

E-Commerce Website with Recommender System

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Chapter 1. Introduction

1.1 Problem Statement

Businesses operating physically have local outreach while those already having an e-commerce website has no recommender system attached to it.

1.2 Scope

To overcome the aforementioned problem, we are developing an e-commerce website for businesses to operate nationwide and gain new customers and continue business with their current customers easily and efficiently. The targeted audience in this project are the people who are currently residing in Pakistan.

1.3 Objectives

- Requirements Elicitation
- Design
- Code
- Test

1.4 Tools

- Bootstrap [1]
- JavaScript [2]
- PHP [3]
- MySQL [4]

Chapter 2. System Requirements, Design and Architecture

2.1 Functional Requirements

2.1.1 Admin Functional Requirements

ID	FR-Admin-1
Name	Admin Login
Description	Admin will log in to the system with his/her username and password to achieve access to the below-mentioned admin functionalities.
Rationale	To keep the admin functionalities secure so that no other person(s) can access them.
Dependency	None

ID	FR-Admin-2
Name	Add (Products, Categories, Brands)
Description	The admin can add a product, category, or brand(s) to the website.
Rationale	To let the users view more products, search by category or by brand.
Dependency	FR-Admin-1

ID	FR-Admin-2.1
Name	Add a product
Description	The admin can add a product to the website through the admin panel. The admin needs to provide the product name, description, brand of the product, category of the product, three images, product price, and quantity available.
Rationale	To list the product on the website for sale.
Dependency	FR-Admin-1, FR-Admin-2

ID	FR-Admin-2.2
Name	Add a category
Description	The admin can add a category to the website for products. The admin needs to provide the category name and description.
Rationale	To associate products with it so that users can search for a product by category.
Dependency	FR-Admin-1, FR-Admin-2

ID	FR-Admin-2.3
Name	Add a brand
Description	The admin can add a brand to the website for products. The admin needs to provide the brand name and description.
Rationale	To associate products with brands so that users can search a product by brand.
Dependency	FR-Admin-1, FR-Admin-2

ID	FR-Admin-3
Name	Update (Categories, Brands)
Description	The admin can update categories or brands names or description.
Rationale	If the admin made a mistake during adding the category or brand, he/she can update it.
Dependency	FR-Admin-1

ID	FR-Admin-3.1
Name	Update a category
Description	The admin can update the category name and description.
Rationale	If the admin made a mistake during adding the category, he/she can update it.
Dependency	FR-Admin-1, FR-Admin-3

ID	FR-Admin-3.2
Name	Update a brand
Description	The admin can update the category name and description.
Rationale	If the admin made a mistake during adding the category, he/she can update it.
Dependency	FR-Admin-1, FR-Admin-3

ID	FR-Admin-4
Name	Remove (Products, Categories, Brands)
Description	The admin can remove a product(s), brand(s), or categories from the website by selecting them in the remove menu.
Rationale	If the product is out of stock or the business is no more dealing in some categories or brands.
Dependency	FR-Admin-1

ID	FR-Admin-4.1
Name	Remove a product
Description	The admin can remove a product(s) from the website by selecting them in the remove menu.
Rationale	If the product is out of stock or it is no more available in the market.
Dependency	FR-Admin-1, FR-Admin-4

ID	FR-Admin-4.2
Name	Remove a category
Description	The admin can remove a category from the website by selecting them in the remove menu.
Rationale	If the business is no more dealing in that category.
Dependency	FR-Admin-1, FR-Admin-4

ID	FR-Admin-4.3
Name	Remove a brand
Description	The admin can remove a brand(s) from the website by selecting them in the remove menu.
Rationale	If the business is no more dealing in that brand.
Dependency	FR-Admin-1, FR-Admin-4

ID	FR-Admin-5
Name	Top-selling Products
Description	The admin can add or remove a product from the top-selling list.
Rationale	The keep the users/visitors updated on the website's top-selling products.
Dependency	FR-Admin-1

ID	FR-Admin-5.1
Name	Add top-selling product(s)
Description	The admin can add a product to the "top-selling products" by selecting them in the menu, which will then be viewed on the home page of the website. The
Rationale	To let the visitors/users know which products are the most demanded in the market.
Dependency	FR-Admin-1, FR-Admin-5

ID	FR-Admin-5.2
Name	Remove top-selling product(s)
Description	The admin can remove the top-selling product(s) from the website by selecting them in the menu, which will then not be visible on the website's home page or any other page.
Rationale	If the product is no longer a top-selling product, the admin can remove it from

	the website's top-selling list.
Dependency	FR-Admin-1, FR-Admin-5

ID	FR-Admin-6
Name	See/Manage Orders
Description	The admin can see and manage the orders as pending, dispatched and delivered orders.
Rationale	To keep the inventory updated.
Dependency	FR-Admin-1

ID	FR-Admin-6.1
Name	Pending Orders
Description	The admin can see pending orders and mark one, some, or all of them as dispatched.
Rationale	To keep the orders managed and up to date.
Dependency	FR-Admin-1, FR-Admin-6

ID	FR-Admin-6.2
Name	Dispatched Orders
Description	The admin can see dispatched orders and mark one, some, or all of them as delivered.
Rationale	To keep the orders managed and up to date.
Dependency	FR-Admin-1, FR-Admin-6

ID	FR-Admin-6.3
Name	Delivered Orders
Description	The admin can see delivered orders.

Rationale	In case of any disputes with the customers or the inventory, the admin can check if an order(s) has been delivered or not.
Dependency	FR-Admin-1, FR-Admin-6

ID	FR-Admin-7
Name	Logout
Description	To stop using the admin panel, the admin will click the logout.
Rationale	To secure the website so that no other person(s) can access the admin panel
Dependency	FR-Admin-1

2.1.2 End-User Functional Requirements

ID	FR-User-1
Name	Search
Description	The user will search a product(s) by typing its name in the search bar, and the search results will appear in front of him/her
Rationale	To find products easily instead of surfing the whole website
Dependency	None

ID	FR-User-2
Name	Categories
Description	If the user clicks on the “categories” tab in the navbar, all the categories of the website will list-up in front of him/her. By clicking any category, the user can see all the products in that category available in the website.
Rationale	To see all the categories and to see the products in a specific category.
Dependency	None

ID	FR-User-3
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Name	Brands
Description	If the user clicks on the “brands” tab in the navbar, all the brands of the website will list-up in front of him/her. By clicking any brand, the user can see all the products of that brand available in the website.
Rationale	To see all the brands and to see the products in a specific brand.
Dependency	None

ID	FR-User-4
Name	Shopping Cart
Description	The user can see his/her cart. All the products will be listed in a tabular form mentioning the product’s name, quantity in which the user added a particular product to the cart, amount (product price * quantity), an option to delete the product from the cart, and he/she can see the total amount.
Rationale	To proceed to checkout.
Dependency	None

ID	FR-User-4.1
Name	Proceed to checkout
Description	The user, upon clicking on the proceed to checkout button will be taken to the checkout page. If the cart is empty, the checkout button won’t work.
Rationale	To pay for the product(s) and buy it.
Dependency	FR-User-4

ID	FR-User-4.2
Name	Continue Shopping
Description	If the user wants to continue shopping after looking at his/her’s cart, he/she will click the “continue shopping” button and will be taken to the home page.
Rationale	To continue shopping

Dependency	FR-User-4
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ID	FR-User-5
Name	Checkout
Description	The user will provide his/her full name, house address, email address, and phone number to place the order.
Rationale	To place the order.
Dependency	FR-User-4.1

ID	FR-User-6
Name	Payment Mode
Description	Only cash on delivery will be used at the current moment
Rationale	To let users know which payment mode they can use.
Dependency	None

ID	FR-User-7
Name	Recommended Products
Description	Based on the users' search and visit (to the product's page) history, a list of products that are recommended to the user will be shown on the home page.
Rationale	To ease the user in finding new products.
Dependency	FR-User-11

ID	FR-User-8
Name	Latest Products
Description	A carousel of the latest products will be shown on the home page of the

	website.
Rationale	To let the users know about the latest product.
Dependency	None

ID	FR-User-9
Name	Top-selling products
Description	A carousel of top-selling products will be shown on the home page of the website.
Rationale	To let the user know which products are top-selling on the website.
Dependency	None

ID	FR-User-10
Name	Add to cart
Description	An add to cart button will be displayed on the carousel items in recommended products, latest products, and top-selling products, upon clicking of which will add the product to the cart of the user.
Rationale	To add the product to the cart of the user.
Dependency	FR-User-7, FR-User-8, FR-User-9

ID	FR-User-11
Name	View Product
Description	Upon clicking a product from the latest products carousel, recommended products carousel, top-selling products carousel or the search results from the search bar, the category search, or the brand search, the user will be taken to the product page. The product page will contain 3 images of the product, information about the product, payment details, and shipping and return policy. It will also contain the “add to cart” button, upon clicking of which, the product will be added to the user’s cart in the quantity mentioned by the user on the product page.
Rationale	To view all the information regarding a product and add it to the cart.

Dependency	FR-User-7, FR-User-8, FR-User-9, FR-User-2, FR-User-3
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2.2 Non-Functional Requirements

ID	NFR-1
Name	System Availability
Description	For how much is the system available to users OR Mean time to failure (network failure not considered)
Scale	Hours
Meter	100 Hours
Must	99 hours
Plan	99.5 hours
Wish	100 hours

ID	NFR-2
Name	System Reliability
Description	If the system gives correct search results and places the order according to the user's cart, it is termed to be as reliable
Scale	Search results and orders placed

ID	NFR-2.1
Name	Search Reliability
Description	If the system gives correct search results, the system will be termed as "search reliable".
Scale	Search results
Meter	100 search results
Must	98 search results shall be accurate.
Plan	99 search results shall be accurate.

Wish	100 search results shall be accurate.
Rationale	NFR-2

ID	NFR-2.2
Name	Order Reliability.
Description	If the system takes the correct order from the user i.e. the cart of the user contains the products which he/she added and the total amount is shown and processed correctly, it will be termed as “order reliable”.
Scale	User orders
Meter	10 orders
Must	10 (all) the orders must be processed correctly.
Plan	10 (all) the orders must be processed correctly.
Wish	10 (all) the orders must be processed correctly.
Dependency	NFR-2

ID	NFR-3
Name	Extendibility
Description	The code must be modular so as to increase cohesion and make the system extendible.
Dependency	None

ID	NFR-4
Name	Usability
Description	The end-user and the admin shall be able to use the system effeciently after an hour of training as per the requirements of the end-user and the admin panel.
Scale	Hours of training.

ID	NFR-4.1
Name	End-user usable
Description	The end-user shall be able to use the system efficiently after 1 hour of training.
Scale	Hour
Meter	1 hour
Dependency	NFR-4

ID	NFR-4.2
Name	Admin usable
Description	The end-user shall be able to use the system efficiently after 2 hours of training.
Scale	Hour
Meter	2 hours
Dependency	NFR-4.2

ID	NFR-5
Name	Performance
Description	The system should perform tasks and return results in a specified time-span which is allocated for each activity. All the below mentioned performance requirements are subject to the availability of a stable 5 Mbps internet connection
Scale	Seconds
Dependency	None

ID	NFR-5.1
Name	Search Results Time
Description	If a user searches a product through the search bar, the system should return the results in no more 2 seconds.

Scale	Seconds
Meter	100 searches
Must	95 searches shall return in 2 seconds or less time
Plan	98 searches shall return in 2 seconds or less time
Wish	100 searches shall return in 2 seconds or less time
Dependency	NFR-5

ID	NFR-5.2
Name	Add to cart time
Description	If a user clicks the “add to cart” button on the recommended products carousel, latest products carousel, or the top-selling products carousel, the item should be added to the cart in no more than 2 seconds.
Scale	Seconds
Meter	100 additions to the cart
Must	95 additions shall be done in 2 seconds or less time
Plan	98 additions shall be done in 2 seconds or less time
Wish	100 additions shall be done in 2 seconds or less time
Dependency	NFR-5

ID	NFR-5.3
Name	Page load time
Description	Any page of the website shall load within less than 2 seconds.
Scale	Seconds
Meter	Load all the pages of the website.
Must	95% of the pages must load within 2 seconds or less
Plan	98% of the pages must load within 2 seconds or less

Wish	100% of the pages must load within 2 seconds or less
Dependency	NFR-5

ID	NFR-5.4
Name	Recommended Products
Description	The system shall show the recommendations to users based on their search history.
Scale	Searches
Meter	20 searches.
Must	Provide 95% of the results accurately.
Plan	Provide 98% of the results accurately.
Wish	Provide 100% of the results accurately.
Dependency	NFR-5

ID	NFR-5.5
Name	Admin adding functionalities
Description	The pop-up window for adding products, brands, categories, products to the top-selling shall open in less than 1 second, and upon clicking the “Add” button, the addition process shall be completed in less than 2 seconds and a success message shall be displayed.
Scale	Seconds
Meter	100 additions
Must	95 additions shall be done in time mentioned above in the description
Plan	98 additions shall be done in time mentioned above in the description
Wish	100 additions shall be done in time mentioned above in the description
Dependency	NFR-5

ID	NFR-5.6
Name	Admin removing functionalities
Description	The pop-up window for removing products, brands, categories, products from the top-selling shall open in no more than 1 second, and upon clicking the “Remove” button, the removal process shall be completed in no more than 2 seconds and a success message shall be displayed
Scale	Seconds
Meter	100 removals
Must	95 removals shall be completed in the time mentioned above in the description
Plan	98 removals shall be completed in the time mentioned above in the description
Wish	100 removals shall be completed in the time mentioned above in the description
Dependency	NFR-5

ID	NFR-5.7
Name	Admin updating functionalities
Description	The page for updating brands, categories shall open in no more than 2 second, and upon clicking the “Update” button, the updating process shall be completed in no more than 2 seconds and a success message shall be displayed
Scale	Seconds
Meter	100 updating
Must	95 updating shall be completed in the time mentioned above in the description
Plan	98 updating shall be completed in the time mentioned above in the description
Wish	100 updating shall be completed in the time mentioned above in the description
Dependency	NFR-5

ID	NFR-5.8
Name	Admin managing the inventory functionalities.

Description	The pop-up window for managing the orders i.e. the window for pending orders, for dispatched orders, and delivered orders shall pop-up in no more than 2 seconds, and the operations of marking pending orders as dispatched and dispatched orders as delivered shall take no more than 2 seconds.
Scale	Seconds
Meter	100 operations
Must	95 operations shall be completed in the time mentioned above in the description
Plan	98 operations shall be completed in the time mentioned above in the description
Wish	100 operations shall be completed in the time mentioned above in the description
Dependency	NFR-5

2.3 Use Case Model

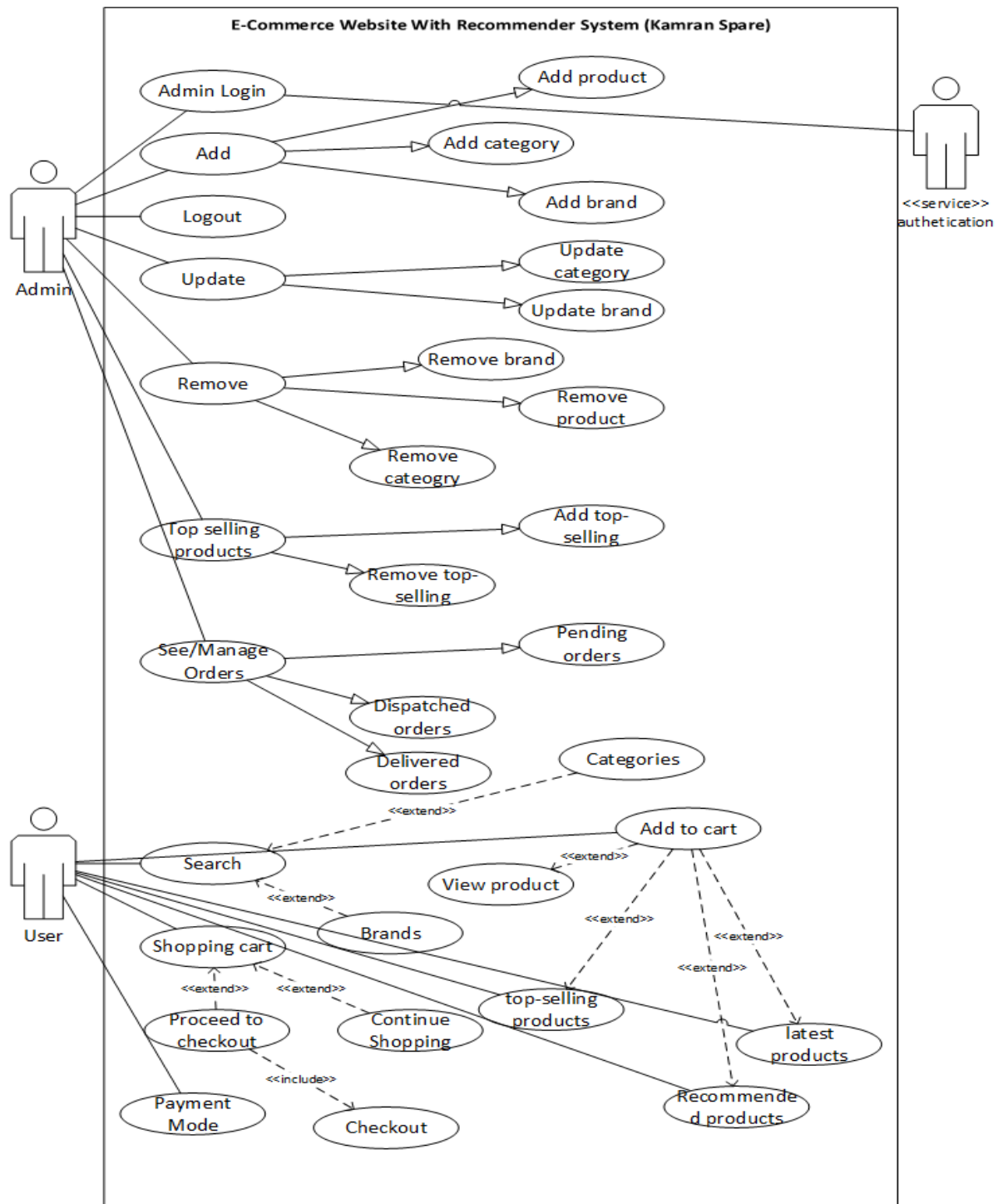


Fig 1. Use Case Model

2.4 Fully Dressed Use Cases

ID	UC-1
Use Case	Admin Login
Actors	Admin
Purpose	To gain access to the admin panel
Description	The admin can control the website through the admin panel. For this purpose, he/she need to login into the admin panel to make changes to the website or to see/manage orders.
Cross Reference	None
Pre-condition	The admin must be registered with the system.
Successful Post Condition	The admin panel is loaded to the admin i.e. he/she gains access.

