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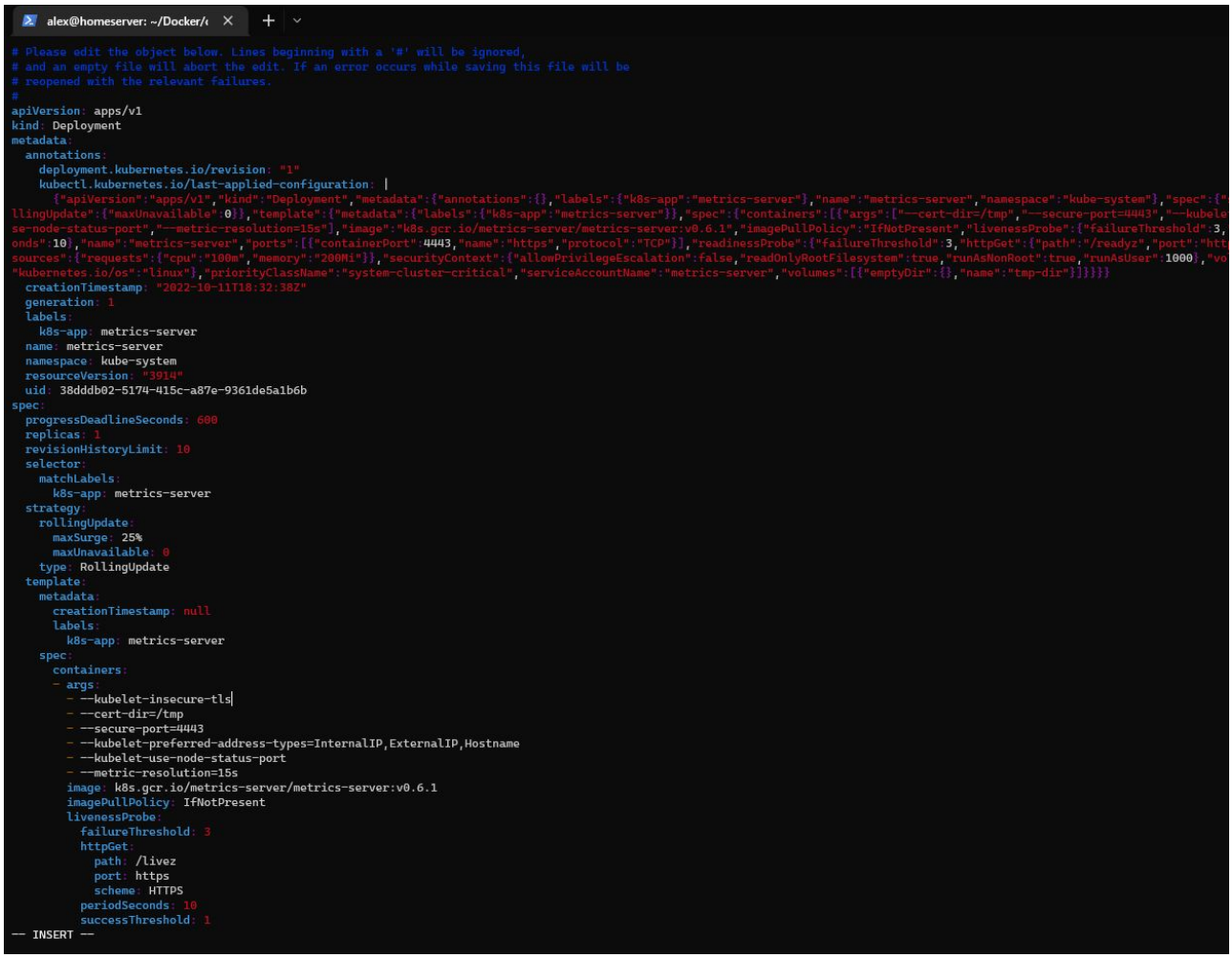
Github Repo

Task A3

Deploy a metrics-server and HorizontalPodAutoscaler

1. Creating metrics-server
    1. `kubectl apply -f https://github.com/kubernetes-sigs/metrics-server/releases/latest/download/components.yaml`
2. Disable TLS



