ELLENA

ONLINE WOMEN FASHION SHOP

Software Design Document

– Ho Chi Minh, May 2022 –

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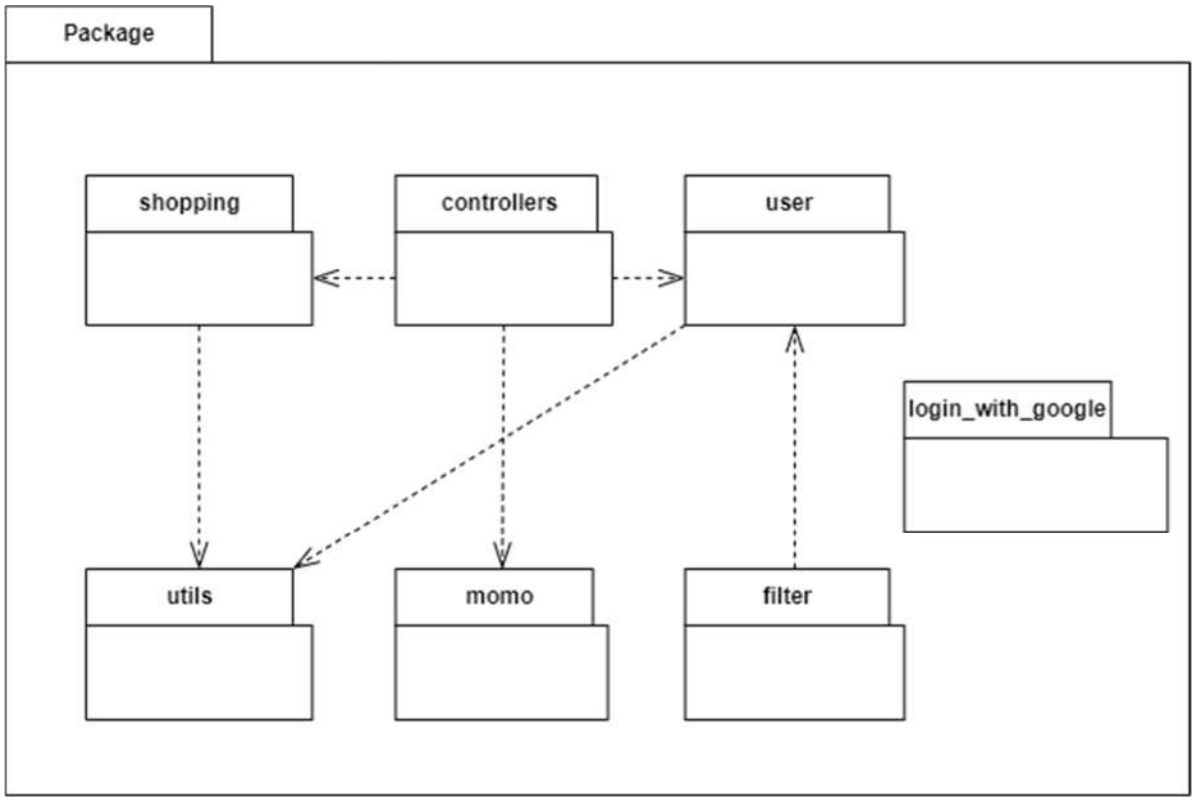
1. Code Packages/Namespaces



Package descriptions & package class naming conventions

No	Package	Description
01	store	This package contains all the other packages in this Web app.
02	controllers	This package contains classes for all the controllers in the app Class naming convention: ActionController
03	shopping	This package contains classes for product items and carts. Class naming convention: ItemDAO, ItemDTO,...
04	user	This package contains classes for processing users' data. Class naming convention: UserDAO, UserDTO,...
05	login_with_google	This package contains classes for processing Google Sign-in accounts' information.
06	momo	This package contains classes for processing Momo online payment.
07	utils	This package contains classes for common functions.