Typical Course of Events

Actor Action	System Response
1. The admin visits “kamranspare.com/login”	
	2. The login screen is loaded
3. The admin put in his/her credentials i.e. the username and password.	
	4. Credentials are verified with the database.
	5. The admin panel is loaded.

Alternate Scenario(s)

3* Admin enters incorrect credentials, an error message is displayed to the admin.

ID	UC-2
Use Case	Add Product(s)
Actors	Admin
Purpose	To add products to the database
Description	To add product(s) to the database for end-users to see it, the admin can do so through admin panel.
Cross Reference	None
Pre-condition	The admin must be logged in.
Successful Post Condition	Product is added to the database.

Typical Course of Events

Actor Action	System Response
1. The admin clicks on the “Add” option	
	2. The add menu is loaded
3. The admin clicks on the “Add a product” button	
	4. Product adding window is popped up.
5. The admin enters the product name, description, selects brand from the dropdown menu, selects category from the dropdown menu, adds three images of the product, enters the product price, and the quantity in which the product is stored in the inventory. The admin then clicks the “Add Product” button	
	6. The data is stored in the database and a success messages is displayed

Alternate Scenario(s)

5* The admin enters incorrect data type thus an error message is displayed.

ID	UC-3
Use Case	Add Category
Actors	Admin
Purpose	To add categories to the database so that products can be associated with it.
Description	The admin can add categories to the database so that any products that he/she uploads to the database can be associated with it. Also to help users search products by categories.
Cross Reference	None
Pre-condition	The admin must be logged in.
Successful Post Condition	Category is added to the database.

Typical Course of Events

Actor Action	System Response
1. The admin clicks on the “Add” option	
	2. The add menu is loaded
3. The admin clicks on the “Add a category” button	
	4. Category adding window is popped up.
5. The admin enters the category name, and description. The admin then clicks the “Add Category” button	
	6. The data is stored in the database and a success messages is displayed

Alternate Scenario(s)

5* The admin enters incorrect data type thus an error message is displayed.

ID	UC-4
Use Case	Add Brand(s)
Actors	Admin
Purpose	To add brand(s) to the database so that products can be associated with it.
Description	The admin can add brand(s) to the database so that any products that he/she uploads to the database can be associated with it. Also to help users search products by brand.
Cross Reference	None
Pre-condition	The admin must be logged in.
Successful Post Condition	Brand is added to the database.

Typical Course of Events

Actor Action	System Response
1. The admin clicks on the “Add” option	
	2. The add menu is loaded
3. The admin clicks on the “Add a brand” button	
	4. Brand adding window is popped up.
5. The admin enters the brand name, and description. The admin then clicks the “Add Category” button	

	6. The data is stored in the database and a success messages is displayed
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Alternate Scenario(s)

5* The admin enters incorrect data type thus an error message is displayed.

ID	UC-5
Use Case	Update Brand(s)
Actors	Admin
Purpose	To update brand information
Description	If the admin made any mistake during adding a brand, the admin can update the brand information.
Cross Reference	None
Pre-condition	The admin must be logged in.
Successful Post Condition	Brand data is updated successfully in the database.

Typical Course of Events

Actor Action	System Response
1. The admin clicks on the “Update” option	
	2. The update menu is loaded
3. The admin clicks on the “Update a brand” button	
	4. Brand updating window is popped up.
5. The admin selects which brand to update	
	6. Brand updating tab is opened.

7. Admin updates the brand info and clicks the “update brand” button	
	8. Data is updated in database and a success message is displayed.

Alternate Scenario(s)

7* The admin enters incorrect data type thus an error message is displayed.

ID	UC-6
Use Case	Update Category
Actors	Admin
Purpose	To update category information
Description	If the admin made any mistake during adding a category, the admin can update the category information.
Cross Reference	None
Pre-condition	The admin must be logged in.
Successful Post Condition	Category data is updated successfully in the database.

Typical Course of Events

Actor Action	System Response
1. The admin clicks on the “Update” option	
	2. The update menu is loaded
3. The admin clicks on the “Update a category” button	
	4. Category updating window is popped up.

5. The admin selects which category to update	
	6. Category updating tab is opened.
7. Admin updates the category info and clicks the “update category” button	
	8. Data is updated in database and a success message is displayed.

Alternate Scenario(s)

7* The admin enters incorrect data type thus an error message is displayed.

ID	UC-7
Use Case	Remove Product
Actors	Admin
Purpose	To remove a product from the database.
Description	If the business is out of stock for a product or is no more dealing in that product, the admin can remove the product from the database.
Cross Reference	None
Pre-condition	The admin must be logged in.
Successful Post Condition	The product is removed successfully from the database.

Typical Course of Events

Actor Action	System Response
1. The admin clicks on the “Remove” option	
	2. The remove menu is loaded

3. The admin clicks on the “Remove a Product” button	
	4. Product removing window is popped up.
5. The admin selects which product(s) to be removed and clicks the “Remove Product(s)” button.	
	6. The products are removed from the database and a success message is displayed.

Alternate Scenario(s)

5* The admin does not select any product to be removed, thus an error is displayed.

ID	UC-8
Use Case	Remove a Brand
Actors	Admin
Purpose	To remove a brand from the database.
Description	If Kamran is no more dealing in a brand, the admin can remove the brand from the database.
Cross Reference	None
Pre-condition	The admin must be logged in.
Successful Post Condition	The brand is removed successfully from the database.

Typical Course of Events

Actor Action	System Response
1. The admin clicks on the “Remove” option	

	2. The remove menu is loaded
3. The admin clicks on the “Remove a Brand” button	
	4. Brand removing window is popped up.
5. The admin selects which brand(s) to be removed and clicks the “Remove Brand(s)” button.	
	6. The brand(s) are removed from the database and a success message is displayed.

Alternate Scenario(s)

5* The admin does not select any brand to be removed, thus an error is displayed.

ID	UC-9
Use Case	Remove a Category
Actors	Admin
Purpose	To remove a category from the database.
Description	If the business is no more dealing in a category, the admin can remove the category from the database.
Cross Reference	None
Pre-condition	The admin must be logged in.
Successful Post Condition	The category is removed successfully from the database.

Typical Course of Events

Actor Action	System Response
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1. The admin clicks on the “Remove” option	
	2. The remove menu is loaded
3. The admin clicks on the “Remove a Category” button	
	4. Product removing window is popped up.
5. The admin selects which category to be removed and clicks the “Remove Category” button.	
	6. The category is removed from the database and a success message is displayed.

Alternate Scenario(s)

5* The admin does not select any category to be removed, thus an error is displayed.

ID	UC-10
Use Case	Add top-selling
Actors	Admin
Purpose	To add a product to the top-selling list.
Description	To let the visitors/users know which products are top-selling, the admin can add some products to the top-selling list of the website.
Cross Reference	None
Pre-condition	The admin must be logged in.
Successful Post Condition	The product(s) are added successfully to the top-selling list.

Typical Course of Events

Actor Action	System Response
1. The admin clicks on the “Top-selling” option	
	2. The top-selling menu is loaded
3. The admin clicks on the “Add top-selling products” button	
	4. The adding tab is loaded.
5. The admin selects which product(s) to be added to the top-selling list and clicks the “Add to Top Selling” button	
	6. The products are successfully added to the top-selling menu and a success message is displayed.

Alternate Scenario(s)

5* The admin does not select any product to be added, thus an error is displayed.

ID	UC-11
Use Case	Remove top-selling
Actors	Admin
Purpose	To remove a product from the top-selling list.
Description	To let the visitors/users know which products are top-selling, the admin can remove some products to the top-selling list of the website.
Cross Reference	None
Pre-condition	The admin must be logged in.
Successful Post Condition	The product(s) are successfully removed from the top-selling list.

Typical Course of Events

Actor Action	System Response
1. The admin clicks on the “Top-selling” option	
	2. The top-selling menu is loaded
3. The admin clicks on the “Remove top-selling products” button	
	4. The removing tab is loaded.
5. The admin selects which product(s) to be removed from the top-selling list and clicks the “Remove to Top Selling” button	
	6. The products are successfully removed from the top-selling menu and a success message is displayed.

Alternate Scenario(s)

5* The admin does not select any product to be removed, thus an error is displayed.

ID	UC-12
Use Case	Pending Orders
Actors	Admin
Purpose	To see pending orders and mark them as dispatched orders.
Description	The admin can see the pending orders and can mark them as <i>dispatched</i> .
Cross Reference	None
Pre-condition	The admin must be logged in.
Successful Post Condition	The orders are successfully marked as dispatched.

Typical Course of Events

Actor Action	System Response
1. The admin clicks on the “See/Manage” option	
	2. The orders menu is loaded.
3. The admin clicks on the “Pending Orders” button	
	4. The pending order window is loaded.
5. The admin clicks on the “See Order” button and confirms which orders to be marked as dispatched.	
6. The admin then selects all the orders which he/she wants to be marked as dispatched and click the “mark as dispatched” button.	
	7. The orders are successfully marked as dispatched in the database and a success message is displayed.

Alternate Scenario(s)

6* The admin does not select any order to be marked as dispatched, thus an error is displayed.

ID	UC-13
Use Case	Dispatched Orders
Actors	Admin
Purpose	To see dispatched orders and mark them as delivered orders
Description	The admin can see the dispatched orders and can mark them as <i>delivered</i> .
Cross Reference	None
Pre-condition	The admin must be logged in.

Successful Post Condition	The orders are successfully marked as delivered.
----------------------------------	--------------------------------------------------

Typical Course of Events

Actor Action	System Response
1. The admin clicks on the “See/Manage” option	
	2. The orders menu is loaded.
3. The admin clicks on the “Dispatched Orders” button	
	4. The dispatched order window is loaded.
5. The admin clicks on the “See Order” button and confirms which orders to be marked as delivered.	
6. The admin then selects all the orders which he/she wants to be marked as delivered and click the “mark as delivered” button.	
	7. The orders are successfully marked as delivered in the database and a success message is displayed.

Alternate Scenario(s)

6* The admin does not select any order to be marked as delivered, thus an error is displayed.

ID	UC-14
Use Case	Delivered Orders
Actors	Admin
Purpose	To see delivered orders
Description	The admin can see the delivered orders in case of inventory management or

	any dispute with the customer on not receiving the order.
Cross Reference	None
Pre-condition	The admin must be logged in.
Successful Post Condition	Data of the delivered order is displayed.

Typical Course of Events

Actor Action	System Response
1. The admin clicks on the “See/Manage” option	
	2. The orders menu is loaded.
3. The admin clicks on the “Delivered Orders” button	
	4. The delivered order window is loaded.
5. The admin clicks on the “See Order”.	
	6. The all the data about the order is displayed to the admin

Alternate Scenario(s)

Nil

ID	UC-15
Use Case	Logout
Actors	Admin

Purpose	To logout of the admin panel
Description	For the purpose that no unauthorized person should use the admin panel, the admin when finishes his/her work logs out of the admin panel.
Cross Reference	None
Pre-condition	The admin must be logged in.
Successful Post Condition	The login page of the admin panel is displayed.

Typical Course of Events

Actor Action	System Response
1. The admin clicks on the “Logout” button	
	2. The system ends the admin’s session and the login page is loaded.

Alternate Scenario(s)

Nil

ID	UC-16
Use Case	Search
Actors	User
Purpose	To find products
Description	In order to find products easily, the user can search the name of the products and all the search results will be displayed to user.
Cross Reference	None
Pre-	None

condition	
Successful Post Condition	All the relevant data from the database is loaded onto the user's screen.

Typical Course of Events

Actor Action	System Response
1. The user types a keyword in the search bar and clicks the search icon	
	2. The website searches for the keyword in the database and returns the search result to the user.

Alternate Scenario(s)

1* No match for the keyword is found in the database.

ID	UC-17
Use Case	Categories
Actors	User
Purpose	To find products by categories.
Description	In order to find products by categories, the user clicks the categories button on the navigation bar. All the categories will be displayed to the user and the user can click on a category to see products in that category.
Cross Reference	None
Pre-condition	None
Successful Post Condition	All the categories and products in that categories are loaded from the database to the user's screen.

Typical Course of Events

Actor Action	System Response
1. The user clicks the “categories”	
	2. All the categories are displayed to the user
3. The user clicks on a category	
	4. All the products in that category are loaded onto the user’s screen.

Alternate Scenario(s)

Nil

ID	UC-18
Use Case	Brands
Actors	User
Purpose	To find products of a specific brand
Description	In order to find products of a specific brand, the user clicks on the brand button in the navigation bar. All the brands are displayed to the user. The user clicks on a brand and all the products from that brand are displayed to the user
Cross Reference	None
Pre-condition	None
Successful Post Condition	All the brands from and products from that brands are displayed to the user.

Typical Course of Events

Actor Action	System Response
--------------	-----------------

1. The user clicks on the brands button in the navbar.	
	2. All the brands are displayed to the user
3. The user clicks on a specific brand	
	4. All the products from that brand are displayed to the user.

Alternate Scenario(s)

Nil

ID	UC-19
Use Case	Shopping Cart
Actors	User
Purpose	To add products to the cart.
Description	In order to shop products, the user adds the products to cart and proceeds to checkout.
Cross Reference	None
Pre-condition	None
Successful Post Condition	The product(s) are added to the cart successfully.

Typical Course of Events

Actor Action	System Response
1. The user clicks on the “Add to Cart” on a product page/recommender carousel/latest-product carousel/top-selling carousel.	

	2. The products are added to the cart.
	3. The cart displays all the products with their quantity and price and total amount.

Alternate Scenario(s)

1* The product is out of stock or limited in stock thus can't be added to the cart.

ID	UC-20
Use Case	Proceed to Checkout
Actors	User
Purpose	To confirm the order
Description	The user confirms the order and sends it for approval to the admin.
Cross Reference	None
Pre-condition	Products must be added to the cart.
Successful Post Condition	An order number is generated and displayed to the user.

Typical Course of Events

Actor Action	System Response
1. The user clicks on the “proceed to checkout” button on the cart page.	
	2. The checkout page is loaded.
3. The user provides full names, house address, email address, phone number and clicks on the “place order” button	

	4. The order is added to the database and an order number is generated and displayed to the user.
--	---------------------------------------------------------------------------------------------------

Alternate Scenario(s)

1* The “proceed to checkout” button is disabled because the cart is empty.

ID	UC-21
Use Case	Continue Shopping
Actors	User
Purpose	To continue shopping
Description	If the user wants to continue shopping, he/she can do so instead of proceeding to checkout
Cross Reference	None
Pre-condition	None
Successful Post Condition	The home page is loaded.

Typical Course of Events

Actor Action	System Response
1. The user clicks on the “continue shopping” button on the cart page	
	2. The home page is displayed to the user.

Alternate Scenario(s)

Nil

ID	UC-22
Use Case	View Product
Actors	User
Purpose	To view the product in detail.
Description	If the user wants to view a product in detail, he/she can click on the product will be taken to the product page where three images of the product, name of the product, price, information, payment details, shipping and return policy, quantity remaining and add to cart button is displayed
Cross Reference	None
Pre-condition	None
Successful Post Condition	The product page is displayed

Typical Course of Events

Actor Action	System Response
1. The user clicks on a product from the search results/category search/brand search/top-selling products/ latest products/recommended products	
	2. The user is taken to the product page containing all the information.

