Nahid Sekander
HTTP5126 Final Project Proposal
Nov 24, 2024

MTG Card Store Database : Database Proposal

Real World Scenario

As a database administrator, the real-world scenario involves managing an online card store that sells unique Magic: The Gathering cards to customers.

Problem 1: Managing Inventory for Customer Checkout

Description: Customers request to purchase Magic: The Gathering (MTG) cards, generating a checkout list. The system must verify that the requested cards are available in the inventory before completing the checkout process.

Solution:

- **Trigger:** Automatically checks inventory levels before processing a checkout. If any card is out of stock, the checkout is blocked, and the customer is notified.
- **View:** Displays available stock for requested cards to simplify the inventory check process.
- **Procedure/Function:** Ensures the transaction proceeds only if all requested cards are in stock.

Required Tables:

1. **Customer Information Table:**
    - **Columns:**
        - `Customer_ID` (Primary Key)
        - `Name` (Not Null)
        - `Email` (Unique/ Not Null)
        - `Address` (Not Null)
    - **Data Types:**
        - `Customer_ID`: Integer
        - `Name`: Varchar(255)
        - `Email`: Varchar(255)
        - `Address`: Varchar(255)
2. **Customer Checkout Table:**
    - **Columns:**
        - `Checkout_ID` (Primary Key)
        - `Customer_ID` (Foreign Key to Customer Information Table)

        - `Card_ID` (Foreign Key to Full MTG Card Database)
        - `Quantity` (Not Null)
        - `Status` (Not Null)
    - **Data Types:**
        - `Checkout_ID`: Integer
        - `Customer_ID`: Integer
        - `Card_ID`: Integer
        - `Quantity`: Integer
        - `Status`: Varchar(50)
3. **Full MTG Card Database:**
    - **Columns:**
        - `Card_ID` (Primary Key)
        - `Name` (Not Null / Unique)
        - `Description` (Not Null / Unique)
    - **Data Types:**
        - `Card_ID`: Integer
        - `Name`: Varchar(255)
        - `Description`: TEXT
4. **Data Store Available Cards Table:**
    - **Columns:**
        - `Card_ID` (Primary Key, Foreign Key to Full MTG Card Database)
        - `Quantity` (Not Null)
        - `Price` (Not Null)
    - **Data Types:**
        - `Card_ID`: Integer
        - `Quantity`: Integer
        - `Price`: Decimal(10, 2)

Relationships:

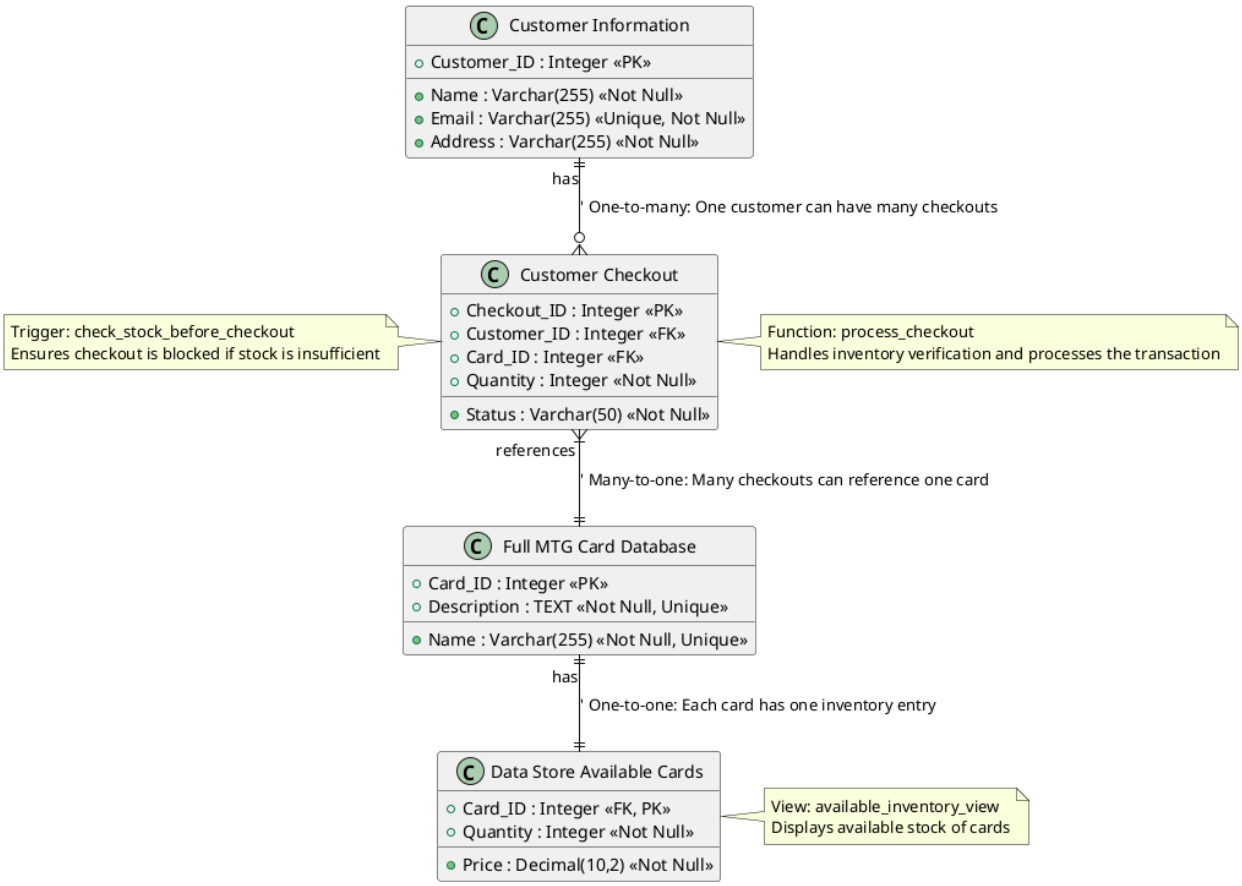
- **Customer Information → Customer Checkout:**
    - One customer can have multiple checkouts.
    - **Mapping:** One (Customer Information) → Many (Customer Checkout)
- **Customer Checkout → Full MTG Card Database:**
    - Many checkout entries can reference the same card.
    - **Mapping:** Many (Customer Checkout) → One (Full MTG Card Database)
- **Full MTG Card Database → Data Store Available Cards:**
    - Each card in the database has one corresponding stock entry in the data store.
    - **Mapping:** One (Full MTG Card Database) → One (Data Store Available Cards)

