### No. Requirement descriptions in Web Store

### **Product Features:**

Account Management (AM) (High Priority): AM allows users to create, edit, and view accounts information. It also allows the user to login/out of the system.

Search Engine (SE) (Medium Priority): SE is the tool that assists the user in finding a specific item in the database. It can receive search criteria, find search criteria, and return the results of the search. Product Management (PM) (High Priority): PM allows sales personnel to manage the product line shown on the web site.

Shopping Cart (SC) (Medium Priority): SC is temporary storage for customers shopping on the web. Items from the inventory can be reserved in a virtual cart until the customer decides to purchase them.

Purchasing and Payment (PP) (High Priority): PP is used to approve and transfer payment from buyers when purchasing items in the cart.

#### **User Classes:**

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System Administrator: Is generally the owner that takes care of maintenance for the Web Store system. The administrator will be in charge of assigning privileges of accounts. Suggested more than one individual can have administrator privilege to ensure advisability. Full documentation will be provided to the Administrator to assist with this process.

- Sales Personnel: Is generally the owner of the Web Store tasked with updating inventory and product line descriptions. Once added, sales personnel can add, delete and change descriptions, pictures, prices, and when ready flag items for customers to buy.
  - Customer: A customer is an individual wishing to purchase inventory from GAMMA-J's Web Store. The Web store will have a variety of clientele depending upon the inventory loaded on the Key. When creating a new account on Web Store it will default as a customer account. Later if the account needs to be upgraded the administrator can accomplish this via the administrator interface. **Customer Accounts:** Customers will be able to create accounts to store their customer profiles, configure contact information, view their purchase history, and confirm orders. Customers will be
- 3 able to register, log in, and log out of their accounts. Furthermore, Customer profiles will also include payment information, such as the ability to store credit card information, and address information.
- Inventory Management: Products will be stored in multi-tiered categories; a category can contain sub categories or products. The inventory management will allow for administrators to update the categories, the products placed in categories, and the specific product details.
- Shopping Cart: Customers will also be able to add products into the shopping cart. The shopping cart will clearly display the number of items in the cart, along with the total cost. The customer will also be able to add to or remove products from the shopping cart prior to checkout and order confirmation.
- **Order Confirmation:** Customers will be able to confirm the order after checkout. If the order is incorrect, the customer will be able to revise and update their order. The customer will then receive a confirmation email with the specific order details.
- Interface: Customers will be presented with an unambiguous interface to assist in browsing the categories and products. Customers will be able to search for products matching their search criteria. The interface will be compatible with all major web browsers such as Internet Explorer, Mozilla Navigator, Mozilla Firefox, Opera, and Safari.

## The use cases designed by a requirement engineer with LLM assistance (senior):

Use Case ID	01(Register Customer)	
Intent	Customers create accounts in the system to store personal	
	profiles, configure contact information, etc.	
Role	Customer	
Pre-conditions	None	
Post-conditions	The customer successfully creates an account, and the system	

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- 1. The customer navigates to the "Registration" page.
- 2. The customer fills in registration information (username, password, and contact information).
- 3. The customer clicks the "Register" button.
- 4. The system verifies the registration information.
- 5. The system creates the account.
- 6. The system prompts the message "successful registration".

## **Alternative Flow(s):**

- 2a. The registration information format is incorrect.
- 2a1. The system prompts with specific error messages (such as insufficient password length, incorrect email format, etc.).
  - 2a2. The customer modifies the information and resubmits.
- 4a. The username is already in use.
- 4a1. The system prompts that the username already exists and suggests that the customer change the username.
- 4a2. The customer changes the username and resubmits the registration information.

Use Case ID	02(Login Customer)
Intent	Customers log in to the system to access personal information,
	shopping carts, and other functions.
Role	Customer
Pre-conditions	None
Post-conditions	The customer successfully logs in to the system and can access
	personal - related functions.

#### **Basic Flow**

- 1. The customer navigates to the "Login" page.
- 2. The customer enters the username and password.
- 3. The customer clicks the "Login" button.
- 4. The system verifies the username and password.
- 5. The system redirects to the Customer's Personal Center page.

