Relational DB Checklist

Understanding User Needs

- ☐ Bring a List of Questions (Record Meetings)
- ☐ Identify Key Players and their positions in the company
- ☐ Identify Data Integrity and Security Priorities
- ☐ Walk a Mile in User's Shoes
- ☐ Brainstorm (Rough Sketches, Relations, Ideas)
- ☐ Verify Understanding and Make Use Cases
- ☐ Compile List of Required Tools, Infrastructure and Costs Associated
- ☐ Establish Rough Timeline and Checkpoints

Translate User Needs to Data Models

- ☐ Design High Level User Interface (What data must be displayed in what form)
- ☐ Design Semantic Object Model (Constantly Check with Team)
- ☐ Build Entity-Relationship diagrams
- ☐ Study Entities Involved in the Problem
- ☐ Examine Interactions among Entities
- ☐ Convert Semantic Object Models and Entity-Relationship Diagrams into Relational Models
- ☐ Build Entity-Relationship diagrams, to study the entities that are involved in the problem

Optimization Phase I: Extract Business Rules

- ☐ Write Down All Business Rules
- ☐ Extract Key Business Rules
- ☐ Identify required fields and other field-level constraints that are unlikely to change
- ☐ Identify sanity checks that are unlikely to change
- ☐ Identify rules that are more complicated or likely to change in the future
- ☐ Re-design the ER diagram with updated changes

Optimization Phase II: Normalization and Refinement

- ☐ Verify First Normal Form (1NF)
  - ☐ Each Column Must Have Unique Name
  - ☐ The Order of Rows and Columns Does not Matter
  - ☐ Each Column Must Have a Single Data Type
  - ☐ No Two Rows Can Contain Identical Values
  - ☐ Each Column Must Contain a Single Value
  - ☐ Columns Cannot Contain Repeating Groups
- ☐ Verify Second Normal Form (2NF)
  - ☐ It is in 1NF
  - ☐ All of the Non-Key Fields Depend on All of the Key Fields
- ☐ Verify Third Normal Form (3NF)

- ☐ It is in 2NF
- ☐ It Contains no Transitive Dependencies

☐ Check Boyce-Codd Normal Form (BCNF)*

- ☐ It is in 3NF
- ☐ Every Determinant is a Candidate Key

☐ Fourth Normal Form (4NF)*

- ☐ It is in BCNF
- ☐ It Does Not Contain Unrelated Multi-Valued Dependency

☐ Fifth Normal Form (5NF)*

- ☐ It is in 4NF
- ☐ It Contains no Related Multi-Valued Dependencies

☐ Domain / Key Normal Form (DKNF)* Optional

- ☐ The Table Contains no Constraints except Domain Constraints and Key Constraints

Other Things To Consider

☐ Consider Multi-Tier Architecture
☐ Keep Tables Focused
☐ Check Naming Conventions With Development Team
☐ Maintain Proper Documentation for Any Change Associated
☐ Review Common Design Patterns For:

- ☐ Many-to-Many Associations
- ☐ Multiple Object Associations
- ☐ Repeated Attribute Associations
- ☐ One to One Reflexive Associations
- ☐ One to Many Reflexive Associations
- ☐ Hierarchical Data
- ☐ Network Data
- ☐ Temporal Data

Beware Of:

☐ Poor Documentation
☐ Poor Naming Standards
☐ Lack of Planning for Changing Features
☐ Too Much / Too Little Normalization
☐ Testing (Try To Find All Bottlenecks and bugs)
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☐ Too Much / Too Little Normalization
☐ Testing (Try To Find All Bottlenecks and bugs)
☐ Lack of Proper Constraints
☐ Not Defining Natural Keys
☐ ID Obsession