

Project: Super Mario Bros

Project Workflow

Step 1 → Login and basics setup

Step 2 → Setup Docker ,Terraform ,aws cli , and Kubectl

Step 3 → IAM Role for EC2

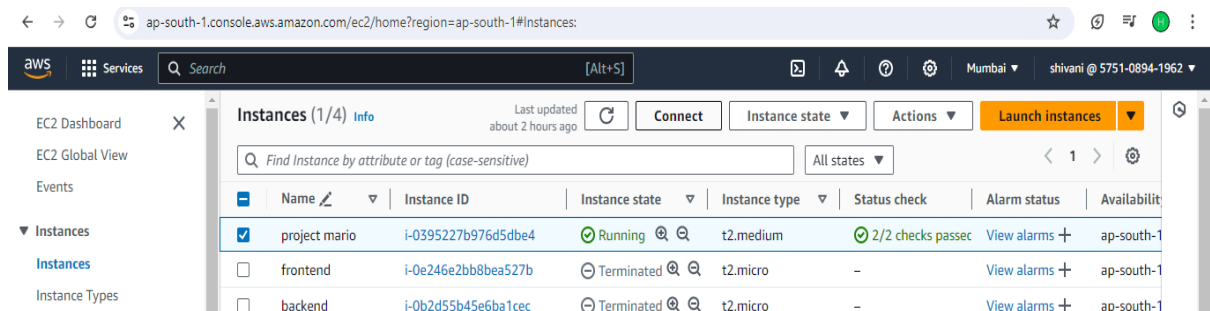
Step 4 →Attach IAM role with your EC2

Step 5 → Building Infrastructure Using terraform

Step 6 → Creation of deployment and service for EKS

Step 1 → Login and basics setup

1. Click on launch Instance



2. Connect to EC2-Instance



Step 2 → Setup Tools

```
sudo apt update -y
```

Setup Docker:

```
sudo apt install docker.io
```

```
sudo systemctl start docker
```

```
sudo usermod -aG docker ubuntu
```

```
newgrp docker
```

```
docker --version
```

Setup Terraform:

```
sudo apt-get update && sudo apt-get install -y gnupg software-properties-common

wget -O- https://apt.releases.hashicorp.com/gpg | \
gpg --dearmor | \
sudo tee /usr/share/keyrings/hashicorp-archive-keyring.gpg > /dev/null

gpg --no-default-keyring \
--keyring /usr/share/keyrings/hashicorp-archive-keyring.gpg \
--fingerprint

echo "deb [signed-by=/usr/share/keyrings/hashicorp-archive-keyring.gpg] \
https://apt.releases.hashicorp.com $(lsb_release -cs) main" | \
sudo tee /etc/apt/sources.list.d/hashicorp.list

sudo apt update
sudo apt-get install terraform
terraform --version
```

Setup AWS CLI:

```
curl "https://awscli.amazonaws.com/awscli-exe-linux-x86_64.zip" -o "awscliv2.zip"
sudo apt install unzip
unzip awscliv2.zip
sudo ./aws/install
aws --version
```

Install kubectl

Download the latest release with the command:

```
curl -LO "https://dl.k8s.io/release/$(curl -L -s
https://dl.k8s.io/release/stable.txt)/bin/linux/amd64/kubectl"
```

Validate the binary

```
curl -LO "https://dl.k8s.io/release/$(curl -L -s
https://dl.k8s.io/release/stable.txt)/bin/linux/amd64/kubectl.sha256"
```

Validate the kubectl binary against the checksum file:

```
echo "$(cat kubectl.sha256) kubectl" | sha256sum --check
```

Install kubectl:

```
sudo install -o root -g root -m 0755 kubectl /usr/local/bin/kubectl
```

Note: If you do not have root access on the target system, you can still install kubectl to the ~/.local/bin directory:

```
chmod +x kubectl
mkdir -p ~/.local/bin
mv ./kubectl ~/.local/bin/kubectl
kubectl version --client
```

Step 3 → IAM Role for EC2

create role:

The screenshot shows the AWS IAM console interface. On the left, a sidebar indicates 'Step 2: Add permissions' and 'Step 3: Name, review, and create'. The main area is titled 'Permissions policies (1/947)' and prompts the user to 'Choose one or more policies to attach to your new role.' A search bar contains 'eks' and the filter is set to 'All types', showing 8 matches. The table below lists several AWS managed policies, all of which are selected with checkboxes.

