TEACHNOOK MINOR PROJECT

PROJECT NAME:

Cloud Computing Minor Project

PROJECT DESCRIPTION:

Use any one service of azure and show its practical demonstration...You can use speech recognition or image recognition...etc

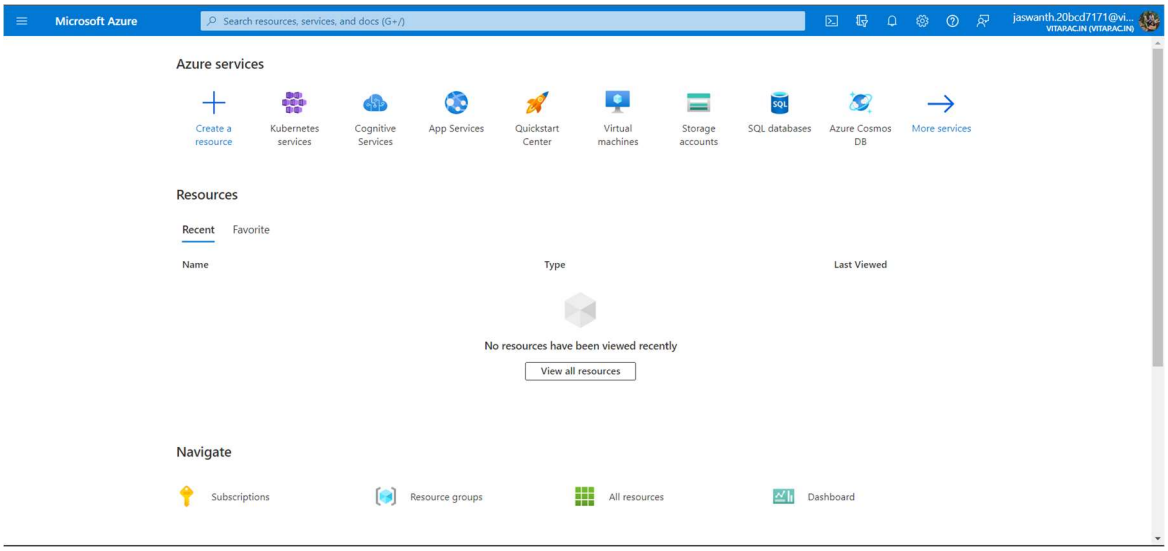
TITLE OF THE PROJECT:
Deploy App to Azure Kubernetes Services (AKS)

Index:

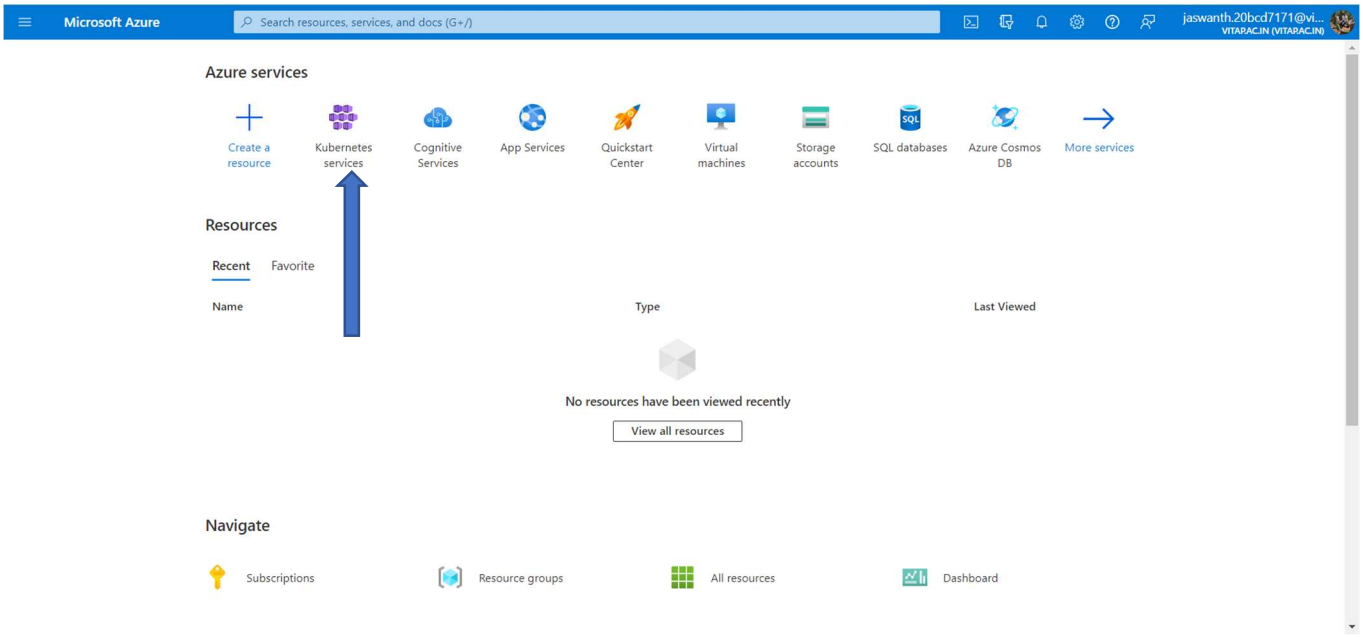
- *Creating AKS Context from our local cmd*
- *Using Azure CLI to login to AKS*
- *Executing YAML file against your AKS clustur from your local PC.*
- *Querying Pods and Service.*
- *Opening Service by their external ips on the browser*

Execution:

