The Art Gallery Sales Tracking System

A system for 100 artists, 1000 pieces, 5000 customers per year Phase 1

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**E-R Diagram**

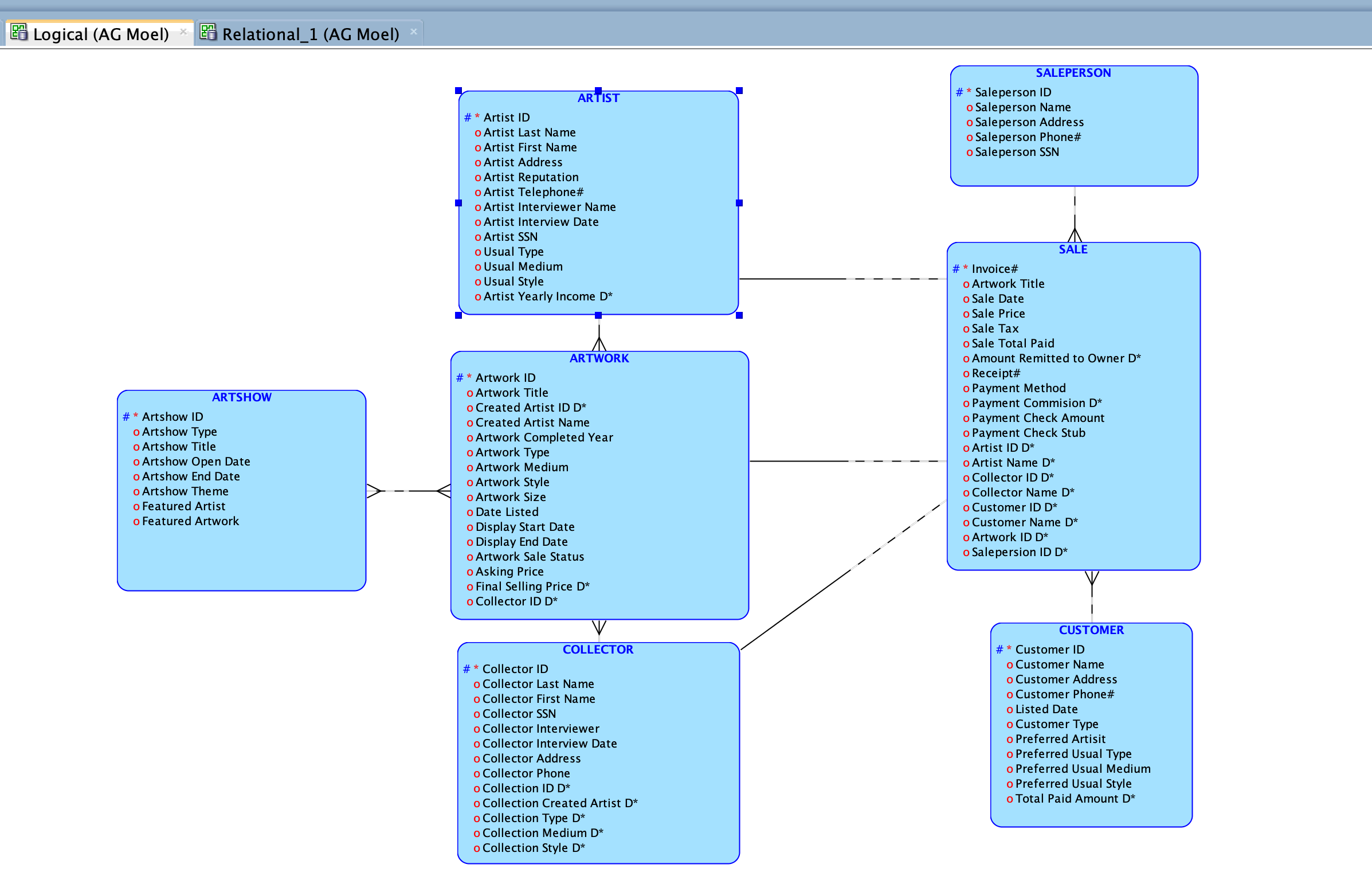


Figure1 E-R Diagram for Art Gallery Sales System

**Data dictionary for logical model**

* ARTSHOW

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale |
| Artshow ID | √ | NUMERIC | 10 |  | 0 |
| Artshow Type |  | CHAR | 20 | CHAR |  |
| Artshow Title |  | CHAR | 20 | CHAR |  |
| Artshow Open Date |  | Date |  |  |  |
| Artshow End Date |  | Date |  |  |  |
| Artshow Theme |  | CHAR | 20 | CHAR |  |
| Featured Artist |  | CHAR | 20 | CHAR |  |
| Featured Artwork |  | CHAR | 20 | CHAR |  |

* ARTIST

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale |
| Artist ID | √ | NUMERIC | 10 |  | 0 |
| Artist Last Name |  | CHAR | 20 | CHAR |  |
| Artist First Name |  | CHAR | 20 | CHAR |  |
| Artist Address |  | CHAR | 40 | CHAR |  |
| Artist Reputation |  | CHAR | 10 | CHAR |  |
| Artist Telephone# |  | Integer |  |  |  |
| Artist Interviewer Name |  | CHAR | 20 | CHAR |  |
| Artist Interview Date |  | Date |  |  |  |
| Artist SSN |  | Integer |  |  |  |
| Usual Type |  | CHAR | 20 | CHAR |  |
| Usual Medium |  | CHAR | 20 | CHAR |  |
| Usual Style |  | CHAR | 20 | CHAR |  |
| Artist Yearly Income D\* |  | NUMERIC | 8 |  | 0 |

**Data dictionary for logical model**

* ARTWORK

