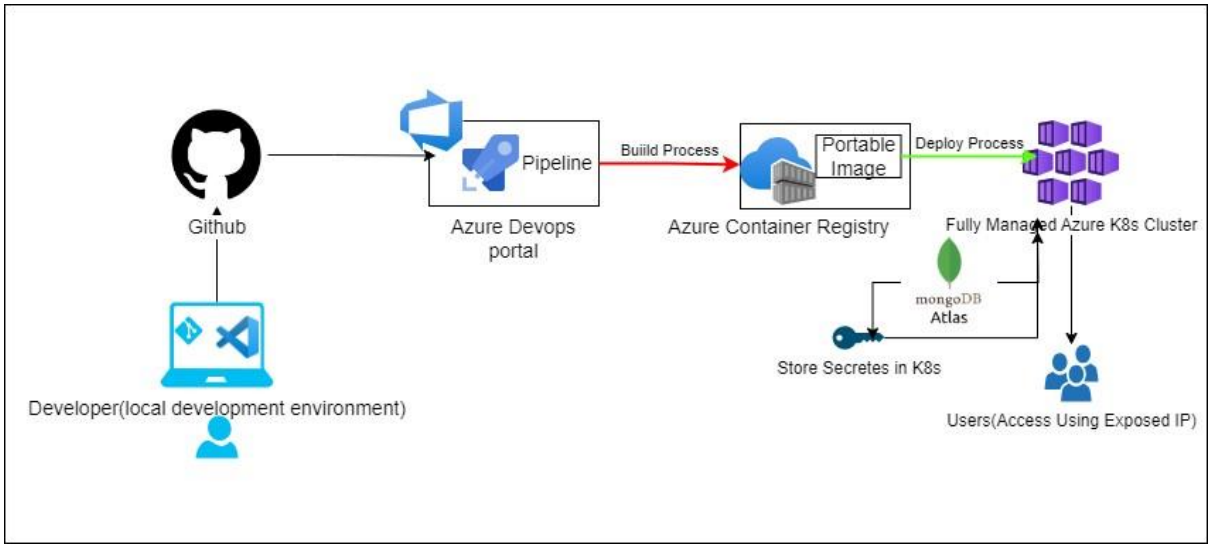
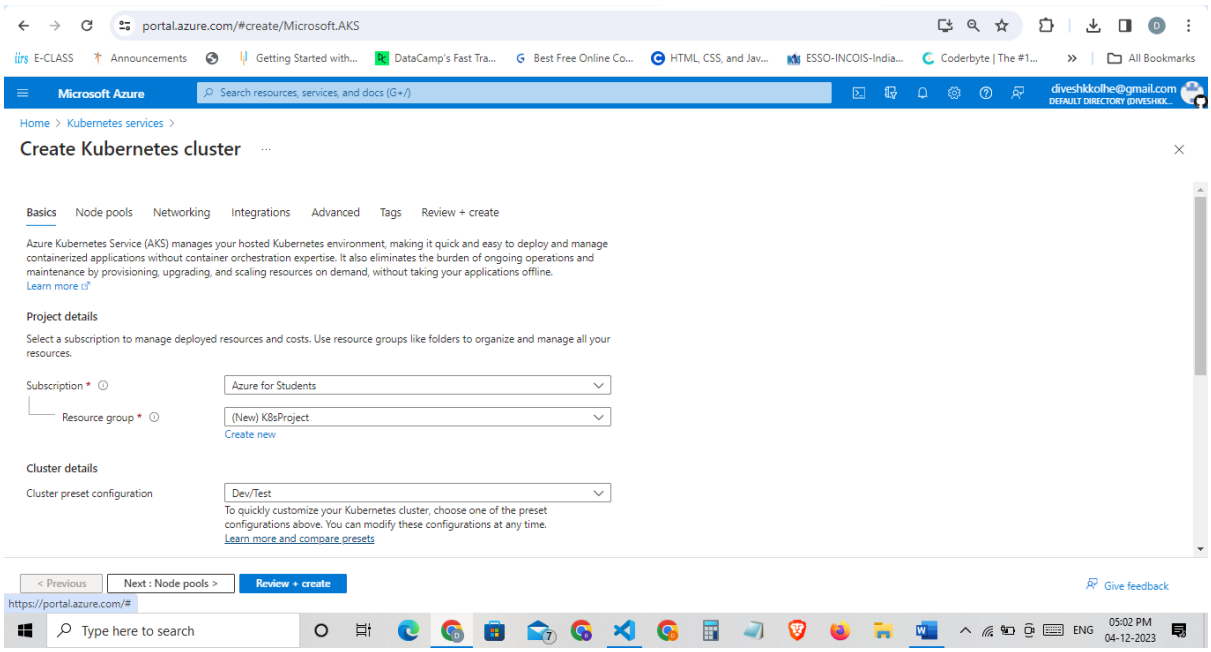
Aim: Kubernetes Deployment.

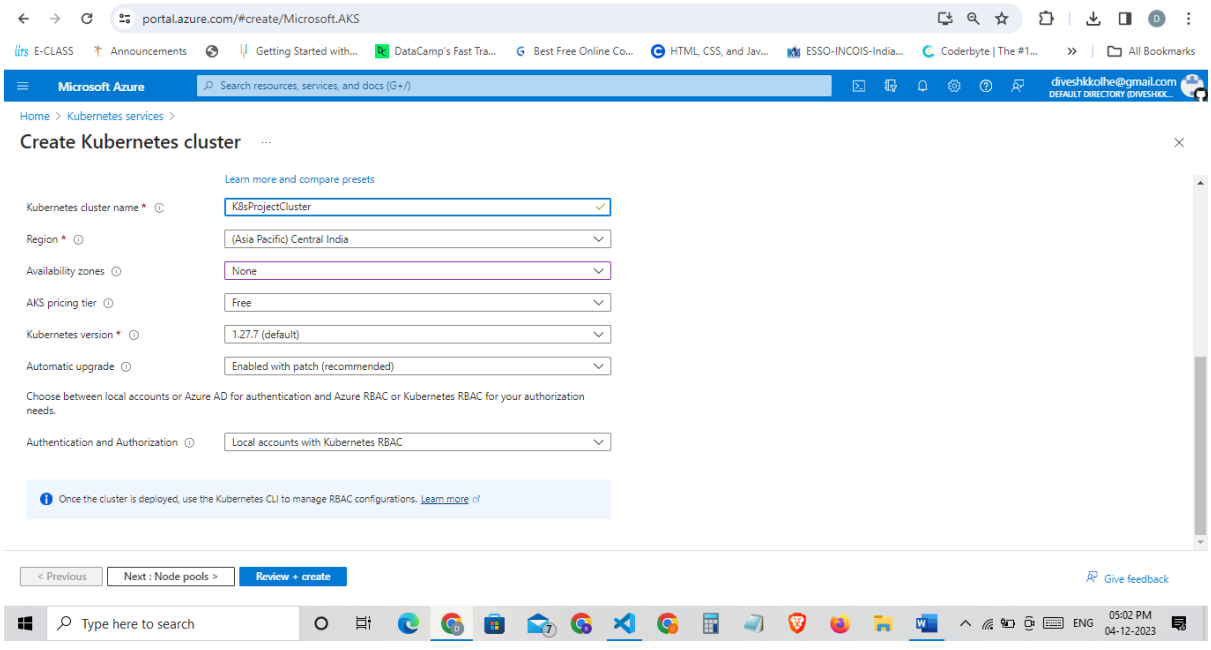
Architecture:

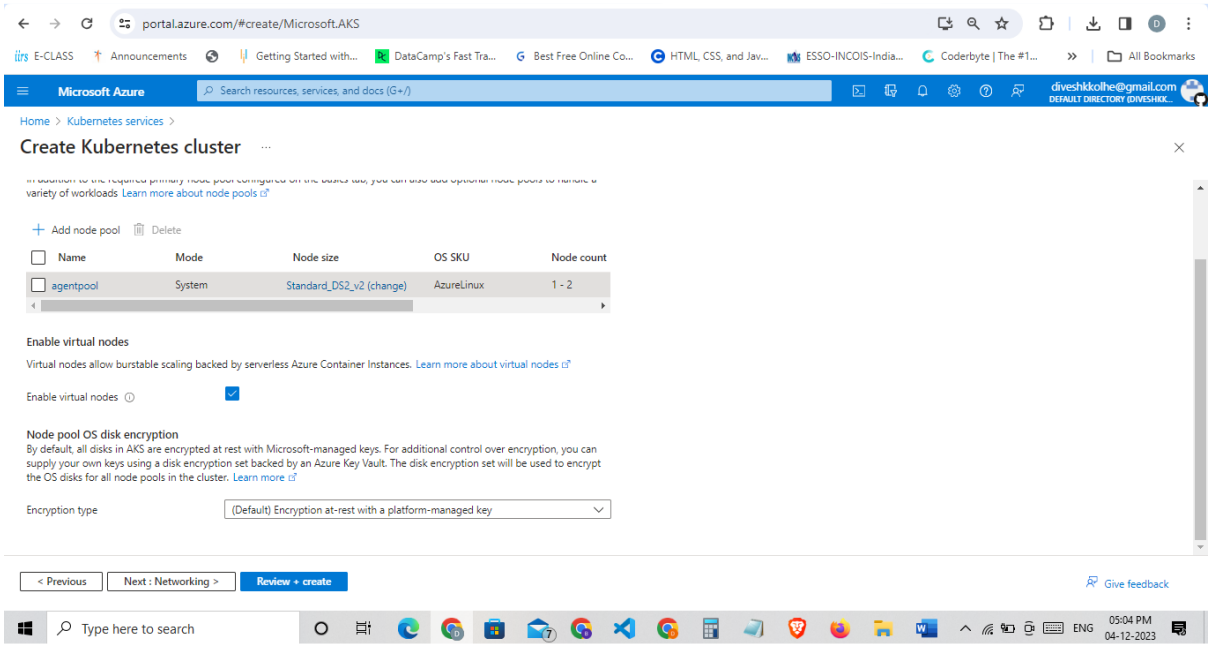


Steps:

1. Create a Kubernetes cluster:



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Create Kubernetes cluster
variety of workloads Learn more about node pools
Add node pool
Delete
Name
Mode
Node size
OS SKU
Node count
agentpool
System
Standard_DS2_v2 (change)
AzureLinux
1 - 2
Enable virtual nodes
Virtual nodes allow burstable scaling backed by serverless Azure Container Instances. Learn more about virtual nodes
Enable virtual nodes
Node pool OS disk encryption
By default, all disks in AKS are encrypted at rest with Microsoft-managed keys. For additional control over encryption, you can supply your own keys using a disk encryption set backed by an Azure Key Vault. The disk encryption set will be used to encrypt the OS disks for all node pools in the cluster. Learn more
Encryption type
(Default) Encryption at-rest with a platform-managed key
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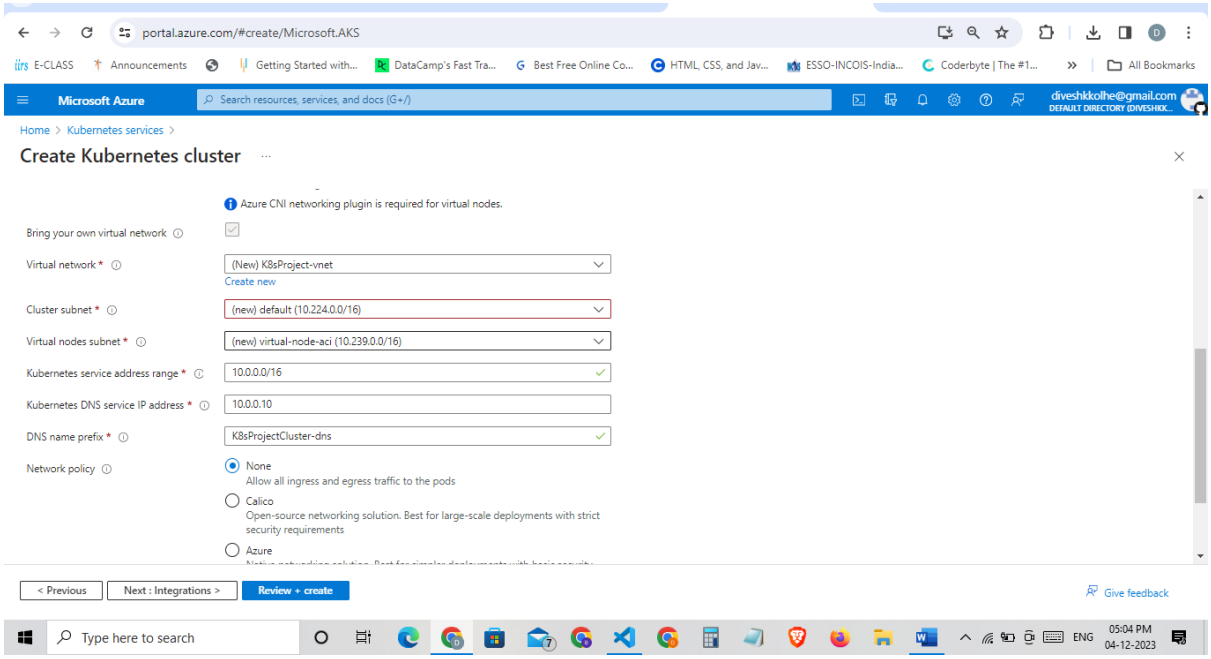
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Create Kubernetes cluster
Azure CNI networking plugin is required for virtual nodes.
Bring your own virtual network
Virtual network *
(New) K8sProject-vnet
Create new
Cluster subnet *
(new) default (10.224.0.0/16)
Virtual nodes subnet *
(new) virtual-node-aci (10.239.0.0/16)
Kubernetes service address range *
10.0.0.0/16
Kubernetes DNS service IP address *
10.0.0.10
DNS name prefix *
K8sProjectCluster-dns
Network policy
None
Allow all ingress and egress traffic to the pods
Calico
Open-source networking solution. Best for large-scale deployments with strict security requirements
Azure
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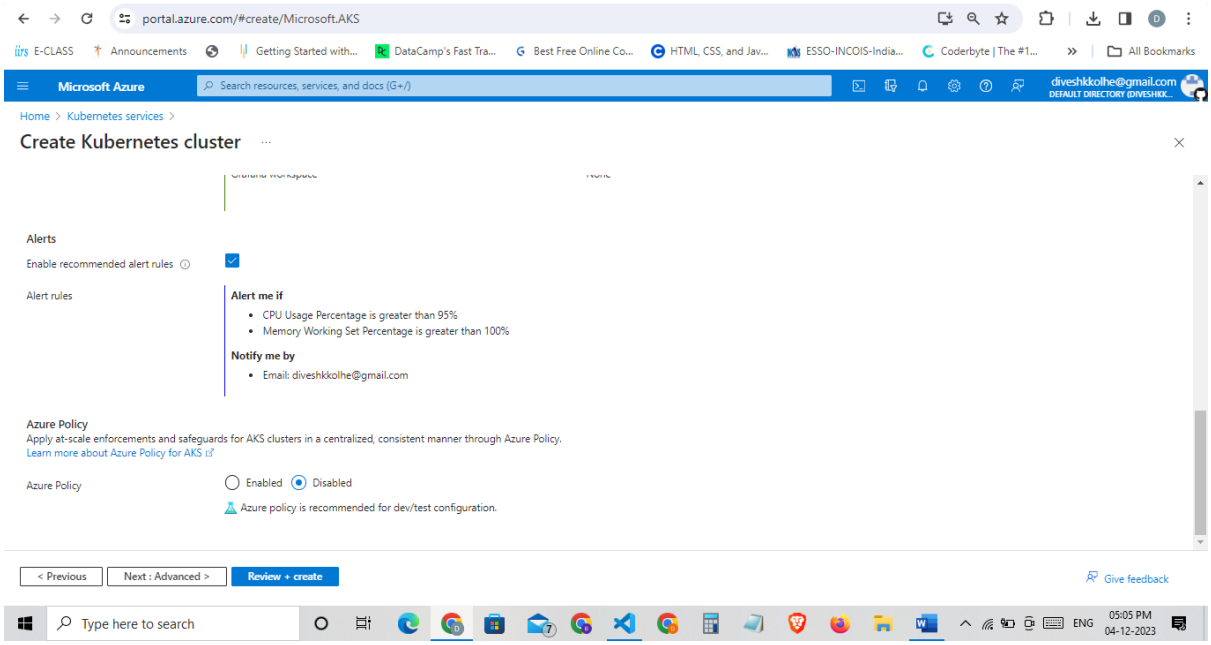
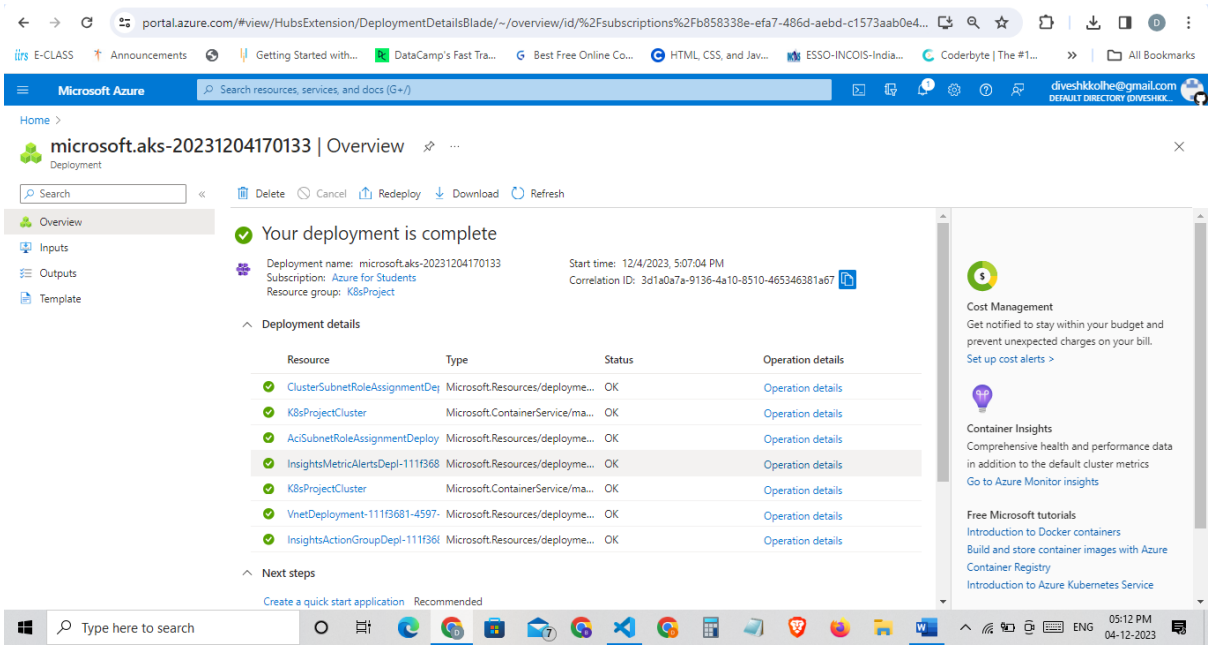
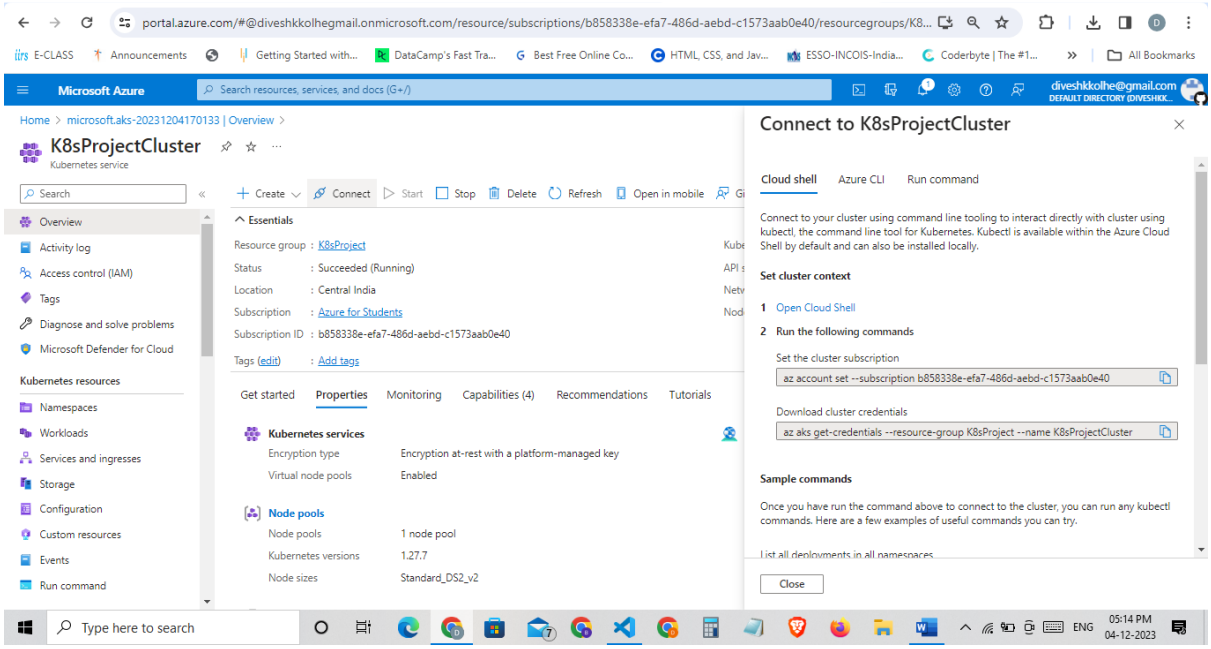
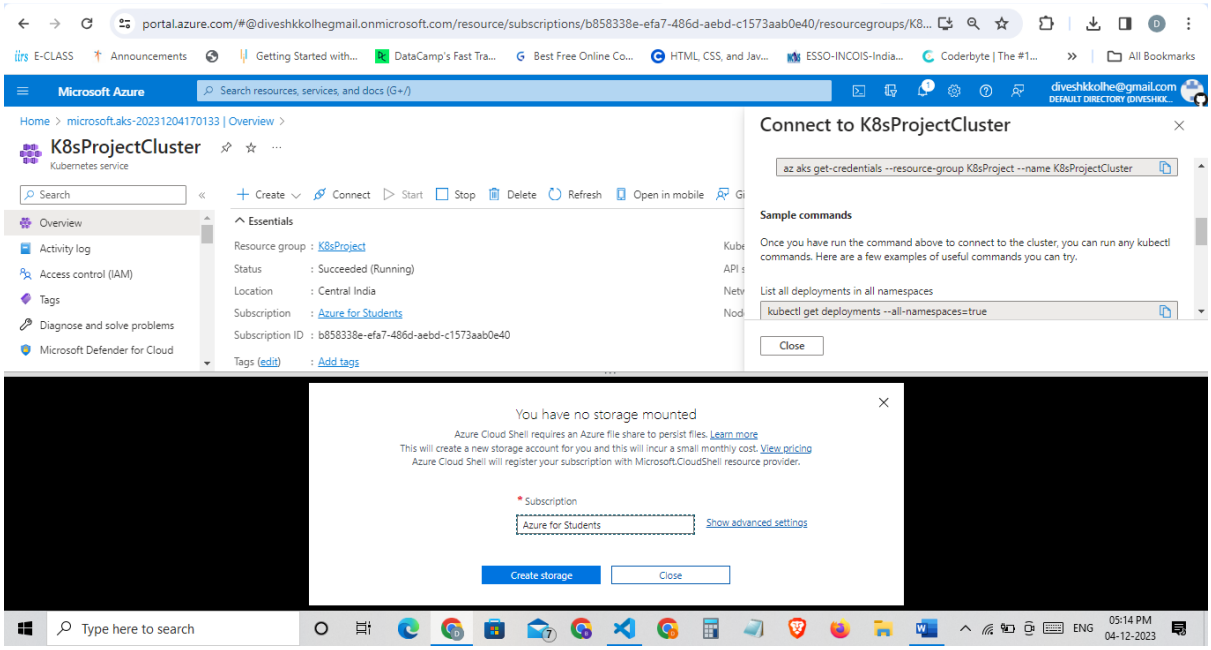