Policy name	Type	Description
<input checked="" type="checkbox"/> AdministratorAccess	AWS managed - job function	Provides full access to AWS services an...
<input type="checkbox"/> AdministratorAccess-Amp...	AWS managed	Grants account administrative permiss...
<input type="checkbox"/> AdministratorAccess-AWS...	AWS managed	Grants account administrative permiss...
<input checked="" type="checkbox"/> AmazonEKS_CNI_Policy	AWS managed	This policy provides the Amazon VPC ...
<input checked="" type="checkbox"/> AmazonEKSClusterPolicy	AWS managed	This policy provides Kubernetes the pe...
<input checked="" type="checkbox"/> AmazonEKSFGatePodEx...	AWS managed	Provides access to other AWS service r...
<input checked="" type="checkbox"/> AmazonEKSLocalOutpost...	AWS managed	This policy provides permissions to EK...
<input checked="" type="checkbox"/> AmazonEKSServicePolicy	AWS managed	This policy allows Amazon Elastic Cont...
<input checked="" type="checkbox"/> AmazonEKSVPCResource...	AWS managed	Policy used by VPC Resource Controlle...
<input checked="" type="checkbox"/> AmazonEKSWorkerNodeP...	AWS managed	This policy allows Amazon EKS worker ...
<input checked="" type="checkbox"/> AWSFaultInjectionSimula...	AWS managed	This policy grants the Fault Injection Si...

Step 4 → Attach IAM role with your EC2

go to EC2 click on actions → security → modify IAM role option

- administrator access
- eks

The screenshot shows the AWS EC2 console. A table lists instances, with one instance 'i-0c28d73cbc8dca7d2' in a 'Stopped' state. An 'Actions' menu is open for this instance, showing options like 'Connect', 'View details', and 'Security'. The 'Security' option is selected, leading to a dialog box titled 'IAM role'. This dialog prompts the user to 'Select an IAM role to attach to your instance or create a new role if you haven't created any.' A search bar shows 'eks' and a list of roles is displayed, including 'arn:aws:iam::575108941962:instance-profile/eks'. A warning message states 'The instance will be removed. Are you'.

Step 5 → Building Infrastructure Using terraform

Install GIT

```
sudo apt install git -y
git clone https://github.com/HemaTate/project-mario-game.git
cd Project-Super-Mario
cd EKS-TF
vim backend.tf
```

```
terraform {
  backend "s3" {
    bucket = "project-mario-bros-bucket-hema" # Replace with your actual S3 bucket name
    key    = "EKS/terraform.tfstate"
    region = "ap-south-1"
  }
}
```

Create Infra:

```
terraform init
```

```
terraform validate
```

```
terraform plan
```

```
terraform apply --auto-approve
```

```
aws eks update-kubeconfig --name EKS_CLOUD --region ap-south-1
```

Step 6 → Creation of deployment and service for EKS

change the directory where deployment and service files are stored use the command →

```
cd ..
```

create the deployment

```
kubectl apply -f deployment.yaml
```

Now create the service

```
kubectl apply -f service.yaml
kubectl get all
kubectl get svc mario-service
```

copy the load balancer ingress and paste it on browser and your game is running

```
Last login: Thu Aug 22 06:54:20 2024 from 103.194.105.52
ubuntu@ip-172-31-12-106:~$ kubectl get svc mario-service
NAME      TYPE          CLUSTER-IP      EXTERNAL-IP      PORT(S)          AGE
mario-service  LoadBalancer  10.100.103.33    a266d81f66b324d4f9e4df11fad2f600-1759252906.ap-south-1.elb.amazonaws.com  80:31124/TCP    13m
ubuntu@ip-172-31-12-106:~$
```

Final Output: Enjoy The Game 🎮