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale |
| Artwork ID | √ | NUMERIC | 10 |  | 0 |
| Artwork Title |  | CHAR | 20 | CHAR |  |
| Created Artist ID D\* |  | NUMERIC | 10 |  | 0 |
| Created Artist Name |  | CHAR | 20 | CHAR |  |
| Artwork Completed Year |  | Integer |  |  |  |
| Artwork Type |  | CHAR | 15 | CHAR |  |
| Artwork Medium |  | CHAR | 20 | CHAR |  |
| Artwork Style |  | CHAR | 20 | CHAR |  |
| Artwork Size |  | CHAR | 15 | CHAR |  |
| Date Listed |  | Date |  |  |  |
| Display Start Date |  | Date |  |  |  |
| Display End Date |  | Date |  |  |  |
| Artwork Sale Status |  | CHAR | 10 | CHAR |  |
| Asking Price |  | NUMERIC | 10 |  | 0 |
| Final Selling Price D\* |  | NUMERIC | 10 |  | 0 |
| Collector ID D\* |  | NUMERIC | 10 |  | 0 |

* COLLECTOR

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale |
| Collector ID | √ | NUMERIC | 10 |  | 0 |
| Collector Last Name |  | CHAR | 10 | CHAR |  |
| Collector First Name |  | CHAR | 20 | CHAR |  |
| Collector SSN |  | Integer |  |  |  |
| Collector Interviewer |  | CHAR | 20 | CHAR |  |
| Collector Interview Date |  | Date |  |  |  |
| Collector Address |  | CHAR | 20 | CHAR |  |
| Collector Phone |  | Integer |  |  |  |
| Collection ID D\* |  | CHAR | 20 | CHAR |  |
| Collection Created Artist D\* |  | CHAR | 20 | CHAR |  |
| Collection Type D\* |  | CHAR | 20 | CHAR |  |
| Collection Medium D\* |  | CHAR | 20 | CHAR |  |
| Collection Style D\* |  | CHAR | 20 | CHAR |  |

