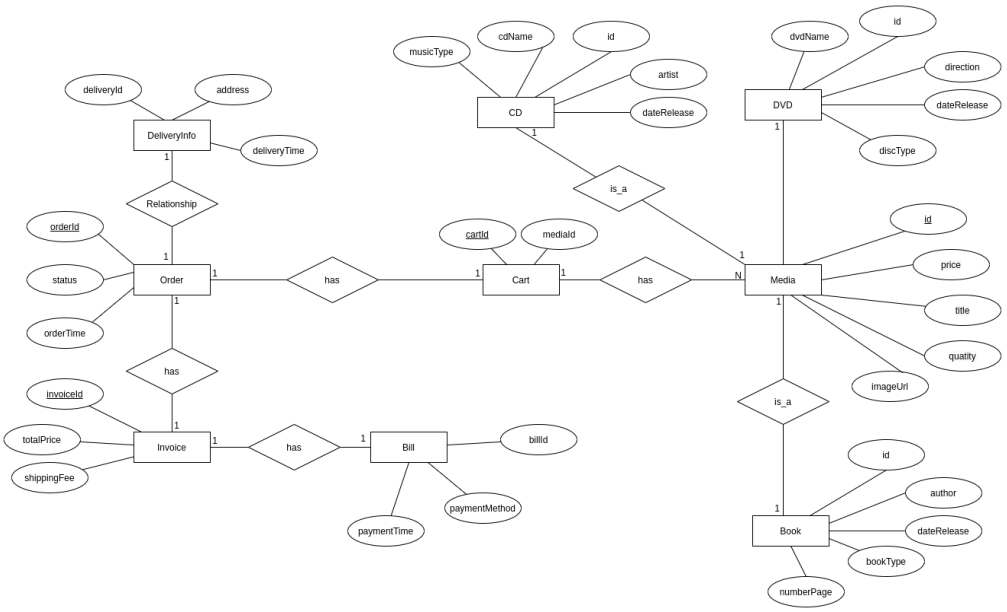
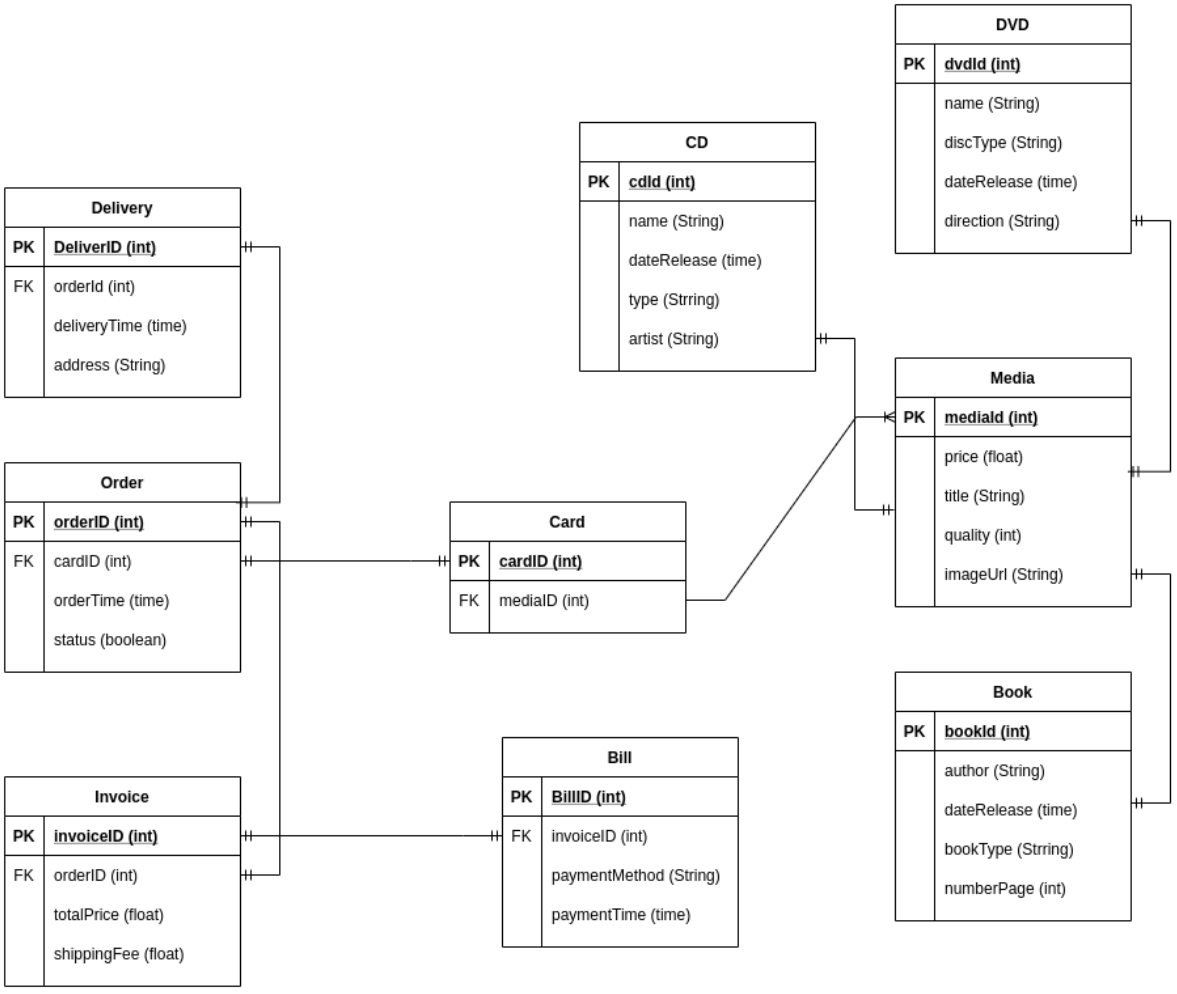
ER diagram



