**PHYSICAL DATA MODEL SPECIFICATION**

**Interface Design – Data modeling**

1. **Data Modeling**
   1. **Media**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | PK | FK | Column Name | Data Type | Mandatory | Description |
| 1 | x |  | id | integer | Yes | ID, auto increment |
| 2 |  |  | category | varchar(45) | Yes | Media type, e.g., CD, DVD |
| 3 |  |  | price | integer | Yes | Current price |
| 4 |  |  | quantity | integer | Yes | Number of products |
| 5 |  |  | title | varchar(45) | Yes | Product name |
| 6 |  |  | Value | integer | Yes | Value of the product |
| 7 |  |  | imageUrl | varchar(45) | Yes | Product image path |

* 1. **CD**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | PK | FK | Column Name | Data Type | Mandatory | Description |
| 1 |  | x | id | integer | Yes | ID, same as ID of Media of which type is CD |
| 2 |  |  | artist | varchar(45) | Yes | Artist’s name |
| 3 |  |  | recordLable | varchar(45) | Yes | Record label |
| 4 |  |  | musicType | varchar(45) | Yes | Music genres |
| 5 |  |  | releasedDate | DATE | No | Release date |

* 1. **Book**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | PK | FK | Column Name | Data Type | Mandatory | Description |
| 1 |  | x | id | integer | Yes | ID, same as ID of Media of which type is Book |
| 2 |  |  | author | varchar(45) | Yes | Author |
| 3 |  |  | coverType | integer | Yes | Cover type |
| 4 |  |  | publisher | varchar(45) | Yes | Publishing house |
| 5 |  |  | publishDate | DATETIME | Yes | Date of publishing |
| 6 |  |  | numOfPages | integer | Yes | Page number |
| 7 |  |  | language | varchar(45) | Yes | Language |
| 8 |  |  | bookCategory | varchar(45) | Yes | Book category |

* 1. **DVD**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | PK | FK | Column Name | Data Type | Mandatory | Description |
| 1 |  | x | id | integer | Yes | ID, same as ID of Media of which type is DVD |
| 2 |  |  | discType | varchar(45) | Yes | Disc type |
| 3 |  |  | director | varchar(45) | Yes | Director |
| 4 |  |  | runtime | integer | Yes | Duration |
| 5 |  |  | studio | varchar(45) | Yes | Manufacture |
| 6 |  |  | subtitle | varchar(45) | Yes | Subtitles |
| 7 |  |  | releasedDate | DATETIME | Yes | Release date |
| 8 |  |  | filmType | varchar(45) | Yes | Genres |

* 1. **Card**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | PK | FK | Column Name | Data Type | Mandatory | Description |
| 1 | x |  | id | integer | Yes | ID, auto increment |
| 2 |  |  | cardCode | varchar(45) | Yes | Card code |
| 3 |  |  | owner | varchar(45) | Yes | Cardholders |
| 4 |  |  | cvvCode | varchar(3) | Yes | CVV code |
| 5 |  |  | DateExpired | varchar(4) | Yes | Expiration date |

* 1. **DeliveryInfo**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | PK | FK | Column Name | Data Type | Mandatory | Description |
| 1 | x |  | id | integer | Yes | ID, auto increment |
| 2 |  |  | name | varchar(45) | Yes | Receiver name |
| 3 |  |  | province | varchar(45) | Yes | Provinces |
| 4 |  |  | instructions | varchar(45) | Yes | Delivery instructions |
| 5 |  |  | address | varchar(45) | Yes | Delivery address |
| 6 |  |  | rushHour | varchar(45) | Yes | Rush delivery information |

* 1. **PaymentTransaction**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | PK | FK | Column Name | Data Type | Mandatory | Description |
| 1 | x |  | id | integer | Yes | ID |
| 2 |  |  | createAt | DATETIME | Yes | Date of creation |
| 3 |  |  | content | varchar(45) | Yes | Transaction contents |
| 4 |  |  | paymentMethod | varchar(45) | Yes | Payment methods |
| 5 |  |  | cardID | Integer | Yes | ID of used card |
| 6 |  |  | invoiceId | integer | Yes | Invoice |

* 1. **Order**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | PK | FK | Column Name | Data Type | Mandatory | Description |
| 1 | x |  | id | integer | Yes | ID |
| 2 |  |  | shippingFees | varchar(45) | Yes | Shipping Fee |
| 3 |  | x | deliveryInfoId | integer | Yes | Delivery Information ID |
| 4 |  |  | isRushOrder | Boolean | Yes | Check if order is rush |

* 1. **OrderMedia**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | PK | FK | Column Name | Data Type | Mandatory | Description |
| 1 |  | x | mediaID | integer | Yes | Media ID |
| 2 |  | x | orderID | integer | Yes | Order ID |
| 3 |  |  | price | integer | Yes | Current price |
| 4 |  |  | quantity | integer | Yes | Number of products |
| 5 | x |  | id | integer | Yes | ID, auto increment |

* 1. **Invoice**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | PK | FK | Column Name | Data Type | Mandatory | Description |
| 1 | x |  | id | integer | Yes | ID |
| 2 |  |  | totalAmount | integer | Yes | Total |
| 3 |  | x | orderID | integer | Yes | Order ID |

* 1. **DeliveryOrderMedia**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | PK | FK | Column Name | Data Type | Mandatory | Description |
| 1 | x | x | deliveryInfoId | integer | Yes | ID, Delivery Information ID |
| 2 | x | x | orderMediaId | integer | Yes | ID, Order Media ID |

1. **Database script**

BEGIN;

CREATE TABLE "Media"(

"id" INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,

"category" VARCHAR(45) NOT NULL,

"price" INTEGER NOT NULL,

"quantity" INTEGER NOT NULL,

"title" VARCHAR(45) NOT NULL,

"value" INTEGER NOT NULL,

"imageUrl" VARCHAR(45) NOT NULL

);

