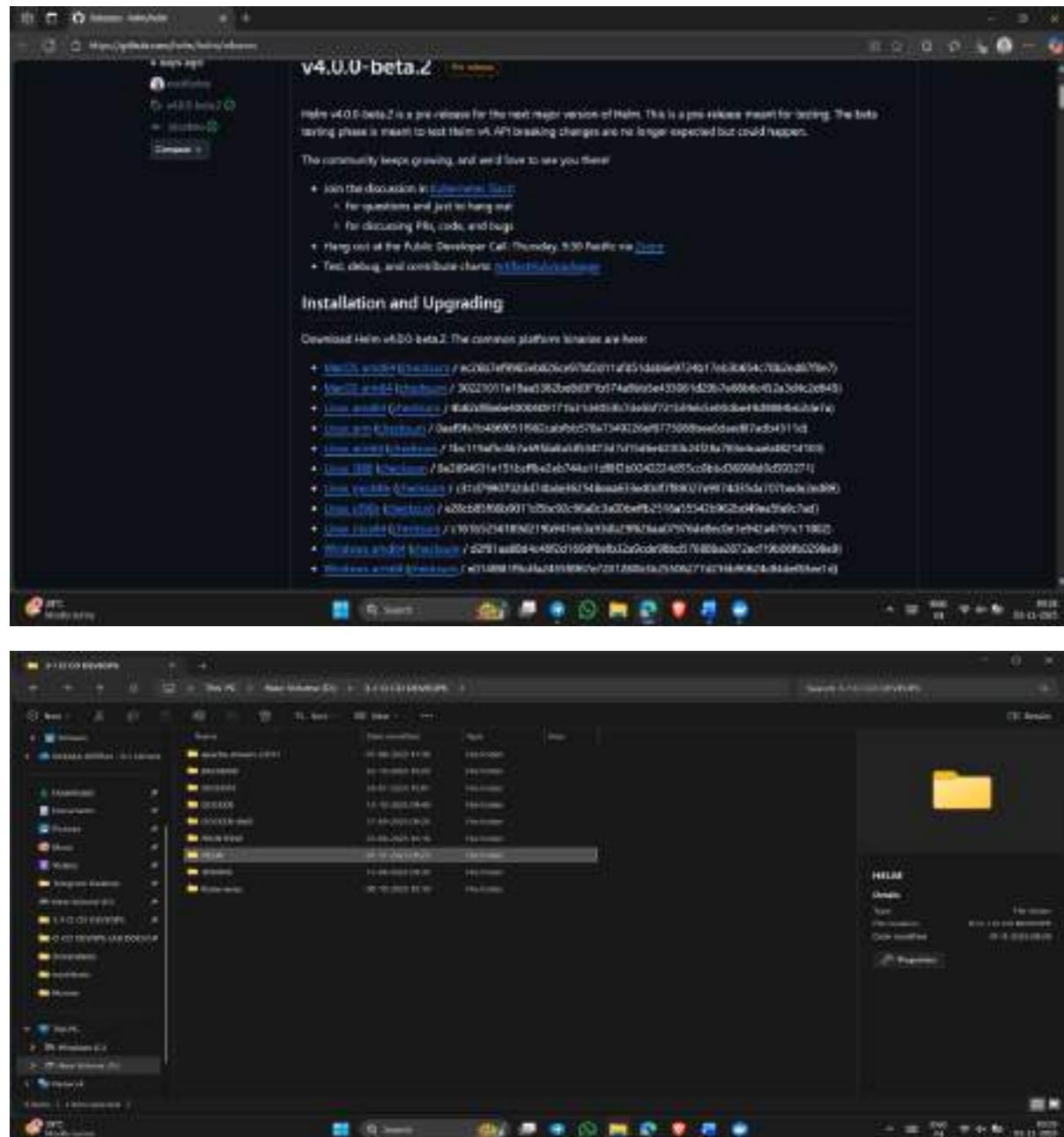
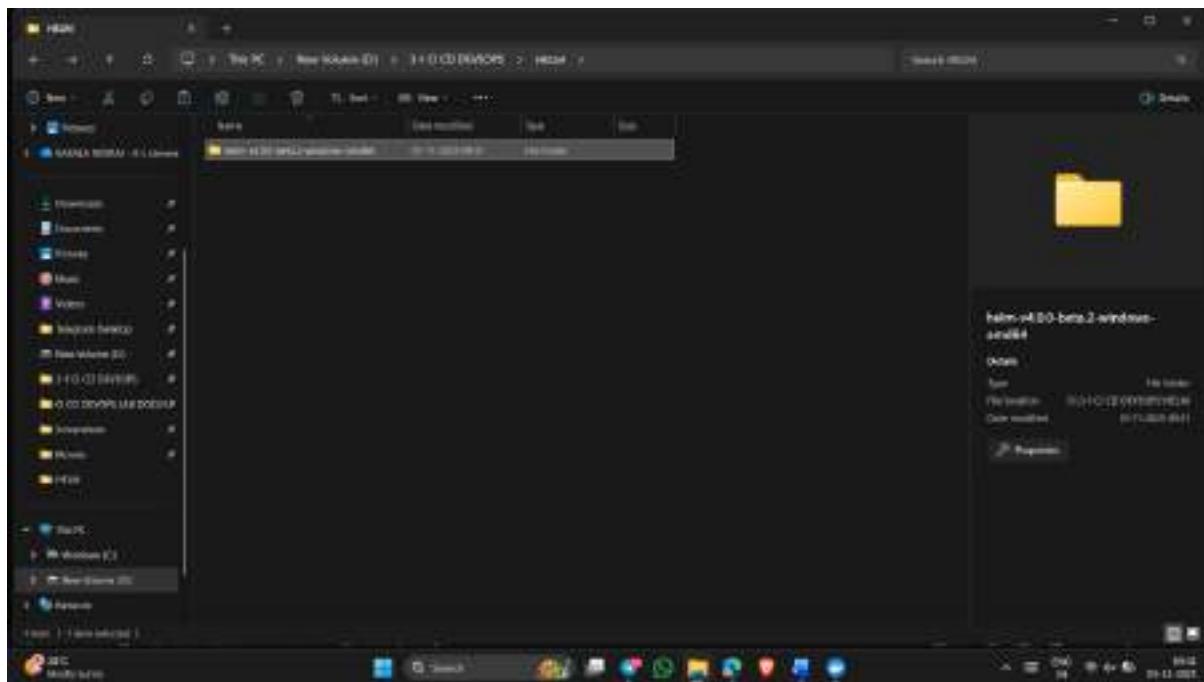


LAB 14

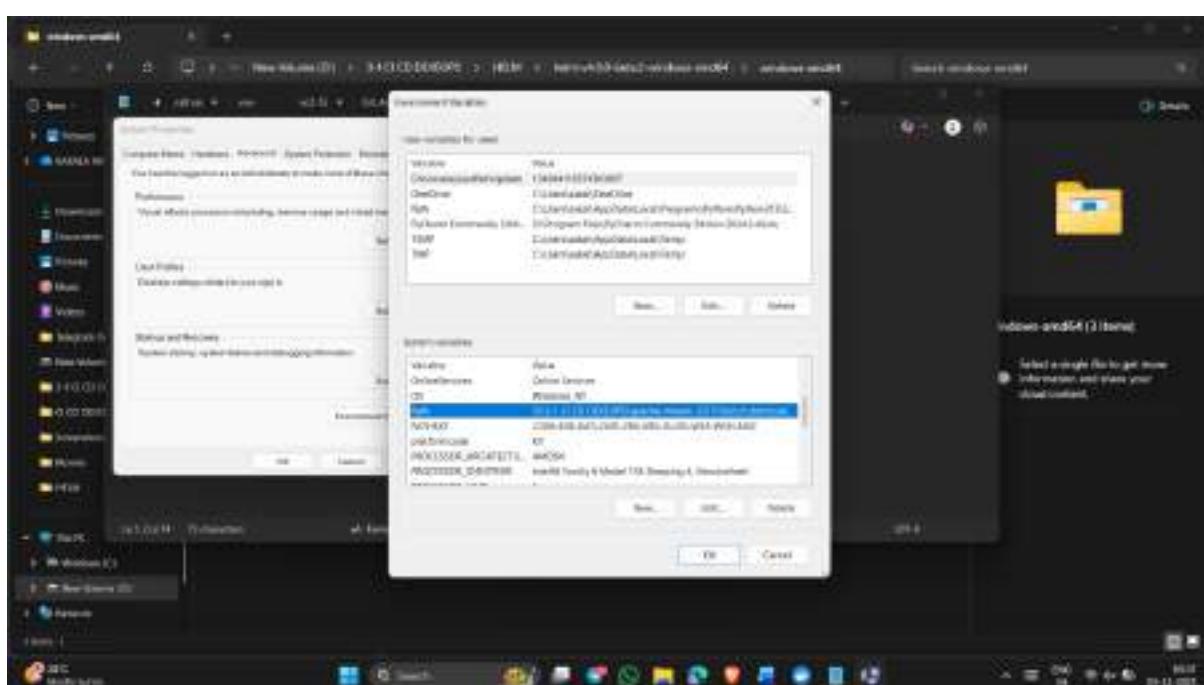
Kubernetes deployment using helm and ingress

