

# Considering Business Rules

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## WHAT'S COVERED

This lesson explores the importance of considering database business rules, in two parts. Specifically, this lesson will cover:

1. [Business Rules](#)
2. [Implementing Business Rules in a Database's Design](#)

## 1. Business Rules

In a generic sense, any sort of policy or guideline that a business has might be considered a "business rule." However, in the context of database creation and management, the term has a different, more specialized meaning. In a database management system, **business rules** are specific constraints and requirements that govern how data should be stored, processed, and managed in a database. Implementing business rules in a database's design ensures that the data remains accurate, consistent, and compliant with the organization's policies and processes.

### IN CONTEXT

Here are some examples of how business rules can be implemented in a database's design: Data Validation:

- Ensure that email addresses are in a valid format.
- Enforce age limits for certain services or products.
- Validate that product prices are within an acceptable range.

Data Integrity:

- Enforce referential integrity constraints to maintain relationships between tables.
- Prevent duplicate records or entries for unique data, such as employee IDs or customer account numbers.
- Use check constraints to limit the values that can be entered in a column, for example, ensuring a "status" column only contains predefined values (e.g., "active" or "inactive").

#### Security and Access Control:

- Implement role-based access control to restrict data access based on user roles or permissions.
- Enforce password policies to ensure strong and secure user passwords.

#### Audit Trails:

- Record changes made to critical data fields, such as who made the change and when.
- Maintain logs of data access and modifications for compliance and security purposes.

#### Derived Data:

- Calculate and store derived data, such as a total order amount or a customer's credit score, based on specific rules and formulas.
- Create views or computed columns to generate data summaries or transformations.

#### Data Transformation:

- Convert data from one format to another to meet specific requirements (e.g., transforming dates or currencies for international operations).
- Apply data cleansing rules to remove or standardize inconsistent data entries.

#### Temporal Data:

- Implement rules for managing effective dates (validity periods) for data records, ensuring historical and future data is correctly handled.
- Enforce retention policies to automatically archive or delete data after a specific timeframe.

#### Workflow Automation:

- Use triggers or stored procedures to automate specific actions when certain conditions are met, such as sending notifications, updating statuses, or generating reports.
- Implement approval workflows to enforce business rules for authorizations and document approvals.

#### Data Constraints:

- Enforce constraints related to physical limits, such as maximum storage capacity, or constraints related to time, like data archiving and retention policies.
- Implement rules for data purging or data aging, ensuring data is removed according to legal and business requirements.

#### Legal and Compliance Rules:

- Store legal agreements and contracts and enforce rules for expiration and renewal.
- Implement compliance rules related to data privacy, financial regulations, or industry-specific requirements, like HIPAA for healthcare data.

These are just a few examples of how business rules can be integrated into a database's design.

Properly implementing business rules helps organizations maintain data quality, consistency, security, and compliance with their specific requirements and objectives.

**Business Rule**

Specific constraints and requirements that govern how data should be stored, processed, and managed in a database.

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## 2. Implementing Business Rules in a Database's Design

Implementing the right business rules in a database is crucial for maintaining data integrity, security, and compliance. Here are some tips for successfully incorporating business rules into a database and following up to make sure they remain relevant:

**Understand and Document Business Requirements:** Make sure you understand the business processes, policies, and requirements of the organization. Document the business rules you will be implementing clearly, ensuring they are specific, unambiguous, and well-defined.

**Collaborate With Stakeholders:** Involve all relevant stakeholders, including business users, IT staff, and compliance or legal experts, in the rule definition and implementation process. Ensure that the business rules meet the needs of different departments and align with overall business objectives. The frontline employees who interact with the database on a daily basis often provide the most helpful insights in business rule development.

**Use Data Modeling and Standardization:** Employ robust data modeling techniques to represent business rules within the database structure. You can use the modeling method you learned in previous lessons in this course. Standardize the representation and enforcement of rules across the database to maintain consistency.

**Implement Data Validation and Constraints:** Apply data validation rules at the database level to prevent incorrect or inconsistent data entry. Enforce constraints such as uniqueness and referential integrity and check constraints to ensure data accuracy and adherence to business rules.

**Utilize Triggers and Stored Procedures:** Implement triggers to automate actions or checks when specific events occur, ensuring that rules are enforced in real time. Use stored procedures to encapsulate business logic, allowing complex business rules to be implemented consistently.

**Regularly Review and Update Rules:** Conduct periodic reviews of business rules to ensure they remain relevant and aligned with changing business needs, industry standards, and legal requirements. Update and adapt rules as necessary, considering feedback from stakeholders and new business requirements.

**Ensure Data Security and Access Control:** Implement role-based access controls to restrict data access based on user roles and responsibilities. Encrypt sensitive data and enforce security measures to safeguard against unauthorized access or breaches.

**Provide Training and Support:** Offer training and support to database users to ensure they understand and comply with the implemented business rules. Create documentation and guidelines that clearly explain the rules and their implications.

**Test and Validate Business Rules:** Test the implemented business rules thoroughly before deployment to ensure they function as intended. Validate rules in various scenarios to check for potential exceptions and ensure the database behaves as expected.

Implementing and maintaining business rules in a database is an ongoing process that demands collaboration, periodic evaluation, and a commitment to adapting to changing business needs. By integrating business rules effectively, databases can function as reliable systems that align with company policies and meet stakeholders' requirements.



## SUMMARY

In this lesson, you learned that **business rules** are specific constraints and requirements that govern how data should be stored, processed, and managed in a database. **Implementing business rules in a database's design** ensures that the data remains accurate, consistent, and compliant with the organization's policies and processes.

First, you looked at some ways that business rules can be implemented in a database design to achieve data validation, data integrity, security and access control, data transformation, workflow automation, and regulatory compliance.

Then you learned some best practices for implementing business rules in a database, including the importance of understanding and documenting rules, collaborating with shareholders, implementing data validation and constraints, maintaining audit trails that document any changes made, and periodically testing and validating rules to ensure they still reflect company policies.

Source: THIS TUTORIAL WAS AUTHORED BY DR. VINCENT TRAN, PHD (2020) AND Faithe Wempen (2024) FOR SOPHIA LEARNING. PLEASE SEE OUR [TERMS OF USE](#).



## TERMS TO KNOW

### **Business Rule**

Specific constraints and requirements that govern how data should be stored, processed, and managed in a database.