1. Conceptual data model: Entity-Relation Diagram (ERD)
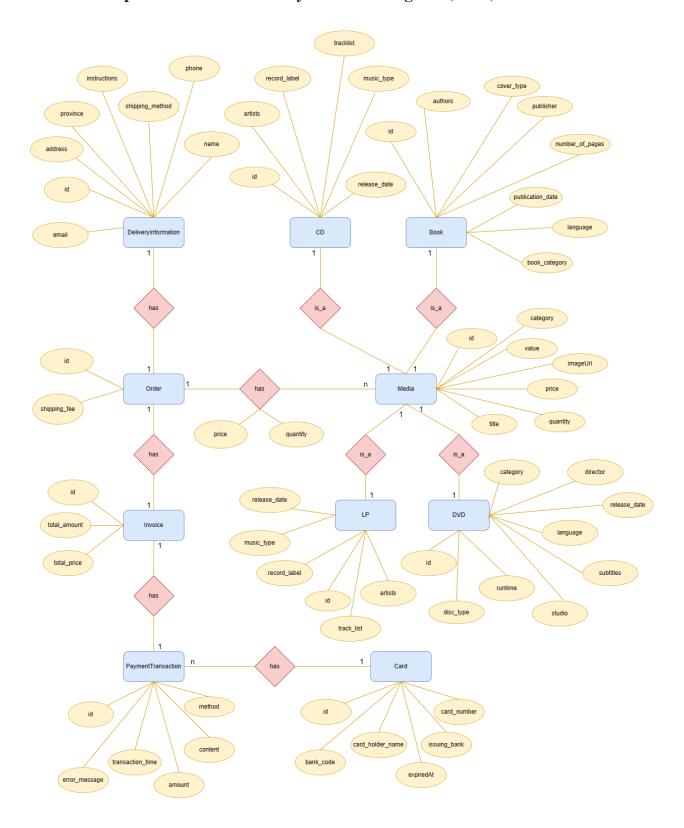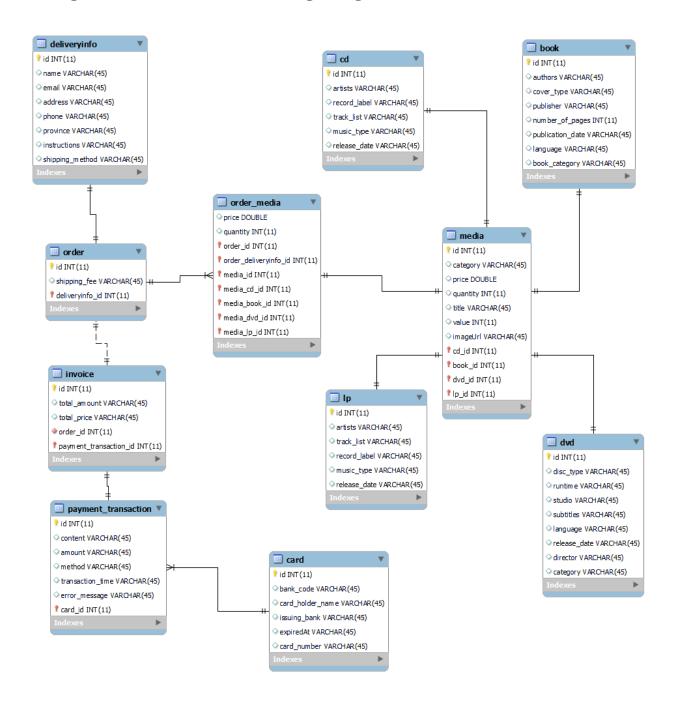
2. Logical data model: Database Design Diagram

deliveryinfo
- 🔑 id INT(11)
- ◇ name VARCHAR(45)
- ◇ email VARCHAR(45)
- ◇ address VARCHAR(45)
- ◇ phone VARCHAR(45)
- ◇ province VARCHAR(45)
- ◇ instructions VARCHAR(45)
- ◇ shipping_method VARCHAR(45)
- Indexes

cd
- 🔑 id INT(11)
- ◇ artists VARCHAR(45)
- ◇ record_label VARCHAR(45)
- ◇ track_list VARCHAR(45)
- ◇ music_type VARCHAR(45)
- ◇ release_date VARCHAR(45)
- Indexes

book
- 🔑 id INT(11)
- ◇ authors VARCHAR(45)
- ◇ cover_type VARCHAR(45)
- ◇ publisher VARCHAR(45)
- ◇ number_of_pages INT(11)
- ◇ publication_date VARCHAR(45)
- ◇ language VARCHAR(45)
- ◇ book_category VARCHAR(45)
- Indexes