Create with this basic and simple configuration.

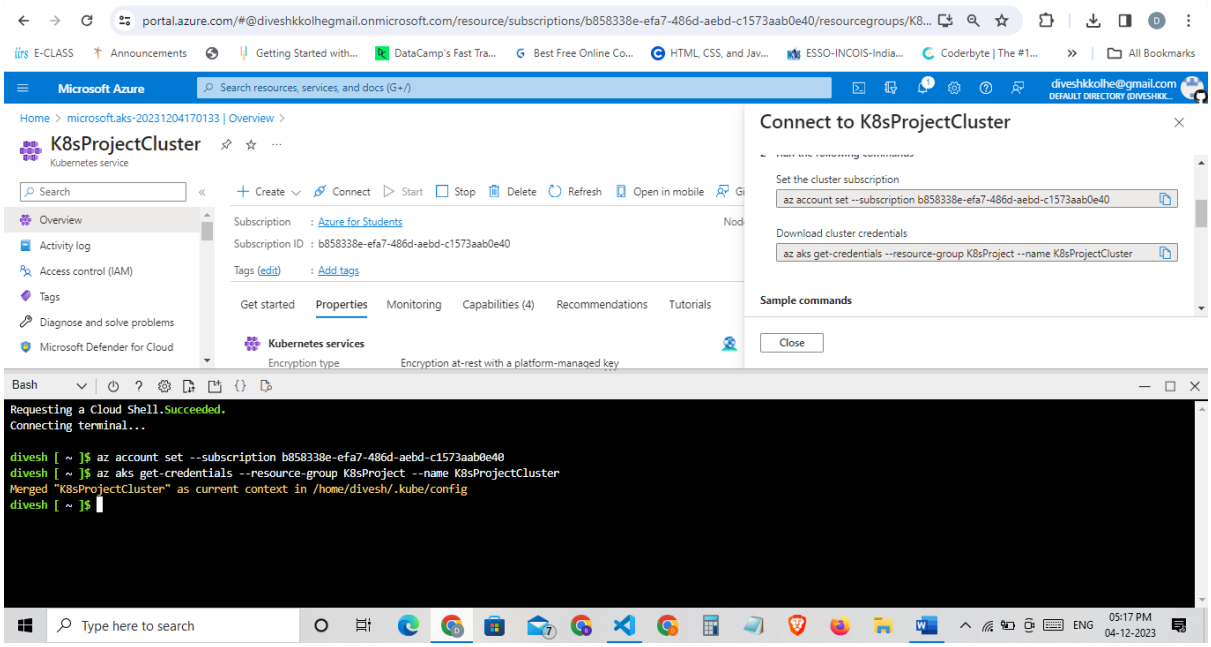


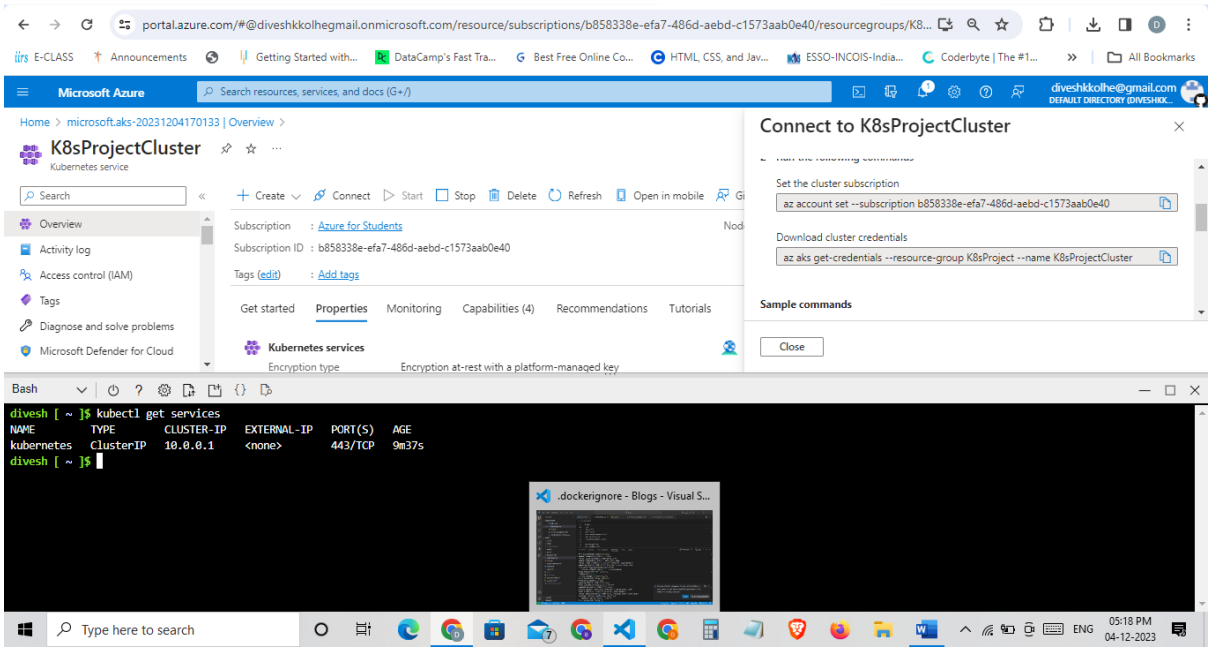
2. Connect to Cluster Using Cloud Shell.



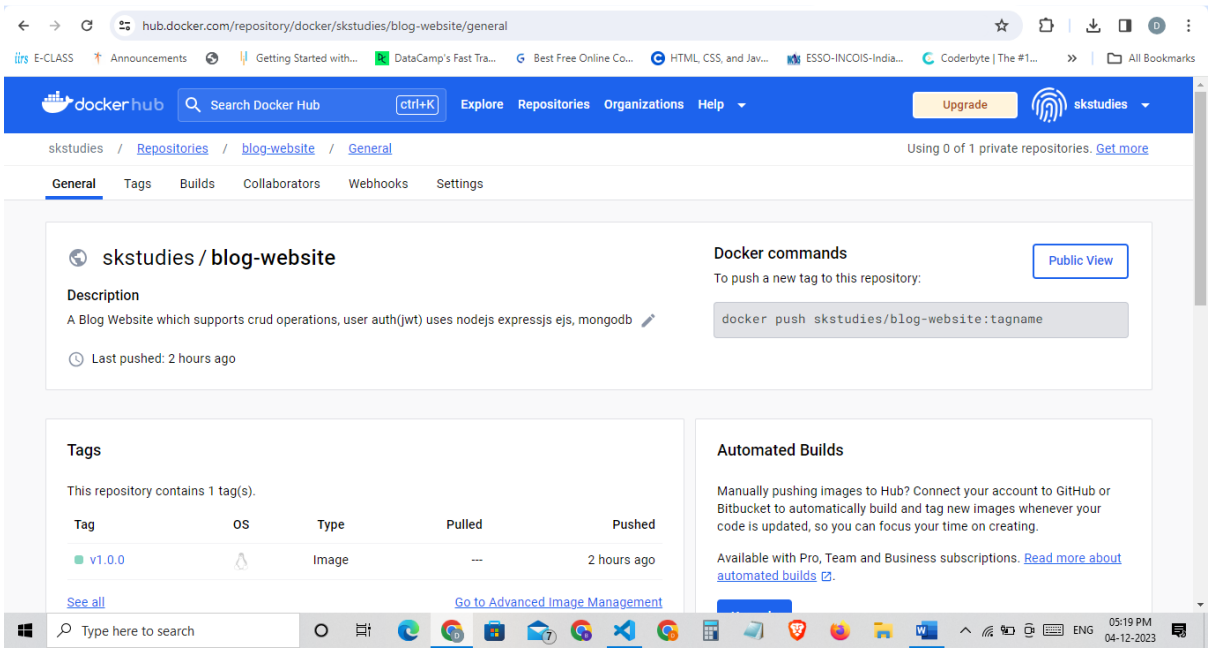


Establish the connection.

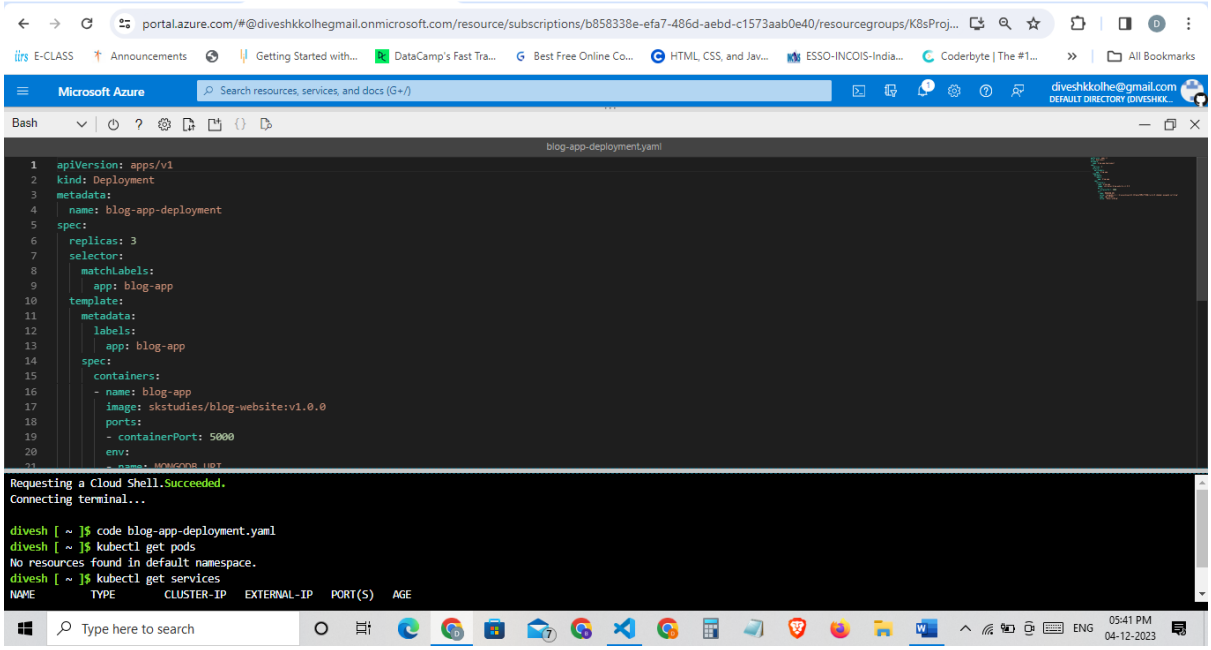




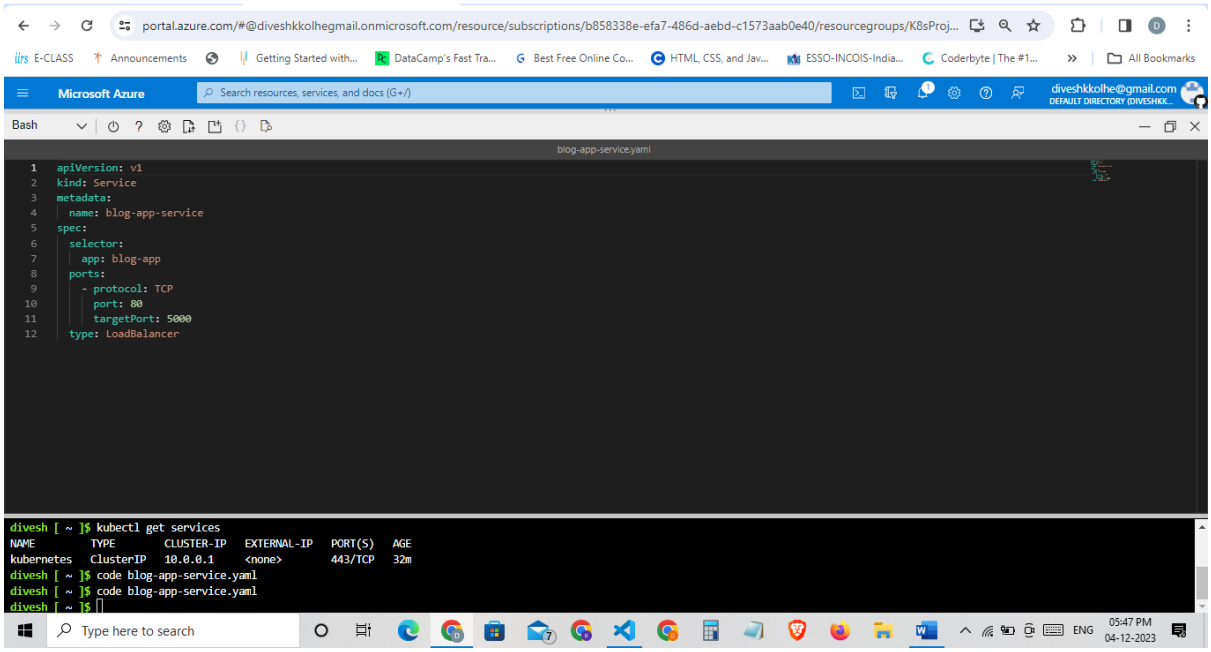
I have already created a docker container of my code and stored it on docker hub.



