**BÀI THỰC HÀNH SỐ 03 – THIẾT KẾ LỚP VÀ MÔ HÌNH HÓA DỮ LIỆU**

**Tuần 8, ngày 16/11/2021**

Họ và tên: Trần Văn Tuyền

MSSV: 20184012

Mã lớp thực hành: 710808

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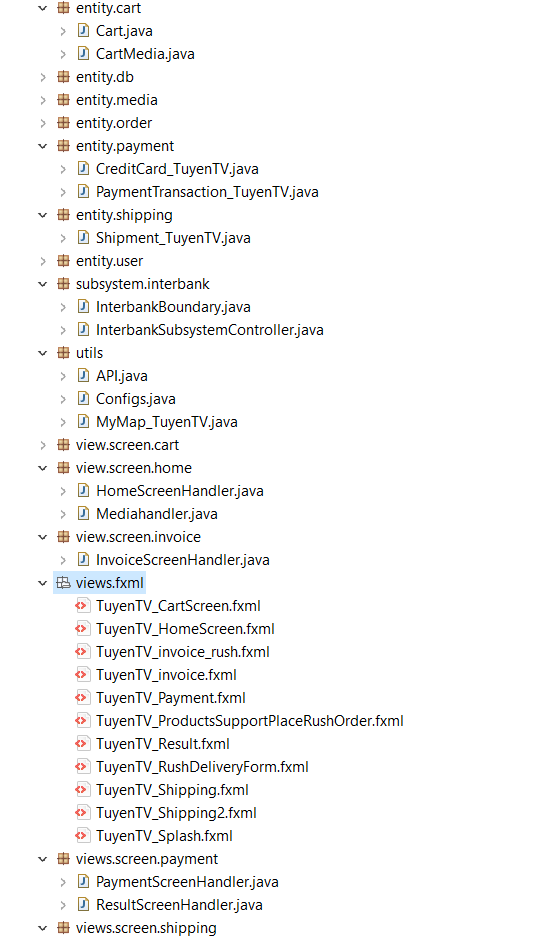
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# 1. Thiết kế lớp (Class Design)