order_media
- ◇ price DOUBLE
- ◇ quantity INT(11)
- 🔑 order_id INT(11)
- 🔑 order_deliveryinfo_id INT(11)
- 🔑 media_id INT(11)
- 🔑 media_cd_id INT(11)
- 🔑 media_book_id INT(11)
- 🔑 media_dvd_id INT(11)
- 🔑 media_lp_id INT(11)
- Indexes

media
- 🔑 id INT(11)
- ◇ category VARCHAR(45)
- ◇ price DOUBLE
- ◇ quantity INT(11)
- ◇ title VARCHAR(45)
- ◇ value INT(11)
- ◇ imageUrl VARCHAR(45)
- 🔑 cd_id INT(11)
- 🔑 book_id INT(11)
- 🔑 dvd_id INT(11)
- 🔑 lp_id INT(11)
- Indexes

order
- 🔑 id INT(11)
- ◇ shipping_fee VARCHAR(45)
- 🔑 deliveryinfo_id INT(11)
- Indexes

invoice
- 🔑 id INT(11)
- ◇ total_amount VARCHAR(45)
- ◇ total_price VARCHAR(45)
- ◆ order_id INT(11)
- 🔑 payment_transaction_id INT(11)
- Indexes

lp
- 🔑 id INT(11)
- ◇ artists VARCHAR(45)
- ◇ track_list VARCHAR(45)
- ◇ record_label VARCHAR(45)
- ◇ music_type VARCHAR(45)
- ◇ release_date VARCHAR(45)
- Indexes

dvd
- 🔑 id INT(11)
- ◇ disc_type VARCHAR(45)
- ◇ runtime VARCHAR(45)
- ◇ studio VARCHAR(45)
- ◇ subtitles VARCHAR(45)
- ◇ language VARCHAR(45)
- ◇ release_date VARCHAR(45)
- ◇ director VARCHAR(45)
- ◇ category VARCHAR(45)
- Indexes

payment_transaction
- 🔑 id INT(11)
- ◇ content VARCHAR(45)
- ◇ amount VARCHAR(45)
- ◇ method VARCHAR(45)
- ◇ transaction_time VARCHAR(45)
- ◇ error_message VARCHAR(45)
- 🔑 card_id INT(11)
- Indexes

card
- 🔑 id INT(11)
- ◇ bank_code VARCHAR(45)
- ◇ card_holder_name VARCHAR(45)
- ◇ issuing_bank VARCHAR(45)
- ◇ expiredAt VARCHAR(45)
- ◇ card_number VARCHAR(45)
- Indexes

3. Physical data model:

3.1. Table DeliveryInformation

STT	PK	FK	Column Name	Data Type	Mandatory	Description
1	x		id	INT	Yes	ID, auto increment
2			address	VARCHAR(100)	Yes	Delivery address
3			province	VARCHAR(45)	Yes	Provinces
4			name	VARCHAR(45)	Yes	Receiver name
5			phone	VARCHAR(20)	Yes	Contact number
6			shipping_method	INT	Yes	Shipping Method (normal: 0, rush: 1)
7			instructions	VARCHAR(200)	No	Delivery Instructions

3.2. Table Media

STT	PK	FK	Column Name	Data Type	Mandatory	Description
1	x		id	INT	Yes	ID, auto increment
2			price	INT	Yes	Current price
3			category	VARCHAR(45)	Yes	Media type (CD, DVD, Book, LP)
4			value	INT	Yes	Product value

STT	PK	FK	Column Name	Data Type	Mandatory	Description
5			quantity	INT	Yes	Number of products
6			title	VARCHAR(100)	Yes	Product name
7			imageUrl	VARCHAR(200)	No	Product image path

3.3. Table CD

STT	PK	FK	Column Name	Data Type	Mandatory	Description
1		x	id	INT	Yes	ID, same ID of Media of which category is CD
2			artist	VARCHAR(45)	Yes	Artist's name
3			record_label	VARCHAR(45)	Yes	Record Label
4			music_type	VARCHAR(45)	Yes	Music genres
5			track_list	VARCHAR(200)	No	Track list songs
6			release_date	DATETIME	No	Release Date

3.4. Table Book

STT	PK	FK	Column Name	Data Type	Mandatory	Description
1		x	id	INT	Yes	ID, same ID of Media of which category is Book
2			author	VARCHAR(45)	Yes	Author's name
3			cover_type	VARCHAR(45)	Yes	Cover Type
4			number_of_pages	INT	Yes	Page number

STT	PK	FK	Column Name	Data Type	Mandatory	Description
5			language	VARCHAR(45)	Yes	Language
6			book_category	VARCHAR(45)	Yes	Type of Book
7			publisher	VARCHAR(100)	Yes	Publishing house
8			publish_date	DATETIME	Yes	Date of publishing

