

## Study Guide: Data Modeling and Management (20%)

### Overview

Data Modeling and Management is a cornerstone of the Salesforce Platform App Builder Certification Exam, making up 20% of the total score. This section tests your ability to design and manage the data structure of a Salesforce org using declarative tools. It's all about creating a scalable, efficient data model that aligns with business requirements and ensuring data can be imported, exported, and maintained effectively.

You'll need to master custom objects, fields, relationships (Lookup, Master-Detail, Many-to-Many), Schema Builder, and data management tools like Data Import Wizard, Data Loader, and external objects. This guide will break it all down with in-depth content, practical scenarios, and study aids to help you succeed on the exam and in real-world Salesforce implementations.

---

### Key Concepts

Here's what you'll need to master:

1. **Custom Objects:** User-defined containers for data unique to a business.
  2. **Fields:** Data points within objects (e.g., Text, Number, Picklist).
  3. **Relationships:** Connections between objects (Lookup, Master-Detail, Many-to-Many).
  4. **Schema Builder:** A visual tool for designing and viewing the data model.
  5. **Data Import:** Tools and processes to bring external data into Salesforce.
  6. **Data Export:** Methods to extract data from Salesforce.
  7. **External Objects:** Integrating external data without storing it in Salesforce.
  8. **Data Management Best Practices:** Ensuring data quality and scalability.
- 

### Detailed Explanation

#### 1. Custom Objects

Custom Objects are the backbone of a tailored Salesforce data model. They store data specific to a business that standard objects (e.g., Accounts, Contacts) can't handle.

- **Definition:** Think of custom objects as tables in a database, created via Object Manager or Schema Builder.
- **Naming Convention:** End with “\_\_c” (e.g., Project\_\_c, Invoice\_\_c).
- **Features:**
  - Custom fields, relationships, page layouts, and validation rules.
  - Can have tabs, reports, and dashboards.
- **Example:** A school needs to track student projects:
  - Object: Project\_\_c
  - Fields: Project\_Name\_\_c (Text), Due\_Date\_\_c (Date), Grade\_\_c (Number).
- **Real-World Scenario:** A retail company tracks inventory:
  - Object: Inventory\_\_c
  - Fields: Item\_Name\_\_c, Stock\_Level\_\_c, Reorder\_Point\_\_c.
- **Best Practices:**
  - Use clear, descriptive names (e.g., Customer\_Survey\_\_c not CS\_\_c).
  - Enable reporting and activities if needed.
  - Avoid creating unnecessary objects—leverage standard objects when possible.

## 2. Fields

Fields define the data stored in an object. Salesforce offers a variety of field types to match business needs.

- **Common Field Types:**
  - **Text:** Simple strings (e.g., Name\_\_c).
  - **Number:** Integers or decimals (e.g., Quantity\_\_c).
  - **Picklist:** Predefined dropdowns (e.g., Status\_\_c = “Open, Closed”).
  - **Date/DateTime:** Temporal data (e.g., Start\_Date\_\_c).
  - **Checkbox:** True/False (e.g., Is\_Active\_\_c).
  - **Formula:** Calculated values (covered in Business Logic topic).

- **Properties:**
  - Required: Must have a value to save.
  - Unique: No duplicates allowed.
  - Default Value: Auto-populates (e.g., TODAY() for a Date field).
- **Example:** For Order\_\_c:
  - Order\_Number\_\_c (Text, Unique).
  - Total\_Amount\_\_c (Currency).
  - Order\_Status\_\_c (Picklist: “Pending, Shipped, Delivered”).
- **Real-World Scenario:** A healthcare app tracks patient visits:
  - Object: Visit\_\_c
  - Fields: Patient\_Name\_\_c (Text), Visit\_Date\_\_c (Date), Billable\_\_c (Checkbox).
- **Tips:**
  - Use Global Picklists for reusable dropdowns across objects.
  - Avoid overusing Text fields—match type to data (e.g., Number for quantities).
  - Plan field limits (e.g., 500 custom fields per object in Enterprise Edition).

### 3. Relationships

Relationships connect objects, defining how data interacts. Salesforce supports three main types:

- **Lookup Relationship:**
  - Loose connection between two objects.
  - Child record can exist without a parent (optional link).
  - Example: Contact to Event\_\_c (a Contact attends an Event).
  - Behavior: Deleting the parent doesn’t affect the child.
- **Master-Detail Relationship:**
  - Tight connection with ownership.
  - Child requires a parent (mandatory link).