3. Restart Deployment
    1. `kubectl -nkube-system rollout restart deploy/metrics-server`
4. Verify metrics-server
    1. `kubectl get pods --all-namespaces | grep metrics-server`

```
==================================
|     Viewing Metrics-Server     |
==================================
kube-system          metrics-server-6c9466598b-whsq5              1/1     Running     0          45s
```

5. Creating HorizontalPodAutoscaler
    1. `kubectl apply -f ./manifests/hpa.yaml`
6. Verify HorizontalPodAutoscaler

1. `kubectl describe hpa`

```
====================
|     Viewing HPA     |
====================
Warning: autoscaling/v2beta2 HorizontalPodAutoscaler is deprecated in v1.23+, unavailable in v1.26+; use autoscaling/v2 HorizontalPodAutoscaler
Name:                                                  backend
Namespace:                                             default
Labels:                                                <none>
Annotations:                                           <none>
CreationTimestamp:                                     Wed, 12 Oct 2022 02:42:44 +0800
Reference:                                             Deployment/backend
Metrics:                                               ( current / target )
  resource cpu on pods  (as a percentage of request):  0% (0) / 10%
Min replicas:                                          1
Max replicas:                                          10
Deployment pods:                                       3 current / 3 desired
Conditions:
  Type            Status  Reason              Message
  ----            ------  ------              -------
  AbleToScale     True    ScaleDownStabilized  recent recommendations were higher than current one, applying the highest recent recommendation
  ScalingActive   True    ValidMetricFound     the HPA was able to successfully calculate a replica count from cpu resource utilization (percentage of request)
  ScalingLimited  False   DesiredWithinRange   the desired count is within the acceptable range
Events:           <none>
```

7. HPA Scaling up under load

```
NAME                       READY   STATUS    RESTARTS   AGE
backend-887ccbfbc-75xr6    1/1     Running   0          12m
backend-887ccbfbc-n2lbk    1/1     Running   0          12m
backend-887ccbfbc-qq9b2    1/1     Running   0          12m
```

```
NAME                       READY   STATUS              RESTARTS   AGE
backend-887ccbfbc-75xr6    1/1     Running             0          15m
backend-887ccbfbc-n2lbk    1/1     Running             0          15m
backend-887ccbfbc-qq9b2    1/1     Running             0          15m
backend-887ccbfbc-mz29f    0/1     Pending             0          0s
backend-887ccbfbc-j4xpf    0/1     Pending             0          0s
backend-887ccbfbc-mz29f    0/1     Pending             0          0s
backend-887ccbfbc-j4xpf    0/1     Pending             0          0s
backend-887ccbfbc-mz29f    0/1     ContainerCreating   0          0s
backend-887ccbfbc-j4xpf    0/1     ContainerCreating   0          0s
backend-887ccbfbc-j4xpf    1/1     Running             0          5s
```

