



## 1. ART\_OBJECTS

- **Justification:**

The central entity *ART\_OBJECTS* shares the common attributes of all art objects (*Id\_no*, *Artist*, *Year*, *Title*, *Description*), which are universal to every object in the museum. Using this as a central entity reduces repetition and allows specialization for different art categories.

## 2. Specializations for ART\_OBJECTS

- **PAINTING:**

- Attributes: *Paint\_type*, *Drawn\_on*, *Style*.
- **Justification:** These attributes are specific to paintings.

- **SCULPTURE:**

- Attributes: *Material*, *Height*, *Weight*, *Style*.
- **Justification:** Sculptures and statues share attributes.

- **STATUE:**

- **Justification:** Statues are a subtype of *SCULPTURE* and inherit its attributes.

- **OTHER:**

- Attributes: *Type*, *Style*.
- **Justification:** The OTHER category captures art objects that do not fit into the primary categories.

## 3. PERMANENT\_COLLECTION and BORROWED

- **Justification:**

These entities represent a distinction in how art objects are categorized in museums.

- *PERMANENT\_COLLECTION* includes attributes of *Date\_acquired*, *Status*, and *Cost*.
- *BORROWED* includes attributes like *Collection*, *Date\_borrowed*, and *Date\_returned*.

## 4. ART\_INFO and HISTORY

- **ART\_INFO Relationship:**

- **Justification:** This relationship links *ART\_OBJECTS* with their creation details, historical information, and cultural information.

- **HISTORY Relationship:**

- **Justification:** Includes historical information about the art object's origin with *Country\_of\_origin*.

## 5. Relationships

- **Exhibits\_In (ART\_OBJECTS ↔ EXHIBITIONS):**

- **Justification:** Tracks which art objects are included in exhibitions.

- **Created\_By (ART\_OBJECTS ↔ ARTIST):**

- **Justification:** Represents the direct relationship between art objects and their artist.
- **Other\_Collection (ART\_OBJECTS ↔ OTHER\_COLLECTIONS):**
  - **Justification:** Connects art objects with their root collection if borrowed.

## Assumptions for the Art Museum Database Design

### 1. General Assumptions

- Every art object in the museum has a unique ID (*Id\_no*).
- An art object can belong to only one type (*PAINTING*, *SCULPTURE*, *STATUE*, or *OTHER*).
- Each art object can either belong to the **PERMANENT\_COLLECTION** or be **BORROWED**, but not both simultaneously.
- The museum keeps track of art objects, even if the Artist or Year is unknown.

### 2. Specialized Categories

- Paintings are classified by *Paint\_type* (e.g., oil, watercolor), the material they are drawn on (*Drawn\_on*), and their *artistic Style* (e.g., modern, abstract).
- Sculptures and statues share attributes like *Material*, *Height*, *Weight*, and *Style*.

### 3. Artists

- Each artist has a unique *Name*. If two artists share the same name, additional attributes like *Date\_born* and *Country\_of\_origin* are used for distinction.
- Not all art objects in the museum are associated with an artist.

### 4. Exhibitions

- Each exhibition has a unique *Name* and is defined by *Start\_date* and *End\_date*.
- An art object can participate in multiple exhibitions over time.

### 5. Other Collections

- The museum may borrow art objects from other collections (*OTHER\_COLLECTIONS*), which include information like *Contact\_person*, *Address*, and *Phone*.
- Each borrowed art object is linked to one specific external collection.

### 6. History

- Historical information about an art object is uses attributes like *Country\_of\_origin*.
- Art objects with incomplete or unknown historical details will have null values for these attributes.

### 7. Relationships

- An art object can be linked to only one artist (*Created\_By*) and participate in multiple exhibitions (*Exhibits\_In*).
- Each borrowed art object is linked to a single external collection (*Other\_Collection*).

### 8. Normalization

- Attributes shared by multiple art object types (e.g., *Style*) are not duplicated but stored within their respective specialization.