



Lab 4

Portable Technologies in Cloud

Professor: Irina Geiman

CODE: CLO835

Name: Niluxsi Puvanenthiran

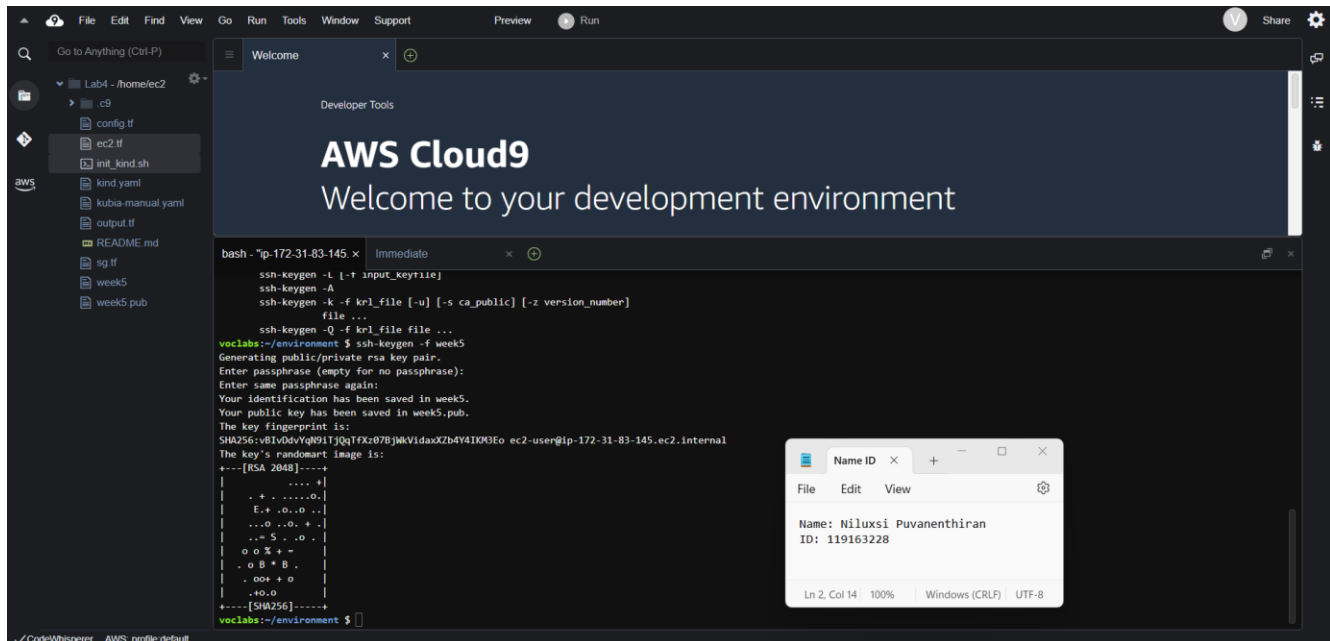
Student Number: 119163228

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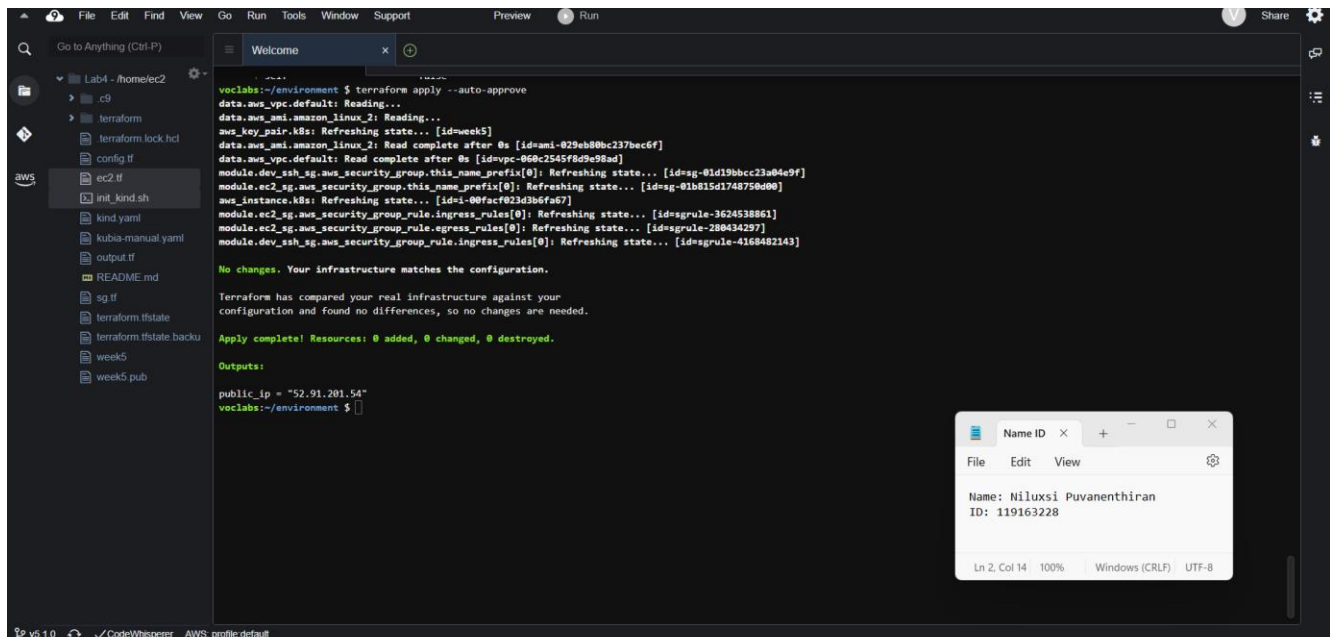
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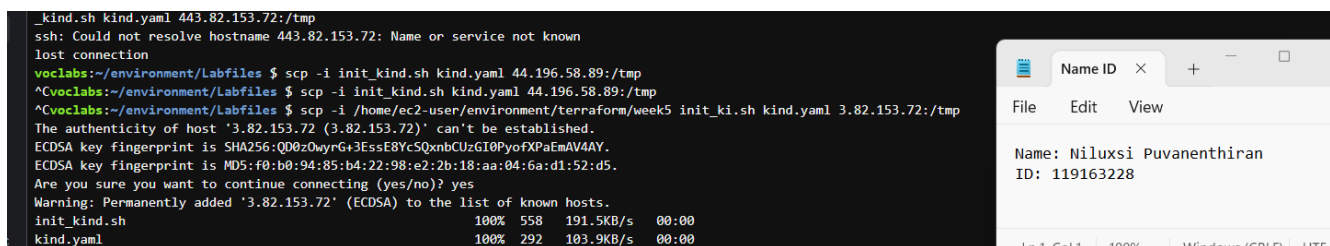
PREPARING THE CLUSTER



Screenshot 1 Deploy EC2 instance



Screenshot 2 Terraform deployed



Screenshot 3 Installation file copied to instance

```

/home/ec2-user/environment/terraform
voclabs:~/environment/terraform $ ssh -i week5 3.82.153.72

  _|_  _|_ )
  _| (  _/  Amazon Linux 2 AMI
 _|\_|_|_|

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-86-28 ~]$

```

Screenshot 4 login into the instance.

```

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-86-28 ~]$ cd /tmp
[ec2-user@ip-172-31-86-28 tmp]$ pwd
/tmp
[ec2-user@ip-172-31-86-28 tmp]$ chmod 777 init_kind.sh
[ec2-user@ip-172-31-86-28 tmp]$

```

Screenshot 5 Updated permissions

```

Nothing to do
++ sudo systemctl start docker
++ sudo usermod -a -G docker ec2-user
++ curl -slo kind https://kind.sigs.k8s.io/dl/v0.11.0/kind-linux-amd64