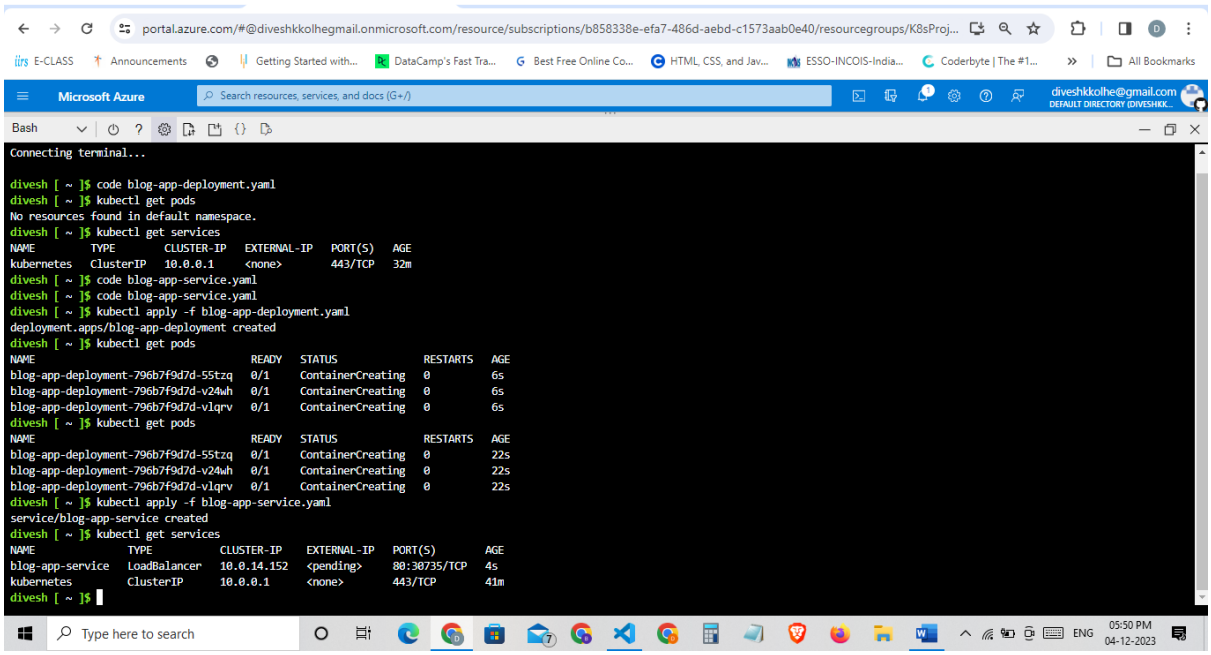
Create a deployment.yaml file



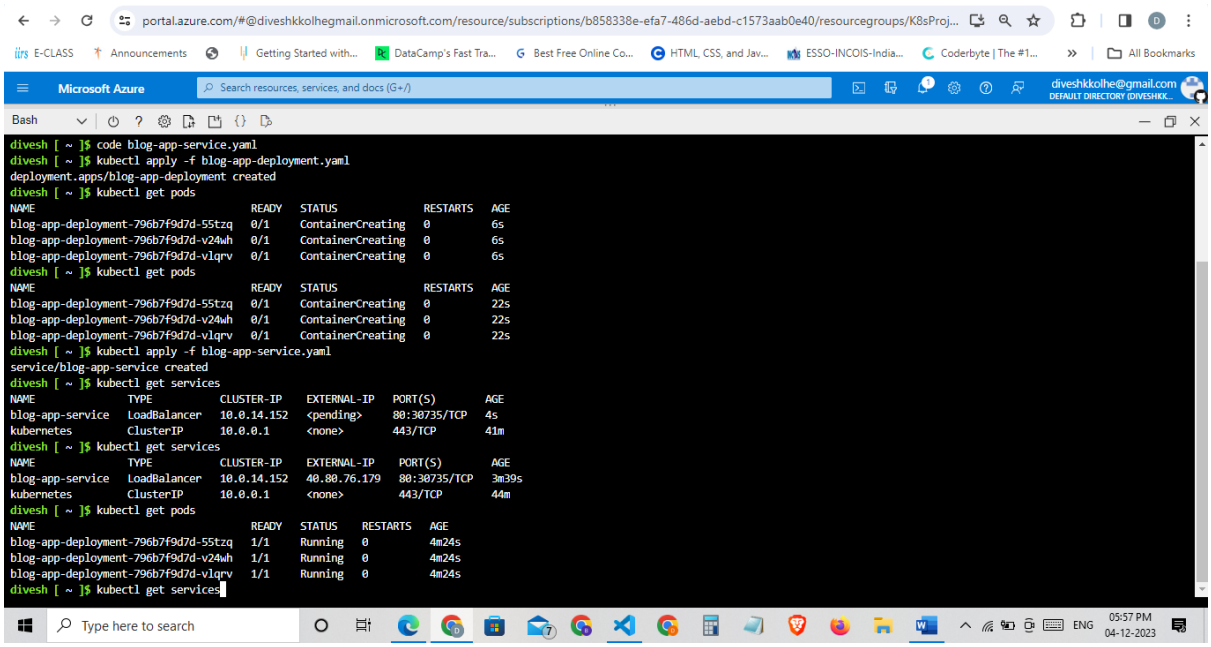
Create a yaml file for service;



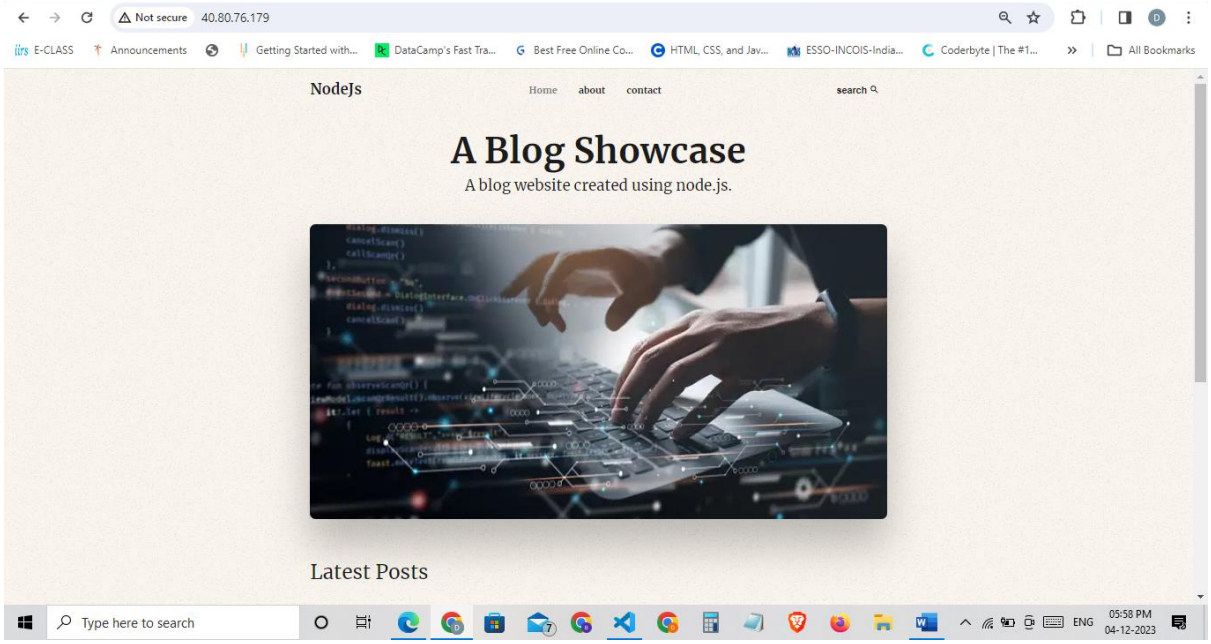
Apply the two created files.



Wait for pods to run.



Search the external ip

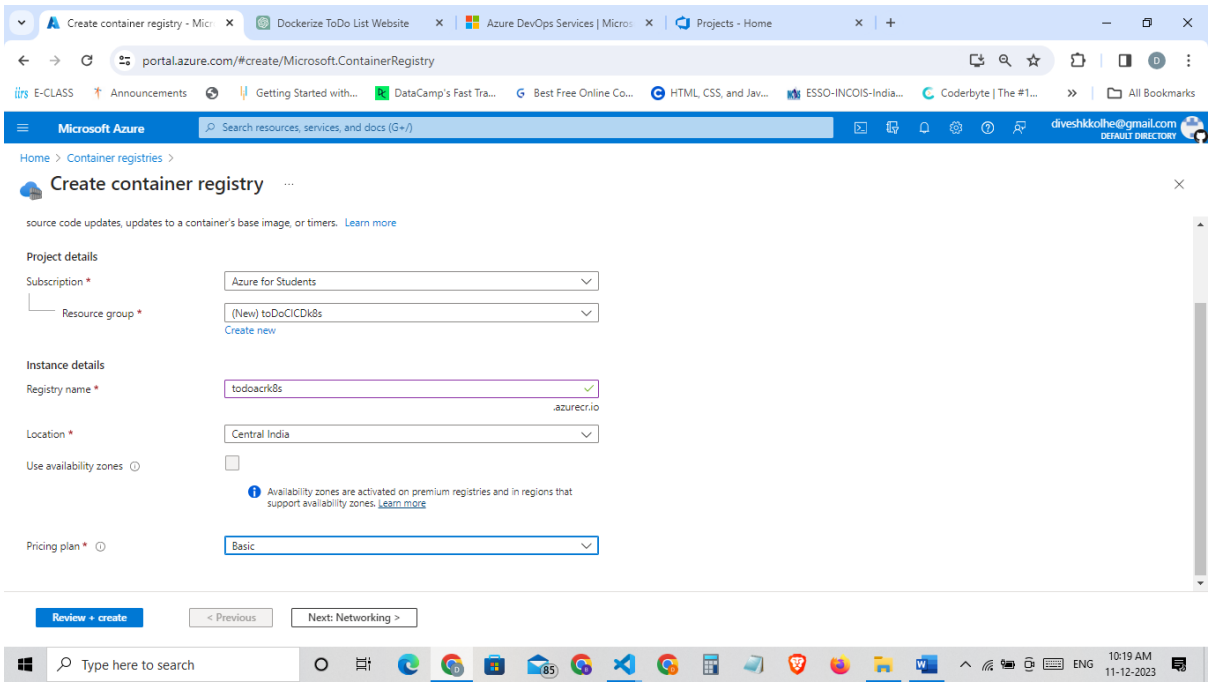


```
 1  az account set --subscription b858338e-efa7-486d-aebd-c1573aab0e40
 2  az aks get-credentials --resource-group K8sProject --name K8sProjectCluster
 3  kubectl get pods
 4  clear
 5  kubectl get services
 6  ls
 7  apt update
 8  clear
 9  code blog-app.yaml
10  az account set --subscription b858338e-efa7-486d-aebd-c1573aab0e40
11  az aks get-credentials --resource-group K8sProject --name K8sProjectCluster
12  clear
13  code blog-app-deployment.yaml
14  kubectl get pods
15  kubectl get services
16  code blog-app-service.yaml
17  kubectl apply -f blog-app-deployment.yaml
18  kubectl get pods
19  kubectl apply -f blog-app-service.yaml
20  kubectl get services
21  kubectl get pods
22  code blog-app-service.yaml
23  code blog-app.yaml
24  code blog-app-deployment.yaml
25  cat blog-app-deployment.yaml
26  history
```

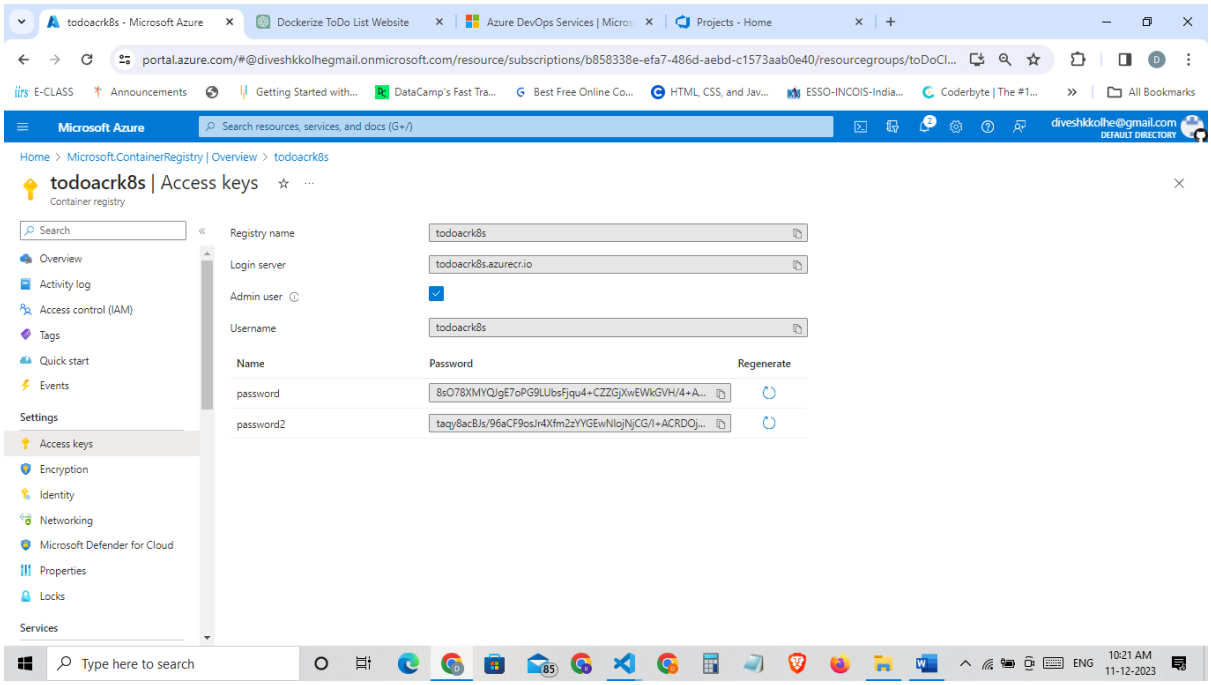
This Was The Manual Deployment.

Aim: Lets Try The CICD Deployment.