- 2a. The username or password is not entered.
  - 2a1. The system prompts the user to enter complete information.
  - 2a2. The customer supplements the information and logs in again.
- 4a. The username or password is incorrect.
  - 4a1. The system prompts that the username or password is incorrect and provides the option to retrieve the password.
  - 4a2. The customer can choose to retrieve the password or re enter the information to log in.

Use Case ID	03(Edit Customer Details)
Intent	Customers modify personal profiles, contact information, or

	payment information, etc.	
Role	Customer	
Pre-conditions	The customer has logged in to the system.	
Post-conditions	The customer's information is successfully modified, and the	
	system updates the relevant customer information.	

- 1. The customer clicks the "Edit Profile" button.
- 2. The customer modifies the information (such as name, address, credit card information, etc.).
- 3. The customer clicks the "Save" button.
- 4. The system verifies the modified information format.
- 5. The system saves the modification.
- 6. The system prompts the message "save successfully".

## **Alternative Flow(s):**

- 4a. The information format is incorrect.
  - 4a1. The system prompts with specific error messages (such as an irregular address format, etc.).
  - 4a2. goto step 3.

Use Case ID	04(Logout Customer)
Intent	Customers log out of the current login state.
Role	Customer
Pre-conditions	The customer has logged in to the system.
Post-conditions	The customer successfully logs out of the system, and the
	current session ends.
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### **Basic Flow**

- 1. The customer clicks the "Logout" button.
- 2. The system clears the current customer's session information.
- 3. The system redirects to the website's home page.

# **Alternative Flow(s):**

None

Use Case ID	05(Add Item To Cart)	
Intent	Customers add selected items to the shopping cart for	
	convenient subsequent purchase.	
Role	Customer	
Pre-conditions	The customer has logged in to the system.	
Post-conditions	The item is successfully added to the shopping cart, and the	
shopping cart information is updated.		
Basic Flow		
1. The customer navigates to the "Item Details" page.		

- 2. The customer selects the quantity of the item.
- 3. The customer clicks the "Add to Cart" button.
- 4. The system checks the item inventory.
- 5. The system adds the item to the shopping cart.
- 6. The system updates the item quantity and total price.
- 7. The system prompts the message "added successfully".

## **Alternative Flow(s):**

- 2a. The quantity of item is not selected.
  - 2a1. The system prompts the customer to select the item quantity.
  - 2a2. The customer selects the quantity and adds the item again.
- 4a. The inventory of item is insufficient.
  - 4a1. The system prompts that the item inventory is insufficient and provides options such as pre-ordering or viewing other items.

Use Case ID	06(Checkout An Order)	
Intent	Customers settle the items in the shopping cart and complete	
	the payment.	
Role	Customer	
Pre-conditions	The customer has logged in to the system, and there are	
	items in the shopping cart.	
Post-conditions	The order is successfully settled, the payment is completed,	
	and the system generates an order confirmation message.	

### **Basic Flow**

- 1. The customer clicks the "Checkout" button.
- 2. The system displays the order details (including item information, quantity, total price, shipping address, etc.)
- 3. The system confirms the order.
- 4. The customer selects the payment method.
- 5. The customer clicks the "Submit Order" button.
- 6. The system sends a payment request.
- 7. The payment platform verifies the payment information.
- 8. The system receives the payment success notification.
- 9. The system generates an order confirmation message.
- 10. The system sends a confirmation email to the customer.

- 2a. The order information is incorrect.
  - 2a1. The customer clicks "Modify Order" and modifies information such as the shipping address and item quantity.
  - 2a2. After the modification, the customer resubmits the order.
- 4a. No payment method is selected.
  - 4a1. The system prompts the customer to select a payment method.
  - 4a2. The customer selects a payment method and continues to submit the order.
- 6a. The payment fails.
  - 6a1. The system prompts the reason for the payment failure (such as insufficient balance,

network problems, etc.).

6a2. The customer can choose to change the payment method or retry the payment.

Use Case ID	07(Login Administrator)	
Intent	Administrators log in to the system to perform system	
	management operations.	
Role	Administrator	
<b>Pre-conditions</b>	None	
Post-conditions	The administrator successfully logs in to the system and can	
	access the management function module.	

