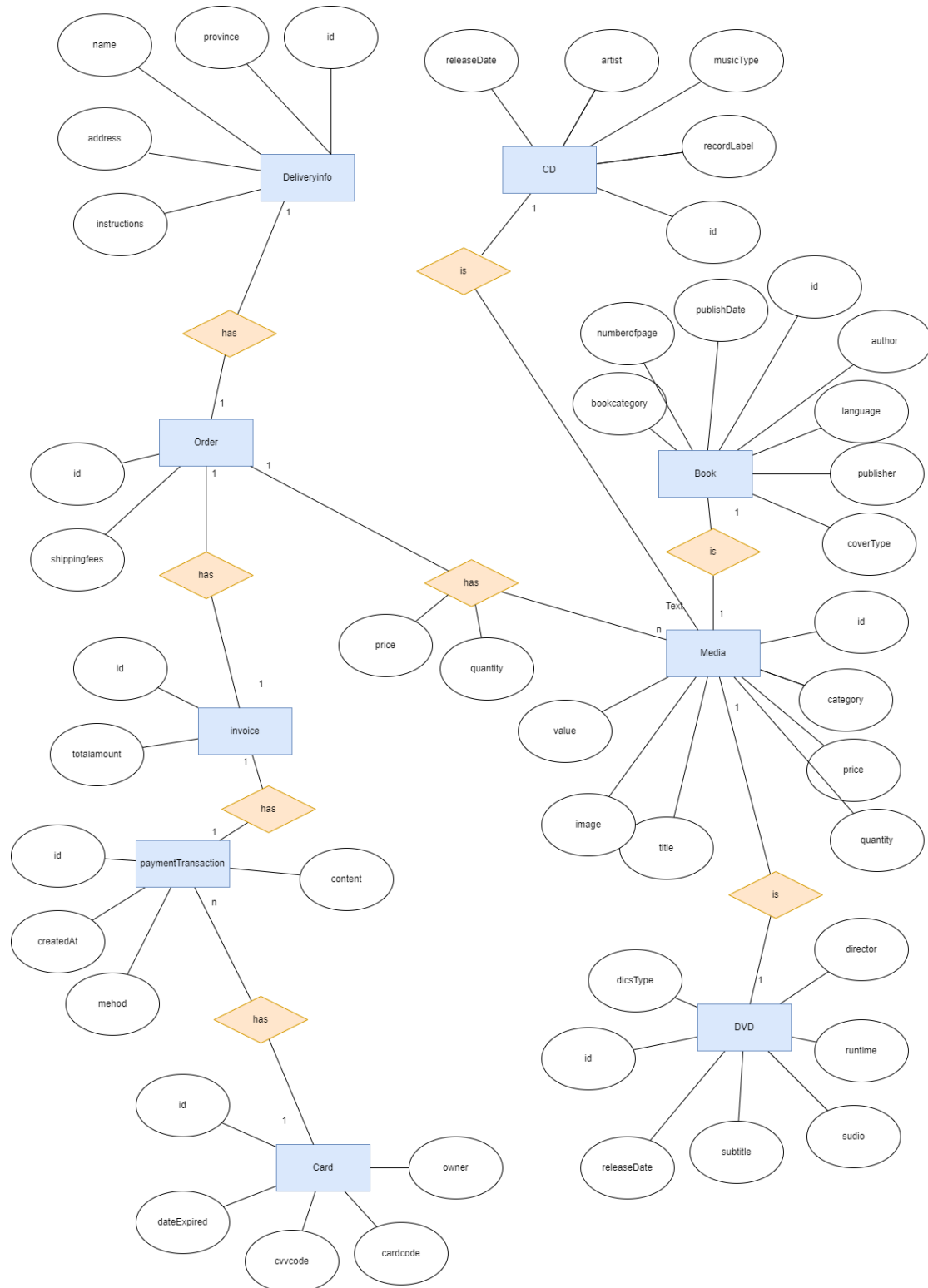


Trần Thế Thịnh 20194853

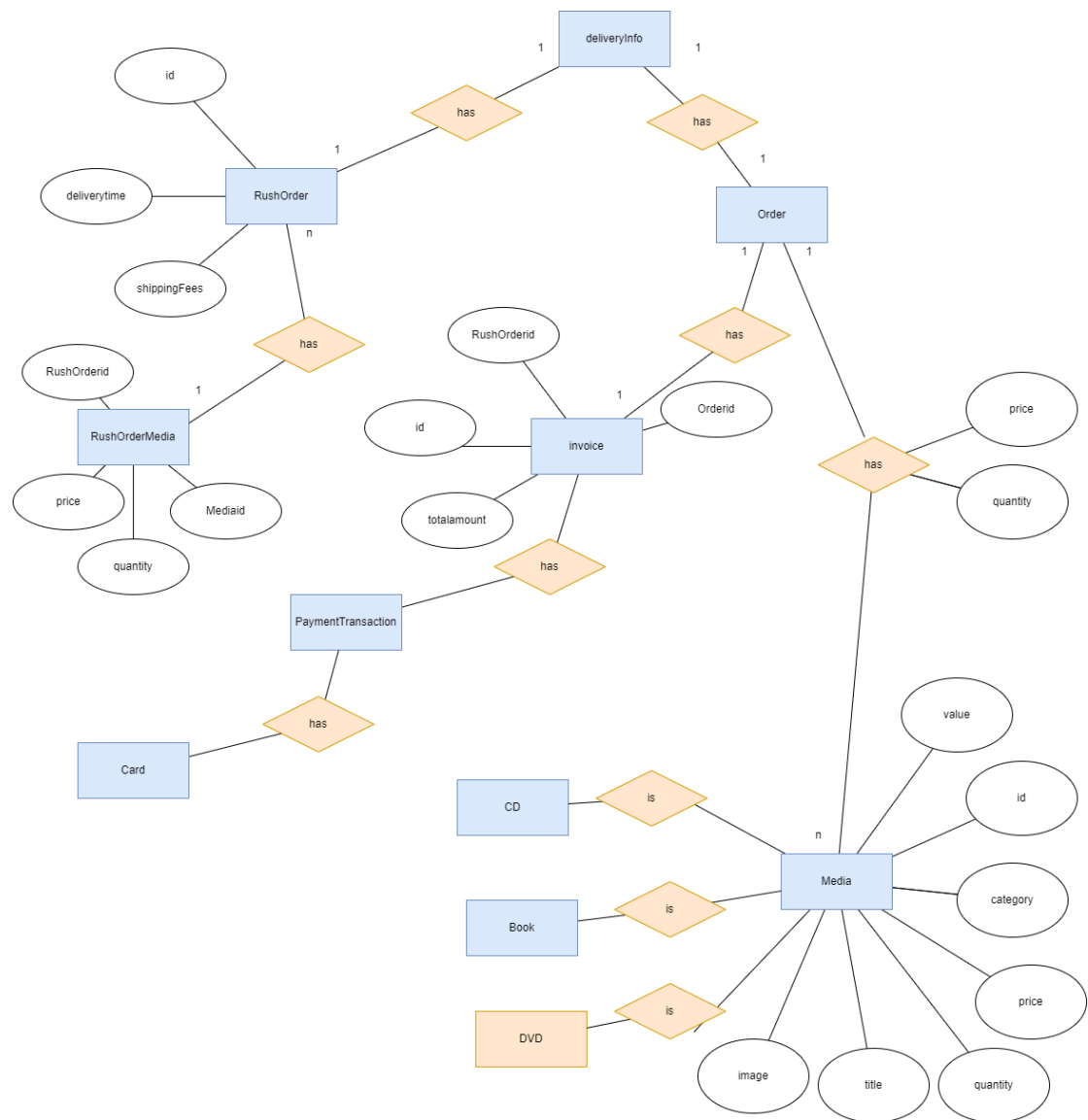
Data Modeling

1. Conceptual Data Model

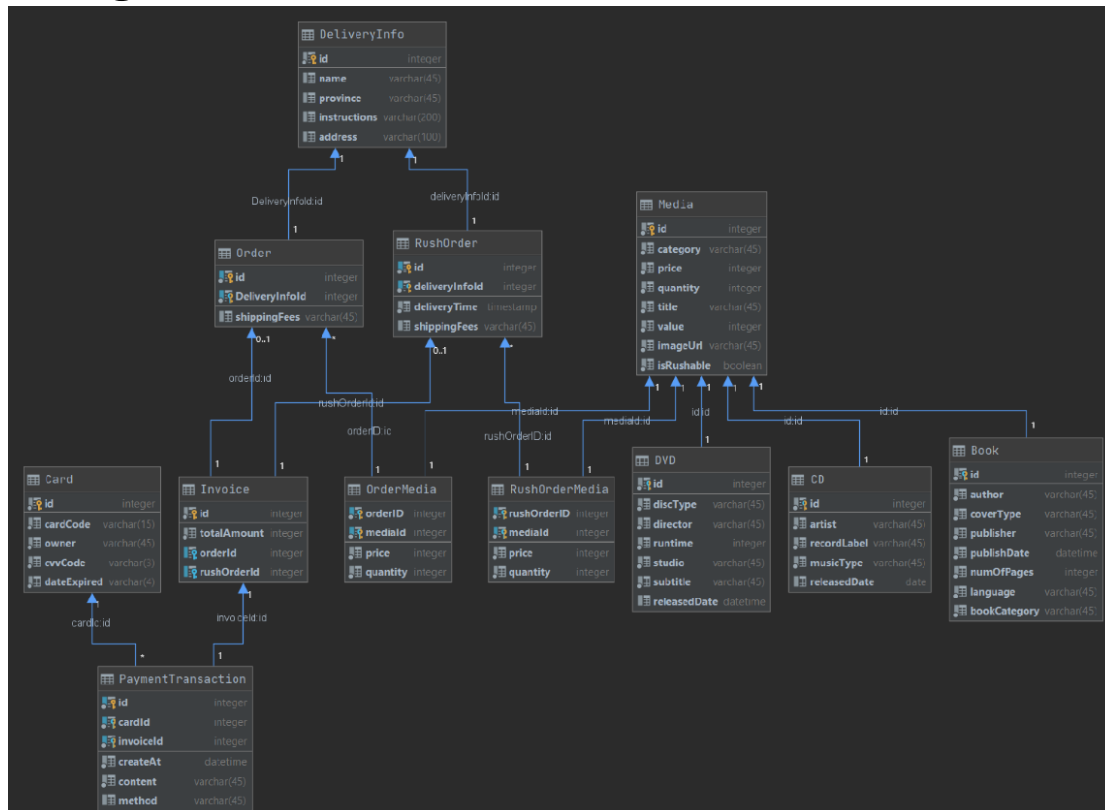
+Place Order



+Place Rush Order



2.Logical Data Model



2. Physical Data Model Media

#	PK	FK	Column Name	Data type	Mandatory	Description
1.	x		id	Integer	Yes	ID, auto increment
2.			category	VARCHAR(45)	Yes	Media type
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(45)	Yes	Product image path
8.			isRushable	Boolean	Yes	Rush delivery support status

Rush Order Media

#	PK	FK	Column Name	Data type	Mandatory	Description
1.	x	x	rushOrderId	Integer	Yes	Id of rush order it belongs
2.	x	x	mediaId	Integer	Yes	Id of media
3.			price	Integer	Yes	Price at placed time
4.			quantity	Integer	Yes	Number of bought items

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.			recordLabel	VARCHAR(45)	Yes	Record label
4.			musicType	VARCHAR(45)	Yes	Music genres
5.			releasedDate	DATE	No	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.			numOfPages	Integer	Yes	Page number
7.			language	VARCHAR(45)	Yes	Language
8.			bookCategory	VARCHAR(45)	Yes	Book category

