**ASSIGNMENT DBI**

**GROUP 4: PICO.VN**

**LƯỢC ĐỒ CSDL**

1. **Lược đồ CSDL**

**Customers** (Khách hàng):

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| CustomerID | int | Primary Key (PK) |
| CustomerName | NVarchar(100) | NOT NULL |
| Email | NVarchar(100) | NOT NULL, UNIQUE |
| Phone | NVarchar(20) | NOT NULL |
| Address | NVarchar(255) | NULL |
| Account | Varchar(25) | NULL |
| Password | Varchar(255) | NOT NULL |
| CreatedAt | datetime | NOT NULL |

**Products** (Sản phẩm):

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| ProductID | int | Primary Key (PK) |
| ProductName | NVarchar(200) | NOT NULL |
| Description | NVarchar(200) | NULL |
| Price | Decimal(10,2) | NOT NULL, CHECK (Price > 0) |
| CategoryID | int | Foreign Key (FK) references Categories |
| BrandID | int | Foreign Key (FK) references Brands |
| LocationID | int | Foreign Key (FK) references Location |
| ProgramID | int | Foreign Key (FK) references Promotional program |

**Categories** (Loại sản phẩm):

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| CategoryID | int | Primary Key (PK) |
| CategoryName | NVarchar(100) | NOT NULL |

**Brands** (Thương hiệu):

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| BrandID | int | Primary Key (PK) |
| BrandName | NVarchar(100) | NOT NULL |

**Orders** (Đơn hàng):

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| OrderID | int | Primary Key (PK) |
| CustomerID | int | Foreign Key (FK) references Customers(CustomerID) |
| OrderDate | datetime | NOT NULL |
| ShippingAddress | NVarchar(255) | NOT NULL |
| TotalAmount | Decimal(10,2) | NOT NULL |
| Status | NVarchar(50) | NOT NULL(Pending, Shipped, Delivered, Cancelled) |

**OrderItems** (Chi tiết đơn hàng):

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| OrderItemID | int | Primary Key (PK) |
| OrderID | int | Foreign Key (FK) references Orders(OrderID) |
| ProductID | int | Foreign Key (FK) references Products(ProductID) |
| Quantity | int | NOT NULL(Quantity > 0) |
| UnitPrice | Decimal(10,2) | NOT NULL |

**Payments** (Thanh toán):

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| PaymentID | int | Primary Key (PK) |
| OrderID | int | Foreign Key (FK) references Orders(OrderID) |
| PaymentMethod | NVarchar(50) | NOT NULL(CreditCard, PayPal, Cash) |
| PaymentStatus | NVarchar(50) | NOT NULL(Paid, Pending, Failed) |
| PaymentAmount | Decimal(10,2) | NOT NULL |
| PaymentDate | datetime | NOT NULL |

**Reviews** (Đánh giá sản phẩm):

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| ReviewID | int | Primary Key (PK) |
| CustomerID | int | Foreign Key (FK) references Customers(CustomerID) |
| ProductID | int | Foreign Key (FK) references Products(ProductID) |
| Rating | int | NOT NULL, CHECK (Rating BETWEEN 1 AND 5) |
| ReviewText | NVarchar(255) | NULL |
| ReviewDate | datetime | NOT NULL |

#### **Promotional program:** (Chương trình ưu đãi):

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| ProgramID | int | Primary Key (PK) |
| ProgramName | NVarchar(100) | NOT NULL |
| StartDate | datetime | NOT NULL |
| EndDate | datetime | NOT NULL |
| DiscountRate | Decimal(5,2) | NOT NULL |
| Description | NVarchar(255) | NULL |
| VoucherCode | NVarchar(50) | NULL |
| ProductID | int | NULL, Foreign Key (FK) references Products |

#### **OrderTracking:**(Tra cứu đơn hàng)

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| TrackingID | int | Primary Key (PK) |
| OrderID | int | NOT NULL, Foreign Key (FK) references Orders |
| ShippingCompanyID | int | NOT NULL, Foreign Key (FK) references ShippingCompany |
| Status | NVarchar(50) | NOT NULL |
| EstimatedDeliverate | datetime | NOT NULL |
| ActualDeliveryDate | datetime | NULL |
| TrackingDetails | NVarchar(255) | NOT NULL |

**ShippingCompany:** (Đơn vị vận chuyển)

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| ShippingCompanyID | int | Primary Key (PK) |
| CompanyName | NVarchar(100) | NOT NULL |
| ContactNumber | NVarchar(20) | NULL |
| Email | NVarchar(100) | NULL |
| Address | NVarchar(255) | NULL |
| TrackingID | int | NOT NULL, Foreign Key (FK) referencesOrderTracking |