### **Basic Flow**

- 1. The administrator navigates to the "Login" page.
- 2. The administrator enters the username and password.
- 3. The administrator clicks the "Login" button.
- 4. The system redirects to the management background page.

## **Alternative Flow(s):**

- 2a. The username or password is not entered.
  - 2a1. The system prompts the user to enter complete information.
  - 2a2. The administrator supplements the information and logs in again.
- 3a. The username or password is incorrect.
  - 3a1. The system prompts that the username or password is incorrect and provides the option to retrieve the password.
  - 3a2. The administrator can choose to retrieve the password or re-enter the information to log in.

Use Case ID	08(Logout Administrator)
Intent	Administrators log out of the current login state.
Role	Administrator
<b>Pre-conditions</b>	The administrator has logged in to the system.
Post-conditions	The administrator successfully logs out of the system, and the
	current management session ends.

### **Basic Flow**

- 1. The administrator clicks the "Logout" button.
- 2. The system clears the current administrator's session information.
- 3. The system redirects to the "Login" page.

# **Alternative Flow(s):**

None

Use Case ID	09(Add User)
Intent	Administrators add new users to the system and assign corresponding permissions.
Role	Administrator

Pre-conditions	The administrator has logged in to the system.
Post-conditions	The new user is successfully added to the system with
	corresponding permissions.

- 1. The administrator navigates to the "User Management" page.
- 2. The administrator clicks the "Add User" button.
- 3. The administrator fills in the new user's information (username, password, user type, customer, sales person, etc.).
- 4. The administrator clicks the "Save" button.
- 5. The system verifies the information format.
- 6. The system creates the new user.
- 7. The system assigns permissions.
- 8. The system prompts the message "added successfully".

# **Alternative Flow(s):**

- 3a. Required information is not filled.
  - 3a1. The system prompts the administrator to fill in complete information.
  - 3a2. The administrator supplements the information and saves it again.
- 5a. The username is already in use.
  - 5a1. The system prompts that the username already exists and suggests changing the username.
  - 5a2. The administrator changes the username and resubmits the addition information.

Use Case ID	10(Remove User)
Intent	Administrators delete specified users from the system.
Role	Administrator
<b>Pre-conditions</b>	The administrator has logged in to the system.
Post-conditions	The specified user is successfully deleted from the system.

## **Basic Flow**

- 1. The administrator navigates to the "User Management" page.
- 2. The administrator selects the user to be deleted from the user list.
- 3. The administrator clicks the "Delete" button.
- 4. The administrator confirms the deletion operation.
- 5. The administrator clicks "Confirm" button.
- 6. The system deletes the user information.
- 7. The system prompts the message "deleted successfully".

- 4a. The administrator cancels the deletion operation.
- 4a1. The system does not perform the deletion operation and returns to the user management page.

Use Case ID	11(Change User Properties)
Intent	Administrators modify the attribute information of users in the
	system, such as permissions and user types.

Role	Administrator	
Pre-conditions	The administrator has logged in to the system.	
Post-conditions	The user's attributes are successfully modified, and the system the relevant user information.	m updates

- 1. The administrator navigates to the "User Management" page.
- 2. The administrator selects a user.
- 3. The administrator clicks the "Modify Attributes" button.
- 4. The administrator modifies the user's attributes (such as permission level, user type, etc.).
- 5. The administrator clicks the "Save" button.
- 6. The system verifies the attribute information.
- 7. The system saves the modification.
- 8. The system prompts the message "saved successfully".

## **Alternative Flow(s):**

- 4a. No attribute information is modified.
  - 4a1. The system prompts the administrator to modify at least one attribute.
  - 4a2. The administrator modifies the attributes and saves them again.
- 6a. The attribute information format is incorrect.
  - 6a1. The system prompts with specific error messages (such as an illegal permission level, etc.).
  - 6a2. The administrator modifies the information and saves it again.

Use Case ID	12(Install Plug-ins)
Intent	Administrators install plugins in the system to expand system
	functions.
Role	Administrator
Pre-conditions	The administrator has logged in to the system.
Post-conditions	The plugin is successfully installed in the system, and the
	system has new functions.