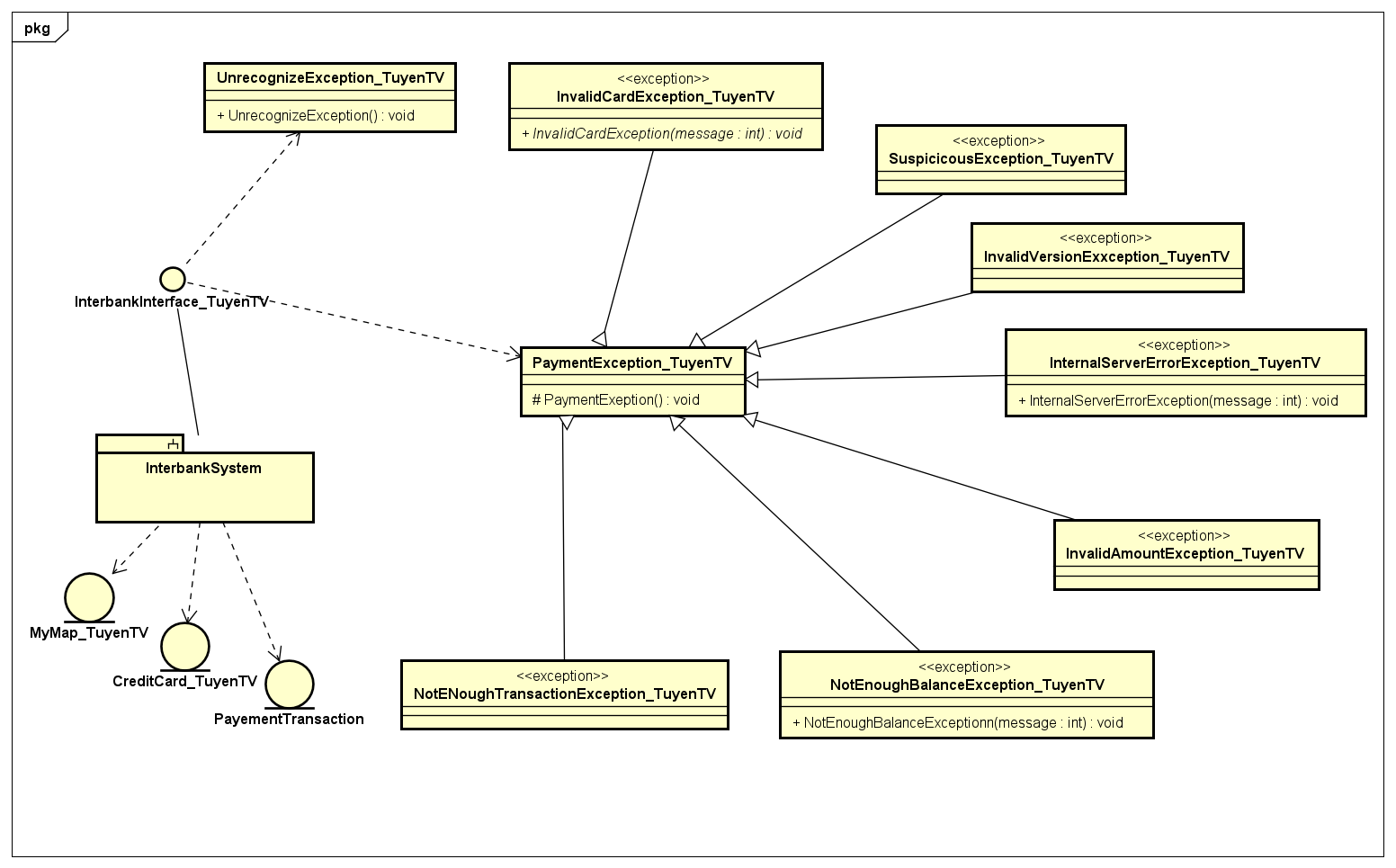
## 1.1. Bước đầu tạo các lớp thiết kế

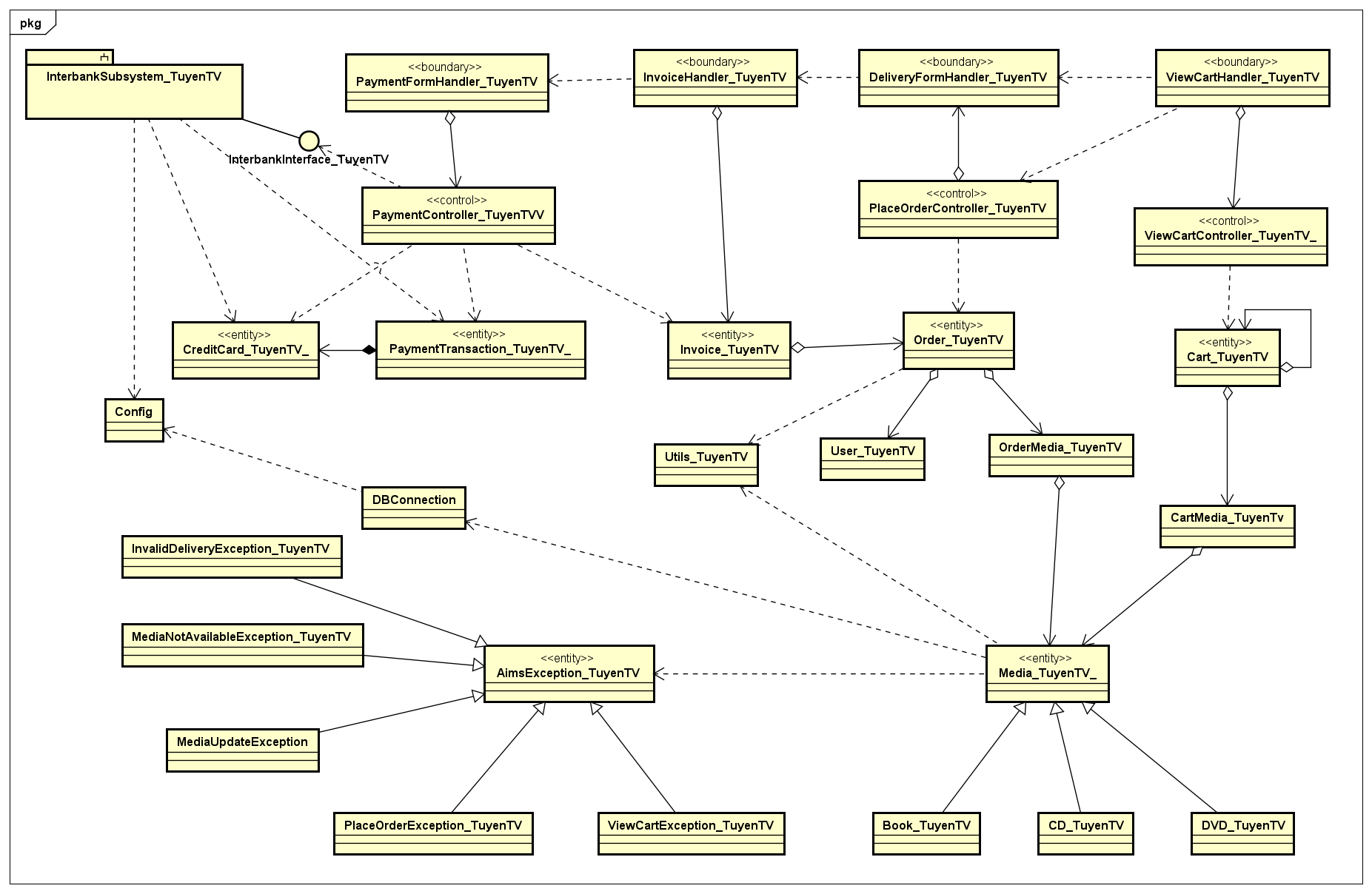
Ảnh có chứa bàn

Mô tả được tạo tự động



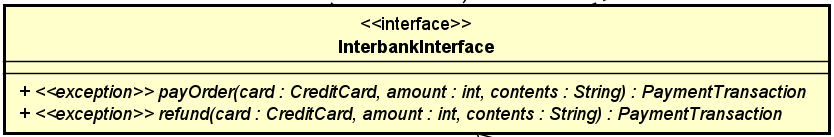
## 1.2. Xác định mối quan hệ giữa các lớp.





## 1.3. Lớp thiết kế.

Lớp “InterbankInterface”



***Attribute***

Không

***Operation***

|  |  |  |  |
| --- | --- | --- | --- |
| *#* | *Tên* | *Kiểu dữ liệu trả về* | *Mô tả (mục đích)* |
| 1 | payOrder | PaymentTransaction | Thanh toán đơn hàng và trả về giao dịch thanh toán |
| 2 | refund | PaymentTransaction | Hoàn tiền và trả về giao dịch thanh toán |

*Parameter:*

* card – thẻ tín dụng để giao dịch
* amount – số tiền giao dịch
* contents – nội dung giao dịch

*Exception:*

* PaymentException – nếu mã lỗi trả về đã biết
* UnrecognizedException – nếu không tìm thấy mã lỗi trả về hoặc có lỗi hệ thống

