

MariaDB Data Type Attributes and Constraints

This reference card shows all attributes and constraints that can be applied to columns in MariaDB tables.

Basic Constraints

Attribute	Description	Example
NOT NULL	Column cannot contain NULL values	name VARCHAR(100) NOT NULL
NULL	Column can contain NULL values (default)	middle_name VARCHAR(50) NULL
DEFAULT value	Sets default value when no value provided	status VARCHAR(20) DEFAULT 'active'
PRIMARY KEY	Column is the primary key	id INT PRIMARY KEY
UNIQUE	All values in column must be unique	email VARCHAR(100) UNIQUE
CHECK (expr)	Values must satisfy the condition	age INT CHECK (age >= 18)
COMMENT 'text'	Documentation comment	created_at TIMESTAMP COMMENT 'Creation date'

Auto-Increment

Attribute	Description	Example
AUTO_INCREMENT	Automatically increase value	id INT AUTO_INCREMENT PRIMARY KEY
AUTO_INCREMENT=value	Set starting value	AUTO_INCREMENT=1000 (table-level)

Indexing

Attribute	Description	Example
KEY or INDEX	Create regular index	INDEX (last_name)
UNIQUE KEY	Create unique index	UNIQUE KEY (email)
FOREIGN KEY	Reference another table	FOREIGN KEY (dept_id) REFERENCES departments(id)
FULLTEXT KEY	Text search index	FULLTEXT KEY (content)
SPATIAL KEY	Geometric data index	SPATIAL KEY (location)

Foreign Key Actions

Attribute	Description	Example
<code>ON DELETE CASCADE</code>	Delete child when parent deleted	<code>ON DELETE CASCADE</code>
<code>ON DELETE SET NULL</code>	Set to NULL when parent deleted	<code>ON DELETE SET NULL</code>
<code>ON DELETE RESTRICT</code>	Prevent parent deletion	<code>ON DELETE RESTRICT</code>
<code>ON DELETE NO ACTION</code>	Similar to RESTRICT	<code>ON DELETE NO ACTION</code>
<code>ON DELETE SET DEFAULT</code>	Set to default value	<code>ON DELETE SET DEFAULT</code>
<code>ON UPDATE CASCADE</code>	Update child when parent updated	<code>ON UPDATE CASCADE</code>
<code>ON UPDATE SET NULL</code>	Set to NULL when parent updated	<code>ON UPDATE SET NULL</code>
<code>ON UPDATE RESTRICT</code>	Prevent parent update	<code>ON UPDATE RESTRICT</code>

Generated Columns

Attribute	Description	Example
<code>GENERATED ALWAYS AS (expr) VIRTUAL</code>	Computed when queried	<code>full_price DECIMAL(10,2) GENERATED ALWAYS AS (price * (1 + tax_rate)) VIRTUAL</code>
<code>GENERATED ALWAYS AS (expr) STORED</code>	Computed and stored	<code>full_price DECIMAL(10,2) GENERATED ALWAYS AS (price * (1 + tax_rate)) STORED</code>

Character Set & Collation

Attribute	Description	Example
<code>CHARACTER SET charset</code>	Define character set	<code>name VARCHAR(100) CHARACTER SET utf8mb4</code>
<code>COLLATE collation</code>	Define collation	<code>name VARCHAR(100) COLLATE utf8mb4_unicode_ci</code>

Combined Example

sql

```
CREATE TABLE products (  
  id INT AUTO_INCREMENT PRIMARY KEY,  
  name VARCHAR(100) NOT NULL CHARACTER SET utf8mb4,  
  sku VARCHAR(50) UNIQUE NOT NULL,  
  price DECIMAL(10,2) NOT NULL CHECK (price > 0),  
  discount_price DECIMAL(10,2) GENERATED ALWAYS AS (price * 0.9) STORED,  
  category_id INT NOT NULL,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  description TEXT NULL COMMENT 'Product full description',  
  INDEX (name),  
  FULLTEXT KEY (description),  
  FOREIGN KEY (category_id) REFERENCES categories(id) ON DELETE RESTRICT ON UPDATE CASCADE  
) ENGINE=InnoDB AUTO_INCREMENT=1000;
```