Nahid Sekander
HTTP5126 Final Project Proposal
Nov 24, 2024

Architecture Design:

- **Trigger Name:** `check_stock_before_checkout`
  - Ensures the checkout is blocked if any card's stock is insufficient.
- **View Name:** `available_inventory_view`
  - Displays the available stock of cards to validate the customer's checkout request.
- **Function Name:** `process_checkout`
  - Handles inventory verification and processes the transaction.

ERD :



Nahid Sekander
HTTP5126 Final Project Proposal
Nov 24, 2024

Problem 2: Customer Requests for Out-of-Stock Cards

Description: If requested cards are unavailable in the current inventory, customers can submit a request for the store to order them. The system must estimate when these cards will become available based on the upcoming inventory table.

Solution:

- **Trigger:** Automatically updates the customer's request status when the requested cards are restocked.
- **View:** Combines current and upcoming inventory, providing a unified view to estimate restock dates.
- **Procedure/Function:** Manages requests for unavailable cards and tracks restocking status.

Required Tables:

1. **Customer Information Table:**
    - **Columns:**
        - `Customer_ID` (Primary Key)
        - `Name` (Not Null)
        - `Email` (Unique / Not Null)
        - `Address` (Not Null)
    - **Data Types:**
        - `Customer_ID`: Integer
        - `Name`: Varchar(255)
        - `Email`: Varchar(255)
        - `Address`: Varchar(255)
2. **Customer Requested Cards Table:**
    - **Columns:**
        - `Request_ID` (Primary Key)
        - `Customer_ID` (Foreign Key to Customer Information Table)
        - `Card_ID` (Foreign Key to Full MTG Card Database)
        - `Request_Date` (Date) (Not Null)
    - **Data Types:**
        - `Request_ID`: Integer
        - `Customer_ID`: Integer
        - `Card_ID`: Integer
        - `Request_Date`: Date

Nahid Sekander
HTTP5126 Final Project Proposal
Nov 24, 2024

3. **Full MTG Card Database:**
    - **Columns:**
        - `Card_ID` (Primary Key)
        - `Name` (Not Null / Unique)
        - `Description` (Not Null / Unique)
    - **Data Types:**
        - `Card_ID`: Integer
        - `Name`: Varchar(255)
        - `Description`: TEXT
4. **Data Store Available Cards Table:**
    - **Columns:**
        - `Card_ID` (Primary Key, Foreign Key to Full MTG Card Database)
        - `Quantity` (Not Null)
        - `Price` (Not Null)
    - **Data Types:**
        - `Card_ID`: Integer
        - `Quantity`: Integer
        - `Price`: Decimal(10, 2)
5. **Upcoming Inventory Table:**
    - **Columns:**
        - `Card_ID` (Primary Key, Foreign Key to Full MTG Card Database)
        - `Expected_Arrival` (Date)
        - `Quantity` (Not Null)
    - **Data Types:**
        - `Card_ID`: Integer
        - `Expected_Arrival`: Date
        - `Quantity`: Integer

Relationships:

- **Customer Information → Customer Requested Cards:**
    - One customer can make multiple requests.
    - **Mapping:** One (Customer Information) → Many (Customer Requested Cards)
- **Customer Requested Cards → Full MTG Card Database:**
    - Many requests can reference the same card.
    - **Mapping:** Many (Customer Requested Cards) → One (Full MTG Card Database)
- **Full MTG Card Database → Upcoming Inventory:**
    - Each card in the database may have one upcoming inventory record.
    - **Mapping:** One (Full MTG Card Database) → One (Upcoming Inventory)

Nahid Sekander
HTTP5126 Final Project Proposal
Nov 24, 2024

Architecture Design:

- **Trigger Name:** `update_request_status`
  - Automatically updates the customer request when restocked cards become available.
- **View Name:** `upcoming_inventory_view`
  - Combines current and upcoming inventory to provide restock information.
- **Function Name:** `request_card_restock`
  - Manages customer requests for unavailable cards and tracks restocking.

ERD: