Task

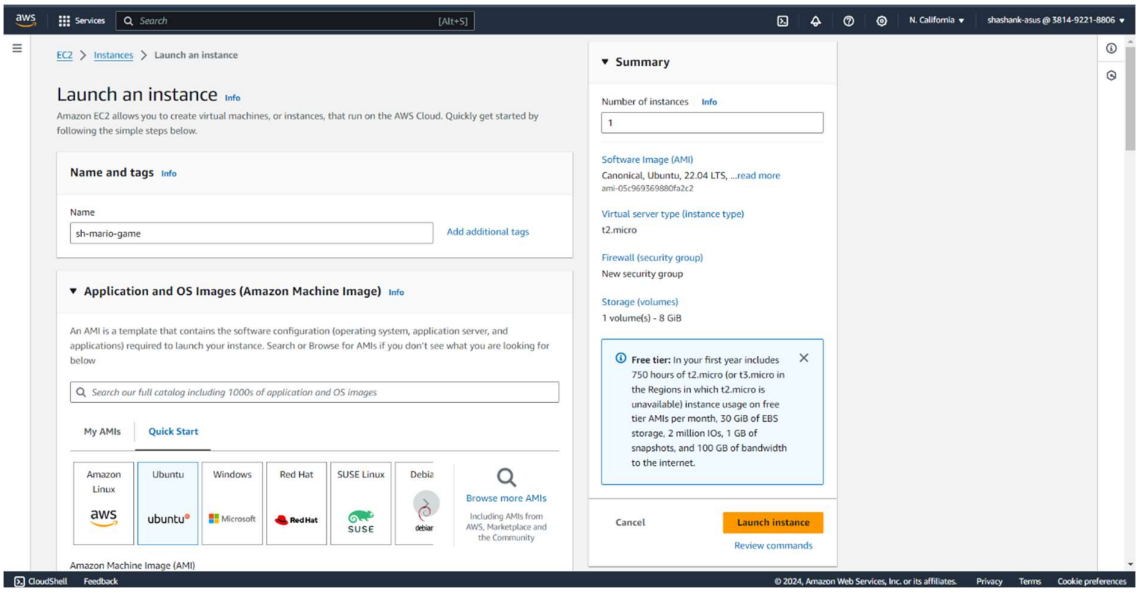
Deploying Mario Game

Resource git - https://github.com/Aj7Ay/k8s-mario

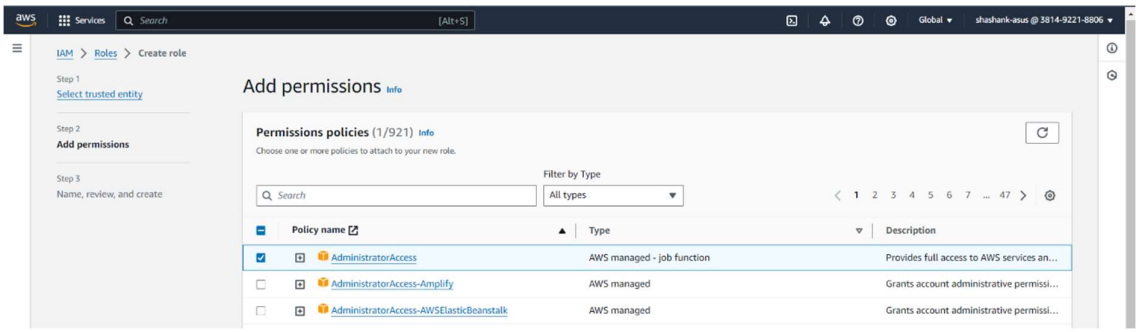
My repo - https://github.com/shashanksharma1309/DevOps-Project.git

Name- Shashank Sharma

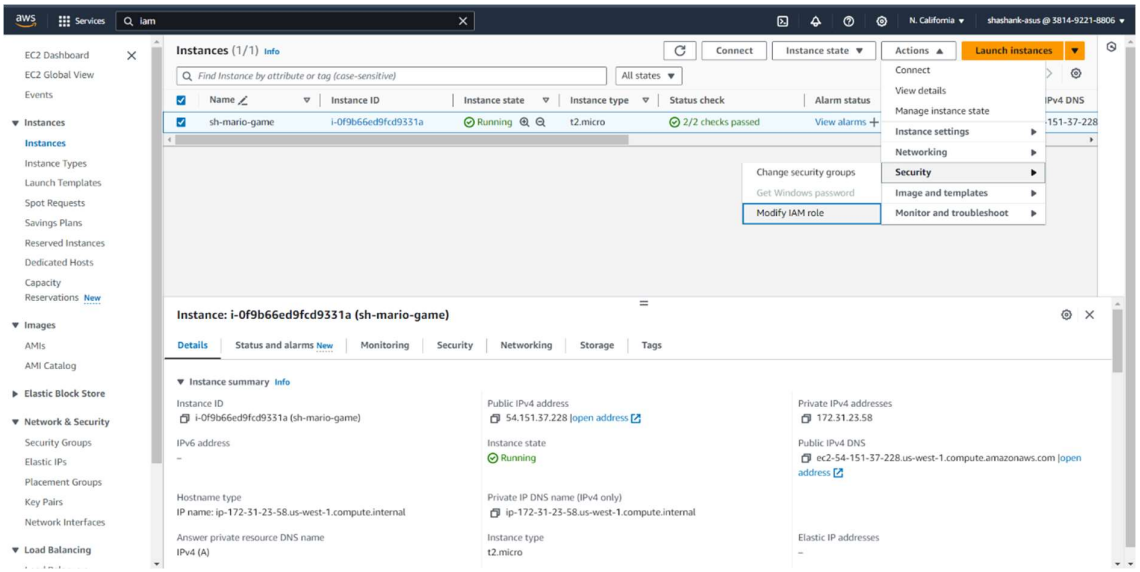
1. Create an EC2 instance with ubuntu image. (you can also use t2.micro & storage of 12 GB)



2. Create an IAM role for EC2 & give full access.



3. Attach IAM role to the instance.



4. Launch the instance. (aws, MobaXterm)
   # sudo apt update

5. Make clone of repo. (resource repo)
   # git clone https://github.com/Aj7Ay/k8s-mario
   Resource git - https://github.com/Aj7Ay/k8s-mario
   # my repo- https://github.com/shashanksharma1309/DevOps-Project.git

```
ubuntu@ip-172-31-23-58:~$ git clone https://github.com/shashanksharma1309/DevOps-Project.git
Cloning into 'DevOps-Project'...
remote: Enumerating objects: 27, done.
remote: Counting objects: 100% (27/27), done.
remote: Compressing objects: 100% (19/19), done.
remote: Total 27 (delta 4), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (27/27), 7.57 KiB | 1.89 MiB/s, done.
Resolving deltas: 100% (4/4), done.
ubuntu@ip-172-31-23-58:~$
```

6. Go k8s-mario folder using commands.

    # ls

    # DevOps-Project

    # ls

    # mario-game

    # ls

    # ll (to see execution permission)

```
ubuntu@ip-172-31-23-58:~$ ls
DevOps-Project
ubuntu@ip-172-31-23-58:~$ cd DevOps-Project/
ubuntu@ip-172-31-23-58:~/DevOps-Project$ ls
mario-game
ubuntu@ip-172-31-23-58:~/DevOps-Project$ cd mario-game/
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$ ls
EKS-TF  deployment.yml  script.sh  service.yml
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$
```

7. Provide execution permission to the script.sh.

    # chmod +x script.sh

    # ll (to see after execution permission to the script.sh file)

```
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$ ll
total 24
drwxrwxr-x 3 ubuntu ubuntu 4096 Apr  4 05:20 ./
drwxrwxr-x 4 ubuntu ubuntu 4096 Apr  4 05:20 ../
drwxrwxr-x 2 ubuntu ubuntu 4096 Apr  4 05:20 EKS-TF/
-rw-rw-r-- 1 ubuntu ubuntu  388 Apr  4 05:20 deployment.yml
-rw-rw-r-- 1 ubuntu ubuntu  888 Apr  4 05:20 script.sh
-rw-rw-r-- 1 ubuntu ubuntu  180 Apr  4 05:20 service.yml
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$ chmod +x s
script.sh    service.yml
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$ chmod +x script.sh
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$ ll
total 24
drwxrwxr-x 3 ubuntu ubuntu 4096 Apr  4 05:20 ./
drwxrwxr-x 4 ubuntu ubuntu 4096 Apr  4 05:20 ../
drwxrwxr-x 2 ubuntu ubuntu 4096 Apr  4 05:20 EKS-TF/
-rw-rw-r-- 1 ubuntu ubuntu  388 Apr  4 05:20 deployment.yml
-rwxrwxr-x 1 ubuntu ubuntu  888 Apr  4 05:20 script.sh*
-rw-rw-r-- 1 ubuntu ubuntu  180 Apr  4 05:20 service.yml
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$
```

8. Use command to see script.sh file contend.

   # cat script.sh

```
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$ cat script.sh
#!/bin/bash
# Install Terraform
sudo apt install wget -y
wget -O- https://apt.releases.hashicorp.com/gpg | sudo gpg --dearmor -o /usr/share/keyrings/hashicorp-archive-keyring.gpg
echo "deb [signed-by=/usr/share/keyrings/hashicorp-archive-keyring.gpg] https://apt.releases.hashicorp.com $(lsb_release -cs) main" | sudo tee /etc/apt/source
s.list.d/hashicorp.list
sudo apt update && sudo apt install terraform -y

# Install kubectl
sudo apt update
sudo apt install curl -y
curl -LO https://dl.k8s.io/release/$(curl -L -s https://dl.k8s.io/release/stable.txt)/bin/linux/amd64/kubectl
sudo install -o root -g root -m 0755 kubectl /usr/local/bin/kubectl
kubectl version --client

# Install AWS CLI
curl "https://awscli.amazonaws.com/awscli-exe-linux-x86_64.zip" -o "awscliv2.zip"
sudo apt-get install unzip -y
unzip awscliv2.zip
sudo ./aws/install

echo "Installation completed successfully."
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$
```

9. Install docker to the terminal.

   Link- https://docs.docker.com/engine/install/ubuntu/

10. Use command to install script.sh.

    # ./script.sh or sh script.sh

11. After installation complete it give message like;

    Installation completed successfully

```
  inflating: aws/dist/docutils/parsers/rst/include/isonum.txt
  inflating: aws/dist/docutils/parsers/rst/include/mmlextra-wide.txt
  inflating: aws/dist/docutils/parsers/rst/include/xhtml1-symbol.txt
  inflating: aws/dist/docutils/parsers/rst/include/isotech.txt
  inflating: aws/dist/docutils/parsers/rst/include/mmlalias.txt
  inflating: aws/dist/docutils/parsers/rst/include/isoamsn.txt
  inflating: aws/dist/docutils/parsers/rst/include/isocyr2.txt
  inflating: aws/dist/docutils/parsers/rst/include/isoamsa.txt
  inflating: aws/dist/docutils/parsers/rst/include/isoamsr.txt
  inflating: aws/dist/docutils/parsers/rst/include/xhtml1-special.txt
You can now run: /usr/local/bin/aws --version
Installation completed successfully.
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$
```

12. To see all parts install or not use command.

aws --version

docker --version

terraform --version

kubectl version --client

```
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$ aws --version
aws-cli/2.15.35 Python/3.11.8 Linux/6.5.0-1014-aws exe/x86_64.ubuntu.22 prompt/off
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$ terraform --version
Terraform v1.7.5
on linux_amd64
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$ kubectl version --client
Client Version: v1.29.3
Kustomize Version: v5.0.4-0.20230601165947-6ce0bf390ce3
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$
```

13. Change the directory.

cd EKS-TF/

ls

14. Change the bucket name.

cat backend.tf (make changes in the backend file which is in the repo)

(bucket = “your S3 bucket name”)

