# Magic: The Gathering Database Documentation

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# Contents

# 1 Philosophy of Design

write something about why we did the things we did.
Note: Datatypes are SQLite datatypes of the following: INTEGER, TEXT, BLOB, REAL, or NUMERIC.

# 2 Tables

## 2.1 CARD

A CARD represents a real, phyisical, entity in Magic: The Gathering (MTG). CARDs have attributes (descirbed below) that appear as printed images or text on the playing face of the CARD. These attributes give CARDs different playable characteristics in a game.

CARDs may or may not be grouped by these attributes. One example are all CARDs with they type creature, which represent all creature cards. Note that under these attributes, a CARD can be uniquely identified by its name, but a CARD may be reprinted in more than one SET. In other words, a CARD doesn't change between SETs and can be contained within one or more SETs.

### 2.1.1 Attributes

- card_name
  - **description**: The name of the card.
  - **data type**: TEXT
  - **domain**: Any valid card name.
- text
  - **description**: Everything in the text area of the card.
  - **data type**: TEXT
  - **domain**: Any valid card text.
- type
  - **description**: The type of the card (creature, artifact, etc).
  - **data type**: TEXT
  - **domain**: Any valid magic card type.
- supertype
  - **description**: The super type of the card (legendary, snow, etc).
  - **data type**: TEXT
  - **domain**: Any valid magic card supertype.

- power
  - **description**: The card's power.
  - **data type**: INTEGER
  - **domain**: Any non-negative integer.
- toughness
  - **description**: The card's toughness.
  - **data type**: INTEGER
  - **domain**: Any non-negative integer.
- loyalty
  - **description**: The card's loyalty.
  - **data type**: INTEGER
  - **domain**: Any non-negative integer.

## 2.2 SET

A SET represents a real, physical, collection of CARDs that are released together and designed for the same play environment. SETs are released throught the year and each have a name, code (three character abbreviation) and a set symbol which is not tracked.

### 2.2.1 Attributes

- set_code
  - **description**: The alphanumeric code associated with a set.
  - **data type**: TEXT
  - **domain**: Combinations of letters and digits.
- set_name
  - **description**: The name of the set.
  - **data type**: TEXT
  - **domain**: Any valid set name.
- year
  - **description**: The year the set was released.
  - **data type**: INTEGER
  - **domain**: Any valid year.
- set_type
  - **description**: The type of set it is (Core, expansion, etc).
  - **data type**: TEXT
  - **domain**: Any valid set type.

## 2.3 FORMAT

A FORMAT is representation of a set of rules and allowable SETs for deck construction and gameplay. These restrictions define what a FORMAT is, and each FORMAT has a unique name.

### 2.3.1 Attributes

- format_name
  - **description**: The name of the format.
  - **data type**: TEXT
  - **domain**: Any valid format name.
- min_deck_size
  - **description**: The minimum number of cards allowed in a deck.
  - **data type**: INTEGER
  - **domain**: Any non-negative integer.
- max_deck_size
  - **description**: The maximum number of cards allowed in a deck.
  - **data type**: Integer.
  - **domain**: Any integer, negative integers are interpreted as infinity.
- copies_allowed
  - **description**: The maximum number of copies of a card allowed in a deck.
  - **data type**: INTEGER
  - **domain**: Any non-negative integer.

## 2.4 IS_ALLOWED

IS_ALLOWED represents a many-to-many relationship between SETs and FORMATs. A SET can either be allowed or not allowed in a particular FORMAT. Each SET can be allowed or not allowed in one or more FORMATs. Each FORMAT can allow or not allow one or more SETs.

### 2.4.1 Attributes

- set_code
  - **description**: A foreign key from SET.
  - **data type**: TEXT

- **domain**: Combinations of letters and digits.

- format_name
  - **description**: A foreign key from FORMAT.
  - **data type**: TEXT
  - **domain**: Any valid format name.

## 2.5 CONTAINS

CONTAINS represents a one-to-many relationship between CARDs and SETs. A CARD can be printed or reprinted in one or more SETs, but each SET can only contain one printing of that CARD in the SET (no duplicates in a SET). Note that each CARD must be printed or reprinted with the release of a SET. In other words, each CARD is part of at least one SET.

### 2.5.1 Attributes

- set_code
  - **description**: A foreign key from SET.
  - **data type**: TEXT
  - **domain**: Combinations of letters and digits.

- card_name
  - **description**: A foreign key from CARD.
  - **data type**: TEXT
  - **domain**: Any valid card name.

