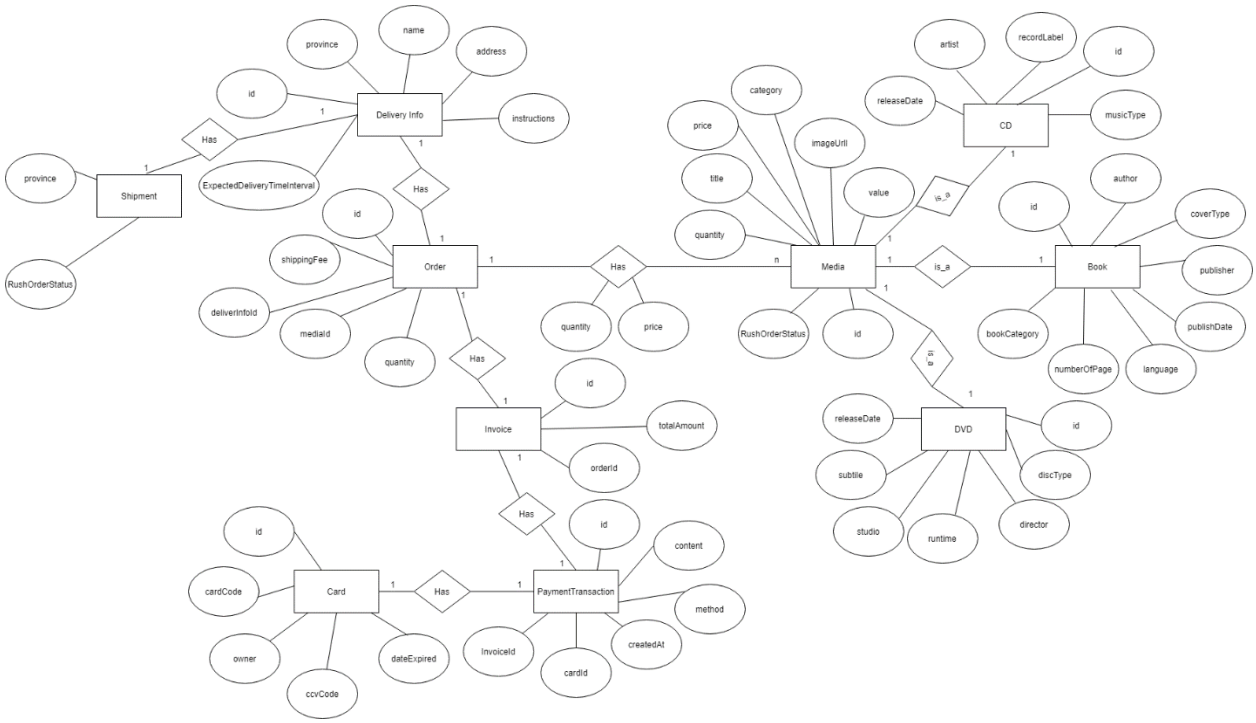
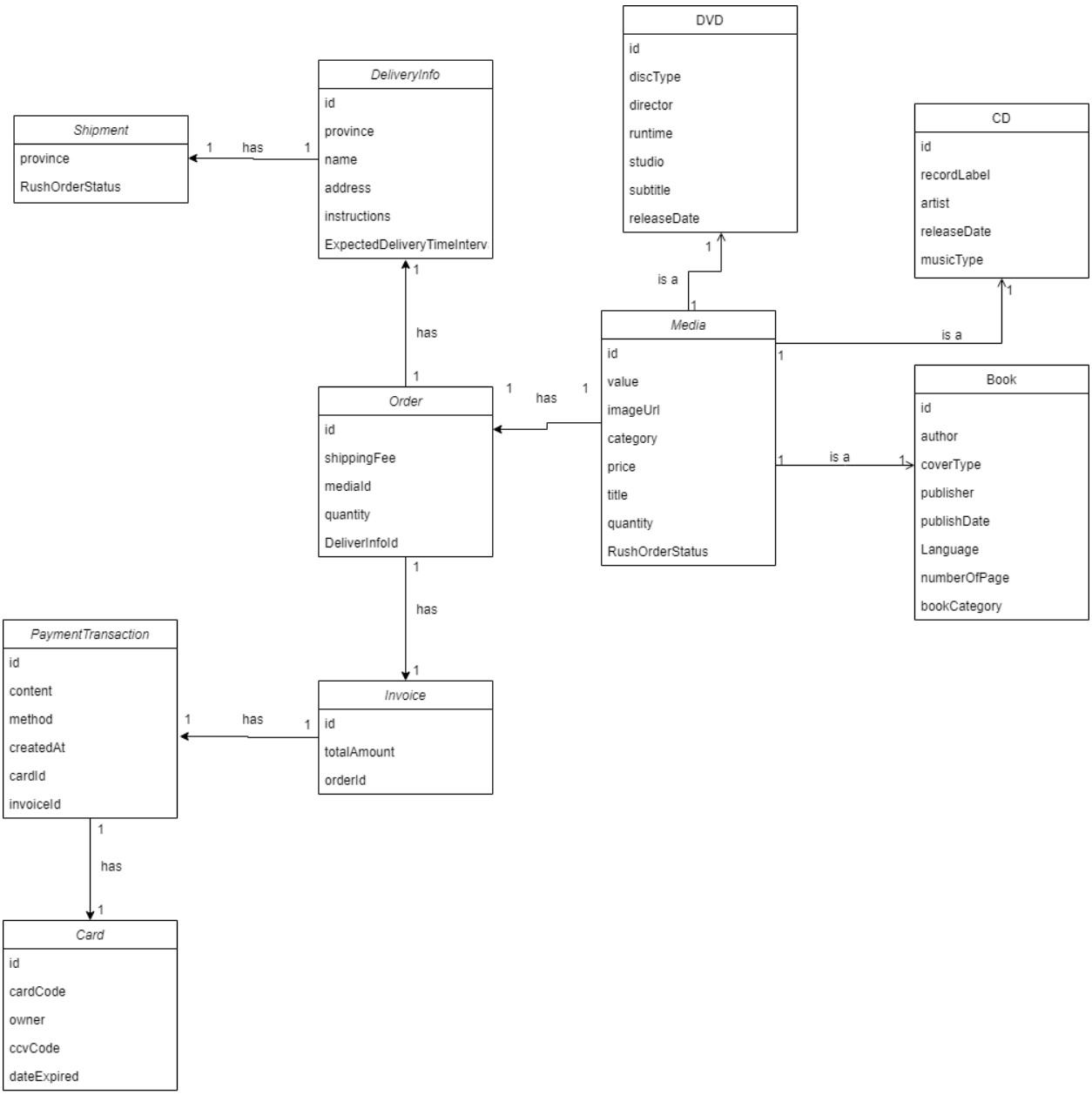
DATA MODELING