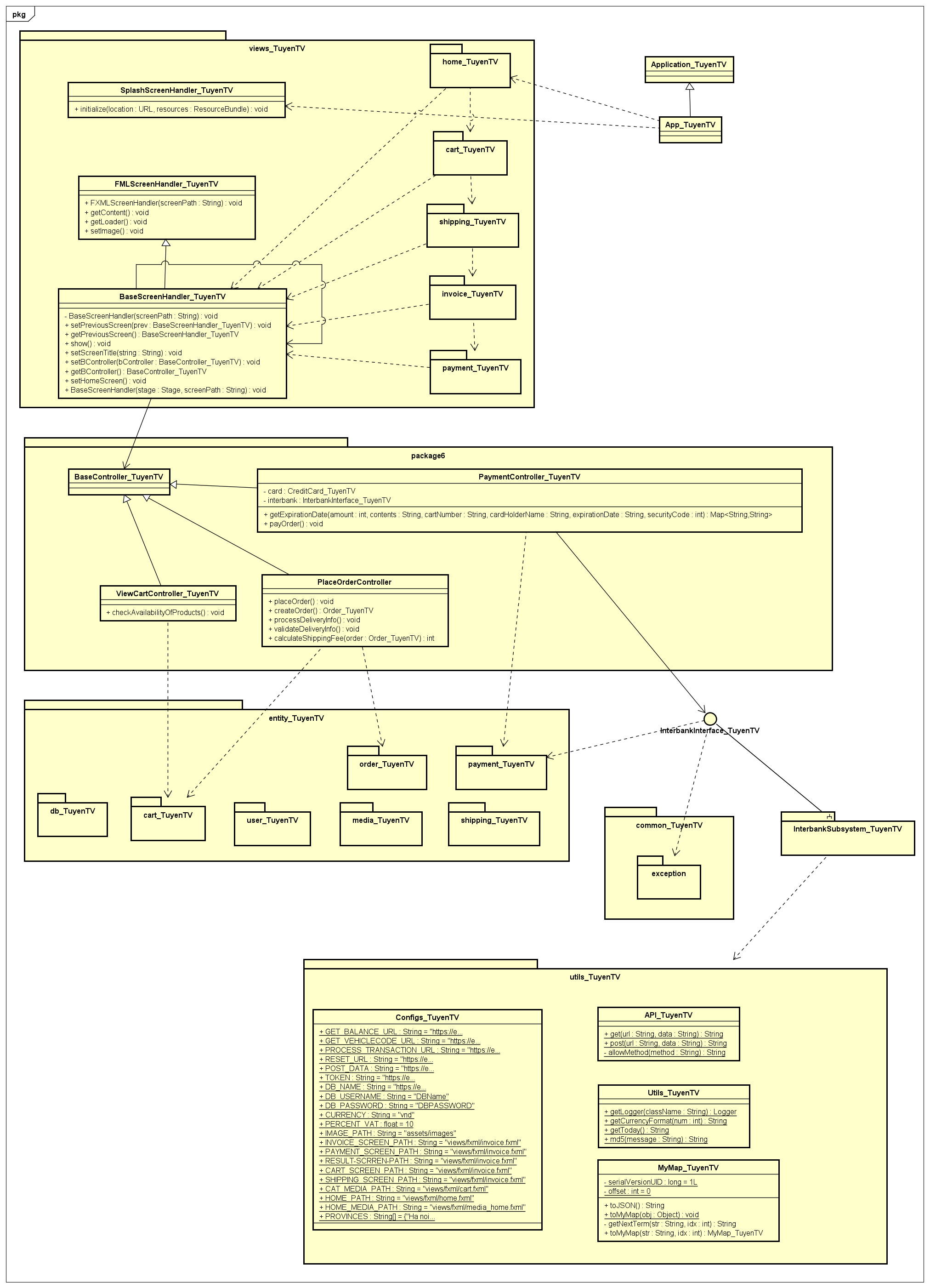
***Method***

Không

***State***

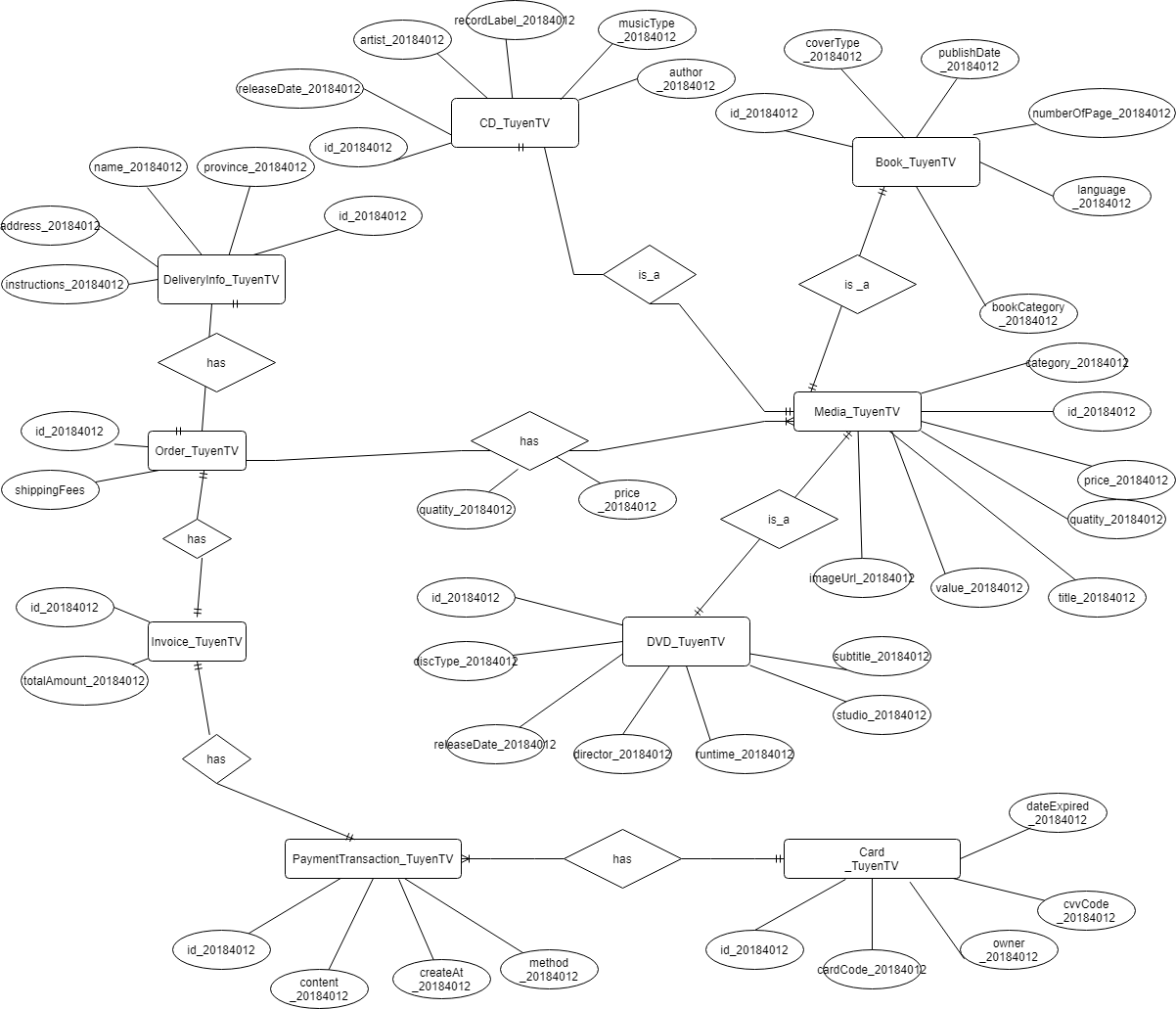
Không

## 1.4. Biều đồ lớp thiết kế

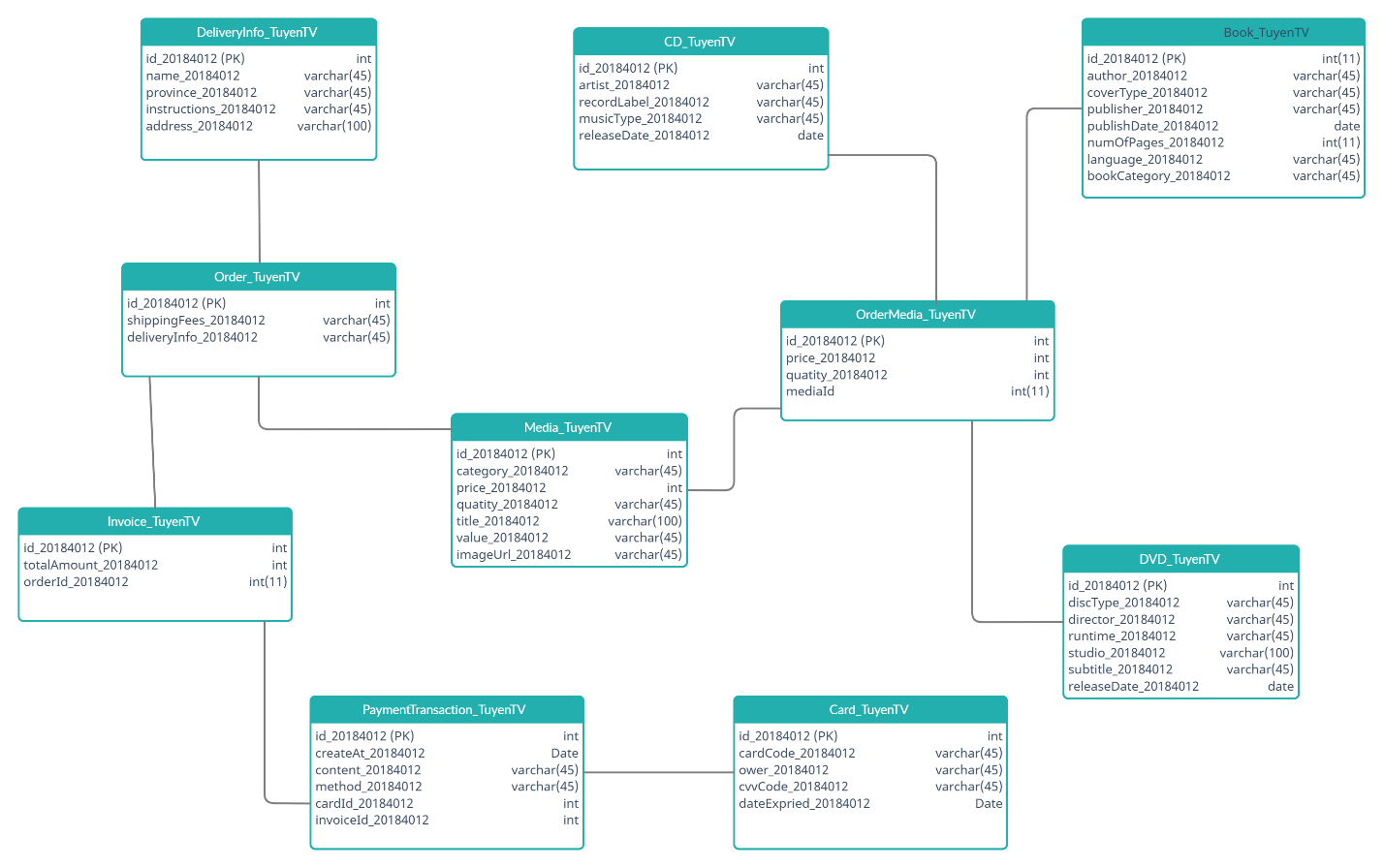


# 2. Mô hình hóa dữ liệu (Data Modeling)

## 2.1. Mô hình khái niệm (Conceptual Data Model)



## 2.2. Thiết kế cơ sở dữ liệu



Chú thích:

PK: Primary Key

FK: Foreign Key

* **Media\_TuyenTV**

| # | PK | FK | Column Name | Data type | Mandatory | Description |
| --- | --- | --- | --- | --- | --- | --- |
|  | x |  | Id\_20184012 | Integer | Yes | ID, auto increment |
|  |  |  | category\_20184012 | VARCHAR(45) | Yes | Media type, e.g., CD, DVD |
|  |  |  | price\_20184012 | Integer | Yes | Current price |