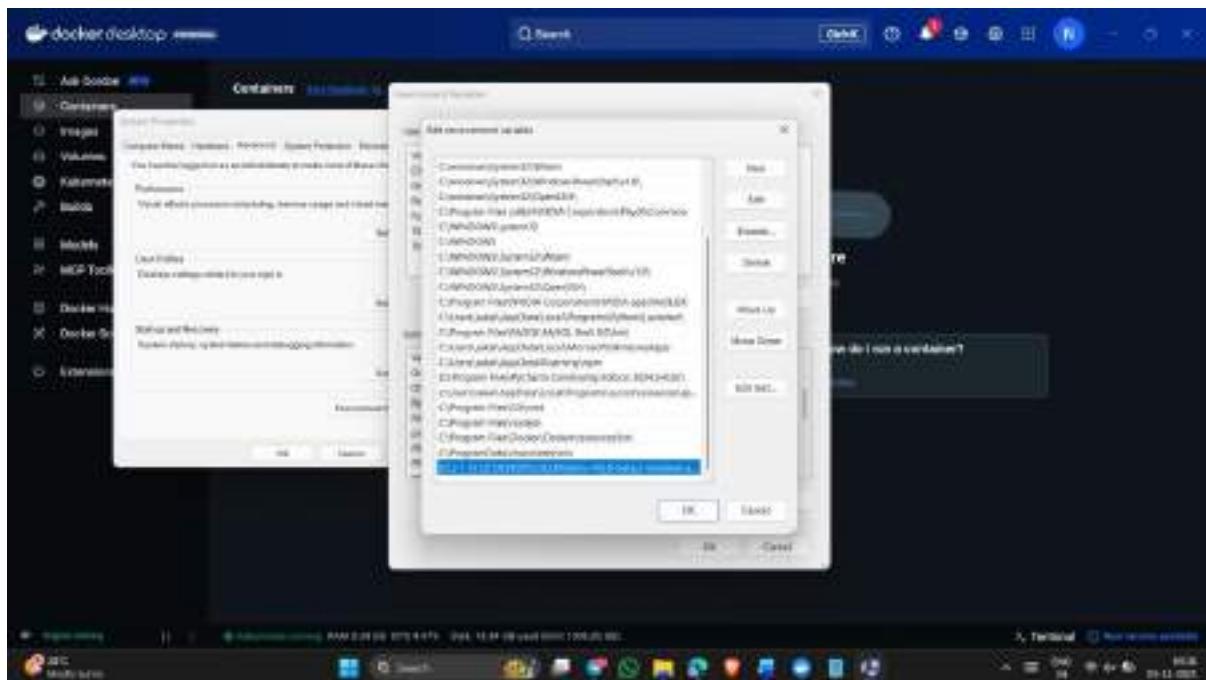
<https://github.com/helm/helm/releases>

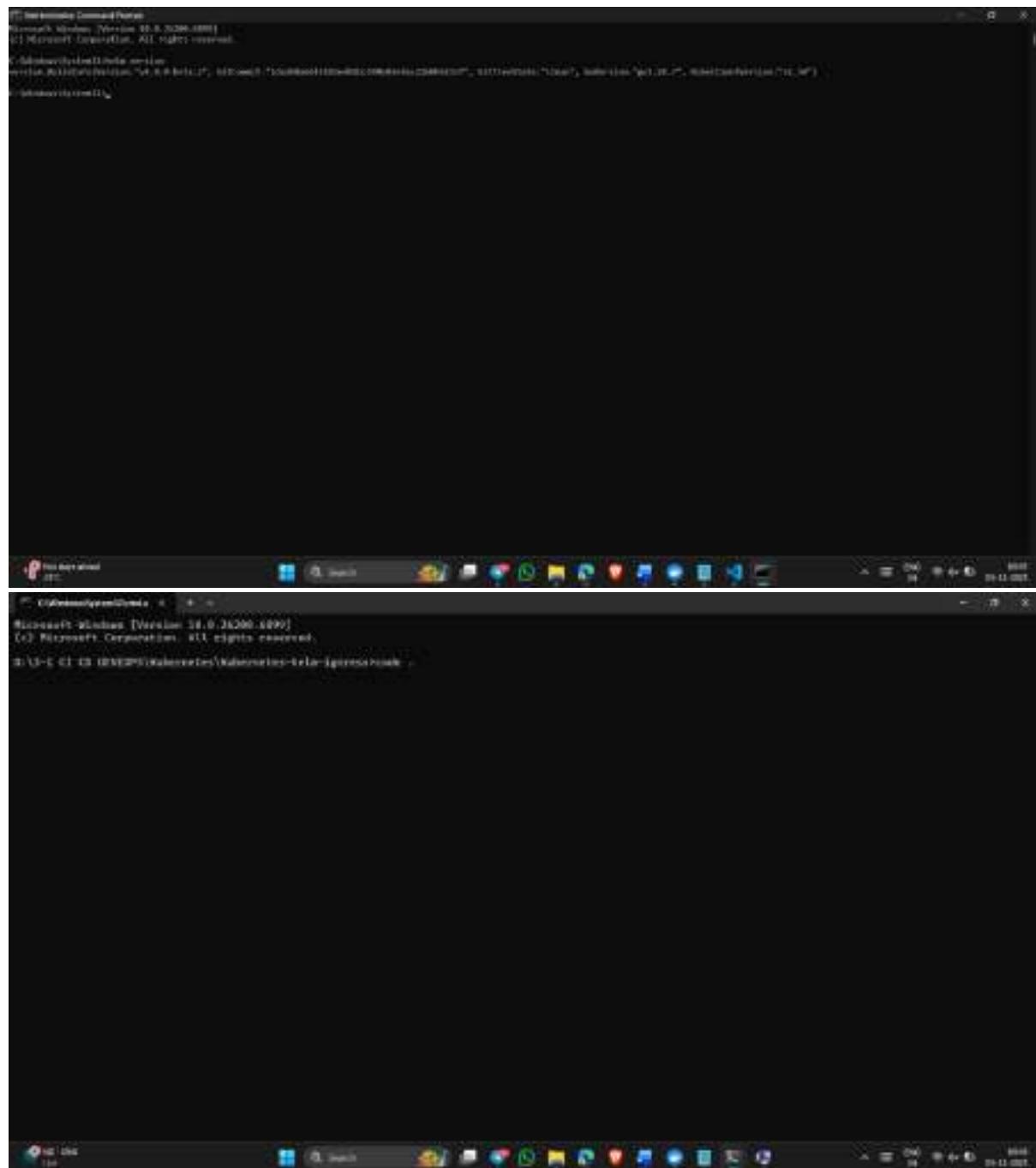


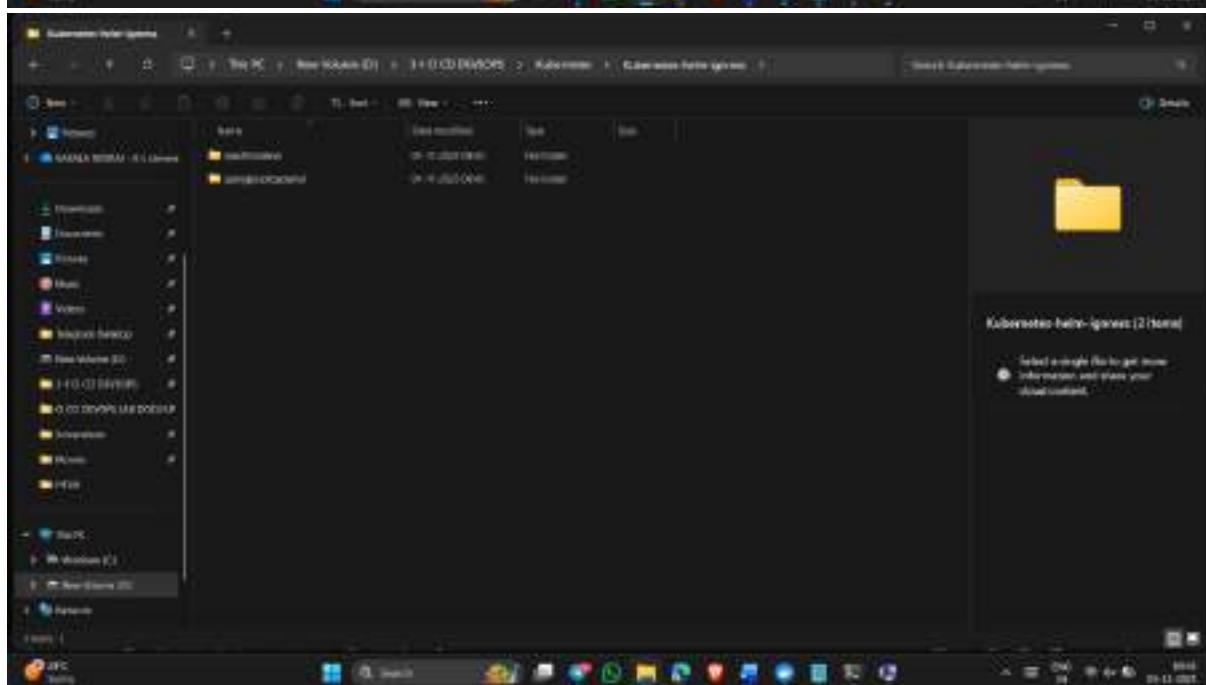
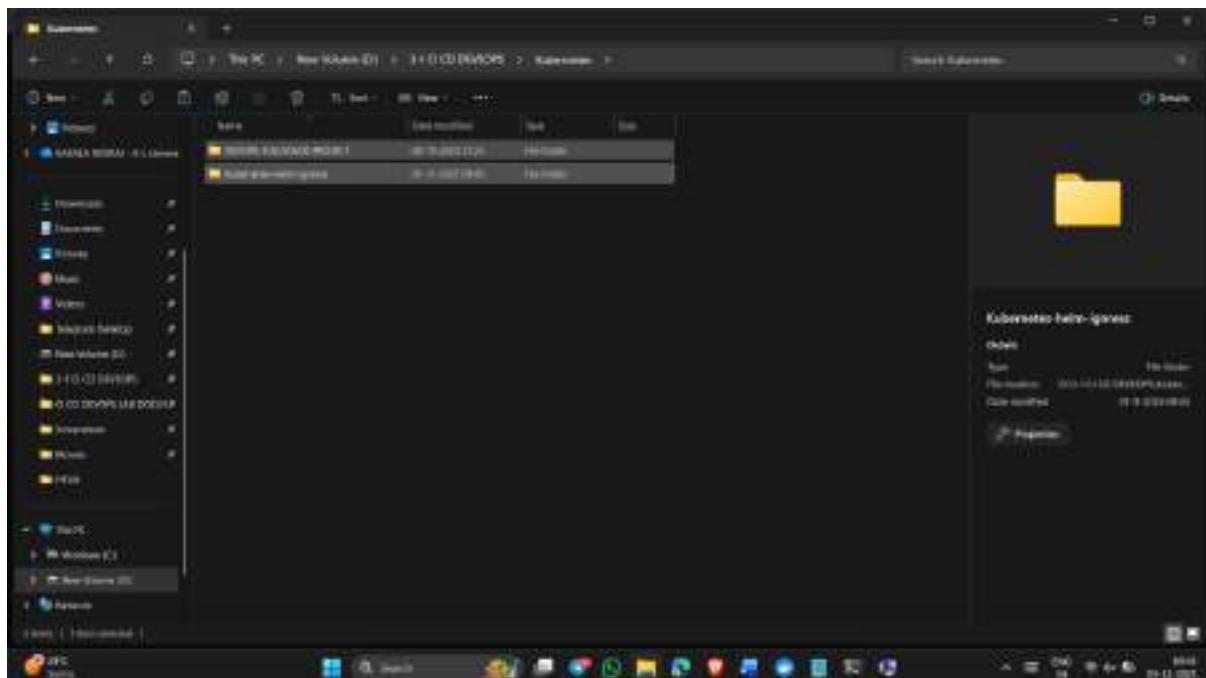


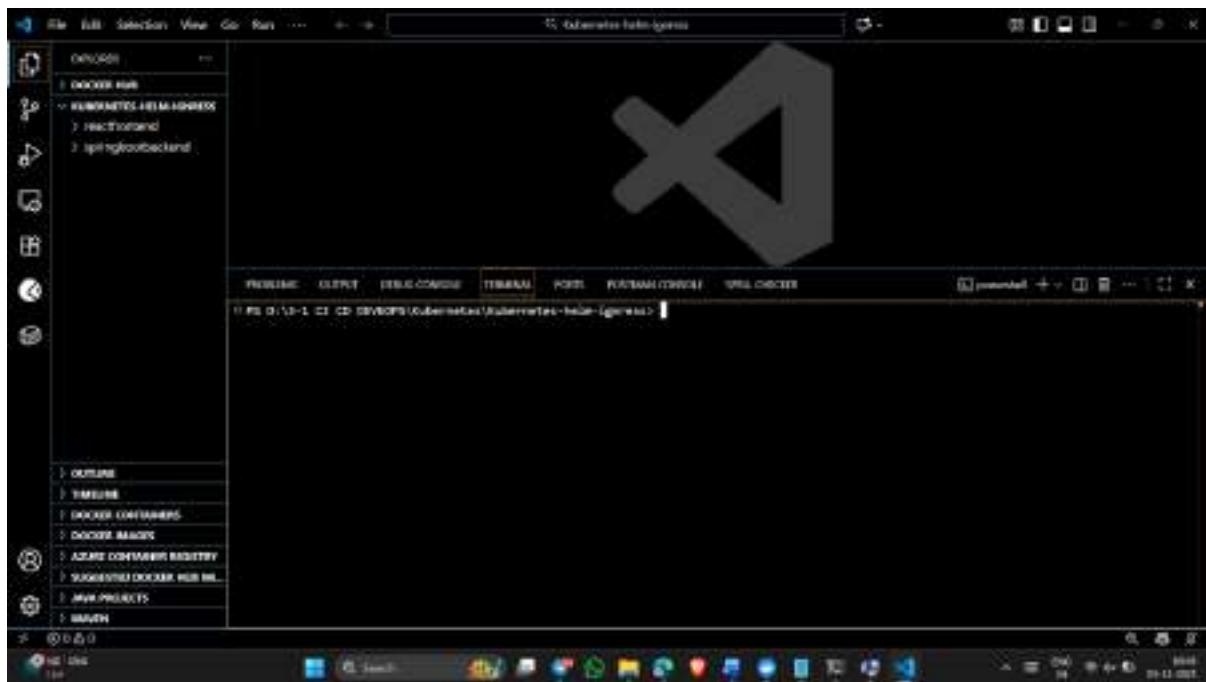
D:\3-1 CI CD DEVEOPS\HELM\helm-v4.0.0-beta.2-windows-amd64\windows-amd64











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

The image displays two side-by-side terminal windows within the Visual Studio Code interface.

Top Terminal (Kubernetes):

- Shows the command: `PS D:\VS\I\CI\CD\DEVOPS\Kubernetes\Kubernetes-helm-ligero> helm version`
- Output:

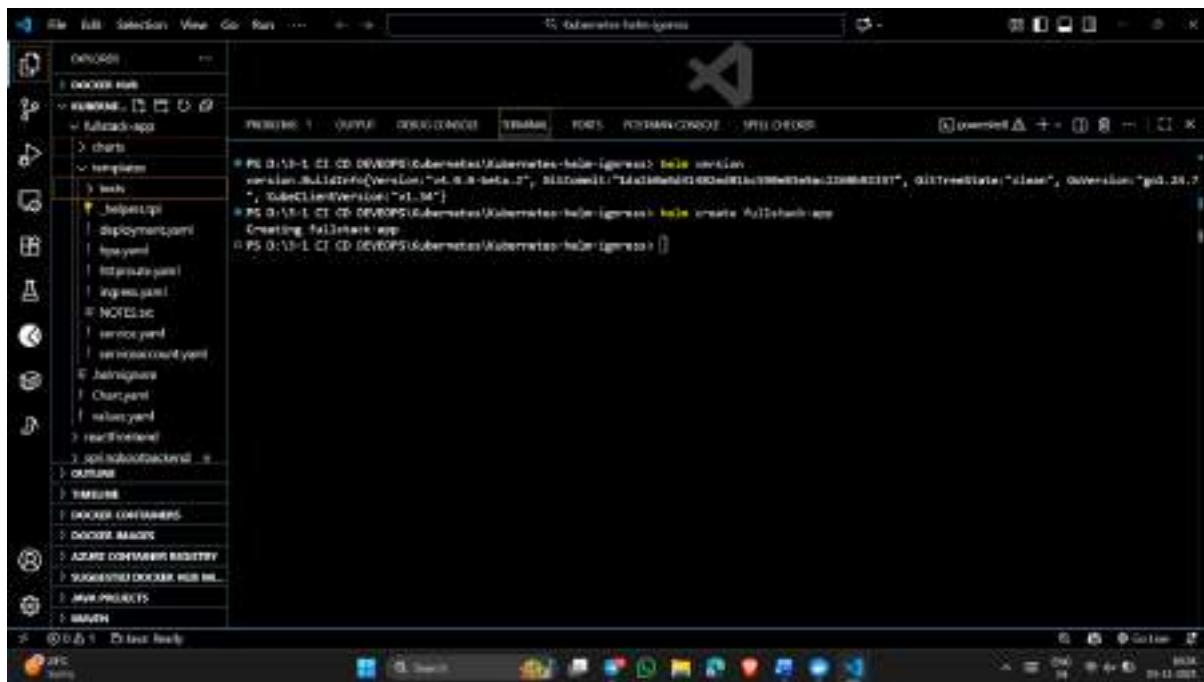
```
version.BuildInfo{Version:"v0.8.0-beta.2", GitCommit:"4e1f16d030301000000000000000000000000000", GitTreeState:"clean", GoVersion:"go1.26.7", DockerClientVersion:"v1.44"}
```
- Shows the command: `PS D:\VS\I\CI\CD\DEVOPS\Kubernetes\Kubernetes-helm-ligero>`

Bottom Terminal (Docker Hub):

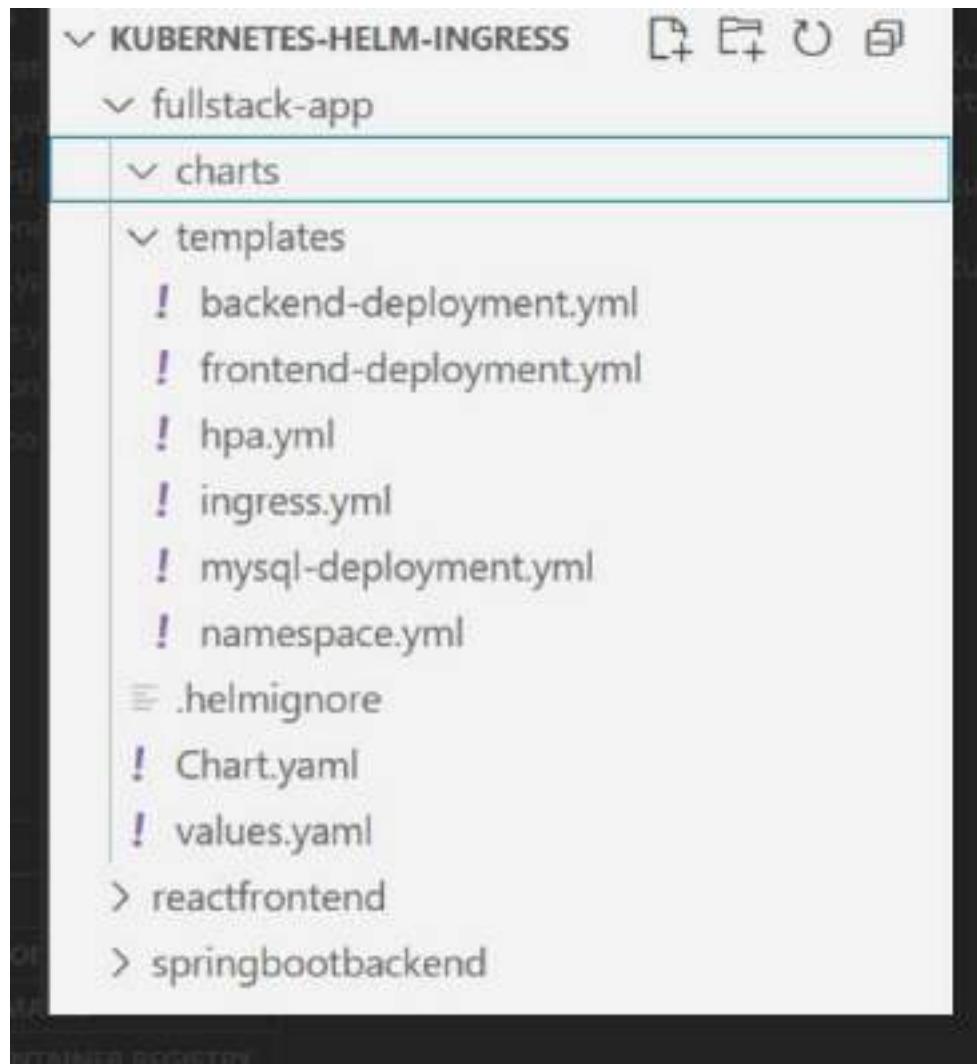
- Shows the command: `PS D:\VS\I\CI\CD\DEVOPS\Kubernetes\Kubernetes-helm-ligero> helm search -A dockerhub`
- Output:

```
Creating fullIndex.yaml
```
- Shows the command: `PS D:\VS\I\CI\CD\DEVOPS\Kubernetes\Kubernetes-helm-ligero>`

The left sidebar of the VS Code interface shows project navigation with items like **DOCKER HUB**, **KUBERNETES-Helm-LIGERO**, **ReactFrontend**, and **SpringBootBackend**.