## **Basic Flow**

- 1. The administrator navigates to the "Plugin Management" page.
- 2. The administrator clicks the "Install Plugin" button.
- 3. The administrator selects the plugin file (either a local file or from the plugin library).
- 4. The administrator clicks the "Start Installation" button.
- 5. The system checks the compatibility and legality of the plugin.
- 6. The system installs the plugin.
- 7. The system prompts the message "installed successfully".

- 3a. No plugin file is selected.
  - 3a1. The system prompts the administrator to select a plugin file.
  - 3a2. The administrator selects the file and installs it again.
- 5a. The plugin is incompatible or illegal.
  - 5a1. The system prompts that the plugin has compatibility issues or illegal reasons.

5a2. The administrator selects another plugin and installs it again.

Use Case ID	13(Remove Plug-ins)
Intent	Administrators delete installed plugins from the system.
Role	Administrator
Pre-conditions	The administrator has logged in to the system, and there are
	installed plugins in the system.
Post-conditions	The specified plugin is successfully deleted from the system.

#### **Basic Flow**

- 1. The administrator navigates to the "Plugin Management" page.
- 2. The administrator selects a plugin.
- 3. The administrator clicks the "Delete" button.
- 4. The administrator confirms the deletion operation.
- 5. The administrator clicks "Confirm" button.
- 6. The system deletes the plugin file.
- 7. The system prompts the message "deleted successfully".

## **Alternative Flow(s):**

- 4a. The administrator cancels the deletion operation.
  - 4a1. The system does not perform the deletion operation and returns to the plugin management page.

Use Case ID	14(Manage Plug-in Options)
Intent	Administrators configure and manage the relevant options of
	installed plugins.
Role	Administrator
Pre-conditions	The administrator has logged in to the system, and there are
	installed plugins in the system.
Post-conditions	The plugin options are successfully configured, and the plugin
	runs according to the new configuration.

### **Basic Flow**

- 1. The administrator navigates to the "Plugin Management" page.
- 2. The administrator selects a plugin.
- 3. The administrator clicks the "Manage Options" button.
- 4. The administrator modifies the relevant options of the plugin (such as plugin function switches, parameter settings, etc.).
- 5. The administrator clicks the "Save" button.
- 6. The system verifies the modified options.
- 7. The system saves the configuration.
- 8. The system prompts the message "saved successfully".

- 4a. No options are modified.
  - 4a1. The system prompts the administrator to modify at least one option.
  - 4a2. The administrator modifies the options and saves them again.

- 6a. The option information format is incorrect.
  - 6a1. The system prompts with specific error messages (such as illegal parameter values, etc.).
  - 6a2. The administrator modifies the information and saves it again.

Use Case ID	15(Install patch process)
Intent	Administrators install patch programs in the system to fix
	system vulnerabilities or optimize system performance.
Role	Administrator
<b>Pre-conditions</b>	The administrator has logged in to the system.
Post-conditions	The patch program is successfully installed in the system, and
	the system vulnerabilities are fixed or the performance is
	optimized.

- 1. The administrator navigates to the "System Maintenance" page.
- 2. The administrator clicks the "Install Patch" button.
- 3. The administrator selects the patch file (either a local file or from the patch library).
- 4. The administrator clicks the "Start Installation" button.
- 5. The system checks the compatibility and legality of the patch.
- 6. The system installs the patch.
- 7. The system prompts the message "installed successfully".

## **Alternative Flow(s):**

- 3a. No patch file is selected.
  - 3a1. The system prompts the administrator to select a patch file.
  - 3a2. The administrator selects the file and installs it again.
- 5a. The patch is incompatible or illegal.
  - 5a1. The system prompts that the patch has compatibility issues or illegal reasons.
  - 5a2. The administrator selects another patch and installs it again.

Use Case ID	16(Login Sales Person)
Intent	Sales persons log in to the system to manage products and
	inventory, etc.
Role	Sales Person
<b>Pre-conditions</b>	None
Post-conditions	The Sales person successfully logs in to the system and can
	access the product management functions.