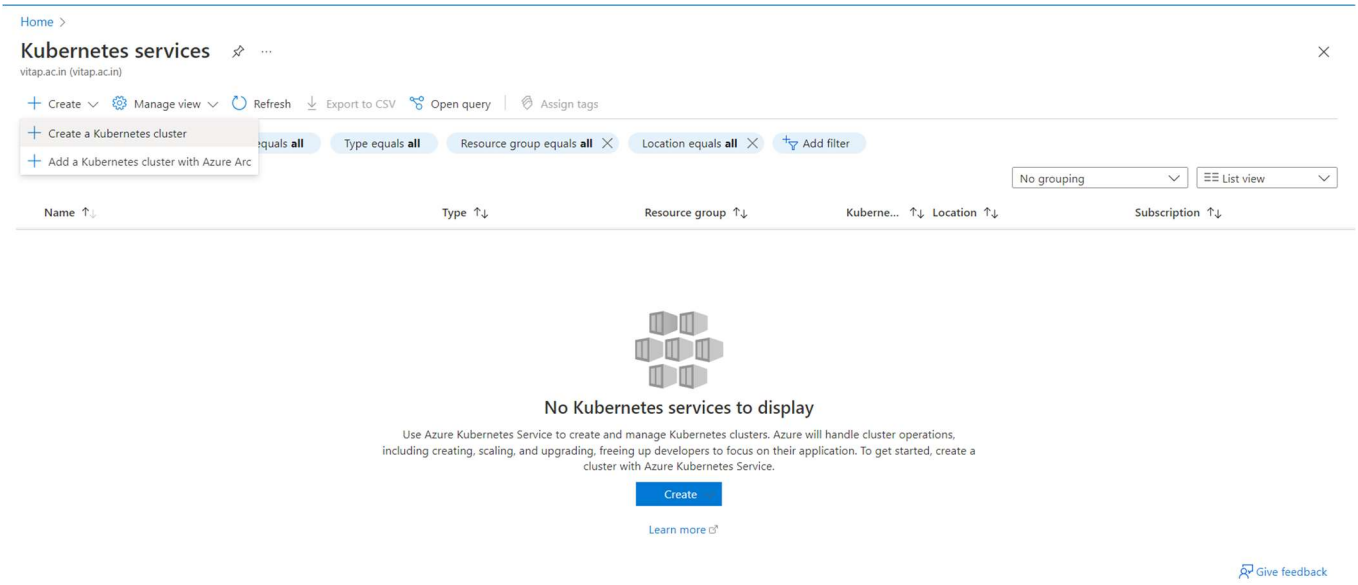
1.Sign in with your azure account.