**Data dictionary for logical model**

* SALE

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale |
| Invoice# | √ | NUMERIC | 10 |  | 0 |
| Artwork Title |  | CHAR | 20 | CHAR |  |
| Sale Date |  | Date |  |  |  |
| Sale Price |  | NUMERIC | 10 |  | 0 |
| Sale Tax |  | NUMERIC | 10 |  | 0 |
| Sale Total Paid |  | NUMERIC | 10 |  | 0 |
| Amount Remitted to Owner D\* |  | NUMERIC | 10 |  | 0 |
| Receipt# |  | NUMERIC | 10 |  | 0 |
| Payment Method |  | CHAR | 20 | CHAR |  |
| Payment Commission D\* |  | NUMERIC | 10 |  | 0 |
| Payment Check Amount |  | NUMERIC | 10 |  | 0 |
| Payment Check Stub |  | NUMERIC | 10 |  | 0 |
| Artist ID D\* |  | NUMERIC | 10 |  |  |
| Artist Name D\* |  | CHAR | 20 | CHAR |  |
| Collector ID D\* |  | NUMERIC | 10 |  |  |
| Collector Name D\* |  | CHAR | 20 | CHAR |  |
| Customer ID D\* |  | NUMERIC | 10 |  |  |
| Customer Name D\* |  | CHAR | 20 | CHAR |  |
| Artwork ID D\* |  | NUMERIC | 10 |  |  |
| Saleperson ID D\* |  | NUMERIC | 10 |  |  |

* SALEPERSON

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale |
| Saleperson ID | √ | NUMERIC | 10 |  | 0 |
| Saleperson Name |  | CHAR | 20 | CHAR |  |
| Saleperson Address |  | CHAR | 40 | CHAR |  |
| Saleperson Phone# |  | Integer |  |  |  |
| Saleperson SSN |  | Integer |  |  |  |

**Data dictionary for logical model**

* CUSTOMER

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale |
| Customer ID | √ | NUMERIC | 10 |  | 0 |
| Customer Name |  | CHAR | 20 | CHAR |  |
| Customer Address |  | CHAR | 40 | CHAR |  |
| Customer Phone# |  | Integer |  |  |  |
| Listed Date |  | Date |  |  |  |
| Customer Type |  | CHAR | 20 | CHAR |  |
| Preferred Artist |  | CHAR | 20 | CHAR |  |
| Preferred Usual Type |  | CHAR | 20 | CHAR |  |
| Preferred Usual Medium |  | CHAR | 20 | CHAR |  |
| Preferred Usual Style |  | CHAR | 20 | CHAR |  |
| Total Paid Amount D\* |  | NUMERIC | 8 |  |  |

**List of assumptions for logical model**

**Assumptions：**

* Artist Yearly Income D\* is the descriptive attribute between ARTIST and SALE.
* Final Selling Price D\* is the descriptive attribute between ARTIST and ARTWORK.
* Collection ID D\*, Collection Created Artist D\*, Collection Type D\*, Collection Medium D\*, Collection Style D\* are the descriptive attributes between COLLECTOR and ARTWORK.
* Payment Commission D\*, Payment Check Amount D\*, Payment Check Stub D\*, Artist ID D\*, Artist Name D\*, Collector Name D\*, Customer Name D\* are the descriptive attributes between SALE and ARTWORK.
* Total Paid Amount D\* is the descriptive attribute between CUSTOMER and SALE.