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



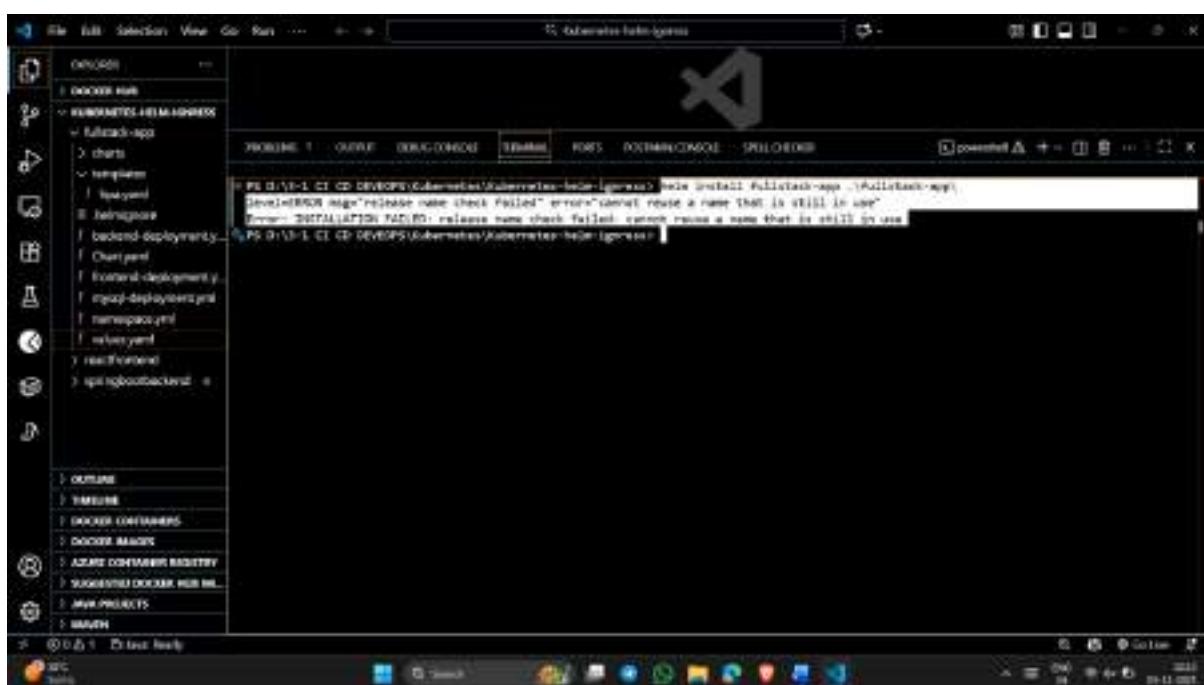
```
-> helm install fullstack-app ./fullstack-app
```

helm means cli tool

install means deploy a new release

fullstack-app means name of the release name

`./fullstack-app/` means helm directory



```
helm repo add fullstack-app https://github.com/truecharts/fullstack-app
```

```
helm search fullstack-app
```

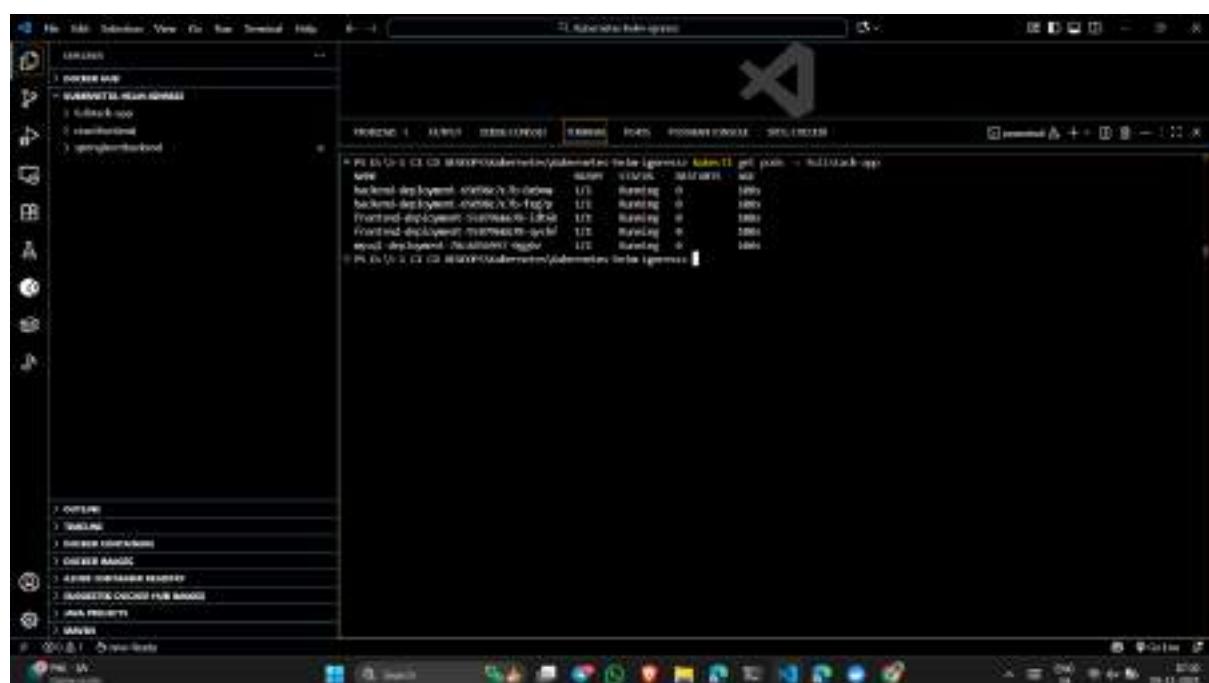
```
NAME: fullstack-app
VERSION: 0.1.0
APP VERSION: v0
DESCRIPTION: Fullstack App
URL: https://github.com/truecharts/fullstack-app
VALUES: {"name": "values", "namespace": "fullstack-app"}  
REVISION: 1 OUTPUT: DEPLOYMENT: NAME: fullstack-app TARGETS: REPO: https://github.com/truecharts/fullstack-app Deployment/backend-deployment: deployment/backend-deployment: cpu: unknown/50% 2 0 0 Deployment/frontend-deployment: deployment/frontend-deployment: cpu: unknown/50% 2 0 0  
OUTPUT: PS D:\VS-2\CD-DEVOPS\Kubernetes\Kubernetes-Helm-Signals  
REVISION: 1 DEPLOYMENT: NAME: fullstack-app TARGETS: REPO: https://github.com/truecharts/fullstack-app Deployment/backend-deployment: deployment/backend-deployment: cpu: unknown/50% 2 0 0 Deployment/frontend-deployment: deployment/frontend-deployment: cpu: unknown/50% 2 0 0  
TIMELINE:  
Docker Containers  
Docker Images  
Azure Container Registry  
Suggested Docker Hub Images  
Java Projects  
Batch
```

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

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

```
NAME: fullstack-app
VERSION: 0.1.0
APP VERSION: v0
DESCRIPTION: Fullstack App
URL: https://github.com/truecharts/fullstack-app
VALUES: {"name": "values", "namespace": "fullstack-app"}  
REVISION: 1 STATUS: UP-TO-DATE RELEASED: Sun Mar 3 18:26:45 2025  
NAMESPACE: fullstack-app STATUS: deployed RELEASED: 2 DESCRIPTION: Signage complete  
LAST UPDATED: None  
OUTPUT: PS D:\VS-2\CD-DEVOPS\Kubernetes\Kubernetes-Helm-Signals  
REVISION: 1 DEPLOYMENT: NAME: fullstack-app TARGETS: REPO: https://github.com/truecharts/fullstack-app Deployment/backend-deployment: deployment/backend-deployment: cpu: unknown/50% 2 0 0 Deployment/frontend-deployment: deployment/frontend-deployment: cpu: unknown/50% 2 0 0  
TIMELINE:  
Docker Containers  
Docker Images  
Azure Container Registry  
Suggested Docker Hub Images  
Java Projects  
Batch
```

```
kubectl get all -n fullstack-app
```



Task Manager

+ Add Task

Title	Description	Start Date	End Date
Enter task title	Enter task description	dd-mm-yyyy	dd-mm-yyyy

Priority:

Search by any field (id, title, description, priority, status):

All Tasks

ID	Title	Description	Start	End	Priority	Status	Actions
No record exists found.							

Task Manager

+ Add Task

Title	Description	Start Date	End Date
Enter task title	Enter task description	dd-mm-yyyy	dd-mm-yyyy

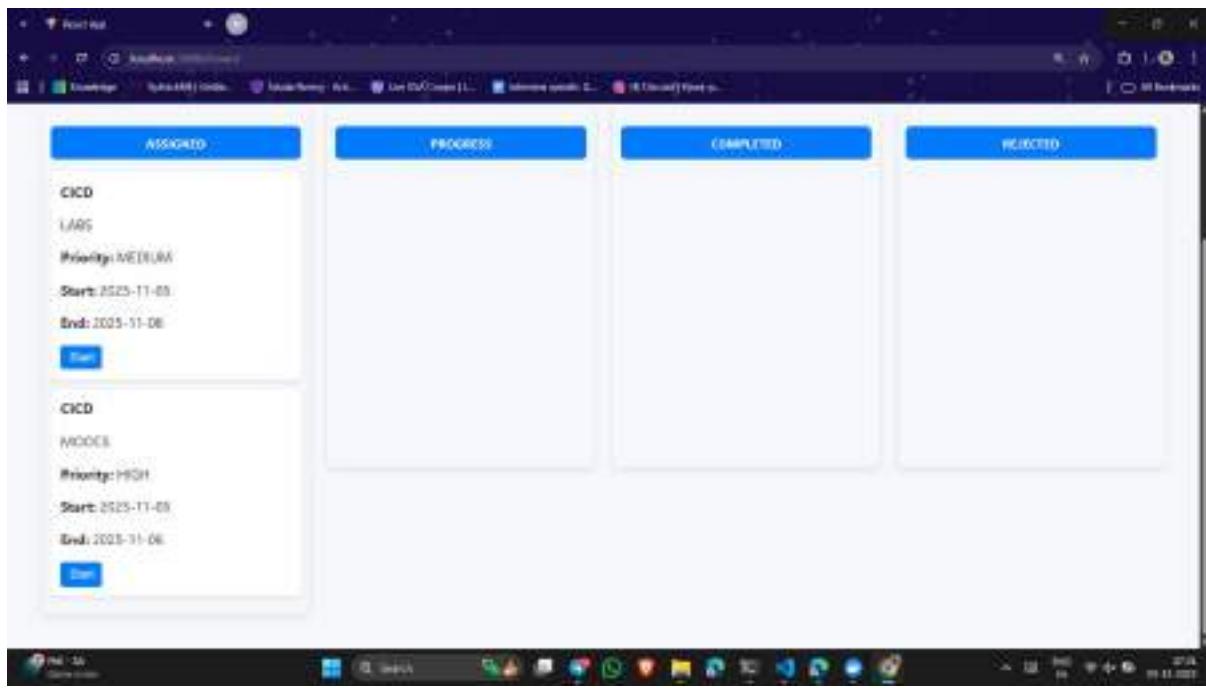
Priority:

Task updated successfully!

Search by any field (id, title, description, priority, status):

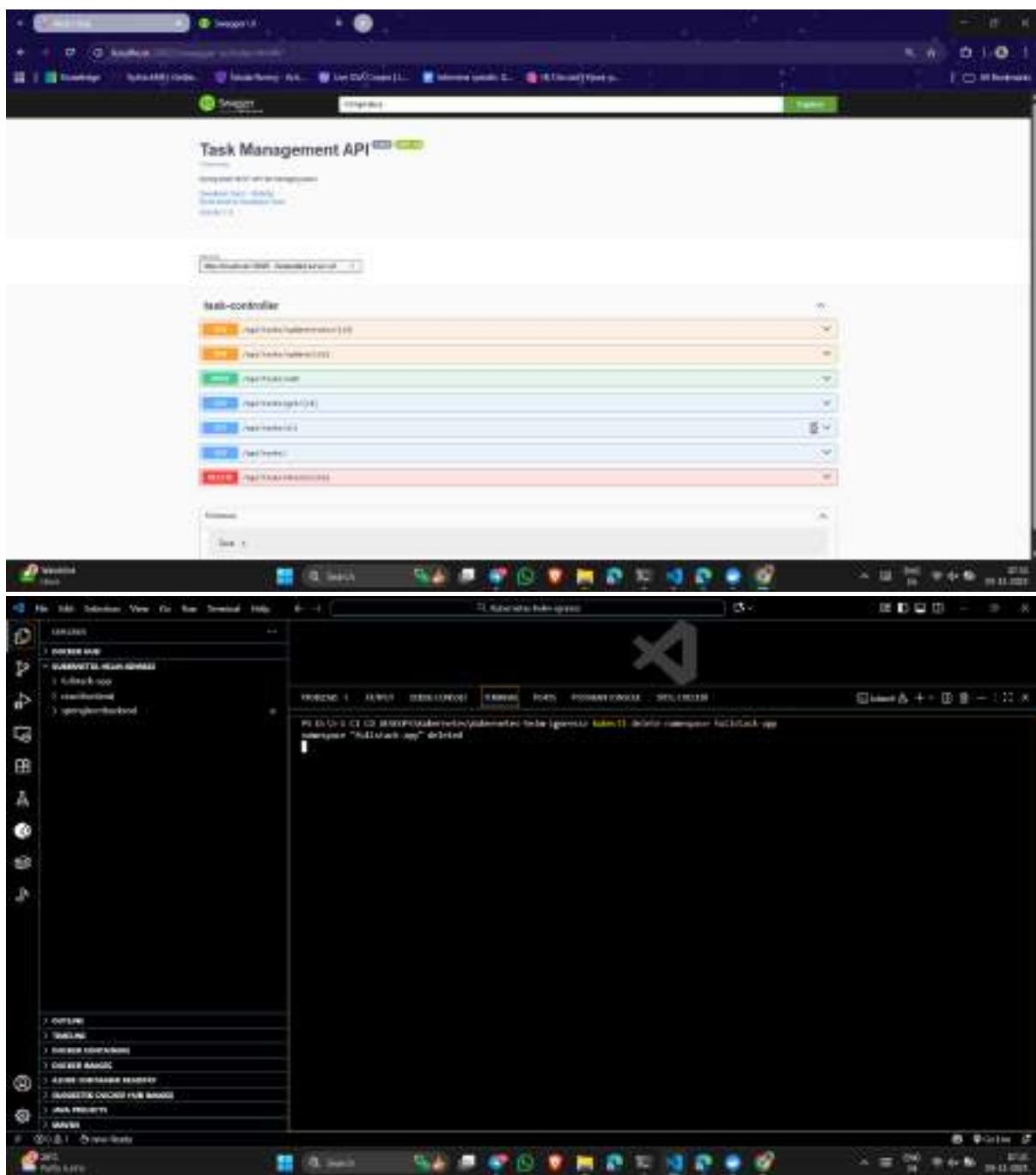
All Tasks

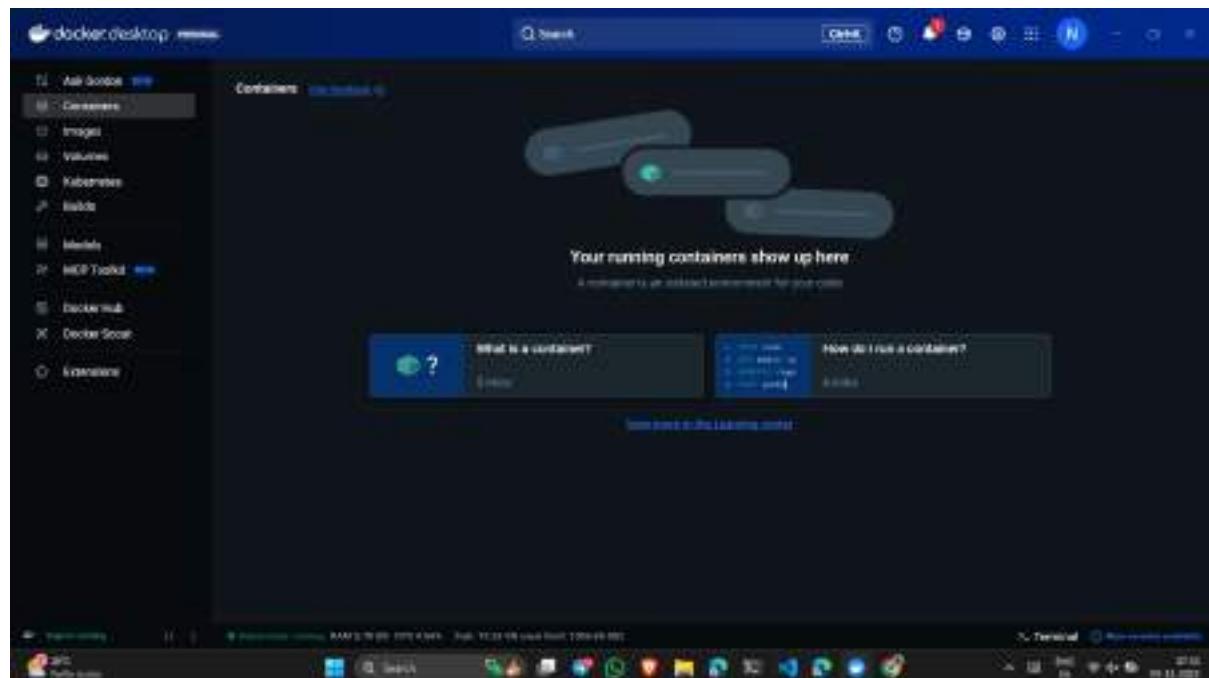
ID	Title	Description	Start	End	Priority	Status	Actions
34499	GCD	LABS	2025-11-05	2025-11-06	MEDIUM	ASSIGNED	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
34497	OCD	MOODS	2025-11-05	2025-11-06	HIGH	ASSIGNED	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

