# Database Functionalities

## Contents

Preface ..... Preface–1

1. Introduction ..... 1–1
   - 1.1 Document Overview ..... 1–1
   - 1.2 Background ..... 1–1
   - 1.3 Requirements Terminology ..... 1–1
   - 1.4 Requirement Labeling Conventions ..... 1–2
     - 1.4.1 Numbering of Requirement and Related Objects ..... 1–2
     - 1.4.2 Requirement, Conditional Requirement, and Objective Object Identification ..... 1–3

2. SPCS Database Management ..... 2–1
   - 2.1 Office Data ..... 2–1
   - 2.2 Database Management System (DBMS) ..... 2–1
   - 2.3 DBMS Implementation Considerations ..... 2–2
   - 2.4 Access to the Database ..... 2–3
     - 2.4.1 Database Maintenance Access ..... 2–3
     - 2.4.2 Customer Access to the Database ..... 2–4
     - 2.4.3 Customer-Originated Recent Changes ..... 2–4
   - 2.5 User View of Office Data ..... 2–5
   - 2.6 Descriptions of the Major DBMS Capabilities ..... 2–6
     - 2.6.1 Initialization and Reinitialization ..... 2–6
       - 2.6.1.1 Database Initialization ..... 2–6
       - 2.6.1.2 Database Reinitialization ..... 2–7
     - 2.6.2 Normal Database Updates ..... 2–7
       - 2.6.2.1 Delayed Activation ..... 2–7
       - 2.6.2.2 Testing State for Updates ..... 2–8
       - 2.6.2.3 Response Time Requirements ..... 2–8
       - 2.6.2.4 Throughput Requirement ..... 2–9
     - 2.6.3 Database Verification ..... 2–9
       - 2.6.3.1 Response Time ..... 2–10
     - 2.6.4 Report Generation ..... 2–11
       - 2.6.4.1 Office Records ..... 2–11
       - 2.6.4.2 Summaries and Statistics ..... 2–12
     - 2.6.5 Memory Management ..... 2–12
     - 2.6.6 DBMS Reliability ..... 2–13
     - 2.6.7 Documentation ..... 2–14

3. Backup and Recovery ..... 3–1
   - 3.1 Introduction ..... 3–1
     - 3.1.1 Backup and Recovery ..... 3–1
   - 3.2 Database Snapshots ..... 3–2

3.3 Log ..... 3–3
3.4 External Copies ..... 3–4
3.5 Restoration ..... 3–5
3.6 Roll-Back Capability ..... 3–5
3.7 Standalone Feature ..... 3–6
3.8 Maintenance ..... 3–6

4. Database Integrity ..... 4–1
4.1 Introduction ..... 4–1
4.2 Integrity ..... 4–1
4.2.1 Integrity Constraints ..... 4–1
4.2.2 Integrity Constraint Specification ..... 4–2
4.2.2.1 Types of Integrity Constraints ..... 4–2
4.2.2.2 Specification Format ..... 4–2
4.2.3 Enforcement ..... 4–3
4.2.3.1 Interactions with Database Updates ..... 4–3
4.2.3.2 Enforcement of Integrity at Installation ..... 4–4
4.2.3.3 Enforcement of Integrity upon Overwrite or Retrofit 4–4
4.2.3.4 Maintenance ..... 4–4

5. Database Security ..... 5–1
5.1 Introduction ..... 5–1
5.2 Security Overview and Terminology ..... 5–1

References ..... References–1

Acronyms ..... Acronyms–1