Alternate Scenario(s)

Nil

2.5 Entity Relationship Diagram

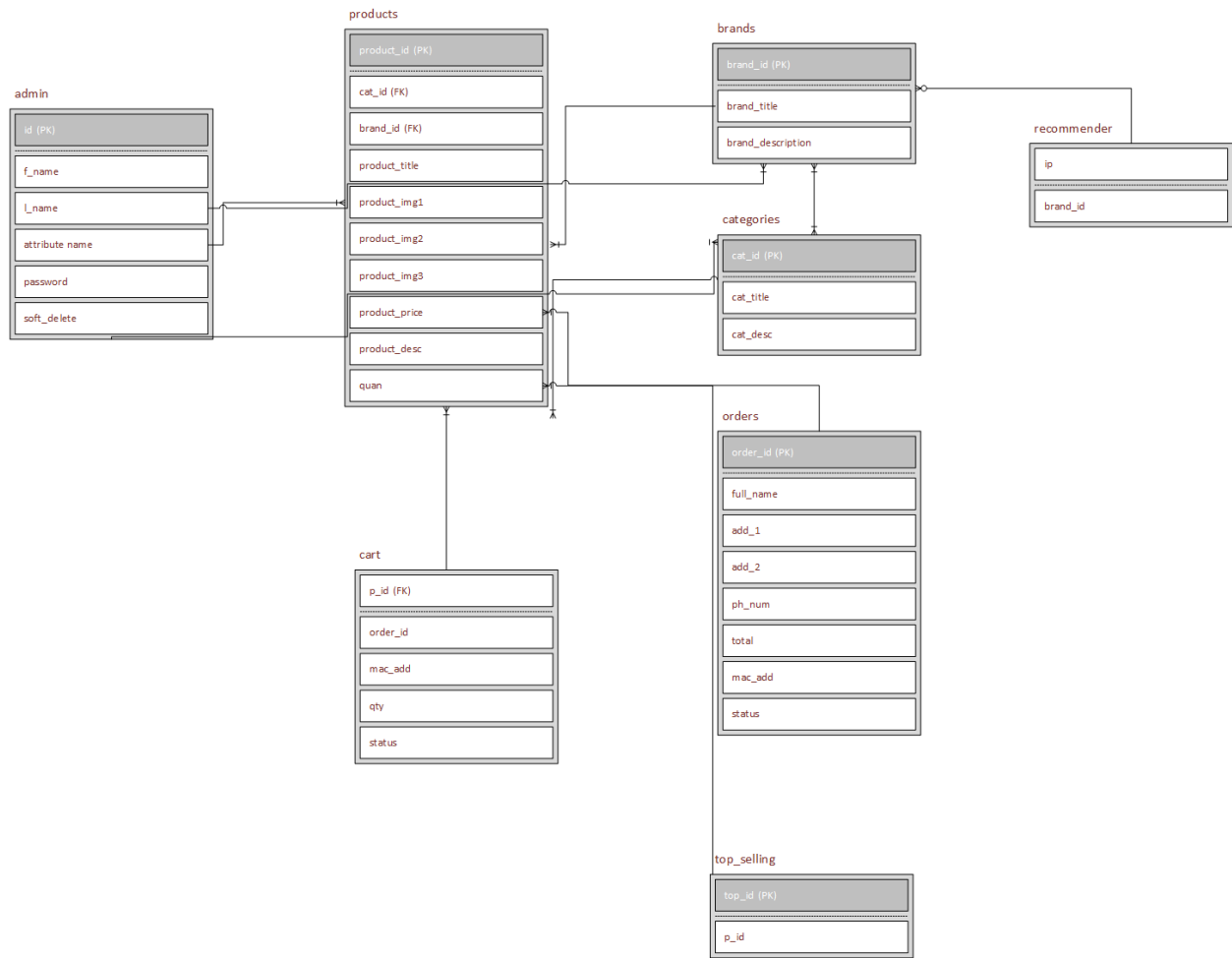


Fig 2. Entity Relationship Diagram

2.6 Data Flow Diagram

2.6.1 Level 0 DFD

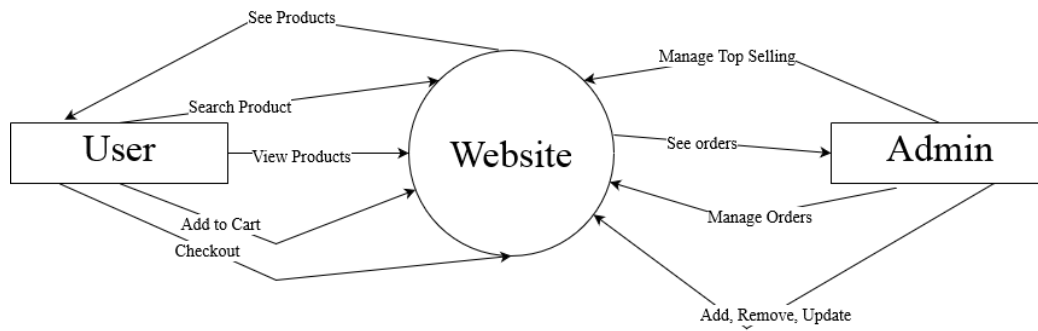


Fig 3. Level 0 DFD

2.6.2 Level 1 DFD

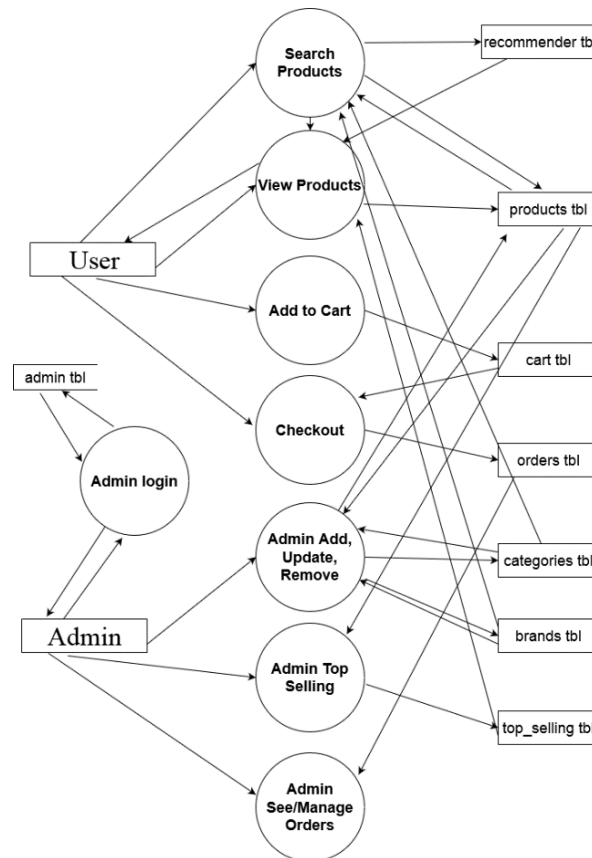


Fig 4. Level 1 DFD

2.7 System Sequence Diagrams

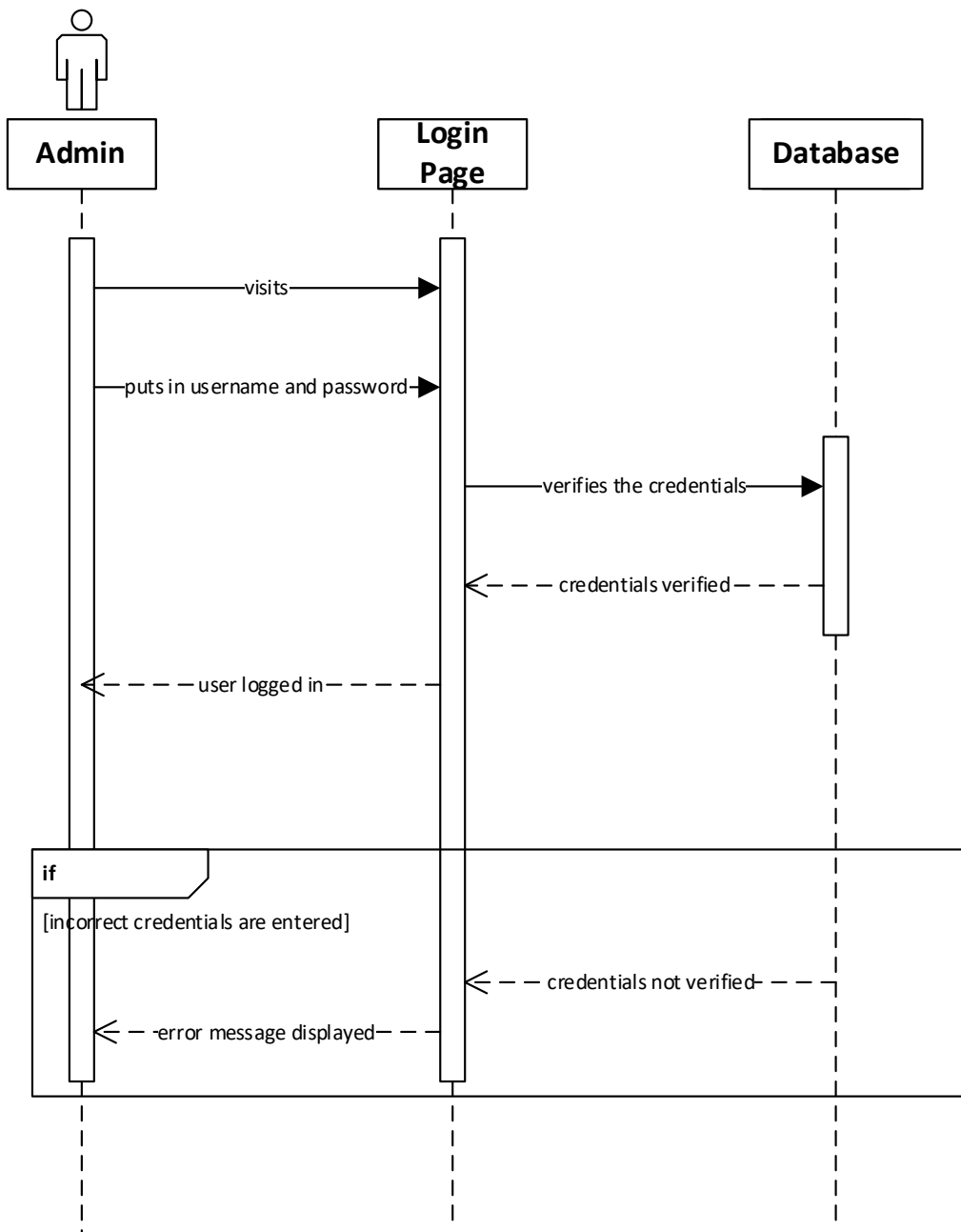


Fig 5. Login

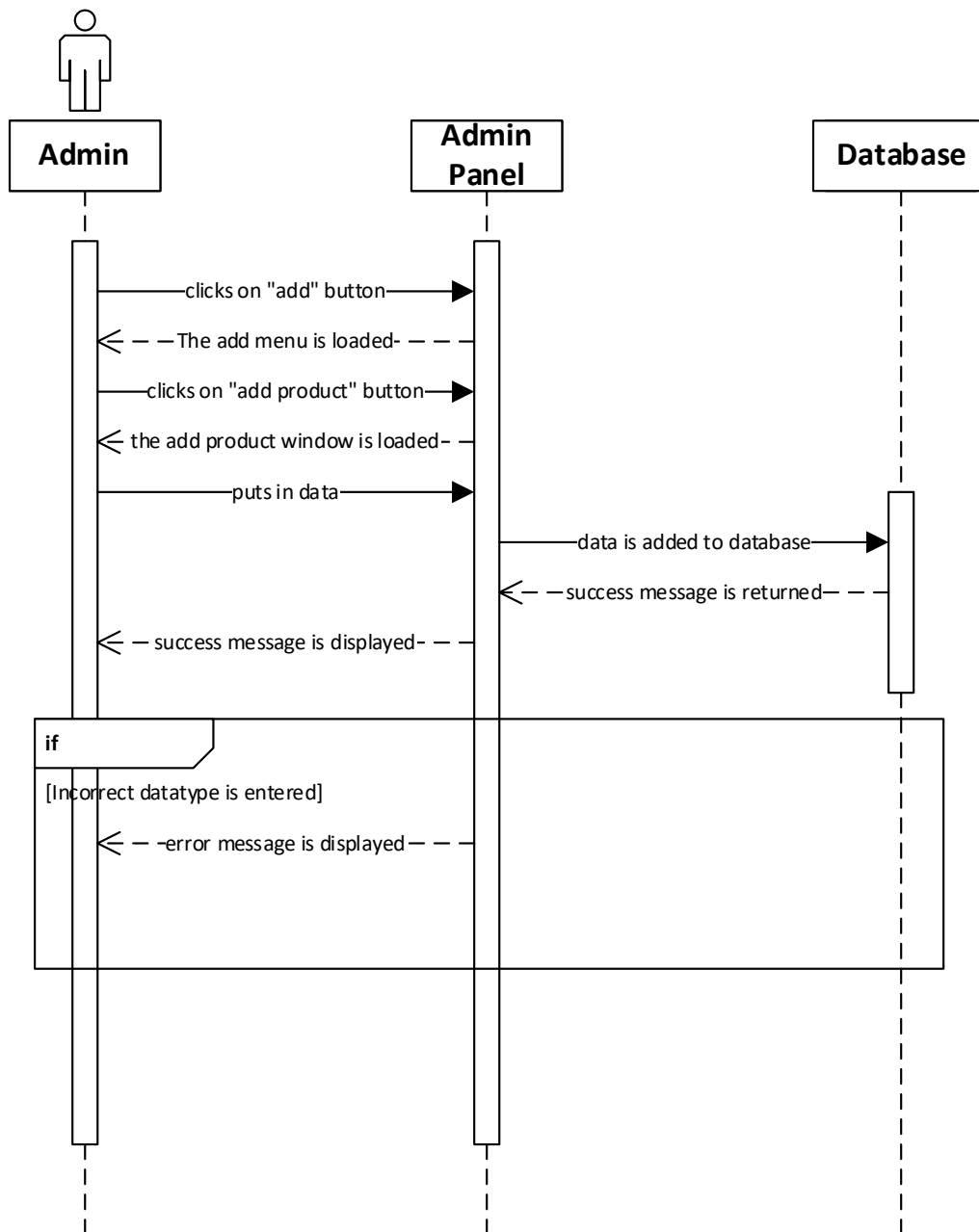


Fig 6. Add a Product

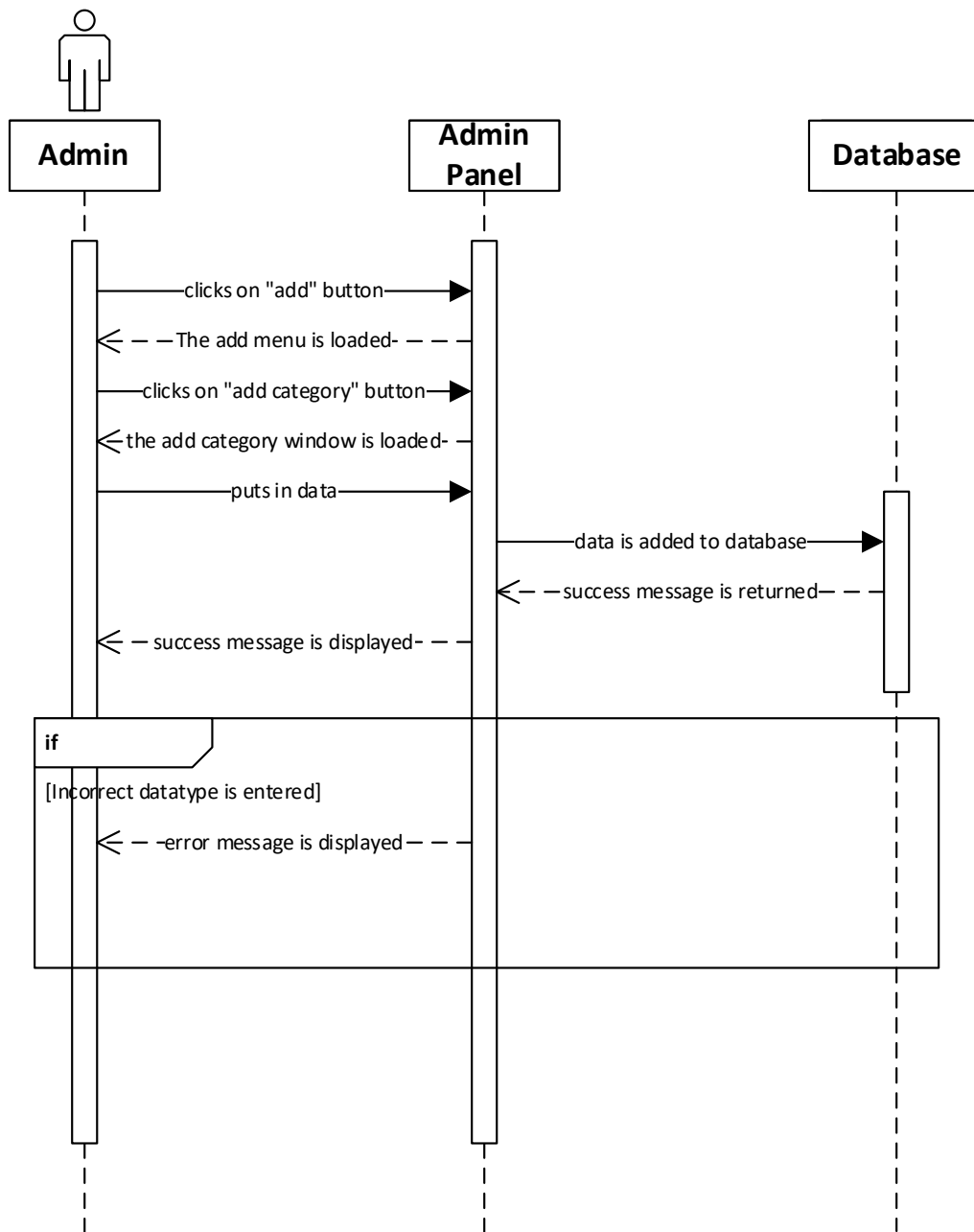


Fig 7. Add a Category

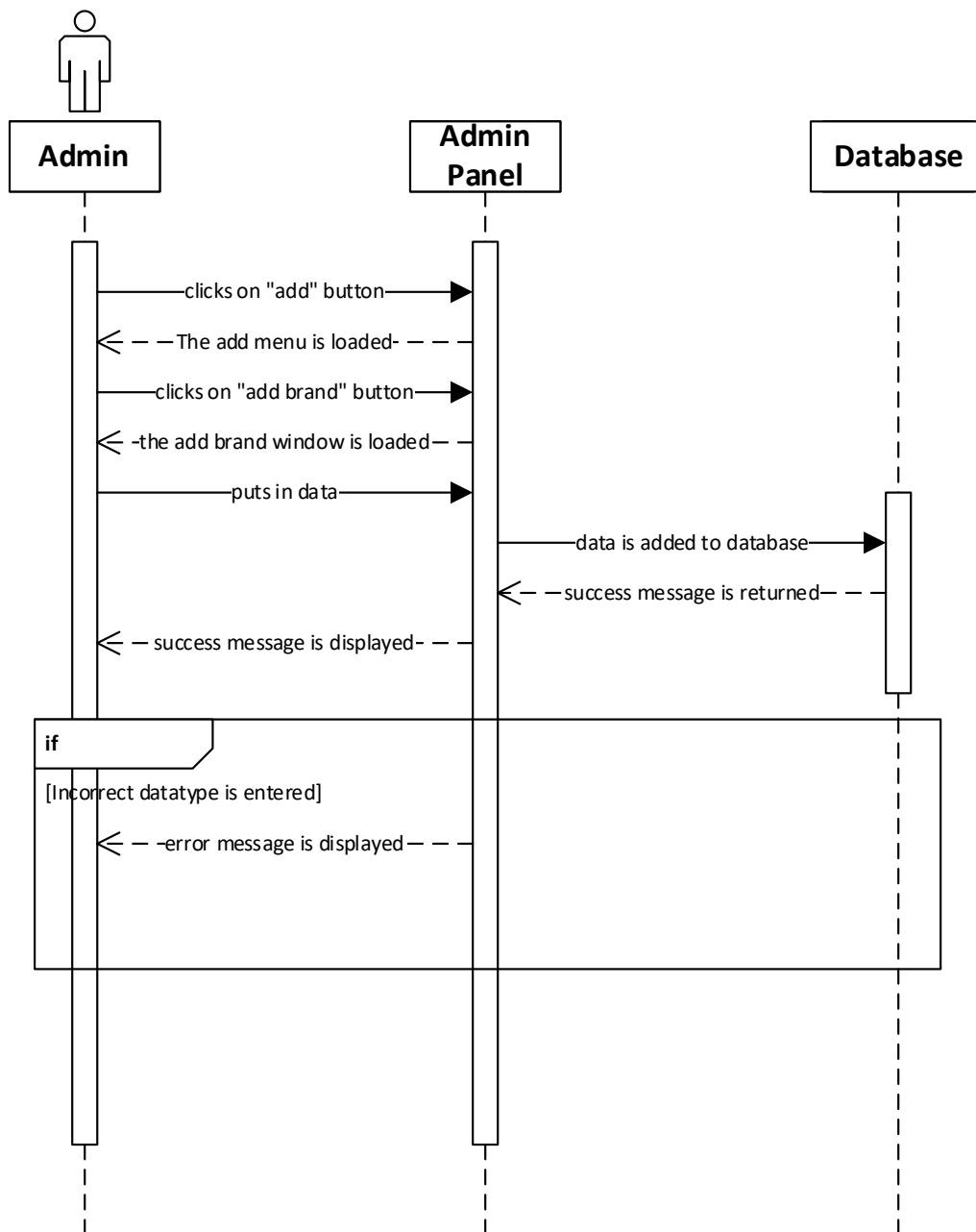


Fig 8. Add a Brand

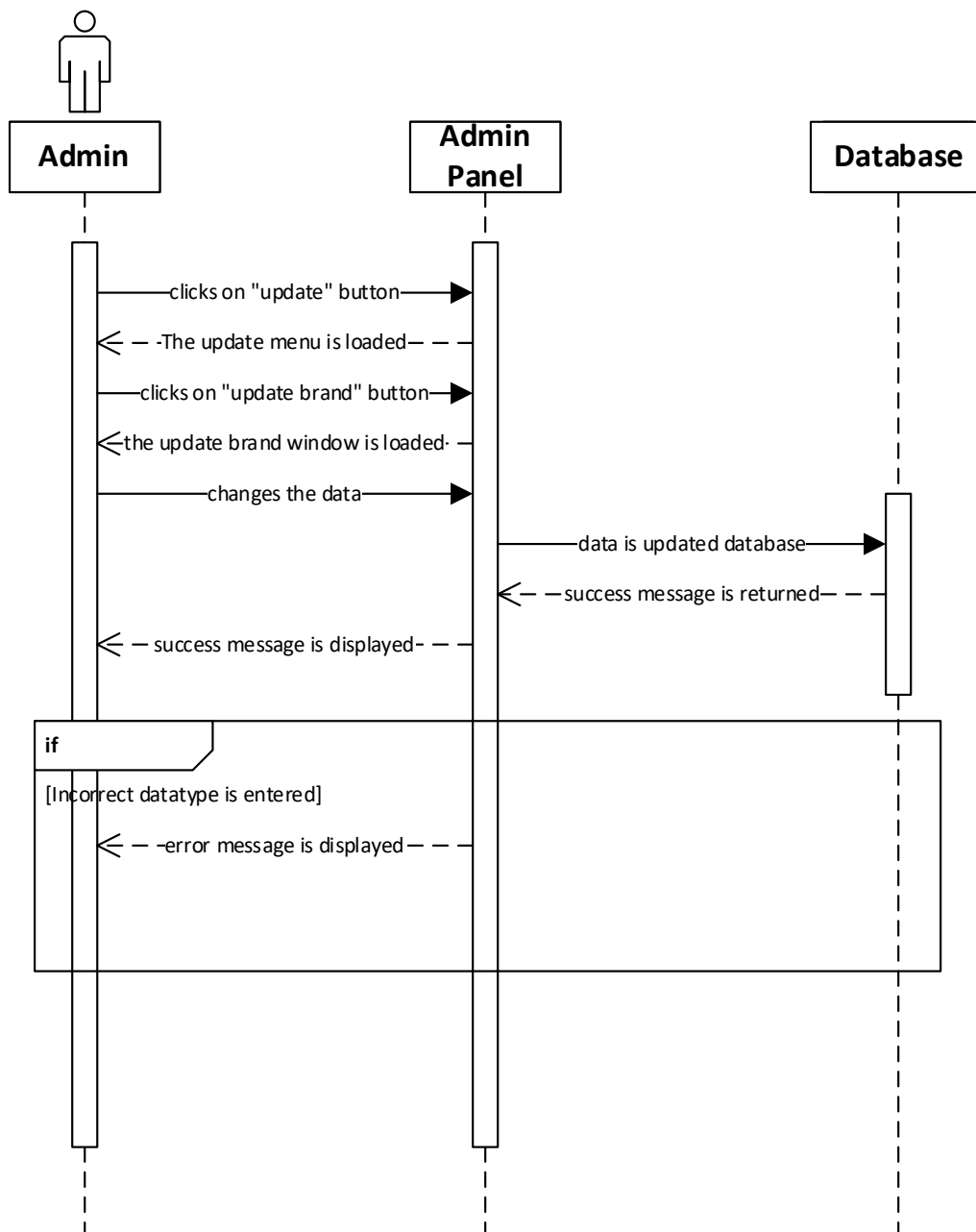


Fig 9. Update Brand

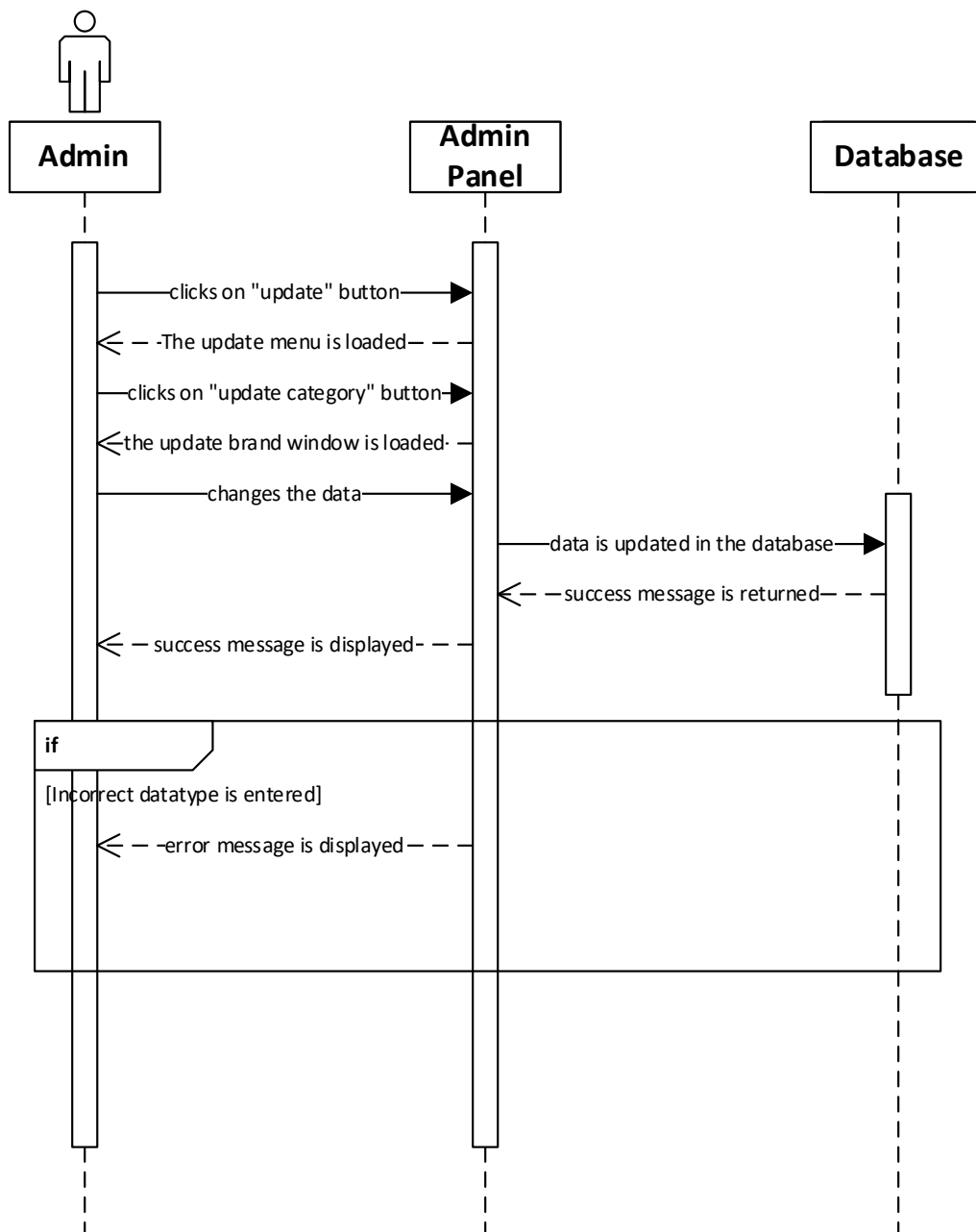


Fig 10. Update Category

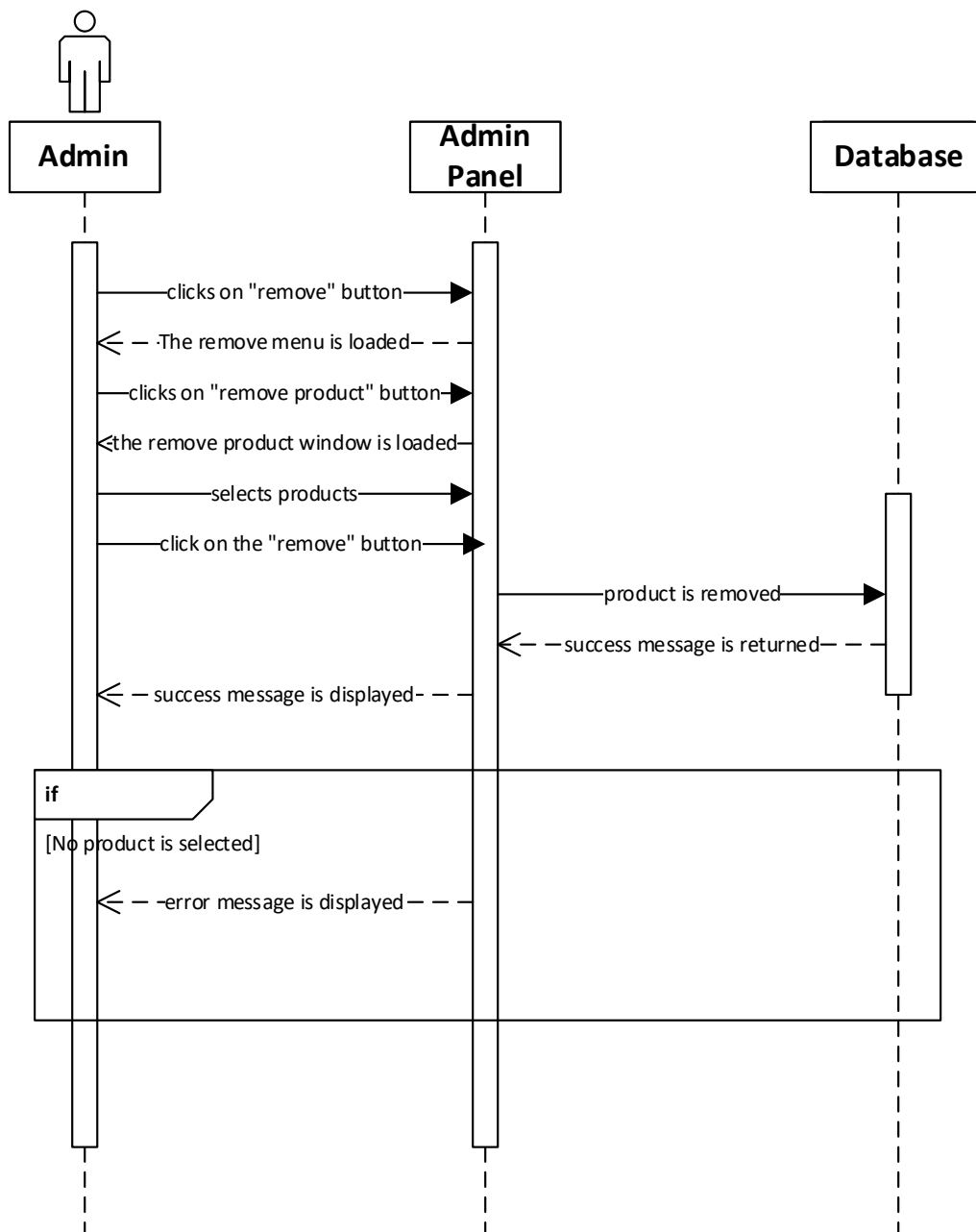


Fig 11. Remove Product

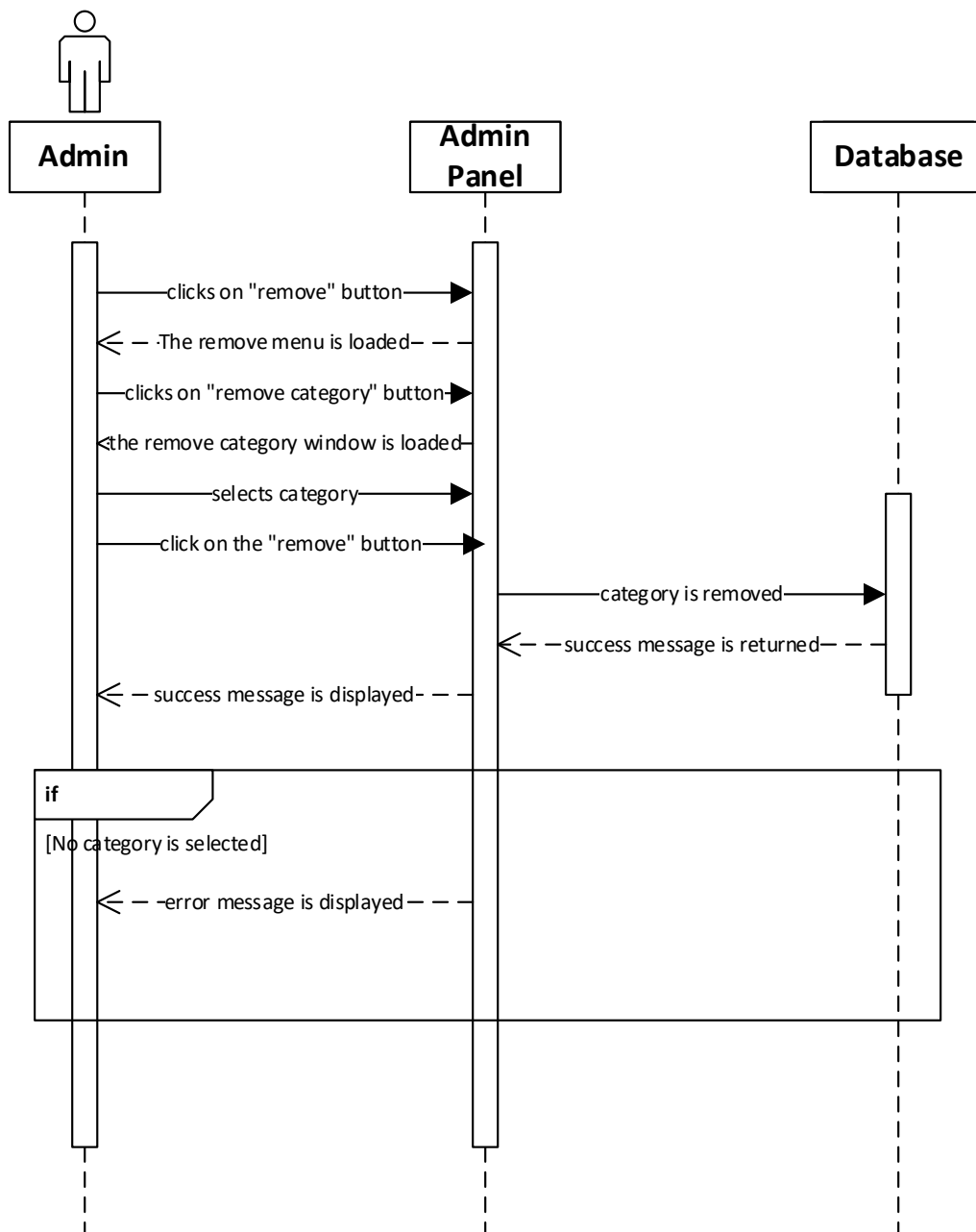


Fig 12. Remove Category

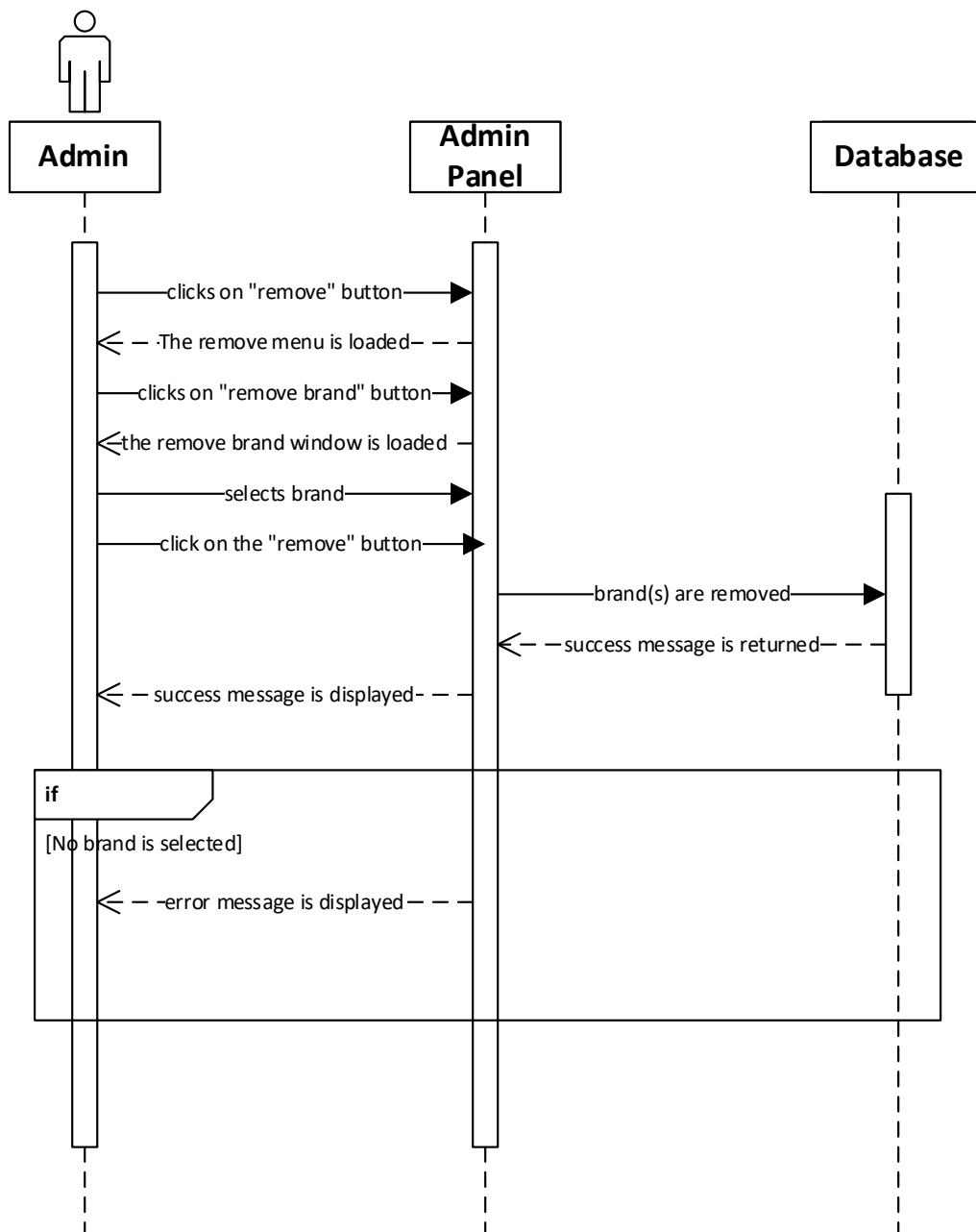


Fig 13. Remove Brand

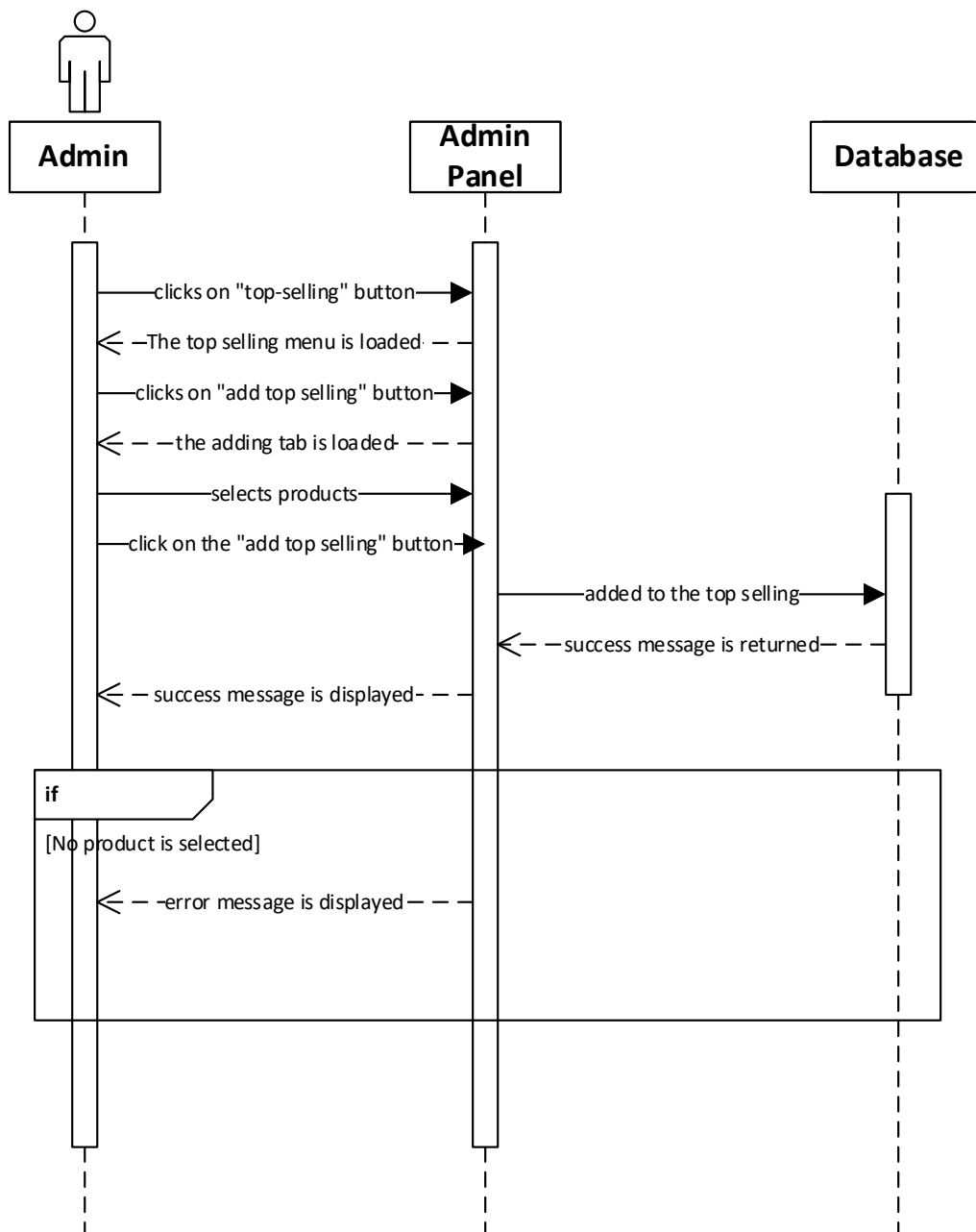


Fig 14. Add Top-Selling