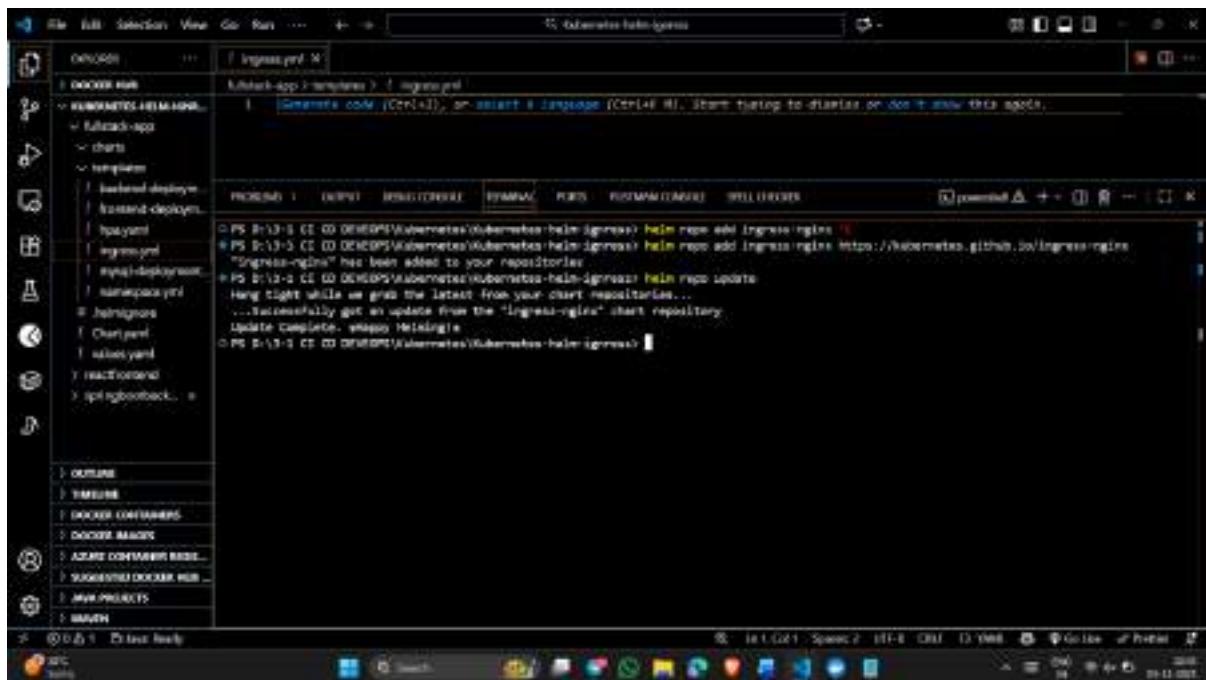


```
"id": "00000000-0000-0000-0000-000000000000",
"Title": "Title1",
"Description": "Desc1",
"StartDate": "2023-11-01T00:00:00Z",
"EndDate": "2023-11-01T23:59:59Z",
"Category": "Category1",
"Status": "Approved"
}

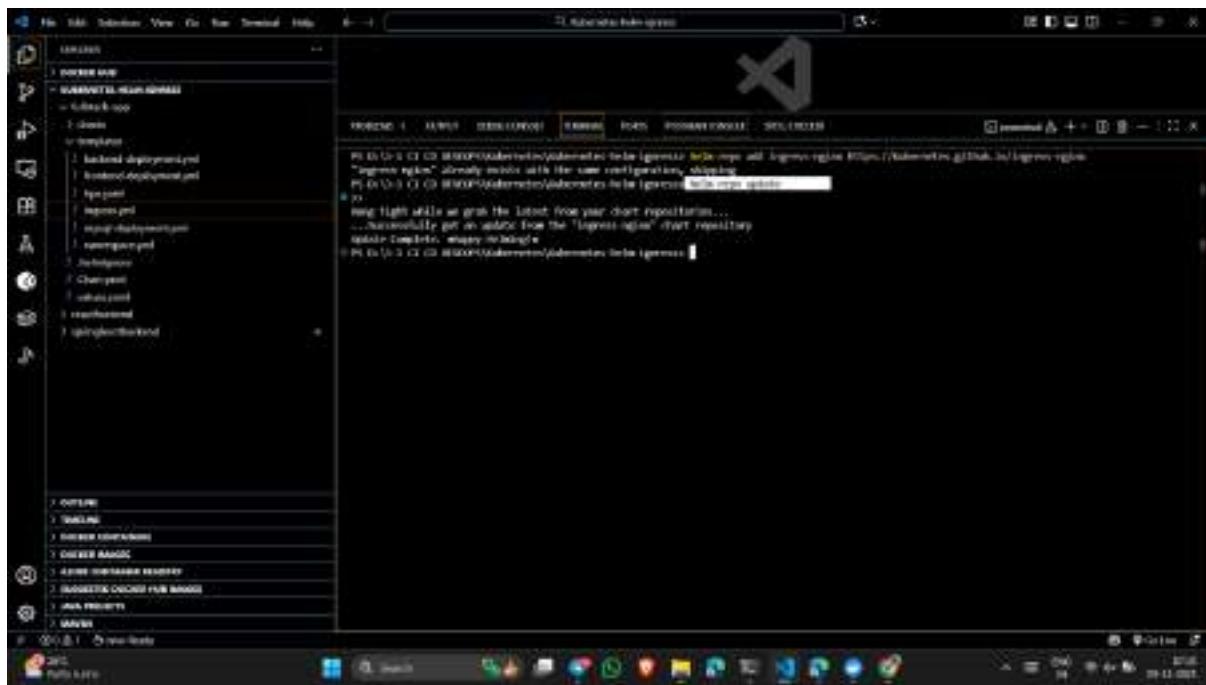
{
"Id": "00000000-0000-0000-0000-000000000001",
"Title": "Title2",
"Description": "Desc2",
"StartDate": "2023-11-02T00:00:00Z",
"EndDate": "2023-11-02T23:59:59Z",
"Category": "Category2",
"Status": "Approved"
}
```



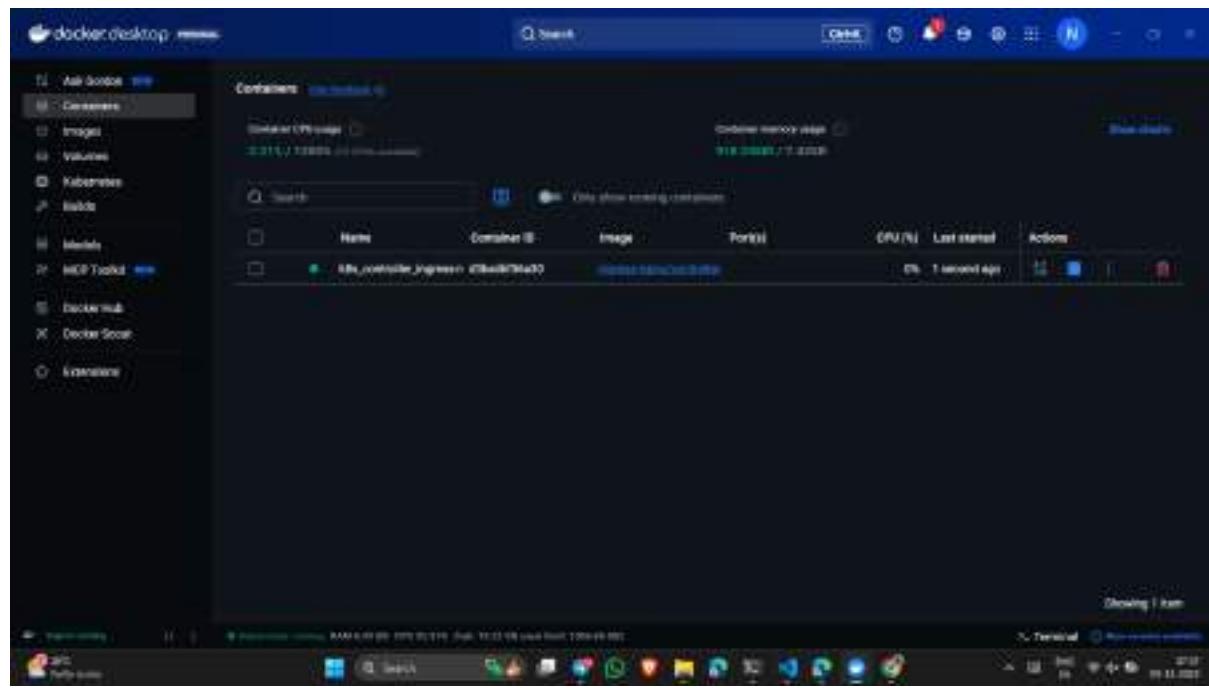


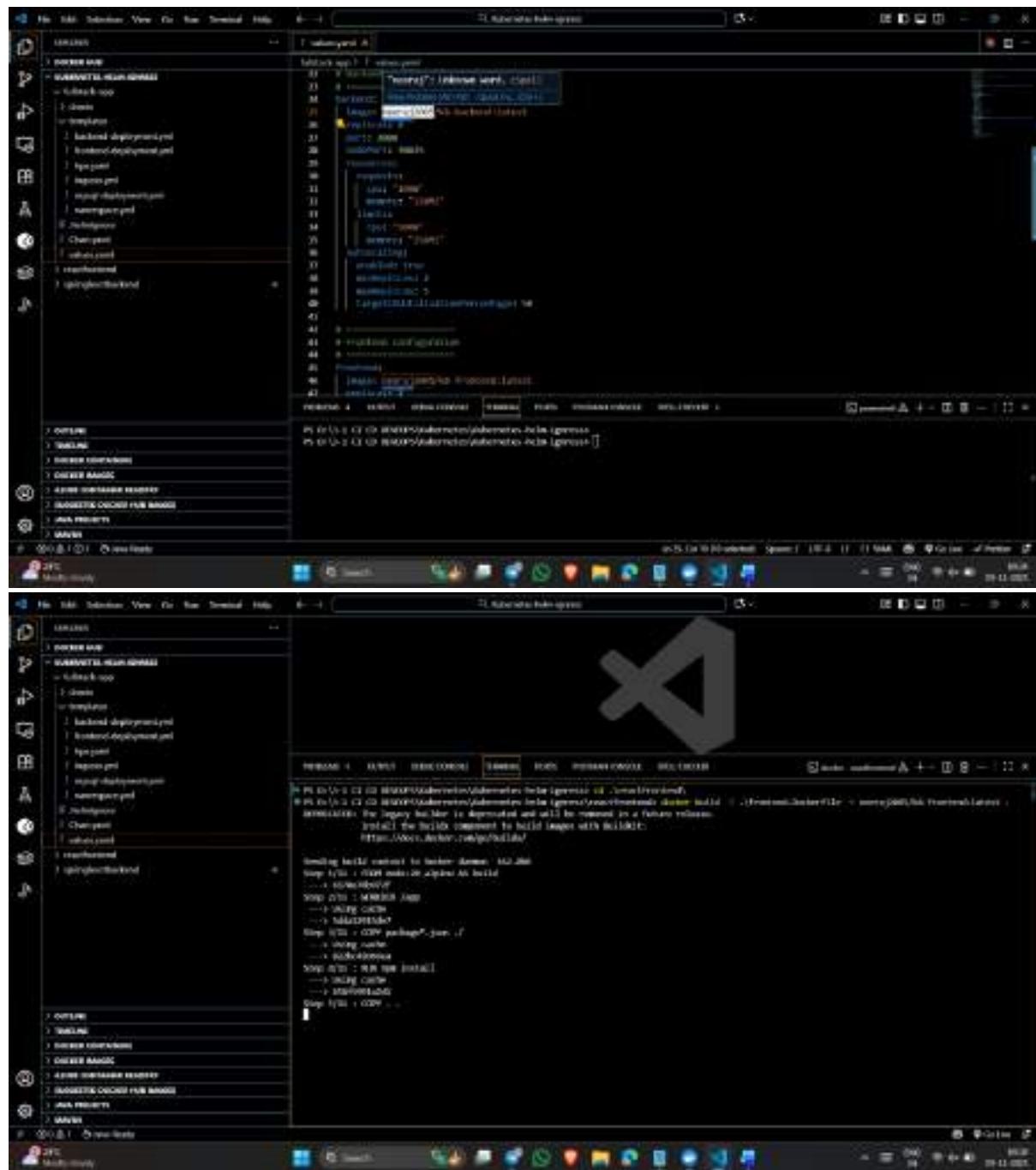


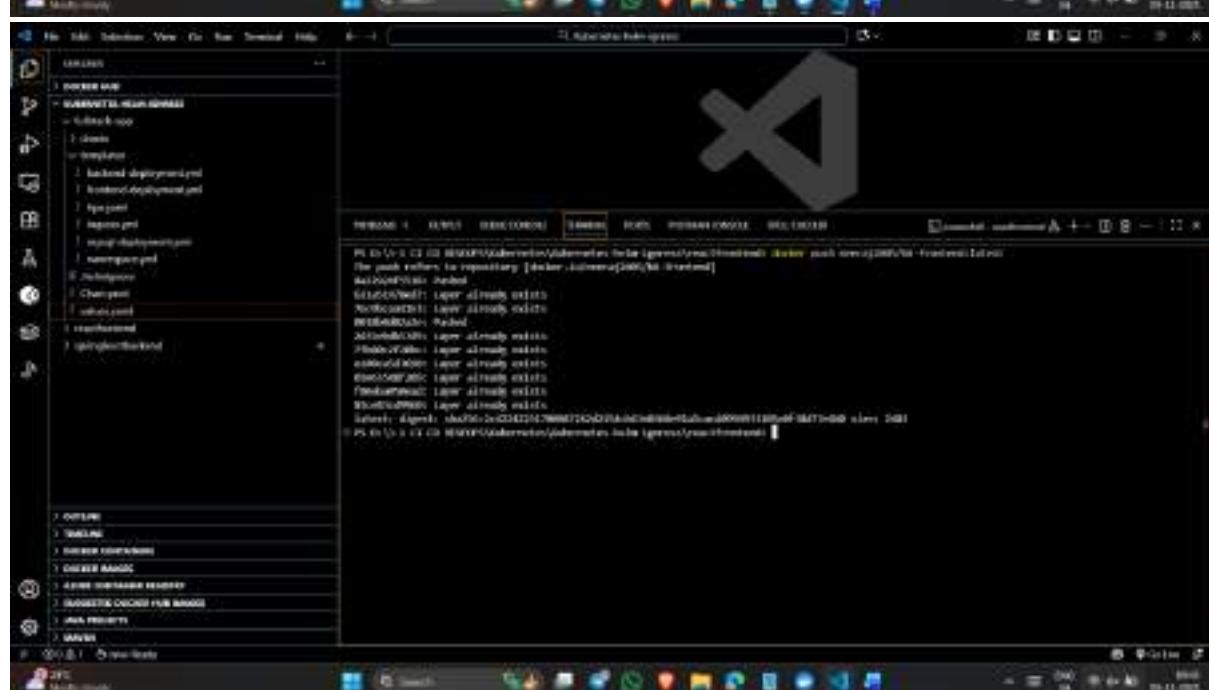
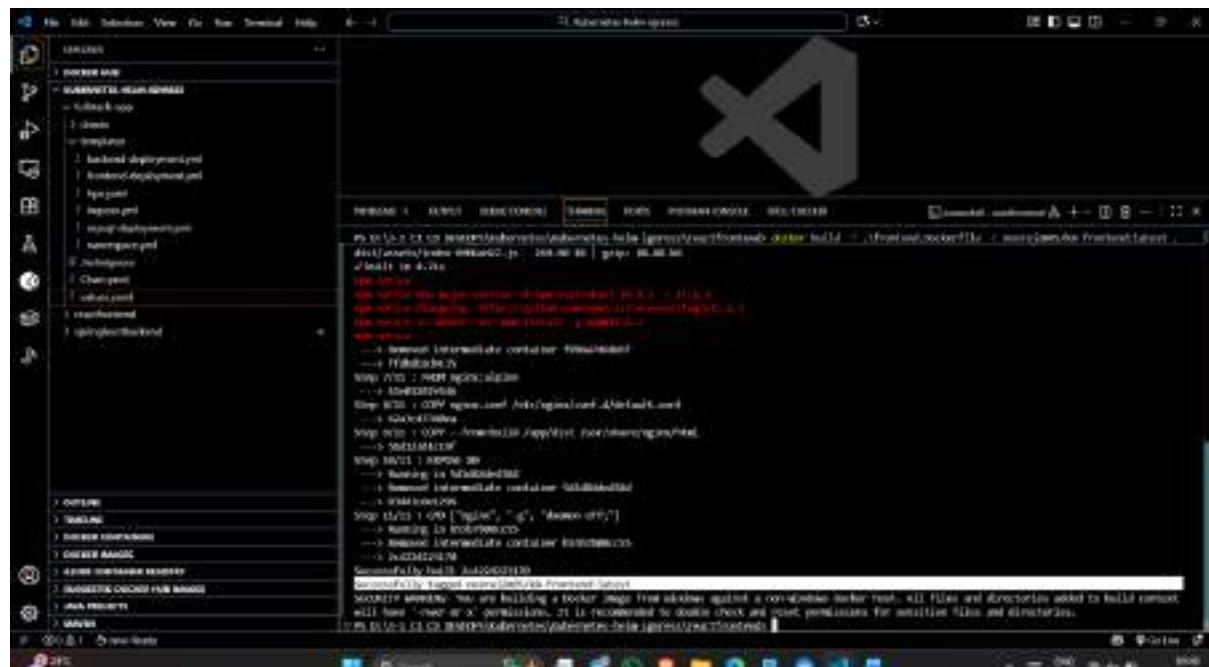
Helm with ingress

