Terraform on AWS - Beginner Tutorial

1. Introduction to Terraform

Terraform is an open-source Infrastructure as Code (IaC) tool developed by HashiCorp.

It enables you to define and provision infrastructure using a high-level configuration language known as HCL (HashiCorp Configuration Language).

2. Download and Install Terraform

1. Visit https://www.terraform.io/downloads
2. Download the Terraform binary based on your OS.
3. Extract and move it to a directory in your system PATH.
4. Verify installation with `terraform -version` command in terminal.

3. Setup in VS Code

1. Install Visual Studio Code.
2. Install the 'HashiCorp Terraform' extension for syntax highlighting and IntelliSense.
3. Create a working directory (e.g., terraform-aws-ec2) and open it in VS Code.

4. Terraform State File

Terraform maintains a state file (`terraform.tfstate`) that tracks your real infrastructure resources.

It is important to manage this file securely. Avoid manual edits.

You can use remote backends like S3 for collaborative state management.

5. terraform.lock.hcl

This file is used to lock the versions of provider plugins used in your configuration.

It ensures that consistent versions are used across environments or teams.

6. Create an EC2 Instance with Security Group

```
provider "aws" {
  region = "ap-south-1"
}
```

```
resource "aws_instance" "web" {
  ami           = "ami-0abcdef1234567890"
  instance_type = "t2.micro"
  security_groups = [aws_security_group.allow_ssh.name]
}

resource "aws_security_group" "allow_ssh" {
  name        = "allow_ssh"
  description = "Allow SSH inbound traffic"
  ingress {
    from_port   = 22
    to_port     = 22
    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"]
  }
}
```

7. depends_on Block

Use `depends_on` to explicitly declare resource dependencies.

Example:

```
resource "aws_instance" "example" {
  ami           = "ami-0abcdef1234567890"
  instance_type = "t2.micro"
```

```
  depends_on    = [aws_security_group.allow_ssh]
}
```

This ensures the EC2 instance is created only after the security group.