2.Get ahead to Kubernetes Services

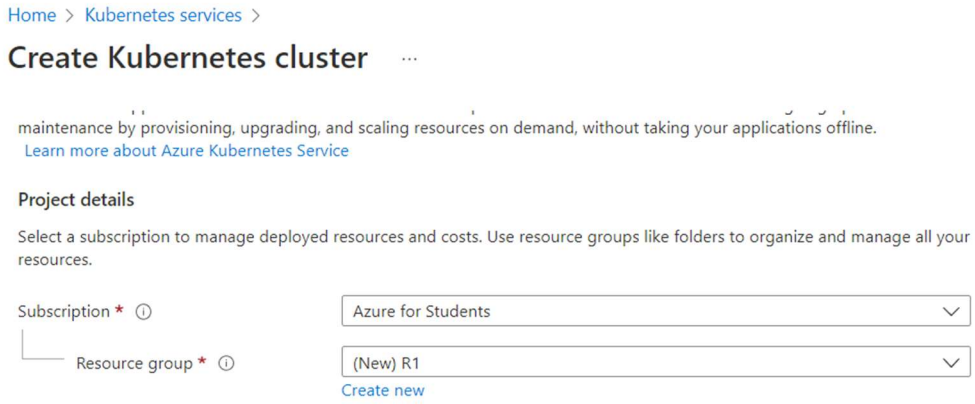


3.Click on the Create Kubernetes Cluster to create

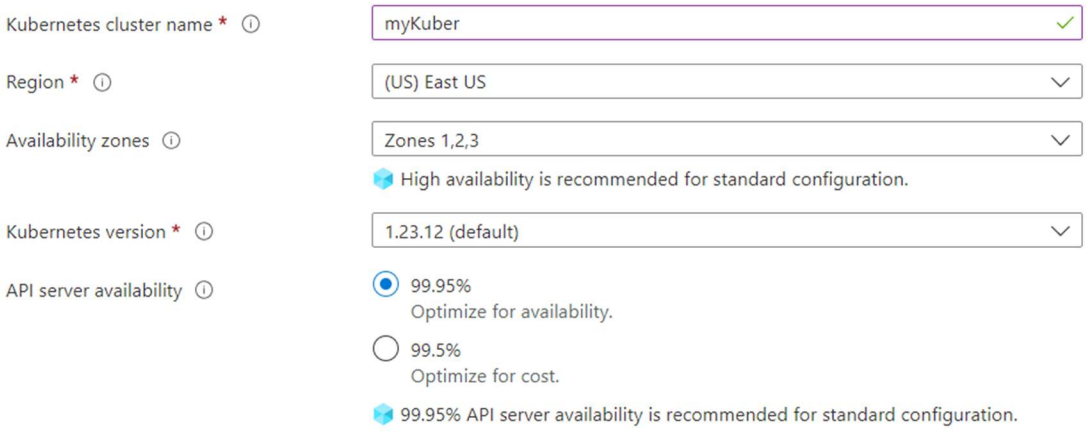


4.Naming and all inside the Cluster Kubernetes Services

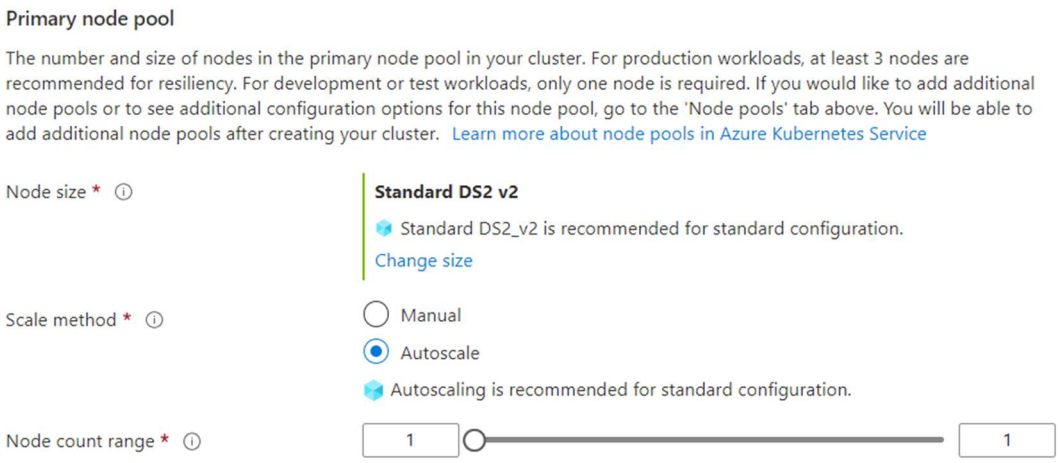
- Create New Resource name im giving it as *"R1"*



