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SOFTWARE ENGINEERING PROBLEM SPECIFICATION TABLE

CLIENT	MercadoLibre
USER	Sellers/administrators and customers interested in buying through the application.
FUNCTIONAL REQUIREMENTS	**R1.** Register product information. **R2:** Remove product from inventory. **R3.** Register an order. **R4:** Modify the available quantity of a product. **R5.** Search for products by name, price, category, and number of times purchased. **R6.** Search for orders by buyer's name, total price, and purchase date. **R7.** Search by range for numeric attributes (price, available quantity, number of times purchased). **R8.** Search by interval for string attributes (name). **R9.** Choose the order in which results are displayed.
PROBLEM CONTEXT	MercadoLibre has hired our services to develop an application that allows the online sale of their virtual store. This app should allow users to enter products into the system with their respective information and create an inventory of products. It should also allow users to search for products according to the search criteria they choose, such as name, price, price range, number of times purchased, among others. After performing this search, the products should be displayed on

	the screen in an orderly manner (ascending or descending).
	This app also allows users to make purchases or orders, and each time one of these is made, the product inventory decreases and the number of times purchased increases.
NON-FUNCTIONAL REQUIREMENTS	**Reliability:** The system should be fault-tolerant and have mechanisms to handle situations of failures or interruptions in its operation. **Scalability:** The system should be able to handle large amounts of data and users as the number of products and orders grows. **Data completeness:** The system should validate that all necessary parameters are entered when adding a product or recording an order. **Data atomicity:** The system should ensure that data operations are completed in their entirety or canceled completely to avoid inconsistencies. **Data duplication:** The system should allow the existence of products with similar characteristics but maintain the information of each one individually.

Functional Requirements Analysis Tables

Name or identifier	**R1.** Register product information.		
Summary	This function allows registering products in the system or increasing the quantity of a product if it has already been registered. To register a product, the user must enter basic information for each one.		
Inputs	Input name	Data type	Condition of selection and repetition
	name	String	Only if the product´s name is not already registered in the system.
	description	String	
	price	double	
	category	int	

General activities necessary to obtain the result	1. Enter the product's name 2. Enter the product's description 3. Enter the product's price 4. Enter the product's category 5. Validate that the product's name does not already exist. 6. Save the product in inventory.		
Result or postcondition	A message will be displayed on the screen informing that the product has registered successfully. In case there was an error during the registration/entry process, an error message will be displayed.		
Outputs	Output name	Data type	Condition of selection and repetition
	msgSuccesfull	String	Only if all the steps of the registration were successful.
	msgError	String	Only if there was an error or issue during the registration process.

Name or identifier	**R2:** Remove product from inventory.		
Summary	This function allows users to remove a product from the system's inventory.		
Inputs	Input name	Data type	Condition of selection and repetition
	name	String	Only if the product name is already registered in the system.
General activities necessary to obtain the result	1. User selects the "Remove product" option from the system menu. 2. User enters the name of the product to be removed. 3. Validate that the product's name does already exist. 4. User confirms the removal action.		
Result or postcondition	The product is removed from the inventory database. The quantity of the product is reduced by the number of units sold.		

Outputs	Output name	Data type	Condition of selection and repetition
	confirmationMsg	String	Once for each product removed.

Name or identifier	**R3.** Register an order.		
Summary	The system allows users to register an order, which includes information about the products, quantities, and total price of the order.		
Inputs	Input name	Data type	Condition of selection and repetition
	buyerName	String	
	productName	String	
	quantities	int	
General activities necessary to obtain the result	1. User selects the "Register order" option from the system menu. 2. User enters the buyer name. 3. User selects the products and quantities for the order. 4. Validate that the product's name does already exist. 5. The system calculates the total price. 6. User confirms and submits the order.		
Result or postcondition	The order information is saved into the system, and the quantities of the products in the inventory are updated accordingly.		
Outputs	Output name	Data type	Condition of selection and repetition
	confirmationMsg	String	Only if all the steps of the registration were successful.
	orderId	String	Only if all the steps of the registration were successful.