(region = “your region”)

```
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$ cd EKS-TF/
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game/EKS-TF$ ls
backend.tf  main.tf  provider.tf
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game/EKS-TF$ cat backend.tf
terraform {
  backend "s3" {
    bucket = "sh-mario-game" # Replace with your actual S3 bucket name
    key    = "EKS/terraform.tfstate"
    region = "us-west-1"
  }
}
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game/EKS-TF$
```

15. Initialize the terraform and many more.

    # terraform init (it initialize the backend)

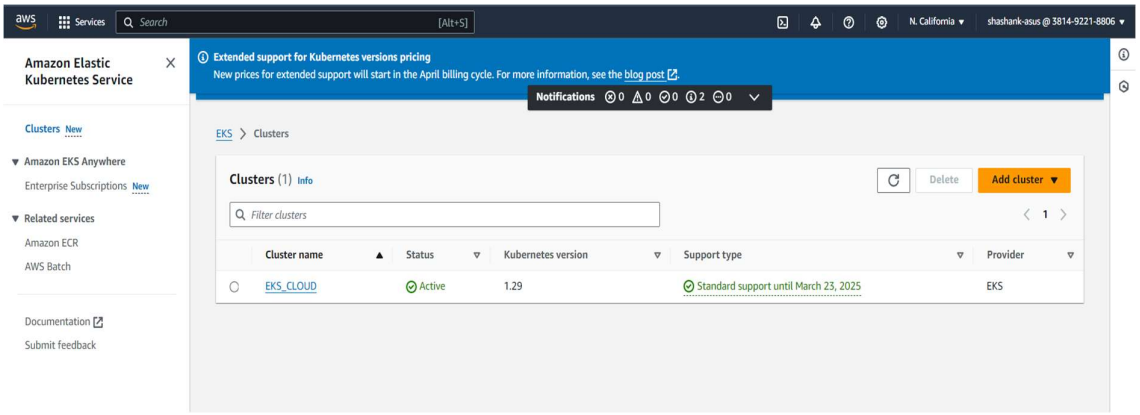
    # terraform validate (see your code is right or not if it shows success then okk)

```
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game/EKS-TF$ terraform init

Initializing the backend...

Successfully configured the backend "s3"! Terraform will automatically
use this backend unless the backend configuration changes.

Initializing provider plugins...
- Finding hashicorp/aws versions matching "~> 5.0"...
- Installing hashicorp/aws v5.43.0...
- Installed hashicorp/aws v5.43.0 (signed by HashiCorp)

Terraform has created a lock file .terraform.lock.hcl to record the provider
selections it made above. Include this file in your version control repository
so that Terraform can guarantee to make the same selections by default when
you run "terraform init" in the future.

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game/EKS-TF$ terraform validate
Success! The configuration is valid.
```

    # terraform plan

    # terraform apply or terraform apply --auto-approve

16. After creation of EKS Cluster go to the aws and search EKS to see your cluster is created or not.



17. Update the Kubernetes configuration.

    # aws eks update-kubeconfig --name <cluster name> --region <your region>

    (aws eks update-kubeconfig –name EKS_CLOUD --region us-west-1)

```
Apply complete! Resources: 8 added, 0 changed, 0 destroyed.
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game/EKS-TF$ aws eks update-kubeconfig --name EKS_CLOUD --region us-west-1
Added new context arn:aws:eks:us-west-1:381492218806:cluster/EKS_CLOUD to /home/ubuntu/.kube/config
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game/EKS-TF$
```

    # ls

    # cd ..

    # ls

```
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game/EKS-TF$ cd ..
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$ ls
EKS-TF  aws  awscliv2.zip  deployment.yml  kubectl  script.sh  service.yml
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$ vim deployment.yml
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$
```