++ sudo install -o root -g root -m 0755 kind /usr/local/bin/kind
++ rm -f ./kind
+++ curl -L -s https://dl.k8s.io/release/stable.txt
++ curl -LO https://dl.k8s.io/release/v1.27.3/bin/linux/amd64/kubectl
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left   Speed
  0     0    0     0    0     0      0      0  --:--:-- --:--:-- --:--:-- 100    138   100    138    0     0   3685    0 --:--:-- --:--:-- --:--:-- 3729
 73 46.9M   73 34.4M    0     0  120M      0  --:--:-- --:--:-- --:--:-- 100   46.9M   100   46.9M    0     0   133M    0 --:--:-- --:--:-- --:--:-- 187M
++ sudo install -o root -g root -m 0755 kubectl /usr/local/bin/kubectl
++ rm -f ./kubectl
++ kind create cluster --config kind.yaml
Creating cluster "kind" ...
  ✓ Ensuring node image (kindest/node:v1.19.11)
  ✓ Preparing nodes
  ✓ Writing configuration
  ✓ Starting control-plane
  ✓ Installing CNI
  ✓ Installing StorageClass
Set kubectl context to "kind-kind"
You can now use your cluster with:

kubectl cluster-info --context kind-kind

Have a question, bug, or feature request? Let us know! https://kind.sigs.k8s.io/#community
[ec2-user@ip-172-31-86-28 tmp]$

