In a relational database management system (RDBMS), key constraints play a crucial role in maintaining the integrity and structure of the database. Key constraints are rules that define the relationships between different tables and ensure the accuracy and consistency of data. There are several types of key constraints in a DBMS:

1. **Primary Key Constraint:**
   * A primary key uniquely identifies each record in a table.
   * It must contain unique values and cannot have NULL values.
   * Each table can have only one primary key.

Example:

sqlCopy code

CREATE TABLE Students ( StudentID INT PRIMARY KEY, Name VARCHAR(50), Age INT );

1. **Unique Key Constraint:**
   * Similar to a primary key, a unique key ensures that all values in a column are unique.
   * Unlike a primary key, it can allow NULL values (as many as desired).
   * Each table can have multiple unique keys.

Example:

sqlCopy code

CREATE TABLE Employees ( EmployeeID INT UNIQUE, FirstName VARCHAR(50), LastName VARCHAR(50) );

1. **Foreign Key Constraint:**
   * A foreign key establishes a link between two tables by referencing the primary key of another table.
   * It ensures referential integrity, meaning that values in the foreign key must match values in the referenced primary key.
   * It helps maintain consistency and relationships between tables.

Example:

sqlCopy code

CREATE TABLE Orders ( OrderID INT PRIMARY KEY, CustomerID INT, ProductID INT, FOREIGN KEY (CustomerID) REFERENCES Customers(CustomerID), FOREIGN KEY (ProductID) REFERENCES Products(ProductID) );

1. **Check Constraint:**
   * A check constraint defines a condition that each row in a table must satisfy.
   * It ensures that values entered into a column meet a specific condition.
   * It is not limited to key columns and can be used to enforce various rules on data.

Example:

sqlCopy code

CREATE TABLE Employees ( EmployeeID INT PRIMARY KEY, Age INT, CHECK (Age >= 18) );

Key constraints are essential for maintaining data integrity, enforcing relationships between tables, and preventing the introduction of inconsistent or invalid data into the database.