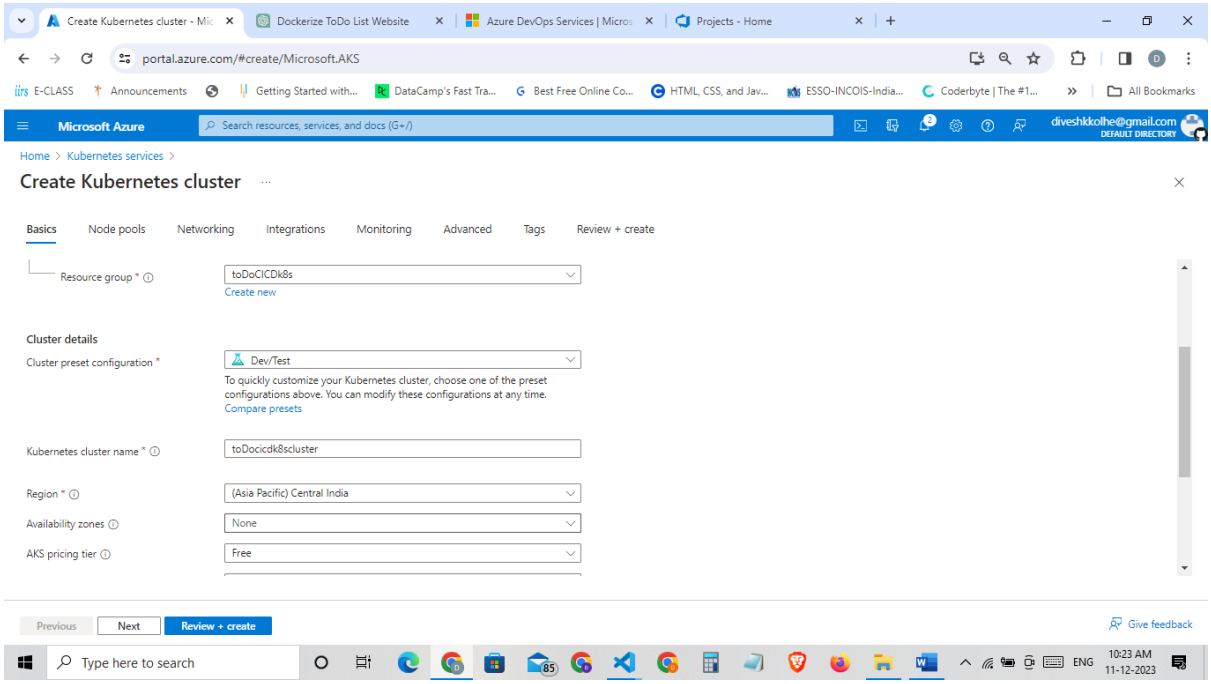
1. Create ACR

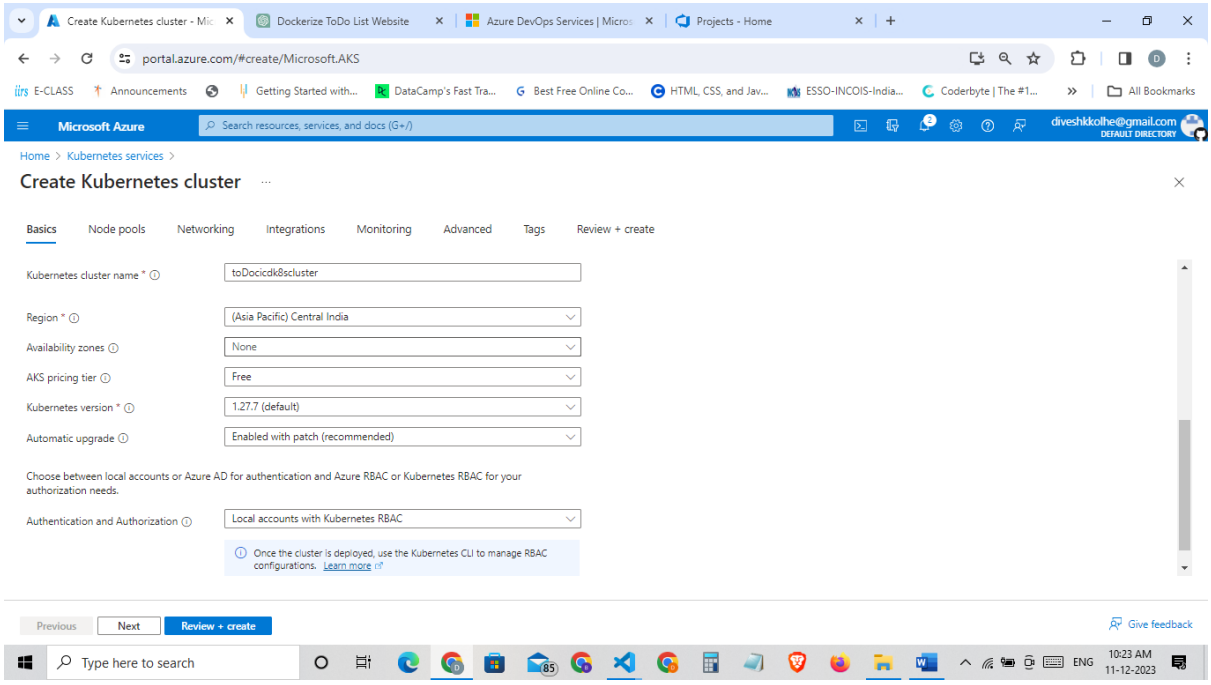


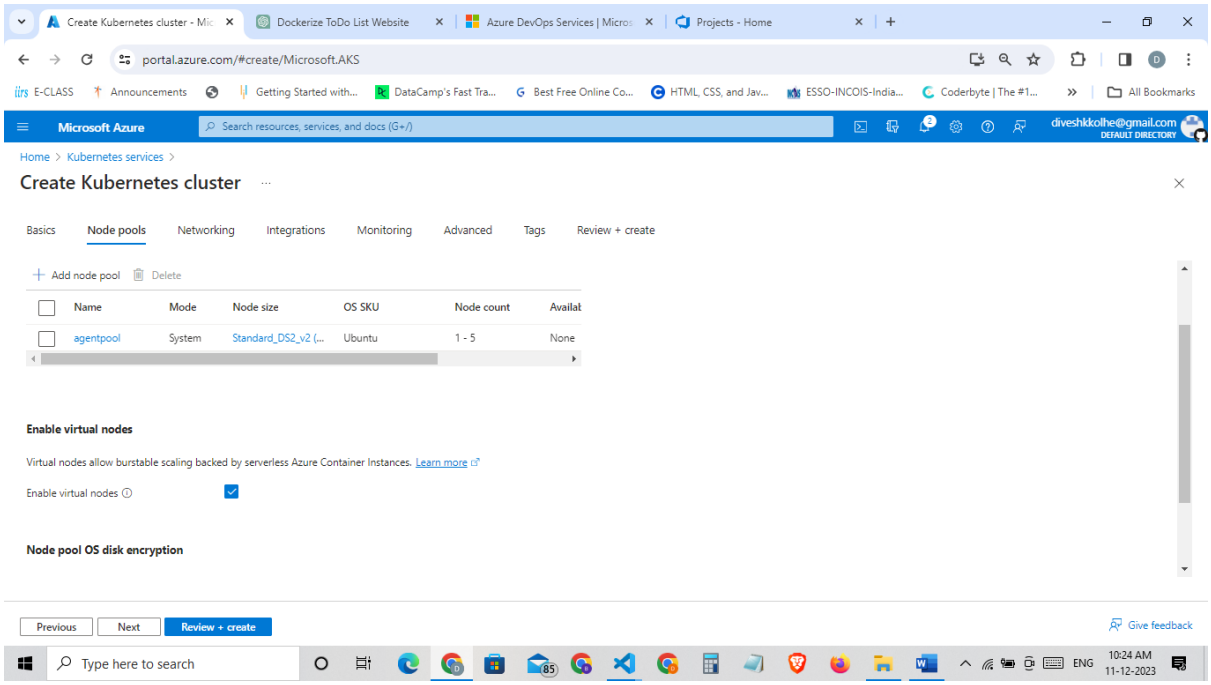
Enable Access



2. Create K8s Cluster:



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OS SKU
Node count
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System
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Ubuntu
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None
Enable virtual nodes
Virtual nodes allow burstable scaling backed by serverless Azure Container Instances. Learn more
Enable virtual nodes
Node pool OS disk encryption
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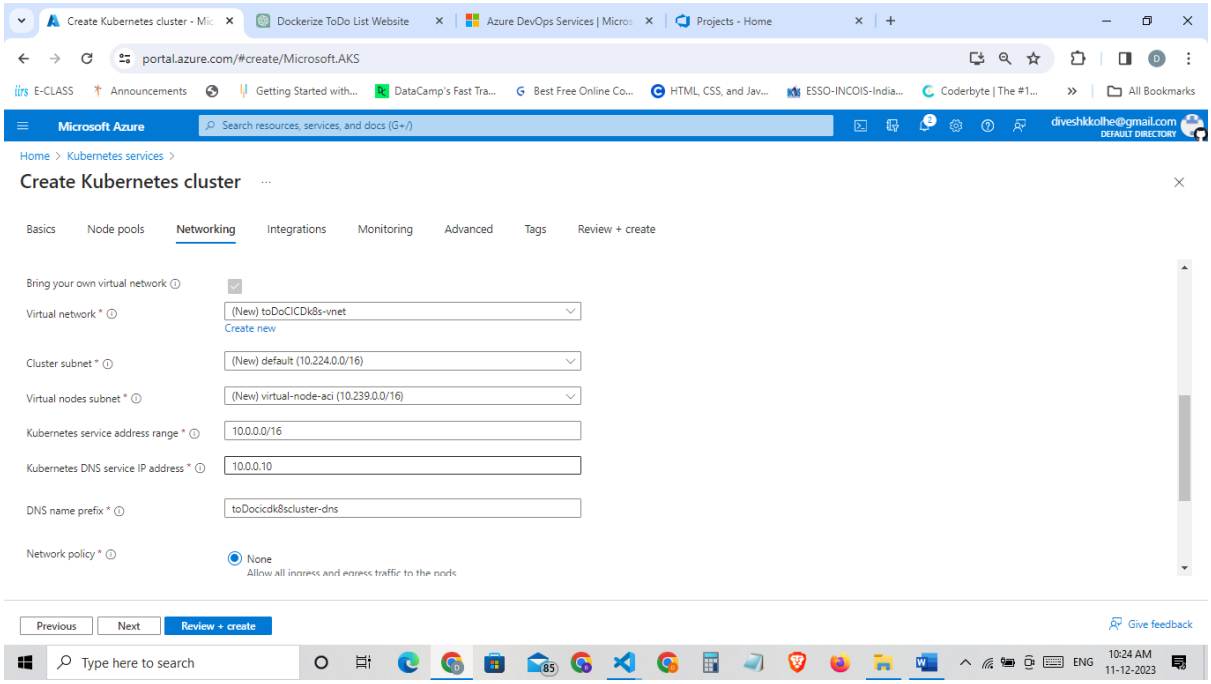
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(New) toDoCICDk8s-vnet
Create new
Cluster subnet *
(New) default (10.224.0.0/16)
Virtual nodes subnet *
(New) virtual-node-aci (10.239.0.0/16)
Kubernetes service address range *
10.0.0.0/16
Kubernetes DNS service IP address *
10.0.0.10
DNS name prefix *
toDocicdk8scluster-dns
Network policy *
None
Allow all ingress and egress traffic to the pods
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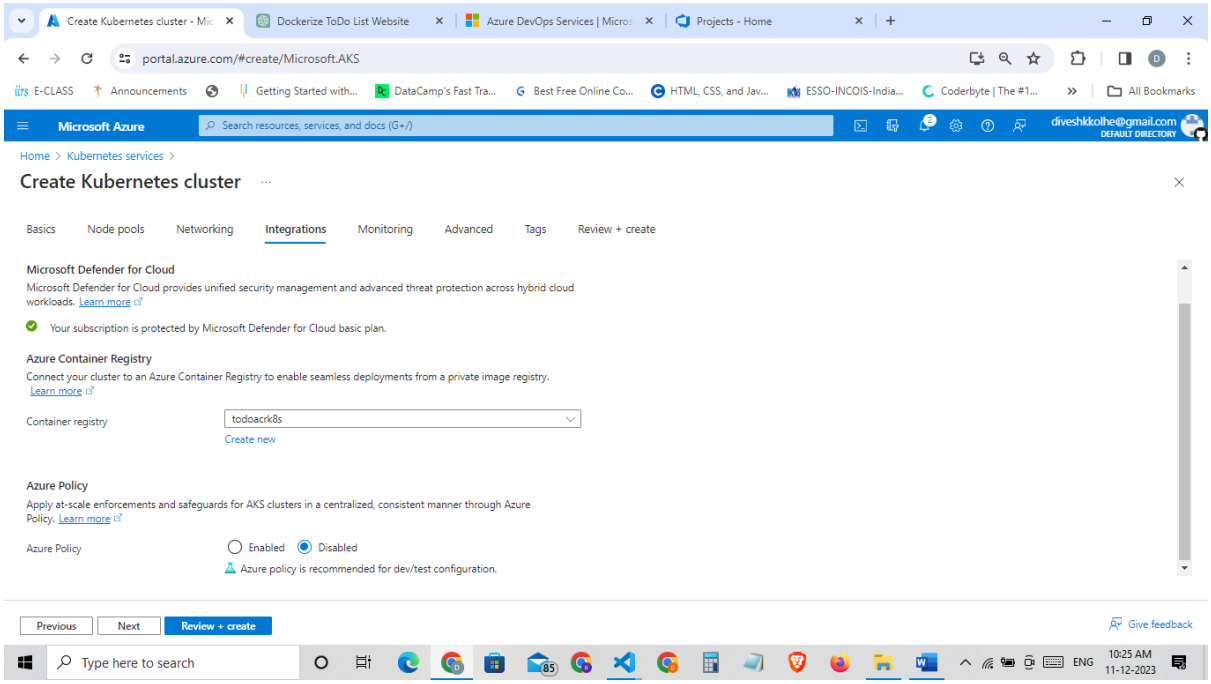
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Azure Container Registry
Connect your cluster to an Azure Container Registry to enable seamless deployments from a private image registry. Learn more
Container registry
todoacrk8s
Create new
Azure Policy
Apply at-scale enforcements and safeguards for AKS clusters in a centralized, consistent manner through Azure Policy. Learn more
Azure Policy
Enabled
Disabled
Azure policy is recommended for dev/test configuration.
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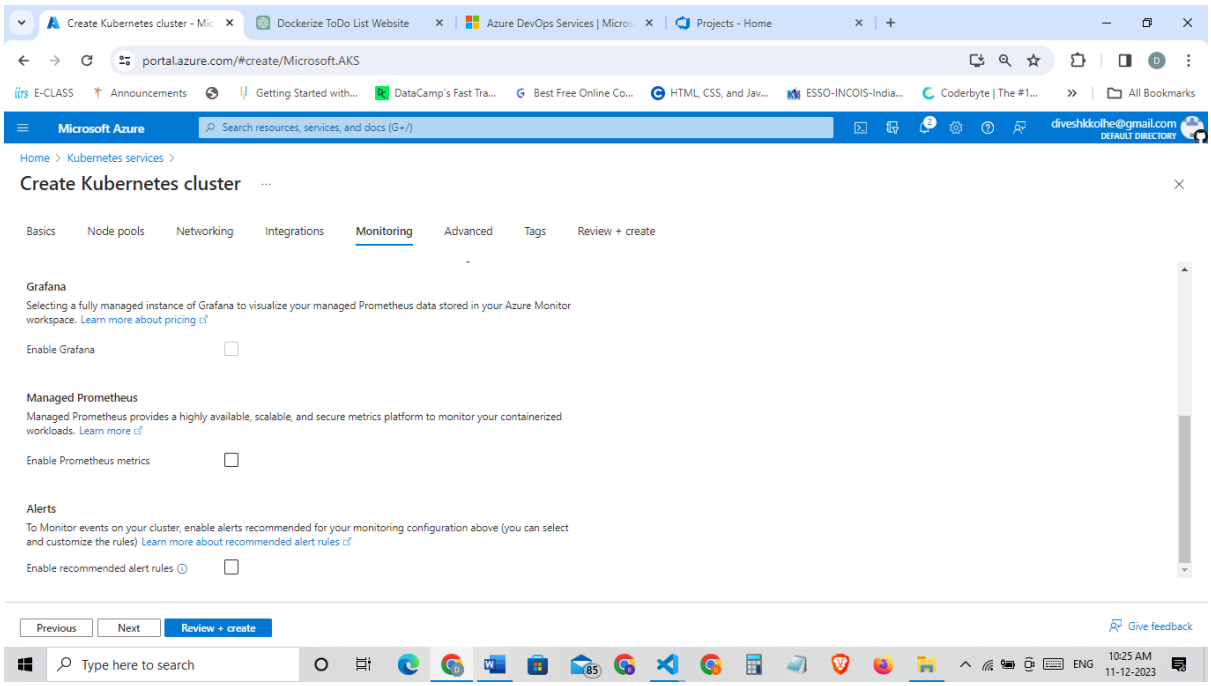
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Grafana
Selecting a fully managed instance of Grafana to visualize your managed Prometheus data stored in your Azure Monitor workspace. Learn more about pricing
Enable Grafana
Managed Prometheus
Managed Prometheus provides a highly available, scalable, and secure metrics platform to monitor your containerized workloads. Learn more
Enable Prometheus metrics
Alerts
To Monitor events on your cluster, enable alerts recommended for your monitoring configuration above (you can select and customize the rules) Learn more about recommended alert rules
Enable recommended alert rules
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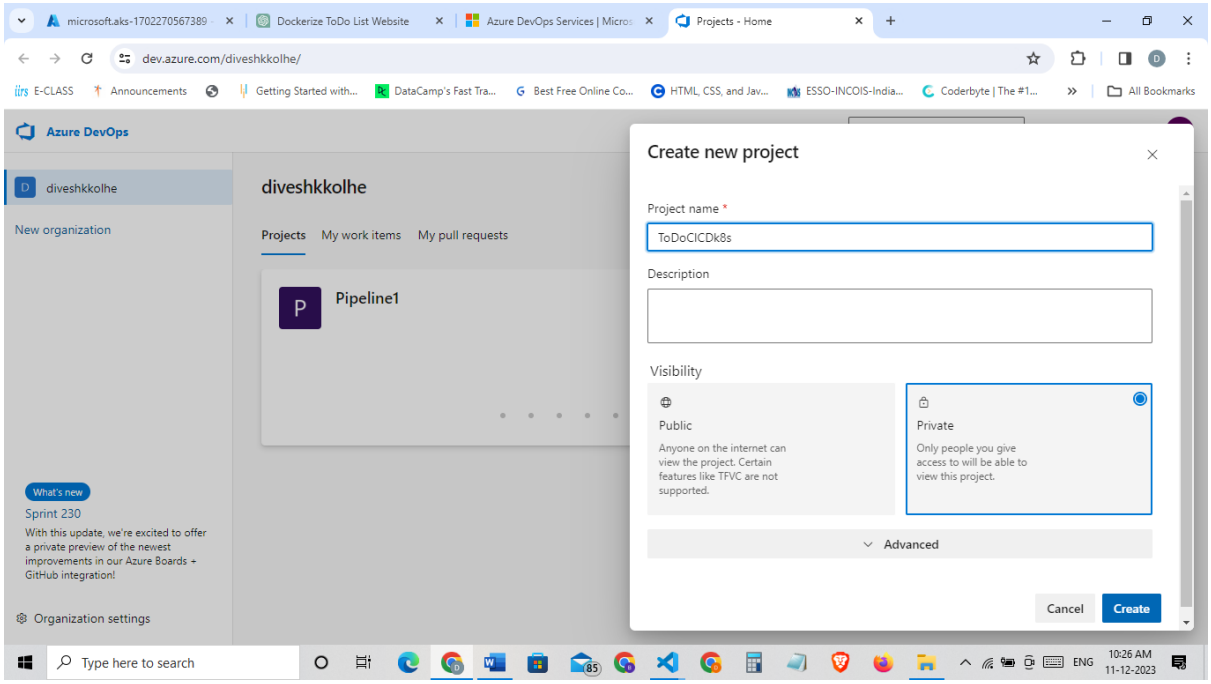
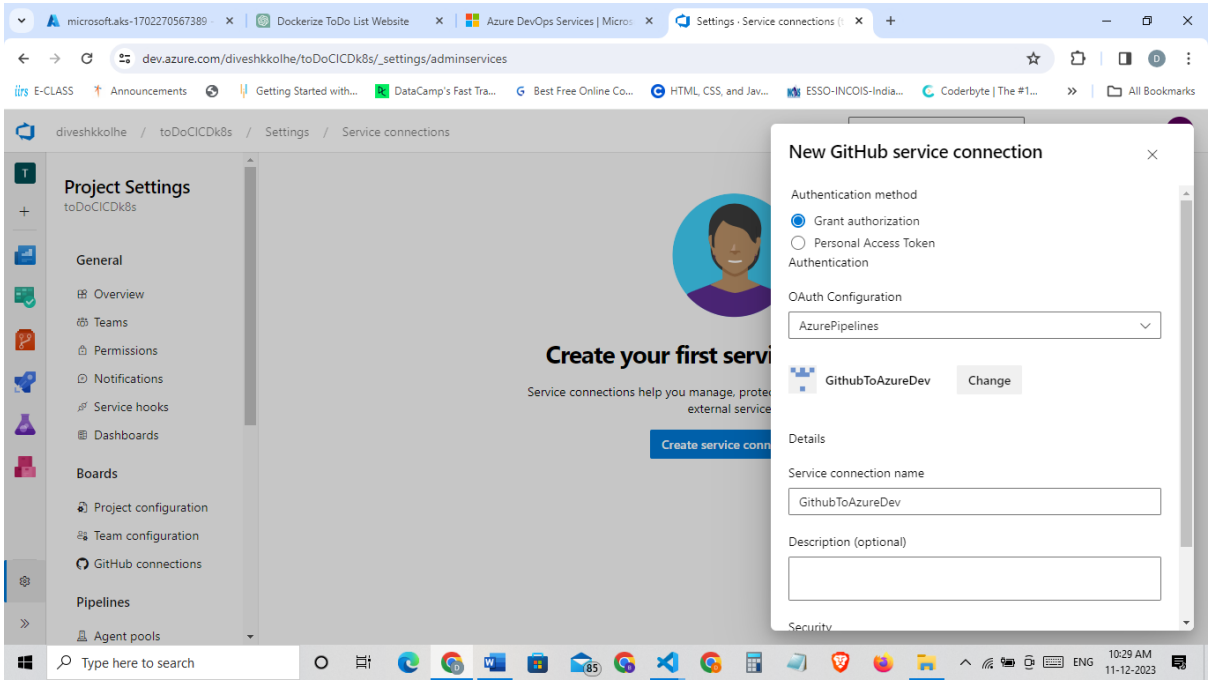
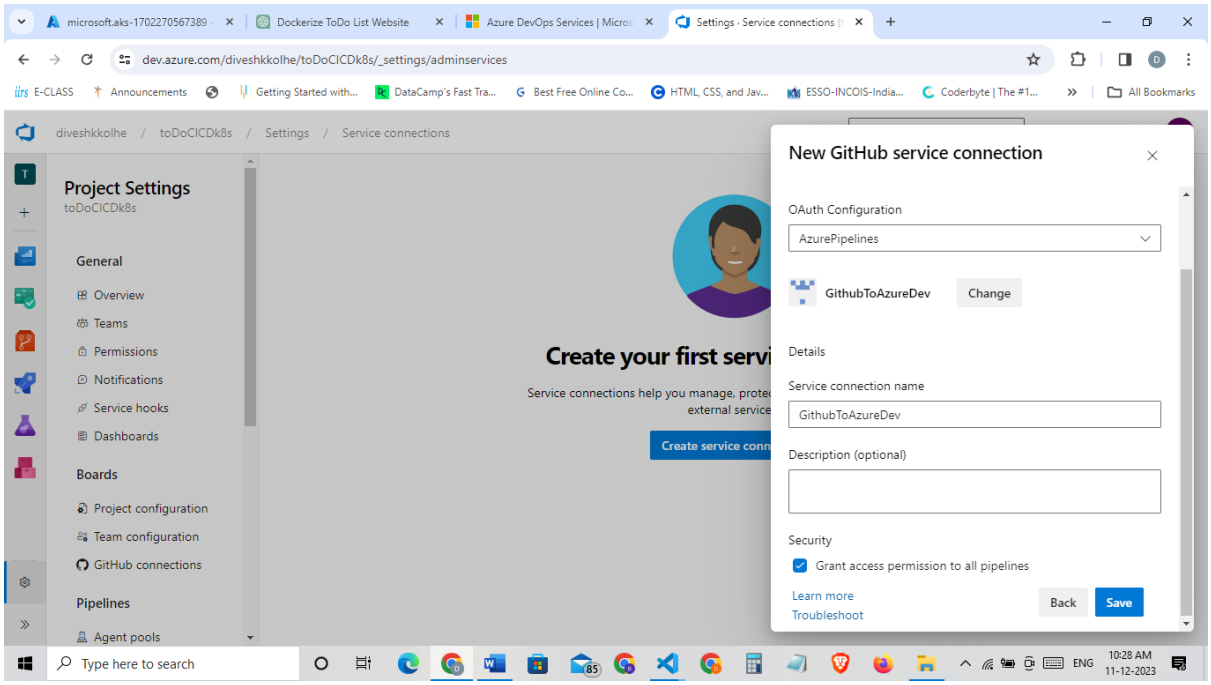
3. Create the pipeline on Devops portal.