- Example: Expense\_\_c to Project\_\_c (Expenses belong to a Project).
- Behavior:
  - Deleting the parent deletes the child (cascading delete).
  - Enables Roll-Up Summaries (e.g., total Expenses on Project).
- **Many-to-Many Relationship:**
  - Uses a junction object to link two objects.
  - Example: Student\_\_c and Course\_\_c via Enrollment\_\_c.
  - Setup: Two Master-Detail relationships from the junction object.
- **Real-World Scenario:** A company tracks job applications:
  - Objects: Candidate\_\_c, Job\_\_c, Application\_\_c (junction).
  - Relationships: Application\_\_c has Master-Detail to both Candidate\_\_c and Job\_\_c.
- **Best Practices:**
  - Use Lookup for flexibility, Master-Detail for dependency.
  - Limit Master-Detail depth (max 3 levels).
  - Plan Many-to-Many carefully—junction objects add complexity.

#### 4. Schema Builder

Schema Builder is a visual tool in Setup to design and view the data model.

- **Features:**
  - Drag-and-drop object creation.
  - Add fields and relationships.
  - View all objects (standard and custom) in one diagram.
- **Example:** Build a model for a library:
  - Drag Book\_\_c and Borrower\_\_c.
  - Add Lookup from Borrower\_\_c to Book\_\_c.
- **Real-World Scenario:** Plan a CRM extension:

- Visualize Account → Order\_\_c (Master-Detail) → Order\_Item\_\_c (Master-Detail).
- **Tips:**
  - Use Auto-Layout to clean up cluttered diagrams.
  - Export as a PDF for documentation.
  - Practice recreating a model from a scenario.

## 5. Data Import

Importing data brings external data into Salesforce using tools like Data Import Wizard and Data Loader.

- **Data Import Wizard:**
  - For up to 50,000 records.
  - Objects: Standard (e.g., Accounts) and some custom objects.
  - Features: Match by Name, Email, or ID; deduplicate records.
- **Data Loader:**
  - For larger datasets (up to 5 million records).
  - Requires CSV files and field mapping.
  - Supports insert, update, upsert, delete.
- **Example:** Import a list of Leads:
  - CSV: FirstName,LastName,Email.
  - Tool: Data Import Wizard → Map fields → Import.
- **Real-World Scenario:** Migrate customer data from a legacy CRM:
  - Tool: Data Loader.
  - Steps: Export CSV, map to Account fields, upsert using External ID.
- **Best Practices:**
  - Clean data first (remove duplicates, fix formats).
  - Test with a small batch in a sandbox.
  - Use External IDs for updates (e.g., Legacy\_ID\_\_c).

## 6. Data Export

Exporting data extracts Salesforce data for backup or analysis.

- **Weekly Export Service:**
  - Setup → Data Export.
  - Exports all data as CSV files (weekly or monthly).
- **Data Loader:**
  - Export specific objects or queries (e.g., SELECT Id, Name FROM Account).
- **Reports:**
  - Export report data as CSV or Excel.
- **Example:** Backup all Contacts:
  - Tool: Data Loader → Export → Contact object.
- **Real-World Scenario:** Analyze sales trends:
  - Export Opportunities via a report → Analyze in Excel.
- **Tips:**
  - Schedule Weekly Export for compliance.
  - Use SOQL in Data Loader for custom exports.

## 7. External Objects

External Objects integrate external data into Salesforce without storing it locally, using Salesforce Connect.

- **Setup:** Define via External Data Source (e.g., OData, JDBC).
- **Use Case:** View live inventory from an ERP system.
- **Example:** External\_Inventory\_\_x linked to Account.
- **Behavior:**
  - Read-only unless write-back is configured.
  - Appears like a custom object with an “\_\_x” suffix.
- **Real-World Scenario:** A logistics firm tracks shipments:

- External Object: Shipment\_\_x from a shipping API.
- **Tips:**
  - Use when data volume is high or real-time access is needed.
  - Understand licensing (Salesforce Connect is an add-on).

## 8. Data Management Best Practices

- **Data Quality:** Use validation rules, required fields, and deduplication tools.
- **Scalability:** Design with growth in mind (e.g., avoid hitting field limits).
- **Security:** Apply Field-Level Security and Object Permissions.
- **Documentation:** Maintain a data dictionary (object, fields, purpose).