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	Manufacturer
6.			subtitle	VARCHAR(45)	Yes	Subtitles
7.			releasedDate	DATETIME	Yes	Release date
8.			filmType	VARCHAR(45)	Yes	Genres

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

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(200)	No	Delivery instructions
5.			address	VARCHAR(100)	Yes	Delivery address

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 Info ID

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	Number

Invoice

#	PK	FK	Column Name	Data type	Mandatory	Description
1.	x	x	id	Integer	Yes	auto increment
2.			totalAmount	Integer	Yes	total charge
3.		x	orderId	Integer	No	normal order id
4.		x	rushOrderId	Integer	No	rush order id

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.			method	VARCHAR(45)	Yes	Payment methods
5.		x	cardId	Integer	Yes	ID of used card
6.		x	invoiceId	Integer	Yes	Invoice ID

Rush Order

#	PK	FK	Column Name	Data type	Mandatory	Description
1.	x		id	Integer	Yes	auto increment
2.			deliveryTime	Timestamp	Yes	scheduled delivery time
3.			shippingFees	Integer	Yes	shipping fee for rush delivery
4.		x	deliveryInfoId	Integer	Yes	delivery info id

4.Database script

```

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,
    "isRushable" BOOLEAN 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 "DeliveryInfo"
(
"id" INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,
"name" VARCHAR(45),
"province" VARCHAR(45),
"instructions" VARCHAR(200),
"address" VARCHAR(100)
);
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),
"DeliveryInfoId" INTEGER NOT NULL,
PRIMARY KEY ("id", "DeliveryInfoId"),
CONSTRAINT "fk_Order_DeliveryInfo1"
FOREIGN KEY ("DeliveryInfoId")
REFERENCES "DeliveryInfo" ("id")
);
CREATE INDEX "Order.fk_Order_DeliveryInfo1_idx" ON "Order" ("DeliveryInfoId");
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 "RushOrder"
(
    "id" INTEGER NOT NULL,
    "deliveryTime" TIMESTAMP NOT NULL,
    "shippingFees" VARCHAR(45),
    "deliveryInfoId" INTEGER NOT NULL,
    PRIMARY KEY ("id", "deliveryInfoId"),
    CONSTRAINT "fk_RushOrder_DeliveryInfo1"
    FOREIGN KEY ("deliveryInfoId")
    REFERENCES "DeliveryInfo" ("id")
);
CREATE TABLE "RushOrderMedia"
(
    "rushOrderID" INTEGER NOT NULL,
    "mediaId" INTEGER NOT NULL,
    "price" INTEGER NOT NULL,
    "quantity" INTEGER NOT NULL,
    PRIMARY KEY ("rushOrderID", "mediaId"),
    CONSTRAINT "fk_rushOrdermedia_rushOrder"
    FOREIGN KEY ("rushOrderID")
    REFERENCES "RushOrder" ("id"),
    CONSTRAINT "fk_RushOrderMedia_Media1"
    FOREIGN KEY ("mediaId")
    REFERENCES "Media" ("id")
);
CREATE INDEX "RushOrderMedia.fk_rushOrdermedia_rushOrder_idx" ON "RushOrderMedia" ("rushOrderID");
CREATE INDEX "RushOrderMedia.fk_RushOrderMedia_Media1_idx" ON "RushOrderMedia" ("mediaId");
CREATE TABLE "Invoice"
(
    "id" INTEGER PRIMARY KEY NOT NULL,
    "totalAmount" INTEGER NOT NULL,
    "orderId" INTEGER,
    "rushOrderId" INTEGER,
    CONSTRAINT "fk_Invoice_Order1"
    FOREIGN KEY ("orderId")
    REFERENCES "Order" ("id"),
    CONSTRAINT "fk_Invoice_RushOrder1"
    FOREIGN KEY ("rushOrderId")
    REFERENCES "RushOrder" ("id")
);
CREATE INDEX "Invoice.fk_Invoice_Order1_idx" ON "Invoice" ("orderId");
CREATE INDEX "Invoice.fk_Invoice_RushOrder1_idx" ON "Invoice" ("rushOrderId");
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");
```