2. Database Schema

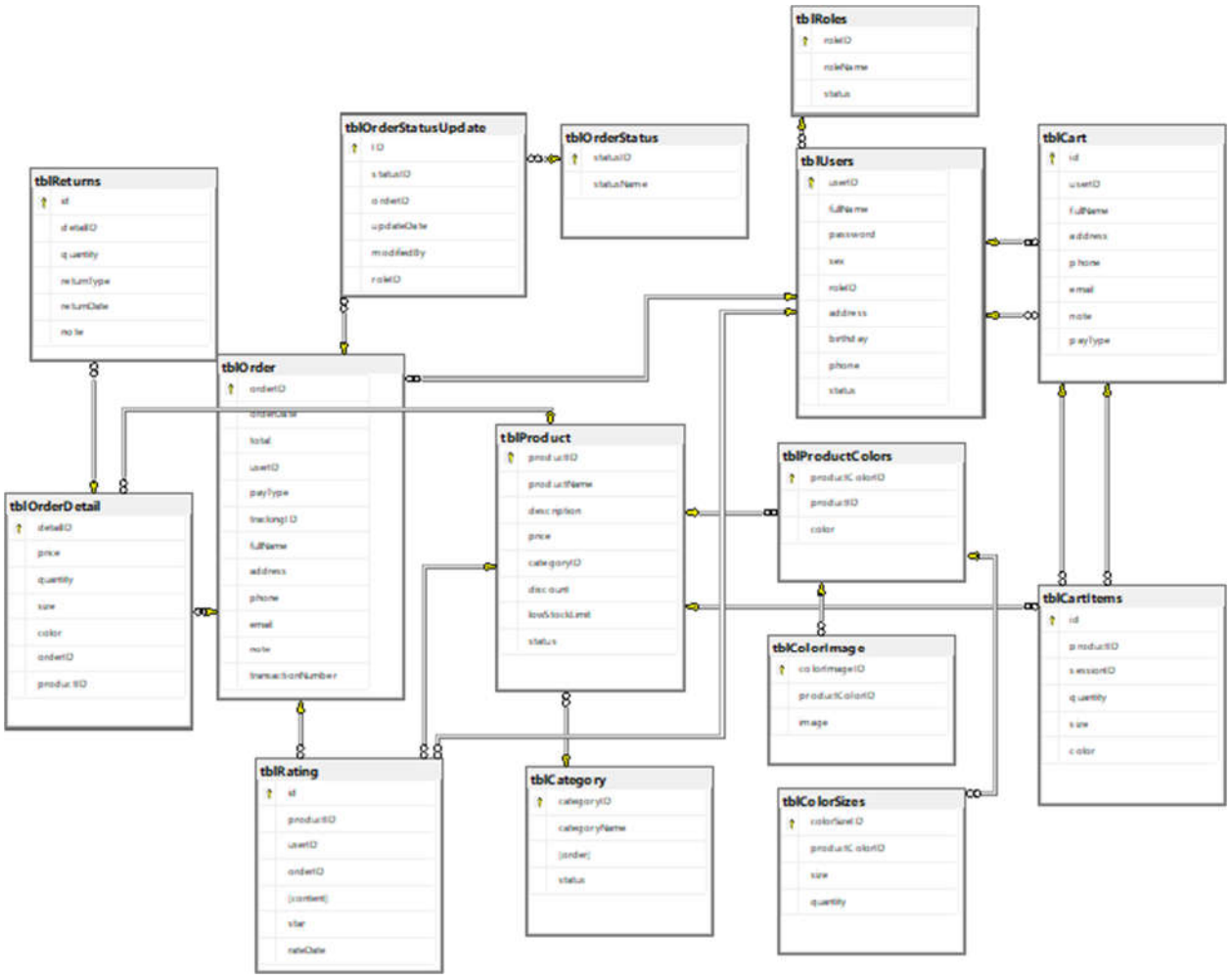


Table descriptions & package class naming conventions are as below

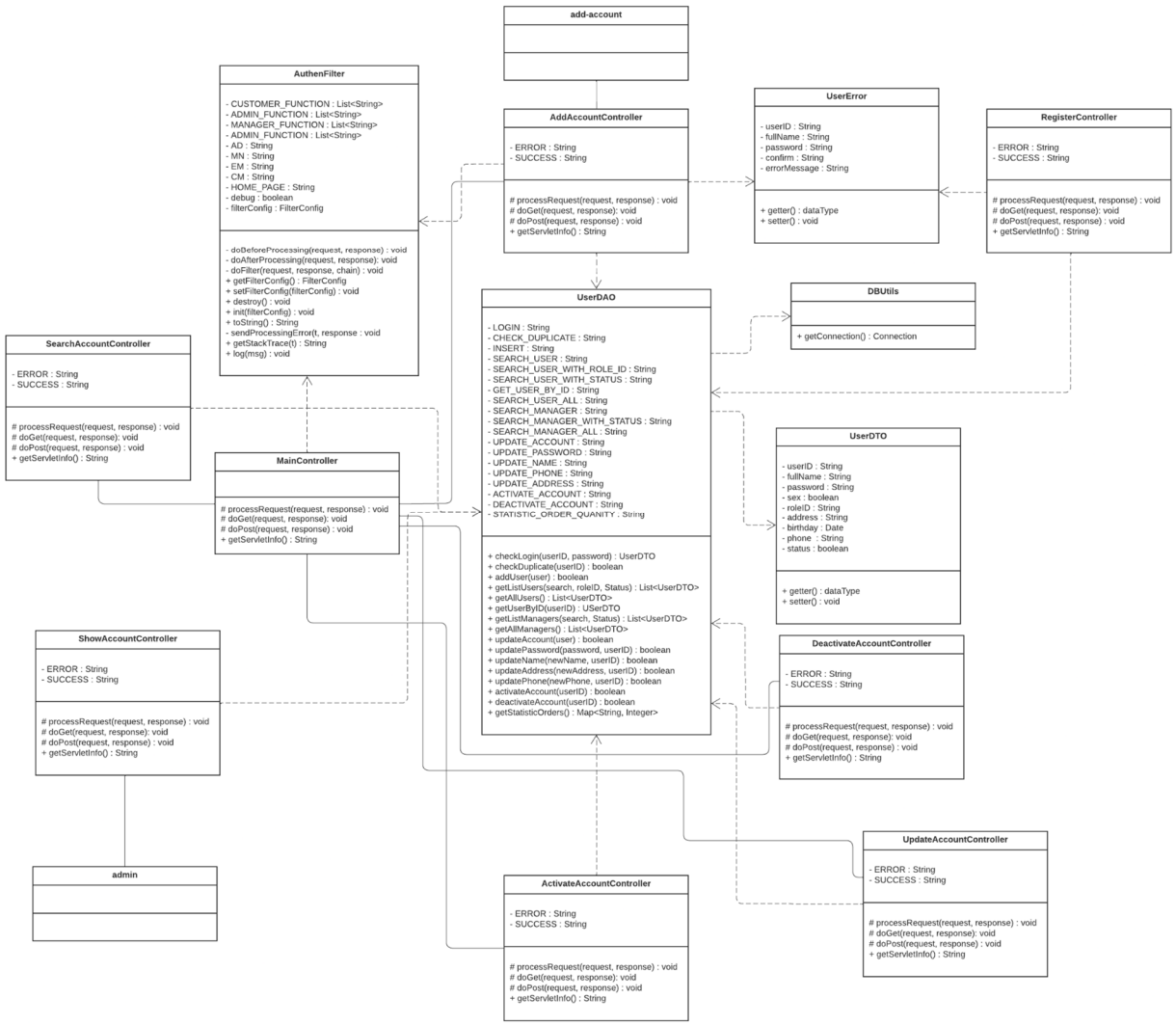
No	Table	Description
1	tblUsers	Used to store all accounts infomation. - Primary key: userID - Foreign key: roleID
2	tblRoles	Used to limit account permission. - Primary key: roleID
3	tblRating	Used to store products rating from customers. - Primary keys: productID, userID - Foreign keys: productID, userID
4	tblOrder	Used to store all orders infomation. - Primary key: orderID - Foreign key: statusID
5	tblOrderStatus	Used to differentiate each order status. - Primary key: statusID

6	tblOrderDetail	Used to store the detail in each customer's order (products, quantity, total price) - Primary key: detailID - Foreign keys: orderID, productID
7	tblProduct	Used to store all the product details - Primary key: productID - Foreign key: categoryID
8	tblCategory	Used to separate different kinds of product. - Primary key: categoryID
9	tblProductDetail	Used to store all the product's variants detail (size,color) - Primary keys: productID, size, color - Foreign key: productID

II. Code Designs

1. Account Management

a. Class Diagram



b. Class Specifications

UserDAO

No	Method	Description
01	checkLogin(userID, password)	Check whether an user has an existing account or not
02	checkDuplicate(userID)	Check whether an userID is duplicated
03	addUser(user)	Insert an user into the database
04	getListUsers(search, roleID, Status)	Return a list of users with some criteria
05	getAllUsers()	Return the list of all users
06	getUserByID(userID)	Return a user that has the requested userID.
07	getListManagers(search, Status)	Return a list of searched managers
08	getAllManagers()	Return the list of all managers
09	updateAccount(user)	Update an account
10	updatePassword(password, userID)	Update password of an account
11	updateName(newName, userID)	Update name of an account
12	updateAddress(newAddress, userID)	Update address of an account
13	updatePhone(newPhone, userID)	Update phone of an account
14	updateSex(newSex, userID)	Update sex of an account
16	updateBirthday(newBirthday, userID)	Update birthday of an account
17	deactivateAccount(userID)	Change an account's status to inactive
18	activateAccount(userID)	Change an account's status to active

UserDTO

No	Method	Description
01	getter()	Get an attribute's value
02	setter()	Set an attribute's value

UserError

No	Method	Description
01	getter()	Get an attribute's value
02	setter()	Set an attribute's value

DBUtils

No	Method	Description
01	getConnection()	Return a Connection to connect to the database

AddAccountController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.

03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

ShowAccountController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

RegisterController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

ActivateAccountController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

DeactivateAccountController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

SearchAccountController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

UpdateAccountController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

c. Sequence Diagram(s)