- Give a name to Kubernetes Cluster I have given it as *"myKuber"*

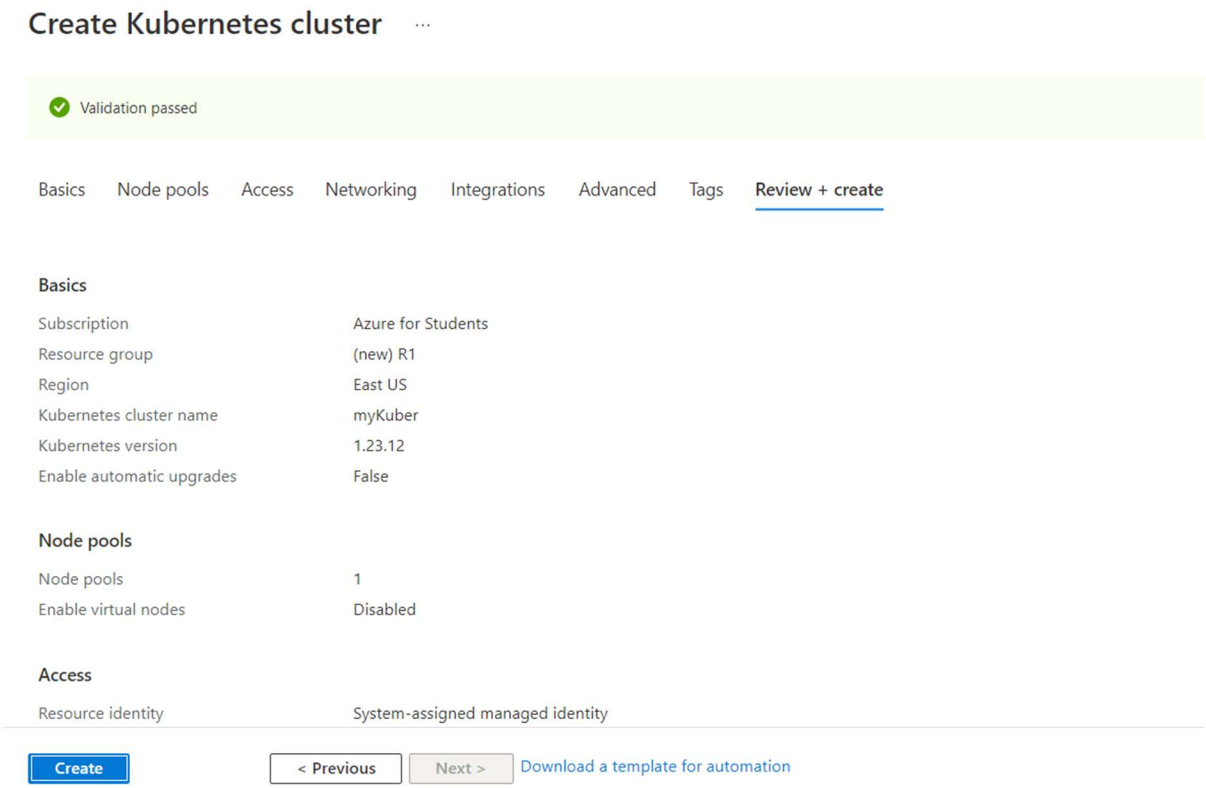


- Give a Node Count Range as *"1to2"*

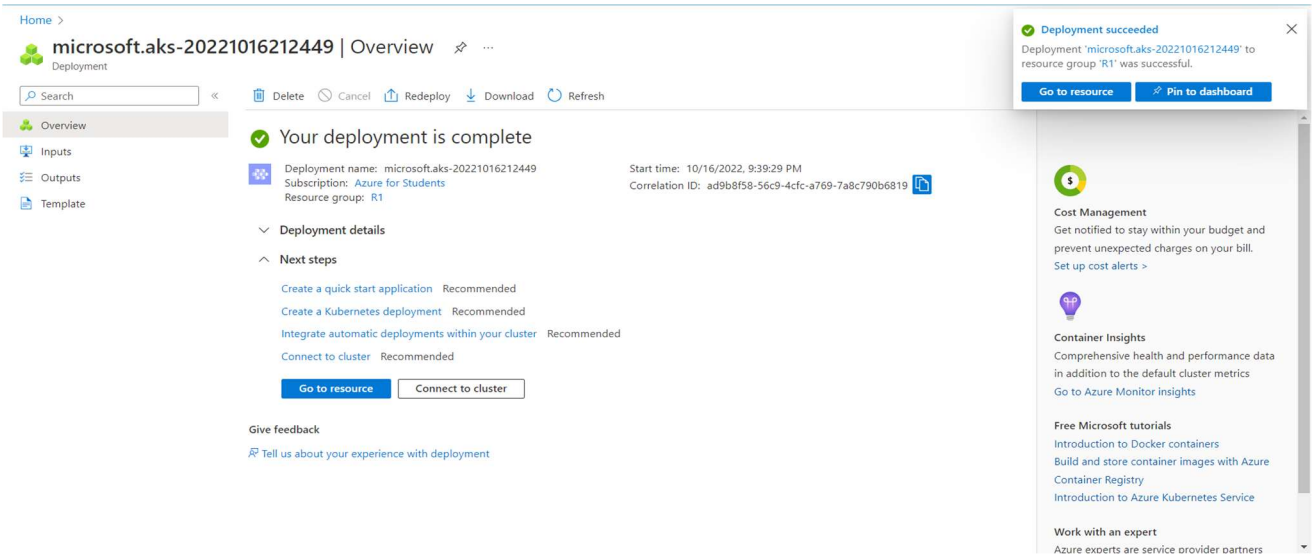


After it Click on "*Review+Create*"

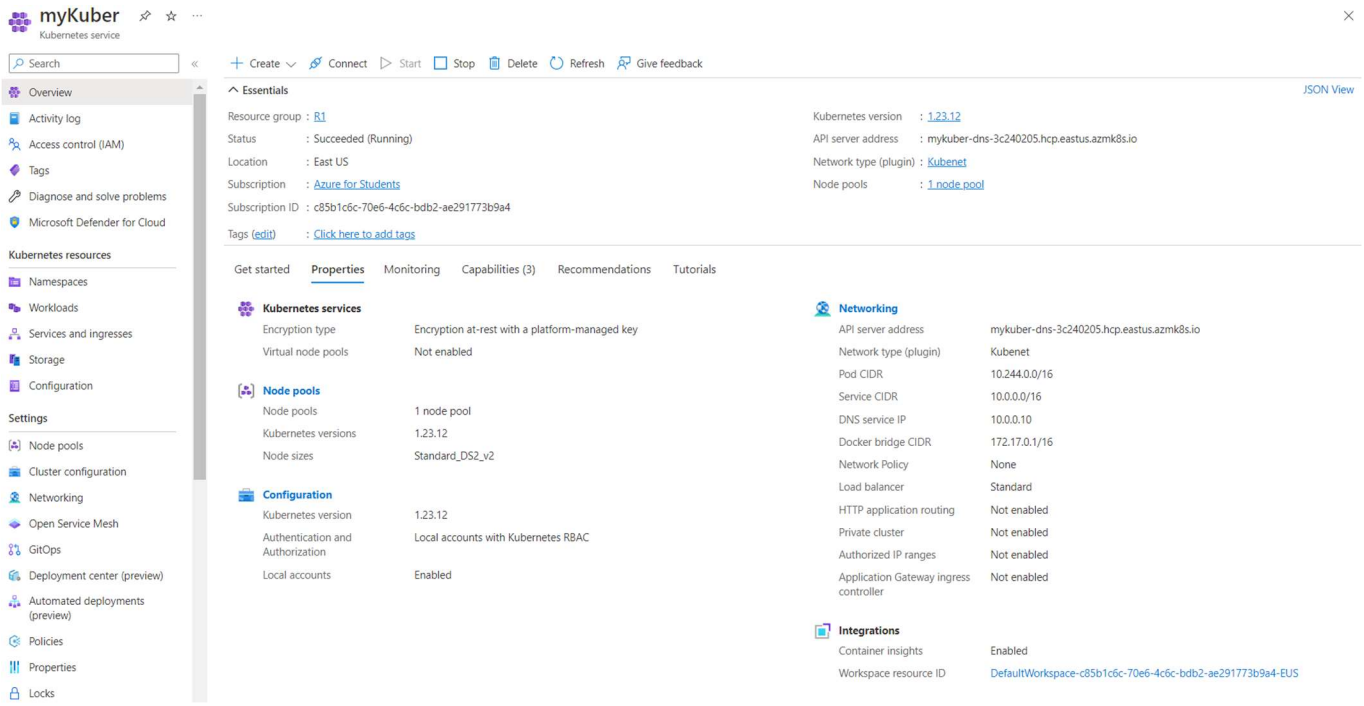
5. Now the final Validation has done so click on *"Create"*



6.Now after clicking on create our deployment will begin we should wait for some time (min 1 to 2min) after you will get as Deployment complete



7.Now Click on *"Go to Resource"*. You can see all the things what we have done yet



❖ ***Creating AKS Context from our local cmd:***

1. First of all you should connect your powershell to Azure. For that you need to install "*Azure CLI and kubectl Commands"*
2. So it goes now on……

```
PS C:\WINDOWS\system32> az login
A web browser has been opened at https://login.microsoftonline.com/organizations/oauth2/v2.0/authorize.
Please continue the login in the web browser. If no web browser is available or if the web browser fails
 to open, use device code flow with `az login --use-device-code`.
[
  {
    "cloudName": "AzureCloud",
    "homeTenantId": "ff335ba2-bb68-489a-bbdd-f49ab4319838",
    "id": "c85b1c6c-70e6-4c6c-bdb2-ae291773b9a4",
    "isDefault": true,
    "managedByTenants": [],
    "name": "Azure for Students",
    "state": "Enabled",
    "tenantId": "ff335ba2-bb68-489a-bbdd-f49ab4319838",
    "user": {
      "name": "jaswanth.20bcd7171@vitap.ac.in",
      "type": "user"
    }
  }
]
```