- rarity
  - **description**: The rarity of the card (common, uncommon, etc).
  - **data type**: TEXT
  - **domain**: Any valid magic card rarity.

## 2.6 LIMITATION

A LIMITATION represents a many-to-many relationship between CARD and FORMAT. The limitation or restriction of a CARD to a particular FORMAT is determined by the particular rules of the FORMAT. FORMATs can deem particular CARDs banned (not allowed in gameplay), restricted (only one copy of CARD is allowed in a deck), or illegal (CARD is not allowed).

### 2.6.1 Attributes

- format_name
  - **description**: A foreign key from FORMAT.
  - **data type**: TEXT
  - **domain**: Any valid format name.
- card_name
  - **description**: A foreign key from CARD.
  - **data type**: TEXT
  - **domain**: Any valid card name.
- limitation_type
  - **description**: The way in which a card is limited (banned, restricted, etc).
  - **data type**: TEXT
  - **domain**: Any valid limitation.

## 2.7 COLOR

### 2.7.1 Attributes

- card_name
  - **description**: A foreign key from CARD.
  - **data type**: TEXT
  - **domain**: Any valid card name.
- color
  - **description**: The color a card is associated with, usually indicated by the physical color of the card.
  - **data type**: TEXT
  - **domain**: Any valid magic card color.

## 2.8 COLOR_COST

COLOR_COST represents symobols on a CARD indicating the cost of casting the CARD. On a physical CARD, this can be a combination of intgers and symbols which represent color. Symbols are represented in this table with letters. R for red, U for blue, G for green, B for black, W for white. X represents casting costs with no required color.

#### 2.8.1 Attributes

- card_name
  - **description**: A foreign key from CARD.
  - **data type**: TEXT
  - **domain**: Any valid card name.
- cost_string
  - **description**: An alphanumeric representation of a cards mana cost.
  - **data type**: TEXT
  - **domain**: Strings over the alphabet $\sum = \{R, U, G, B, W, X, \phi\}$ where $\phi \in \mathbb{Z}_{>0}$ and each string that contains $\phi$ begins with $\phi$.
- converted_cost
  - **description**: The sum over a cards mana cost. Each occurrence of a character in a cost_string is summed according to the above table.

Table 1: How to sum a cost_string.

| $\sum$ | value |
|---|---|
| $R$ | 1 |
| $U$ | 1 |
| $G$ | 1 |
| $B$ | 1 |
| $W$ | 1 |
| $X$ | 0 |
| $\phi$ | $\phi$ |

  - **data type**: INTEGER
  - **domain**: Any non-negative integer.

### 2.9 DOUBLE_CARD

CARDs

#### 2.9.1 Attributes

- side_a
  - **description**: A foreign key from CARD, specifically a card_name.
  - **data type**: TEXT
  - **domain**: Any valid card name.
- side_b

- **description**: A foreign key from CARD, specifically a card_name.
- **data type**: TEXT
- **domain**: Any valid card name.

- set_code
  - **description**: A foreign key from SET.
  - **data type**: TEXT
  - **domain**: Combinations of letters and digits.

## 2.10 SUBTYPE

description

### 2.10.1 Attributes

- card_name
  - **description**: A foreign key from CARD.
  - **data type**: TEXT
  - **domain**: Any valid card name.

- subtype
  - **description**: The subtype of the card (equipment, curse, etc).
  - **data type**: TEXT
  - **domain**: Any valid magic card subtype.

## 2.11 COLOR_IDENTITY

description

### 2.11.1 Attributes

- card_name
  - **description**: A foreign key from CARD.
  - **data type**: TEXT
  - **domain**: Any valid card name.

- red
  - **description**: A flag to indicate the cards alignment with red.
  - **data type**: BOOLEAN
  - **domain**: Any valid boolean.

- blue
  - **description**: A flag to indicate the cards alignment with blue.
  - **data type**: BOOLEAN
  - **domain**: Any valid boolean.
- green
  - **description**: A flag to indicate the cards alignment with green.
  - **data type**: BOOLEAN
  - **domain**: Any valid boolean.
- white
  - **description**: A flag to indicate the cards alignment with white.
  - **data type**: BOOLEAN
  - **domain**: Any valid boolean.
- black
  - **description**: A flag to indicate the cards alignment with black.
  - **data type**: BOOLEAN
  - **domain**: Any valid boolean.
- colorless
  - **description**: A flag to indicate the cards alignment with colorless.
  - **data type**: BOOLEAN
  - **domain**: Any valid boolean.