

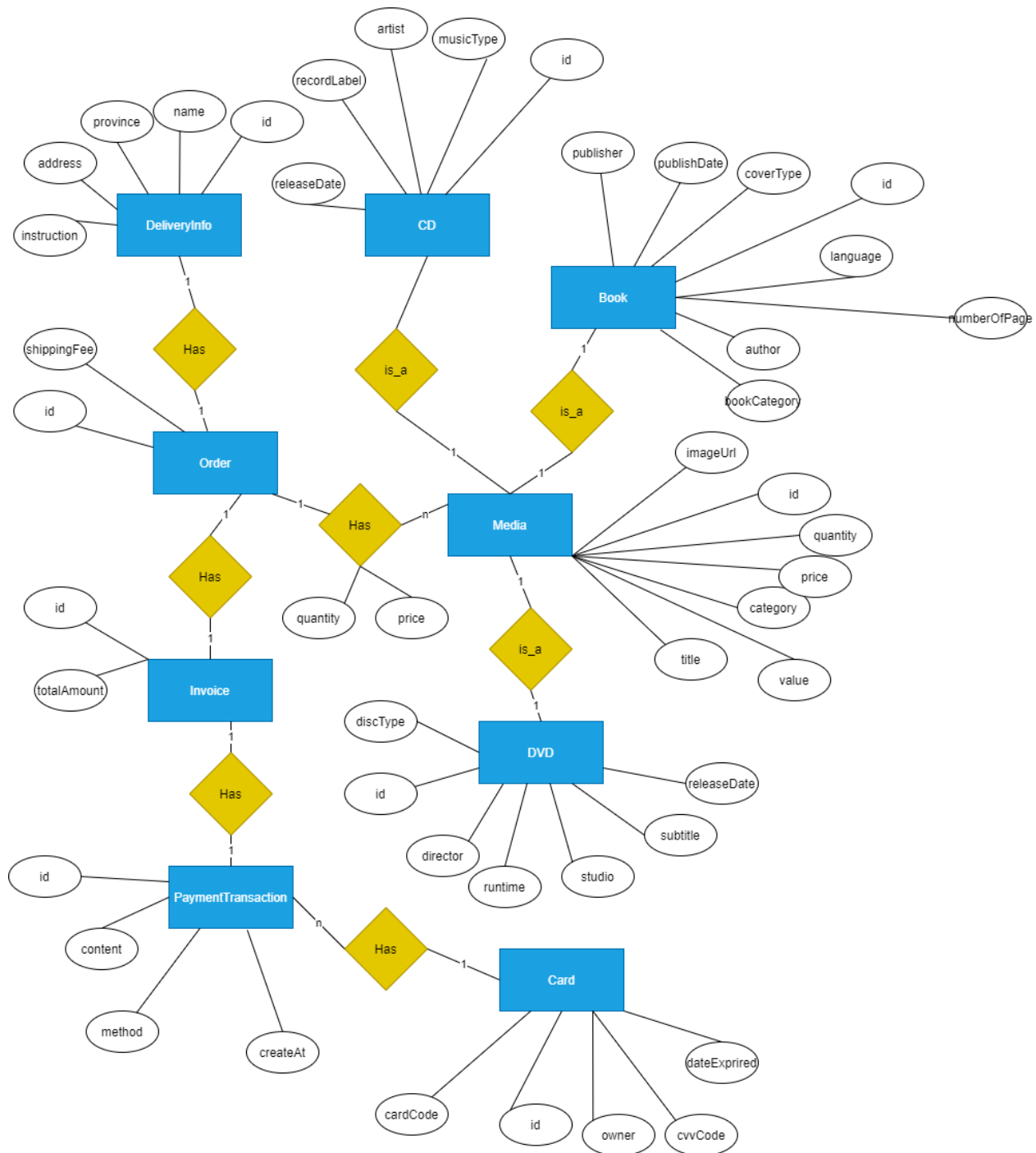
# **ITSS SOFTWARE DEVELOPMENT**

## **Lab 07 – Data Modeling**

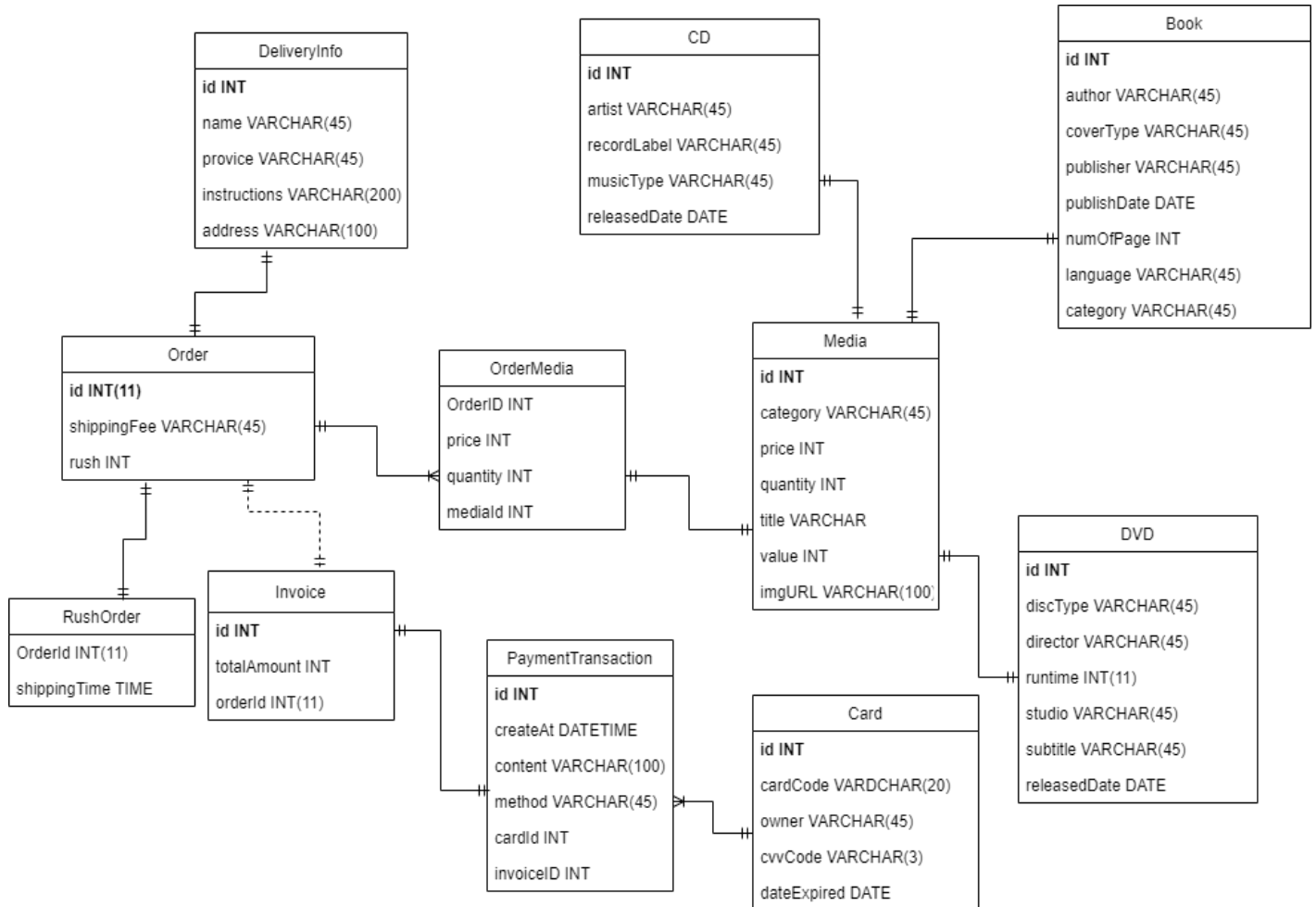
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## 1. ER diagram for AIMS



## 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			category	VARCHAR(45)	Yes	Media type (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

#### - 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 CD
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			category	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 CD
2			discType	VARCHAR(45)	Yes	Disc type
3			director	VARCHAR(45)	Yes	Cover type
4			runtime	Integer	Yes	Duration
5			studio	VARCHAR(45)	Yes	Manufacturer
6			subtitle	VARCHAR(45)	Yes	Subtitles
7			releasedDate	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	Cardholders
4			cvvCode	VARCHAR(3)	Yes	CVV code
5			dateExpired	VARCHAR(4)	No	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			instruction	VARCHAR(200)	No	Delivery instruction
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	rushOrderID	Integer	Yes	Rush order

- RushOrder

	PK	FK	Column Name	Data type	Mandatory	Description
1		X	OrderID	Integer	Yes	Id of the order
2			shippingTime	TIME	Yes	shipping time

- OrderMedia