**Default Rational Model for Art Gallery Sales System**

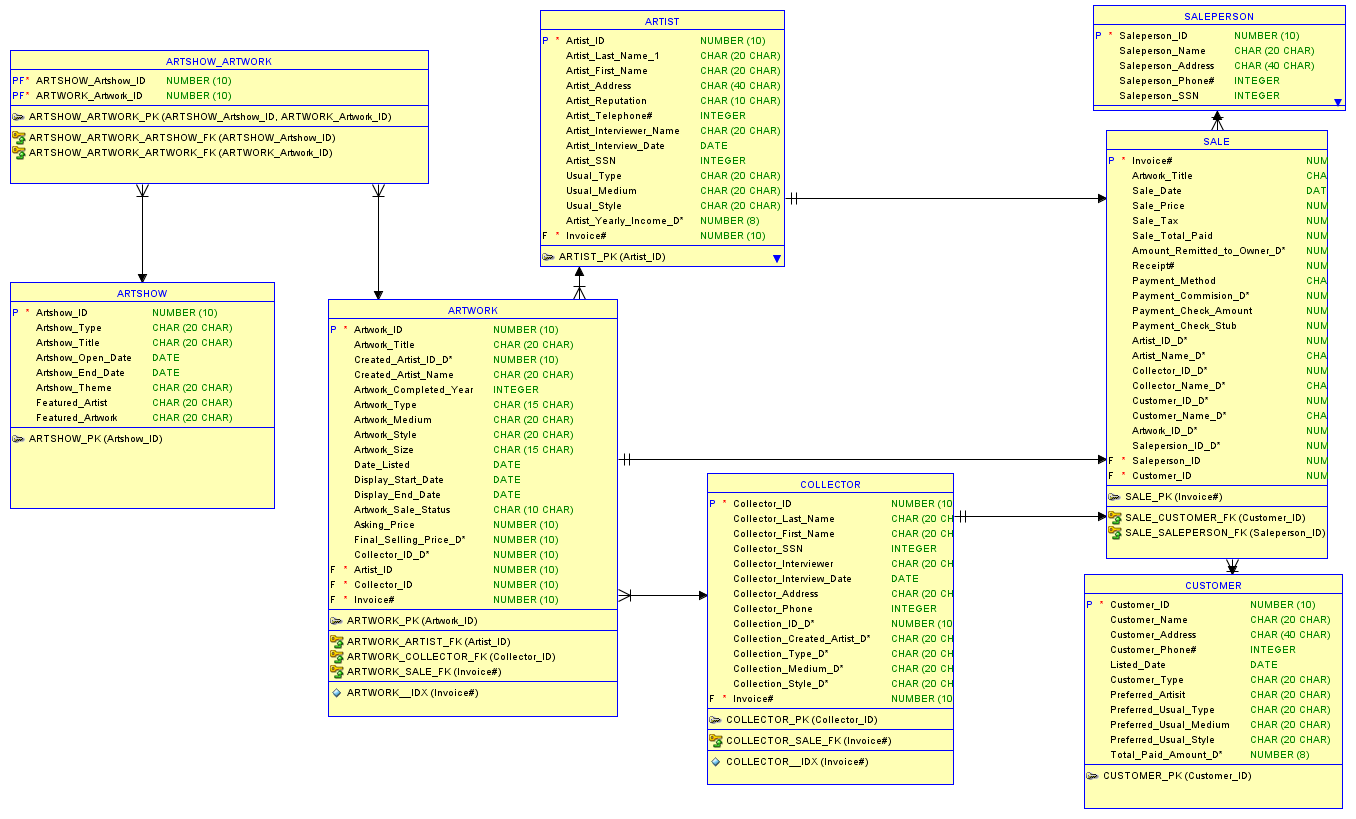


Figure2: Default Rational Model for Art Gallery Sales System

**Revised Rational Model for Art Gallery Sales System**

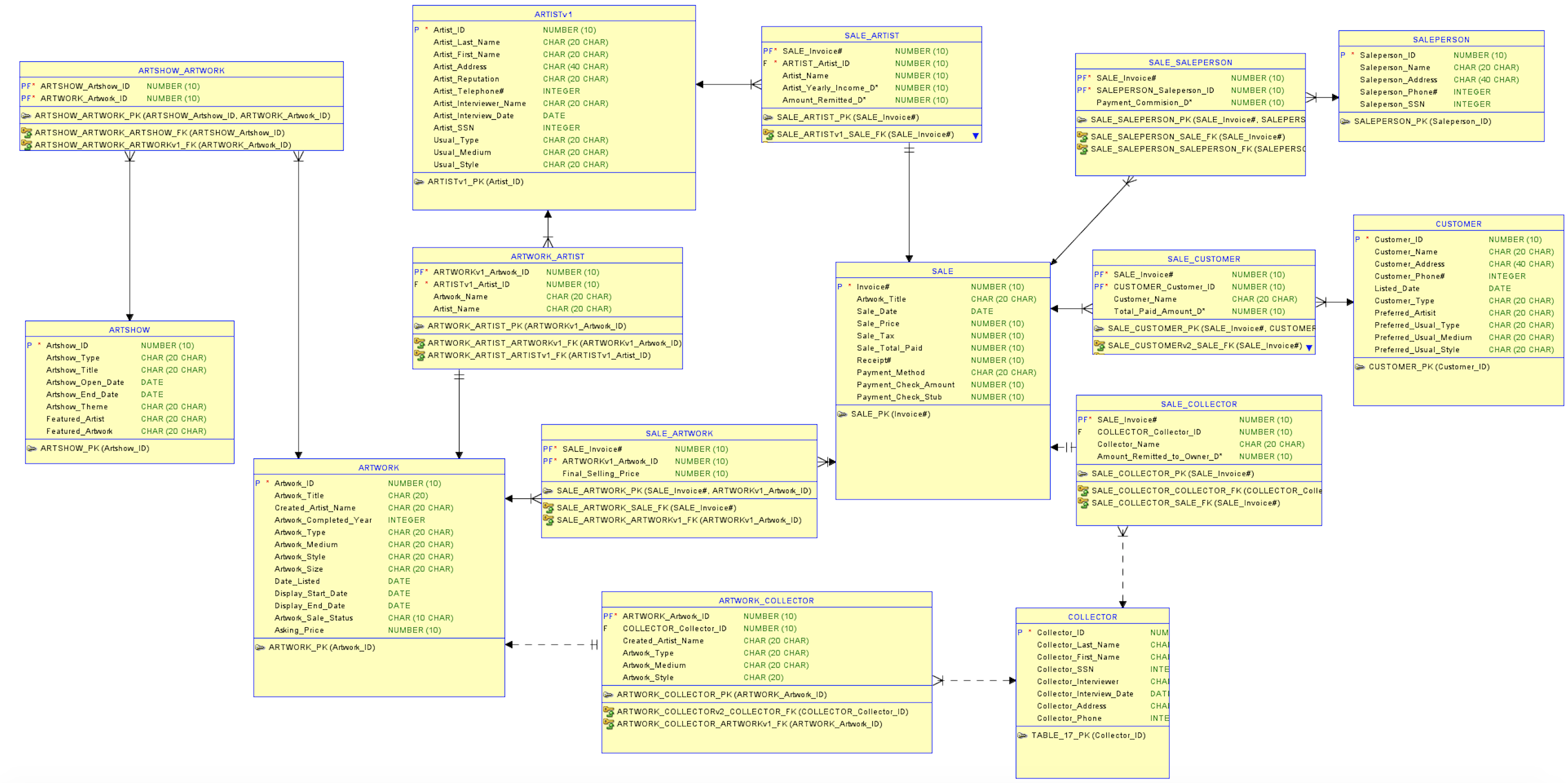


Figure3: Revised Rational Model for Art Gallery Sales System

**Data dictionary for relational model**

* ARTIST

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale |
| Artist ID | √ | NUMERIC | 10 |  | 0 |
| Artist Last Name |  | CHAR | 20 | CHAR |  |
| Artist First Name |  | CHAR | 20 | CHAR |  |
| Artist Address |  | CHAR | 40 | CHAR |  |
| Artist Reputation |  | CHAR | 10 | CHAR |  |
| Artist Telephone# |  | Integer |  |  |  |
| Artist Interviewer Name |  | CHAR | 20 | CHAR |  |
| Artist Interview Date |  | Date |  |  |  |
| Artist SSN |  | Integer |  |  |  |
| Usual Type |  | CHAR | 20 | CHAR |  |
| Usual Medium |  | CHAR | 20 | CHAR |  |
| Usual Style |  | CHAR | 20 | CHAR |  |