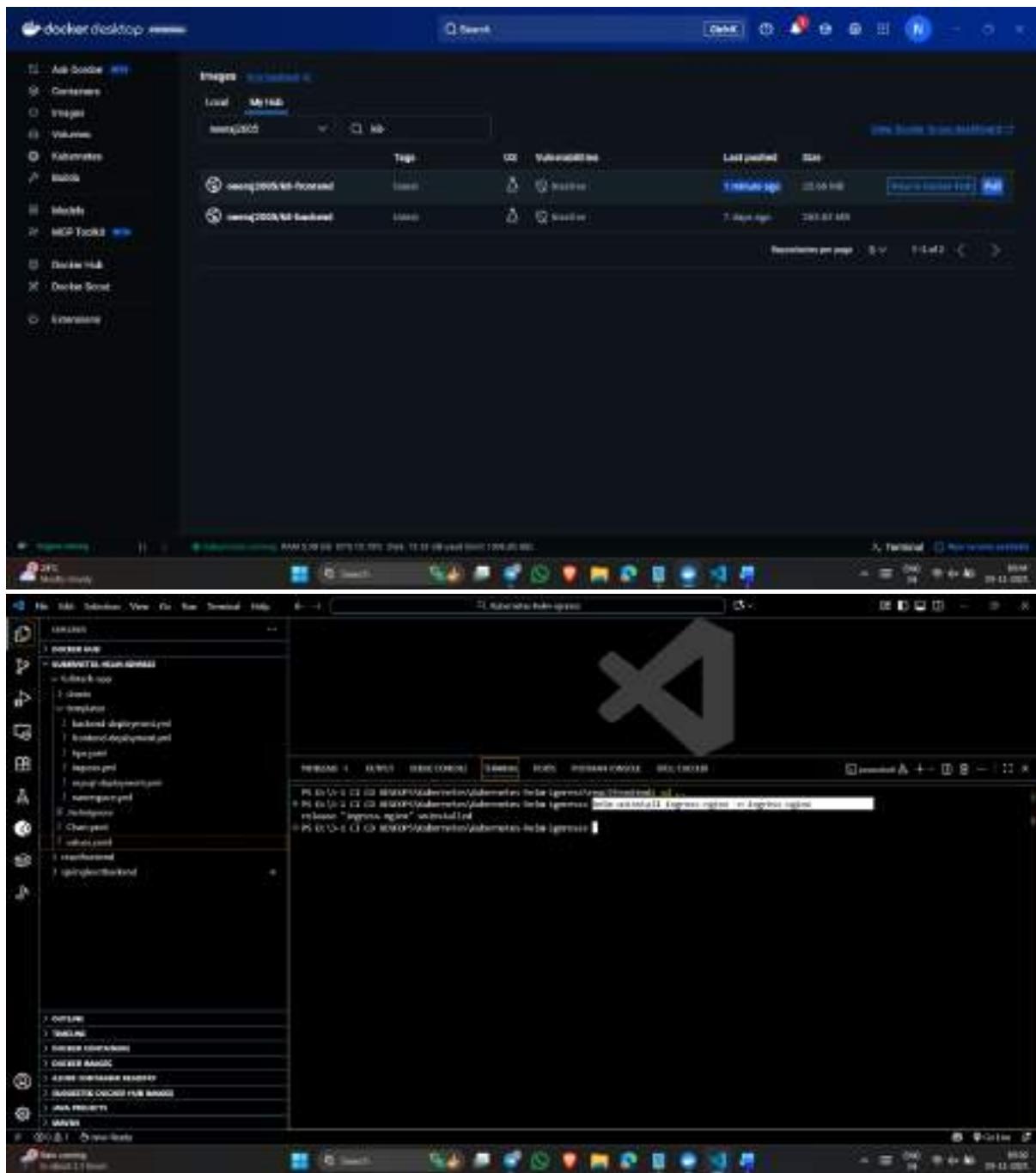


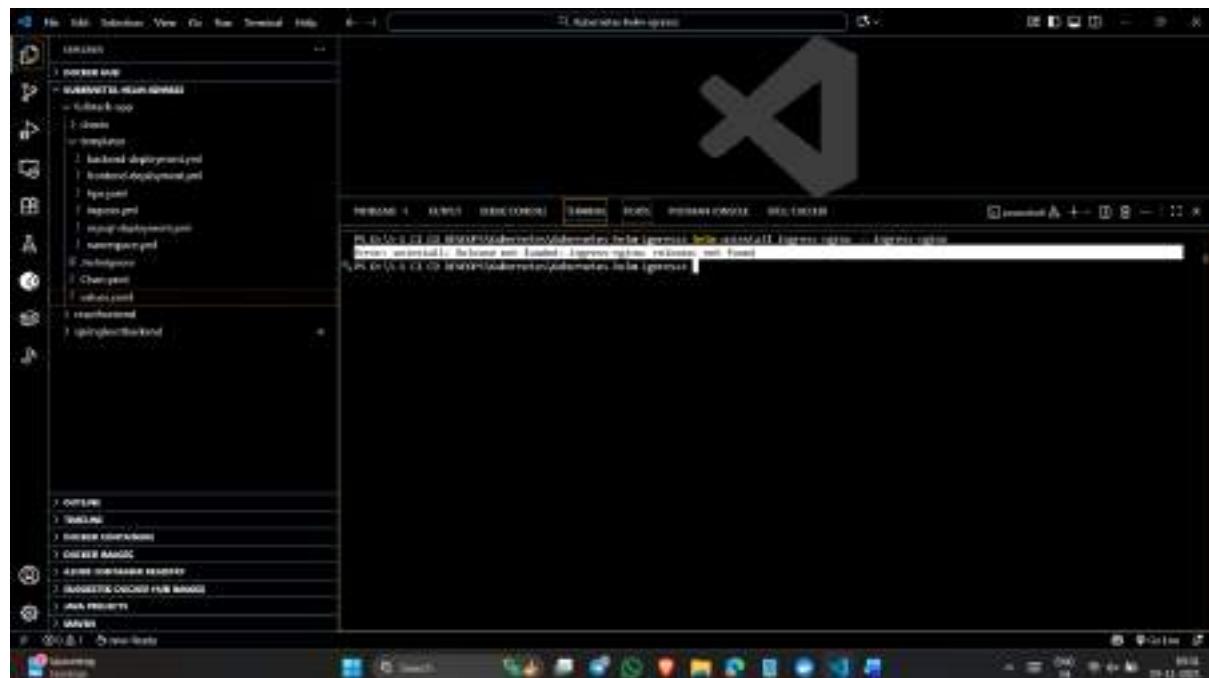
The screenshot shows the AWS Lambda function configuration interface. The left sidebar lists functions: 'DEMO-APP' (selected), 'DEMO-APP-2', 'DEMO-APP-3', 'DEMO-APP-4', 'DEMO-APP-5', 'DEMO-APP-6', 'DEMO-APP-7', 'DEMO-APP-8', 'DEMO-APP-9', 'DEMO-APP-10', 'DEMO-APP-11', 'DEMO-APP-12', 'DEMO-APP-13', 'DEMO-APP-14', 'DEMO-APP-15', 'DEMO-APP-16', 'DEMO-APP-17', 'DEMO-APP-18', 'DEMO-APP-19', 'DEMO-APP-20', 'DEMO-APP-21', 'DEMO-APP-22', 'DEMO-APP-23', 'DEMO-APP-24', 'DEMO-APP-25', 'DEMO-APP-26', 'DEMO-APP-27', 'DEMO-APP-28', 'DEMO-APP-29', 'DEMO-APP-30', 'DEMO-APP-31', 'DEMO-APP-32', 'DEMO-APP-33', 'DEMO-APP-34', 'DEMO-APP-35', 'DEMO-APP-36', 'DEMO-APP-37', 'DEMO-APP-38', 'DEMO-APP-39', 'DEMO-APP-40', 'DEMO-APP-41', 'DEMO-APP-42', 'DEMO-APP-43', 'DEMO-APP-44', 'DEMO-APP-45', 'DEMO-APP-46', 'DEMO-APP-47', 'DEMO-APP-48', 'DEMO-APP-49', 'DEMO-APP-50', 'DEMO-APP-51', 'DEMO-APP-52', 'DEMO-APP-53', 'DEMO-APP-54', 'DEMO-APP-55', 'DEMO-APP-56', 'DEMO-APP-57', 'DEMO-APP-58', 'DEMO-APP-59', 'DEMO-APP-60', 'DEMO-APP-61', 'DEMO-APP-62', 'DEMO-APP-63', 'DEMO-APP-64', 'DEMO-APP-65', 'DEMO-APP-66', 'DEMO-APP-67', 'DEMO-APP-68', 'DEMO-APP-69', 'DEMO-APP-70', 'DEMO-APP-71', 'DEMO-APP-72', 'DEMO-APP-73', 'DEMO-APP-74', 'DEMO-APP-75', 'DEMO-APP-76', 'DEMO-APP-77', 'DEMO-APP-78', 'DEMO-APP-79', 'DEMO-APP-80', 'DEMO-APP-81', 'DEMO-APP-82', 'DEMO-APP-83', 'DEMO-APP-84', 'DEMO-APP-85', 'DEMO-APP-86', 'DEMO-APP-87', 'DEMO-APP-88', 'DEMO-APP-89', 'DEMO-APP-90', 'DEMO-APP-91', 'DEMO-APP-92', 'DEMO-APP-93', 'DEMO-APP-94', 'DEMO-APP-95', 'DEMO-APP-96', 'DEMO-APP-97', 'DEMO-APP-98', 'DEMO-APP-99', 'DEMO-APP-100'. The main panel displays the configuration for 'DEMO-APP'. It includes tabs for 'FUNCTION', 'LAYER', 'ENVIRONMENT', 'HANDLER', 'CODE', 'PERMISSIONS', and 'LOGGING'. The 'HANDLER' tab is selected, showing the handler as 'lambda_function.lambda_handler'. The 'CODE' tab shows the code entry point as 'DEMO-APP-100'. The 'PERMISSIONS' tab shows a single permission: 'Allow invoke function' with 'Action' as 'lambda:InvokeFunction' and 'Resource' as 'arn:aws:lambda:us-east-1:123456789012:function:DEMO-APP-100'. The 'LOGGING' tab shows log group settings: 'Log group' as '/aws/lambda/DEMO-APP-100' and 'Log driver' as 'awslogs'. The bottom status bar indicates the browser is up-to-date.

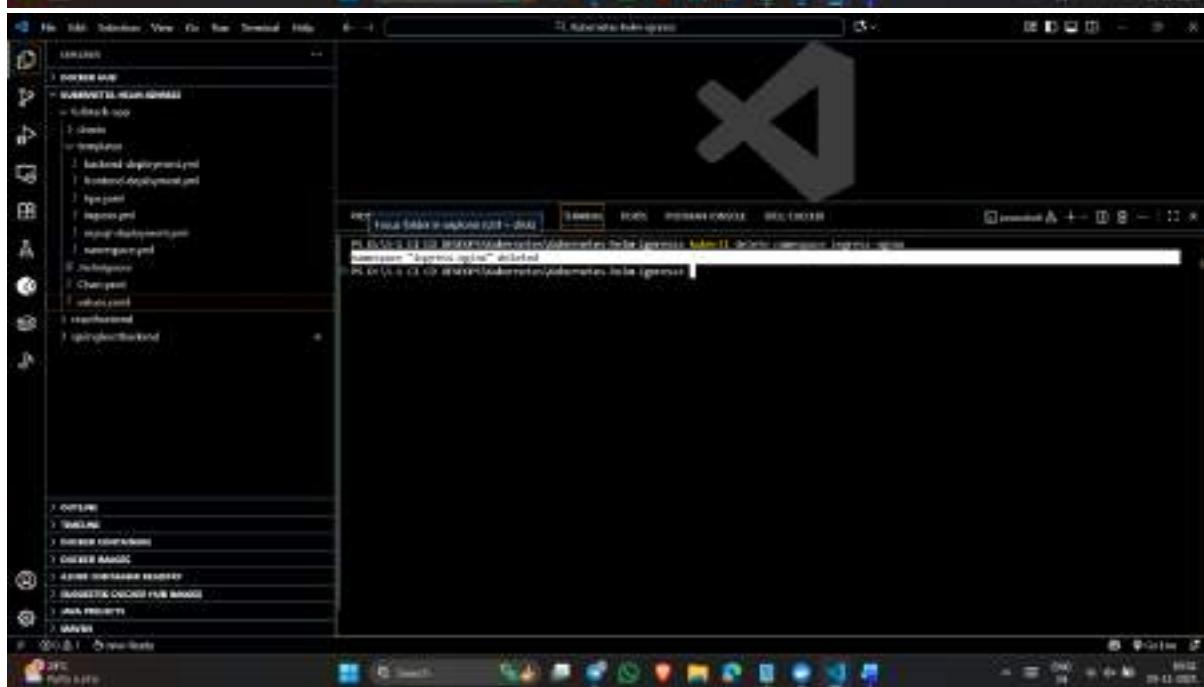
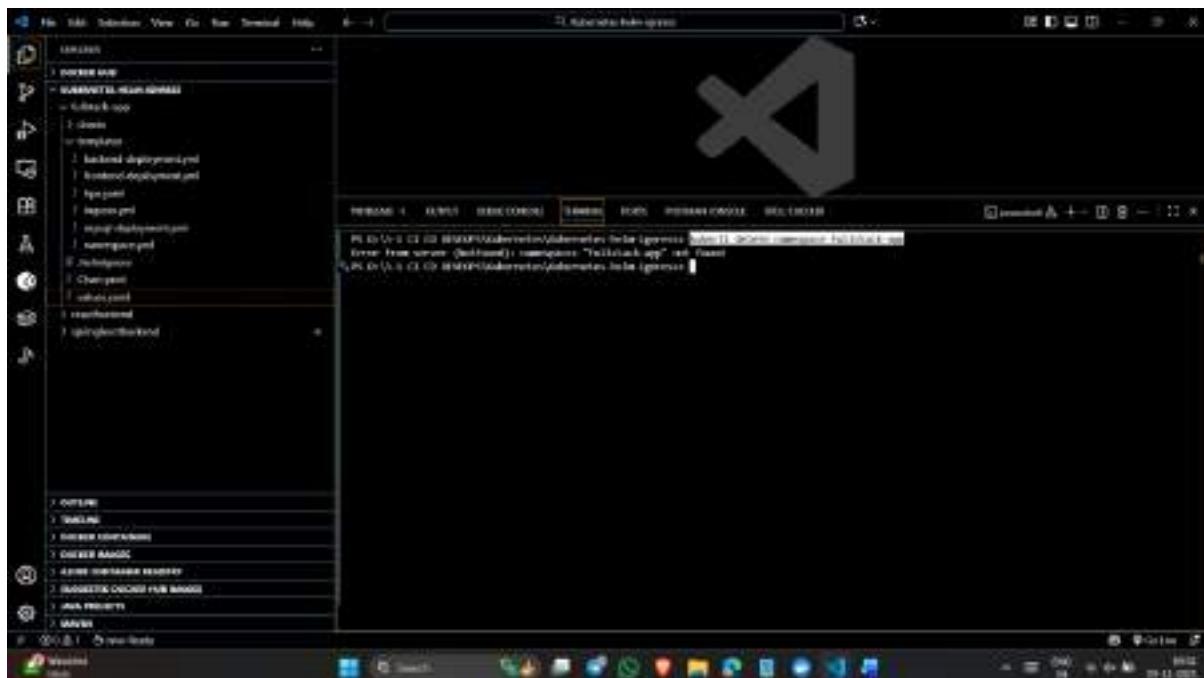












The image shows two side-by-side terminal windows within the Visual Studio Code interface, both titled "Kubernetes Helm ingress".

