

Problem Statement

You're a Platform engineer at a tech startup (Beejan Technologies) launching a scalable web application. The application must be highly available, secure, and designed following AWS best practices for a production environment.

Your task is to design and deploy a fault-tolerant infrastructure across two Availability Zones, with isolated network layers, secure Compute, and a managed relational database. All infrastructure must be defined as code using Terraform with clear module separation and environment flexibility.

Objectives

1. Design and deploy a custom VPC with multiple subnets for different layers of the infrastructure.
2. Set up secure routing between public and private subnets.
3. Deploy EC2 instances in private subnets and expose them via an Application Load Balancer in public subnets.
4. Launch an RDS Multi-AZ database in isolated private subnets.
5. Configure IAM roles, security groups, and route tables according to least privilege and AWS security best practices.
6. Organize code using reusable Terraform modules with clear variable naming and documentation.
7. Ensure the architecture supports scaling, monitoring, and minimal exposure to the public internet.

Deliverables

1. Full project hosted on GitHub
2. Architecture diagram.
3. README documentation.