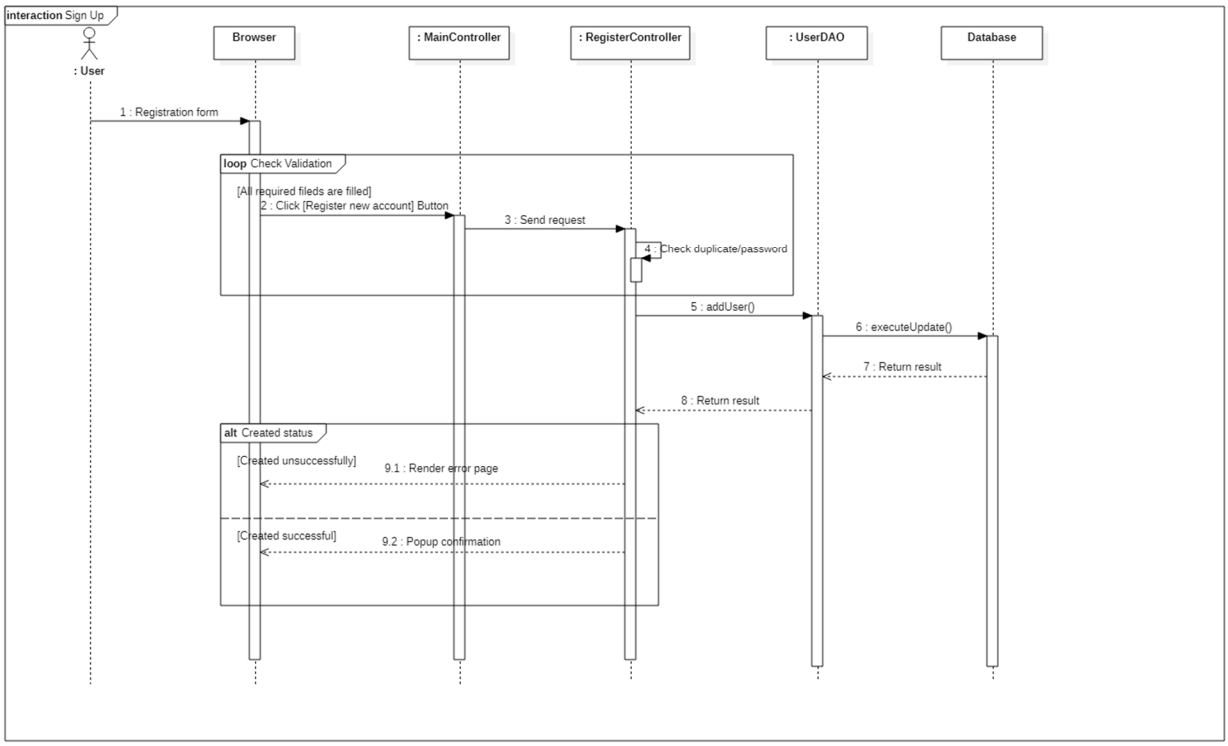


Figure 1.1: Sign up

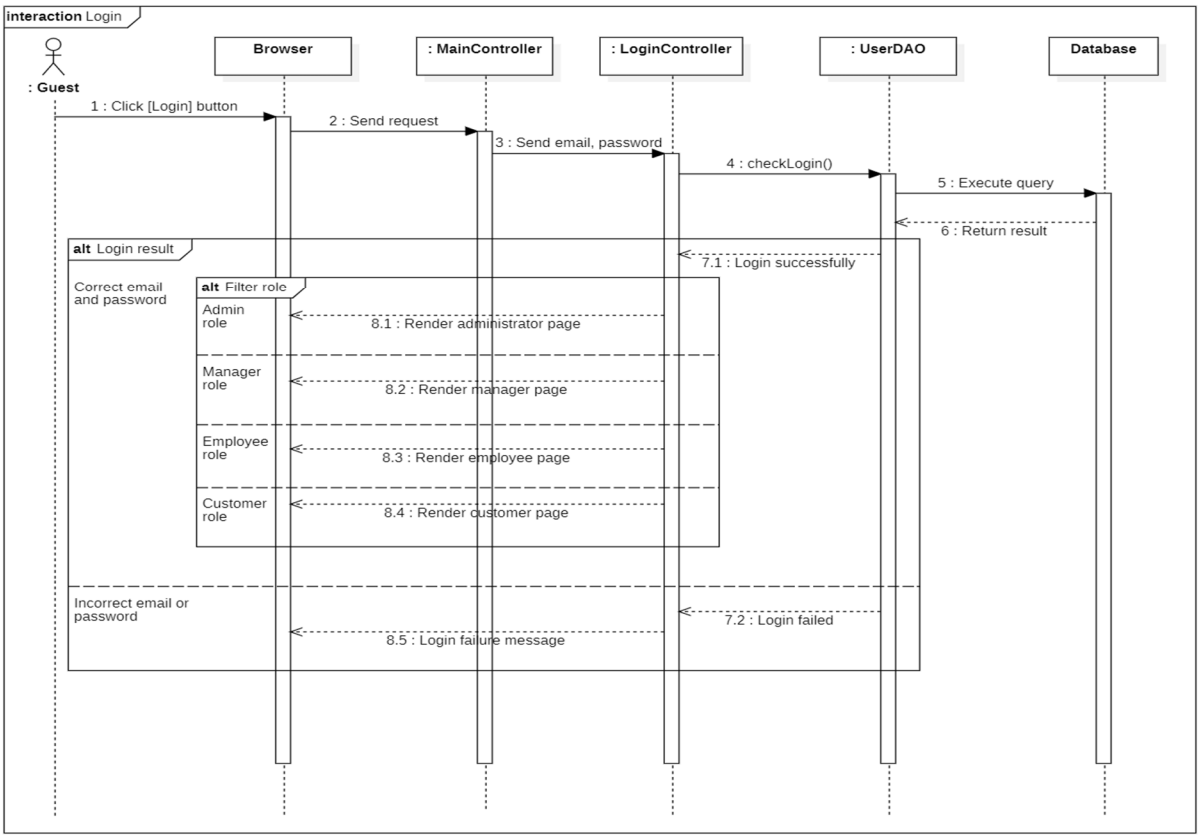


Figure 1.2: Login

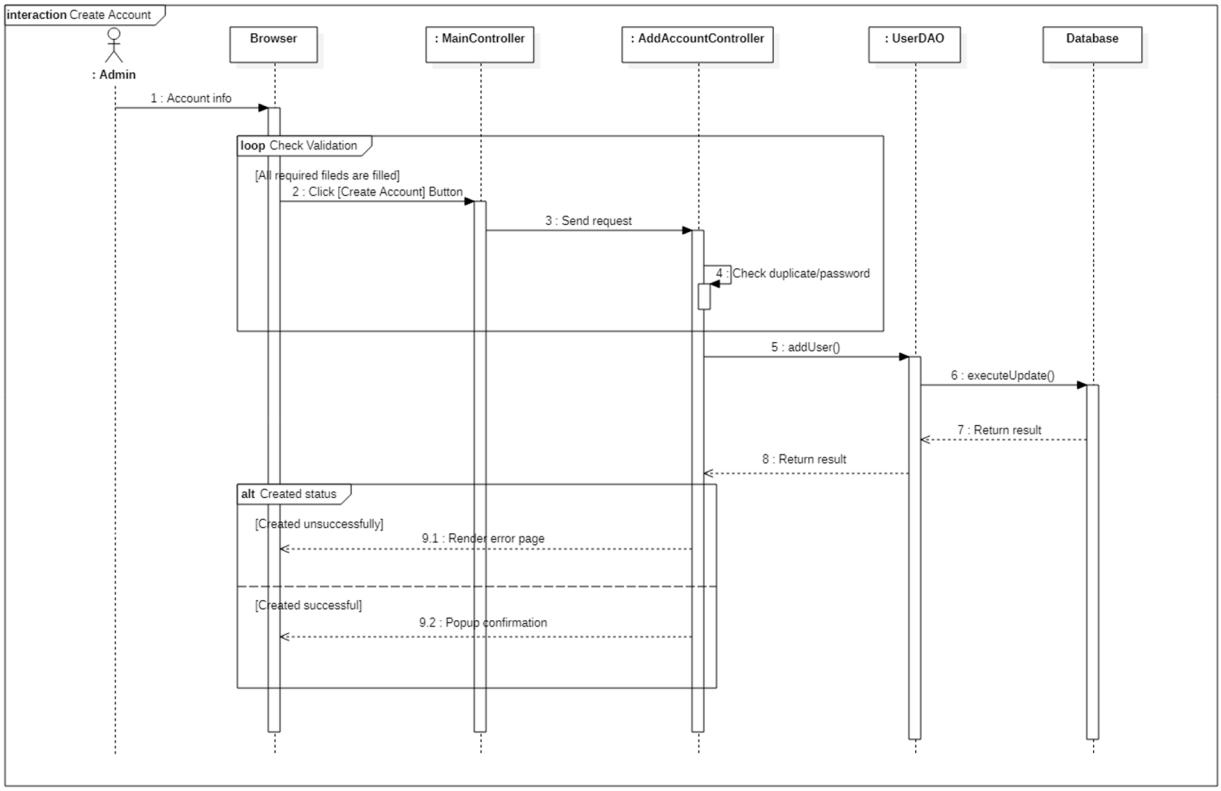


Figure 1.3: Create an account - Administrator

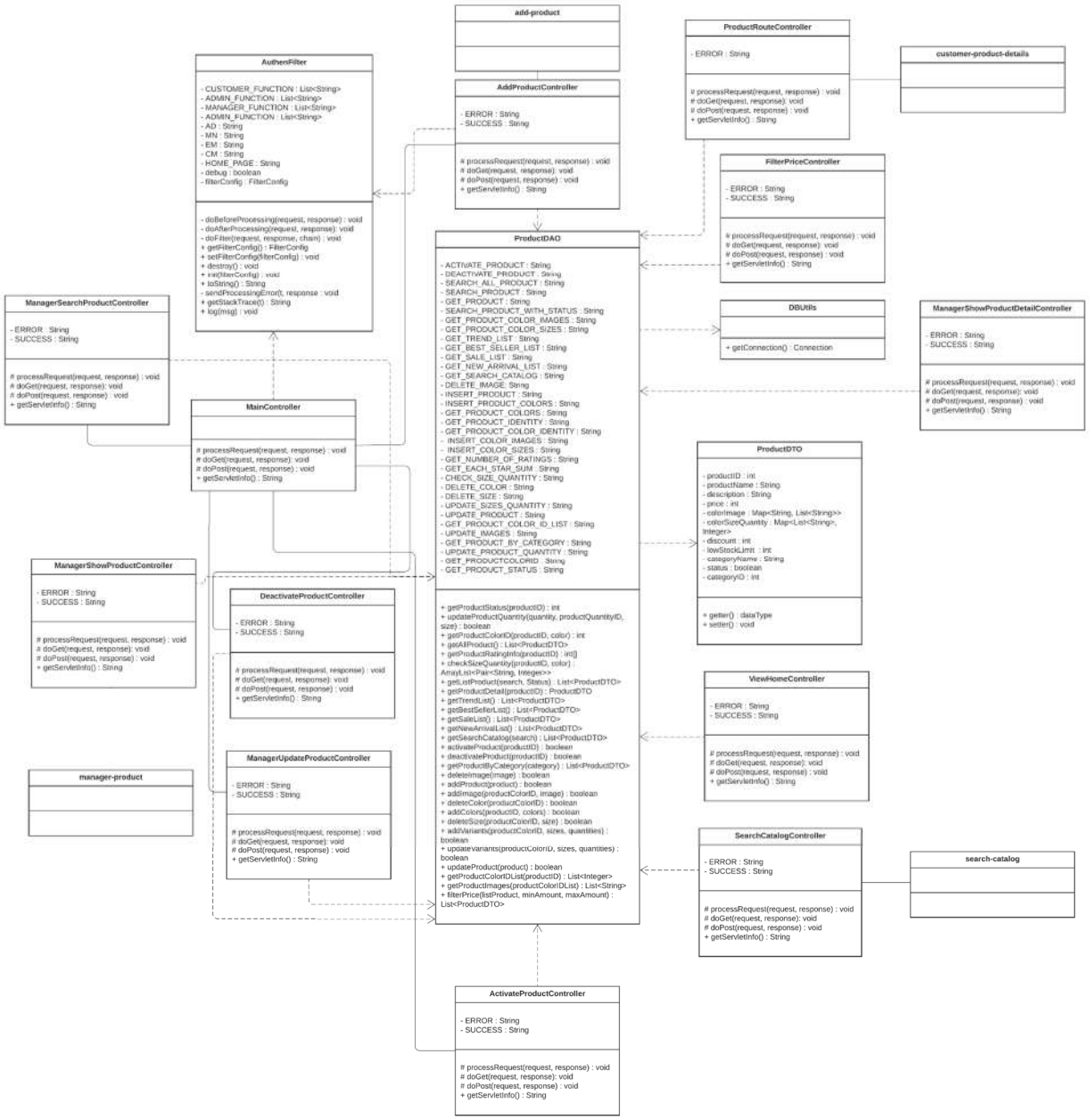
d. Database queries

- String INSERT = INSERT tblUsers(userID, fullName, password, sex, roleID, address, birthday, phone, status) VALUES(?, ?, ?, ?, ?, ?, ?, ?, ?)
- String CHECK_DUPLICATE = "SELECT fullName FROM tblUsers WHERE userID=?"
- String LOGIN = "SELECT fullName, sex, roleID, address, birthday, phone, status FROM tblUsers WHERE userID=? AND password=?"
- String SEARCH_USER = "SELECT userID, fullName, sex, roleID, address, birthday, phone, status FROM tblUsers WHERE userID LIKE ?"
- String SEARCH_USER_WITH_ROLE_ID = "SELECT userID, fullName, sex, roleID, address, birthday, phone, status FROM tblUsers WHERE userID LIKE ? AND roleID LIKE ?"
- String SEARCH_USER_WITH_STATUS = "SELECT userID, fullName, sex, roleID, address, birthday, phone, status FROM tblUsers WHERE userID LIKE ? AND roleID LIKE ? AND status=?"
- String GET_USER_BY_ID = "SELECT userID, fullName, password, sex, roleID, address, birthday, phone, status FROM tblUsers WHERE userID=?"
- String SEARCH_USER_ALL = "SELECT userID, fullName, sex, roleID, address, birthday, phone, status FROM tblUsers"
- String SEARCH_MANAGER = "SELECT userID, fullName, sex, roleID, address, birthday, phone, status FROM tblUsers WHERE userID LIKE ? AND roleID LIKE 'MN'"
- String SEARCH_MANAGER_WITH_STATUS = "SELECT userID, fullName, sex, roleID, address, birthday, phone, status FROM tblUsers WHERE userID LIKE ? AND roleID LIKE 'MN' AND status=?"
- String SEARCH_MANAGER_ALL = "SELECT userID, fullName, sex, roleID, address, birthday, phone, status FROM tblUsers WHERE roleID LIKE 'MN'"