Logical data model



Physical Data Model specification
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 product
7.			imageURL	Varchar(5)	yes	product image url
8.			rushPossible	bool	yes	product can be placed rush order

CD

#	PK	FK	Column Name	Data Type	Mandatory	Description
1.		x	id	Integer	yes	ID,same as ID of Media if which type us CD
2.			artist	Varchar(45)	yes	artist's name
3.			recordLabel	Varchar(45)	yes	record's label
4.			musicType	Varchar(45)	yes	Music genres
5.			releaseDate	Date	yes	Release Date

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	VARCHAR(45)	yes	cover type

4.			publisher	VARCHAR(45)	yes	publishing house
5.			publishDate	DATETIME	yes	Date of publishing
6.			numOfPage	Integer	yes	number of page
7.			language	VARCHAR(45)	yes	language
8.			bookCategory	VARCHAR(45)	yes	Book Category

DVD

#	PK	FK	Column Name	Data type	Mandatory	Description
1.			id	integer	yes	id, same as id of media of which type is
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.			releaseDate	DATETIM E	yes	Release Date

Card

#	PK	FK	Column Name	Data type	Mandato ry	Description
1.	x		id	integer	yes	Id, auto_increment
2.			cardCode	VARCHAR(45)	yes	card Code
3.			owner	VARCHAR(45)	yes	Cardholder
4.			cvvCode	VARCHAR(3)	yes	CVV code
5.			dateExpired	DATETIME	yes	Expiration Date

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.			address	VARCHAR (100)	yes	Delivery Address
5.			instructions	VARCHAR (200)	no	Delivery Instruction

Order

#	PK	FK	Column Name	Data type	Mandatory	Description
1.	x		id	integer	yes	ID, auto increment
2.			shippingFees	VARCHAR (45)	yes	shipping fees
3.		x	deliveryInfoId	integer	yes	Delivery info

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	selling price
4.			quantity	integer	yes	quantity

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

Payment Transaction

#	PK	FK	Column Name	Data type	Mandatory	Description
1.	x		id	integer	yes	ID
2.			createdAt	DATETIME	yes	Date of creation
3.			content	VARCHAR(45)	yes	transaction content
4.			method	VARCHAR(45)	yes	payment method
5.		x	cardID	integer	yes	card ID
6.		x	invoiceID	integer	yes	invoice ID