```

Screenshot 6 Installation script run

```

Have a question, bug, or feature request? Let us know! https://kind.sigs.k8s.io/#community
[ec2-user@ip-172-31-86-28 tmp]$ kubectl get nodes
NAME                STATUS    ROLES    AGE   VERSION
kind-control-plane  Ready    master   109s  v1.19.11
[ec2-user@ip-172-31-86-28 tmp]$

```

Screenshot 7 Verified cluster running

```

kind-control-plane Ready Master 109s v1.19.11
[ec2-user@ip-172-31-86-28 tmp]$ kubectl run nginx --image nginx
pod/nginx created
[ec2-user@ip-172-31-86-28 tmp]$ kubectl get pods
-bash: kubectl get: command not found
[ec2-user@ip-172-31-86-28 tmp]$ kubectl get pods
NAME READY STATUS RESTARTS AGE
nginx 1/1 Running 0 26s
[ec2-user@ip-172-31-86-28 tmp]$ kubectl get pods --all-namespaces
NAMESPACE NAME READY STATUS RESTARTS AGE
default nginx 1/1 Running 0 50s
kube-system coredns-f9fd979d6-98x8m 1/1 Running 0 3m24s
kube-system coredns-f9fd979d6-jwp2z 1/1 Running 0 3m24s
kube-system etcd-kind-control-plane 1/1 Running 0 3m31s
kube-system kindnet-6c72p 1/1 Running 0 3m24s
kube-system kube-apiserver-kind-control-plane 1/1 Running 0 3m31s
kube-system kube-controller-manager-kind-control-plane 1/1 Running 0 3m31s
kube-system kube-proxy-s78kl 1/1 Running 0 3m24s
kube-system kube-scheduler-kind-control-plane 1/1 Running 0 3m31s
local-path-storage local-path-provisioner-547f78dff-z8jk7 1/1 Running 0 3m24s

```

Screenshot 8 nginx pod created, and pods in default namespace and all namespaces were listed

```

[ec2-user@ip-172-31-86-28 tmp]$ kubectl get pod nginx -o yaml
apiVersion: v1
kind: Pod
metadata:
  creationTimestamp: "2023-07-01T21:10:13Z"
  labels:
    run: nginx
  name: nginx
  namespace: default
  resourceVersion: "931"
  selfLink: /api/v1/namespaces/default/pods/nginx
  uid: 6d0f5b72-7fb3-49ea-942f-b42767b60ce4
spec:
  containers:
  - image: nginx
    imagePullPolicy: Always
    name: nginx
    resources: {}
    terminationMessagePath: /dev/termination-log
    terminationMessagePolicy: File
    volumeMounts:
    - mountPath: /var/run/secrets/kubernetes.io/serviceaccount
      name: default-token-gqpzv
      readOnly: true
  dnsPolicy: ClusterFirst
  enableServiceLinks: true

```

Screenshot 9 retrieved pod's descriptor

```

podIP: 10.244.0.5
podIPs:
  - ip: 10.244.0.5
qosClass: BestEffort
startTime: "2023-07-01T21:10:13Z"
[ec2-user@ip-172-31-86-28 tmp]$ kubectl port-forward nginx 8080:80
-bash: kubectl port-forward: command not found
[ec2-user@ip-172-31-86-28 tmp]$ kubectl port-forward nginx 8080:80
Forwarding from 127.0.0.1:8080 -> 80
Forwarding from [::1]:8080 -> 80
Handling connection for 8080