Top Terminal:

```
PS D:\J\1-3\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!
```

Bottom Terminal:

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

```
PS D:\M-3 C:\CD\DEVOPS\Kubernetes\kubernetes-helm-ingress> helm repo list
NAME      URL
Ingress-nginx https://kubernetes.github.io/ingress-nginx/
PS D:\M-3 C:\CD\DEVOPS\Kubernetes\kubernetes-helm-ingress>

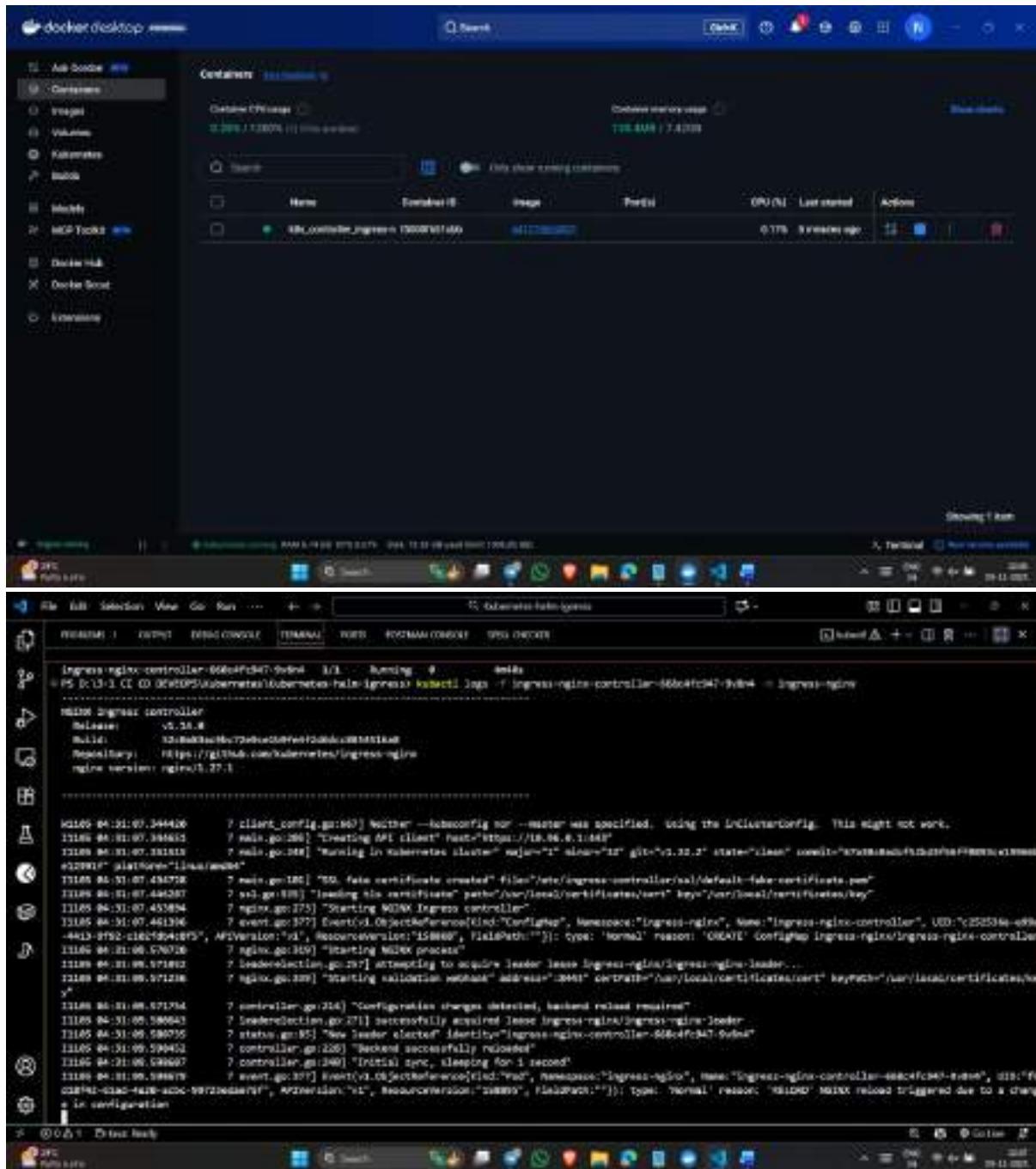
PS D:\M-3 C:\CD\DEVOPS\Kubernetes\kubernetes-helm-ingress> helm install ingress-nginx ingress-nginx/ingress-nginx --create-namespace
--namespace ingress-nginx
level=INFO msg="unable to find exact version; falling back to closest available version" chart=ingress-nginx requested="" selected="4.0"
NAME: ingress-nginx
LAST DEPLOYED: Wed Nov  5 08:43:41 2025
NAMESPACE: ingress-nginx
STATUS: deployed
REVISION: 4
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 -wwatch'.
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
```



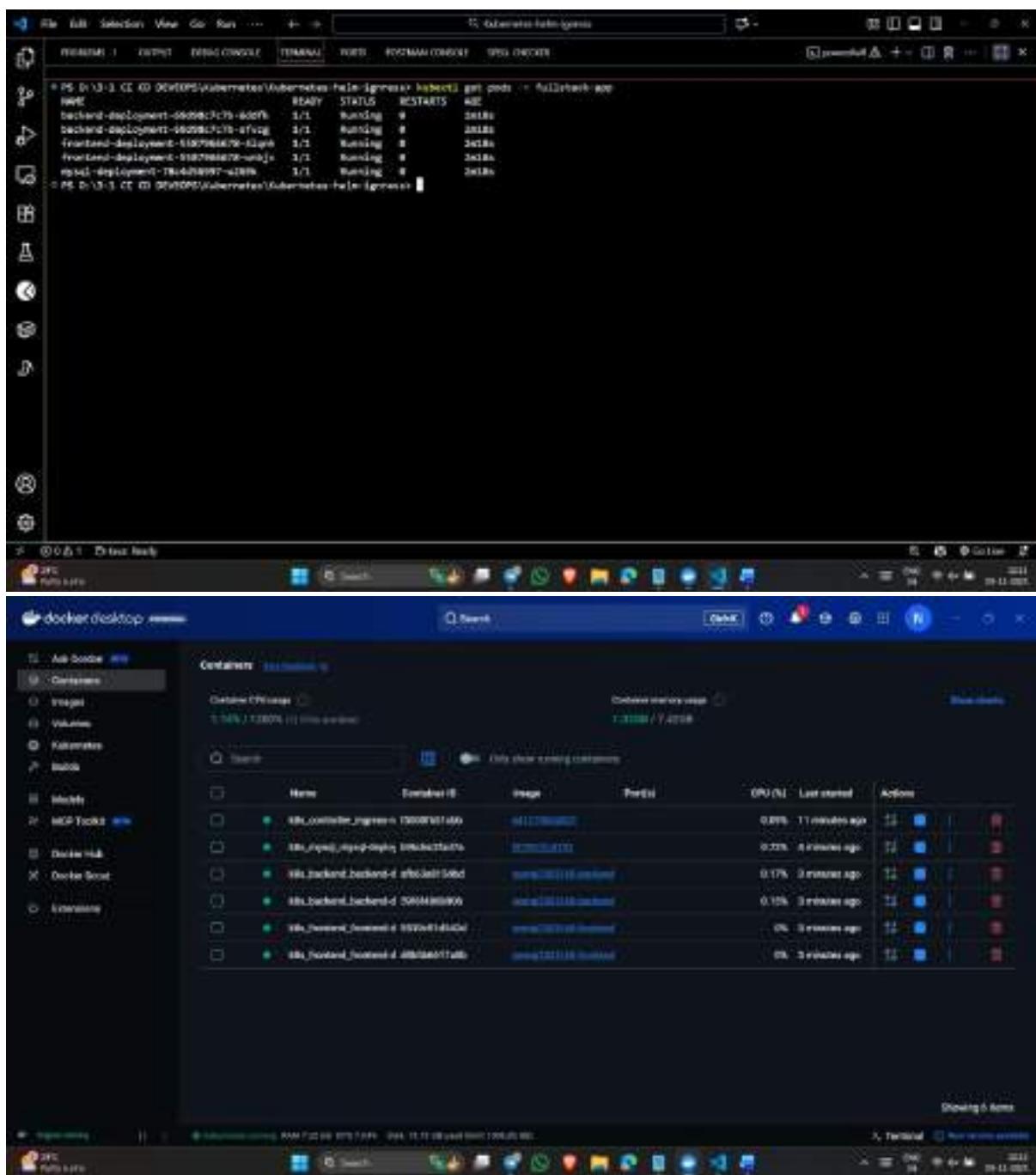
```
helm repo add ingress-nginx https://kubernetes.github.io/ingress-nginx
helm upgrade --install ingress-ingress-nginx ./ingress-nginx
```

The terminal output shows the deployment of the Ingress controller:

```
PS D:\Dokumente\Helm\Ingress> kubectl get pods --namespace=ingress-nginx
NAME                           READY   STATUS    RESTARTS   AGE
ingress-nginx-controller-466d4f3d7-9v8n4   1/1     Running   0          4m48s
PS D:\Dokumente\Helm\Ingress>
```



```
PS D:\D\1> cd D:\DevOps\ValueMetrics\ValueMetrics-helm\greenbox\helm\bin\..\..\..\fullstack-app\fullstack-app --create namespace --namespace fullstack-app
NAME: fullstack-app
LAST DEPLOYED: Wed Nov 5 10:00:38 2025
NAMESPACE: fullstack-app
STATUS: deployed
REVISION: 1
DESCRIPTION: fullstack-app
TEST SUITE: None
PS D:\D\1> cd D:\DevOps\ValueMetrics\ValueMetrics-helm\greenbox\helm\bin\..\..\..\fullstack-app\fullstack-app --upgrade fullstack-app --namespace fullstack-app
NAME: fullstack-app
LAST DEPLOYED: Wed Nov 5 10:00:38 2025
NAMESPACE: fullstack-app
STATUS: deployed
REVISION: 1
DESCRIPTION: fullstack-app
TEST SUITE: None
Release "fullstack-app" has been updated. Happy helming!
NAME: fullstack-app
LAST DEPLOYED: Wed Nov 5 10:00:44 2025
NAMESPACE: fullstack-app
STATUS: deployed
REVISION: 2
DESCRIPTION: Upgrade complete
TEST SUITE: None
PS D:\D\1> cd D:\DevOps\ValueMetrics\ValueMetrics-helm\greenbox\helm\bin\..\..\..\fullstack-app\fullstack-app --namespace fullstack-app
```



```
File Edit Selection View Go Run ... + - File: /home/centos/IdeaProjects/SpringBootHelloWorld/src/main/java/com/centos/springboot/hello/controller/HelloController.java Project: SpringBootHelloWorld Terminal 2020-12-03 09:56:28.620 INFO 1 --- [main] o.s.boot.SpringApplication : Starting SpringBootHelloWorldApplication v0.0.1-SNAPSHOT using Java 11.0.8 with PID 1 (/opt/jdk-11.0.8/bin/java -jar /opt/SpringBootHelloWorld.jar) 2020-12-03 09:56:28.620 INFO 1 --- [main] o.s.boot.SpringApplication : No active profile set, falling back to 'default': 2020-12-03 09:56:28.620 INFO 1 --- [main] o.s.boot.SpringApplication : Configuring profiles from system properties: 2020-12-03 09:56:28.620 INFO 1 --- [main] o.s.boot.SpringApplication : No profiles are active. Using 'default' profile. 2020-12-03 09:56:28.620 INFO 1 --- [main] o.s.boot.SpringApplication : Started application using mainClassName=SpringBootHelloWorldApplication in 0.001 seconds. 2020-12-03 09:56:28.620 INFO 1 --- [main] o.s.b.a.RepositoryConfigurationDelegate : Bootstrapping Spring Data JPA repositories in 0.001 seconds. 2020-12-03 09:56:28.620 INFO 1 --- [main] o.s.b.a.RepositoryConfigurationDelegate : Finished Spring Data repository scanning in 0.001 seconds. Found 1 JPA repository interfaces. 2020-12-03 09:56:28.620 INFO 1 --- [main] o.s.b.a.orm.jpa.EntityManagerFactoryBuilder : PersistenceUnit [DefaultPU] initialized with persistence provider [org.hibernate.jpa.HibernateJpaEntityManagerFactory] 2020-12-03 09:56:28.620 INFO 1 --- [main] o.apache.catalina.core.StandardService : Starting service [tomcat] 2020-12-03 09:56:28.620 INFO 1 --- [main] o.apache.catalina.core.StandardEngine : Starting servlet engine: [Apache Tomcat/10.0.0-M10] 2020-12-03 09:56:28.620 INFO 1 --- [main] o.a.c.t.TomcatWebappContext : Initializing Spring embedded Jetty web application context 2020-12-03 09:56:28.620 INFO 1 --- [main] o.a.c.t.TomcatWebappContext : Root WebApplicationContext: initialization completed in 7653 ms 2020-12-03 09:56:28.620 INFO 1 --- [main] o.h.b.j.p.internal.util.LogHelper : HHH000004: Processing PersistenceUnitInfo [name = default] 2020-12-03 09:56:28.620 INFO 1 --- [main] o.h.b.j.p.internal.util.LogHelper : HHH000022: hibernate core version 5.6.20.Final 2020-12-03 09:56:28.620 INFO 1 --- [main] o.h.b.j.p.internal.util.LogHelper : HHH000023: Second-level cache disabled
```

```
PS D:\D\1 CE k3s devops\kubernetes\kubernetes-helm\ignacio Helm 1.16.0 -> fullstack-app
NAME          NAMESPACE      VERSION      UPDATES      STATUS      CHART      APP VERSION
fullstack-app  fullstack-app  1            2025-11-05 08:00:44.541798146(+)  deployed   fullstack-app-1.0.0  1.0
PS D:\D\1 CE k3s devops\kubernetes\kubernetes-helm\ignacio
```



```
PS D:\D\1 CE k3s devops\kubernetes\kubernetes-helm\ignacio Helm 1.16.0 -> fullstack-app
NAME          NAMESPACE      VERSION      UPDATES      STATUS      CHART      APP VERSION
fullstack-app  fullstack-app  1            2025-11-05 08:00:44.541798146(+)  deployed   fullstack-app-1.0.0  1.0
PS D:\D\1 CE k3s devops\kubernetes\kubernetes-helm\ignacio kubectl get svc -n fullstack-app
NAME           TYPE        CLUSTER-IP      EXTERNAL-IP      PORT(S)      SELECTOR
backend-deployment-service  NodePort   10.99.183.218    <none>       30001:30021/TCP  backend
frontend-deployment-service  NodePort   10.99.242.133    <none>       80:30888/TCP    frontend
nginx-ingress-service       ClusterIP  10.99.3.1       <none>       3004/TCP      <none>
PS D:\D\1 CE k3s devops\kubernetes\kubernetes-helm\ignacio
```



```
File Edit Selection View Go Run ... + - <--> Kubernetes-hello-gateway
PROBLEMS | DIFFERENT DEBUG CONSOLE TERMINAL TOOLS POSTMAN CONSOLE SPIN MONITOR
File Edit Selection View Go Run ... + - <--> Kubernetes-hello-gateway
REVISION UPDATED STATUS APP VERSION DESCRIPTION
1 last nov 5 20:00:38 2020 suspended Fullstack-app-1.0.0 0.0 Install complete
2 last nov 5 20:00:44 2020 deployed Fullstack-app-1.0.0 0.0 Upgrade complete
PS D:\a\1\c\0\minipriv\kubernetes\kubernetes-hello-gateway>
```



```
File Edit Selection View Go Run ... + - <--> Kubernetes-hello-gateway
PROBLEMS | DIFFERENT DEBUG CONSOLE TERMINAL TOOLS POSTMAN CONSOLE SPIN MONITOR
File Edit Selection View Go Run ... + - <--> Kubernetes-hello-gateway
REF ID REFERENCE TARGETS K8SPODS K8SPVS REPLICAS AGE
backend-deployment-hs deployment/backend-deployment csi:customers/vfs 2 5 2 3m
frontend-deployment-hs deployment/frontend-deployment csi:customers/vfs 2 2 2 3m
PS D:\a\1\c\0\minipriv\kubernetes\kubernetes-hello-gateway>
```



```
File Edit Selection View Go Run ... + - <--> Kubernetes-hello-gateway
PROBLEMS | DIFFERENT DEBUG CONSOLE TERMINAL TOOLS POSTMAN CONSOLE SPIN MONITOR
File Edit Selection View Go Run ... + - <--> Kubernetes-hello-gateway
PS D:\a\1\c\0\minipriv\kubernetes\kubernetes-hello-gateway>
```

Horizontal pod autoscaling

```
PS D:\13-3\CE\03-06\00PS\kubernetes\kubernetes-helm-ignition> kubectl get svc --selector=fullstack-app --namespace=failinace-app
NAME          TYPE        CLUSTER-IP   EXTERNAL-IP   PORT(S)   AGE
fullstack-app   ClusterIP   10.96.1.100   <none>       80/TCP    1d
PS D:\13-3\CE\03-06\00PS\kubernetes\kubernetes-helm-ignition> kubectl get svc --selector=fullstack-app --namespace=failinace-app
NAME          TYPE        CLUSTER-IP   EXTERNAL-IP   PORT(S)   AGE
fullstack-app   ClusterIP   10.96.1.100   <none>       80/TCP    1d
PS D:\13-3\CE\03-06\00PS\kubernetes\kubernetes-helm-ignition> kubectl get svc --selector=fullstack-app --namespace=failinace-app
NAME          TYPE        CLUSTER-IP   EXTERNAL-IP   PORT(S)   AGE
fullstack-app   ClusterIP   10.96.1.100   <none>       80/TCP    1d
PS D:\13-3\CE\03-06\00PS\kubernetes\kubernetes-helm-ignition> kubectl get svc --selector=fullstack-app --namespace=failinace-app
NAME          TYPE        CLUSTER-IP   EXTERNAL-IP   PORT(S)   AGE
fullstack-app   ClusterIP   10.96.1.100   <none>       80/TCP    1d
PS D:\13-3\CE\03-06\00PS\kubernetes\kubernetes-helm-ignition>
```

```
PS D:\13-3 CE 03 089605\kubernetes\kubernetes-helm-ignition> kubectl get frontends --field-selector status.phase=Running -n kube-system
```