1. ER Diagram:



2. Logical Data Model:



3. Physical Data Model:

- Media

#	PK	FK	Column Name	Data Type	Mandatory	Description
1	x		id	Integer	yes	ID, auto increment

2			value	Integer	Yes	Value of product
3			imageUrl	VARCHAR(45)	Yes	Product image path
4			category	VARCHAR(45)	Yes	Media type: CD, DVD, …
5			price	Integer	Yes	Current price
6			title	VARCHAR(45)	Yes	Product name
7			quantity	Integer	Yes	Number of products
8			RushOrderStatus	Boolean	Yes	Product supports rush order status or not

- CD:

#	PK	FK	Column Name	Data Type	Mandatory	Description
1		x	id	Integer	yes	ID, same as ID of Media
2			recordLabel	VARCHAR(45)	Yes	Record Label
3			artist	VARCHAR(45)	Yes	Artist's name
4			releaseDate	DATE	Yes	Release Date
5			musicType	VARCHAR(45)	Yes	Music Genre

- DVD:

#	PK	FK	Column Name	Data Type	Mandatory	Description
1		x	id	Integer	Yes	ID, same as ID of Media
2			discType	VARCHAR(45)	Yes	Disc type
3			director	VARCHAR(45)	Yes	Director
4			runtime	Integer	Yes	Duration
5			studio	VARCHAR(45)	Yes	Manufacturer
6			subtitle	VARCHAR(45)	Yes	Subtitles
7			releaseDate	DATETIME	Yes	Release date

- Book:

#	PK	FK	Column Name	Data Type	Mandatory	Description
1		x	id	Integer	Yes	ID, same as ID of Media
2			author	VARCHAR(45)	Yes	Author
3			coverType	VARCHAR(45)	Yes	Cover type
4			publisher	VARCHAR(45)	Yes	Publishing house

5			publishDate	DATETIME	Yes	Date of publishing
6			language	VARCHAR(45)	Yes	Language
7			numberOfPage	Integer	Yes	Page number
8			bookCategory	VARCHAR(45)	yes	Book category

- Order:

#	PK	FK	Column Name	Data Type	Mandatory	Description
1	x		id	Integer	Yes	ID of order, auto increment
2			shippingFee	Integer	Yes	Shipping Fee
3		x	deliveryInfoId	Integer	Yes	Delivery info ID
4		x	mediaId	Integer	yes	Product ID in Order
5			quantity	Integer	yes	Number of product