## **Basic Flow**

- 1. The sales person navigates to the "Sales Management" page.
- 2. The sales person enters the username and password.
- 3. The sales person clicks the "Login" button.
- 4. The system verifies the username and password.
- 5. The system redirects to the "Sales Management" page.

- 2a. The username or password is not entered.
  - 2a1. The system prompts the user to enter complete information.
  - 2a2. The Sales person supplements the information and logs in again.
- 4a. The username or password is incorrect.
  - 4a1. The system prompts that the username or password is incorrect and provides the option to retrieve the password.
  - 4a2. The sales person can choose to retrieve the password or re enter the information to log in.

Use Case ID	17(Logout Sales Person)
Intent	Sales persons log out of the current login state.
Role	Sales Person
Pre-conditions	The sales person has logged in to the system.
Post-conditions	The Sales person successfully logs out of the system, and the
	current sales management session ends.

- 1. The sales person clicks the "Logout" button.
- 2. The system clears the current sales person 's session information.
- 3. The system redirects to the login page.

## **Alternative Flow(s):**

None

Use Case ID	18(Add Product)
Intent	Sales persons add new products to the inventory in the system.
Role	Sales Person
Pre-conditions	The sales person has logged in to the system.
Post-conditions	The new product is successfully added to the inventory, and
	the system updates the product information.

## **Basic Flow**

- 1. The sales person navigates to the "Product Management" page.
- 2. The sales person clicks the "Add Product" button.
- 3. The sales person fills in product information (name, price, inventory quantity, description, and image).
- 4. The sales person clicks the "Save" button.
- 5. The system verifies the format.
- 6. The system saves the product information.
- 7. The system prompts the message "saved successfully".
- 8. The system updates the inventory data.

- 3a. Required information is not filled.
  - 3a1. The system prompts the sales person to fill in complete required information.
  - 3a2. The Sales person supplements the information and saves it again.

- 5a. The image format is not supported.
  - 5a1. The system prompts the supported image formats and requires the sales person to change the image.
  - 5a2. The sales person changes the image and resubmits the save.

Use Case ID	19(Remove Product)
Intent	Sales persons delete specified products from the system
	inventory.
Role	Sales Person
Pre-conditions	The sales person has logged in to the system, and there are
	products in the system that can be deleted.
Post-conditions	The specified product is successfully deleted from the system
	inventory.

- 1. The sales person navigates to the "Product Management" page.
- 2. The sales person selects a product.
- 3. The sales person clicks the "Delete" button.
- 4. The sales person confirms the deletion operation.
- 5. The system deletes the product information.
- 6. The system deletes the inventory data.
- 7. The system prompts the message "deleted successfully".

## **Alternative Flow(s):**

- 4a. The sales person cancels the deletion operation.
  - 4a1. The system does not perform the deletion operation and returns to the product management page.
- 5a. The product has related orders and cannot be deleted.
  - 5a1. The system prompts that the product has related orders and cannot be deleted, and notifies the processing method (such as processing the orders first).

Use Case ID	20(Update Product)
Intent	Sales persons modify the relevant information of products in
	the system, such as price, inventory quantity, and description.
Role	Sales Person
Pre-conditions	The sales person has logged in to the system, and there are
	products in the system to be updated.
Post-conditions	The product information is successfully updated, and the
	system synchronizes the latest product data.

### **Basic Flow**

- 1. The sales person navigates to the "Product Management" page.
- 2. The Sales person selects the product.
- 3. The sales person clicks the "Update" button.
- 4. The sales person modifies the product price, inventory quantity, description, etc.
- 5. The sales person clicks the "Save" button.
- 6. The system verifies the information format.

- 7. The system saves the product information.
- 8. The system prompts the message "updated successfully".

- 4a. No information is modified.
  - 4a1. The system prompts the sales person to modify at least one product information item.
  - 4a2. The sales person modifies the information and saves it again.
- 6a. The modified inventory quantity is negative.
  - 6a1. The system prompts that the inventory quantity cannot be negative and requires the sales person to reenter.
  - 6a2. The sales person reenters the inventory quantity and saves.