HANOI UNIVERSITY OF SCIENCE AND TECHNOLOGY

School of Information and Communications Technology

**Mô hình hoá dữ liệu cho AIMS**

Subject: Thiết kế xây dựng phần mềm

## 1. Entity-Relation Diagram (ERD)

A diagram of a company

Description automatically generated

## 2. Database Design Diagram

A computer screen shot of a computer

Description automatically generated

- **Media**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **PK** | **FK** | **Column Name** | **Data type** | **Mandatory** | **Description** |
| **1.** | x |  | id | INT | Yes | ID, auto increment |
| **2.** |  |  | category | VARCHAR(45) | Yes | Media type, e.g., CD, DVD |
| **3.** |  |  | price | INT | Yes | Current price |
| **4.** |  |  | quantity | INT | Yes | Number of products |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **PK** | **FK** | **Column Name** | **Data type** | **Mandatory** | **Description** |
| **5.** |  |  | title | VARCHAR(45) | Yes | Product name |
| **6.** |  |  | value | INT | 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 | INT | 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.** |  |  | tracklist | VARCHAR(255) | Yes | List music |
| **5.** |  |  | releasedDate | DATETIME | No | Release date |

* **Book**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **PK** | **FK** | **Column Name** | **Data type** | **Mandatory** | **Description** |
| **1.** |  | x | id | INT(10) | 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.** |  |  | numberOfPages | INT | Yes | Page number |
| **7.** |  |  | language | VARCHAR(45) | Yes | Language |

* **DVD**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **PK** | **FK** | **Column Name** | **Data type** | **Mandatory** | **Description** |
| **1.** |  | x | id | INT | 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 | INT | 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 | INT | Yes | ID, auto increment |
| **2.** |  |  | cardCode | VARCHAR(20) | Yes | Card code |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **PK** | **FK** | **Column Name** | **Data type** | **Mandatory** | **Description** |
| **3.** |  |  | owner | VARCHAR(45) | Yes | Cardholders |
| **4.** |  |  | cvvCode | VARCHAR(5) | Yes | CVV code |
| **5.** |  |  | dateExpired | DATETIME | Yes | Expiration date |

* **OrderData**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **PK** | **FK** | **Column Name** | **Data type** | **Mandatory** | **Description** |
| **1.** | X |  | id | INT | Yes | ID |
| **2.** |  |  | shippingFees | INT | Yes | Shipping fee |
| **3.** |  |  | city | VARCHAR(45) | Yes | name city |
| **4.** |  |  | phone | VARCHAR(45) | Yes | number phone |
| **5.** |  | X | userId | VARCHAR(45) | Yes | user id |
| **6.** |  |  | createAt | DATETIME | Yes |  |
| **7.** |  |  | instructions | VARCHAR(255) | No |  |
| **8.** |  |  | type | VARCHAR(45) | Yes |  |
| **9.** |  |  | totalPrice | INT | Yes | price of order |
| **10** |  |  | status | VARCHAR(45) | Yes | status of order |

* **OrderMedia**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **PK** | **FK** | **Column Name** | **Data type** | **Mandatory** | **Description** |
| **1.** |  | X | mediaID | INT | Yes | Media ID |
| **2.** |  | X | orderID | INT | Yes | Order ID |
| **3.** |  |  | price | INT | Yes | Selling price |
| **4.** |  |  | quantity | INT | Yes | Number |

* **Invoice**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **PK** | **FK** | **Column Name** | **Data type** | **Mandatory** | **Description** |
| **1.** | x |  | id | INT | Yes | ID |
| **2.** |  |  | totalAmount | INT | Yes | Total |
| **3.** |  | x | orderID | INT | Yes | Order ID |

* **paymentTransaction**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **PK** | **FK** | **Column Name** | **Data type** | **Mandatory** | **Description** |
| **1.** | x |  | id | INT(10) | 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 | INT | Yes | ID of used card |
| **6.** |  | x | invoiceID | INT | Yes | Invoice ID |