Database Script

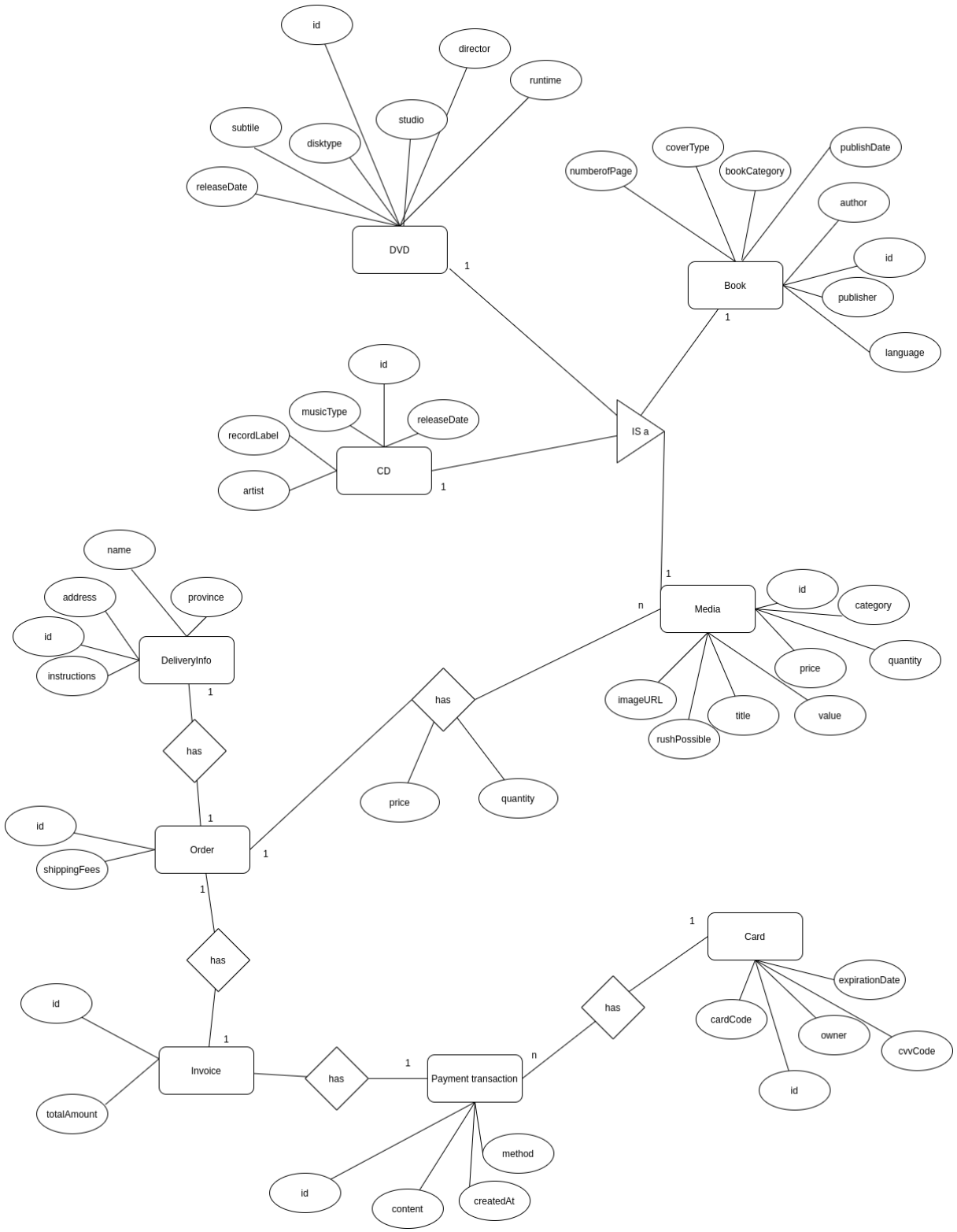
```
BEGIN;
CREATE TABLE "aims"."Media"(
"id" INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,
"category" VARCHAR(45) NOT NULL,
"price" INTEGER NOT NULL,
"quantity" INTEGER NOT NULL,
"title" VARCHAR(45) NOT NULL,
"value" INTEGER NOT NULL,
"imageUrl" VARCHAR(45) NOT NULL,
“rushPossible” bool NOT NULL,
);

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"."DeleveryInfo"(
"id" INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,
"name" VARCHAR(45),
"province" VARCHAR(45),
"instructions" VARCHAR(200),
"address" VARCHAR(100)
);

CREATE TABLE "aims"."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 "aims"."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 "aims"."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
INDEX
"aims"."Order.fk_Order_DeleveryInfo1_idx"
("deleveryInfoId");
ON
"Order"
CREATE TABLE "aims"."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 "aims"."OrderMedia.fk_ordermedia_order_idx" ON "OrderMedia"
("orderID");
CREATE INDEX "aims"."OrderMedia.fk_OrderMedia_Media1_idx" ON "OrderMedia"
("mediaId");

CREATE TABLE "aims"."Invoice"(
"id" INTEGER PRIMARY KEY NOT NULL,
"totalAmount" INTEGER NOT NULL,
"orderId" INTEGER NOT NULL,
HANDS-ON LAB GUIDELINES
CONSTRAINT "fk_Invoice_Order1"
FOREIGN KEY("orderId")
REFERENCES "Order"("id")
);
CREATE INDEX "aims"."Invoice.fk_Invoice_Order1_idx" ON "Invoice" ("orderId");

CREATE TABLE "aims"."PaymentTransaction"(
"id" INTEGER NOT NULL,
"createAt" DATETIME NOT NULL,
"content" VARCHAR(45) NOT NULL,
```