NAME	READY	REPLICAS	AGE
fullstack-app	1/1	1	10d, 20h

```
PS D:\13-3 CE 03 089605\kubernetes\kubernetes-helm-ignition> kubectl get svc --selector=app.kubernetes.io/name=fullstack-app -n kube-system
```

NAME	TYPE	PORT(S)	SELECTOR	EXTERNAL-IP	PORT(S)
fullstack-app	ClusterIP	80:3080/TCP	app.kubernetes.io/name:fullstack-app	<none>	<none>

```
PS D:\13-3 CE 03 089605\kubernetes\kubernetes-helm-ignition> kubectl get deployment --selector=app.kubernetes.io/name=fullstack-app -n kube-system
```

NAME	REPLICAS	READY	AGE
fullstack-deployment	1/1	1/1	10d, 20h

```
PS D:\13-3 CE 03 089605\kubernetes\kubernetes-helm-ignition> kubectl get events --field-selector source.lastEventTime --sort-by=.lastEventTime --reverse -n kube-system
```

LAST EVENT TIME	TYPE	REASON	MESSAGE
2020-11-20T18:48:36Z	Warning	FailedGetResourceMetrics	the K8S controller was unable to get the target's current scale
2020-11-20T18:48:36Z	Warning	FailedGetResourceMetrics	the K8S 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.kubelet)
2020-11-20T18:48:36Z	Warning	FailedGetResourceMetrics	the K8S controller was unable to get the target's current scale
2020-11-20T18:48:36Z	Warning	FailedGetResourceMetrics	the K8S 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.kubelet)
2020-11-20T18:48:36Z	Warning	FailedGetResourceMetrics	the K8S controller was unable to get the target's current scale
2020-11-20T18:48:36Z	Warning	FailedGetResourceMetrics	the K8S 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.kubelet)

```
PS D:\13-3 CE 03 089605\kubernetes\kubernetes-helm-ignition>
```

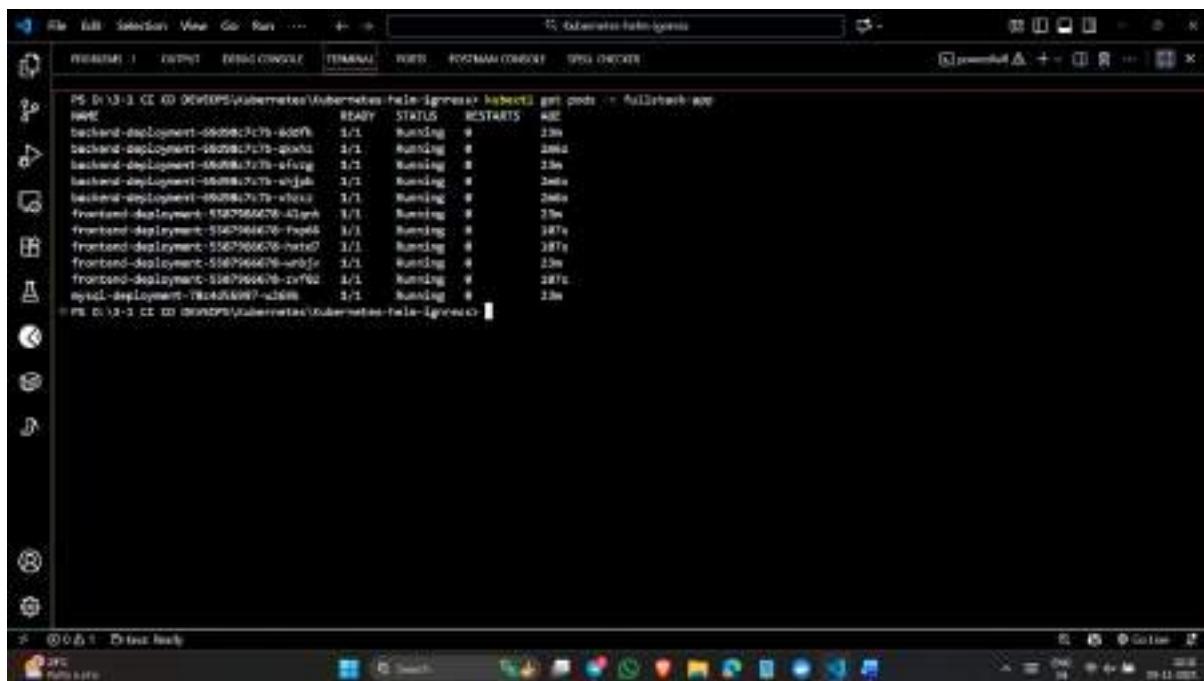
```
PS D:\13-3\CE\03-devops\yaml\kubernetes\helm\ignition> kubectl get svc --namespace=fullstack-app
NAME          TYPE        CLUSTER-IP      EXTERNAL-IP   PORT(S)          AGE
backend-deployment-ips   deployment-backend-deployment   clusterip:192.168.1.2   80,443   1m
frontend-deployment-ips  deployment-frontend-deployment   clusterip:192.168.1.3   80,443   1m
PS D:\13-3\CE\03-devops\yaml\kubernetes\helm\ignition> kubectl get pods --namespace=fullstack-app
NAME                           READY   STATUS    RESTARTS   AGE
backend-deployment-59987179-8d9ff   3/3    Running   0          28s
backend-deployment-59987179-8f9ff   3/3    Running   0          28s
frontend-deployment-5967964226-43qph  3/3    Running   0          28s
frontend-deployment-5967964226-wxqjg  3/3    Running   0          28s
mysql-deployment-78c425997-4369k   3/3    Running   0          28s
PS D:\13-3\CE\03-devops\yaml\kubernetes\helm\ignition>
```

```
PS D:\13-3 CE\03-DEVOPS\kubernetes\kubernetes-hello-liveness> kubectl get pods --in fullstack-app -n
NAME          STATUS    RESTARTS   AGE
backend-deployment-79498c79-84898   1/1      Running   0   2m
frontend-deployment-55698c79-43ygr   1/1      Running   0   2m
mysql-deployment-79498c79-43ygr   1/1      Running   0   2m
PS D:\13-3 CE\03-DEVOPS\kubernetes\kubernetes-hello-liveness> kubectl get pods --in fullstack-app
NAME          STATUS    RESTARTS   AGE
backend-deployment-79498c79-84898   1/1      Running   0   2m
backend-deployment-55698c79-43ygr   1/1      Running   0   2m
frontend-deployment-55698c79-43ygr   1/1      Running   0   2m
mysql-deployment-79498c79-43ygr   1/1      Running   0   2m
PS D:\13-3 CE\03-DEVOPS\kubernetes\kubernetes-hello-liveness> kubectl scale deployment backend-deployment --replicas=5 -n fullstack-app
deployment.apps/backend-deployment scaled
PS D:\13-3 CE\03-DEVOPS\kubernetes\kubernetes-hello-liveness>
```



```
PS D:\13-3 CE\03-DEVOPS\kubernetes\kubernetes-hello-liveness> kubectl get pods --in fullstack-app -n
NAME          STATUS    RESTARTS   AGE
backend-deployment-79498c79-84898   1/1      Running   0   2m
frontend-deployment-55698c79-43ygr   1/1      Running   0   2m
mysql-deployment-79498c79-43ygr   1/1      Running   0   2m
PS D:\13-3 CE\03-DEVOPS\kubernetes\kubernetes-hello-liveness> kubectl get pods --in fullstack-app
NAME          STATUS    RESTARTS   AGE
backend-deployment-79498c79-84898   1/1      Running   0   2m
backend-deployment-55698c79-43ygr   1/1      Running   0   2m
frontend-deployment-55698c79-43ygr   1/1      Running   0   2m
mysql-deployment-79498c79-43ygr   1/1      Running   0   2m
PS D:\13-3 CE\03-DEVOPS\kubernetes\kubernetes-hello-liveness> kubectl scale deployment backend-deployment --replicas=5 -n fullstack-app
deployment.apps/backend-deployment scaled
PS D:\13-3 CE\03-DEVOPS\kubernetes\kubernetes-hello-liveness> kubectl scale deployment frontend-deployment --replicas=5 -n fullstack-app
deployment.apps/frontend-deployment scaled
PS D:\13-3 CE\03-DEVOPS\kubernetes\kubernetes-hello-liveness>
```

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



A screenshot of a terminal window titled "Kubernetes Helm Agents". The window shows a table of deployment statuses:

NAME	READY	STATUS	RESTARTS
HERE	1/1	Running	0
backend-deployment-985987c79-626f9	1/1	Running	239
backend-deployment-985987c79-200d2	1/1	Running	2864
backend-deployment-985987c79-4151g	1/1	Running	236
backend-deployment-985987c79-574ab	1/1	Running	266
backend-deployment-985987c79-xf5zz	1/1	Running	2864
frontend-deployment-5587956679-42mnh	1/1	Running	236
frontend-deployment-5587956679-5y64d	1/1	Running	3876
frontend-deployment-5587956679-nnt67	1/1	Running	3876
frontend-deployment-5587956679-wnbjx	1/1	Running	236
frontend-deployment-5587956679-zr7q2	1/1	Running	2876
mysql-deployment-78cc05897-4z598	1/1	Running	236

The terminal prompt at the bottom is "PS D:\v3>C:\Users\91900\Downloads\kubernetes-helm-agents>".

The screenshot shows a web-based Task Manager application. At the top, there's a navigation bar with icons for Home, Logout, and other system status indicators. Below it, a dark header bar displays "Task Manager". On the right side of the header are two buttons: "Dashboard" and "Task List".

The main area features a "Add Task" form with fields for Title, Description, Start Date, End Date, and Priority. A dropdown menu for Priority is open, showing "Select Priority". Below the form is a search bar with placeholder text "Search by any field (title, description, priority, status)" and a "Clear" button.

Below the search bar is a section titled "All Tasks" with a table header:

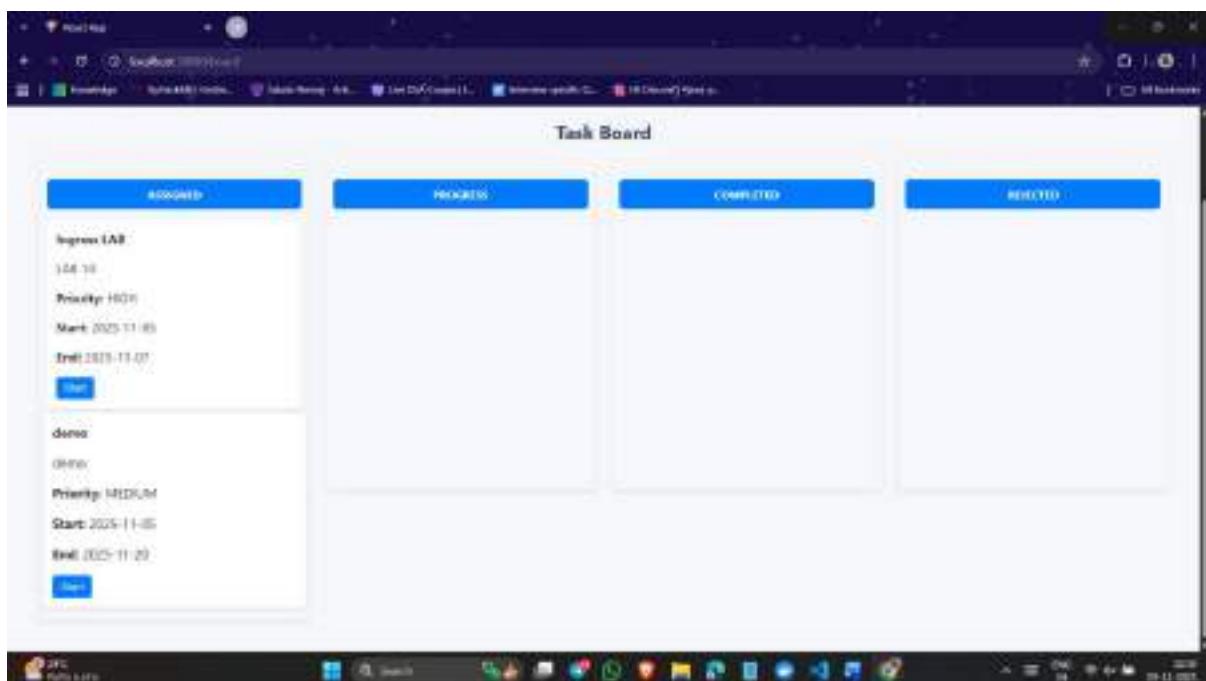
ID	Title	Description	Start	End	Priority	Status	Actions
----	-------	-------------	-------	-----	----------	--------	---------

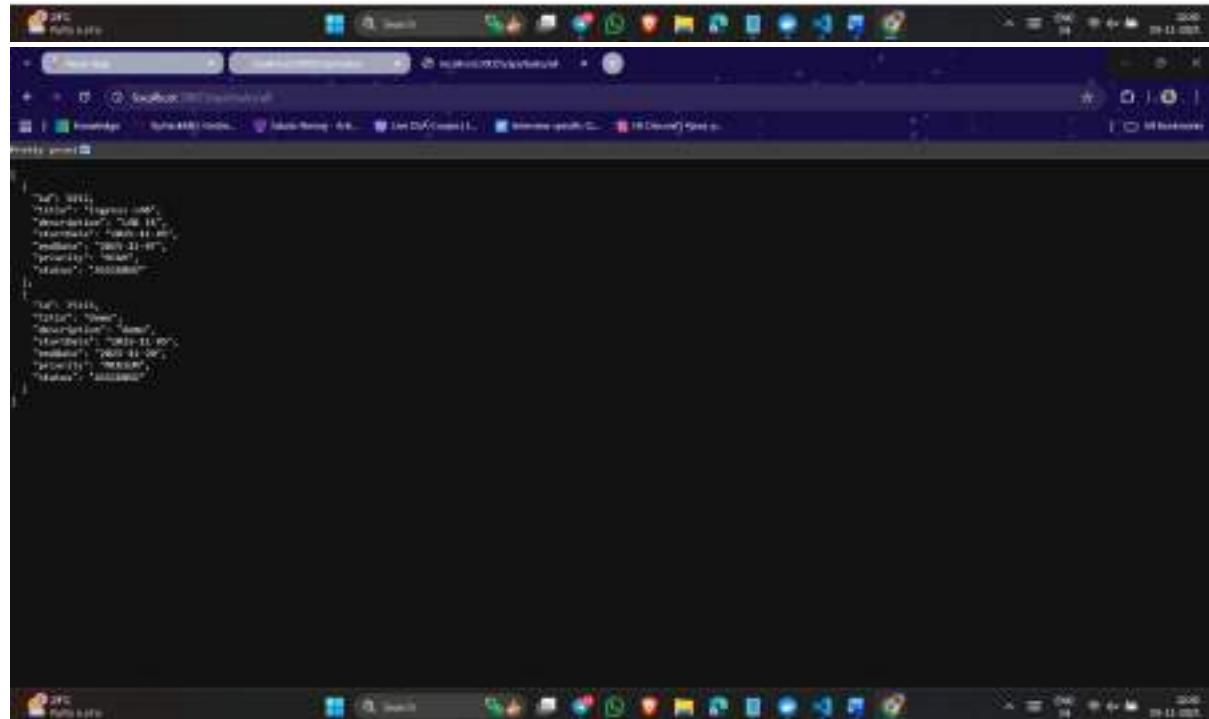
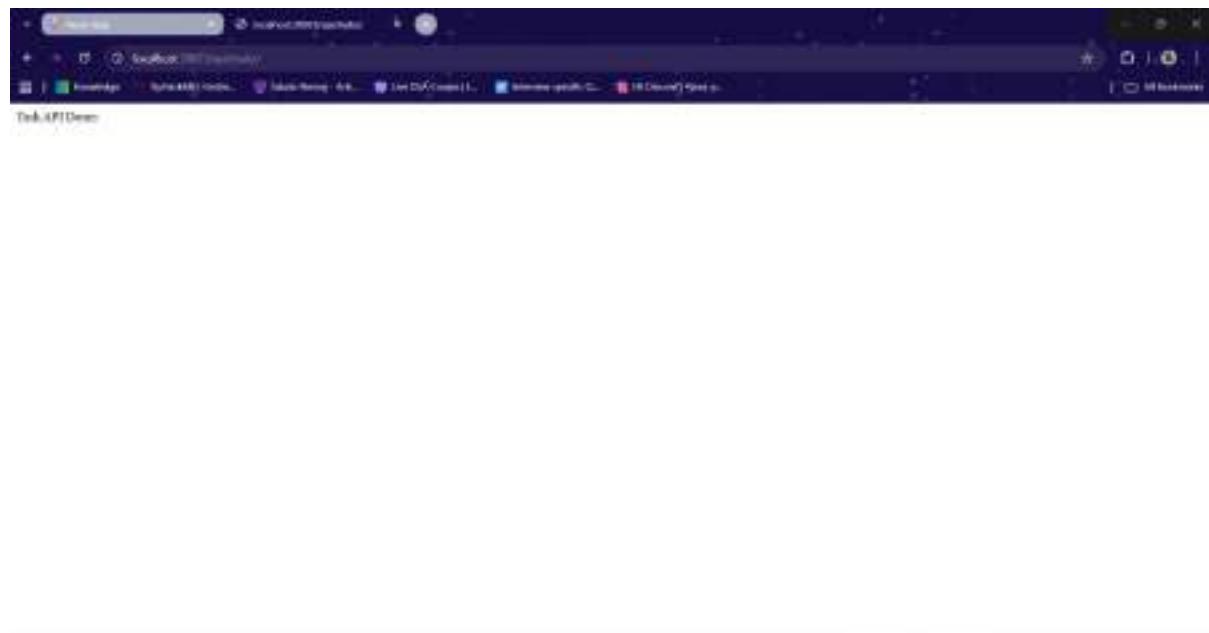
The table body is currently empty, displaying the message "No matching tasks found".