- String UPDATE_ACCOUNT = "UPDATE tblUsers SET fullName=?, sex=?, roleID=?, address=?, birthday=?, phone=? WHERE userID=?"
- String UPDATE_PASSWORD = "UPDATE tblUsers SET password=? WHERE userID=?"
- String UPDATE_NAME = "UPDATE tblUsers SET fullName=? WHERE userID=?"
- String UPDATE_SEX = "UPDATE tblUsers SET sex=? WHERE userID=?"
- String UPDATE_BIRTHDAY = "UPDATE tblUsers SET birthday=? WHERE userID=?"
- String UPDATE_ADDRESS = "UPDATE tblUsers SET address=? WHERE userID=?"
- String UPDATE_PHONE = "UPDATE tblUsers SET phone=? WHERE userID=?"
- String ACTIVATE_ACCOUNT = "UPDATE tblUsers SET status=1 WHERE userID=?"
- String DEACTIVATE_ACCOUNT = "UPDATE tblUsers SET status=0 WHERE userID=?"

2. Product Management

a. Class Diagram



b. Class Specifications

ProductDAO

No	Method	Description
01	addProduct(product)	Add a product to the database
02	getProductStatus(productID)	Return a product's status
03	updateProductQuantity(quantity, productQuantityID, size)	Update a product quantity by its size
04	getProductColorID(productID, color)	Return ID of a product's color

05	getAllProduct()	Return the list of all products
06	getProductRatingInfo(productID)	Return details of a product's rating
07	checkSizeQuantity(productID, color)	Return an array list of all sizes and colors of a product
08	getListProduct(search, Status)	Return the list of searched products
09	getProductDetail(productID)	Return the all detailed information of a product
10	getTrendList()	Get the list of trendy clothes
11	getBestSellerList()	Get the list of best seller clothes
12	getSaleList()	Get the list of clothes that are on sales
13	getNewArrivalList()	Get the list of new clothes
14	getSearchCatalog(search)	Return the list of searched products for customers
16	getProductByCategory(category)	Retrieve all products under a category
17	deactivateProduct(productID)	Change a product's status to inactive
18	activateProduct(productID)	Change a product's status to active
19	deleteImage(image)	Delete an image of a product
20	addImage(productColorID, image)	Add an image of a product's color
21	filterSearchedProducts(search, minAmount, maxAmount)	Return the searched list of products that matched the criteria
22	getProductImages(productColorIDList)	Get all product images for the inputted colors
23	getProductColorIDList(productID)	Get all IDs for a product's color
24	deleteColor(productColorID)	Delete a color from a product
25	addVariants(productColorID, sizes, quantities)	Add a variant for a product
26	updateVariants(productColorID, sizes, quantities)	Update a variant for a product
27	updateProduct(product)	Update a product
28	addColors(productID, colors)	Add a list of colors to a product
29	deleteSize(productColorID, size)	Delete a size of a product
30	filterCategoryProducts(category, minAmount, maxAmount)	Return the list of products that matched the criteria in a specific category

ProductDTO

No	Method	Description
01	getter()	Get an attribute's value
02	setter()	Set an attribute's value

DBUtils

No	Method	Description
01	getConnection()	Return a Connection to connect to the database

AddProductController

No	Method	Description
01	processRequest()	Process a request from the user.

02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

ManagerUpdateProductController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

ProductRouteController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

ManagerShowProductController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

ManagerShowProductDetailController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

ViewHomeController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

ActivateProductController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

DeactivateProductController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

FilterSearchedProductController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

FilterCategoryProductController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

c. Sequence Diagram(s)