3.5. Table DVD

STT	PK	FK	Column Name	Data Type	Mandatory	Description
1		x	id	INT	Yes	ID, same ID of Media of which category is DVD
2			director	VARCHAR(45)	Yes	Director's name
3			disk_type	VARCHAR(45)	Yes	Disc Type
4			subtitle	VARCHAR(45)	Yes	Subtitles
5			studio	VARCHAR(45)	Yes	Manufacturer
6			language	VARCHAR(45)	Yes	Language
7			runtime	INT	Yes	Duration
8			release_date	DATETIME	Yes	Release Date

3.6. Table LP

STT	PK	FK	Column Name	Data Type	Mandatory	Description

STT	PK	FK	Column Name	Data Type	Mandatory	Description
1		x	id	INT	Yes	ID, same ID of Media of which category is LP
2			artist	VARCHAR(45)	Yes	Artist's name
3			record_label	VARCHAR(45)	Yes	Record Label
4			music_type	VARCHAR(45)	Yes	Music genres
5			track_list	VARCHAR(200)	Yes	Track list songs
6			release_date	DATETIME	Yes	Release Date

3.7. Table Order

STT	PK	FK	Column Name	Data Type	Mandatory	Description
1	x		id	INT	Yes	ID, auto increment
2			shipping_fee	DOUBLE	Yes	Shipping fee
		x	delivery_info_id	INT	Yes	Delivery Information ID

3.8. Table Order_Media

STT	PK	FK	Column Name	Data Type	Mandatory	Description
1	x		id	INT	Yes	ID, auto increment
2		x	media_id	VARCHAR(100)	Yes	Media ID
3		x	order_id	VARCHAR(45)	Yes	Order ID
4			price	DOUBLE	Yes	Selling price

STT			quantity	INT	Yes	Number of ordered item
5			quantity	INT	Yes	Number of ordered item

3.9. Table Invoice

STT	PK	FK	Column Name	Data Type	Mandatory	Description
1	x		id	INT	Yes	ID, auto increment
2			total_amount	INT	Yes	Totals of items
3			total_price	DOUBLE	Yes	Total of price (include VAT)
4		x	order_id	INT	Yes	Order ID

3.10. Table PaymentTransaction

STT	PK	FK	Column Name	Data Type	Mandatory	Description
1	x		id	INT	Yes	ID, auto increment
2			amount	DOUBLE	Yes	Transaction Money
3			content	VARCHAR(100)	Yes	Transaction contents
4			method	VARCHAR(45)	Yes	Payment Methods
5			transaction_time	DATETIME	Yes	Date of creation a transaction
6			error_message	VARCHAR(100)	Yes	Message of error
7		x	card_id	INT	Yes	ID of used card
8		x	invoice_id	INT	Yes	Invoice ID

3.11. Table Card

STT	PK	FK	Column Name	Data Type	Mandatory	Description
1	X		id	INT	Yes	ID, auto increment
2			card_number	VARCHAR(45)	Yes	Card Number of customer
3			card_holder_ name	VARCHAR(45)	Yes	Card holders
4			issuing_bank	VARCHAR(45)	Yes	Bank's name
5			bank_code	VARCHAR(45)	Yes	Bank Code
6			expiredAt	DATETIME	Yes	Expire Date

- **Database Script from Logical Data Model**

CREATE DATABASE `aims` /*!40100 DEFAULT CHARACTER SET utf8mb4 COLLATE utf8mb4_0900_ai_ci */ /*!80016 DEFAULT ENCRYPTION='N' */;