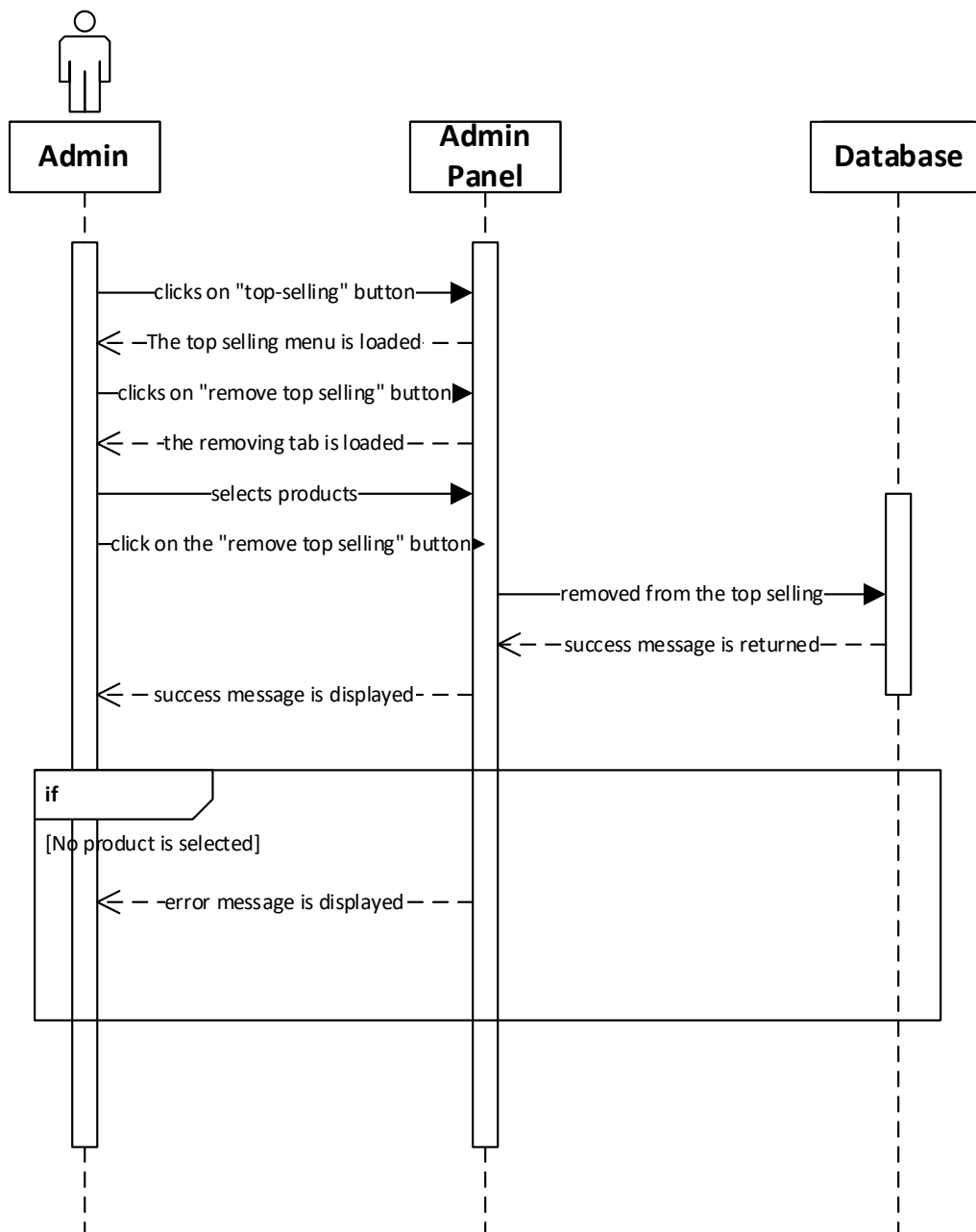


Fig 15. Remove Top Selling

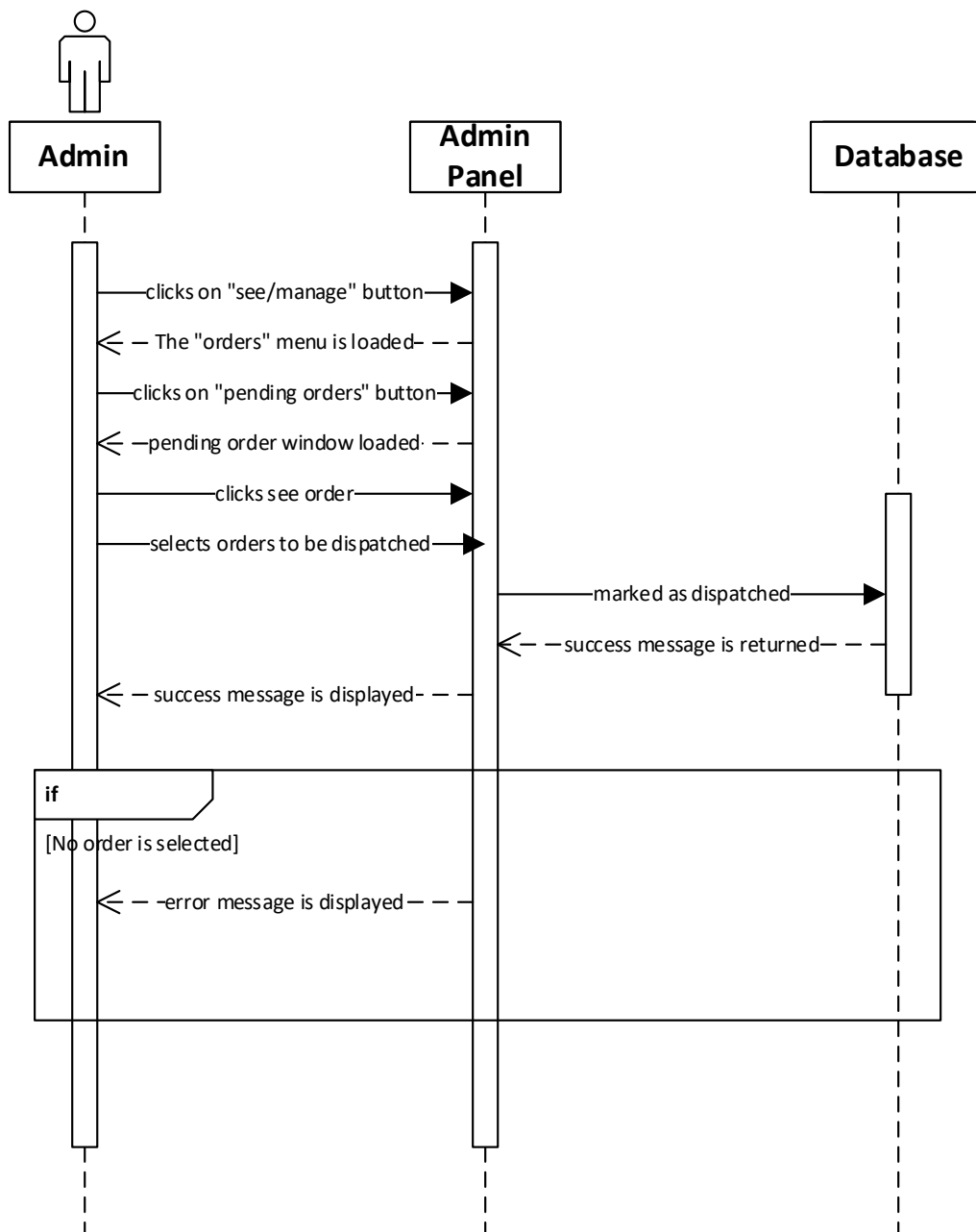


Fig 16. Pending Order

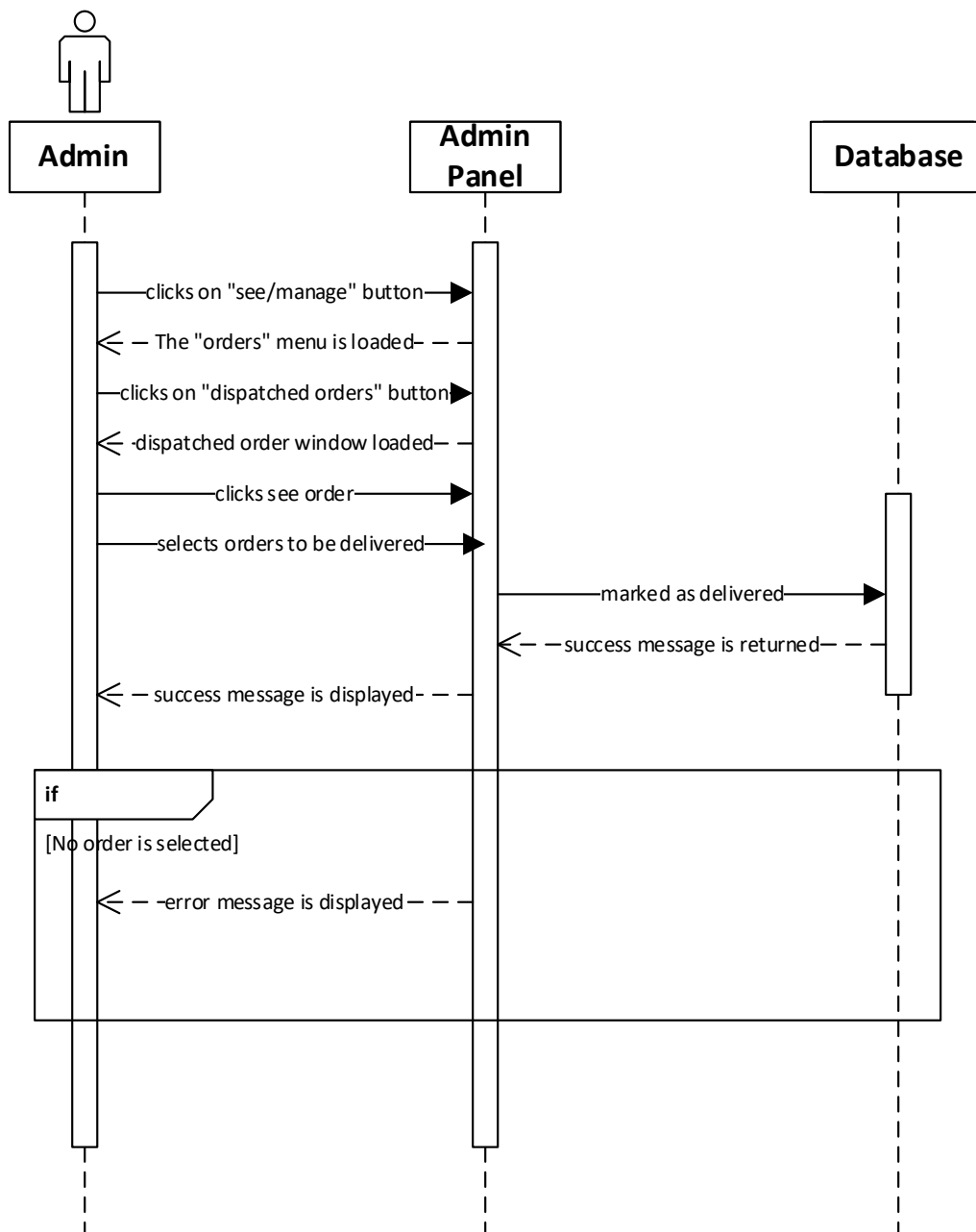


Fig 17. Dispatched Orders

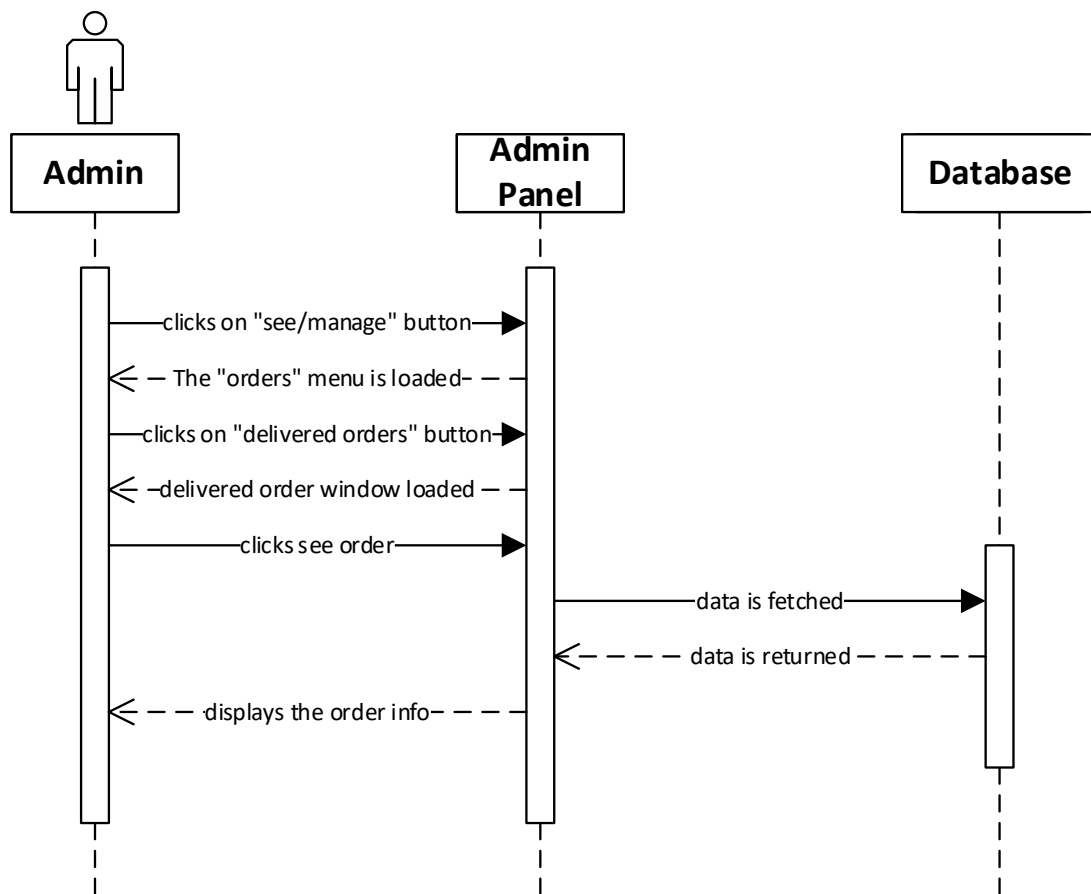


Fig 18. Delivered Orders

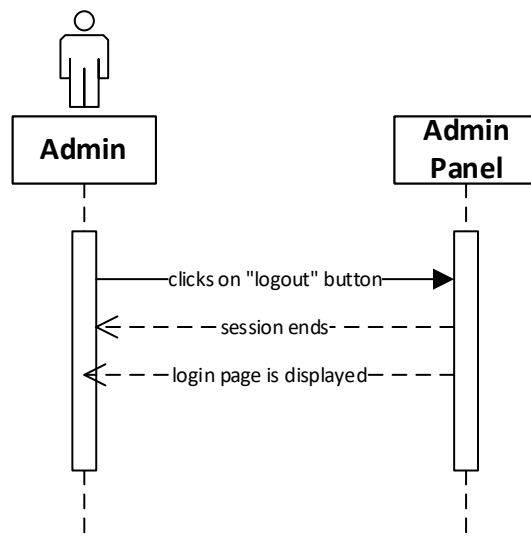


Fig 19. Logout

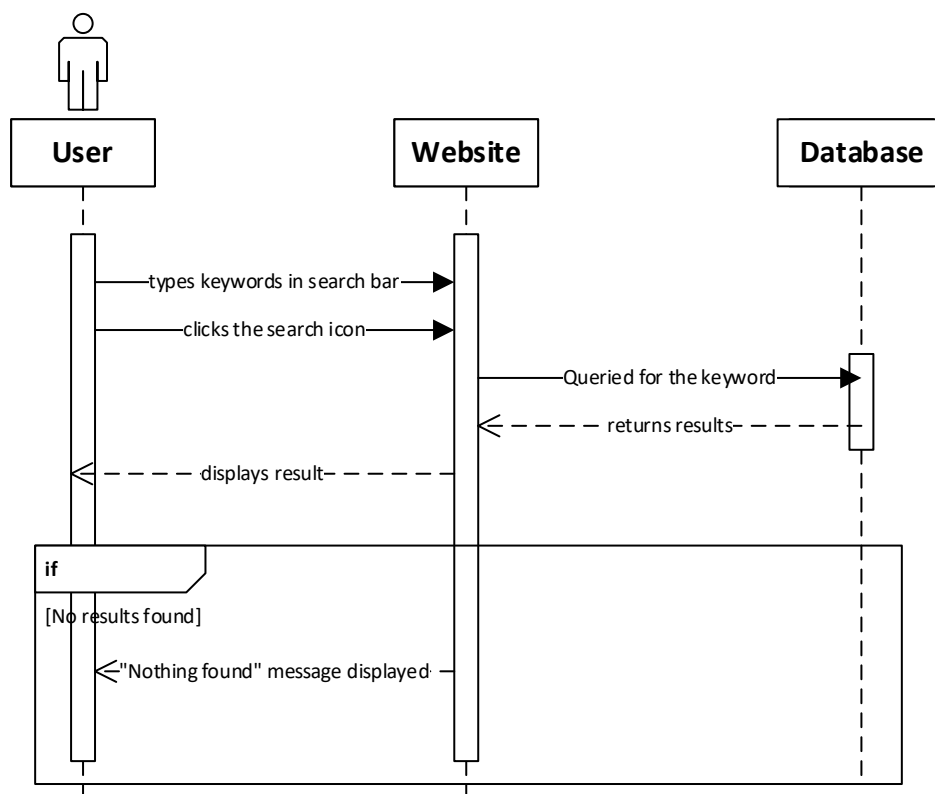


Fig 20. Search

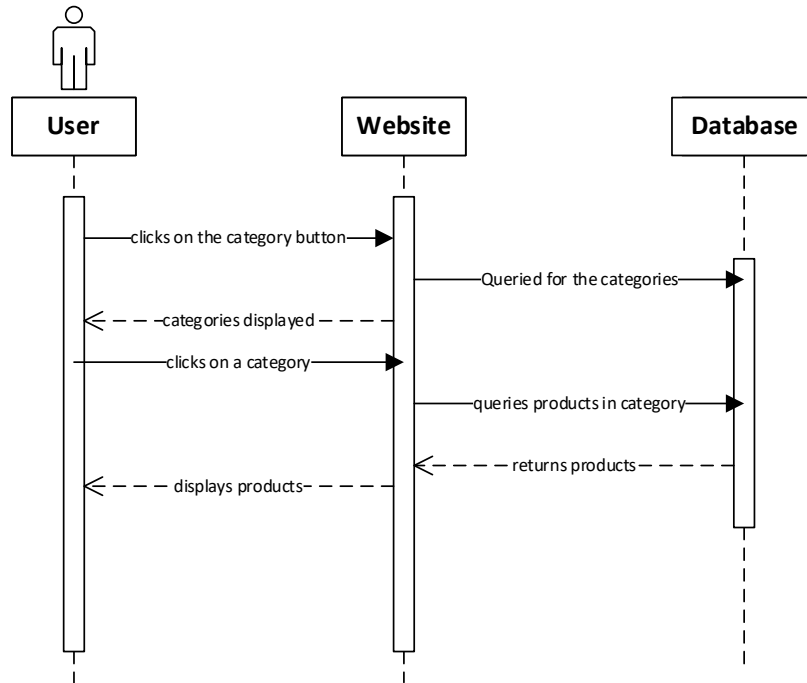


Fig 21. Categories

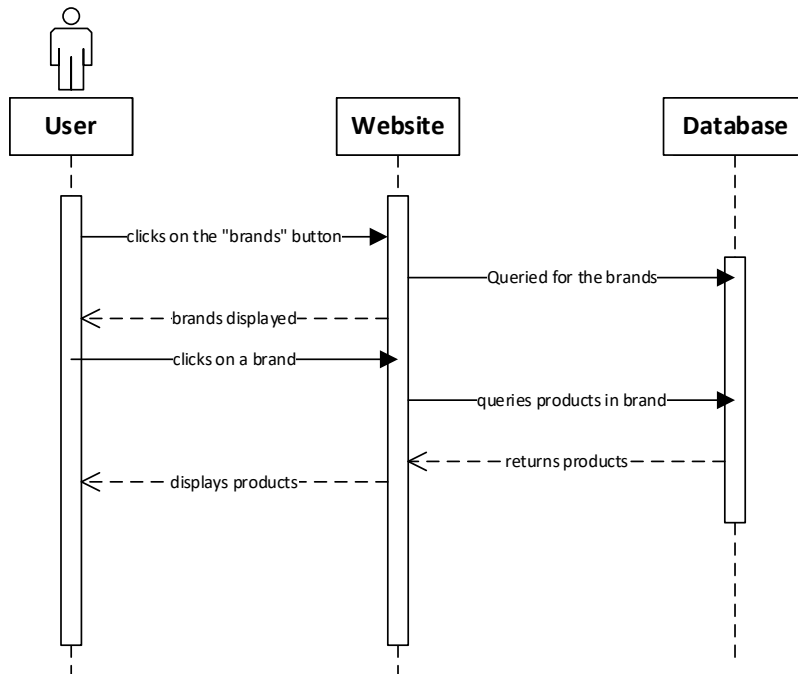


Fig 22. Brands