```

Screenshot 10 accessing nginx webserver running in a pod

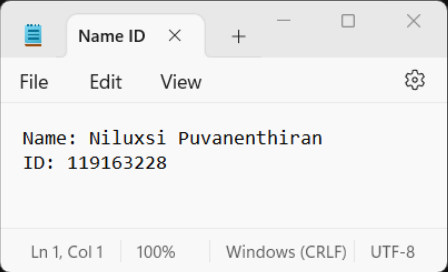
```

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-86-28 ~]$ curl localhost:8080
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>
[ec2-user@ip-172-31-86-28 ~]$

```

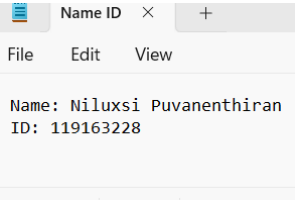


Screenshot 11 Curl localhost

```

</html>
[ec2-user@ip-172-31-86-28 ~]$ alias k=kubectl
[ec2-user@ip-172-31-86-28 ~]$ k run kubia --image luksa/kubia --dry-run -o yaml > kubia-manual.yaml
W0701 21:23:28.383598 9022 helpers.go:692] --dry-run is deprecated and can be replaced with --dry-run=client.
[ec2-user@ip-172-31-86-28 ~]$ k run kubia --image luksa/kubia --dry-run -o yaml>kubia-manual.yaml
W0701 21:24:35.664558 9176 helpers.go:692] --dry-run is deprecated and can be replaced with --dry-run=client.
[ec2-user@ip-172-31-86-28 ~]$ k run kubia --image luksa/kubia --dry-run=client -o yaml>kubia-manual.yaml
[ec2-user@ip-172-31-86-28 ~]$ k apply -f kubia-manual.yaml
pod/kubia created
[ec2-user@ip-172-31-86-28 ~]$

```



Screenshot 12 Pod manifest created

Modified command used `k run kubia --image luksa/kubia --dry-run=client -o yaml>kubia-manual.yaml`

```

Error from server (NotFound): pods "kubia-manual" not found
[ec2-user@ip-172-31-86-28 ~]$ kubectl logs kubia
Kubia server starting...
[ec2-user@ip-172-31-86-28 ~]$ kubectl logs kubia-manual -c kubia
Error from server (NotFound): pods "kubia-manual" not found
[ec2-user@ip-172-31-86-28 ~]$ kubectl explain pods
KIND:      Pod
VERSION:   v1

DESCRIPTION:
  Pod is a collection of containers that can run on a host. This resource is
  created by clients and scheduled onto hosts.

FIELDS:
  apiVersion    <string>
    APIVersion defines the versioned schema of this representation of an
    object. Servers should convert recognized schemas to the latest internal
    value, and may reject unrecognized values. More info:
    https://git.k8s.io/community/contributors/devel/sig-architecture/api-conventions.md#resources

```

Screenshot 13 Kubia deployment with YAML Manifest

```

Last login: Sat Jul  1 21:19:05 2023 from 54.90.174.70

  _| _|_ )
 _| (   /  Amazon Linux 2 AMI
 __|\_|_|_|

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-86-28 ~]$ curl localhost:8888
You've hit kubia
[ec2-user@ip-172-31-86-28 ~]$

```

Screenshot 14 Kubia deployment

```

g 3.82.153.72
pod/pingpong created
[ec2-user@ip-172-31-86-28 ~]$ kubectl logs pingpong
PING 3.82.153.72 (3.82.153.72): 56 data bytes
[ec2-user@ip-172-31-86-28 ~]$ kubectl logs pingpong
PING 3.82.153.72 (3.82.153.72): 56 data bytes
[ec2-user@ip-172-31-86-28 ~]$ kubectl logs pingpong --tail 1 --follow
PING 3.82.153.72 (3.82.153.72): 56 data bytes
^C
[ec2-user@ip-172-31-86-28 ~]$ kubectl get po pingpong -o yaml

```

Screenshot 15 Retrieving logs pingpong

REFERENCES

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Seneca Newham Campus, North York.

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[pods.html#:~:text=A%20pod%20is%20the%20smallest,that%20pod%20to%20continue%20operations.](https://www.vmware.com/topics/glossary/content/kubernetes-pods.html#:~:text=A%20pod%20is%20the%20smallest,that%20pod%20to%20continue%20operations.)