#### **ShoppingCart:** (Giỏ hàng)

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| CartID | int | Primary Key (PK) |
| CustomerID | int | NOT NULL, Foreign Key (FK) references Customer |
| CreatedDate | NVarchar(50) | NOT NULL |
| IsCheckedOut | bit | NULL, true/false |

**ShoppingCartItems** (Chi tiết đơn hàng):

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| CartItemID | int | Primary Key (PK) |
| CartID | int | NOT NULL, Foreign Key (FK) references ShoppingCart |
| ProductID | int | NOT NULL, Foreign Key (FK)  references Product |
| Quantity | bit | NOT NULL, Quantity > 0 |

**Location** (Vị trí):

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| LocationID | int | Primary Key (PK) |
| LocationName | Nvarchar(100) | NOT NULL |
| ProductID | int | NOT NULL,Foreign Key (FK) references Products(ProductID |
| StockQuantity | int | NOT NULL, CHECK (StockQuantity >= 0) |

#### **CustomerSupport** (Chăm sóc khách hàng)**:**

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| SupportID | int | Primary Key (PK) |
| CustomerID | int | NOT NULL,Foreign Key (FK) references Customers(CustomerID) |
| SupportDate | datetime | NOT NULL |
| SupportType | Nvarchar(50) | NOT NULL(Chat, Email, Phone) |
| IssueDescription | Nvarchar(255) | NULL |
| SupportStatus | Nvarchar(50) | NOT NULL(Open, Closed, Pending) |

#### **Warranty** (Bảo hành):

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| WarrantyID | int | Primary Key (PK) |
| ProductID | int | NOT NULL,Foreign Key (FK) references Products(ProductID) |
| WarrantyPeriod | int | NOT NULL |
| WarrantyStartDate | datetime | NOT NULL |
| WarrantyEndDate | datetime | NOT NULL |
| WarrantyStatus | Nvarchar(50) | NOT NULL(Active, Expired, Claimed) |

#### **Returns** (Đổi trả):

| **Column Name** | **Data Type** | **Constraints** |
| --- | --- | --- |
| ReturnID | int | Primary Key (PK) |
| OrderID | int | NOT NULL,Foreign Key (FK) references Orders(OrderID) |
| ProductID | int | NOT NULL,Foreign Key (FK) references Products(ProductID) |
| ReturnReason | NVarchar | NOT NULL |
| ReturnDate | datetime | NOT NULL |
| ReturnStatus | NVarchar | NOT NULL(Pending, Approved, Rejected) |
| RefundAmount | Decimal(10,2) | NOT NULL |

1. **Chuẩn hóa CSDL đạt 3NF hoặc BCNF**

**3NF**

**1.Customer**

| **CustomerID** | **CustomerName** | **Email** | **Phone** | **Address** | **Account** | **Password** | **CreatedAt** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 101 | Tường Vy | tuongvy@gmail.com | 0345678910 | Tp.HCM | TUONGVY | nguyenmaituongvy01234 | 12/05/2022 |
| 102 | Yến Nhi | yennhi@gmail.com | 0836362924 | An Giang | VOYENNHI | voyennhi98765 | 08/7/2024 |
| 103 | Bích Trầm | bichtram@gmail.com | 0348475797 | Kiên Giang | TRAMBICHTRINH | trinhbichtram2303 | 23/02/2020 |
| 104 | Kim Lý | kimly@gmail.com | 0378052785 | Tp.Hà Nội | LYSTRUONG | truongthikimly060204 | 29/04/2023 |
| 105 | Anh Duy | anhduy@gmail.com | 0385492550 | Tp.HCM | ANHDUY | trananhduy030304 | 29/06/2023 |
| 106 | Thịnh | thaithinh@gmail.com | 0965900177 | Kiên Giang | THAITHINH | tranthaithinh231203 | 12/01/2024 |
| 107 | Lộc | loc@gmai.com | 0683786452 | Long An | LOC | loc068 | 29/10/2023 |

**2. Product**

| **ProductID** | **ProductName** | **Price** | **CategoryID** | **BrandID** | **LocationID** | **ProgramID** | **Description** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | Tivi Sony | 12.990.000 vnd | 001 | T01 | 1 | 001 | 4K-Ultra HD Google TV |
| 2 | Máy Giặt Panasonic | 11.190.000 vnd | 002 | G02 | 2 | 001 | LG FV1412S3PA 12 kg |
| 3 | Tủ Lạnh LG | 33.990.000 vnd | 003 | L03 | 3 | 002 | LG Inverter 617 lit Multi Door |
| 4 | Laptop Dell | 14.990.000 vnd | 004 | D04 | 1 | 002 | Core i5-1235U/8GB/512GB |
| 5 | iPhone 16 | 22.890.000 vnd | 00 | A05 | 2 | 003 | iPhone 16 (A18/8GB/6.1 inch/128GB) |

