**Entity Relationship Diagram**

**Diagram, schematic

Description automatically generated**

**Database Diagram from SQL Server after tables creation with PK and FK**

Diagram

Description automatically generated

**Database Design Explanation**

List all the tables and their fields. Indicate the PK and FK and their referenced tables

1. Table – Name the table
2. Purpose – State what the table is used for and contains what details
3. Field – List all the columns of the table
4. DataType – State varchar, integer, decimal etc
5. Primary Key – List the PK (Simple or Composite)
6. Foreign Key – List the FK (Simple or Composite) and its reference table

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| **Table 1** | **Purpose** | **Field** | **DataType** | **Primary Key** | **Foreign Key** |
| store\_relation | Record location/necessary information of all stores as well as assign unique identifier for each store. | store\_id | VARCHAR (7) NOT NULL | store\_id (Simple) | NONE |
| store\_location | VARCHAR (100) NOT NULL |
| country | VARCHAR (100) NOT NULL |
| store\_state | VARCHAR (100) NOT NULL |
| city | VARCHAR (100) NOT NULL |
| street | VARCHAR(100) NOT NULL |
| zip\_code | VARCHAR (5) NOT NULL |

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| **Table 2** | **Purpose** | **Field** | **DataType** | **Primary Key** | **Foreign Key** |
| category\_relation | Record category names and assign unique identifier to each category. | category\_id | VARCHAR (7) NOT NULL | category\_id (Simple) | NONE |
| category\_name | VARCHAR (100) NOT NULL |

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| **Table 3** | **Purpose** | **Field** | **DataType** | **Primary Key** | **Foreign Key** |
| catalog\_relation | Record common attributes of all items (price, image, etc) as well as assign a item category and a unique identifier for each item. | item\_id | VARCHAR (7) NOT NULL | item\_id (Simple) | category\_id references category\_relation category\_id (Simple) |
| category\_id | VARCHAR (7) NOT NULL |
| display\_name | VARCHAR (100) NOT NULL |
| charge | DECIMAL (7,2) NOT NULL |
| image\_url | VARCHAR (300) NOT NULL |

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| **Table 4** | **Purpose** | **Field** | **DataType** | **Primary Key** | **Foreign Key** |
| vcr\_relation | Records information of all VCRs the company has | item\_id | VARCHAR (7) NOT NULL | item\_id (Simple) | item\_id references catalog\_relation item\_id |
| vcr\_type | VARCHAR (100) NOT NULL |
| vcr\_brand | VARCHAR (100) NOT NULL |
| made\_by | VARCHAR (100) NOT NULL |
| purchase\_date | DATE NOT NULL |

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| **Table 5** | **Purpose** | **Field** | **DataType** | **Primary Key** | **Foreign Key** |
| vidcam\_relation | Records information of all video cameras that the company has | item\_id | VARCHAR (7) NOT NULL | item\_id (Simple) | item\_id references catalog\_relation item\_id |
| vidcam\_brand | VARCHAR (100) NOT NULL |
| made\_by | VARCHAR (100) NOT NULL |
| purchase\_date | DATE NOT NULL |

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| **Table 6** | **Purpose** | **Field** | **DataType** | **Primary Key** | **Foreign Key** |
| movie\_relation | Records information of all movies that the company has | item\_id | VARCHAR (7) NOT NULL | item\_id (Simple) | item\_id references catalog\_relation item\_id |
| director | VARCHAR (100) NOT NULL |
| producer | VARCHAR (100) NOT NULL |
| actor | VARCHAR (100) NOT NULL |
| actor\_2 | VARCHAR (100) NOT NULL |
| genre | VARCHAR (50) NOT NULL |
| movie\_medium | VARCHAR (50) NOT NULL |

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| **Table 7** | **Purpose** | **Field** | **DataType** | **Primary Key** | **Foreign Key** |
| item\_count\_relation | Gives every store an assigned count of every item in the catalog | item\_id | VARCHAR (7) NOT NULL | item\_id, store\_id  (Composite) | item\_id references catalog\_relation item\_id |
| store\_id | VARCHAR (7) NOT NULL |
| assigned\_count | INTEGER NOT NULL |

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| **Table 8** | **Purpose** | **Field** | **DataType** | **Primary Key** | **Foreign Key** |
| inventory\_relation | Gives every copy of an item a unique identifier as well as record the store it is currently located in and its status (available/not available) | unit\_id | VARCHAR (7) NOT NULL | unit\_id (Simple) | item\_id references catalog\_relation item\_id  store\_id references store\_relation store\_id |
| unit\_status | VARCHAR (13) NOT NULL |
| item\_id | VARCHAR (7) NOT NULL |
| store\_id | VARCHAR (7) NOT NULL |

