl get hpa -n fullstack-app
```

Describe a Specific HPA

```
kubectl describe hpa backend -n fullstack-app
```

```
kubectl describe hpa frontend -n fullstack-app
```

Watch Scaling in Real Time

```
kubectl get hpa -n fullstack-app -w
```

Check Current Pods and Resource Usage

```
kubectl get pods -n fullstack-app
```

Manually Scale (Optional)

```
kubectl scale deployment backend-deployment --replicas=5 -n fullstack-app
```

```
kubectl scale deployment frontend-deployment --replicas=5 -n fullstack-app
```

Monitor Logs During Scaling

```
kubectl logs -f <backend-pod-name> -n fullstack-app
```

Step 11: Monitor Pods and Scaling Activity

```
kubectl get pods -n fullstack-app -w
```

Step 12: Uninstall the Fullstack App

```
helm uninstall fullstack-app -n fullstack-app
```

Step 13: Uninstall NGINX Ingress Controller

```
helm uninstall ingress-nginx -n ingress-nginx
```

Step 14: Delete Namespaces (Cleanup)

```
kubectl delete namespace fullstack-app
```

```
kubectl delete namespace ingress-nginx
```