CREATE TABLE `deliveryinformation` (

 `id` int NOT NULL AUTO_INCREMENT,

 `address` varchar(100) NOT NULL,

 `province` varchar(45) NOT NULL,

 `name` varchar(45) NOT NULL,

```
  `phone` varchar(20) NOT NULL,

  `shipping_method` int NOT NULL,

  `instructions` varchar(200) DEFAULT NULL,

  PRIMARY KEY (`id`)

) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci;


CREATE TABLE `media` (

  `id` int NOT NULL AUTO_INCREMENT,

  `price` int NOT NULL,

  `category` varchar(45) NOT NULL,

  `value` int NOT NULL,

  `quantity` int NOT NULL,

  `title` varchar(100) NOT NULL,

  `imageUrl` varchar(200) DEFAULT NULL,

  PRIMARY KEY (`id`)

) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci;


CREATE TABLE `book` (
```

```
  `id` int NOT NULL,

  `author` varchar(45) NOT NULL,

  `cover_type` varchar(45) NOT NULL,

  `number_of_pages` int NOT NULL,

  `language` varchar(45) NOT NULL,

  `book_category` varchar(45) NOT NULL,

  `publisher` varchar(100) NOT NULL,

  `publish_date` datetime NOT NULL,

  KEY `media_book_idx` (`id`),

  CONSTRAINT `fk_media_book` FOREIGN KEY (`id`) REFERENCES `media` (`id`)

) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci;


CREATE TABLE `cd` (

  `id` int NOT NULL,

  `artist` varchar(45) NOT NULL,

  `record_label` varchar(45) NOT NULL,

  `music_type` varchar(45) NOT NULL,

  `track_list` varchar(200) DEFAULT NULL,
```

```sql
  `release_date` datetime DEFAULT NULL,

  KEY `media_cd_idx` (`id`),

  CONSTRAINT `fk_media_cd` FOREIGN KEY (`id`) REFERENCES `media` (`id`)

) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci;


CREATE TABLE `dvd` (

  `id` int NOT NULL,

  `director` varchar(45) NOT NULL,

  `disk_type` varchar(45) NOT NULL,

  `subtitle` varchar(45) NOT NULL,

  `studio` varchar(45) NOT NULL,

  `language` varchar(45) NOT NULL,

  `runtime` int NOT NULL,

  `release_date` datetime NOT NULL,

  PRIMARY KEY (`id`),

  CONSTRAINT `fk_dvd_media` FOREIGN KEY (`id`) REFERENCES `media` (`id`)

) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci;
```

```sql
CREATE TABLE `lp` (

  `id` int NOT NULL,

  `artist` varchar(45) NOT NULL,

  `record_label` varchar(45) NOT NULL,

  `music_type` varchar(45) NOT NULL,

  `track_list` varchar(200) DEFAULT NULL,

  `release_date` datetime DEFAULT NULL,

  PRIMARY KEY (`id`),

  CONSTRAINT `fk_lp_media` FOREIGN KEY (`id`) REFERENCES `media` (`id`)

) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci;


CREATE TABLE `card` (

  `id` int NOT NULL AUTO_INCREMENT,

  `card_number` varchar(45) NOT NULL,

  `card_holder_name` varchar(45) NOT NULL,

  `issuing_bank` varchar(45) NOT NULL,

  `bank_code` varchar(45) NOT NULL,

  `expiredAt` datetime NOT NULL,
```

```sql
  PRIMARY KEY (`id`)

) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci;


CREATE TABLE `order` (

  `id` int NOT NULL,

  `shipping_fee` double NOT NULL,

  `delivery_info_id` int NOT NULL,

  PRIMARY KEY (`id`),

  KEY `fk_order_delivery_idx` (`delivery_info_id`),

  CONSTRAINT `fk_order_delivery` FOREIGN KEY (`delivery_info_id`)
REFERENCES `deliveryinformation` (`id`)

) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci;


CREATE TABLE `order_media` (

  `id` int NOT NULL AUTO_INCREMENT,

  `media_id` int NOT NULL,

  `order_id` int NOT NULL,

  `price` double NOT NULL,
```

```
  `quantity` int NOT NULL,

  PRIMARY KEY (`id`),

  KEY `fk_order_media_media_idx` (`media_id`),

  KEY `fk_order_media_order_idx` (`order_id`),

  CONSTRAINT `fk_order_media_media` FOREIGN KEY (`media_id`) REFERENCES
`media` (`id`),

  CONSTRAINT `fk_order_media_order` FOREIGN KEY (`order_id`) REFERENCES
`order` (`id`)

) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci;


CREATE TABLE `invoice` (

  `id` int NOT NULL,

  `total_amount` int NOT NULL,

  `total_price` double NOT NULL,

  `order_id` int NOT NULL,

  PRIMARY KEY (`id`),

  KEY `fk_invoice_order_idx` (`order_id`),

  CONSTRAINT `fk_invoice_order` FOREIGN KEY (`order_id`) REFERENCES
`order` (`id`)
```

```
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci;


CREATE TABLE `paymenttransaction` (

  `id` int NOT NULL AUTO_INCREMENT,

  `amount` int NOT NULL,

  `content` varchar(100) NOT NULL,

  `method` varchar(45) NOT NULL,

  `transaction_time` datetime NOT NULL,

  `error_message` varchar(100) NOT NULL,

  `card_id` int NOT NULL,

  `invoice_id` int NOT NULL,

  PRIMARY KEY (`id`),

  KEY `fk_payment_card_idx` (`card_id`),

  KEY `fk_payment_invoice_idx` (`invoice_id`),

  CONSTRAINT `fk_payment_card` FOREIGN KEY (`card_id`) REFERENCES `card` (`id`),

  CONSTRAINT `fk_payment_invoice` FOREIGN KEY (`invoice_id`) REFERENCES `invoice` (`id`)

) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci;
```