**3. Categories**

| **CategoryID** | **CategoryName** |
| --- | --- |
| 001 | Electronics |
| 002 | Home Appliances |
| 003 | Home Appliances |
| 004 | Electronics |
| 005 | Mobiles |

**4. Brands**

| **BrandID** | **BrandName** |
| --- | --- |
| 01 | Sony |
| 02 | Panasonic |
| 03 | LG |
| 04 | Dell |
| 05 | Apple |

**5. Orders**

| **OrderID** | **CustormerID** | **OrderDate** | **ShippingAddress** | **TotalAmount** | **Status** |
| --- | --- | --- | --- | --- | --- |
| 1 | 101 | 2024-10-12 | 17, đường Trương Hanh, phường Long Thạnh Mỹ, tp.Thủ Đức, Tp.HCM | 25.980.000vnđ | Pending |
| 2 | 102 | 2024-10-12 | 16, Thanh Lương, TT. Ba Chúc, huyện Tri Trôn, tỉnh An Giang | 68.670.000vnđ | Shippep |
| 3 | 103 | 2024-10-13 | ấp Cạnh Đền 3, xã Vĩnh Phong, huyện Vĩnh Thuận, tỉnh Kiên Giang | 14.990.000 vnd | Cancelled |
| 4 | 104 | 2024-10-21 | HS1-19 Hoa Sữa 1, Vinhomes Riverside, Phúc Lợi, Long Biên, Tp. Hà Nội | 33.990.000 vnd | Delivered |

**6. OrderItems:**

| **OrderItemID** | **OrderID** | **ProductID** | **Quantity** | **UnitPrice** |
| --- | --- | --- | --- | --- |
| 01 | 1 | 1 | 2 | 12.990.000 vnd |
| 02 | 2 | 5 | 3 | 22.890.000 vnd |
| 03 | 3 | 4 | 1 | 14.990.000 vnd |
| 04 | 4 | 3 | 1 | 33.990.000 vnd |

**7. Payments**

| **PaymentID** | **OrderID** | **PaymentMethod** | **PaymentStatus** | **PaymentAmount** | **PaymentDate** |
| --- | --- | --- | --- | --- | --- |
| 1 | 1 | Credit Card | Completed | 23.980.000vnđ | 2024-10-12 10:30:00 |
| 2 | 2 | Cash | Completed | 65.670.000vnđ | 2024-10-13 14:15:00 |
| 3 | 3 | Bank Transfer | Completed | 12.990.000 vnd | 2024-10-12 10:35:00 |
| 4 | 4 | Cash | Completed | 30.990.000 vnd | 2024-10-13 14:20:00 |

**8. Review**

| **ReviewID** | **CustomerID** | **ProductID** | **Rating** | **ReviewText** | **ReviewDate** |
| --- | --- | --- | --- | --- | --- |
| 1 | 101 | 1 | 5 | Sản phẩm tuyệt vời | 2024-10-12 |
| 2 | 102 | 5 | 4 | Tốt, nhưng pin có thể tốt hơn | 2024-10-13 |
| 3 | 103 | 4 | 4 | Chất lượng trung bình | 2024-10-14 |

**9.PromotionalPrograms**

| **ProgramID** | **ProgramName** | **StartDate** | **EndDate** | **DiscountRate** | **Description** | **VoucherCode** | **ProductID** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 001 | Giảm giá mùa hè | 2024-06-01 | 2024-06-15 | 20% | Ưu đãi 20% tất cả sản phẩm hè | SUMMER2024 | 1 |
| 002 | Khuyến mãi cuối năm | 2024-12-01 | 2024-12-15 | 30% | Ưu đãi 30% cho các sản phẩm chọn lọc | YEAREND2024 | 5 |
| 003 | Black Friday | 2024-03-29 | 2024-04-12 | 10% | Ưu đãi Black Friday giảm giá 10% trên toàn bộ cửa hàng | SHOPPINGDAY | 4 |
| 004 | Back to School | 2024-08-15 | 2024-08-31 | 20% | Chương trình Back to School giảm giá 20% cho dụng cụ học tập | BACKTOSHOOL | 6 |
| 005 | Giáng Sinh Vui Vẻ | 2024-12-15 | 2024-12-31 | 25% | Ưu đãi Giáng Sinh giảm giá 25% cho tất cả sản phẩm | CHRISTMAS25 | 2 |
| 006 | Tết Nguyên Đán | 2025-01-10 | 2025-01-24 | 30% | Khuyến mãi Tết Nguyên Đán giảm giá 30% các mặt hàng gia dụng | TET2025 | 8 |
| 007 | Flash Sale | 2024-11-10 | 2024-11-12 | 50% | Chương trình Flash Sale giảm giá đến 50% cho tất cả các sản phẩm chọn lọc | FLASH50 | 9 |