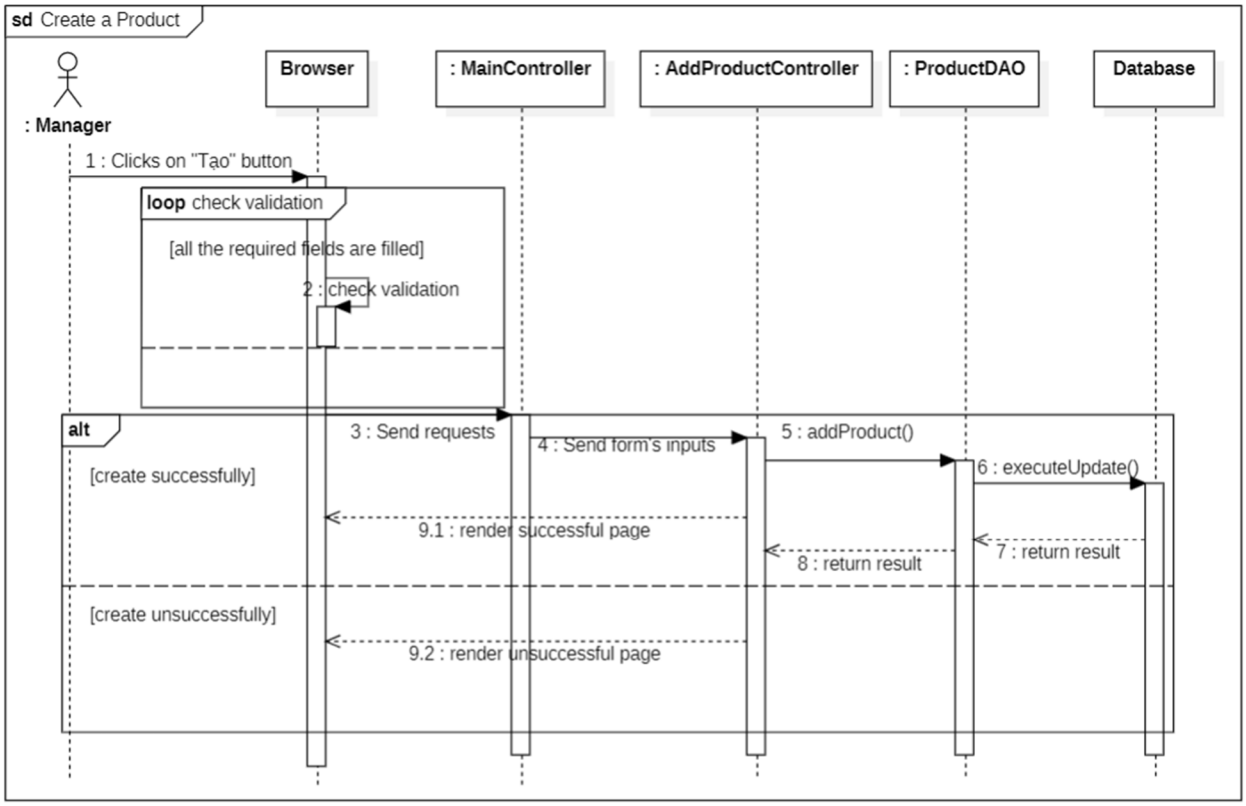


Figure 2.1: Create a product

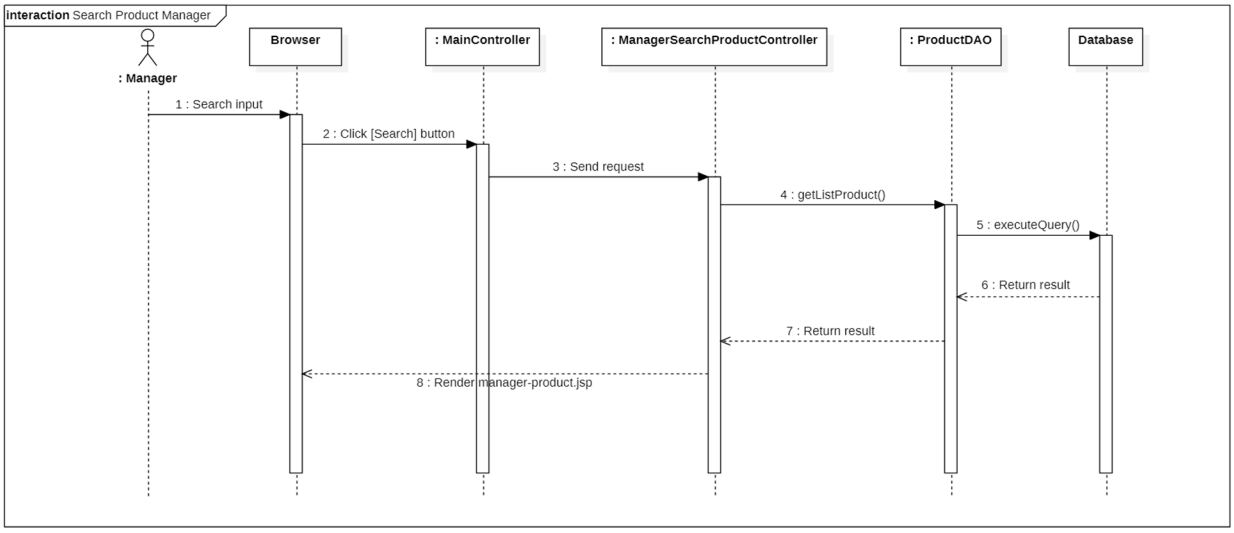


Figure 2.2: Search for products - Manager

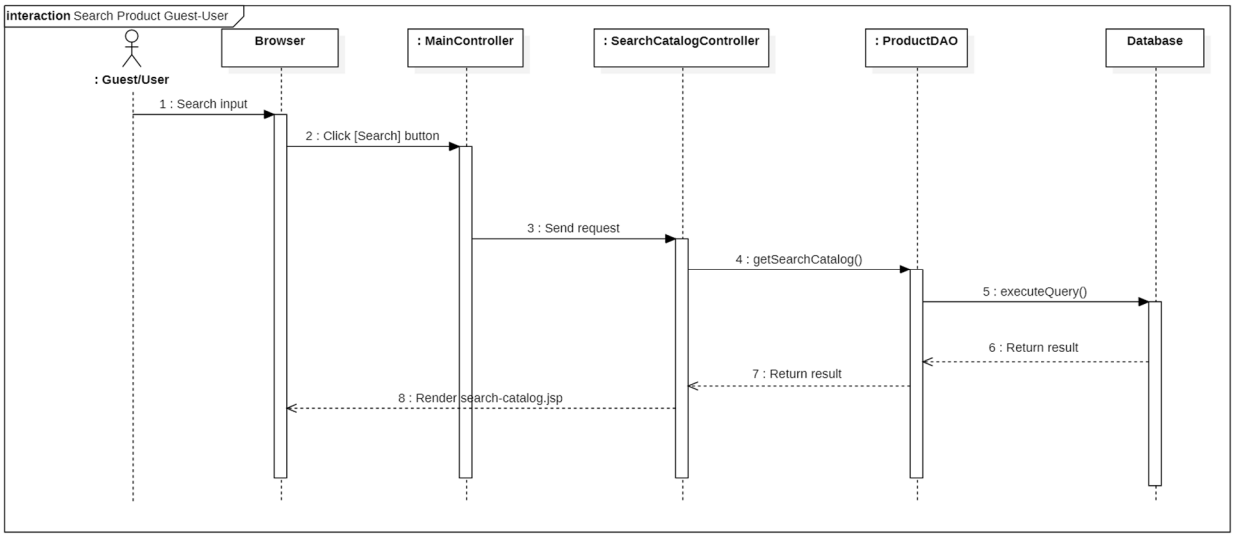


Figure 2.3: Search for products - Customer/Guest

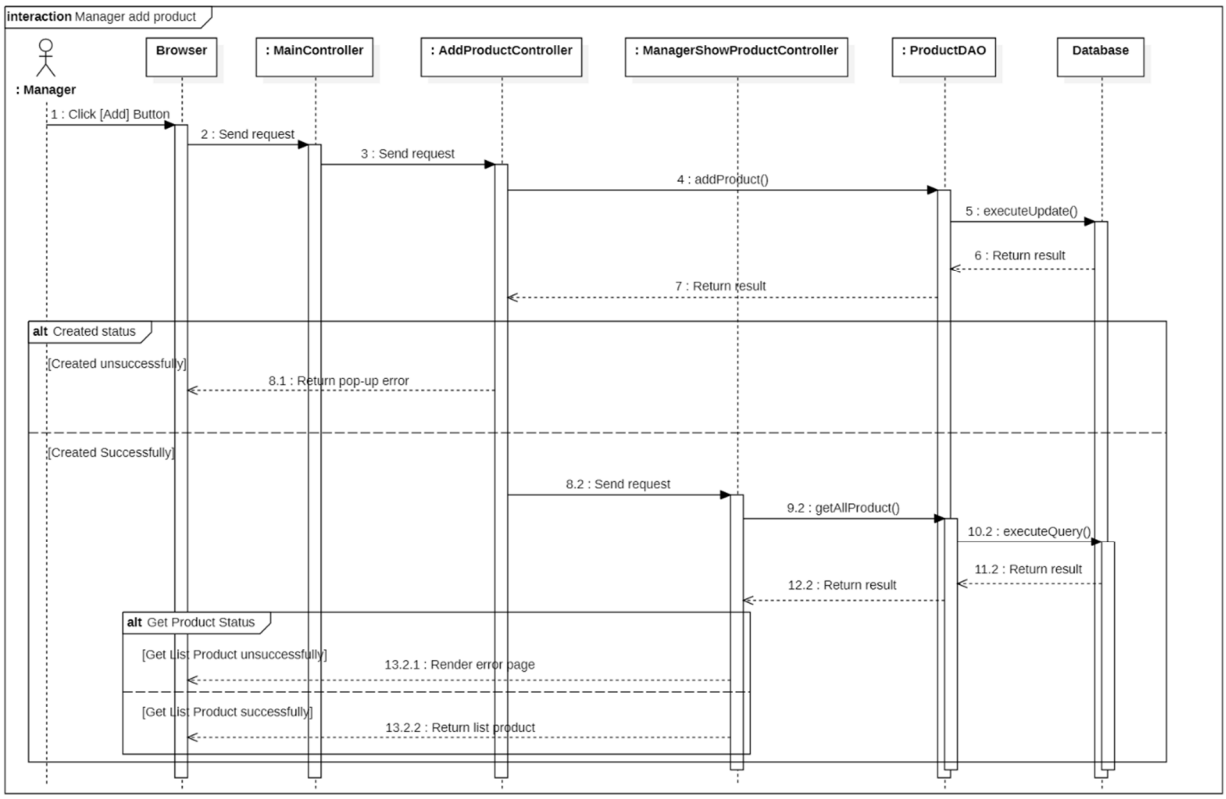


Figure 2.4: Add a product - Manager

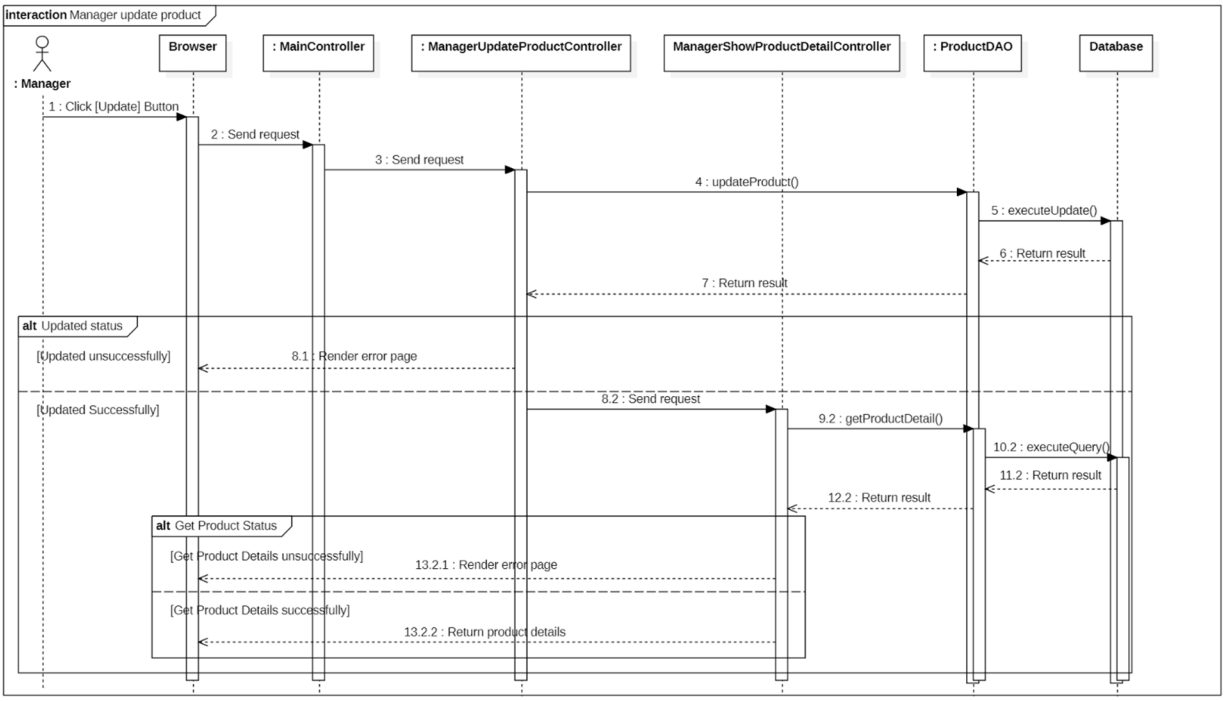


Figure 2.5: Update a product - Manager

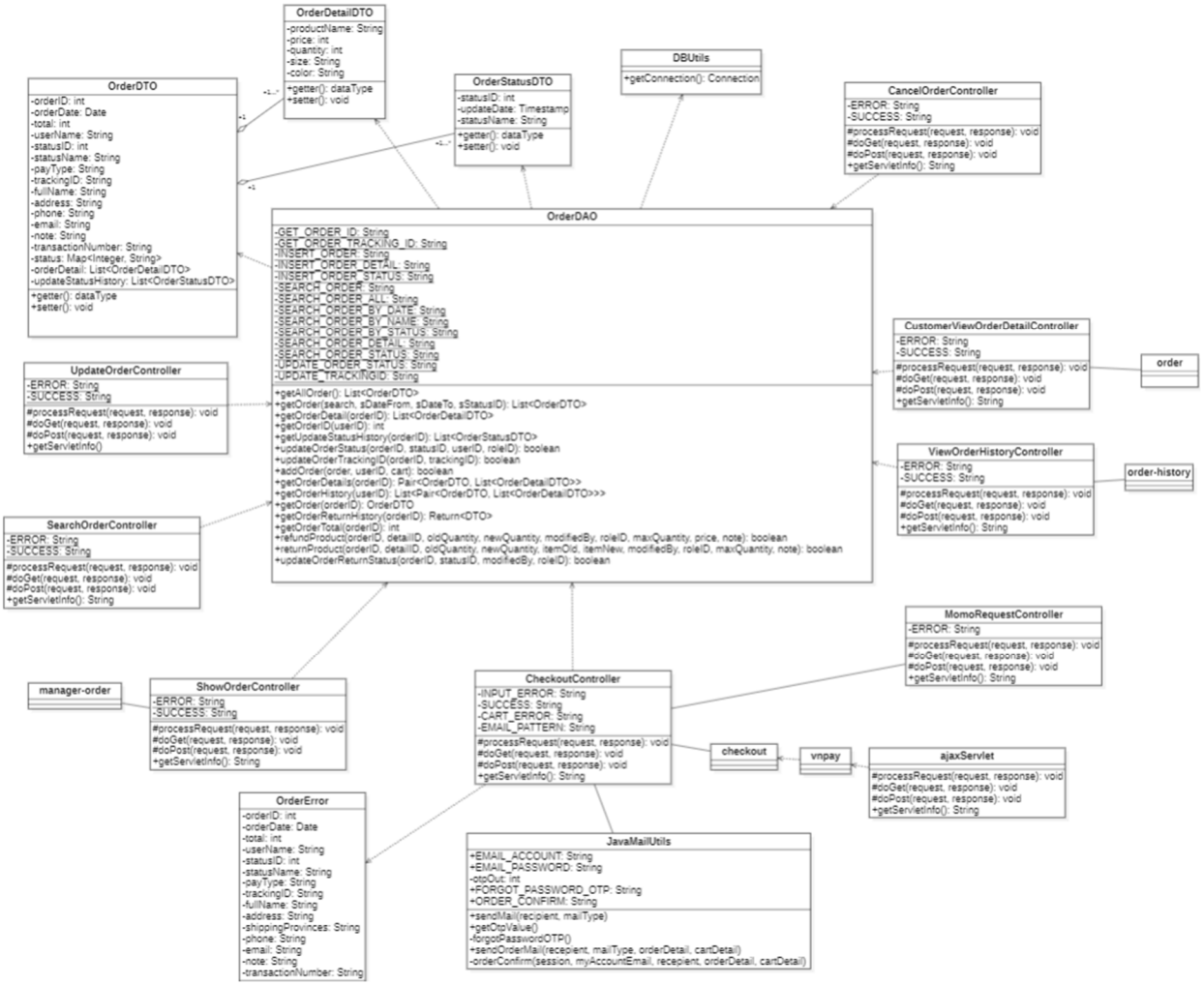
d. Database queries

- String INSERT_PRODUCT = "INSERT INTO tblProduct(productName, description, price, categoryID, discount, lowStockLimit, status) VALUES(?, ?, ?, ?, ?, ?, ?)"
- String GET_PRODUCT_IDENTITY = "SELECT IDENT_CURRENT('tblProduct')"
- INSERT_PRODUCT_COLORS = "INSERT INTO tblProductColors(productID, color) VALUES(?, ?)"
- String INSERT_COLOR_IMAGES = "INSERT INTO tblColorImage(productColorID, image) VALUES(?, ?)"
- String INSERT_COLOR_SIZES = "INSERT INTO tblColorSizes(productColorID, size, quantity) VALUES(?, ?, ?)"
- String SEARCH_PRODUCT = "SELECT productID, productName, price, categoryName, discount, lowStockLimit, p.status FROM tblProduct p JOIN tblCategory c ON p.categoryID=c.categoryID AND dbo.fuChuyenCoDauThanhKhongDau(productName) LIKE ?"
- String SEARCH_PRODUCT_WITH_STATUS = "SELECT productID, productName, price, categoryName, discount, lowStockLimit, p.status FROM tblProduct p JOIN tblCategory c ON p.categoryID=c.categoryID AND dbo.fuChuyenCoDauThanhKhongDau(productName) LIKE ? AND p.status=?"
- String GET_SEARCH_CATALOG = "SELECT p.productID, p.productName, p.price, p.discount, i.image, color, size FROM tblProduct p JOIN tblProductColors pc ON p.productID = pc.productID JOIN tblColorImage i ON pc.productColorID = i.productColorID JOIN tblColorSizes cs ON cs.productColorID = pc.productColorID WHERE dbo.fuChuyenCoDauThanhKhongDau(p.productName) LIKE ?"
- INSERT_PRODUCT = “INSERT INTO tblProduct(productName, description, price, categoryID, discount, lowStockLimit, status) VALUES(?, ?, ?, ?, ?, ?, ?)”
- GET_PRODUCT_IDENTITY = “SELECT IDENT_CURRENT('tblProduct')”
- INSERT_PRODUCT_COLORS = “INSERT INTO tblProductColors(productID, color) VALUES(?, ?)”

- GET_PRODUCT_COLOR_IDENTITY = “SELECT IDENT_CURRENT('tblProductColors')”
