**Automation & Orchestration Scripts**

**Title:** *Infrastructure as Code and Automation Scripts for Deployment*

**A. Repository Structure**

/automation-scripts

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├── /ansible

│ ├── playbooks/

│ │ ├── deploy\_optimization.yml

│ │ ├── configure\_network.yml

│ │ └── security\_hardening.yml

│ ├── roles/

│ │ ├── optimization\_engine/

│ │ ├── monitoring/

│ │ └── firewall/

│ └── inventory.ini

│

├── /terraform

│ ├── main.tf

│ ├── variables.tf

│ ├── outputs.tf

│ └── README.md

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└── README.md

**B. Ansible Playbooks**

* Automate deployment of optimization microservices and dependencies.
* Configure network devices and firewalls securely.
* Enforce security policies and patch management.

**C. Terraform Templates**

* Provision cloud infrastructure (e.g., AWS, Azure) for data storage, compute, and networking.
* Manage Kubernetes clusters for hosting ML models and APIs.
* Define security groups, load balancers, and IAM roles.

**D. Best Practices**

* Use variables and modules to enable reusable, parameterized code.
* Implement state locking and remote backend for Terraform state files.
* Include idempotency checks in Ansible to avoid drift.
* Document all scripts with usage instructions and prerequisites.