Name or identifier	R4: Modify the available quantity of a product.		
Summary	This function allows modifying the available quantity of a product in the inventory.		
Inputs	Input name	Data type	Condition of selection and repetition
	productName	String	Only if the product´s name is already registered in the system.
	newQuantity	int	Only if the product´s name is already registered in the system.
General activities necessary to obtain the result	1. User selects the "Modify product quantity" option from the system menu or the system executes a method to change this information. 2. User enters the product name and the new available quantity. 3. User submits the information to the system. 4. Validate that the product's name does already exist. 5. The system updates the available quantity of the product.		
Result or postcondition	The available quantity of the product is updated in the inventory database.		
Outputs	Output name	Data type	Condition of selection and repetition
	confirmationMsg	String	Only if all the steps of the modification were successful.

Name or identifier	R5. Search for products by name, price, category, and number of times purchased.		
Summary	The system allows users to search for products based on their name, price, category, and number of times purchased.		
Inputs	Input name	Data type	Condition of selection and repetition
	productName	String	optional
	productPrice	Double	optional

	productCategory	String	optional
	productPurchased Range	Int	optional

General activities necessary to obtain the result	1. User selects the "Search products" option from the system menu. 2. User enters one or more search criteria. 3. System queries the inventory database for products that match the criteria. 4. System displays a list of products that match the criteria.
Result or postcondition	The system displays a list of products that match the search criteria.

	Output name	Data type	Condition of selection and repetition
Outputs	productsList	Array	Only if at least 1 product is found in the database with the filtered characteristics

Name or identifier	**R6.** Search for orders by buyer's name, total price, and purchase date.
Summary	The system allows users to search for orders in the system based on the buyer's name, total price, and purchase date.

	Input name	Data type	Condition of selection and repetition
Inputs	buyerName	String	optional
	purchaseDate	Date	optional
	totalPriceRange	Double	optional

General activities necessary to obtain the result	1. User selects the "Search orders" option from the system menu. 2. User enters the optional search criteria. 3. User submits the search request to the system.
Result or postcondition	The system displays a list of orders that match the search criteria.

	Output name	Data type	Condition of selection and repetition
Outputs			

	orderId	String	Only if at least 1 order is found in the database with the filtered characteristics
	buyerName	String	Only if at least 1 order is found in the database with the filtered characteristics
	purchaseDate	Date	Only if at least 1 order is found in the database with the filtered characteristics
	totalPriceRange	Double	Only if at least 1 order is found in the database with the filtered characteristics

Name or identifier	**R7.** Search by range for numeric attributes (price, available quantity, number of times purchased).		
Summary	This function allows users to search products by their numeric attributes, such as price, available quantity, and number of times purchased, using a range of values.		
Inputs	Input name	Data type	Condition of selection and repetition
	price	Double	optional
	availableQuantity	int	optional
	numbersPurchased	int	optional
	minimumValue	Numeric	required
	maximumValue	Numeric	required
General activities necessary to obtain the result	1. User selects the "Search products by range" option from the system menu. 2. User selects the attribute type to search by. 3. User enters the minimum and maximum values for the selected attribute type. 4. User submits the search criteria to the system.		
Result or postcondition	The system displays a list of products that meet the search criteria.		
Outputs	Output name	Data type	Condition of selection and repetition
	productsList	Array	Only if at least 1 product is found in the database with

			the filtered characteristics

Name or identifier	**R8.** Search by interval for string attributes (name).		
Summary	The system displays a list of products that meet the search criteria.		
Inputs	Input name	Data type	Condition of selection and repetition
	searchTerm	String	required
	startingIndex	Numeric	optional
	endingIndex	Numeric	optional
General activities necessary to obtain the result	1. User selects the "Search products" option from the system menu. 2. User enters the search term for the product name. 3. User can optionally specify a starting and ending index for the search range. 4. User submits the search request to the system. 5. Result or postcondition: The system returns a list of products that match the search term within the specified range.		
Result or postcondition	The system returns a list of products that match the search term within the specified range.		
Outputs	Output name	Data type	Condition of selection and repetition
	productsList	Array	Only if at least 1 product is found in the database with the filtered characteristics

Name or identifier	**R9.** Choose the order in which results are displayed.
Summary	The system returns a list of products that match the search term within the specified range.

Inputs	Input name	Data type	Condition of selection and repetition
	fieldToOrderBy	String	
	orderDirection	int	
General activities necessary to obtain the result	1. User selects the "Order results" option from the system menu. 2. User selects the field to order by and the order direction. 3. User submits the information to the system.		
Result or postcondition	The search results are displayed in the selected order.		
Outputs	Output name	Data type	Condition of selection and repetition
	confirmationMsg	String	Only if the instruction was received correctly