- INSERT_COLOR_IMAGES = “INSERT INTO tblColorImage(productColorID, image) VALUES(?, ?)”
- INSERT_COLOR_SIZES = ”INSERT INTO tblColorSizes(productColorID, size, quantity) VALUES(?, ?, ?)”
- SEARCH_ALL_PRODUCT = “SELECT productID, productName, price, categoryName, discount, lowStockLimit, p.status FROM tblProduct p JOIN tblCategory c ON p.categoryID=c.categoryID”
- UPDATE_PRODUCT = “UPDATE tblProduct SET productName=?, description=?, price=?, categoryID=?, discount=?, lowStockLimit=?, status=? WHERE productID=?”
- GET_PRODUCT_COLOR_ID_LIST = “SELECT productColorID FROM tblProductColors WHERE productID = ?”
- getProductImage() = “SELECT image FROM tblColorImage WHERE productColorID in (...?..., …image…)”
- UPDATE_IMAGES = “UPDATE tblColorImage SET image=? WHERE image=?”
- GET_PRODUCT = “SELECT productID, productName, price, description, categoryName, discount, lowStockLimit, p.status FROM tblProduct p JOIN tblCategory c ON p.categoryID=c.categoryID AND productID=?”
- GET_PRODUCT_COLORS = “SELECT color FROM tblProductColors WHERE productID=?”
- GET_PRODUCT_COLOR_IMAGES = “SELECT color, image FROM tblProduct p JOIN tblProductColors pc ON p.productID = pc.productID AND p.productID = ? JOIN tblColorImage ci ON ci.productColorID = pc.productColorID”
- GET_PRODUCT_COLOR_SIZES = “SELECT color, size, quantity FROM tblProduct p JOIN tblProductColors pc ON p.productID = pc.productID AND p.productID = ? JOIN tblColorSizes cs ON cs.productColorID = pc.productColorID”

3. Order Management

a. Class Diagram



b. Class Specifications

OrderDAO

No	Method	Description
01	getOrder(search, sDateFrom, sDateTo, sStatusID)	Return a list of orders that matched inputted criteria
02	getOrderDetail(orderID)	Get order detail for a specific order
03	addOrder(order, userID, cart)	Insert an order with items into the database
04	getOrderID(userID)	Get the newest order from the customer
05	getAllOrder()	Get all orders
06	getUpdateStatusHistory(orderID)	Return a list of statuses of an order
07	updateOrderStatus(orderID, statusID, userID, roleID)	Update status of an order
08	updateOrderTrackingID(orderID, trackingID)	Update a tracking ID of an order
09	getOrderDetails(orderID)	Return a pair in which the order is the key and order details are the values.