	PK	FK	Column Name	Data type	Mandatory	Description
1		X	OrderID	Integer	Yes	Id of the order
2			price	VARCHAR(45)	Yes	Selling price
3			quantity	Integer	Yes	Number
4		X	mediaID	Integer	Yes	Media ID

- 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	Id of the order

- 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 method
5		X	cardId	Integer	Yes	ID of user card
6		X	invoiceId	Integer	Yes	Invoice ID

#### 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
);
```

```
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"."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"."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"."Order"(
  "id" INTEGER NOT NULL,
  "shippingFees" VARCHAR(45),
  "rushOrderID" INTEGER NOT NULL,
  PRIMARY KEY("id"),
  CONSTRAINT "fk_Order_DeiveryInfo1"
  FOREIGN KEY("rushOrderID")
  REFERENCES "DeiveryInfo"("id")
);
CREATE TABLE "aims"."RushOrder"(
  "OrderId" INTEGER NOT NULL,
  "shippingTime" DATE NOT NULL,
  CONSTRAINT "fk_RushOrder_Order1"
  FOREIGN KEY("OrdeId")
  REFERENCES "Order"("id")
);
CREATE INDEX "aims"."Order.fk_Order_RushOrder1_idx" ON "Order" ("rushOrderId");
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,
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;

```