* ARTSHOW

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale |
| Artshow ID | √ | NUMERIC | 10 |  | 0 |
| Artshow Type |  | CHAR | 20 | CHAR |  |
| Artshow Title |  | CHAR | 20 | CHAR |  |
| Artshow Open Date |  | Date |  |  |  |
| Artshow End Date |  | Date |  |  |  |
| Artshow Theme |  | CHAR | 20 | CHAR |  |
| Featured Artist |  | CHAR | 20 | CHAR |  |
| Featured Artwork |  | CHAR | 20 | CHAR |  |

**Data dictionary for relational model**

* ARTWORK

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale |
| Artwork ID | √ | NUMERIC | 10 |  | 0 |
| Artwork Title |  | CHAR | 20 | CHAR |  |
| Created Artist Name |  | CHAR | 20 | CHAR |  |
| Artwork Completed Year |  | Integer |  |  |  |
| Artwork Type |  | CHAR | 15 | CHAR |  |
| Artwork Medium |  | CHAR | 20 | CHAR |  |
| Artwork Style |  | CHAR | 20 | CHAR |  |
| Artwork Size |  | CHAR | 15 | CHAR |  |
| Date Listed |  | Date |  |  |  |
| Display Start Date |  | Date |  |  |  |
| Display End Date |  | Date |  |  |  |
| Artwork Sale Status |  | CHAR | 10 | CHAR |  |
| Asking Price |  | NUMERIC | 10 |  | 0 |

* ARTSHOW-ARTWORK

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale | Foreign  Key |
| Artshow ID | √ | NUMERIC | 10 |  | 0 | √ |
| Artwork ID | √ | NUMERIC | 10 |  | 0 | √ |

* ARTSHOW-ARTIST

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale | Foreign  Key |
| Artwork ID | √ | NUMERIC | 10 |  | 0 |  |
| Artist ID |  | NUMERIC | 10 |  | 0 | √ |
| Artwork Name |  | CHAR | 20 | CHAR |  |  |
| Artist Name |  |  |  |  |  |  |

**Data dictionary for relational model**

* SALE

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale |
| Invoice# | √ | NUMERIC | 10 |  | 0 |
| Artwork Title |  | CHAR | 20 | CHAR |  |
| Sale Date |  | Date |  |  |  |
| Sale Price |  | NUMERIC | 10 |  | 0 |
| Sale Tax |  | NUMERIC | 10 |  | 0 |
| Sale Total Paid |  | NUMERIC | 10 |  | 0 |
| Receipt# |  | NUMERIC | 10 |  | 0 |
| Payment Method |  | CHAR | 20 | CHAR |  |
| Payment Check Amount |  | NUMERIC | 10 |  | 0 |
| Payment Check Stub |  | NUMERIC | 10 |  | 0 |

* SALE-ARTIST

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale | Foreign  Key |
| Invoice# | √ | NUMERIC | 10 |  | 0 | √ |
| Artist ID |  | NUMERIC | 10 |  | 0 | √ |
| Artist Name |  | NUMERIC | 10 |  | 0 |  |
| Artist Yearly Income D\* |  | NUMERIC | 10 |  | 0 |  |
| Amount Remitted D\* |  | NUMERIC | 10 |  | 0 |  |

* SALE-ARTWORK

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale | Foreign  Key |
| Invoice# | √ | NUMERIC | 10 |  | 0 | √ |
| Artist ID | √ | NUMERIC | 10 |  | 0 | √ |
| Final Selling Price |  | NUMERIC | 10 |  | 0 |  |

**Data dictionary for relational model**

* COLLECTOR

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale |
| Collector ID | √ | NUMERIC | 10 |  | 0 |
| Collector Last Name |  | CHAR | 10 | CHAR |  |
| Collector First Name |  | CHAR | 20 | CHAR |  |
| Collector SSN |  | Integer |  |  |  |
| Collector Interviewer |  | CHAR | 20 | CHAR |  |
| Collector Interview Date |  | Date |  |  |  |
| Collector Address |  | CHAR | 20 | CHAR |  |
| Collector Phone |  | Integer |  |  |  |