|  |  |  | quantity\_20184012 | Integer | Yes | Number of products |
|  |  |  | title\_20184012 | VARCHAR(45) | Yes | Product name |
|  |  |  | value\_20184012 | Integer | Yes | Value of the product |
|  |  |  | imageUrl\_20184012 | VARCHAR(45) | Yes | Product image path |

* **CD\_TuyenTV**

| # | PK | FK | Column Name | Data type | Mandatory | Description |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | x | id\_20184012 | Integer | Yes | ID, same as ID of Media of which type is CD |
|  |  |  | artist\_20184012 | VARCHAR(45) | Yes | Artist's name |
|  |  |  | recordLabel\_20184012 | VARCHAR(45) | Yes | Record label |
|  |  |  | musicType\_20184012 | VARCHAR(45) | Yes | Music genres |
|  |  |  | releasedDate\_20184012 | DATE | No | Release date |

* **Book\_TuyenTV**

| # | PK | FK | Column Name | Data type | Mandatory | Description |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | x | id\_20184012 | Integer | Yes | ID, same as ID of Media of which type is Book |
|  |  |  | author\_20184012 | VARCHAR(45) | Yes | Author |
|  |  |  | coverType\_20184012 | VARCHAR(45) | Yes | Cover type |
|  |  |  | Publisher\_20184012 | VARCHAR(45) | Yes | Publishing house |
|  |  |  | publishDate\_20184012 | DATETIME | Yes | Date of publishing |
|  |  |  | numOfPages\_20184012\_20184012 | Integer | Yes | Page number |
|  |  |  | language\_20184012 | VARCHAR(45) | Yes | Language |
|  |  |  | bookCategory\_20184012 | VARCHAR(45) | Yes | Book category |

