provider "aws" {

  region = var.aws\_region

}

# VPC

resource "aws\_vpc" "main" {

  cidr\_block = "10.0.0.0/16"

  enable\_dns\_support = true

  enable\_dns\_hostnames = true

  tags = { Name = "main-vpc" }

}

# Public Subnet

resource "aws\_subnet" "public" {

  vpc\_id = aws\_vpc.main.id

  cidr\_block = "10.0.1.0/24"

  map\_public\_ip\_on\_launch = true

  availability\_zone = var.public\_az

  tags = { Name = "public-subnet" }

}

# Private Subnet

resource "aws\_subnet" "private" {

  vpc\_id = aws\_vpc.main.id

  cidr\_block = "10.0.2.0/24"

  availability\_zone = var.private\_az

  tags = { Name = "private-subnet" }

}

# Internet Gateway

resource "aws\_internet\_gateway" "gw" {

  vpc\_id = aws\_vpc.main.id

  tags = { Name = "main-igw" }

}

# Route Table

resource "aws\_route\_table" "public" {

  vpc\_id = aws\_vpc.main.id

  route {

    cidr\_block = "0.0.0.0/0"

    gateway\_id = aws\_internet\_gateway.gw.id

  }

  tags = { Name = "public-rt" }

}

resource "aws\_route\_table\_association" "public\_assoc" {

  subnet\_id = aws\_subnet.public.id

  route\_table\_id = aws\_route\_table.public.id

}

# Security Group for web server

resource "aws\_security\_group" "web\_sg" {

  name = "web-sg"

  description = "Allow HTTP and HTTPS"

  vpc\_id = aws\_vpc.main.id

  ingress {

    from\_port = 80

    to\_port = 80

    protocol = "tcp"

    cidr\_blocks = ["0.0.0.0/0"]

  }

  ingress {

    from\_port = 443

    to\_port = 443

    protocol = "tcp"

    cidr\_blocks = ["0.0.0.0/0"]

  }

  egress {

    from\_port = 0

    to\_port = 0

    protocol = "-1"

    cidr\_blocks = ["0.0.0.0/0"]

  }

  tags = { Name = "web-sg" }

}

# EC2 Instance

resource "aws\_instance" "web" {

  ami = var.ami\_id

  instance\_type = var.instance\_type

  subnet\_id = aws\_subnet.public.id

  associate\_public\_ip\_address = true

  vpc\_security\_group\_ids = [aws\_security\_group.web\_sg.id]

  key\_name = var.key\_name

  user\_data = <<-EOF

              #!/bin/bash

              sudo yum update -y

              sudo amazon-linux-extras install nginx1 -y

              sudo systemctl enable nginx

              sudo systemctl start nginx

              EOF

  tags = {

    Name = "web-server"

  }

}

variable "aws\_region" {

  default = "us-east-1"

}

variable "public\_az" {

  default = "us-east-1a"

}

variable "private\_az" {

  default = "us-east-1b"

}

variable "ami\_id" {

  description = "Amazon Linux 2 AMI"

  default = "ami-0c02fb55956c7d316" # update as per region

}

variable "instance\_type" {

  default = "t2.micro"

}

variable "key\_name" {

  description = "EC2 Key Pair Name"

  type = string

}

output "instance\_public\_ip" {

  value = aws\_instance.web.public\_ip

}

output "web\_url" {

  value = "http://${aws\_instance.web.public\_ip}"

}

terraform init

terraform plan

terraform apply