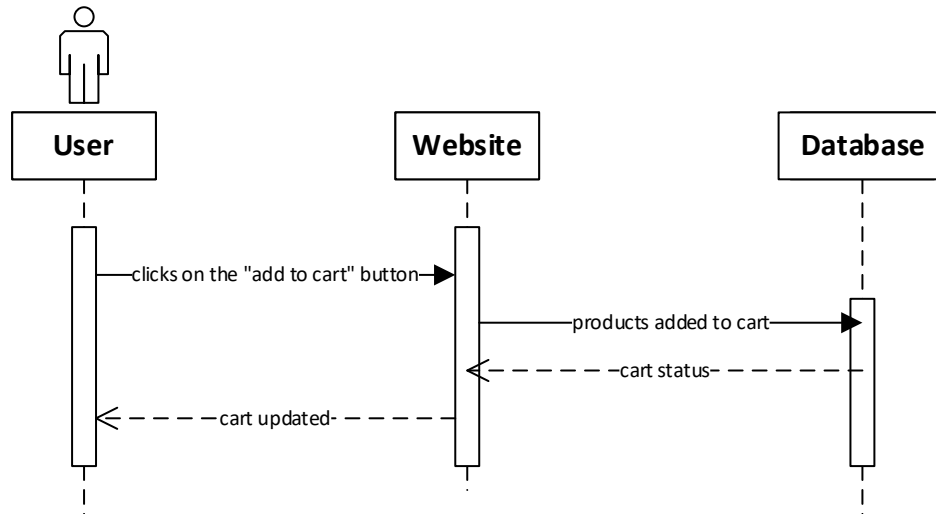


Fig 23. Shopping Cart

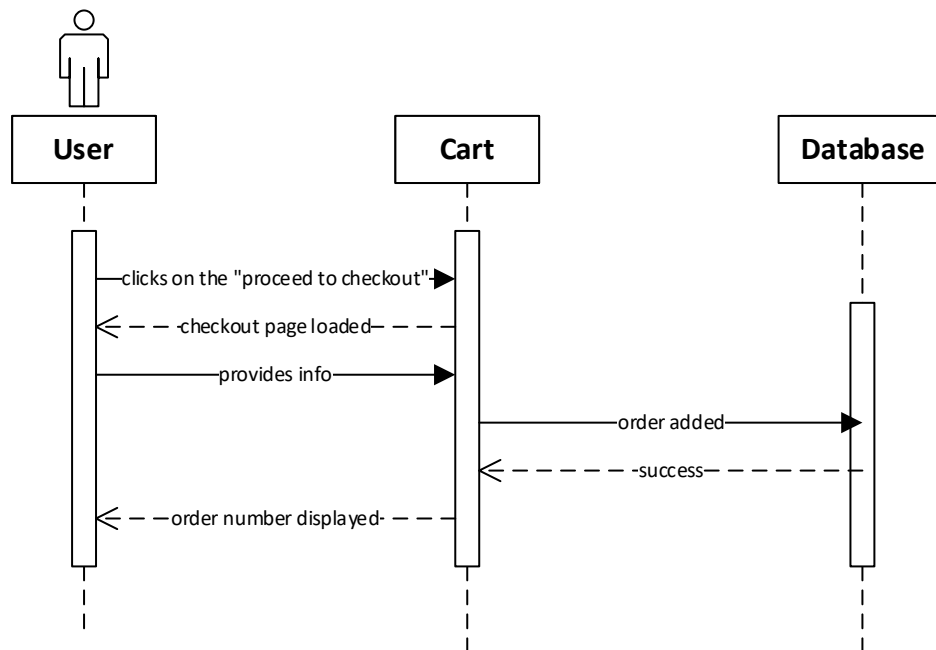


Fig 24. Proceed to Checkout

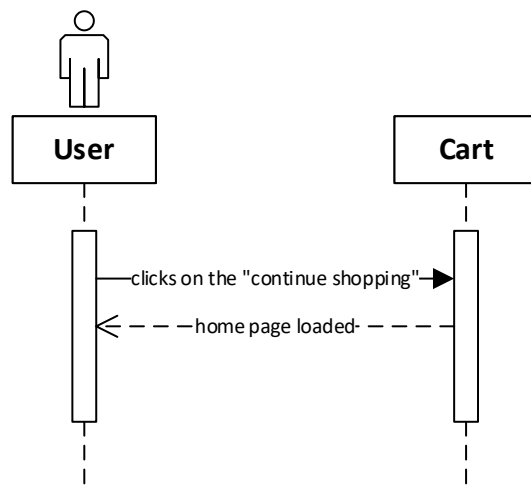


Fig 25. Continue Shopping

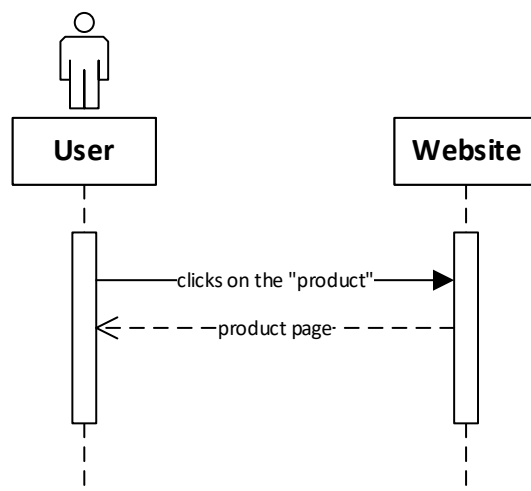


Fig 26. View Product

Chapter 3. Methodology

3.1 Pre-Requisites:

- PHP 7 or higher
- Bootstrap 4
- JavaScript
- MySQLi
- A minimum of 2 Mbps stable internet connection

3.2 Architecture

This web application is built using three tier architecture.