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| **Table 9** | **Purpose** | **Field** | **DataType** | **Primary Key** | **Foreign Key** |
| customer\_relation | Records all customer information such as their address and bank card, also assigns unique identifier for each customer. | customer\_id | VARCHAR (7) NOT NULL | customer\_id (Simple) | NONE |
| first\_name | VARCHAR (100) NOT NULL |
| last\_name | VARCHAR (100) NOT NULL |
| minit | VARCHAR (5) NOT NULL |
| country | VARCHAR (100) NOT NULL |
| cust\_state | VARCHAR (100) NOT NULL |
| city | VARCHAR (100) NOT NULL |
| street | VARCHAR (100) NOT NULL |
| zip\_code | VARCHAR (5) NOT NULL |
| cust\_password | VARCHAR (100) NOT NULL |
| phone | VARCHAR (15) NOT NULL |
| driver\_license | VARCHAR (30) NOT NULL |
| card\_number | VARCHAR (30) NOT NULL |
| card\_type | VARCHAR (100) NOT NULL |

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| **Table 10** | **Purpose** | **Field** | **DataType** | **Primary Key** | **Foreign Key** |
| employee\_relation | Records all employee information, such as their location, pay rate and pay type. Also assigns unique identifier to each employee | employee\_id | VARCHAR (7) NOT NULL | employee\_id (Simple) | store\_id references store\_relation store\_id |
| first\_name | VARCHAR (100) NOT NULL |
| last\_name | VARCHAR (100) NOT NULL |
| minit | VARCHAR (5) NOT NULL |
| country | VARCHAR (100) NOT NULL |
| cust\_state | VARCHAR (100) NOT NULL |
| city | VARCHAR (100) NOT NULL |
| street | VARCHAR (100) NOT NULL |
| zip\_code | VARCHAR (5) NOT NULL |
| title | VARCHAR (50) NOT NULL |
| pay\_type | VARCHAR (16) NOT NULL |
| pay\_rate | DEC (5, 2) NOT NULL |
| store\_id | VARCHAR (7) NOT NULL |

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| **Table 11** | **Purpose** | **Field** | **DataType** | **Primary Key** | **Foreign Key** |
| transaction\_relation | Records all transactions (rent/reserve) made by customers for all the stores as well as the start and due date of the transaction | transaction\_id | VARCHAR (7) NOT NULL | transaction\_id (Simple) | customer\_id references customer\_relation customer\_id  store\_id references store\_relation store\_id |
| transaction\_type | VARCHAR (50) NOT NULL |
| customer\_id | VARCHAR (7) NOT NULL |
| store\_id | VARCHAR (7) NOT NULL |
| date\_start | DATE NOT NULL |
| date\_end | DATE NOT NULL |

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| **Table 12** | **Purpose** | **Field** | **DataType** | **Primary Key** | **Foreign Key** |
| rent\_reserve\_relation | Records all units that are rented/reserved in a transaction | transaction\_id | VARCHAR (7) NOT NULL | transaction\_id,  unit\_id  (Composite) | transaction\_id references transaction\_relation transaction\_id  unit\_id referenes inventory\_relation unit\_id |
| unit\_id | VARCHAR (7) NOT NULL |

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| **Table 13** | **Purpose** | **Field** | **DataType** | **Primary Key** | **Foreign Key** |
| payment\_relation | Records payment made for every transaction as well as the payment date and penalty fee (for late payment) | transaction\_id | VARCHAR (7) NOT NULL | transaction\_id (Simple) | transaction\_id references transaction\_relation transaction\_id |
| rental\_fee | DEC (9,2) NOT NULL |
| penalty\_fee | DEC (9,2) NOT NULL |
| payment\_date | DATE NOT NULL |

**SQL Queries and Results**

|  |  |
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| Query 1 | Query 1 Results |
|  |  |
| Query 2(i) | Query 2(i) Results |
|  |  |
| Query 2(ii) | Query 2(ii) Results |
|  |  |
| Query 3 | Query 3 Results |
|  |  |
| Query 4 | Query 4 Results |
|  |  |
| Query 5 | Query 5 Results |
|  |  |
| Query 6 | Query 6 Results |
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