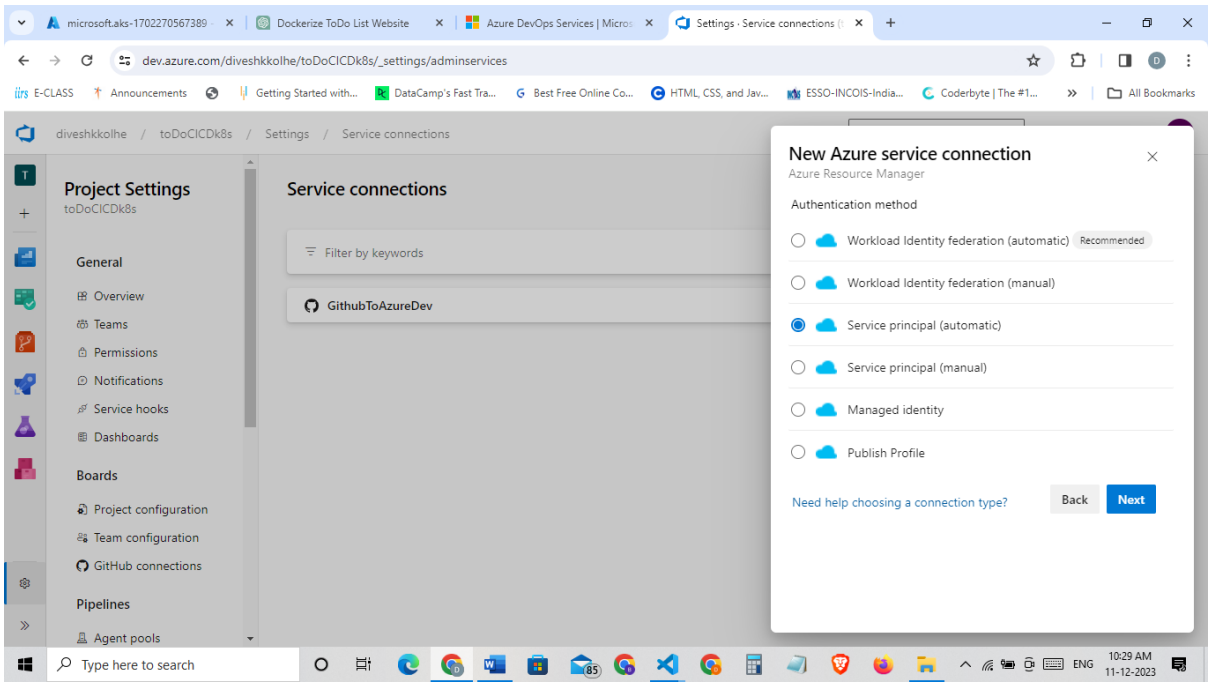
Create service connections

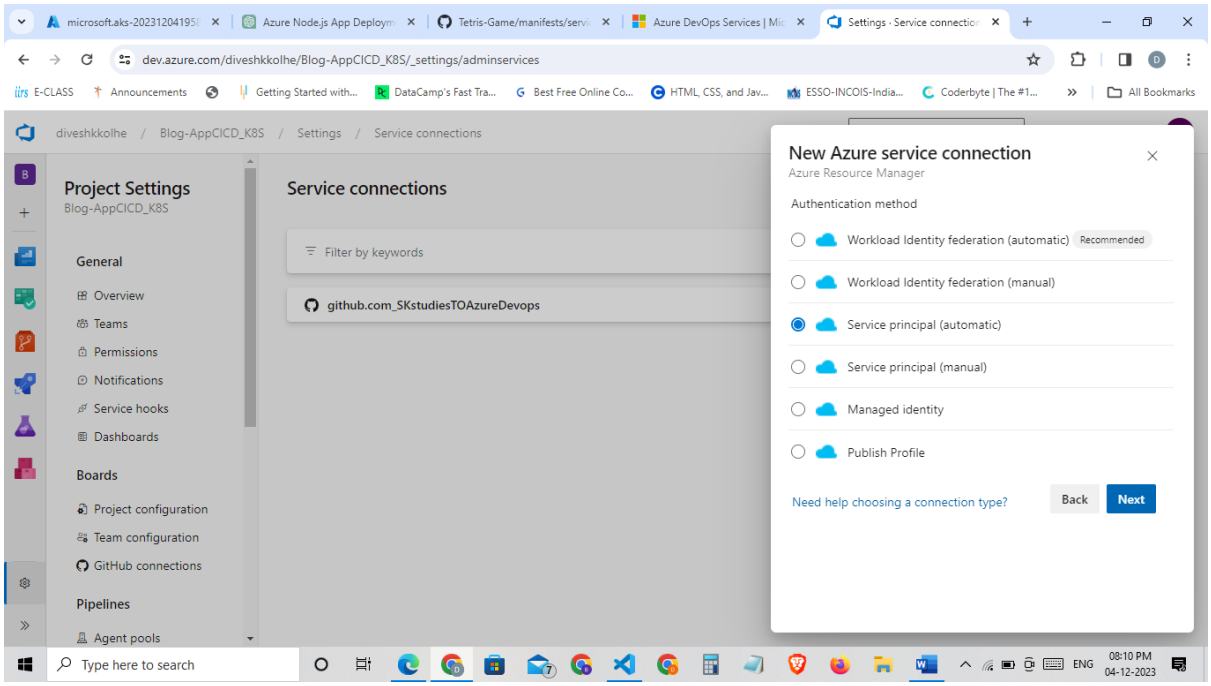
Github:-





AzurePortal:-

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diveshkkolhe / Blog-AppCICD_K8S / Settings / Service connections
Project Settings
Blog-AppCICD_K8S
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Team configuration
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Service connections
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New Azure service connection
Azure Resource Manager
Authentication method
Workload Identity federation (automatic) Recommended
Workload Identity federation (manual)
Service principal (automatic)
Service principal (manual)
Managed identity
Publish Profile
Need help choosing a connection type?
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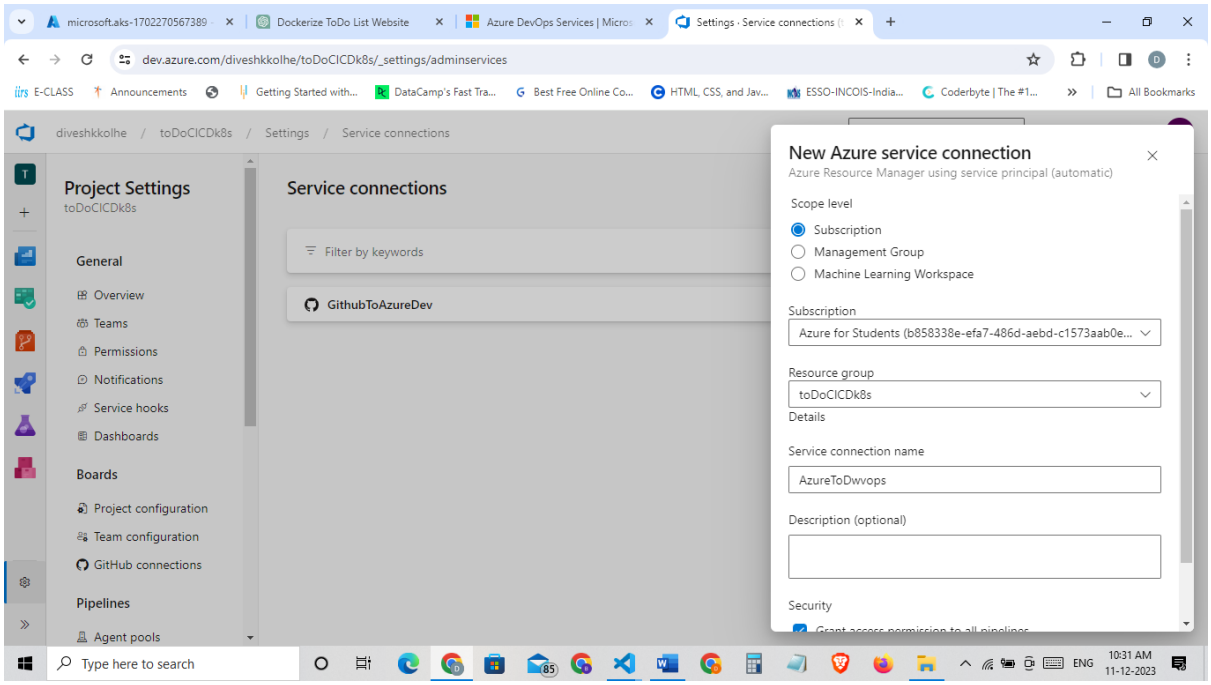
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Azure for Students (b858338e-efa7-486d-aebd-c1573aab0e...
Resource group
toDoCICDk8s
Details
Service connection name
AzureToDwvops
Description (optional)
Security
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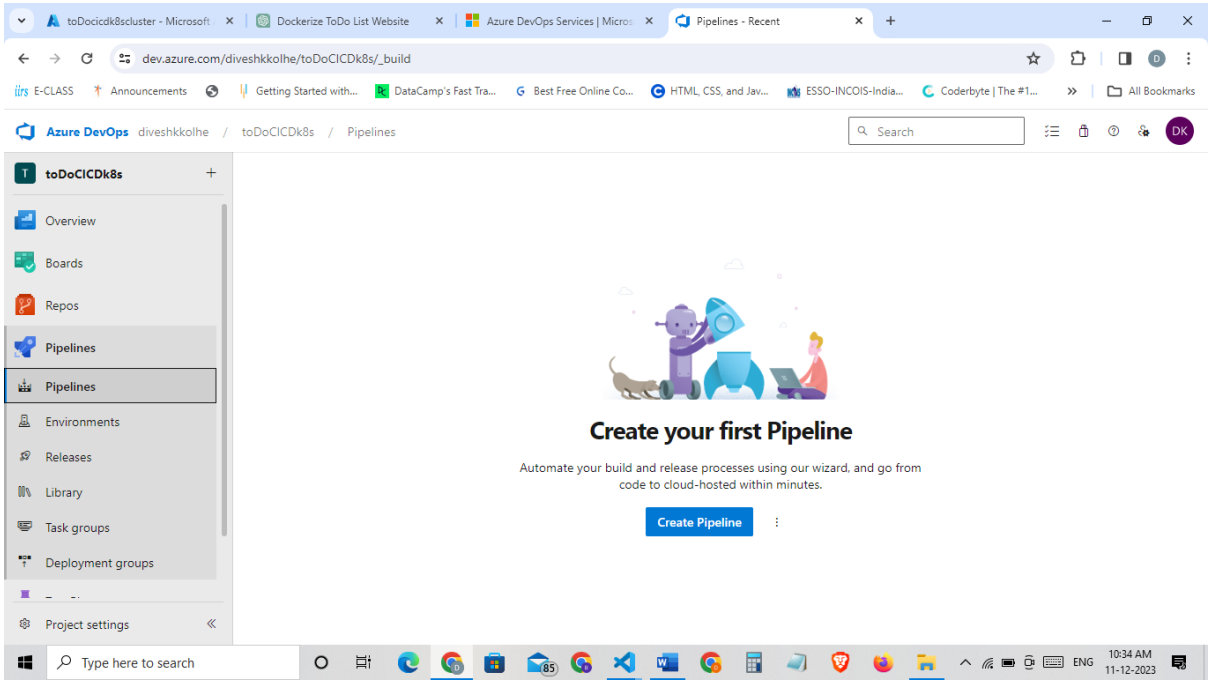
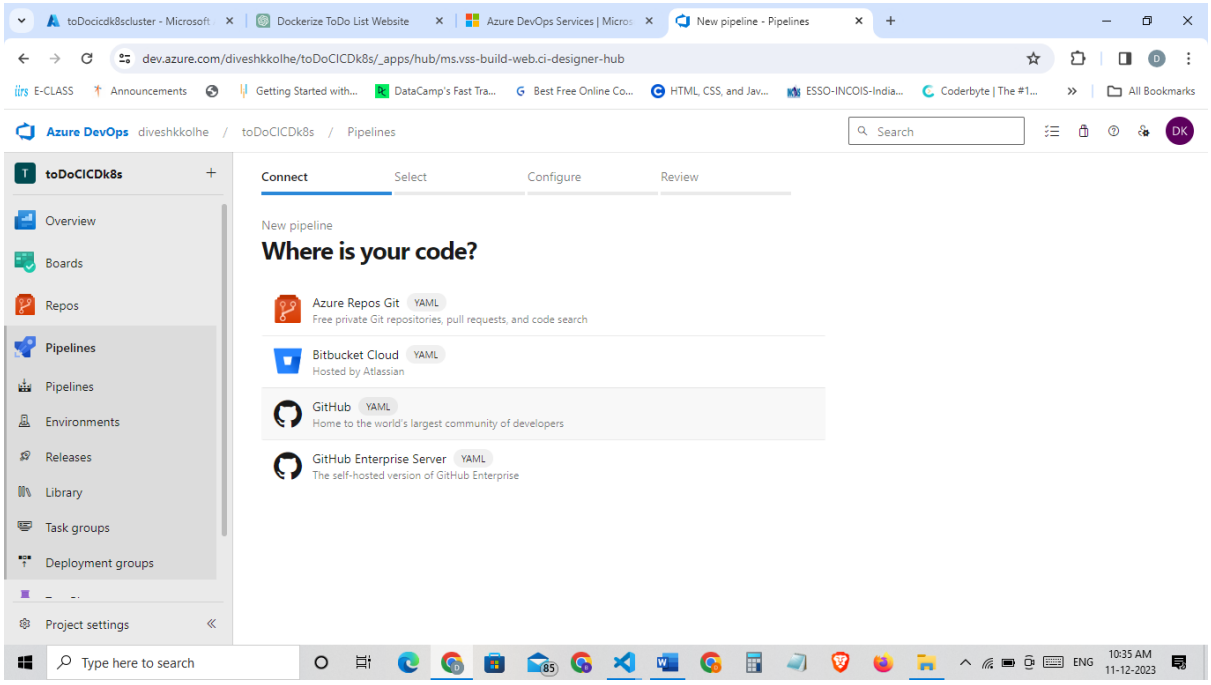
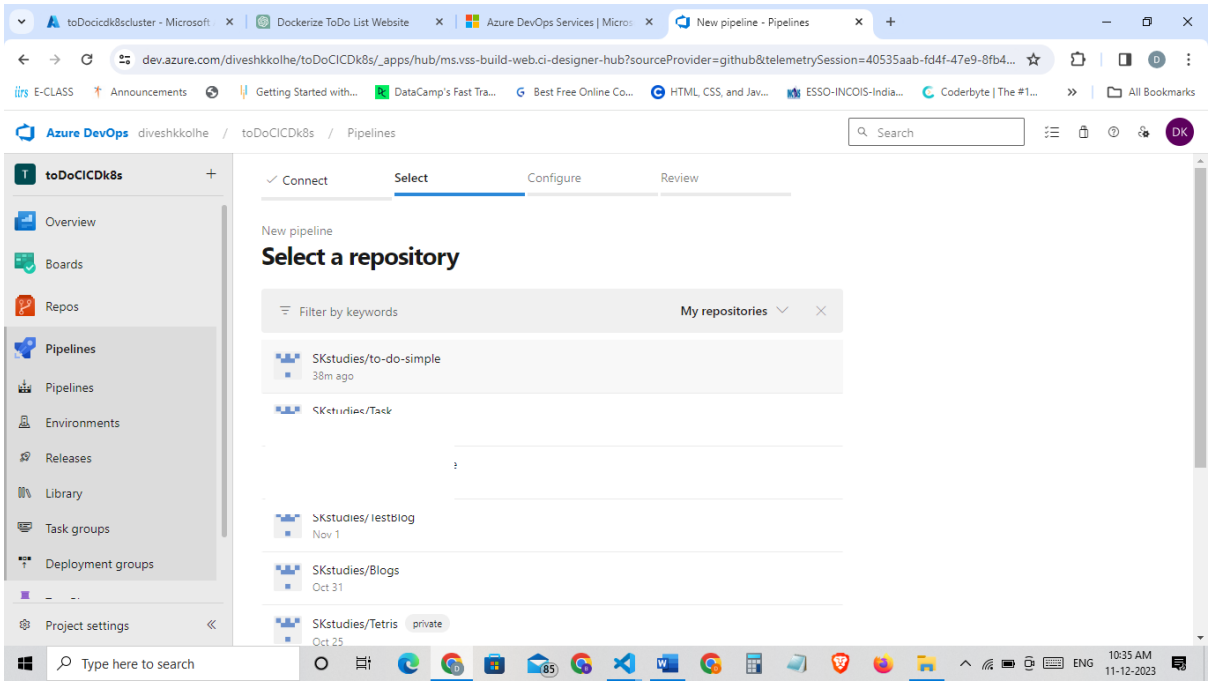
Create Pipeline