3.Now it was logged in. So our next task is to connect Kubernetes to it and know what we are all the programs running in it

```
PS C:\WINDOWS\system32> az account set --subscription c85b1c6c-70e6-4c6c-bdb2-ae291773b9a4
PS C:\WINDOWS\system32> az aks get-credentials --resource-group R1 --name myKuber
Merged "myKuber" as current context in C:\Users\jassu\.kube\config
PS C:\WINDOWS\system32> kubectl get pods
No resources found in default namespace.
```

4.Finally we connected AKS with the local Command prompt

```
PS C:\WINDOWS\system32> kubectl config get-contexta
error: unknown command "get-contexta"
See 'kubectl config -h' for help and examples
PS C:\WINDOWS\system32> kubectl config get-contexts
CURRENT   NAME      CLUSTER   AUTHINFO                NAMESPACE
*         myKuber   myKuber   clusterUser_R1_myKuber
PS C:\WINDOWS\system32>
```

```
PS C:\WINDOWS\system32> kubectl config get-clusters
NAME
myKuber
PS C:\WINDOWS\system32>
```

5.Finally we have AKS connected to Command prompt

```
PS C:\WINDOWS\system32> az aks get-credentials --resource-group R1 --name myKuber
Merged "myKuber" as current context in C:\Users\jassu\.kube\config
PS C:\WINDOWS\system32> kubectl config get-contexts
CURRENT   NAME      CLUSTER   AUTHINFO                NAMESPACE
*         myKuber   myKuber   clusterUser_R1_myKuber
PS C:\WINDOWS\system32> kubectl config get-clusters
NAME
myKuber
PS C:\WINDOWS\system32> kubectl get pods
No resources found in default namespace.
PS C:\WINDOWS\system32>
```

❖ ***Deployment of APP into AKS clusters :***

1. For deploying the app we should write a code.I named my coded file as(myfile.yaml)
2. Code for that file will given in the resources section
3. Now the execution is as follows

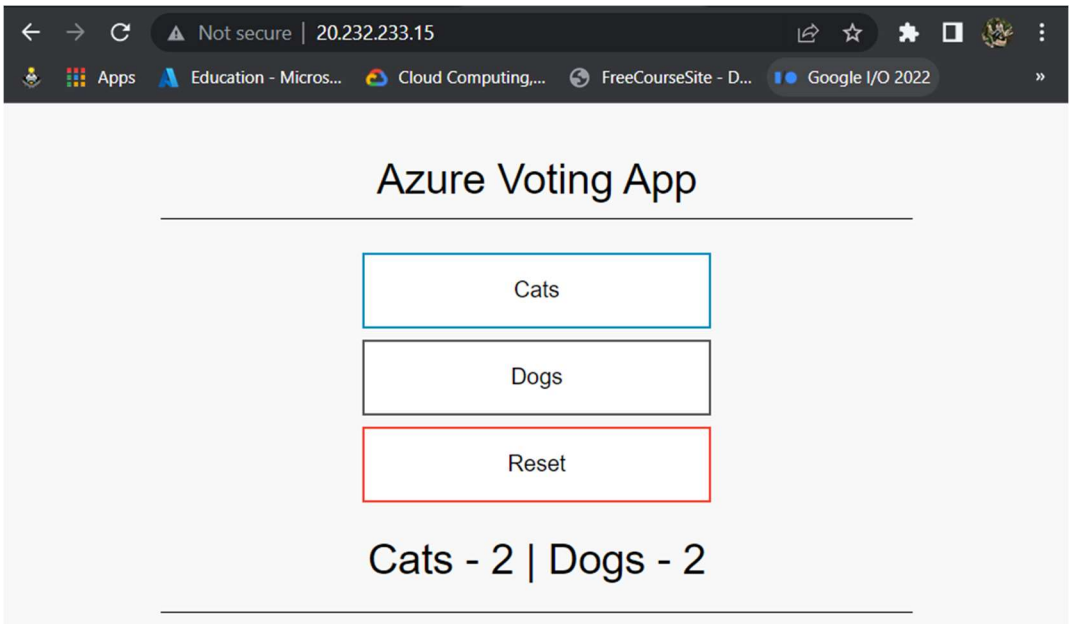
```
PS D:\> cd project
PS D:\project> dir


    Directory: D:\project


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a----        17-10-2022     00:34           1715 myfile.yaml


PS D:\project> kubectl apply -f myfile.yaml
deployment.apps/azure-vote-back created
service/azure-vote-back created
deployment.apps/azure-vote-front created
service/azure-vote-front created
PS D:\project> kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
azure-vote-back-59cb7dc555-lk82r    1/1     Running   0          32s
azure-vote-front-5f4d7db9c8-wfs6g   1/1     Running   0          30s
PS D:\project> kubectl get services
NAME              TYPE           CLUSTER-IP     EXTERNAL-IP     PORT(S)        AGE
azure-vote-back   ClusterIP      10.0.110.0     <none>          6379/TCP       43s
azure-vote-front  LoadBalancer   10.0.127.194   20.232.233.15   80:30907/TCP   42s
kubernetes        ClusterIP      10.0.0.1       <none>          443/TCP        176m
PS D:\project>
```