* **DVD\_TuyenTV**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | PK | FK | Column Name | Data type | Mandatory | Description |
|  |  | x | id\_20184012 | Integer | Yes | ID, same as ID of Media of which type is DVD |
|  |  |  | discType\_20184012 | VARCHAR(45) | Yes | Disc type |
|  |  |  | director\_20184012 | VARCHAR(45) | Yes | Director |
|  |  |  | runtime\_20184012 | Integer | Yes | Duration |
|  |  |  | studio\_20184012 | VARCHAR(45) | Yes | Manufacturer |
|  |  |  | subtitle\_20184012 | VARCHAR(45) | Yes | Subtitles |
|  |  |  | releasedDate\_20184012 | DATETIME | Yes | Release date |
|  |  |  | filmType\_20184012 | VARCHAR(45) | Yes | Genres |

* **Card\_TuyenTV**

| # | PK | FK | Column Name | Data type | Mandatory | Description |
| --- | --- | --- | --- | --- | --- | --- |
|  | x |  | id\_20184012 | Integer | Yes | ID, auto increment |
|  |  |  | cardCode\_20184012 | VARCHAR(45) | Yes | Card code |
|  |  |  | owner\_20184012 | VARCHAR(45) | Yes | Cardholders |
|  |  |  | cvvCode\_20184012 | VARCHAR(3) | Yes | CVV code |
|  |  |  | dateExpired\_20184012 | VARCHAR(4) | Yes | Expiration date |

* **DeliveryInfo\_TuyenTV**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | PK | FK | Column Name | Data type | Mandatory | Description |
|  | X |  | id\_20184012 | Integer | Yes | ID, auto increment |
|  |  |  | name\_20184012 | VARCHAR(45) | Yes | Receiver name |
|  |  |  | province\_20184012 | VARCHAR(45) | Yes | Provinces |
|  |  |  | instructions\_20184012 | VARCHAR(200) | No | Delivery instructions |
|  |  |  | address\_20184012 | VARCHAR(100) | Yes | Delivery address |

* **Order\_TuyenTV**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | PK | FK | Column Name | Data type | Mandatory | Description |
|  | X |  | id\_20184012 | Integer | Yes | ID |
|  |  |  | shippingFees\_20184012 | VARCHAR(45) | Yes | Shipping fee |
|  |  | X | deliveryInfoId\_20184012 | Integer | Yes | Delivery Info ID |

* **OrderMedia\_TuyenTV**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | PK | FK | Column Name | Data type | Mandatory | Description |
|  |  | X | mediaID\_20184012 | Integer | Yes | Media ID |
|  |  | X | orderID\_20184012 | Integer | Yes | Order ID |
|  |  |  | price\_20184012 | Integer | Yes | Selling price |
|  |  |  | quantity\_20184012 | Integer | Yes | Number |

* **Invoice\_TuyenTV**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | PK | FK | Column Name | Data type | Mandatory | Description |
|  | x |  | id\_20184012 | Integer | Yes | ID |
|  |  |  | totalAmount\_20184012 | Integer | Yes | Total |
|  |  | x | orderId\_20184012 | Integer | Yes | Order ID |

* **PaymentTransaction\_TuyenTV**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| # | PK | FK | Column Name | Data type | Mandatory | Description |
|  | x |  | id\_20184012 | Integer | Yes | ID |
|  |  |  | createAt\_20184012 | DATETIME | Yes | Date of creation |
|  |  |  | content\_20184012 | VARCHAR(45) | Yes | Transaction contents |
|  |  |  | method\_20184012 | VARCHAR(45) | Yes | Payment methods |
|  |  | x | cardId\_20184012 | Integer | Yes | ID of used card |
|  |  | x | invoiceId\_20184012 | Integer | Yes | Invoice ID |

# 3. Bài tập về nhà

## 3.1. Thiết kế lớp

## 3.2. Thiết kế CSDL