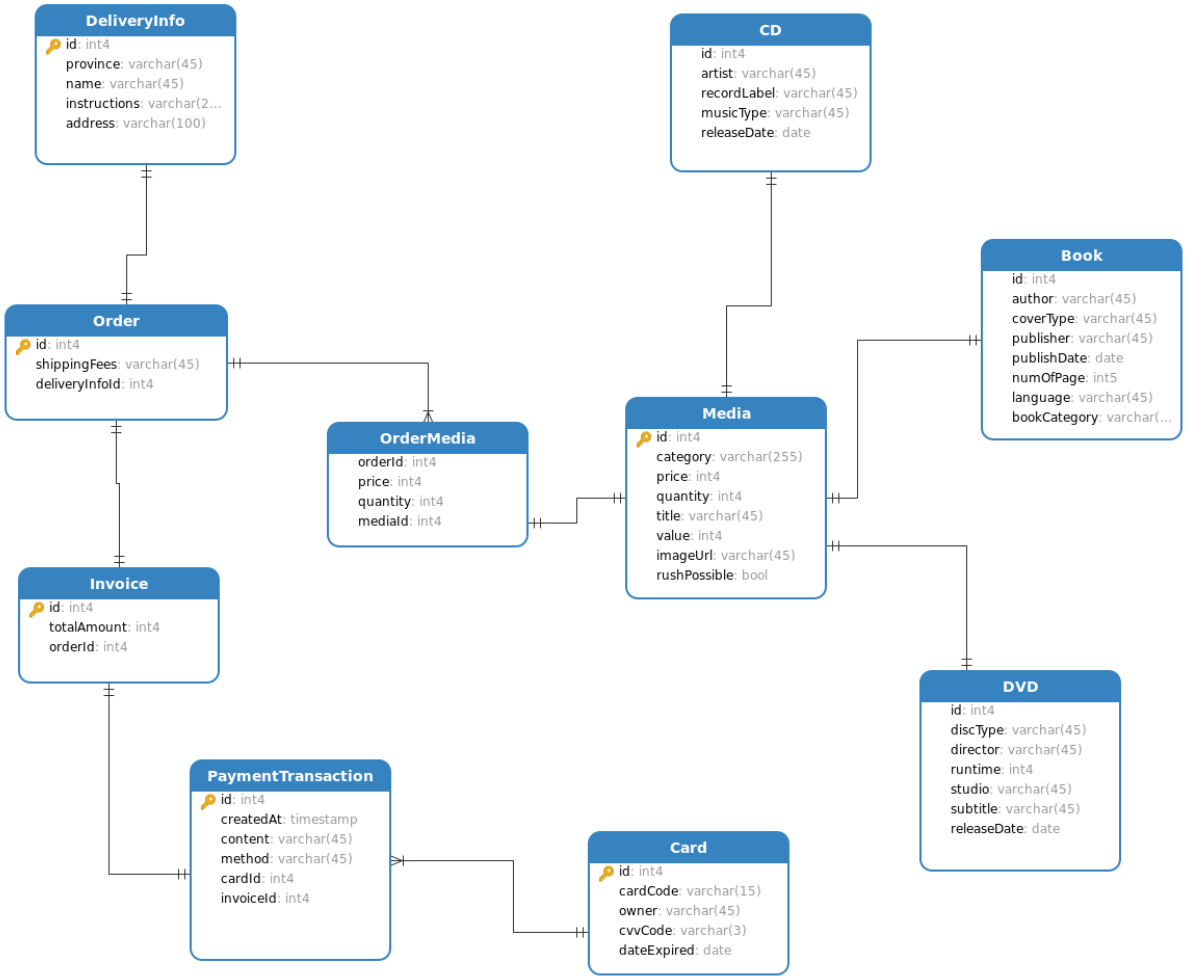
```
"method" VARCHAR(45),
"cardId" INTEGER NOT NULL,
"invoiceId" INTEGER NOT NULL,
PRIMARY KEY("id","cardId","invoiceId"),
CONSTRAINT "fk_PaymentTransaction_Card1"
FOREIGN KEY("cardId")
REFERENCES "Card"("id"),
CONSTRAINT "fk_PaymentTransaction_Invoice1"
FOREIGN KEY("invoiceId")
REFERENCES "Invoice"("id")
);
CREATE INDEX "aims"."PaymentTransaction.fk_PaymentTransaction_Card1_idx" ON
"PaymentTransaction" ("cardId");

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

ER diagram



M

Logical data model



Physical Data Model specification

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 product
7.			imageURL	Varchar(5)	yes	product image url
8.			rushPossible	bool	yes	product can be placed rush order

CD

#	PK	FK	Column Name	Data Type	Mandatory	Description
1.		x	id	Integer	yes	ID,same as ID of Media if which type us CD
2.			artist	Varchar(45)	yes	artist's name
3.			recordLabel	Varchar(45)	yes	record's label
4.			musicType	Varchar(45)	yes	Music genres
5.			releaseDate	Date	yes	Release Date

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	VARCHAR(45)	yes	cover type
4.			publisher	VARCHAR(45)	yes	publishing house
5.			publishDate	DATETIME	yes	Date of publishing
6.			numOfPage	Integer	yes	number of page
7.			language	VARCHAR(45)	yes	language
8.			bookCategory	VARCHAR(45)	yes	Book Category

DVD

#	PK	FK	Column Name	Data type	Mandatory	Description
1.			id	integer	yes	id, same as id of media of which type is
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.			releaseDate	DATETIME	yes	Release Date

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	Cardholder
4.			cvvCode	VARCHAR(3)	yes	CVV code
5.			dateExpired	DATETIME	yes	Expiration Date

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.			address	VARCHAR (100)	yes	Delivery Address
5.			instructions	VARCHAR (200)	no	Delivery Instruction

Order

#	PK	FK	Column Name	Data type	Mandatory	Description
1.	x		id	integer	yes	ID, auto increment