4. Output of the app:



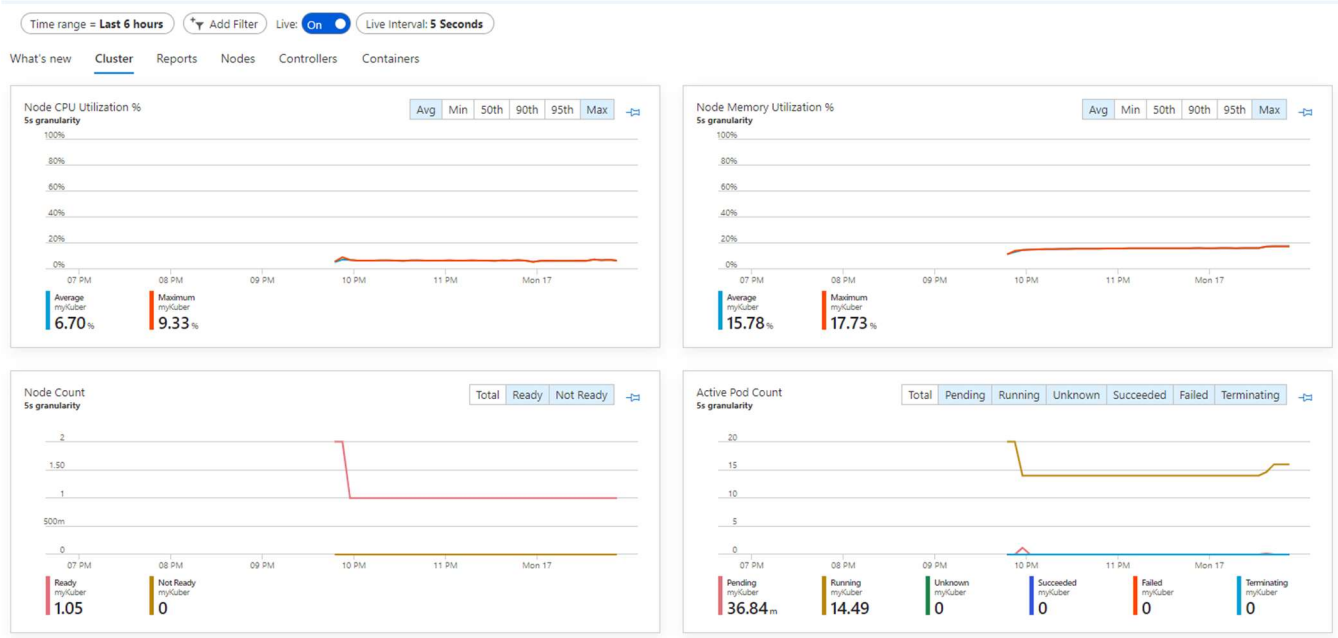
Explanation:

This app was designed for voting whenever the user clicks on ***"Cats"*** the cats count will be incremented by ***"1"*** and similarly ***"Dogs"***

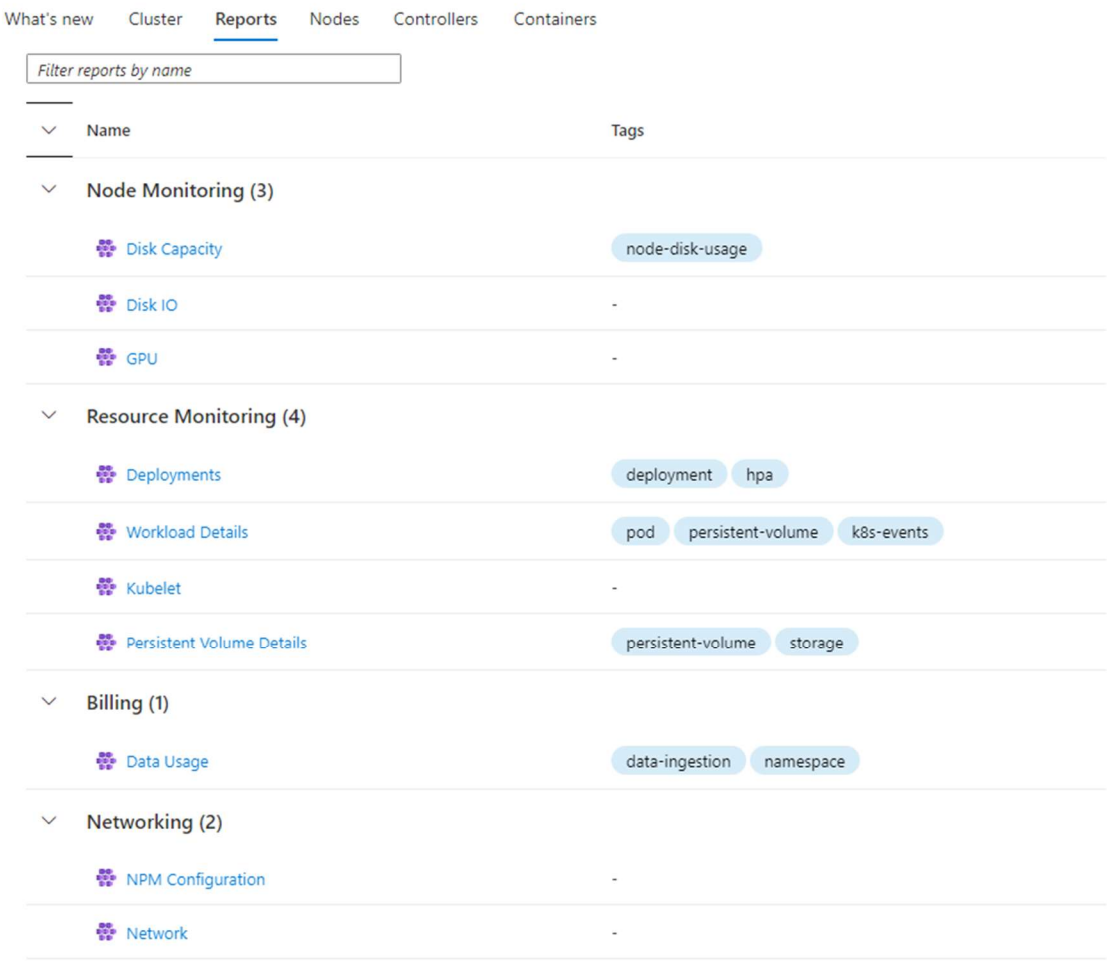
❖ ***Results:***

For the results we should open the ***Azure Portal*** and ***Find Kubernetes services*** and goto ***"mykuber-insights"***