    # vim deployment.yml

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: mario-deployment
spec:
  replicas: 2  # You can adjust the number of replicas as needed
  selector:
    matchLabels:
      app: mario
  template:
    metadata:
      labels:
        app: mario
    spec:
      containers:
      - name: mario-container
        image: sevenajay/mario:latest
        ports:
        - containerPort: 80
~
~
~
```

    # kubectl apply -f deployment.yml

    # kubectl get all / pods (to see all services)

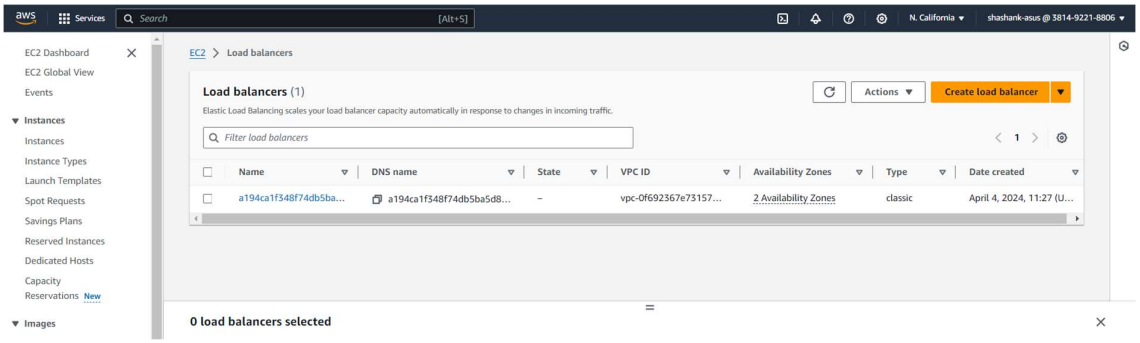
ls

```
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$ kubectl apply -f deployment.yml
deployment.apps/mario-deployment created
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$ kubectl get all
NAME                                 READY   STATUS    RESTARTS   AGE
pod/mario-deployment-78cbc65cb-cp9mp   1/1     Running   0          14s
pod/mario-deployment-78cbc65cb-qwn4k   1/1     Running   0          14s

NAME                 TYPE        CLUSTER-IP    EXTERNAL-IP   PORT(S)   AGE
service/kubernetes   ClusterIP   10.100.0.1    <none>        443/TCP   10m

NAME                               READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/mario-deployment   2/2     2            2           14s

NAME                                          DESIRED   CURRENT   READY   AGE
replicaset.apps/mario-deployment-78cbc65cb    2         2         2       14s
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$ ls
EKS-TF  aws  awscliv2.zip  deployment.yml  kubectl  script.sh  service.yml
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$
```

cat sevice.yml (which create a load balancer)

```
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$ cat service.yml
apiVersion: v1
kind: Service
metadata:
  name: mario-service
spec:
  type: LoadBalancer
  selector:
    app: mario
  ports:
    - protocol: TCP
      port: 80
      targetPort: 80
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$
```

kubectl apply -f service.yml (it create load balancer)



kubectl get all / pods (to see all services)

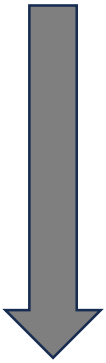
```
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$ kubectl get all
NAME                                 READY   STATUS    RESTARTS   AGE
pod/mario-deployment-78cbc65cb-cp9mp   1/1     Running   0          5m30s
pod/mario-deployment-78cbc65cb-qwn4k   1/1     Running   0          5m30s

NAME                    TYPE           CLUSTER-IP      EXTERNAL-IP                                                               PORT(S)        AGE
service/kubernetes      ClusterIP      10.100.0.1      <none>                                                                    443/TCP        16m
service/mario-service   LoadBalancer   10.100.225.154   a194ca1f348f74db5ba5d827dde35f4a-967102240.us-west-1.elb.amazonaws.com   80:31872/TCP   102s

NAME                           READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/mario-deployment   2/2     2            2           5m30s