10	getOrderHistory(userID)	Return order history of a customer
11	getOrder(orderID)	Get an order by its order ID
12	getOrderReturnHistory(orderID)	Retrieve the product return/exchanged history for an order of a customer
13	getOrderTotal(orderID)	Return the total price of an order
14	refundProduct(orderID, detailID, oldQuantity,newQuantity, modifiedBy, roleID, maxQuantity, price, note)	Add a product to the return history and update the quantity in order detail
15	returnProduct(orderID, detailID, oldQuantity, newQuantity, itemOld, itemNew, modifiedBy,roleID, maxQuantity, note)	Add a product to the exchanged history and update the quantity in order detail
16	updateOrderReturnStatus(orderID, statusID, modifiedBy, roleID)	Update the order's status to "Đã đổi/trả"

OrderDTO

No	Method	Description
01	getter()	Get an attribute's value
02	setter()	Set an attribute's value

OrderDetailDTO

No	Method	Description
01	getter()	Get an attribute's value
02	setter()	Set an attribute's value

OrderStatusDTO

No	Method	Description
01	getter()	Get an attribute's value
02	setter()	Set an attribute's value

OrderError

No	Method	Description
01	getter()	Get an attribute's value
02	setter()	Set an attribute's value

DBUtils

No	Method	Description
01	getConnection()	Return a Connection to connect to the database

SearchOrderController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

UpdateOrderController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

CancelOrderController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

ViewOrderHistoryController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

CheckoutController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

MomoRequestController

No	Method	Description

01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

CustomerViewOrderDetailController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

ShowOrderController

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info.

ajaxServlet

No	Method	Description
01	processRequest()	Process a request from the user.
02	doGet()	Process a GET request from the user.
03	doPost()	Process a POST request from the user.
04	getServletInfo()	Get the servlet's info

JavaMailUtils

No	Method	Description
01	sendMail()	Send a "Forgot Password" mail to the customer.
02	getOtpValue()	Return an OPT value.
03	forgotPasswordOTP()	Return a "ForgotPassword" mail content
04	orderConfirm(session, myAccountEmail, recipient, orderDetail, cartDetail)	Return a "Order Confirmation" mail content
05	sendOrderMail(recipient, mailType, orderDetail, cartDetail)	Send a "Order Confirmation" mail to the customer

c. Sequence Diagram(s)