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Deployment groups
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Select a repository
Filter by keywords
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SKstudies/to-do-simple
38m ago
SKstudies/Task
SKstudies/TestBlog
Nov 1
SKstudies/Blogs
Oct 31
SKstudies/Tetris
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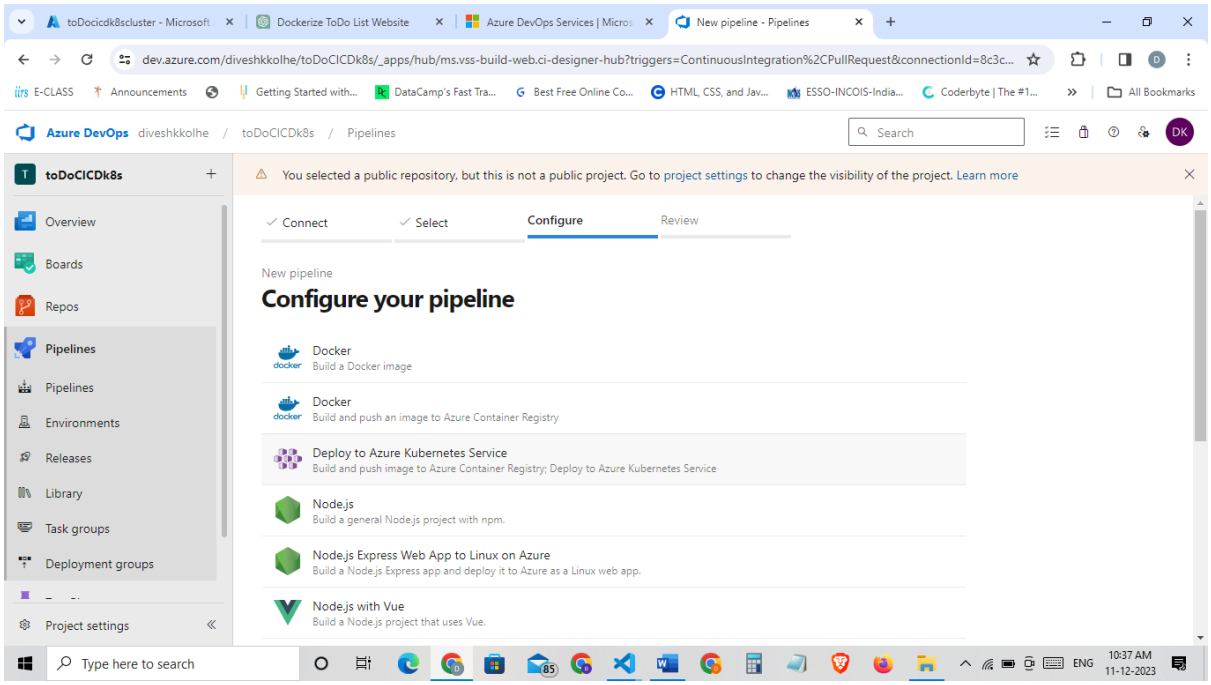
10:35 AM
11-12-2023


toDocicdk8scluster - Microsoft
Dockerize ToDo List Website
Azure DevOps Services | Micros
New pipeline - Pipelines
dev.azure.com/diveshkkolhe/toDoCICDk8s/_apps/hub/ms.vss-build-web.ci-designer-hub?triggers=ContinuousIntegration%2CPullRequest&connectionId=8c3c...
Azure DevOps diveshkkolhe / toDoCICDk8s / Pipelines
Search
toDoCICDk8s
You selected a public repository, but this is not a public project. Go to project settings to change the visibility of the project. Learn more
Overview
Boards
Repos
Pipelines
Pipelines
Environments
Releases
Library
Task groups
Deployment groups
Project settings
Connect
Select
Configure
Review
New pipeline
Configure your pipeline
Docker
Build a Docker image
Docker
Build and push an image to Azure Container Registry
Deploy to Azure Kubernetes Service
Build and push image to Azure Container Registry; Deploy to Azure Kubernetes Service
Node.js
Build a general Node.js project with npm.
Node.js Express Web App to Linux on Azure
Build a Node.js Express app and deploy it to Azure as a Linux web app.
Node.js with Vue
Build a Node.js project that uses Vue.
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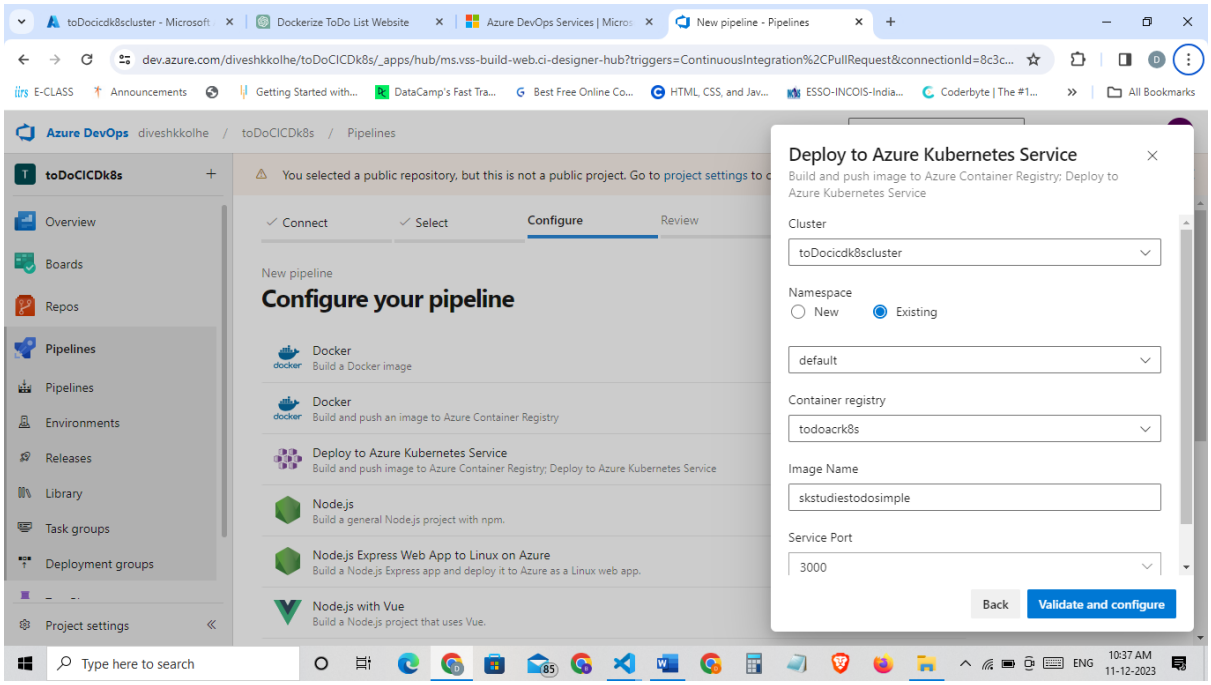
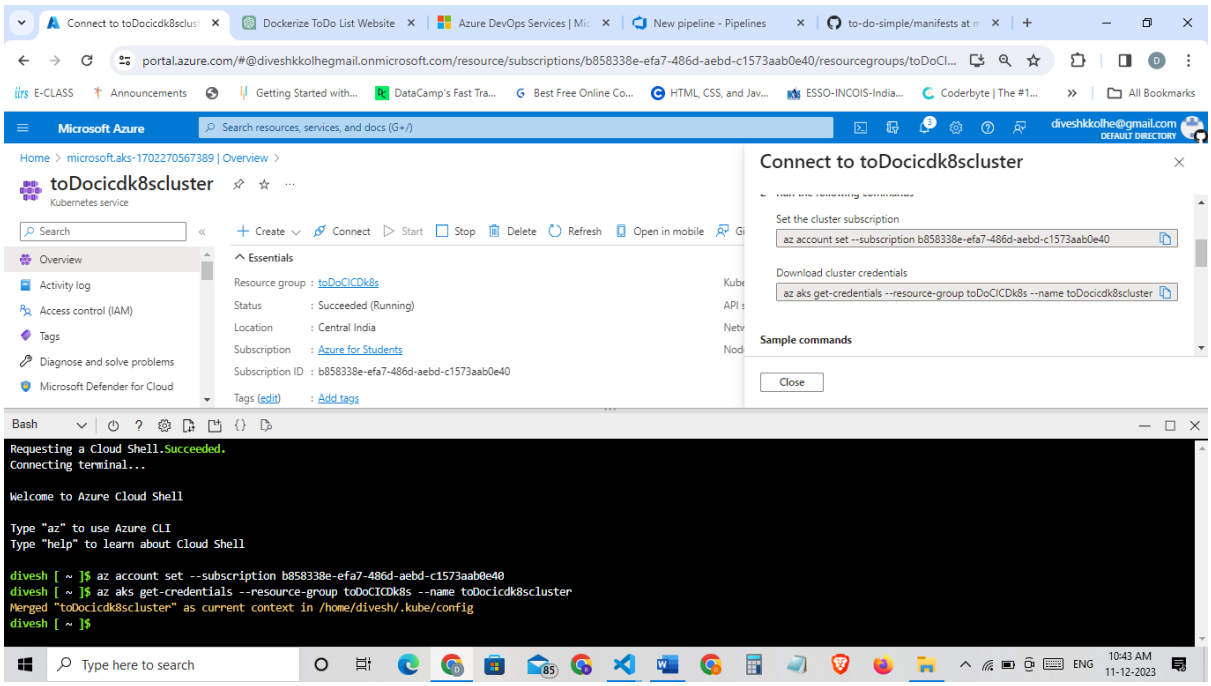
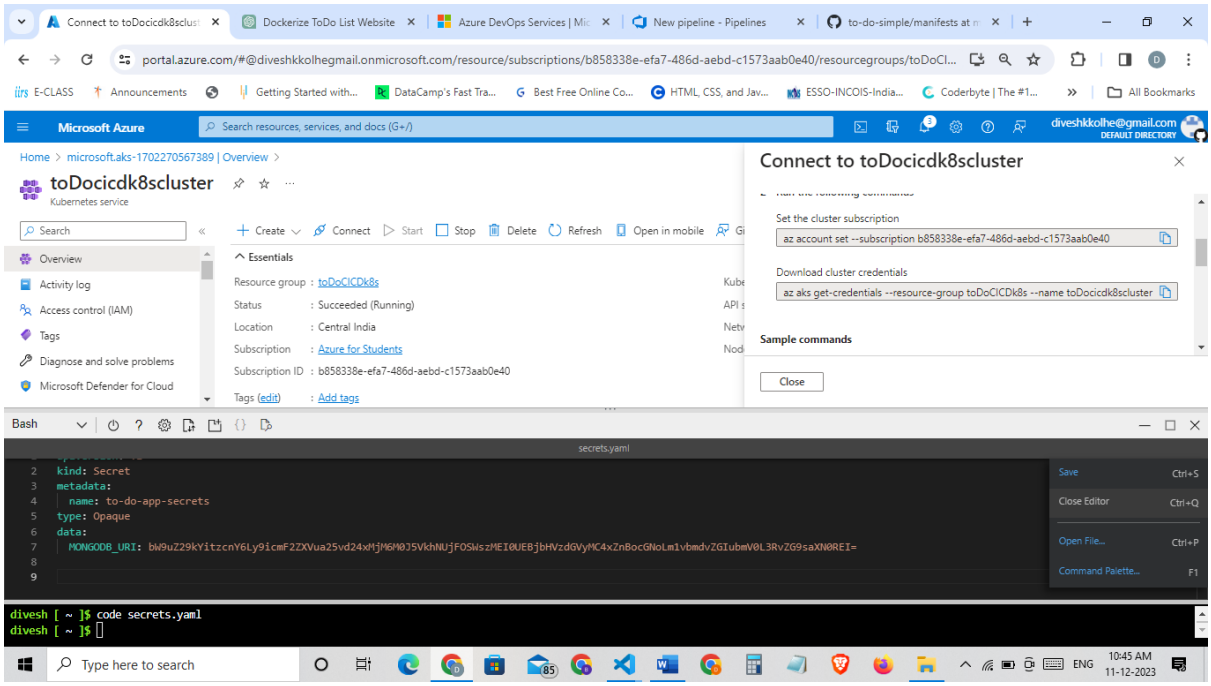