* SALE-COLLECTOR

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale | Foreign  Key |
| Invoice# | √ | NUMERIC | 10 |  | 0 | √ |
| Collector ID |  | NUMERIC | 10 |  | 0 | √ |
| Collector Name D\* |  | CHAR | 20 | CHAR |  |  |
| Amount Remitted to Owner D\* |  | NUMERIC | 10 |  | 0 |  |

* ARTWORK-COLLECTOR

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale | Foreign  Key |
| Artwork ID | √ | NUMERIC | 10 |  | 0 | √ |
| Collector ID |  | NUMERIC | 10 |  | 0 | √ |
| Created Artist Name D\* |  | CHAR | 20 | CHAR |  |  |
| Artwork Type D\* |  | CHAR | 20 | CHAR |  |  |
| Artwork Medium D\* |  | CHAR | 20 | CHAR |  |  |
| Artwork Style |  | CHAR | 20 | CHAR |  |  |

**Data dictionary for relational model**

* SALEPERSON

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale |
| Saleperson ID | √ | NUMERIC | 10 |  | 0 |
| Saleperson Name |  | CHAR | 20 | CHAR |  |
| Saleperson Address |  | CHAR | 40 | CHAR |  |
| Saleperson Phone# |  | Integer |  |  |  |
| Saleperson SSN |  | Integer |  |  |  |

* SALE-SALEPERSON

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale | Foreign  Key |
| Invoice# | √ | NUMERIC | 10 |  | 0 | √ |
| Saleperson ID | √ | NUMERIC | 10 |  | 0 | √ |
| Payment Commission D\* |  | NUMERIC | 10 |  |  |  |

* CUSTOMER

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale |
| Customer ID | √ | NUMERIC | 10 |  | 0 |
| Customer Name |  | CHAR | 20 | CHAR |  |
| Customer Address |  | CHAR | 40 | CHAR |  |
| Customer Phone# |  | Integer |  |  |  |
| Listed Date |  | Date |  |  |  |
| Customer Type |  | CHAR | 20 | CHAR |  |
| Preferred Artist |  | CHAR | 20 | CHAR |  |
| Preferred Usual Type |  | CHAR | 20 | CHAR |  |
| Preferred Usual Medium |  | CHAR | 20 | CHAR |  |
| Preferred Usual Style |  | CHAR | 20 | CHAR |  |

* SALE-CUSTOMER

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Attribute | Primary Key | Type | Precision (size) | Units | Scale | Foreign  Key |
| Invoice# | √ | NUMERIC | 10 |  | 0 | √ |
| Customer ID | √ | NUMERIC | 10 |  | 0 | √ |
| Customer Name |  | CHAR | 20 | CHAR |  |  |
| Total Paid Amount D\* |  | NUMERIC | 10 |  |  |  |

**List of assumptions for revised relational model**

**Assumptions：**

* Descriptive attributes below are into the appropriate tables:
  + Artist Yearly Income D\* is the descriptive attribute between ARTIST and SALE.
  + Final Selling Price D\* is the descriptive attribute between ARTIST and ARTWORK.
  + Collection ID D\*, Collection Created Artist D\*, Collection Type D\*, Collection Medium D\*, Collection Style D\* are the descriptive attributes between COLLECTOR and ARTWORK.
  + Payment Commission D\*, Payment Check Amount D\*, Payment Check Stub D\*, Artist ID D\*, Artist Name D\*, Collector Name D\*, Customer Name D\* are the descriptive attributes between SALE and ARTWORK.
  + Total Paid Amount D\* is the descriptive attribute between CUSTOMER and SALE.
* Keep all relationship tables with descriptive attributes (1:1, 1: M, M: 1 & M: N).
* If relationship is 1:1 either unique identifier can be primary key.
* Both unique identifiers together become the primary key of the M: N table.