**10. OrderTracking**

| **TrackingID** | **OrderID** | **Status** | **EstimatedDeliveryDate** | **ActualDeliveryDate** | **TrackingDetails** | ShippingCompanyID |
| --- | --- | --- | --- | --- | --- | --- |
| 01 | 1 | Đang xử lý | 2024-10-30 | Null | Đã được xác nhận | 01 |
| 02 | 2 | Đã gửi | 2023-10-28 | Null | Đang giao đến địa chỉ của bạn | 02 |
| 03 | 3 | Đang giao | 2024-06-24 | 2024-06-23 | Đang bị hủy theo yêu cầu khách hàng | 01 |
| 04 | 4 | Đã hủy | 2023-12-28 | Null | Đã được xác nhận | 03 |

#### **11. ShoppingCart**

| **CartID** | **CustomerID** | **CreatedDate** | **IsCheckedOut** |
| --- | --- | --- | --- |
| 001 | 101 | 2024-09-05 | true |
| 002 | 102 | 2024-10-05 | true |
| 003 | 103 | 2024-10-04 | false |

**12. ShoppingCartItems**

| **CartItemID** | **CartID** | **ProductID** | **Quantity** |
| --- | --- | --- | --- |
| I1 | 001 | 1 | 2 |
| I2 | 002 | 5 | 1 |
| I3 | 003 | 4 | 3 |

**13. Location**

| **LocationID** | **LocationName** | **ProductID** | **StockQuantity** |
| --- | --- | --- | --- |
| 1 | Hà Nội | 1 | 7 |
| 2 | TP.Hồ Chí Minh | 5 | 2 |
| 3 | Cần Thơ | 4 | 4 |

**14. CustomerSupport**

| **SupportID** | **CustomerID** | **SupportDate** | **SupportType** | **IssueDescription** | **SupportStatus** |
| --- | --- | --- | --- | --- | --- |
| 001 | 101 | 2024-10-20 | Email | không thể đăng nhập vào hệ thống | Open |
| 002 | 102 | 2024-10-17 | Phone | sai sót trong khoản phí ở hóa đơn cuối cùng | Closed |
| 003 | 103 | 2024-10-25 | Chat | hệ thống thường xuyên bị sập | Pending |

**15. Warranty**

| **WarrantyID** | **ProductID** | **WarrantyPeriod** | **WarrantyStartDate** | **WarrantyEndDate** | **WarrantyStatus** |
| --- | --- | --- | --- | --- | --- |
| 0240 | 1 | 36 tháng | 2024-10-12 | 2027-10-12 | Active |
| 0241 | 5 | 12 tháng | 2024-10-15 | 2025-10-15 | Expired |
| 0242 | 4 | 24 tháng | 2024-10-18 | 2026-10-18 | Claimed |

**16. Returns**

| **ReturnID** | **OrderID** | **ProductID** | **LocationID** | **ReturnReason** | **ReturnDate** | **ReturnStatus** | **RefundAmount** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 01 | 1 | 1 | 1 | Sản phẩm lỗi | 2024-10-24 | Đã phê duyệt | 25.980.000vnđ |
| 02 | 2 | 3 | 2 | Không đúng mô tả | 2024-10-30 | Đang chờ xử lý | 68.670.000vnđ |
| 03 | 4 | 5 | 3 | Hư hỏng trên đường vận chuyển | 2024-11-5 | Đã phê duyệt | 33.990.000 vnd |

**17. ShippingCompany**

| **ShippingCompanyID** | **CompanyName** | **ContactNumber** | **Email** | **Address** | **TrackingID** |
| --- | --- | --- | --- | --- | --- |
| 01 | Giao hang tiet kiem | 19006622 | support@ghtk.vn | 222 Đường 19, Phường Bình Trị Đông B, Bình Tân, TP.HCM | 01 |
| 02 | VN Post | 19008099 | support@vnp.vn | Số 15 Đường số 8, Phường Bình Hưng Hòa B, Bình Tân, TP.HCM | 02 |
| 03 | Giao hang nhanh | 1900636112 | contact@ghn.vn | 98 Đường 18, Phường 8, Quận 4, TP.HCM | 04 |