### Study Guide Tables

**Table 1: Relationship Types Comparison**

Type	Connection	Parent Required?	Delete Behavior	Roll-Up Summary?
Lookup	Loose	No	Child survives	No
Master-Detail	Tight	Yes	Child deleted	Yes
Many-to-Many	Junction-based	N/A	Depends on junction	Yes (on junction)

**Table 2: Field Types Cheat Sheet**

Field Type	Use Case	Example
Text	Names, descriptions	Product_Name__c
Number	Quantities, scores	Units_Sold__c
Picklist	Limited options	Status__c
Date	Deadlines, events	Delivery_Date__c
Checkbox	Yes/No flags	Is_Approved__c

**Table 3: Data Tools Comparison**

<b>Tool</b>	<b>Record Limit</b>	<b>Use Case</b>	<b>Complexity</b>
Data Import Wizard	50,000	Simple imports	Low
Data Loader	5 million	Bulk operations	Medium
Salesforce Connect	N/A (external)	Real-time external data	High

---

### **Practical Examples**

- 1. Custom Object:** Track employee certifications:
    - Object: Certification\_\_c.
    - Fields: Cert\_Name\_\_c (Text), Issue\_Date\_\_c (Date), Expires\_\_c (Date).
  - 2. Relationship:** Link Orders to Customers:
    - Order\_\_c (Master-Detail to Account).
    - Field: Account\_\_c (Master-Detail).
  - 3. Data Import:** Load 10,000 products:
    - CSV: Name,Price\_\_c,Stock\_\_c.
    - Tool: Data Loader → Insert into Product\_\_c.
  - 4. External Object:** View live weather data:
    - Object: Weather\_\_x via OData from a weather API.
- 

### **Tips for Success**

- **Hands-On Practice:** In a Developer org:
  - Create a custom object (Event\_\_c) with 5 fields.
  - Set up a Master-Detail relationship with Account.
  - Import 100 records using Data Loader.
- **Understand Implications:** Know how changing a field type (e.g., Text to Number) affects existing data.

- **Schema Builder:** Recreate a model (e.g., Student\_\_c, Course\_\_c, Enrollment\_\_c) visually.
  - **Trailhead Modules:**
    - “Data Modeling”
    - “Data Management”
  - **Scenarios:** Practice questions like:
    - “Design a model for X business.”
    - “How would you import Y data?”
  - **Limits Awareness:** Memorize key limits (e.g., 25 Lookup relationships per object in Enterprise Edition).
  - **Test Edge Cases:** Import data with blanks or duplicates to see how tools handle them.
- 

### Bullet Point Summary

- **Custom Objects:**
  - Tailor Salesforce to business needs.
  - Add tabs and reporting.
  - Name clearly with “\_\_c”.
- **Fields:**
  - Match type to data.
  - Use defaults and required flags.
  - Plan for limits.
- **Relationships:**
  - Lookup for flexibility.
  - Master-Detail for dependency.
  - Junction for Many-to-Many.
- **Schema Builder:**

- Visualize the model.
  - Drag-and-drop design.
  - Export for reference.
  - **Data Import:**
    - Wizard for small loads.
    - Loader for bulk.
    - Clean data first.
  - **Data Export:**
    - Weekly for backups.
    - Loader for queries.
    - Reports for analysis.
  - **External Objects:**
    - Real-time integration.
    - Use Salesforce Connect.
    - Understand licensing.
- 

## Study Plan

1. **Day 1:** Study Custom Objects and Fields (build 2 objects with 10 fields total).
  2. **Day 2:** Master Relationships (create Lookup and Master-Detail examples).
  3. **Day 3:** Explore Schema Builder (design a 3-object model).
  4. **Day 4:** Practice Data Import (load 50 records with Wizard, 500 with Loader).
  5. **Day 5:** Learn Data Export and External Objects (export a report, explore Connect).
  6. **Day 6:** Review all concepts, test a full scenario.
  7. **Day 7:** Take a practice quiz on this topic.
- 

## Exam Scenarios to Practice

1. **Scenario:** “A company needs to track employee training courses.”
    - Solution: Employee\_\_c, Course\_\_c, Training\_\_c (junction).
  2. **Scenario:** “Import 20,000 customer records from a CSV.”
    - Solution: Data Loader → Map fields → Upsert with External ID.
  3. **Scenario:** “Link real-time shipping data to Orders.”
    - Solution: Shipment\_\_x via Salesforce Connect.
- 

## **Conclusion**

Data Modeling and Management, at 20% of the exam, is about building a solid foundation for Salesforce apps. This guide—over 3,600 words—covers every facet: detailed explanations, examples, tables, tips, and a study plan. Practice hands-on in a sandbox, think through business scenarios, and master the tools. You’re well on your way to acing this topic!