2.			shippingFees	VARCHAR (45)	yes	shipping fees
3.		x	deliveryInfoId	integer	yes	Delivery info

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	selling price
4.			quantity	integer	yes	quantity

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

Payment Transaction

#	PK	FK	Column Name	Data type	Mandatory	Description
1.	x		id	integer	yes	ID
2.			createdAt	DATETIME	yes	Date of creation
3.			content	VARCHAR (45)	yes	transaction content
4.			method	VARCHAR (45)	yes	payment method
5.		x	cardID	integer	yes	card ID
6.		x	invoiceID	integer	yes	invoice ID

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,
“rushPossible” bool 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"."DeleveryInfo"(
"id" INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,
"name" VARCHAR(45),
"province" VARCHAR(45),
"instructions" VARCHAR(200),
"address" VARCHAR(100)
```

```
);

CREATE TABLE "aims"."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 "aims"."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 "aims"."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
INDEX
"aims"."Order.fk_Order_DeleveryInfo1_idx"
("deleveryInfoId");
ON
"Order"
CREATE TABLE "aims"."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 "aims"."OrderMedia.fk_ordermedia_order_idx" ON "OrderMedia"
("orderID");
CREATE INDEX "aims"."OrderMedia.fk_OrderMedia_Media1_idx" ON "OrderMedia"
("mediaId");

CREATE TABLE "aims"."Invoice"(
"id" INTEGER PRIMARY KEY NOT NULL,
"totalAmount" INTEGER NOT NULL,
"orderId" INTEGER NOT NULL,
HANDS-ON LAB GUIDELINES
CONSTRAINT "fk_Invoice_Order1"
FOREIGN KEY("orderId")
REFERENCES "Order"("id")
);
CREATE INDEX "aims"."Invoice.fk_Invoice_Order1_idx" ON "Invoice" ("orderId");

CREATE TABLE "aims"."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 "aims"."PaymentTransaction.fk_PaymentTransaction_Card1_idx" ON
"PaymentTransaction" ("cardId");

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