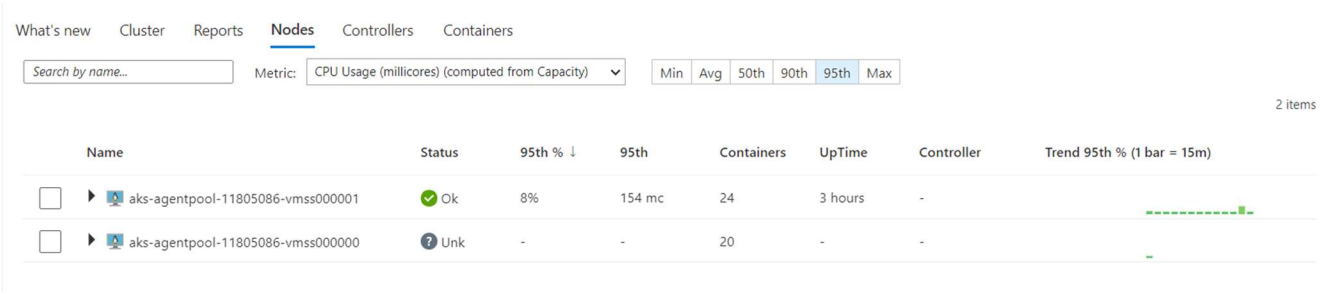
Cluster:



Report:



Nodes:



Controllers:

What's new | Cluster | Reports | Nodes | **Controllers** | Containers

Name	Status	95th % ↓	95th	Containers	Restarts	UpTime	Node
omsagent-rs-7b5f9fcd57 (ReplicaSet)	1 ? 1 ✓	1%	27 mc	2	0	3 hours	-
konnectivity-agent-864656857 (ReplicaSet)	1 ? 2 ✓	1%	9 mc	3	0	3 hours	-
omsagent (DaemonSet)	2 ? 1 ✓	1%	22 mc	4	0	3 hours	-
konnectivity-agent-77d978549 (ReplicaSet)	2 ?	0.9%	5 mc	2	0	3 hours	-
azure-vote-back-59cb7dc555 (ReplicaSet)	1 ✓	0.6%	2 mc	1	0	21 mins	-
metrics-server-668f55b87d (ReplicaSet)	2 ✓	0.4%	7 mc	2	0	3 hours	-
coredns-autoscaler-8566b76d4d (ReplicaSet)	1 ✓	0.2%	0.4 mc	1	0	3 hours	-
azure-vote-front-5f4d7db9c8 (ReplicaSet)	1 ✓	0.1%	0.3 mc	1	0	21 mins	-
azure-ip-masq-agent (DaemonSet)	2 ? 1 ✓	0.1%	0.8 mc	2	0	3 hours	-
coredns-b4854dd98 (ReplicaSet)	2 ✓	0.1%	4 mc	2	0	3 hours	-
csi-azurefile-node (DaemonSet)	2 ? 1 ✓	0.1%	7 mc	9	0	3 hours	-
csi-azuredisk-node (DaemonSet)	2 ? 1 ✓	0%	5 mc	7	0	3 hours	-
cloud-node-manager (DaemonSet)	2 ? 1 ✓	0%	1 mc	2	0	3 hours	-
kube-proxy (DaemonSet)	2 ? 1 ✓	0%	0.8 mc	6	0	3 hours	-

Containers:

What's new | Cluster | Reports | Nodes | Controllers | **Containers**

Search by name... | Metric: CPU Usage (millicores) | Min | Avg | 50th | 90th | 95th | Max

Name	Status	95th % ↓	95th	Pod	Node	Restarts	UpTime
omsagent	Ok	2%	9 mc	omsagent-6s2dv	aks-agentpool-...	0	3 hours
omsagent	Ok	2%	16 mc	omsagent-rs-7b5f9fc...	aks-agentpool-...	0	3 hours
konnectivity-agent	Ok	1%	3 mc	konnectivity-agent-8...	aks-agentpool-...	0	3 hours
konnectivity-agent	Ok	1%	3 mc	konnectivity-agent-8...	aks-agentpool-...	0	3 hours
omsagent-prometheus	Ok	0.7%	4 mc	omsagent-6s2dv	aks-agentpool-...	0	3 hours
azure-vote-back	Ok	0.6%	2 mc	azure-vote-back-59c...	aks-agentpool-...	0	21 mins
metrics-server	Ok	0.4%	4 mc	metrics-server-668f5...	aks-agentpool-...	0	3 hours
metrics-server	Ok	0.3%	3 mc	metrics-server-668f5...	aks-agentpool-...	0	3 hours
autoscaler	Ok	0.2%	0.4 mc	coredns-autoscaler-8...	aks-agentpool-...	0	3 hours
node-driver-registrar	Ok	0.1%	2 mc	csi-azuredisk-node-c...	aks-agentpool-...	0	3 hours
node-driver-registrar	Ok	0.1%	2 mc	csi-azurefile-node-g...	aks-agentpool-...	0	3 hours
azure-vote-front	Ok	0.1%	0.3 mc	azure-vote-front-5f4...	aks-agentpool-...	0	21 mins
azure-ip-masq-agent	Ok	0.1%	0.5 mc	azure-ip-masq-agent...	aks-agentpool-...	0	3 hours
coredns	Ok	0.1%	2 mc	coredns-b4854dd98-...	aks-agentpool-...	0	3 hours
coredns	Ok	0.1%	2 mc	coredns-b4854dd98-...	aks-agentpool-...	0	3 hours
cloud-node-manager	Ok	0%	0.5 mc	cloud-node-manage...	aks-agentpool-...	0	3 hours
kube-proxy	Ok	0%	0.4 mc	kube-proxy-nnj8m	aks-agentpool-...	0	3 hours
azurefile	Ok	0%	0.2 mc	csi-azurefile-node-g...	aks-agentpool-...	0	3 hours
liveness-probe	Ok	0%	0.2 mc	csi-azurefile-node-g...	aks-agentpool-...	0	3 hours
liveness-probe	Ok	0%	0.2 mc	csi-azuredisk-node-c...	aks-agentpool-...	0	3 hours
azuredisk	Ok	0%	0.1 mc	csi-azuredisk-node-c...	aks-agentpool-...	0	3 hours
omsagent	Unk	-	-	omsagent-rs-7b5f9fc...	aks-agentpool-...	0	?
omsagent	Unk	-	-	omsagent-5cqjf	aks-agentpool-...	0	?
omsagent-prometheus	Unk	-	-	omsagent-5cqjf	aks-agentpool-...	0	?
node-driver-registrar	Warn	-	-	csi-azurefile-node-w...	aks-agentpool-...	0	?
node-driver-registrar	Unk	-	-	csi-azurefile-node-q...	aks-agentpool-...	0	?
node-driver-registrar	Unk	-	-	csi-azuredisk-node-f...	aks-agentpool-...	0	?
liveness-probe	Warn	-	-	csi-azurefile-node-w...	aks-agentpool-...	0	?