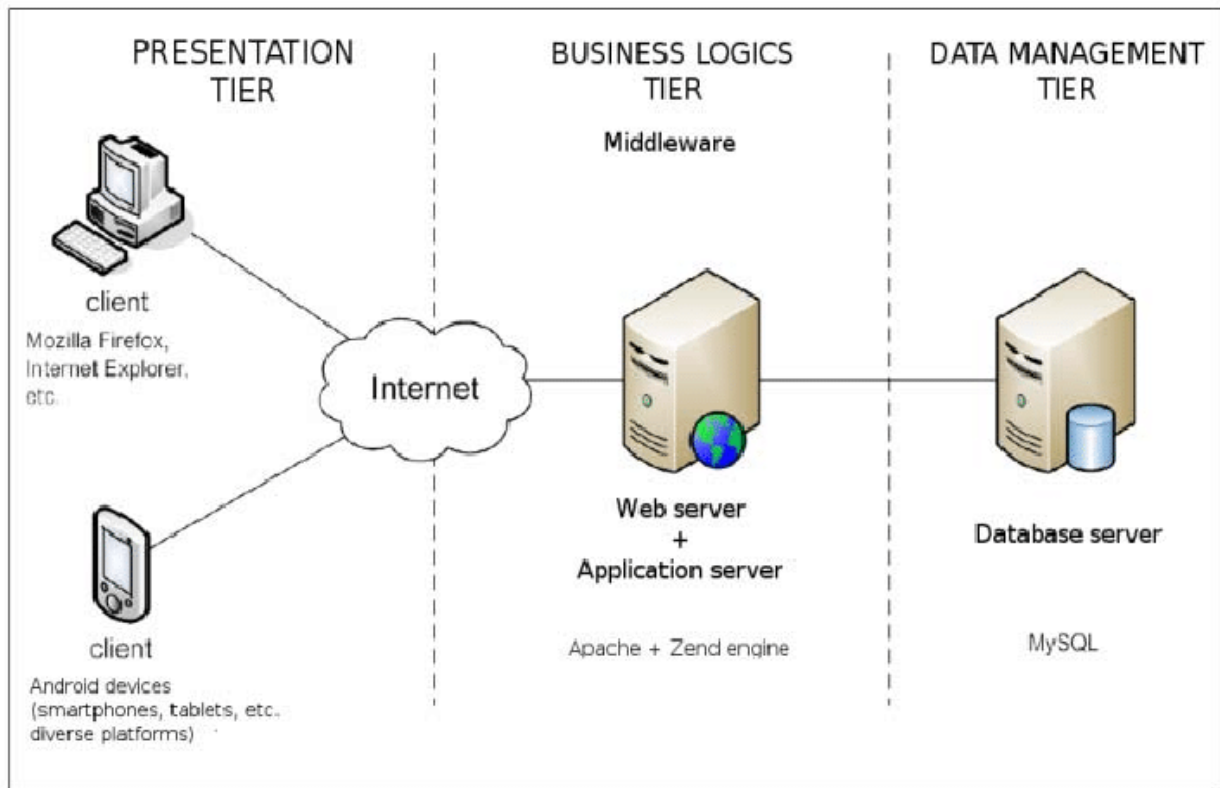


Fig 27. Three tier architecture

3.3 Interfaces

3.3.1 Customer-Side Interfaces

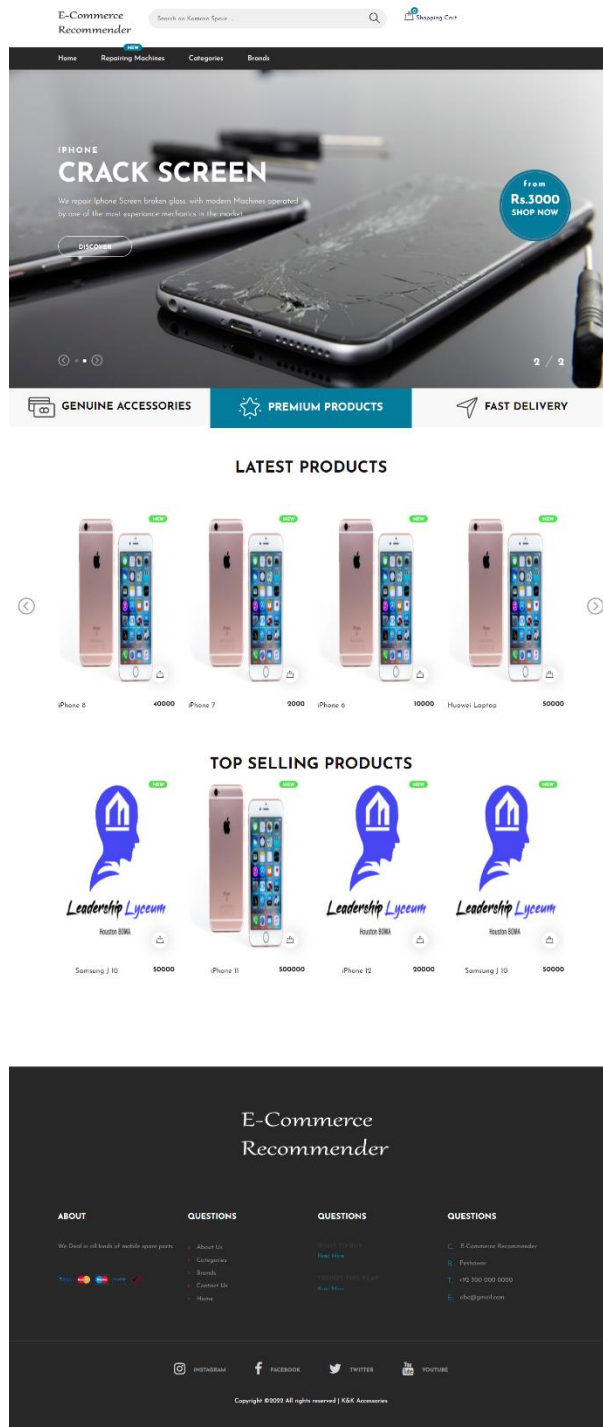


Fig 28. Home page

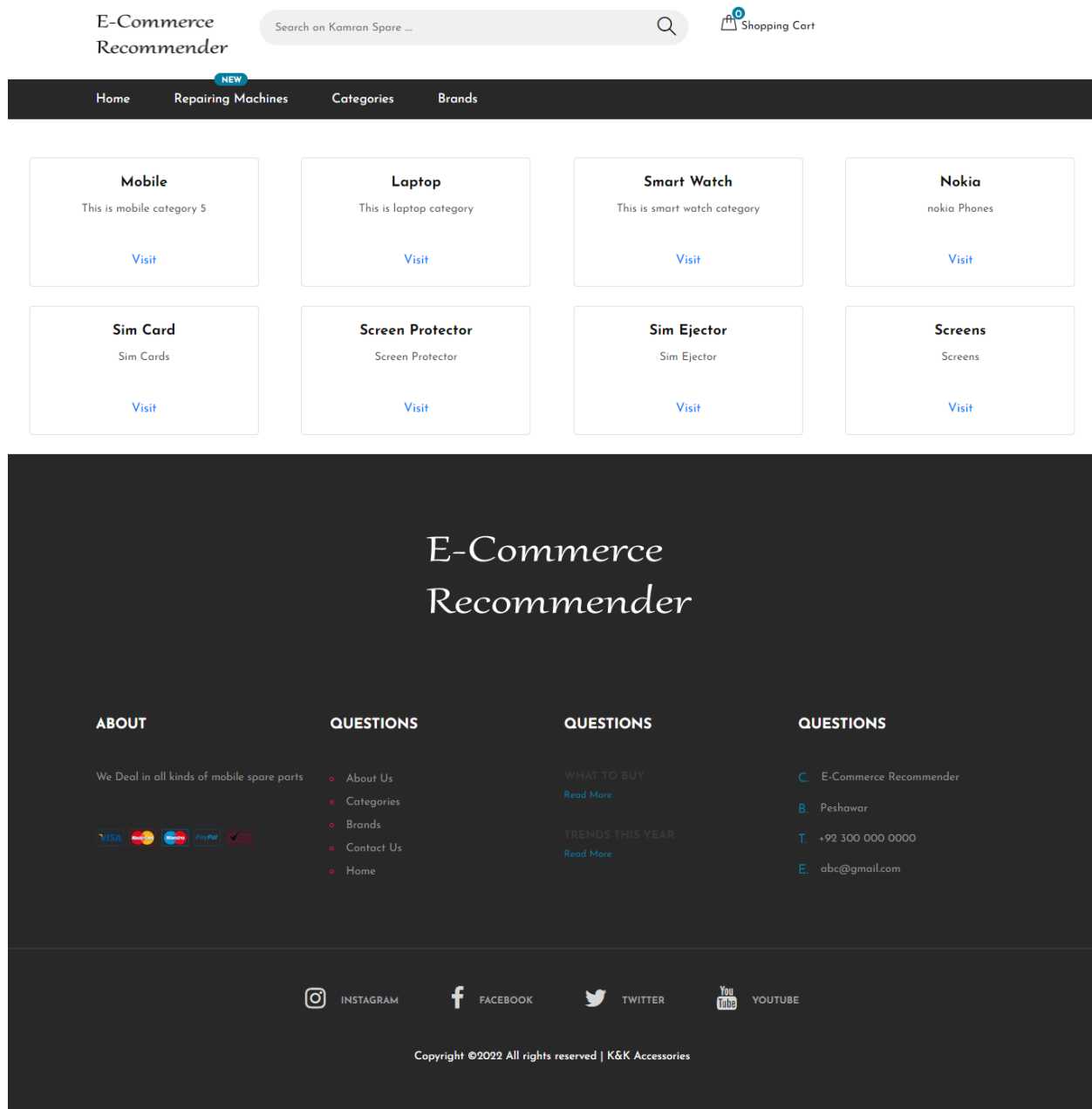


Fig 29. Categories page

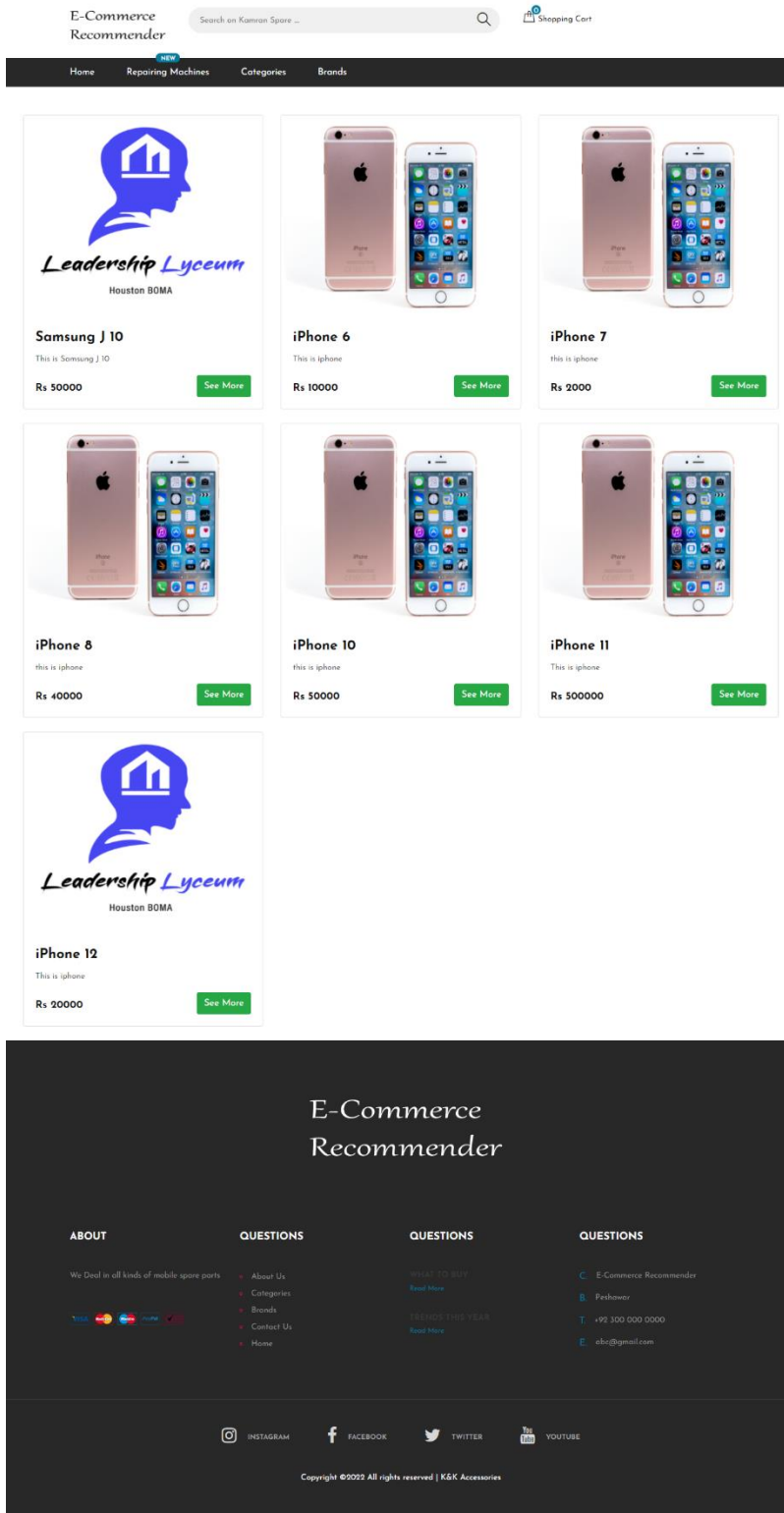


Fig 30. Products in a category

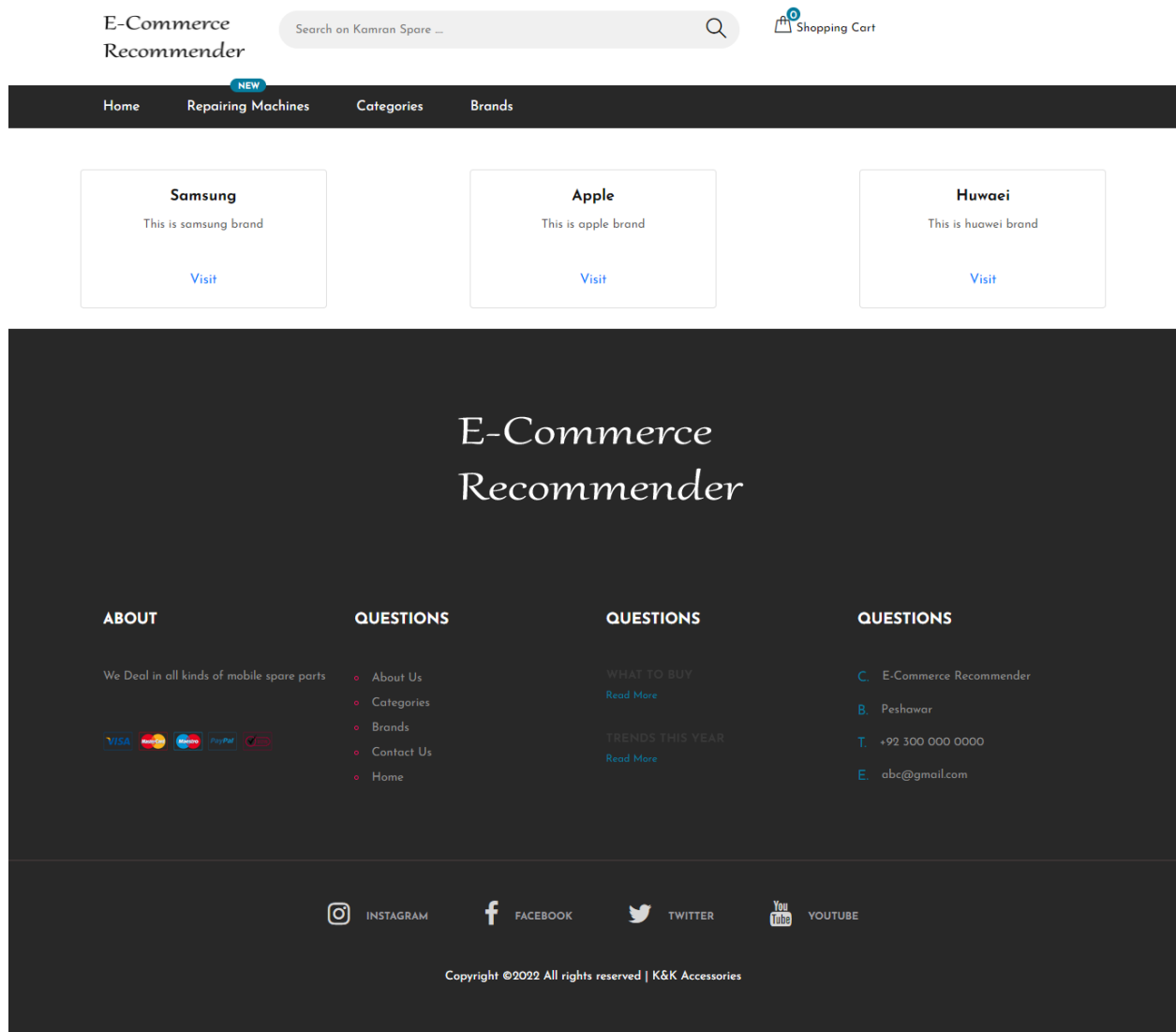


Fig 31. Brands page

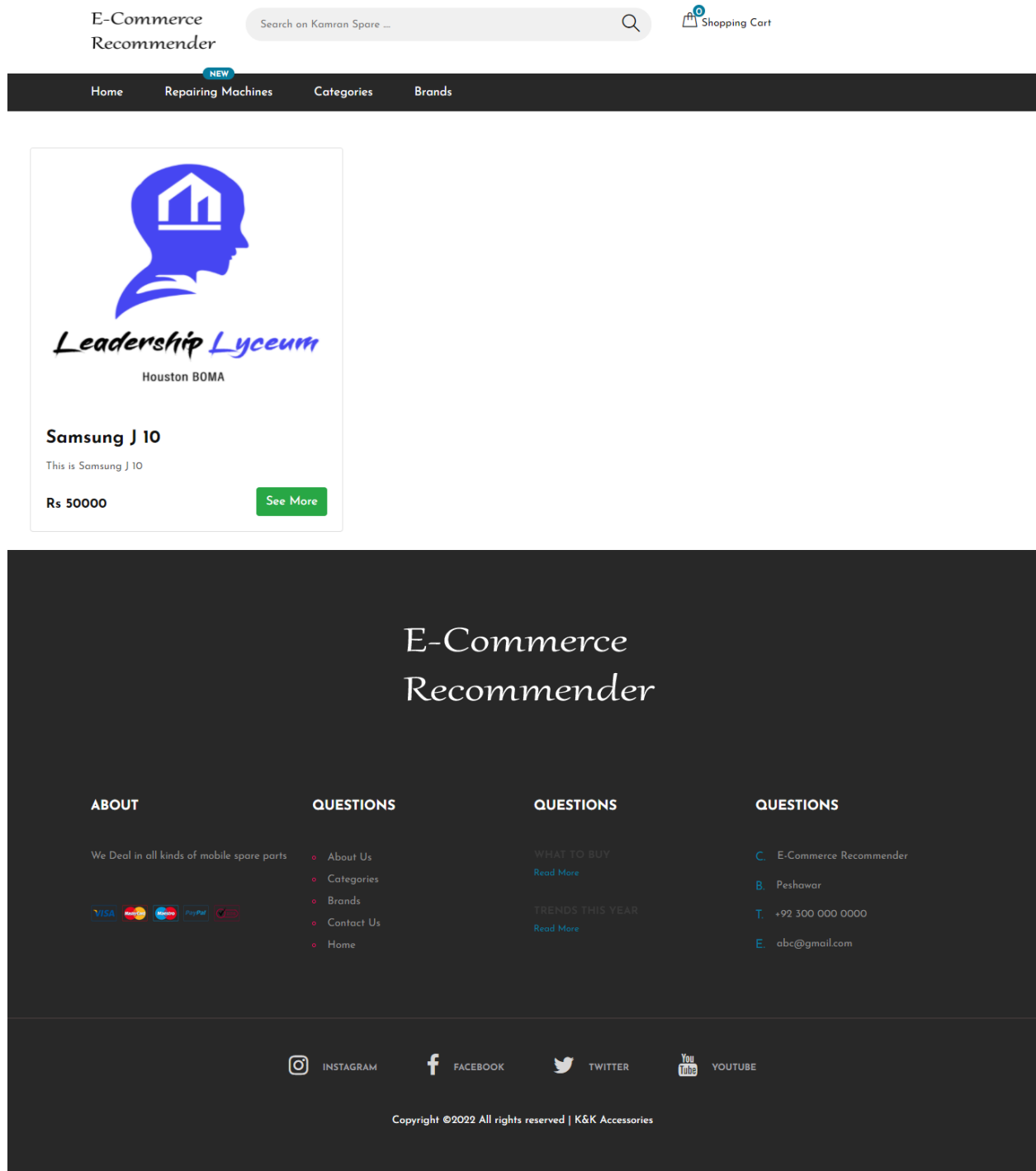


Fig 32. Products in a brand

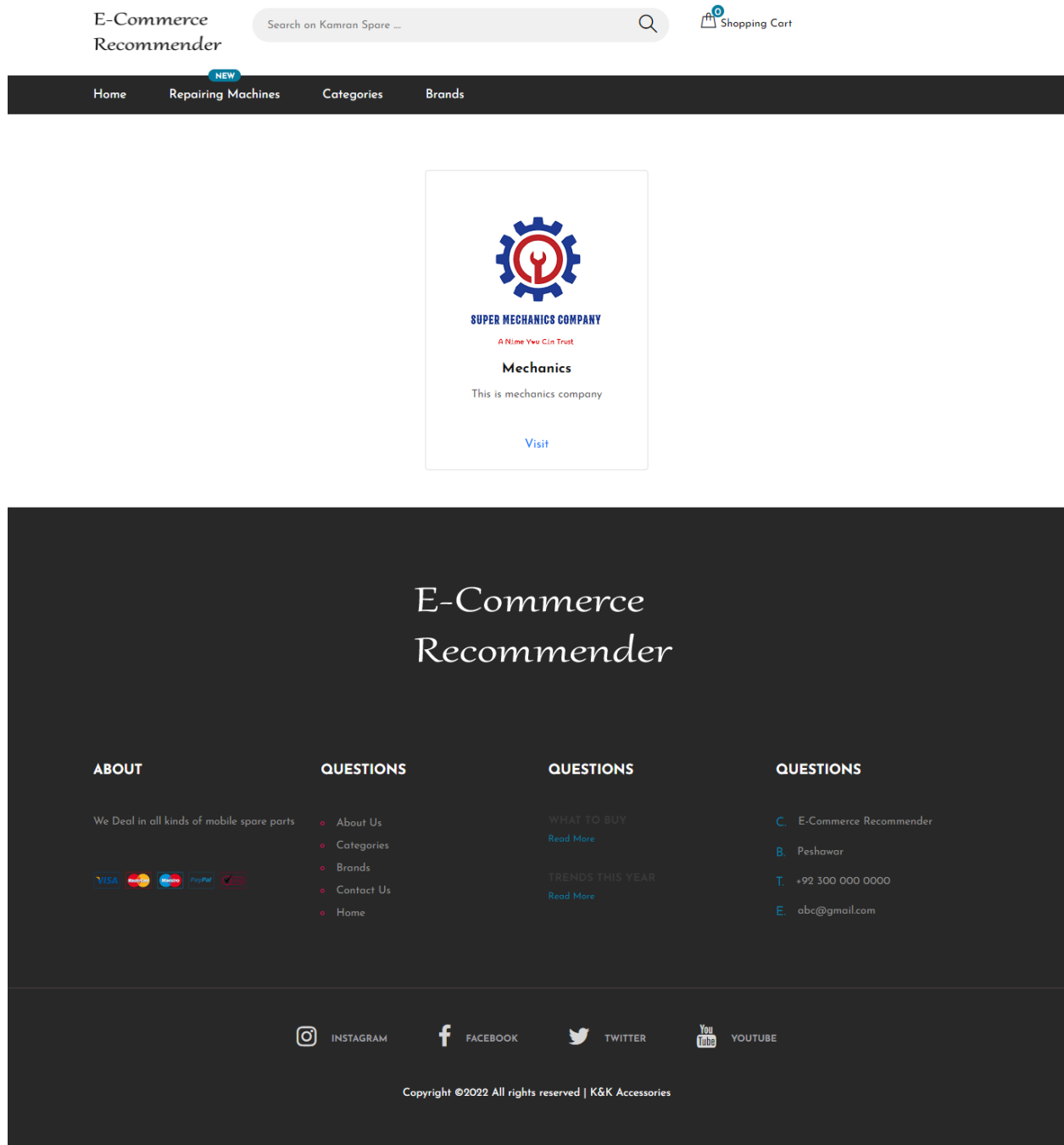


Fig 33. Repairing machines page

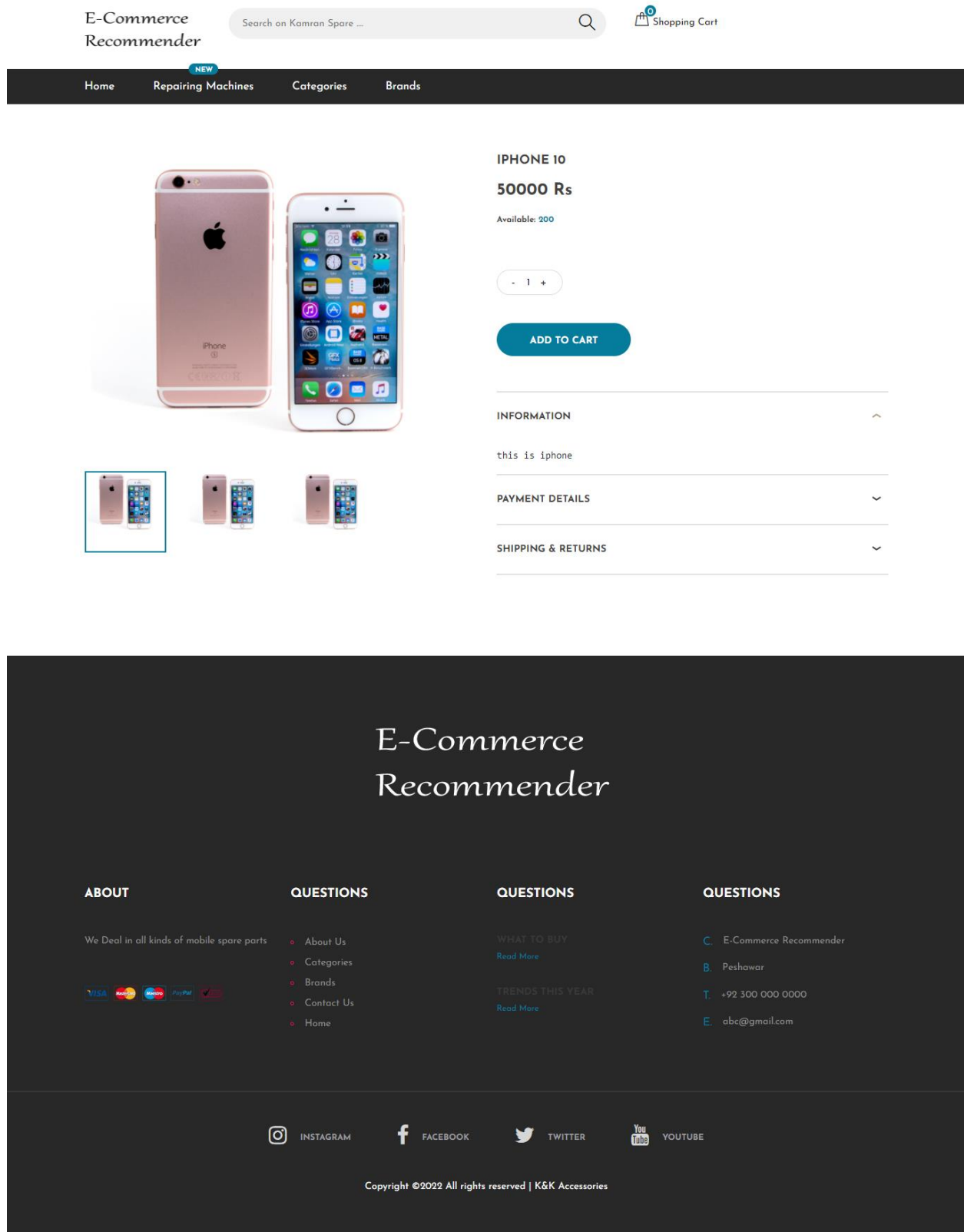


Fig 34. Product display page

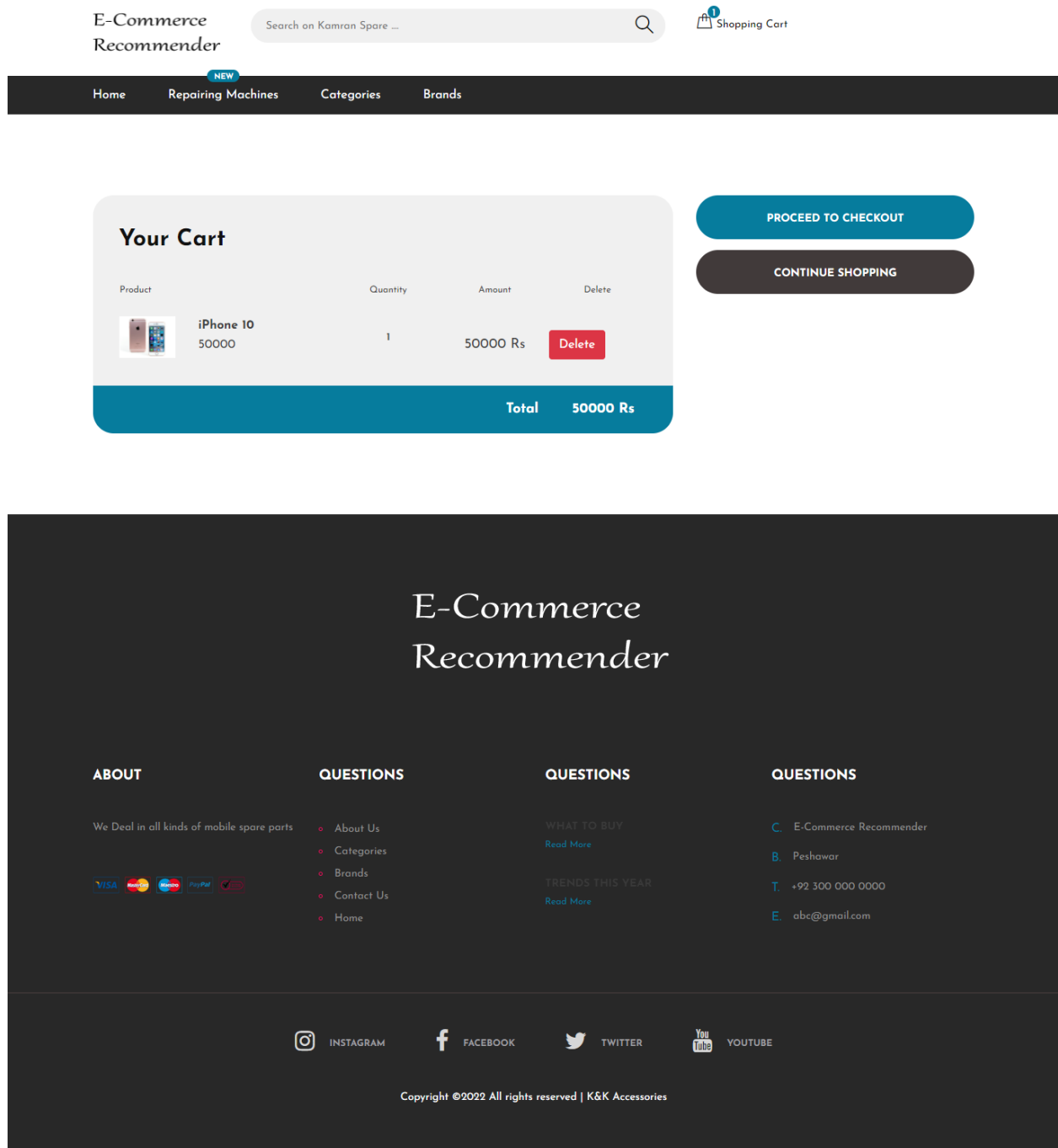


Fig 35. Cart

YOUR CART

[Home / Your cart](#)

Billing Address

Full Name

Address

Email (abc@xyz.com)

Phone no. (+923XXXXXXX)

Delivery Info

Standard

Free

Payment

Cash on Delivery

Pay when you get the package

PLACE ORDER

Your Cart



iPhone 10
50000

Total

Rs
50000

Shipping

free

Total

Rs
50000

E-Commerce Recommender

ABOUT



QUESTIONS

QUESTIONS

QUESTIONS



