

Magic: The Gathering Database Documentation

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1 Philosophy of Design

write something about why we did the things we did.

2 Tables

2.1 CARD

The MTG wiki had the following to say about what a card is.

In Magic: The Gathering, a card is the standard component of the game. The word card usually refers to a Magic card with a Magic card front and a Magic card back, or to double-faced cards.

The CARD table is reflective of the elements you will find on a magic card.

2.1.1 Attributes

- card_name
 - **Description:** The name of the card.
 - **Data type:** String
 - **Domain:** Any valid card name.
 - **Is primary key:** Yes.
 - **Nullable:** No.
- text
 - **Description:** Everything in the text area of the card.
 - **Data type:** String
 - **Domain:** Any valid card text.
 - **Is primary key:** No.
 - **Nullable:** True
- power
 - **Description:** The card's power.
 - **Data type:** Integer
 - **Domain:** Any non-negative integer.
 - **Is primary key:** No.
 - **Nullable:** Yes.
- toughness
 - **Description:** The card's toughness.

- **Data type:** Integer
- **Domain:** Any non-negative integer.
- **Is primary key:** No.
- **Nullable:** Yes.
- loyalty
 - **Description:** The card’s loyalty.
 - **Data type:** Integer
 - **Domain:** Any non-negative integer.
 - **Is primary key:** No.
 - **Nullable:** Yes.

2.2 SET

The MTG wiki had the following to say about what a set is.

A set in Magic: The Gathering is a pool of cards released together and designed for the same play environment. Cards in a set can be obtained either randomly through booster packs, or in box sets that have a fixed selection of cards. An expansion symbol and, more recently, a three-character abbreviation is printed on each card to identify the set it belongs to.

2.2.1 Attributes

- set_code
 - **Description:** The alphanumeric code associated with a set.
 - **Data type:** String
 - **Domain:** Combinations of letters and digits.
 - **Is primary key:** Yes.
 - **Nullable:** No.
- set_name
 - **Description:** The name of the set.
 - **Data type:** String
 - **Domain:** Any valid set name.
 - **Is primary key:** No.
 - **Nullable:** No
- release_date

- **Description:** The date the set was released.
 - **Data type:** String
 - **Domain:** Any valid date.
 - **Is primary key:** No.
 - **Nullable:** No.
- `set_type`
 - **Description:** The type of set it is (core, expansion, etc).
 - **Data type:** String
 - **Domain:** Any valid set type.
 - **Is primary key:** No.
 - **Nullable:** No.

2.3 FORMAT

The MTG wiki had the following to say about what a format is.

Formats are different modes in which the Magic: The Gathering collectible card game can be played. Each format provides rules for deck construction and gameplay.

2.3.1 Attributes

- `format_name`
 - **Description:** The name of the format.
 - **Data type:** String
 - **Domain:** Any valid format name.
 - **Is primary key:** Yes.
 - **Nullable:** No.
- `min_deck_size`
 - **Description:** The minimum number of cards allowed in a deck.
 - **Data type:** Integer
 - **Domain:** Any non-negative integer.
 - **Is primary key:** No.
 - **Nullable:** No.
- `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.
- **Is primary key:** No.
- **Nullable:** No.
- `copies_allowed`
 - **Description:** The maximum number of copies of a card allowed in a deck.
 - **Data type:** Integer
 - **Domain:** Any non-negative integer.
 - **Is primary key:** No.
 - **Nullable:** No.
- `format_type`
 - **Description:** The type of the format (constructed, draft, etc)
 - **Data type:** String
 - **Domain:** Valid magic format types.
 - **Is primary key:** No.
 - **Nullable:** No.
- `multiplayer`
 - **Description:** If the format can be played by more than 2 people.
 - **Data type:** Boolean
 - **Domain:** Any valid boolean.
 - **Is primary key:** No.
 - **Nullable:** No.

2.4 CONTAINS

This table is the implementation of the many-to-many relationship between CARD and SET. A card may be included in many sets and A set may contain many cards.

2.4.1 Attributes

- `set_code`
 - **Description:** A foreign key from SET.
 - **Data type:** String
 - **Domain:** Combinations of letters and digits.

- **Is primary key:** Yes.
- **Nullable:** No.
- **card_name**
 - **Description:** A foreign key from CARD.
 - **Data type:** String
 - **Domain:** Any valid card name.
 - **Is primary key:** Yes.
 - **Nullable:** No.
- **rarity**
 - **Description:** The rarity of the card (common, uncommon, etc).
 - **Data type:** String
 - **Domain:** Any valid magic card rarity.
 - **Is primary key:** No.
 - **Nullable:** No.

2.5 LIMITATION

This table is the implementation of the many-to-many relationship between FORMAT and CARD. A format may limit many cards and a card may be limited by many formats.

2.5.1 Attributes

- **format_name**
 - **Description:** A foreign key from FORMAT.
 - **Data type:** String
 - **Domain:** Any valid format name.
 - **Is primary key:** Yes.
 - **Nullable:** No.
- **card_name**
 - **Description:** A foreign key from CARD.
 - **Data type:** String
 - **Domain:** Any valid card name.
 - **Is primary key:** Yes.
 - **Nullable:** No.

- `limitation_type`
 - **Description:** The way in which a card is limited (banned, restricted, etc).
 - **Data type:** String
 - **Domain:** Any valid limitation.
 - **Is primary key:** No.
 - **Nullable:** No.

2.6 COLOR

MTG wiki had the following to say about color.

Color is a basic property of cards in Magic: The Gathering, forming the core of the game’s mana system and overall strategy.