- Delivery info:

#	PK	FK	Column Name	Data Type	Mandatory	Description
1	x		id	Integer	Yes	ID of delivery, auto increment

			Name	VARCHAR(45)	Yes	Name
			Province	VARCHAR(45)	Yes	Province
			Address	VARCHAR(100)	Yes	Address
			Instructions	VARCHAR(200)	Yes	Instructions
			ExpectedDeliveryTimeInterval	DATETIME	Yes	Expect Delivery Time

- **Shipment:**

#	PK	FK	Column Name	Data Type	Mandatory	Description
1		x	province	VARCHAR(45)	Yes	Province of shipping
2			RushOrderStatus	boolean	Yeas	Province supports rush order or not

- **Invoice:**

#	PK	FK	Column Name	Data Type	Mandatory	Description
1	x		id	integer	Yes	ID of invoice
2			totalAmount	integer	yes	Total Amount
3		x	orderId	Integer	yes	Order ID

- Payment transaction:

#	PK	FK	Column Name	Data Type	Mandatory	Description
1	x		id	integer	Yes	ID of order
2			content	VARCHAR(45)	Yes	Transaction contents
3			method	VARCHAR(45)	Yes	Payment methods
4			createdAt	DATETIME	Yes	Date of creation
5		x	cardId	Integer	Yes	ID of used card
6		x	invoiceId	Integer	Yes	Invoice ID

- Card:

#	PK	FK	Column Name	Data Type	Mandatory	Description
1	x		id	integer	Yes	ID of card, 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

4. Database Script:

```
BEGIN;
CREATE TABLE "aims"."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,
        “RushOrderStatus” BOOLEAN NOT NULL
);


CREATE TABLE "aims"."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  "aims"."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 “aims”.”DCD”(
        “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,
	“releaseDate” DATETIME NOT NULL,
	“filmType VARCHAR(45) NOT NULL,
	CONSTRAINT "fk_DVD_Media1"
		FOREIGN KEY("id")
		REFERENCES "Media"("id")
);
CREATE TABLE “aims”.”DeliveryInfo”(
	“id” INTEGER PRIMARY KEY NOT NULL,
	“province” VARCHAR(45) NOT NULL,
	“name” VARCHAR(45) NOT NULL,
	“address” VARCHAR(100) NOT NULL,
	“instructions” VARCHAR(200) NOT NULL,
	“ExpectedDeliveryTimeInterval” DATETIME NOT NULL
);

CREATE TABLE “aims”.”Order”(
	“id” INTEGER NOT NULL,
	“shippingFee” INTEGER NOT NULL,
	“mediaId” INTEGER NOT NULL,
```

```
	“quantity” INTEGER NOT NULL,
	“deliverInfoId” INTEGER NOT NULL,
	PRIMARY KEY(“id”, “deliveryInfo”),
	CONSTRAINT "fk_Order_Media1"
		FOREIGN KEY("mediaId")
		REFERENCES "Media"("id")
	CONSTRAINT "fk_DVD_Media1"
		FOREIGN KEY("deliverInfoid")
		REFERENCES "DeliveryInfo"("id")
);

CREATE INDEX "aims"."Order.fk_Order_DeleveryInfo1_idx" ON
"Order"("deleveryInfoId");

CREATE TABLE INVOICE “aims”.”Invoice”(
	“id” INTEGER PRIMARY KEY NOT NULL,
	“totalAmount” INTEGER NOT NULL,
	“orderId” INTEGER NOT NULL,
	CONSTRAINT "fk_DVD_Media1"
		FOREIGN KEY("orderId")
		REFERENCES "Order"("id")
```

```
);
CREATE INDEX "aims"."Invoice.fk_Invoice_Order1_idx" ON "Invoice"("orderId");

CREATE TABLE PAYMENTTRANSACTION “aims”.”PaymentTransaction” (
    “id” INTEGER NOT NULL,
    “content” VARCHAR(45) NOT NULL,
    “method” VARCHAR(45),
    “createdAt” DATETIME NOT NULL,
    “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_Card1”
        FOREIGN KEY(“invoiceId”)
        REFERENCES “Invoice” (“id”),
);
```

```
	CREATE INDEX
"aims"."PaymentTransaction.fk_PaymentTransaction_Card1_idx" ON
"PaymentTransaction" ("cardId");

	CREATE INDEX
"aims"."PaymentTransaction.fk_PaymentTransaction_Invoice1_idx" ON
"PaymentTransaction" ("invoiceId");

	COMMIT;
```