Connect cloud shell and deploy secreates.yml




Connect to toDocicdk8scluster
Dockerize ToDo List Website
Azure DevOps Services | Mic
New pipeline - Pipelines
to-do-simple/manifests at m
portal.azure.com/#@diveshkkolhegmail.onmicrosoft.com/resource/subscriptions/b858338e-efa7-486d-aebd-c1573aab0e40/resourcegroups/toDoCl...
Microsoft Azure
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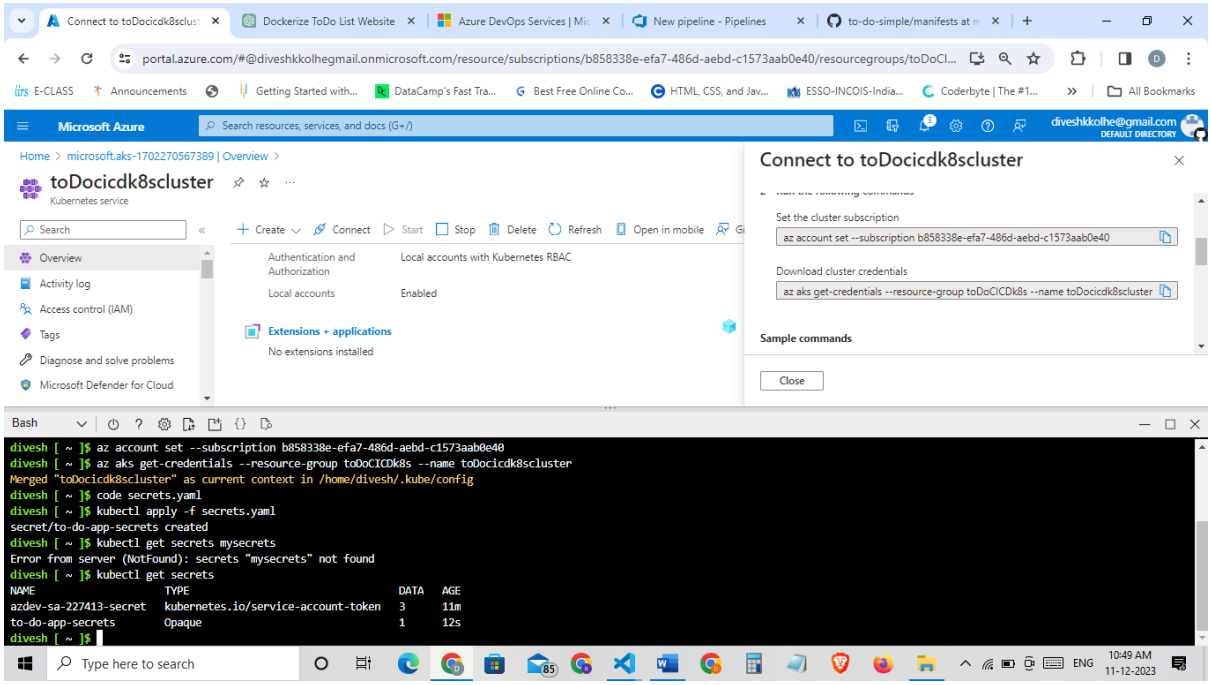
DEFAULT DIRECTORY
Home > microsoft.aks-1702270567389 | Overview >
toDocicdk8scluster
Kubernetes service
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Microsoft Defender for Cloud
Create
Connect
Start
Stop
Delete
Refresh
Open in mobile
Essentials
Resource group : toDoCICDk8s
Status : Succeeded (Running)
Location : Central India
Subscription : Azure for Students
Subscription ID : b858338e-efa7-486d-aebd-c1573aab0e40
Tags (edit) : Add tags
Connect to toDocicdk8scluster
Set the cluster subscription
az account set --subscription b858338e-efa7-486d-aebd-c1573aab0e40
Download cluster credentials
az aks get-credentials --resource-group toDoCICDk8s --name toDocicdk8scluster
Sample commands
Close
Bash
secrets.yaml
kind: Secret
metadata:
name: to-do-app-secrets
type: Opaque
data:
MONGODB_URI: bW9uZ29kYitzcnY6Ly9icmF2ZXVua25vd24xMjM6M0J5VkhNUjFOSWszMEI0UEBjbHVzdGVyMC4xZnBocGNoLm1vbmdvZGIubmV0L3RvZG9saXN0REI=
Save Ctrl+S
Close Editor Ctrl+Q
Open File... Ctrl+P
Command Palette... F1
divesh [~]$ code secrets.yaml
divesh [~]$
Type here to search
ENG
10:45 AM
11-12-2023


Connect to toDocicdk8scluster
Dockerize ToDo List Website
Azure DevOps Services | Mic
New pipeline - Pipelines
to-do-simple/manifests at m
portal.azure.com/#@diveshkkolhegmail.onmicrosoft.com/resource/subscriptions/b858338e-efa7-486d-aebd-c1573aab0e40/resourcegroups/toDoCl...
Microsoft Azure
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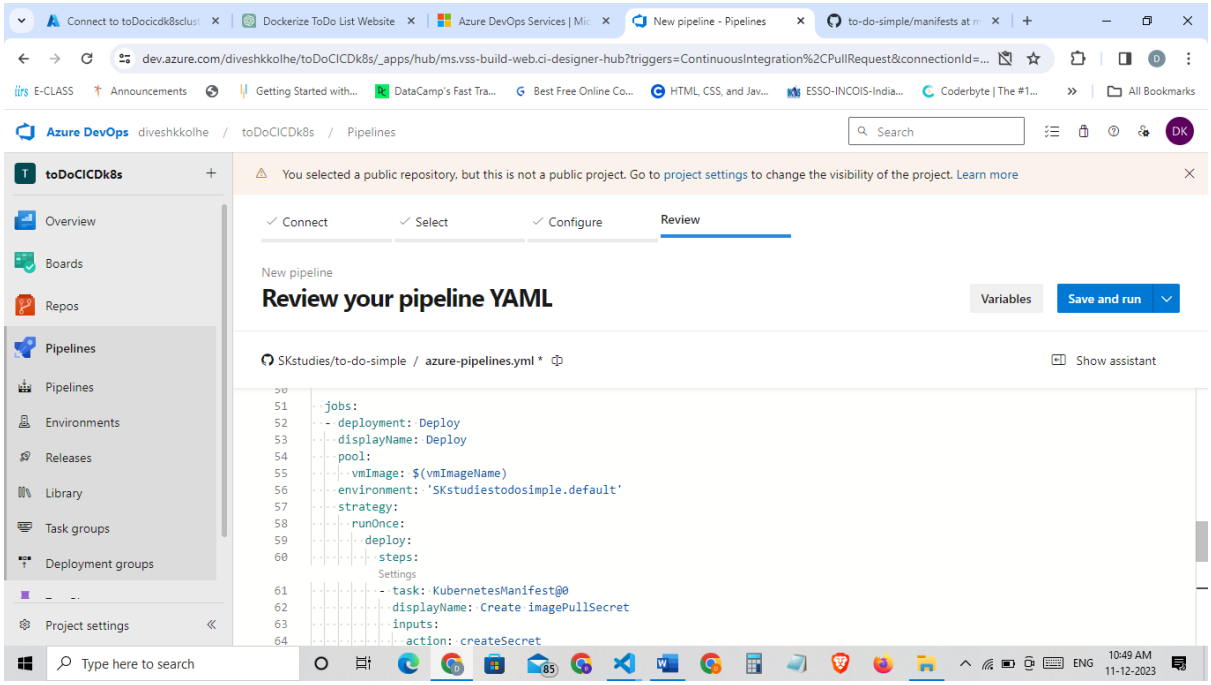
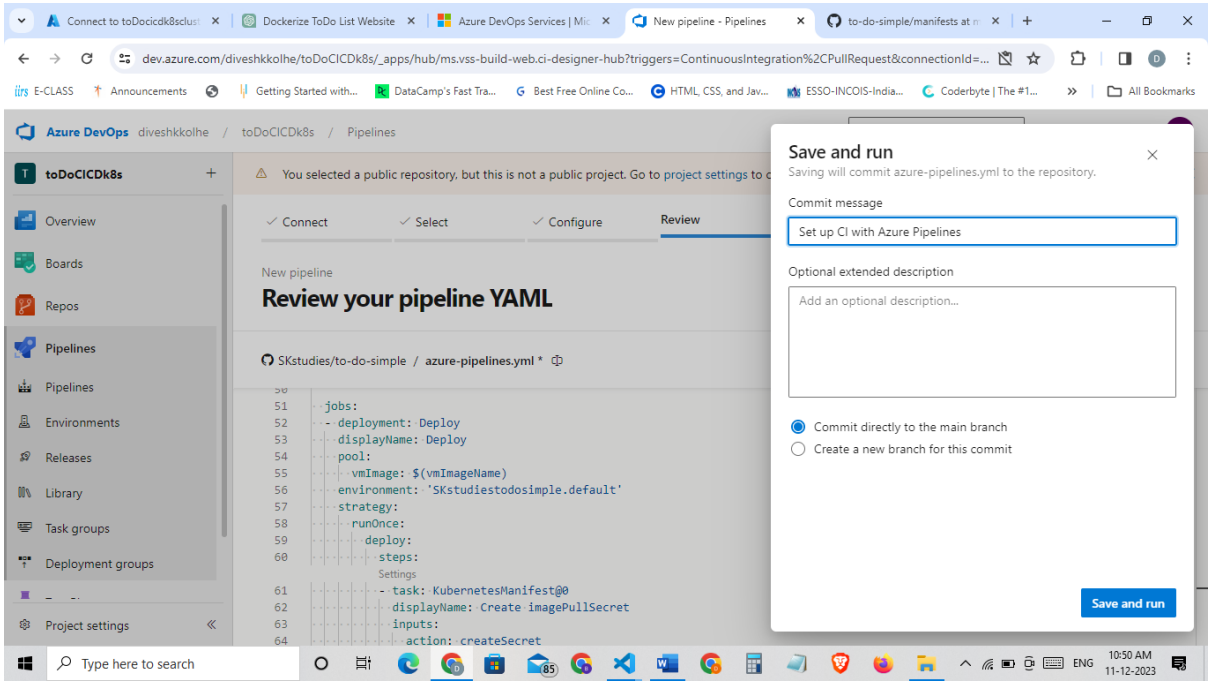
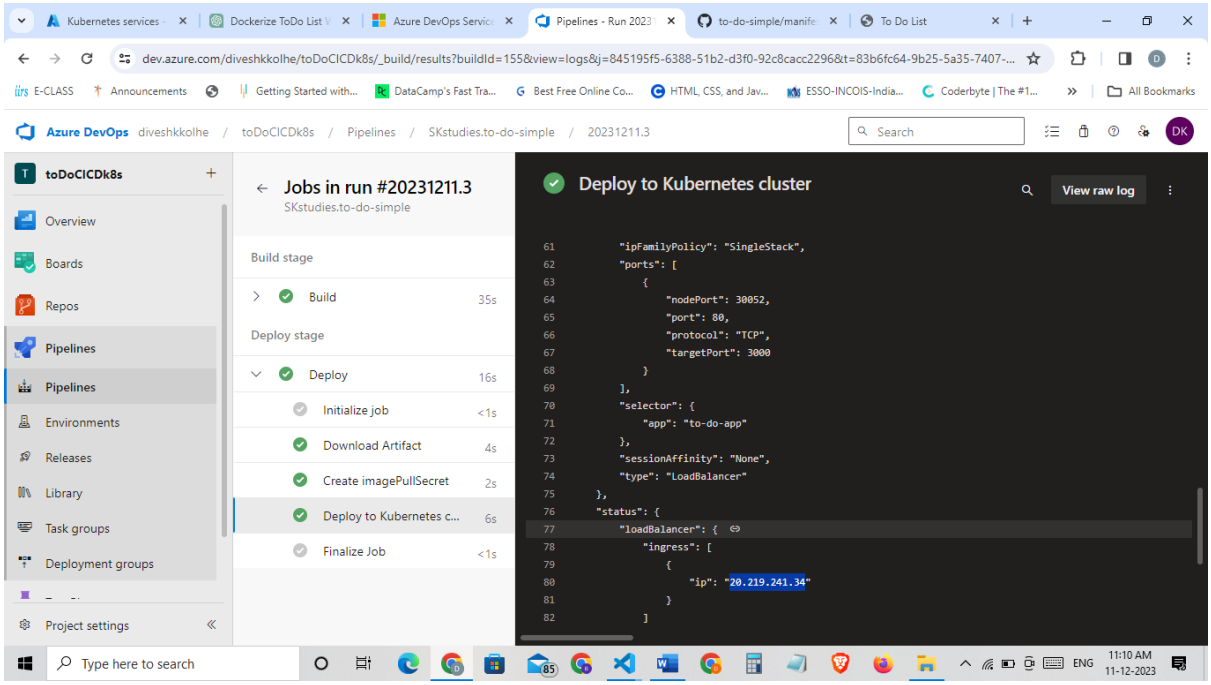
DEFAULT DIRECTORY
Home > microsoft.aks-1702270567389 | Overview >
toDocicdk8scluster
Kubernetes service
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Microsoft Defender for Cloud
Create
Connect
Start
Stop
Delete
Refresh
Open in mobile
Authentication and Authorization
Local accounts with Kubernetes RBAC
Local accounts
Enabled
Extensions + applications
No extensions installed
Connect to toDocicdk8scluster
Set the cluster subscription
az account set --subscription b858338e-efa7-486d-aebd-c1573aab0e40
Download cluster credentials
az aks get-credentials --resource-group toDoCICDk8s --name toDocicdk8scluster
Sample commands
Close
Bash
divesh [~]$ az account set --subscription b858338e-efa7-486d-aebd-c1573aab0e40
divesh [~]$ az aks get-credentials --resource-group toDoCICDk8s --name toDocicdk8scluster
Merged "toDocicdk8scluster" as current context in /home/divesh/.kube/config
divesh [~]$ code secrets.yaml
divesh [~]$ kubectl apply -f secrets.yaml
secret/to-do-app-secrets created
divesh [~]$ kubectl get secrets mysecrets
Error from server (NotFound): secrets "mysecrets" not found
divesh [~]$ kubectl get secrets
NAME TYPE DATA AGE
azdev-sa-227413-secret kubernetes.io/service-account-token 3 11m
to-do-app-secrets Opaque 1 12s
divesh [~]$
Type here to search
ENG
10:49 AM
11-12-2023

