Task 2 – AWS Well-Architected Framework Table

Pillar	Observation	Recommendation	Supporting Aws Service
Operational Excellence	Manual deployments and monitoring are inconsistent	Implement CI/CD and centralized logging	AWS CodePipeline, AWS CloudWatch
Security	Security groups allow broad inbound access	Apply least privilege IAM	AWS IAM, AWS WAF
Reliability	Application runs in a single AZ with no backup strategy	Deploy multi-AZ architecture with automated backups	Amazon RDS Multi-AZ, AWS Backup
Performance Efficiency	Fixed instance sizes regardless of demand	Enable auto-scaling and managed load balancing	EC2 Auto Scaling, Elastic Load Balancer
Cost Optimization	Resources always running at full capacity	Use right-sizing and pay-as-you-go services	AWS Compute Optimizer, AWS Lambda

Task 3 - Cloud Adoption Framework Readiness Summary

Business perspective
The organization aims to improve scalability and reduce infrastructure maintenance costs. Cloud adoption aligns with long-term digital transformation goals but lacks defined ROI tracking. Leadership support exists, yet business metrics for migration success are unclear. Key actions include defining measurable KPIs such as uptime improvement, operational cost reduction, and deployment frequency. Establishing a cloud value framework will ensure migration decisions support business outcomes rather than purely technical goals.

People perspective
The team has limited AWS experience and relies heavily on traditional infrastructure management practices. Skills gaps exist in DevOps automation, cloud security, and cost management. Training programs and certification paths are required to build internal expertise. Creating cross-functional cloud teams and assigning cloud champions will improve adoption speed and reduce resistance to change.

Governance perspective
Current policies are designed for on-premises environments and lack cloud-specific controls. There is no standardized tagging strategy, cost governance model, or compliance monitoring approach. The organization should implement policy enforcement, resource tagging standards, and cost allocation frameworks. Establishing governance guardrails ensures consistent and secure deployments.

Platform perspective
The existing architecture is a simple two-tier application without elasticity or fault tolerance. Migration requires a scalable network design using VPCs, subnets, and managed services. Standardized infrastructure templates and environment automation should be introduced to support repeatable deployments.

Security perspective
Security is perimeter-focused and lacks identity-centric controls. There is minimal monitoring and no centralized audit logging. Implement identity-based access control, encryption policies, and continuous monitoring. Security must be integrated into deployment pipelines rather than applied afterward.

Operations perspective
Operations rely on manual monitoring and reactive issue resolution. There is no automated alerting or incident response workflow. Implement monitoring dashboards, automated alerts, and operational runbooks. Infrastructure as Code and automated recovery processes will improve system stability.

Task 4 - Improved AWS Architecture

The revised design uses a multi-tier, highly available architecture.
Users access the application through Amazon Route 53 and an Application Load Balancer. The frontend runs on EC2 instances inside an Auto Scaling group across multiple Availability Zones. The backend database is hosted on Amazon RDS in Multi-AZ mode with automated backups enabled. The environment is deployed inside a VPC with public and private subnets. Security groups restrict access, and IAM controls permissions. Monitoring is handled through CloudWatch, and logs are centralized. Automated deployment pipelines manage application updates. This architecture improves scalability, security, and fault tolerance while optimizing cost through elastic resource usage.

Reflection

This lab demonstrated how structured frameworks guide cloud architecture decisions. Evaluating the workload using the Well-Architected Framework revealed weaknesses that are common in traditional infrastructure, such as limited redundancy and manual operations. Applying the Cloud Adoption Framework showed that successful migration is not only technical but also organizational. Governance, skills development, and operational readiness are equally critical. Designing the improved architecture reinforced the importance of scalability, automation, and security by design. The exercise strengthened my ability to analyze systems holistically and recommend improvements aligned with best practices. It also highlighted how managed AWS services reduce operational overhead while improving reliability and performance. Overall, the lab developed practical cloud architecture thinking and emphasized the value of structured evaluation models.