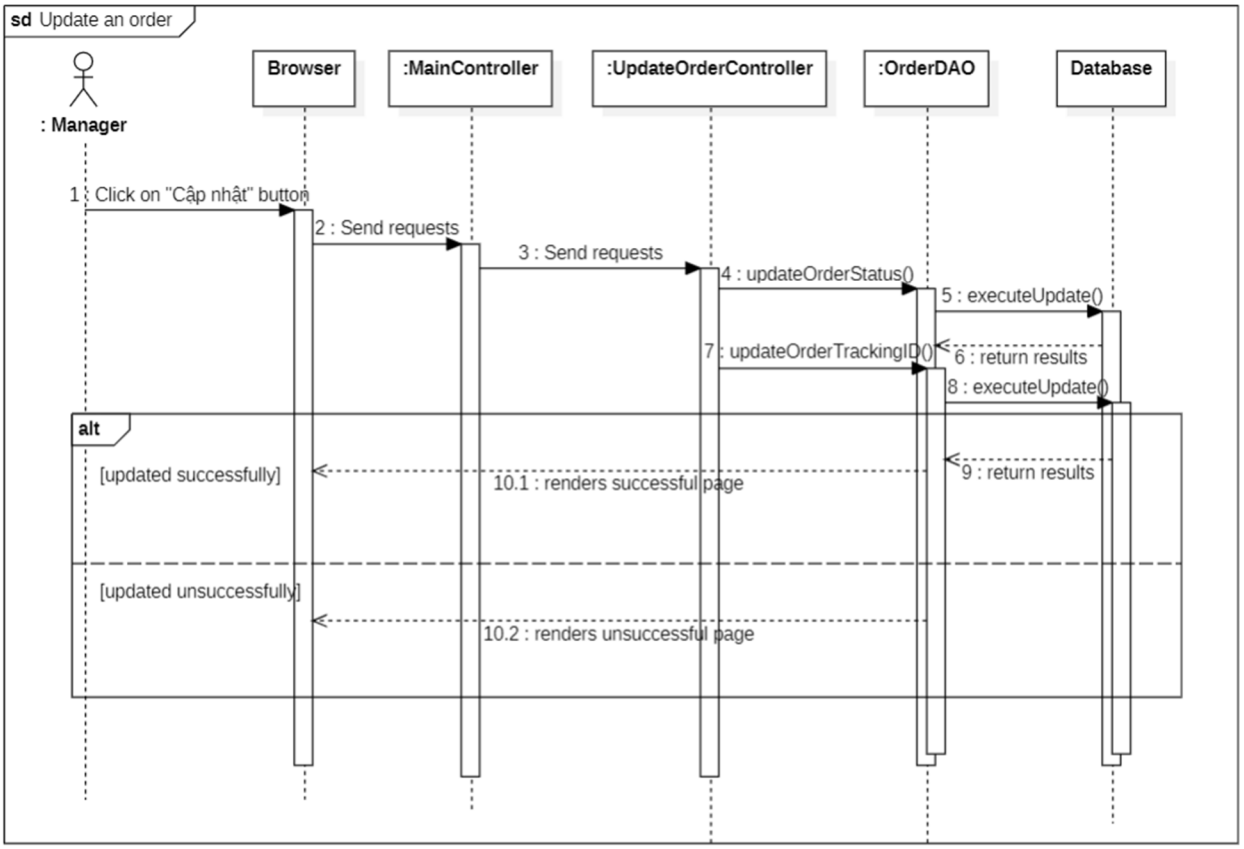


Figure 3.1: Update an order

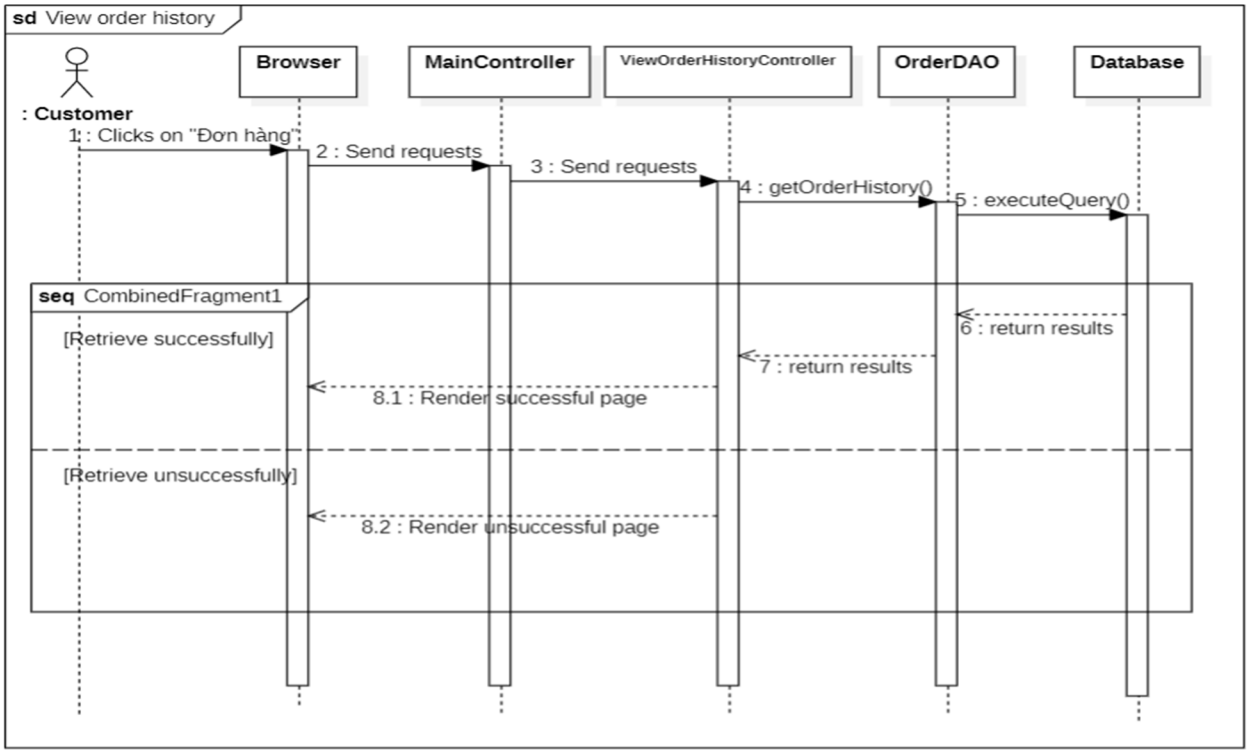


Figure 3.2: View order history

d. Database queries

- String UPDATE_TRACKINGID = "UPDATE tblOrder SET trackingID = ? WHERE orderID = ?"
- String SEARCH_ORDER_ALL = "SELECT v1.orderID, orderDate, total, userID, fullName, statusID, statusName, payType, trackingID, [orderFullName], [address], phone, email, note, transactionNumber FROM currentStatusRow v1 JOIN orderReview v2 ON v1.ID = v2.ID "
- String SEARCH_ORDER_BY_ID = "SELECT v1.orderID, orderDate, total, userID, fullName, statusID, statusName, payType, trackingID, [orderFullName], [address], phone, email, note, transactionNumber FROM currentStatusRow v1 JOIN orderReview v2 ON v1.ID = v2.ID WHERE v1.orderID = ?"
- String SEARCH_ORDER_BY_STATUS = "SELECT v1.orderID, orderDate, total, userID, fullName, statusID, statusName, payType, trackingID, [orderFullName], [address], phone, email, note, transactionNumber FROM currentStatusRow v1 JOIN orderReview v2 ON v1.ID = v2.ID AND statusID = ? AND [TenKhongDau] LIKE '%' + [dbo].[fuChuyenCoDauThanhKhongDau](?) + '%'";
- String SEARCH_ORDER = "SELECT v1.orderID, orderDate, total, userID, fullName, statusID, statusName, payType, trackingID, [orderFullName], [address], phone, email, note, transactionNumber FROM currentStatusRow v1 JOIN orderReview v2 ON v1.ID = v2.ID WHERE (orderDate BETWEEN ? AND ?) AND statusID = ? AND [TenKhongDau] LIKE '%' + [dbo].[fuChuyenCoDauThanhKhongDau](?) + '%'"
- String SEARCH_ORDER_BY_DATE = "SELECT v1.orderID, orderDate, total, userID, fullName, statusID, statusName, payType, trackingID, [orderFullName], [address], phone, email, note, transactionNumber FROM currentStatusRow v1 JOIN orderReview v2 ON v1.ID = v2.ID WHERE (orderDate BETWEEN ? AND ?) AND [TenKhongDau] LIKE '%' + [dbo].[fuChuyenCoDauThanhKhongDau](?) + '%'"
- String UPDATE_ORDER_STATUS = "INSERT INTO tblOrderStatusUpdate(statusID, orderID, updateDate, modifiedBy, roleID) VALUES (?, ?, GETDATE(), ?, ?)"
- String INSERT_ORDER_STATUS = "INSERT INTO tblOrderStatusUpdate(statusID, orderID, updateDate, modifiedBy, roleID) VALUES (?, ?, GETDATE(), 'System', '')"
- String SEARCH_ORDER_BY_NAME = "SELECT v1.orderID, orderDate, total, userID, fullName, statusID, statusName, payType, trackingID, [orderFullName], [address], phone, email, note, transactionNumber FROM currentStatusRow v1 JOIN orderReview v2 ON v1.ID = v2.ID AND [TenKhongDau] LIKE '%' + [dbo].[fuChuyenCoDauThanhKhongDau](?) + '%'"
- String SEARCH_ORDER_DETAIL = "SELECT detailID, t1.productID, productName, t1.price, quantity, size, color tblOrderDetail t1 JOIN tblProduct t2 ON t1.productID = t2.productID WHERE orderID = ? AND quantity > 0"
- String SEARCH_ORDER_STATUS = "SELECT t1.statusID, updateDate, statusName, modifiedBy, roleID FROM tblOrderStatusUpdate t1 JOIN tblOrderStatus t2 ON t1.statusID = t2.statusID WHERE orderID = ?"
- String INSERT_ORDER = "INSERT INTO tblOrder(orderDate, total, userID, payType, fullName, [address], phone, email, note, transactionNumber) VALUES(?, ?, ?, ?, ?, ?, ?, ?, ?, ?)"
- String INSERT_ORDER_DETAIL = "INSERT INTO tblOrderDetail(price, quantity, size, color, orderID, productID) VALUES(?, ?, ?, ?, ?, ?)"
- String GET_ORDER_ID = "SELECT TOP 1 orderID FROM tblOrder WHERE userID LIKE ? + '%' ORDER BY orderID DESC"
- String GET_ORDER_TRACKING_ID = "SELECT trackingID FROM tblOrder WHERE orderID = ?";
- String GET_ORDER_HISTORY = "SELECT v2.orderID, orderDate, total, statusName, payType FROM currentStatusRow v1 JOIN orderReview v2 ON v1.ID = v2.ID WHERE v2.orderID in (SELECT orderID FROM tblOrder WHERE userID = ?) ORDER BY v2.orderID desc"

- String GET_ORDER_DETAIL = "SELECT top 1 with ties p.productID, productName, od.price, od.quantity, od.color, od.size, image FROM tblProduct p JOIN tblOrderDetail od ON p.productID = od.productID JOIN tblProductColors pc ON p.productID = pc.productID AND od.color = pc.color JOIN tblColorImage ci ON ci.productColorID = pc.productColorID WHERE orderID = ? ORDER BY ROW_NUMBER() over (partition by p.productID, od.color, od.size order by image)"
- String GET_ORDER = "SELECT v1.orderID, orderDate, total, statusID, statusName, payType, trackingID, fullName, address, phone, email, note FROM currentStatusRow v1 JOIN orderReview v2 ON v1.ID = v2.ID WHERE v2.orderID = ?"
- String GET_STATUS_HISTORY = "SELECT statusID, updateDate FROM tblOrderStatusUpdate WHERE orderID = ?"
- String UPDATE_ORDER_DETAIL = "UPDATE tblOrderDetail SET quantity = ? WHERE detailID = ?"
- String UPDATE_ORDER_TOTAL = "UPDATE tblOrder SET total = ? WHERE orderID = ?"
- String INSERT_ORDER_RETURN = "INSERT INTO tblReturns(detailID, quantity, returnType, returnDate, note) VALUES(?, ?, ?, GETDATE(), ?)"
- String GET_ORDER_TOTAL = "SELECT total FROM tblOrder WHERE orderID = ?"
- String CHECK_ORDER_DUPLICATE_ITEM = "SELECT detailID, quantity FROM tblOrderDetail WHERE orderID = ? AND productID = ? AND color LIKE ? AND size LIKE ?"
- String GET_RETURN_HISTORY = "SELECT t1.detailID, t1.productID, productName, t1.price, t1.quantity, size, color, t3.quantity AS [returnQuantity], returnType, returnDate, note FROM tblOrderDetail t1 JOIN tblProduct t2 ON t1.productID = t2.productID JOIN tblReturns t3 ON t1.detailID = t3.detailID WHERE orderID = ?"

III. Database Tables

1. tblRoles

This table contains information about the user roles.

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	roleID	nvarchar	10	yes	yes	PK	
2	roleName	nvarchar	50	yes	yes		
3	status	bit			yes		

2. tblUsers

This table contains information about the users.

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	userID	char	100	yes	yes	PK	
2	fullName	nvarchar	100		yes		
3	password	varchar	100		yes		
4	sex	bit			yes		
5	roleID	nvarchar	10		yes	FK	tblRoles
6	address	nvarchar	150		no		
7	birthday	date			yes		
8	phone	varchar	20	yes	yes		
9	status	bit			yes		

3. tblOrderStatus

This table contains the types of order status.

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	statusID	int		yes	yes	PK	
2	statusName	nvarchar	50	yes	yes		

4. tblOrder

This table contains data of the orders.

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	orderID	int		yes	yes	PK	IDENTITY(1,1)
2	orderDate	date			yes		
3	total	int			yes		
4	userID	char	100		yes	FK	tblUsers
5	payType	nvarchar	50		yes		
6	trackingID	varchar	40	yes	yes		
7	fullName	nvarchar	100		yes		
8	address	nvarchar	150		yes		
9	phone	varchar	20		yes		
10	email	char	100		yes	FK	tblOrderStatus
11	note	nvarchar	100				
12	transactionNumber	varchar	100	yes			

5. tblCategory

This table contains the categories of the product.

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	categoryID	int		yes	yes	PK	IDENTITY(1,1)
2	categoryName	nvarchar	50	yes	yes		
3	order	int		yes	yes		
4	status	bit			yes		

6. tblProduct

This table contains overall information of a product.

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	productID	int		yes	yes	PK	IDENTITY(1,1)
2	productName	nvarchar	50		yes		
3	description	nvarchar	500				
4	price	int			yes		
5	categoryID	int			yes	FK	tblCategory
6	discount	int					
7	lowStockLimit	int					
8	status	bit			yes		

7. tblProductColors

This table contains the product details.

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	productColorID	int		yes	yes	PK	IDENTITY(1,1)
2	productID	int			yes	FK	tblProduct
3	color	nvarchar	50		yes		

8. tblColorImage

This table contains the product details.

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	colorImageID	int		yes	yes	PK	IDENTITY(1,1)
2	productColorID	int			yes	FK	tblProductColors
3	image	nvarchar	250		yes		

9. tblColorSizes

This table contains the product details.

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	colorSizeID	int		yes	yes	PK	IDENTITY(1,1)
2	productColorID	int			yes	FK	tblProductColors
3	size	varchar	50		yes		
4	quantity	int			yes		

10. tblRating

This table contains the products' ratings.

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	id	int		yes	yes	PK	IDENTITY(1,1)
2	productID	int			yes	FK	tblProduct
3	userID	char	100		yes	FK	tblUsers
4	orderID	int			yes	FK	tblOrder
5	content	nvarchar	500		yes		
6	star	int			yes		
7	rateDate	date			yes		

11. tblOrderDetail

This table contains the order details.

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	detailID	int		yes	yes	PK	IDENTITY(1,1)
2	price	int			yes		
3	quantity	int			yes		
4	orderID	int			yes	FK	tblOrder
5	productID	int			yes	FK	tblProductDetail
6	size	varchar			yes	FK	tblProductDetail
7	color	nvarchar			yes	FK	tblProductDetail

12. tblOrderStatusUpdate

This table contains detailed order status information.

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	ID	int		yes	yes	PK	IDENTITY(1,1)
2	statusID	int			yes	FK	tblOrderStatus
3	orderID	int			yes	FK	tblOrder
4	updateDate	smalldate time			yes		
5	modifiedBy	char	100		yes		
6	roleID	nvarchar	50		yes		

13. tblCart

This table contains cart session information.

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	id	int		yes	yes	PK	IDENTITY(1,1)
2	userID	char	100		yes	FK	tblUsers
3	fullName	nvarchar	100		yes		
4	address	nvarchar	150		yes		
5	phone	varchar	20		yes		
6	email	char	100		yes		
7	note	nvarchar	200				
8	payType	nvarchar	50		yes		

14. tblCartItems

This table contains a cart's item information.

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	id	int		yes	yes	PK	IDENTITY(1,1)
2	productID	int			yes	FK	tblProduct
3	sessionID	int			yes	FK	tblCart
4	quantity	int			yes		
5	size	varchar	50		yes		
6	color	nvarchar	50		yes		

15. tblReturns

This table contains detailed order status information.

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	id	int		yes	yes	PK	IDENTITY(1,1)
2	detailID	int			yes	FK	tblOrderDetail
3	quantity	int			yes		
4	returnType	nvarchar	50		yes		
5	returnDate	date			yes		
6	note	nvarchar	100		yes		