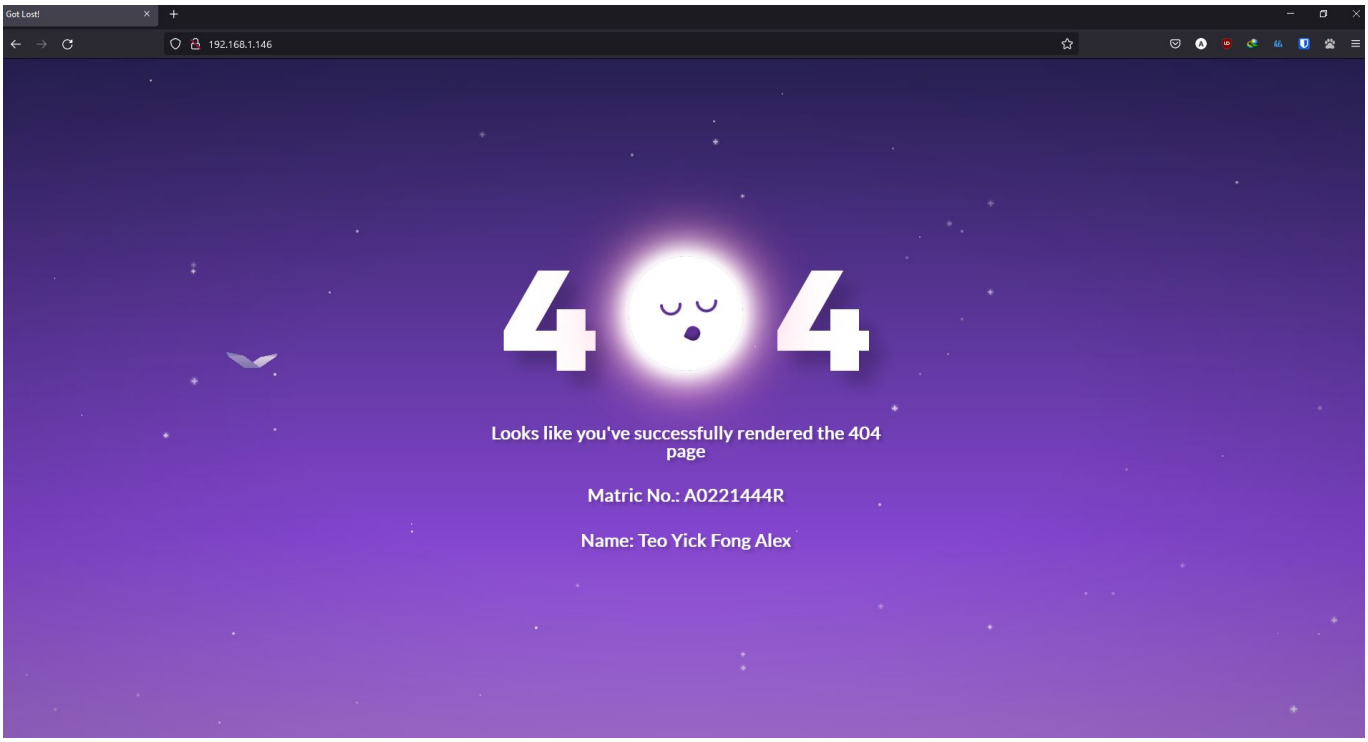
Task A3.2

Deploy Docker image as zone-aware manner

1. Creating Zone Aware Deployment
    1. `kubectl apply -f ./manifests/backend-zone-aware.yaml`
2. Create new Service
    1. `kubectl apply -f ./manifests/service-zone-aware.yaml`
3. Viewing Pods
    1. `kubectl get po -lapp=backend-zone-aware -owide --sort-by='.spec.nodeName'`

```
NAME                                  READY   STATUS    RESTARTS   AGE    IP            NODE              NOMINATED NODE   READINESS GATES
backend-zone-aware-5d7d6ff679-9mt44   1/1     Running   0          171m   10.244.3.6    kind-1-worker     <none>           <none>
backend-zone-aware-5d7d6ff679-5bh2g   1/1     Running   0          171m   10.244.1.10   kind-1-worker2    <none>           <none>
backend-zone-aware-5d7d6ff679-9f8b8   1/1     Running   0          172m   10.244.1.9    kind-1-worker2    <none>           <none>
backend-zone-aware-5d7d6ff679-df28b   1/1     Running   0          172m   10.244.1.8    kind-1-worker2    <none>           <none>
backend-zone-aware-5d7d6ff679-9bl5x   1/1     Running   0          172m   10.244.2.10   kind-1-worker3    <none>           <none>
backend-zone-aware-5d7d6ff679-dv2ml   1/1     Running   0          171m   10.244.2.13   kind-1-worker3    <none>           <none>
backend-zone-aware-5d7d6ff679-lfhxx   1/1     Running   0          172m   10.244.2.9    kind-1-worker3    <none>           <none>
backend-zone-aware-5d7d6ff679-m4hzl   1/1     Running   0          171m   10.244.2.11   kind-1-worker3    <none>           <none>
backend-zone-aware-5d7d6ff679-tf28h   1/1     Running   0          172m   10.244.2.8    kind-1-worker3    <none>           <none>
backend-zone-aware-5d7d6ff679-v46j9   1/1     Running   0          171m   10.244.2.12   kind-1-worker3    <none>           <none>
```

Deployed Site


Got Lost!
192.168.1.146
4 4
Looks like you've successfully rendered the 404 page
Matric No.: A0221444R
Name: Teo Yick Fong Alex