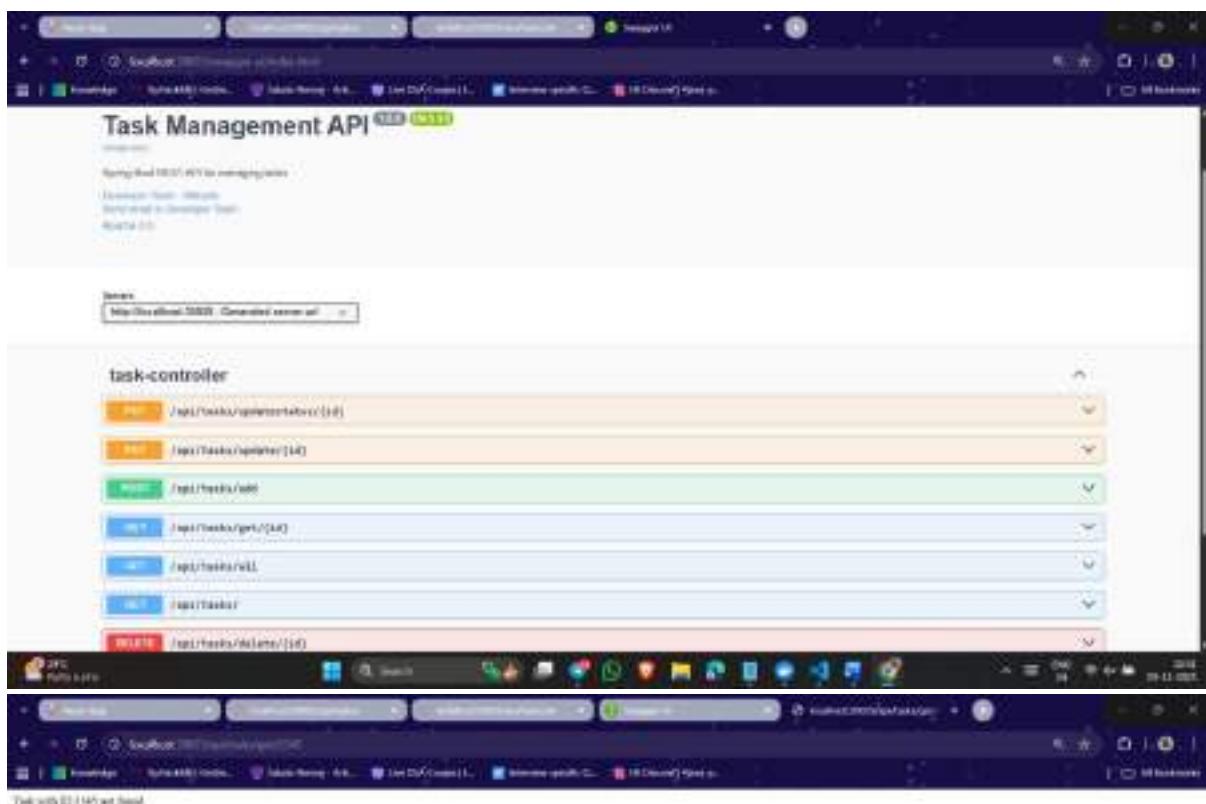
This screenshot shows the same Task Manager application after a task has been added. The "Add Task" form is identical to the one in the first screenshot, but the "Status" field now shows "CREATED" with a green checkmark icon. Below the form is a success message: "Task added successfully!" followed by a green checkmark icon and a "Clear" button.

The "All Tasks" table now contains two entries:

ID	Title	Description	Start	End	Priority	Status	Actions
1001	Ingress L1.0	1.0.1.1	2025-11-01	2025-11-01	HIGH	CREATED	<button>Edit</button> <button>Delete</button>
1002	demo	demo	2025-11-05	2025-11-06	MEDIUM	ASSIGNED	<button>Edit</button> <button>Delete</button>

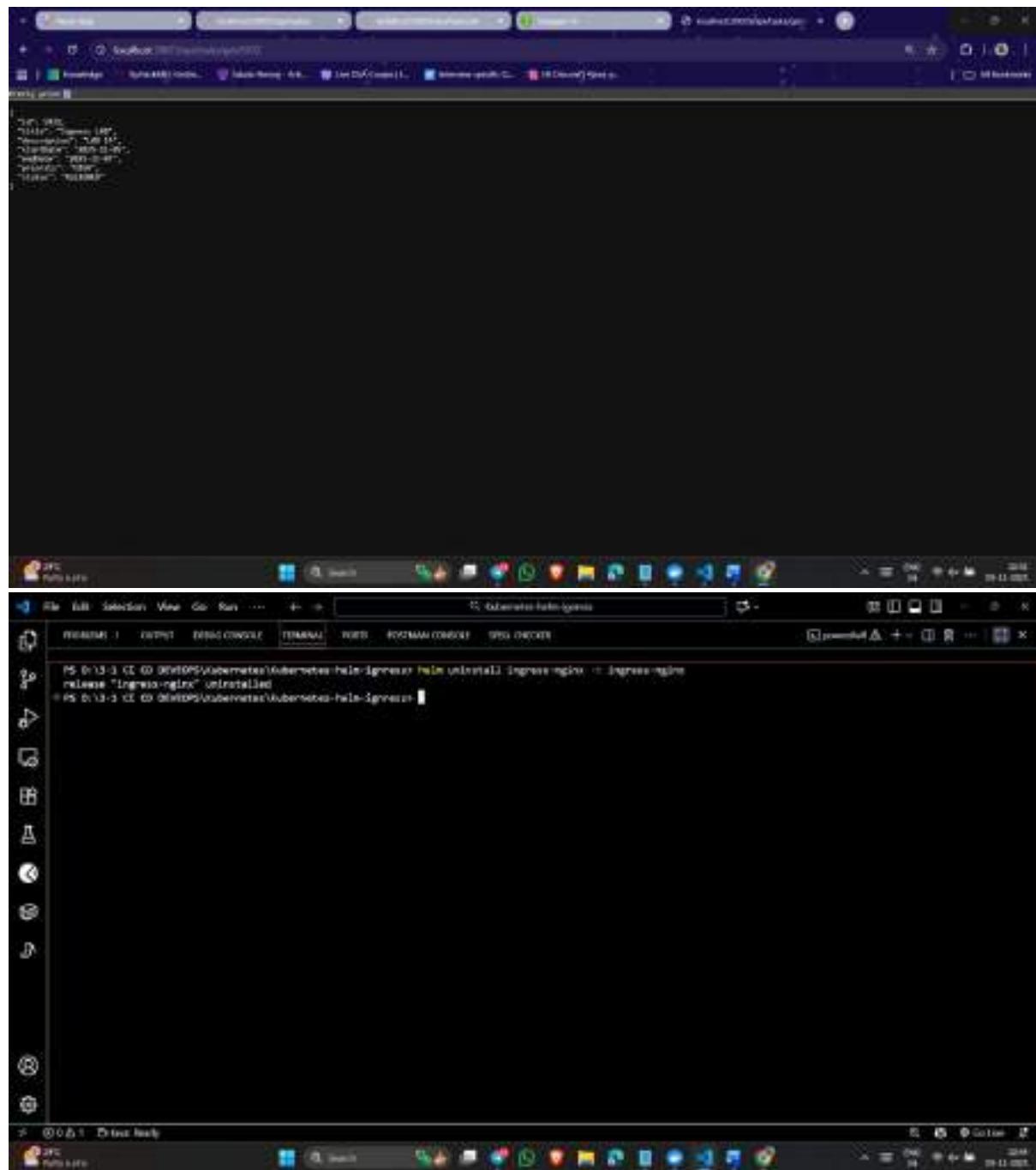


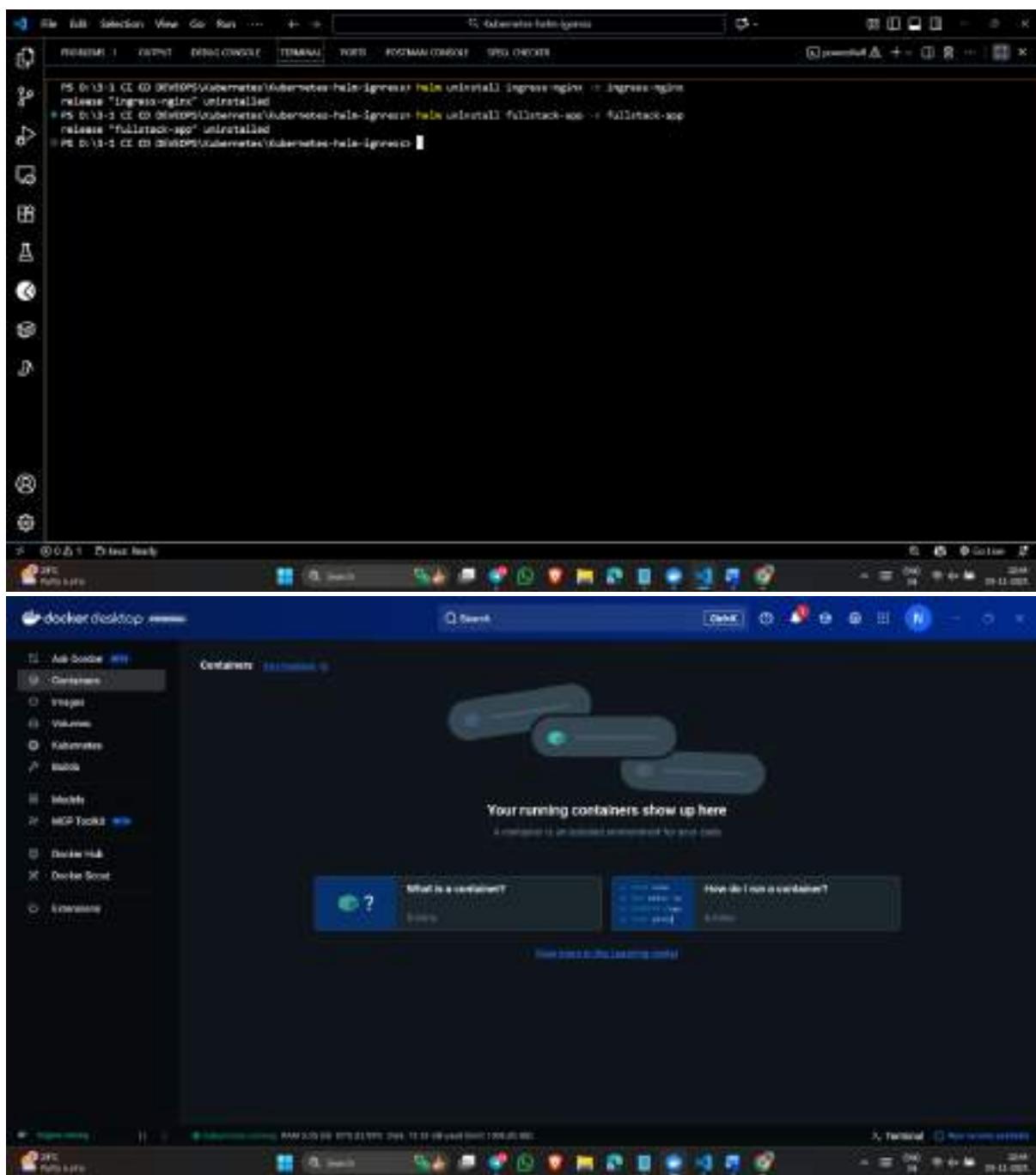


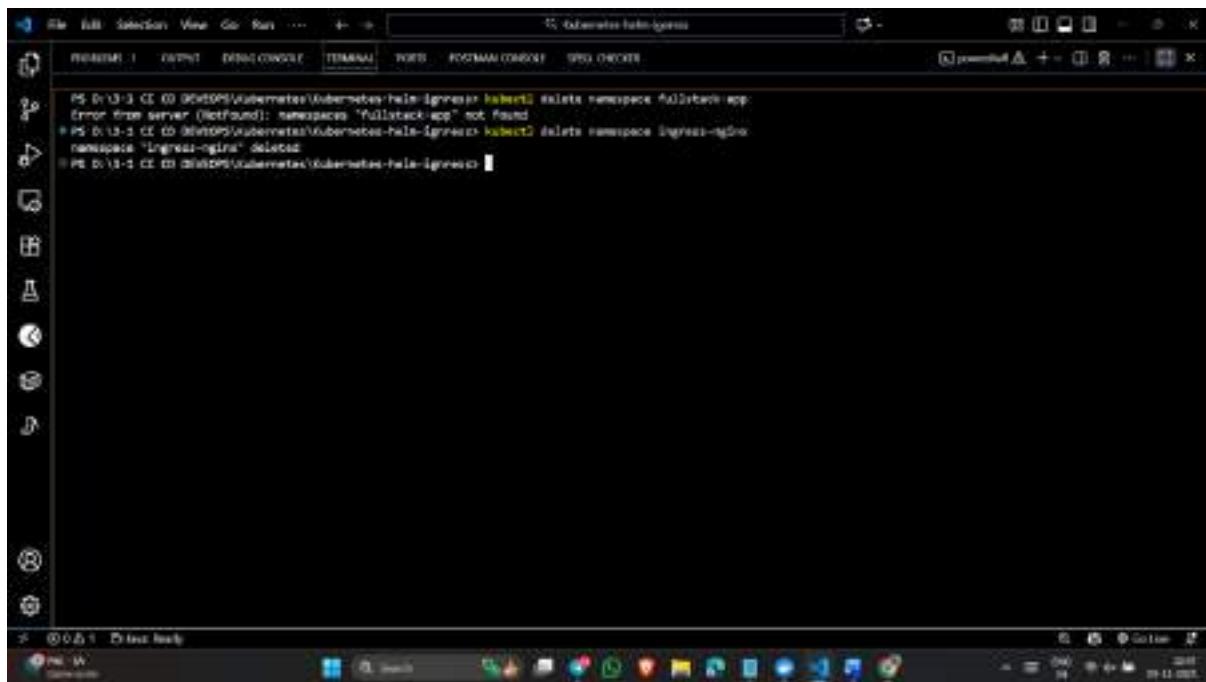


Task with ID 147 was deleted.









The screenshot shows a terminal window titled "Ubuntu 18.04 LTS" with several tabs open: "TERMINAL", "PORTS", "POSTMAN CONSOLE", and "SSH (49308)". The terminal content is as follows:

```
PS 0:13-3: ~ $ helm delete fullstack-app --purge
Error: kubectl: namespaces "fullstack-app" not found
PS 0:13-3: ~ $ cd /tmp/helm/kubernetes/helm-ingress; kubectl delete namespace ingress-ingress
namespace "ingress-ingress" deleted
PS 0:13-3: ~ $ cd /tmp/helm/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
```