liveness-probe	Unk	-	-	csi-azurefile-node-q...	aks-agentpool-...	0	?
liveness-probe	Unk	-	-	csi-azuredisk-node-f...	aks-agentpool-...	0	?
kube-proxy	Warn	-	-	kube-proxy-tjdmp	aks-agentpool-...	0	?
kube-proxy	Unk	-	-	kube-proxy-47hvw	aks-agentpool-...	0	?
kube-proxy-bootstrap	Done	-	-	kube-proxy-tjdmp	aks-agentpool-...	0	?
kube-proxy-bootstrap	Done	-	-	kube-proxy-nnj8m	aks-agentpool-...	0	?
kube-proxy-bootstrap	Done	-	-	kube-proxy-47hvw	aks-agentpool-...	0	?
konnectivity-agent	Unk	-	-	konnectivity-agent-7...	aks-agentpool-...	0	?
konnectivity-agent	Unk	-	-	konnectivity-agent-7...	aks-agentpool-...	0	?
konnectivity-agent	Unk	-	-	konnectivity-agent-8...	aks-agentpool-...	0	?
cloud-node-manager	Unk	-	-	cloud-node-manage...	aks-agentpool-...	0	?
azurefile	Warn	-	-	csi-azurefile-node-w...	aks-agentpool-...	0	?
azurefile	Unk	-	-	csi-azurefile-node-q...	aks-agentpool-...	0	?
azuredisk	Unk	-	-	csi-azuredisk-node-f...	aks-agentpool-...	0	?
azure-ip-masq-agent	Unk	-	-	azure-ip-masq-agent...	aks-agentpool-...	0	?

- ***Resources***

1) ***Code for myfile.yaml:***

```
2) apiVersion: apps/v1
3) kind: Deployment
4) metadata:
5)   name: azure-vote-back
6) spec:
7)   replicas: 1
8)   selector:
9)     matchLabels:
10)           app: azure-vote-back
11)       template:
12)         metadata:
13)           labels:
14)             app: azure-vote-back
15)         spec:
16)           nodeSelector:
17)             "kubernetes.io/os": linux
18)           containers:
19)           - name: azure-vote-back
20)             image:
   mcr.microsoft.com/oss/bitnami/redis:6.0.8
21)             env:
22)             - name: ALLOW_EMPTY_PASSWORD
```

```
23)               value: "yes"
24)             resources:
25)               requests:
26)                 cpu: 100m
27)                 memory: 128Mi
28)               limits:
29)                 cpu: 250m
30)                 memory: 256Mi
31)             ports:
32)             - containerPort: 6379
33)               name: redis
34)     ---
35)     apiVersion: v1
36)     kind: Service
37)     metadata:
38)       name: azure-vote-back
39)     spec:
40)       ports:
41)       - port: 6379
42)       selector:
43)         app: azure-vote-back
44)     ---
45)     apiVersion: apps/v1
46)     kind: Deployment
47)     metadata:
48)       name: azure-vote-front
49)     spec:
50)       replicas: 1
51)       selector:
52)         matchLabels:
53)           app: azure-vote-front
54)       template:
55)         metadata:
56)           labels:
57)             app: azure-vote-front
58)         spec:
59)           nodeSelector:
60)             "kubernetes.io/os": linux
61)           containers:
62)           - name: azure-vote-front
63)             image: mcr.microsoft.com/azuredocs/azure-vote-
   front:v1
64)             resources:
65)               requests:
66)                 cpu: 100m
```

```
67)                 memory: 128Mi
68)               limits:
69)                 cpu: 250m
70)                 memory: 256Mi
71)             ports:
72)             - containerPort: 80
73)             env:
74)             - name: REDIS
75)               value: "azure-vote-back"
76)     ---
77)     apiVersion: v1
78)     kind: Service
79)     metadata:
80)       name: azure-vote-front
81)     spec:
82)       type: LoadBalancer
83)       ports:
84)       - port: 80
85)       selector:
86)         app: azure-vote-front
```

- ***Other Sources:***
  - ***Youtube***
  - ***Microsoft Docs***
  - ***Google Docs***

Done by

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**********THE END**********