2.6.1 Attributes

- `card_name`
 - **Description:** A foreign key from CARD.
 - **Data type:** String
 - **Domain:** Any valid card name.
 - **Is primary key:** Yes.
 - **Nullable:** No.
- `color`
 - **Description:** The color a card is associated with, usually indicated by the physical color of the card.
 - **Data type:** String
 - **Domain:** Any valid magic card color.
 - **Is primary key:** No.
 - **Nullable:** No.

2.7 COLOR_COST

Due to the fact that `converted_cost` depends on `cost_string` which is not the primary key. This table solves that problem.

2.7.1 Attributes

- `card_name`
 - **Description:** A foreign key from CARD.
 - **Data type:** String
 - **Domain:** Any valid card name.
 - **Is primary key:** Yes.
 - **Nullable:** No.
- `cost_string`
 - **Description:** An alphanumeric representation of a cards mana cost.
 - **Data type:** String
 - **Domain:** Strings over the alphabet $\Sigma = \{R, U, G, B, W, X, \phi\}$ where $\phi \in \mathbb{Z}_{>0}$ and each string that contains ϕ begins with ϕ .
 - **Is primary key:** Yes.
 - **Nullable:** Yes.
- `converted_cost`
 - **Description:** The sum over a cards mana cost. Each occurrence of

Table 1: How to sum a `cost_string`.

Σ	value
<i>R</i>	1
<i>U</i>	1
<i>G</i>	1
<i>B</i>	1
<i>W</i>	1
<i>X</i>	0
ϕ	ϕ

a character in a `cost_string` is summed according to the above table.

- **Data type:** Integer
- **Domain:** Any non-negative integer.
- **Is primary key:** No.
- **Nullable:** No.

2.8 SUPERTYPE

Magic cards may have one or more supertypes, this table implements that one-to-many relationship.

2.8.1 Attributes

- card_name
 - **Description:** A foreign key from CARD.
 - **Data type:** String
 - **Domain:** Any valid card name.
 - **Is primary key:** Yes.
 - **Nullable:** No.
- supertype
 - **Description:** The supertype of the card (legendary, snow, etc).
 - **Data type:** String
 - **Domain:** Any valid magic card subtype.
 - **Is primary key:** No.
 - **Nullable:** No.

2.9 TYPE

Magic cards may have one or more types, this table implements that one-to-many relationship.

2.9.1 Attributes

- card_name
 - **Description:** A foreign key from CARD.
 - **Data type:** String
 - **Domain:** Any valid card name.
 - **Is primary key:** Yes.
 - **Nullable:** No.
- type
 - **Description:** The type of the card (creature, artifact, etc).
 - **Data type:** String
 - **Domain:** Any valid magic card type.
 - **Is primary key:** No.
 - **Nullable:** No.

2.10 SUBTYPE

Magic cards may have zero or more subtypes, this table implements that one-to-many relationship.

2.10.1 Attributes

- card_name
 - **Description:** A foreign key from CARD.
 - **Data type:** String
 - **Domain:** Any valid card name.
 - **Is primary key:** Yes.
 - **Nullable:** No.
- subtype
 - **Description:** The subtype of the card (equipment, curse, etc).
 - **Data type:** String
 - **Domain:** Any valid magic card subtype.
 - **Is primary key:** No.
 - **Nullable:** No.

2.11 COLOR_IDENTITY

Each mana symbol that appears on a card is included within that cards color identity. Each card is associated with one or more colors.

2.11.1 Attributes

- card_name
 - **Description:** A foreign key from CARD.
 - **Data type:** String
 - **Domain:** Any valid card name.
 - **Is primary key:** Yes.
 - **Nullable:** No.
- red
 - **Description:** A flag to indicate the cards alignment with red.
 - **Data type:** Boolean
 - **Domain:** Any valid boolean.
 - **Is primary key:** No.
 - **Nullable:** No.
- blue
 - **Description:** A flag to indicate the cards alignment with blue.

- **Data type:** Boolean
- **Domain:** Any valid boolean.
- **Is primary key:** No.
- **Nullable:** No.
- green
 - **Description:** A flag to indicate the cards alignment with green.
 - **Data type:** Boolean
 - **Domain:** Any valid boolean.
 - **Is primary key:** No.
 - **Nullable:** No.
- white
 - **Description:** A flag to indicate the cards alignment with white.
 - **Data type:** Boolean
 - **Domain:** Any valid boolean.
 - **Is primary key:** No.
 - **Nullable:** No.
- black
 - **Description:** A flag to indicate the cards alignment with black.
 - **Data type:** Boolean
 - **Domain:** Any valid boolean.
 - **Is primary key:** No.
 - **Nullable:** No.

3 Domain Descriptions of Certain Attributes

In this section we describe in detail and give examples of the attributes domain for those attributes that we can reasonably do so.

3.1 SET.set_type

3.1.1 Domain Values

- | | | |
|-------------|--------------------|------------------|
| • archenemy | • core | • expansion |
| • box | • draft_innovation | • from_the_vault |
| • commander | • duel_deck | • funny |

- masterpiece
- premium_deck
- token
- masters
- promo
- treasure_chest
- memorabilia
- spellbook
- planechase
- starter

3.2 CONTAINS.rarity

3.2.1 Domain Values

- common
- rare
- uncommon
- mythic

3.3 COLOR.color

3.3.1 Domain Values

- black
- colorless
- red
- blue
- green
- white

3

3.4 LIMITATION.limitation_type

3.4.1 Domain Values

- none
- restricted
- banned

3