* **User**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **PK** | **FK** | **Column Name** | **Data type** | **Mandatory** | **Description** |
| **1.** | X |  | id | INT | Yes | ID |
| **2.** |  |  | fullname | VARCHAR(255) | Yes | full name |
| **3.** |  |  | username | VARCHAR(255) | Yes | name account |
| **4.** |  |  | email | VARCHAR(255) | Yes | email |
| **5.** |  |  | password | VARCHAR(255) | Yes | password |
| **6.** |  |  | salt | VARCHAR(255) | No |  |
| **7.** |  |  | admin | INT | Yes | user is admin? |
| **8.** |  |  | status | VARCHAR(255) | Yes |  |
| **9.** |  |  | address | VARCHAR(255) | No | address |
| **10** |  |  | phone | VARCHAR(255)) | No | number phone |
| **11** |  |  | city | VARCHAR(255) | No | city |

## 3.SQL Script

CREATE TABLE Book (

id INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,

author VARCHAR (45) NOT NULL,

coverType VARCHAR (45) NOT NULL,

publisher VARCHAR (45) NOT NULL,

publishDate DATETIME NOT NULL,

numberOfPages INTEGER NOT NULL,

language VARCHAR (45) NOT NULL,

FOREIGN KEY (id)

REFERENCES Media (id) ON DELETE CASCADE

);

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,

releaseDate DATETIME,

FOREIGN KEY (id)

REFERENCES Media (id) ON DELETE CASCADE

);

CREATE TABLE CD (

id INTEGER PRIMARY KEY NOT NULL,

artist VARCHAR (45) NOT NULL,

recordLabel VARCHAR (45) NOT NULL,

tracklist VARCHAR (255) NOT NULL,

releaseDate DATE,

FOREIGN KEY (id)

REFERENCES Media (id) ON DELETE CASCADE

);

CREATE TABLE CartMedia (

id INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,

mediaId INTEGER NOT NULL,

userId INTEGER NOT NULL,

quantity INTEGER NOT NULL,

FOREIGN KEY (mediaId) REFERENCES Media (id),

FOREIGN KEY (userId) REFERENCES User (id)

);

CREATE TABLE User (

id INTEGER NOT NULL,

fullname VARCHAR (255) NOT NULL,

username VARCHAR (255) NOT NULL,

email VARCHAR (255) NOT NULL,

password VARCHAR (255) NOT NULL,

salt VARCHAR (255),

admin INTEGER NOT NULL DEFAULT (3),

status varchar (255) NOT NULL DEFAULT 'enabled',

address VARCHAR (255),

phone VARCHAR (255),

city VARCHAR (255),

PRIMARY KEY (id AUTOINCREMENT)

);

CREATE TABLE Media (

id INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,

type VARCHAR (45) NOT NULL,

category VARCHAR (45) NOT NULL,

price INTEGER NOT NULL,

quantity INTEGER NOT NULL,

title VARCHAR (45) NOT NULL UNIQUE,

value INTEGER NOT NULL,

imageUrl VARCHAR (45) NOT NULL,

rushSupport BOOLEAN NOT NULL DEFAULT (1)

);

CREATE TABLE OrderData (

id INTEGER PRIMARY KEY NOT NULL,

city VARCHAR (45) NOT NULL,

address VARCHAR (45) NOT NULL,

phone VARCHAR (45) NOT NULL,

userId INTEGER NOT NULL,

shippingFee INTEGER NOT NULL,

createdAt DATETIME NOT NULL,

instructions VARCHAR (255),

type VARCHAR (45) NOT NULL,

totalPrice INTEGER NOT NULL,

status VARCHAR (45) NOT NULL DEFAULT UNSUCCESSFUL,

CONSTRAINT fk\_order\_user

FOREIGN KEY (userId) REFERENCES User (id)

);

CREATE TABLE OrderMedia (

mediaID INTEGER NOT NULL,

orderID INTEGER NOT NULL,

price INTEGER NOT NULL,

quantity INTEGER NOT NULL,

PRIMARY KEY (mediaID, orderID),

CONSTRAINT fk\_ordermedia\_media

FOREIGN KEY (mediaID) REFERENCES Media (id),

CONSTRAINT fk\_ordermedia\_order

FOREIGN KEY (orderID) REFERENCES OrderData (id)

);