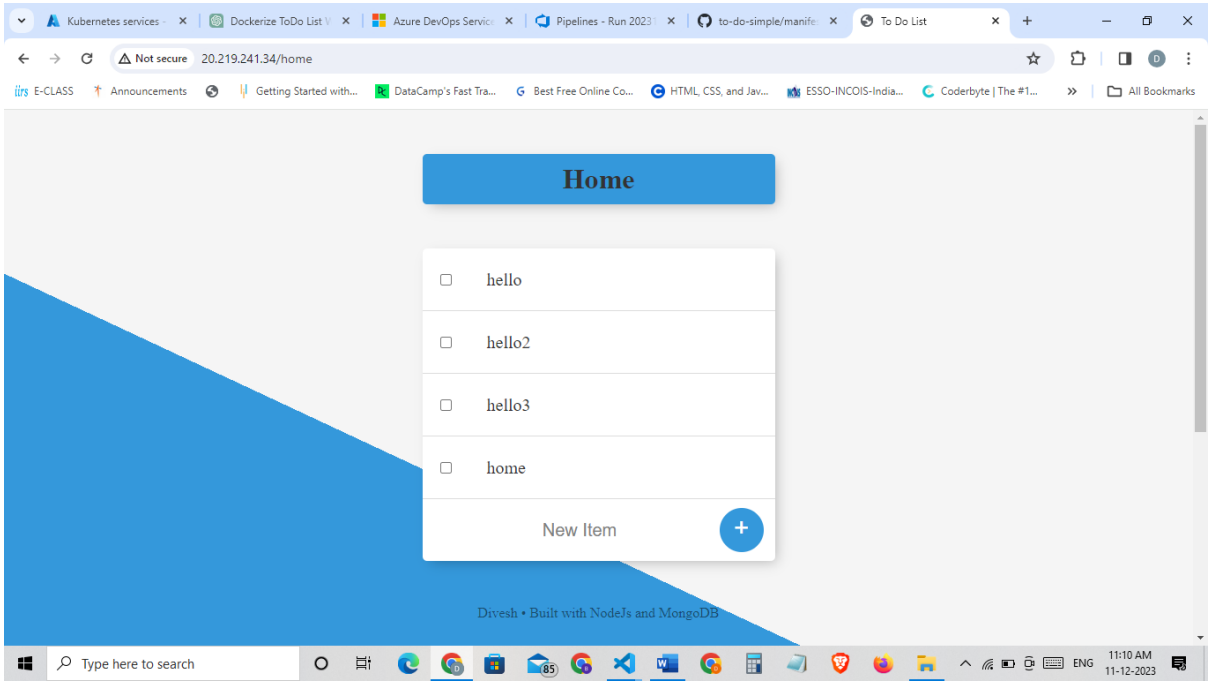
Save and run the pipeline



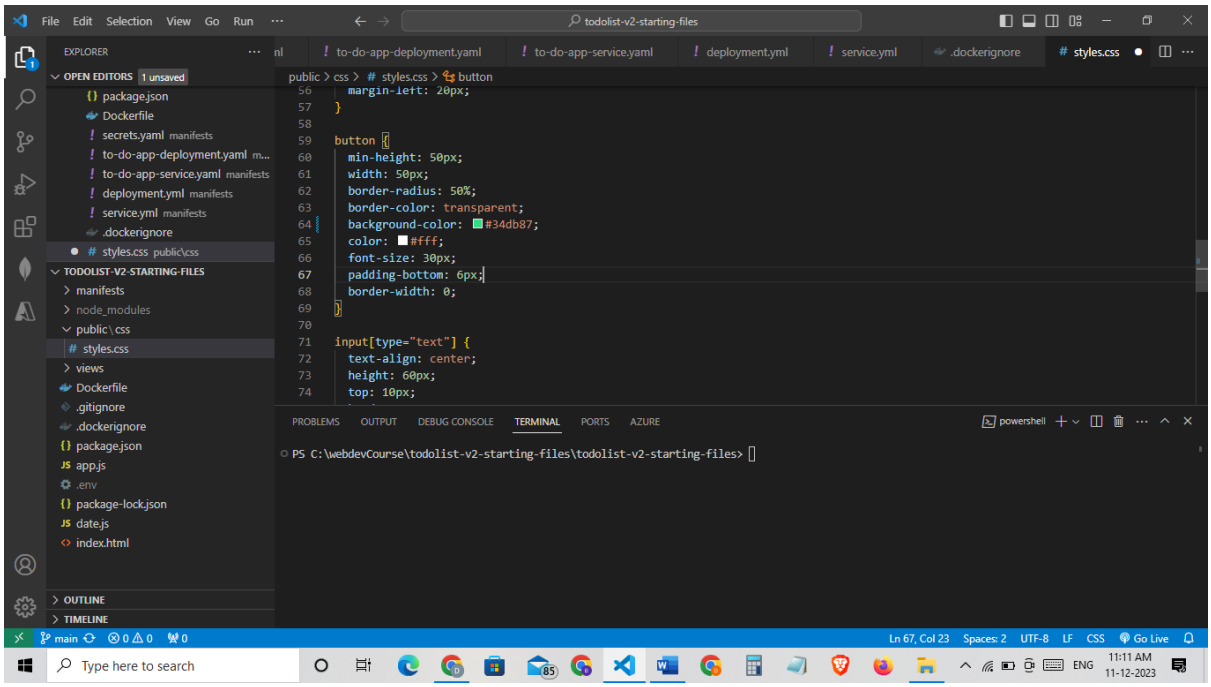


Search the ip

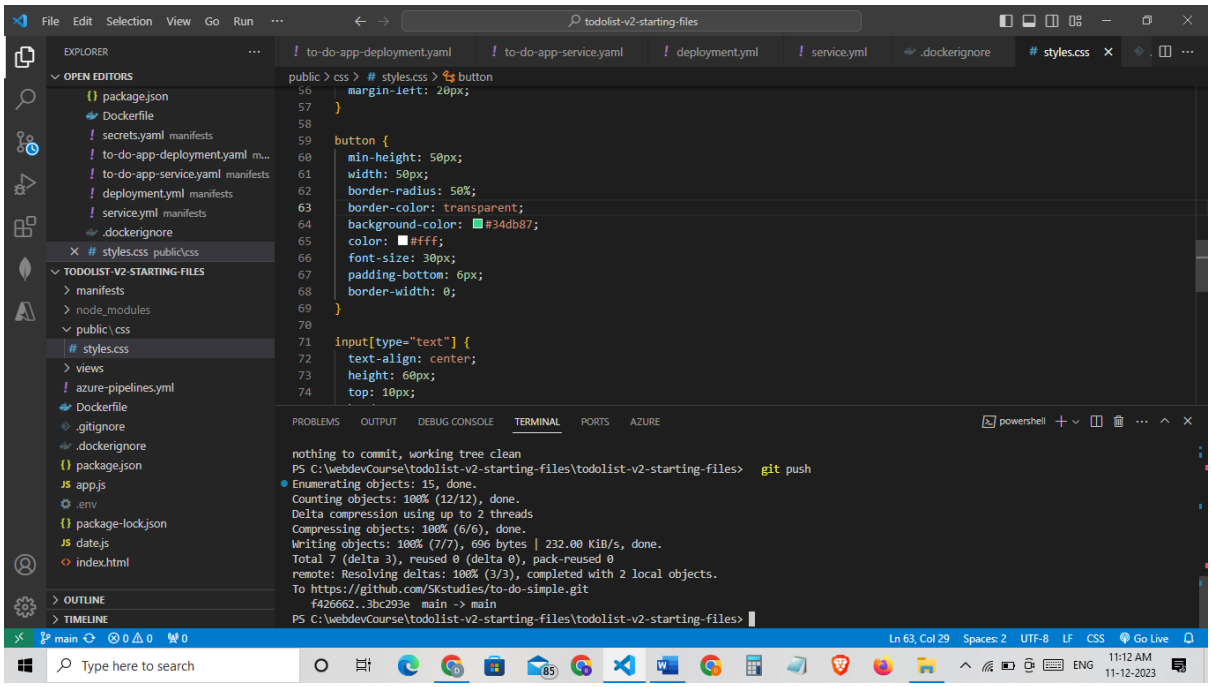




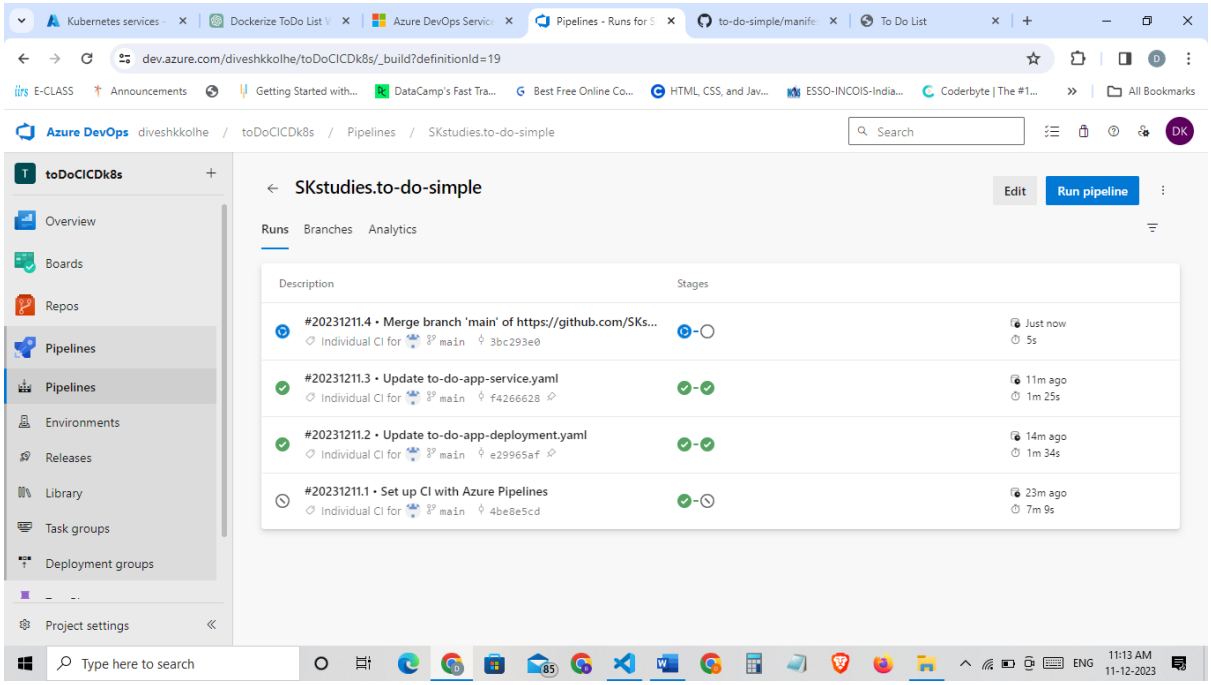
verify the cicd



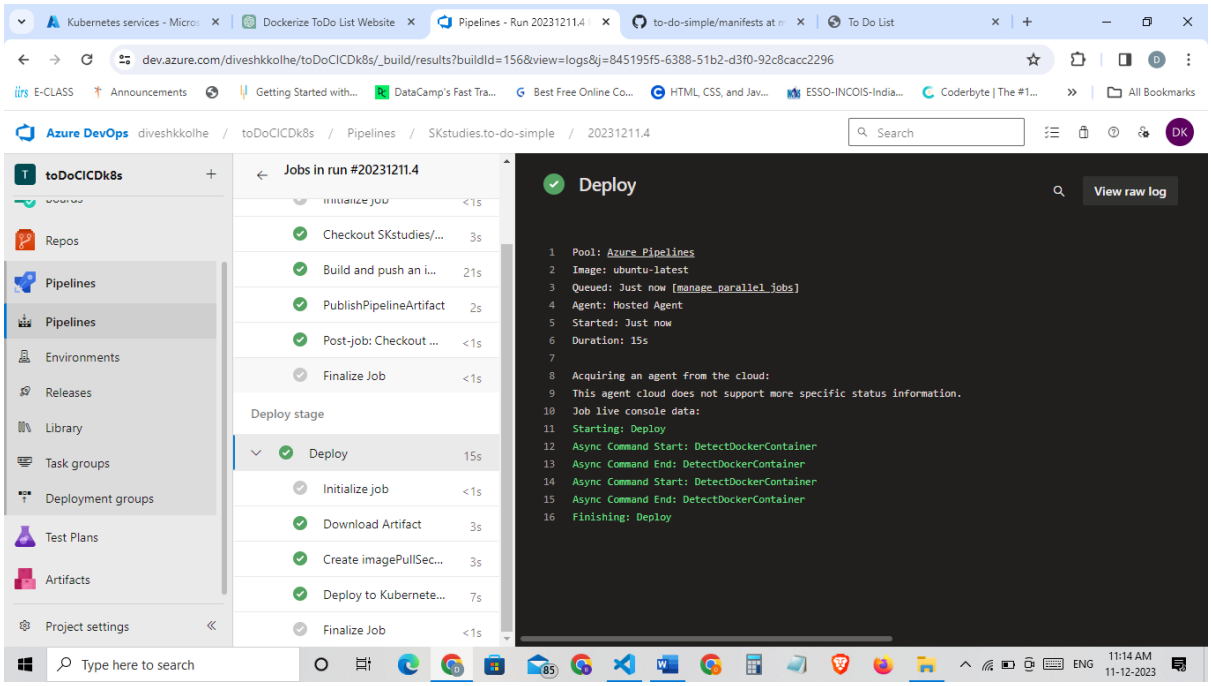
Changed the colour



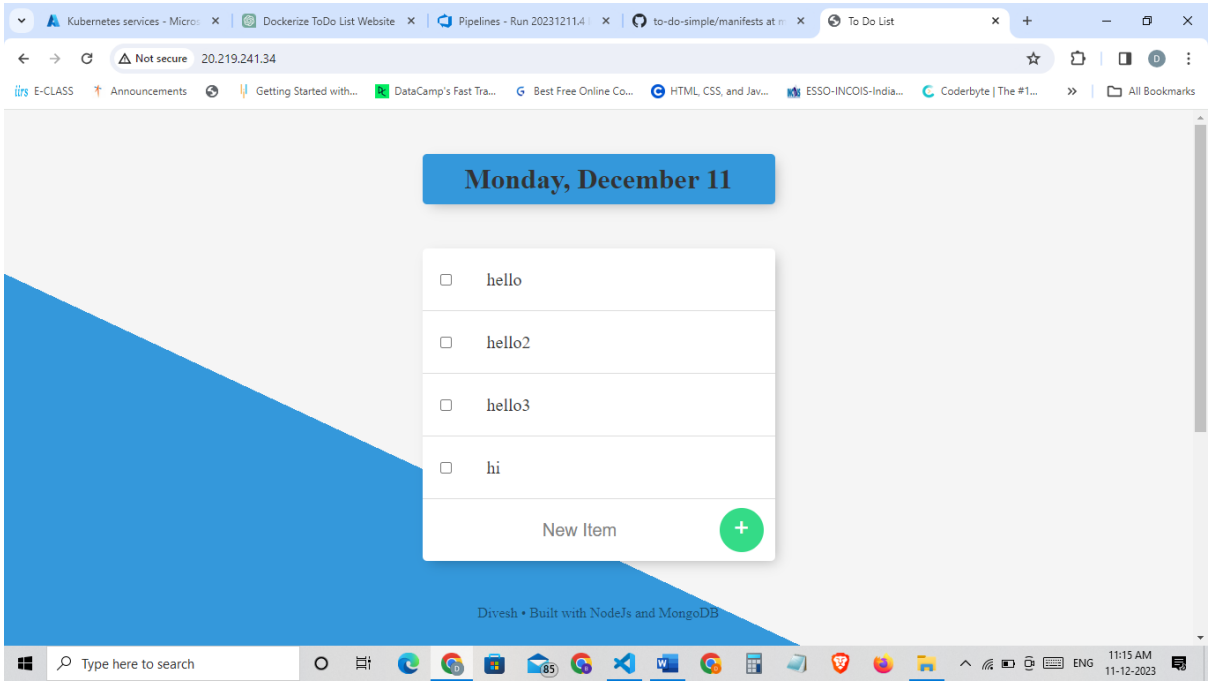
Pipeline automatically triggered

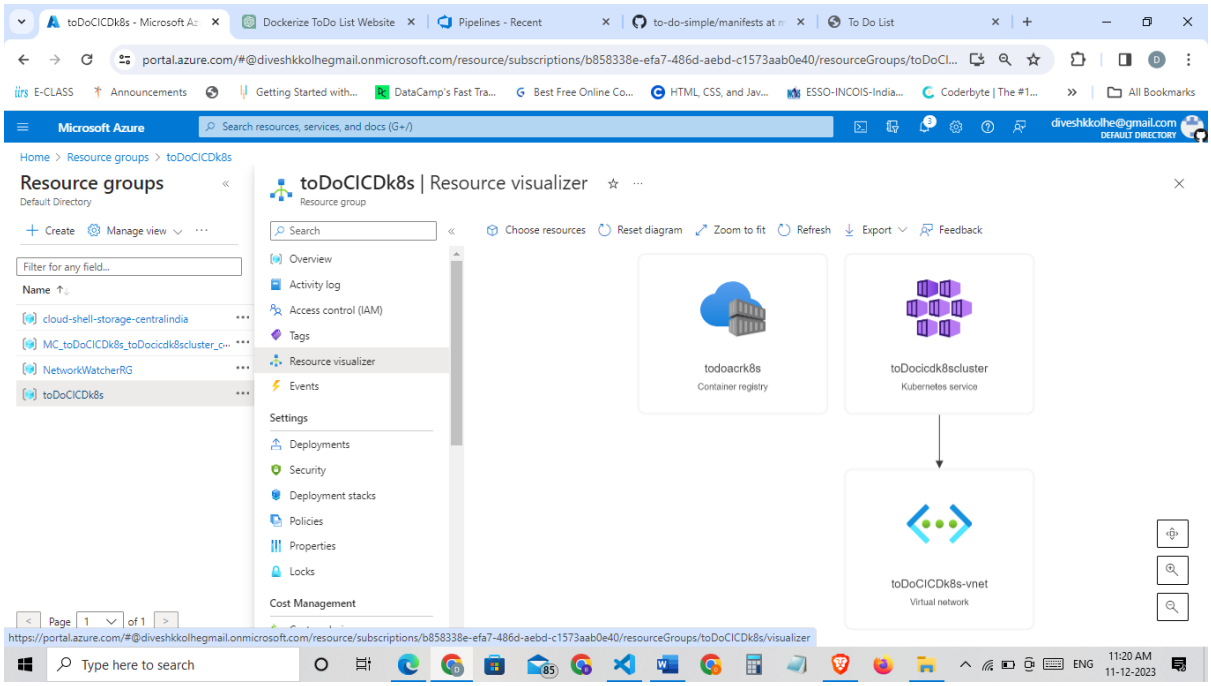


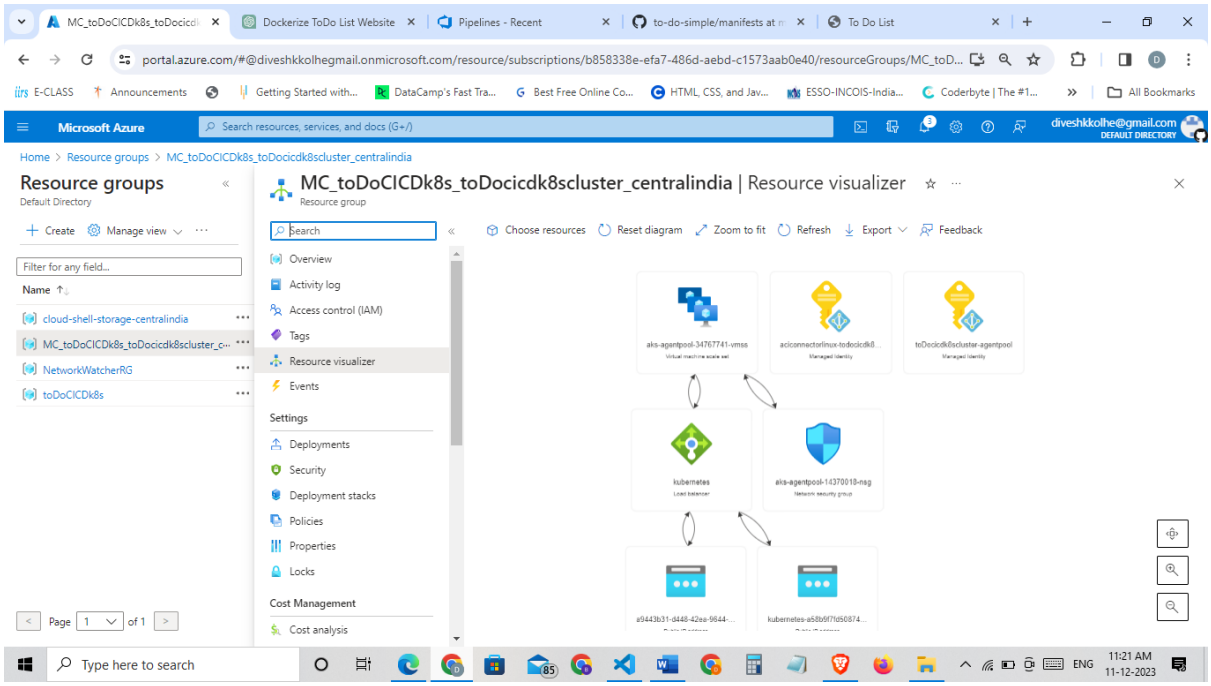
Wiat for build to finish



Button colour changed automiatically






MC_toDoCICDk8s_toDocicdk8scluster_centralindia | Resource visualizer
Resource groups
Default Directory
Create
Manage view
Filter for any field...
Name
cloud-shell-storage-centralindia
MC_toDoCICDk8s_toDocicdk8scluster_c...
NetworkWatcherRG
toDoCICDk8s
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Deployments
Security
Deployment stacks
Policies
Properties
Locks
Cost Management
Cost analysis
Choose resources
Reset diagram
Zoom to fit
Refresh
Export
Feedback
aks-agentpool-34767741-vmss
aciconnectorlinux-todocicdk8...
toDocicdk8scluster-agentpool
kubernetes
aks-agentpool-14370018-nsg
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