NAME                                      DESIRED   CURRENT   READY   AGE
replicaset.apps/mario-deployment-78cbc65cb   2         2         2       5m30s
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$
```

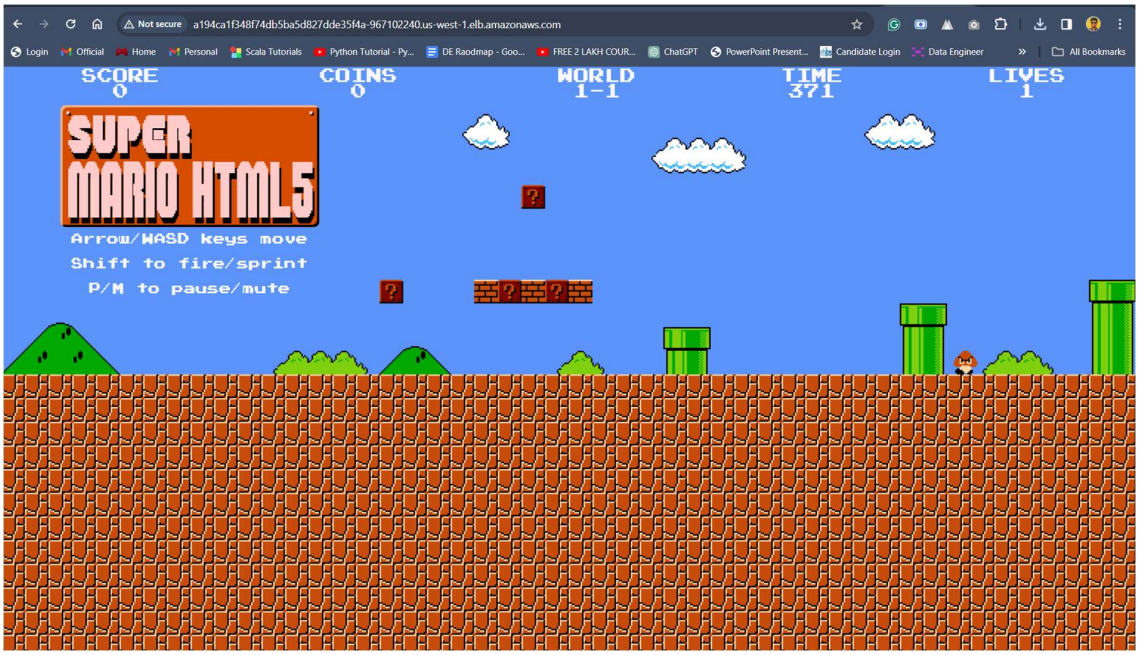
kubectl describe service mario-service
(copy load balancer ingress..)

```
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$ kubectl describe service mario-service
Name:                     mario-service
Namespace:                default
Labels:                   <none>
Annotations:              <none>
Selector:                 app=mario
Type:                     LoadBalancer
IP Family Policy:         SingleStack
IP Families:              IPv4
IP:                       10.100.225.154
IPs:                      10.100.225.154
LoadBalancer Ingress:     a194ca1f348f74db5ba5d827dde35f4a-967102240.us-west-1.elb.amazonaws.com
Port:                     <unset>  80/TCP
TargetPort:               80/TCP
NodePort:                 <unset>  31872/TCP
Endpoints:                172.31.18.155:80,172.31.28.28:80
Session Affinity:         None
External Traffic Policy:  Cluster
Events:
  Type    Reason                Age    From                Message
  ----    ------                ----   ----                -------
  Normal  EnsuringLoadBalancer  4m     service-controller  Ensuring load balancer
  Normal  EnsuredLoadBalancer   3m57s  service-controller  Ensured load balancer
ubuntu@ip-172-31-23-58:~/DevOps-Project/mario-game$
```

->paste the load balancer ingress to the chrome tab

…… Here is your game is start ……..




Not secure
a194ca1f348f74db5ba5d827dde35f4a-967102240.us-west-1.elb.amazonaws.com
Login
Official
Home
Personal
Scala Tutorials
Python Tutorial - Py...
DE Raodmap - Goo...
FREE 2 LAKH COUR...
ChatGPT
PowerPoint Present...
Candidate Login
Data Engineer
All Bookmarks
SCORE
0
COINS
0
WORLD
1-1
TIME
371
LIVES
1
SUPER
MARIO HTML5
Arrow/WASD keys move
Shift to fire/sprint
P/M to pause/mute