{{projectTitle}}

# Database Design Document

|  |  |
| --- | --- |
| Company: | {{company}} |
| Author: | {{author}} |
| Date: | {{formatDate date 'long'}} |
| Version: | {{version}} |
| Database Name: | {{databaseName}} |

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# 1. Database Overview

## Database Information

|  |  |
| --- | --- |
| Property | Value |
| Database Name | {{databaseName}} |
| Version | {{version}} |
| Technologies | {{technologies}} |
| Author | {{author}} |
| Creation Date | {{formatDate date 'short'}} |

## Purpose and Scope

{{databasePurpose}}

## Technology Stack

{{technologies}}

# 2. Requirements Analysis

## Functional Requirements

{{functionalRequirements}}

## Non-Functional Requirements

{{nonFunctionalRequirements}}

## Performance Requirements

{{performanceRequirements}}

# 3. Conceptual Design

## Entity Relationship Diagram Overview

{{erdOverview}}

## Main Entities

{{mainEntities}}

# 4. Logical Design

## Table Schemas

{{tableSchemas}}

## Primary Key Relationships

{{primaryKeys}}

## Foreign Key Relationships

{{foreignKeys}}

## Constraints and Business Rules

{{constraints}}

## Index Design

{{indexes}}

# 5. Physical Design

## Storage Requirements

{{storageRequirements}}

## Data Partitioning Strategy

{{partitioning}}

## Performance Considerations

{{performanceConsiderations}}

# 6. Schema Diagrams

## Entity Relationship Diagram

{{#if erdDiagram}}{{erdDiagram}}{{else}}[ERD Diagram to be inserted here]{{/if}}

## Relationship Diagrams

{{#if relationshipDiagrams}}{{relationshipDiagrams}}{{else}}[Additional relationship diagrams to be inserted here]{{/if}}

# 7. Data Dictionary

## Comprehensive Field Descriptions

{{dataDictionary}}

## Data Type Standards

|  |  |  |
| --- | --- | --- |
| Data Type | Usage | Examples |
| INT | Integer values, IDs | user\_id, order\_count |
| VARCHAR(n) | Variable length text | names, descriptions |
| DECIMAL(p,s) | Financial/precise numbers | prices, percentages |
| DATETIME | Date and time values | created\_at, updated\_at |
| BOOLEAN | True/false values | is\_active, is\_deleted |
| TEXT | Large text content | descriptions, notes |

# 8. Stored Procedures and Functions

## Stored Procedures

{{storedProcedures}}

## Database Triggers

{{triggers}}

## Function Library

[Additional database functions and their purposes]

# 9. Security and Access Control

## User Roles and Permissions

{{userRoles}}

## Access Control Matrix

{{accessControl}}

## Encryption Strategy

{{encryptionStrategy}}

## Security Best Practices

• Regular security audits and vulnerability assessments

• Principle of least privilege for user access

• Strong password policies and multi-factor authentication

• Regular security patches and updates

• Data masking for sensitive information in non-production environments

# 10. Backup and Recovery Strategy

## Backup Strategy

{{backupStrategy}}

## Recovery Procedures

{{recoveryProcedures}}

## Business Continuity

{{businessContinuity}}

## Backup Schedule

|  |  |  |  |
| --- | --- | --- | --- |
| Backup Type | Frequency | Retention | Location |
| Full Backup | Weekly | 1 Month | Primary & Offsite |
| Differential | Daily | 1 Week | Primary |
| Transaction Log | Every 15 minutes | 3 Days | Primary |

# 11. Performance Optimization

## Index Optimization

{{indexOptimization}}

## Query Optimization

{{queryOptimization}}

## Maintenance Plan

{{maintenancePlan}}

## Performance Monitoring

Key Metrics to Monitor:

• Query execution time

• Index fragmentation levels

• Database size and growth

• CPU and memory utilization

• Disk I/O performance

• Concurrent connection counts

# 12. Migration and Deployment

## Migration Strategy

{{migrationPlan}}

## Deployment Procedures

{{deploymentProcedure}}

## Testing Strategy

{{testingStrategy}}

## Deployment Checklist

☐ Database schema validation

☐ Data migration verification

☐ Performance testing completion

☐ Security configuration validation

☐ Backup and recovery testing

☐ User access verification

☐ Application connectivity testing

☐ Documentation updates

☐ Stakeholder notification

☐ Go-live approval

# Appendices

## A. Database Schema Scripts

[Reference to database creation scripts]

## B. Sample Data and Test Cases

[Reference to sample data and test scenarios]

## C. Performance Benchmarks

[Performance testing results and benchmarks]

## D. Security Audit Reports

[Security assessment and audit documentation]

## E. Change Log

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Date | Author | Changes |
| {{version}} | {{formatDate date 'short'}} | {{author}} | Initial database design |

Document Classification: Technical Documentation

Review Cycle: Quarterly

Next Review Date: [To be scheduled]

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