CREATE TABLE "CD"(

"id" INTEGER PRIMARY KEY NOT NULL,

"artist" VARCHAR(45) NOT NULL,

"recordLabel" VARCHAR(45) NOT NULL,

"musicType" VARCHAR(45) NOT NULL,

"releasedDate" DATE,

CONSTRAINT "fk\_CD\_Media1" FOREIGN KEY("id") REFERENCES "Media"("id")

);

CREATE TABLE "Book"(

"id" INTEGER PRIMARY KEY NOT NULL,

"author" VARCHAR(45) NOT NULL,

"coverType" VARCHAR(45) NOT NULL,

"publisher" VARCHAR(45) NOT NULL,

"publishDate" DATETIME NOT NULL,

"numOfPages" INTEGER NOT NULL,

"language" VARCHAR(45) NOT NULL,

"bookCategory" VARCHAR(45) NOT NULL,

CONSTRAINT "fk\_Book\_Media1" FOREIGN KEY("id") REFERENCES "Media"("id")

);

CREATE TABLE "DeleveryInfo"(

"id" INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,

"name" VARCHAR(45),

"province" VARCHAR(45),

"instructions" VARCHAR(200),

"address" VARCHAR(100)

);

CREATE TABLE "RushDeleveryInfo"(

"id" INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,

"name" VARCHAR(45),

"province" VARCHAR(45),

"instructions" VARCHAR(200),

"address" VARCHAR(100),

"rushShippingTime" DATETIME NOT NULL

);

CREATE TABLE "Card"(

"id" INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,

"cardCode" VARCHAR(15) NOT NULL,

"owner" VARCHAR(45) NOT NULL,

"cvvCode" VARCHAR(3) NOT NULL,

"dateExpired" VARCHAR(4) NOT NULL

);

CREATE TABLE "DVD"(

"id" INTEGER PRIMARY KEY NOT NULL,

"discType" VARCHAR(45) NOT NULL,

"director" VARCHAR(45) NOT NULL,

"runtime" INTEGER NOT NULL,

"studio" VARCHAR(45) NOT NULL,

"subtitle" VARCHAR(45) NOT NULL,

"releasedDate" DATETIME,

CONSTRAINT "fk\_DVD\_Media1" FOREIGN KEY("id") REFERENCES "Media"("id")

);

CREATE TABLE "Order"(

"id" INTEGER NOT NULL,

"shippingFees" VARCHAR(45),

"deleveryInfoId" INTEGER NOT NULL,

PRIMARY KEY("id", "deleveryInfoId"),

CONSTRAINT "fk\_Order\_DeleveryInfo1" FOREIGN KEY("deleveryInfoId") REFERENCES "DeleveryInfo"("id")

);

CREATE TABLE "RushOrder"(

"id" INTEGER NOT NULL,

"rushDeleveryInfoId" INTEGER NOT NULL,

PRIMARY KEY("id"),

CONSTRAINT "fk\_RushOrder\_Order1" FOREIGN KEY("id") REFERENCES "Order"("id"),

CONSTRAINT "fk\_RushOrder\_RushDeleveryInfo1" FOREIGN KEY("rushDeleveryInfoId") REFERENCES "RushDeleveryInfo"("id")

);

CREATE INDEX "Order.fk\_Order\_DeleveryInfo1\_idx" ON "Order" ("deleveryInfoId");

CREATE TABLE "OrderMedia"(

"orderID" INTEGER NOT NULL,

"price" INTEGER NOT NULL,

"quantity" INTEGER NOT NULL,

"mediaId" INTEGER NOT NULL,

PRIMARY KEY("orderID", "mediaId"),

CONSTRAINT "fk\_ordermedia\_order" FOREIGN KEY("orderID") REFERENCES "Order"("id"),

CONSTRAINT "fk\_OrderMedia\_Media1" FOREIGN KEY("mediaId") REFERENCES "Media"("id")

);

CREATE INDEX "OrderMedia.fk\_ordermedia\_order\_idx" ON "OrderMedia" ("orderID");

CREATE INDEX "OrderMedia.fk\_OrderMedia\_Media1\_idx" ON "OrderMedia" ("mediaId");

CREATE TABLE "Invoice"(

"id" INTEGER PRIMARY KEY NOT NULL,

"totalAmount" INTEGER NOT NULL,

"orderId" INTEGER NOT NULL,

CONSTRAINT "fk\_Invoice\_Order1" FOREIGN KEY("orderId") REFERENCES "Order"("id")

);

CREATE INDEX "Invoice.fk\_Invoice\_Order1\_idx" ON "Invoice" ("orderId");

CREATE TABLE "PaymentTransaction"(

"id" INTEGER NOT NULL,

"createAt" DATETIME NOT NULL,

"content" VARCHAR(45) NOT NULL,

"method" VARCHAR(45),

"cardId" INTEGER NOT NULL,

"invoiceId" INTEGER NOT NULL,

PRIMARY KEY("id", "cardId", "invoiceId"),

CONSTRAINT "fk\_PaymentTransaction\_Card1" FOREIGN KEY("cardId") REFERENCES "Card"("id"),

CONSTRAINT "fk\_PaymentTransaction\_Invoice1" FOREIGN KEY("invoiceId") REFERENCES "Invoice"("id")

);

CREATE INDEX "PaymentTransaction.fk\_PaymentTransaction\_Card1\_idx" ON "PaymentTransaction" ("cardId");

CREATE INDEX "PaymentTransaction.fk\_PaymentTransaction\_Invoice1\_idx" ON "PaymentTransaction" ("invoiceId");

COMMIT;