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Fig 36. Proceed to checkout page

E-Commerce Recommender

Search on Kamran Spare ...

Shopping Cart


Home

Repairing Machines

Categories


Brands

Search Results




iPhone 6
This is iphone
Rs 10000

See More




iPhone 7
this is iphone
Rs 2000

See More




iPhone 8
this is iphone
Rs 40000

See More




iPhone 10
this is iphone
Rs 50000

See More



iPhone 11
This is iphone
Rs 500000

See More








iPhone 12
This is iphone
Rs 20000

See More

E-Commerce Recommender

ABOUT

We Deal in all kinds of mobile spare parts

QUESTIONS

- About Us
- Categories
- Brands
- Contact Us
- Home

QUESTIONS

WHAT TO BUY

Read More

TRENDS THIS YEAR

Read More


QUESTIONS

C. E-Commerce Recommender


B. Peshawar

T. +92 300 000 0000


E. abrc@gmail.com




INSTAGRAM



FACEBOOK



TWITTER



YOUTUBE

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Fig 37. Search results

3.3.2 Admin-Side Interfaces

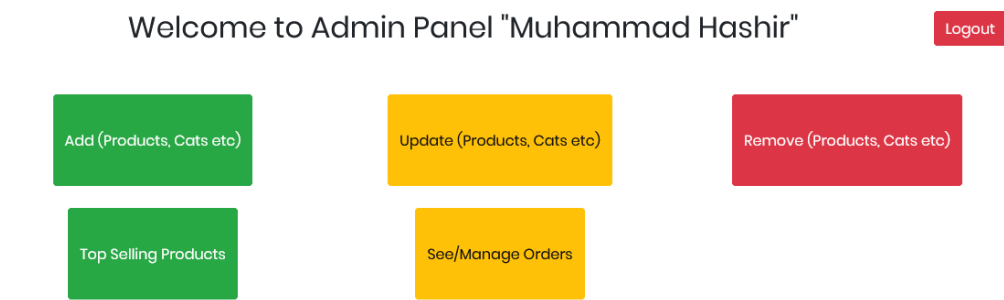


Fig 38. Admin Panel

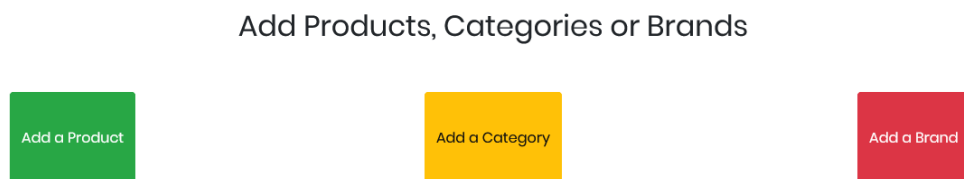
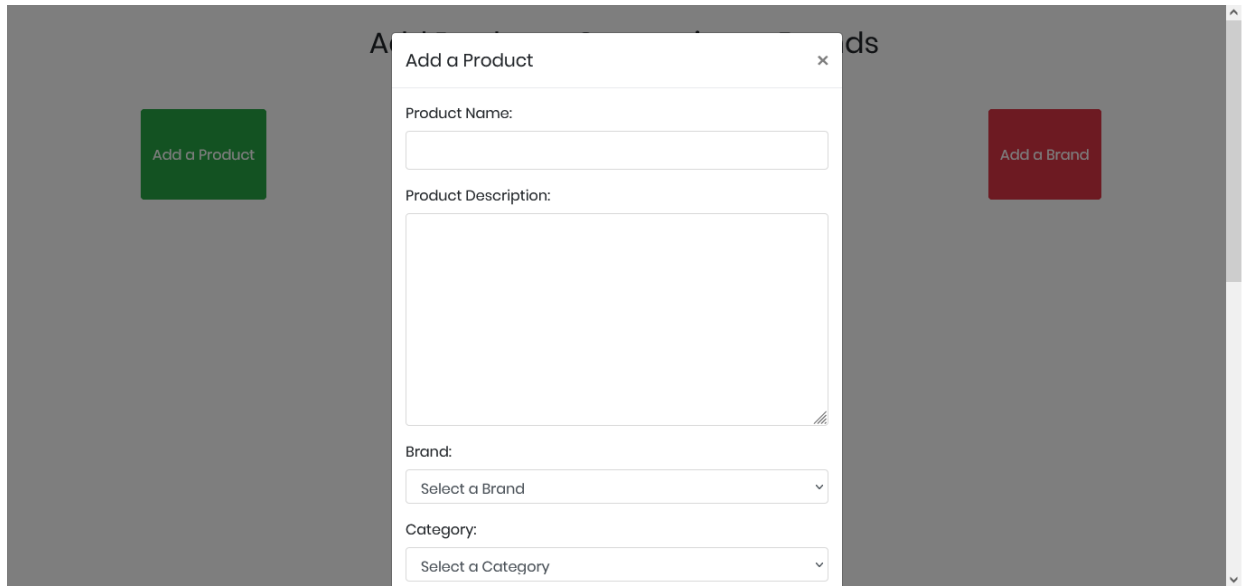
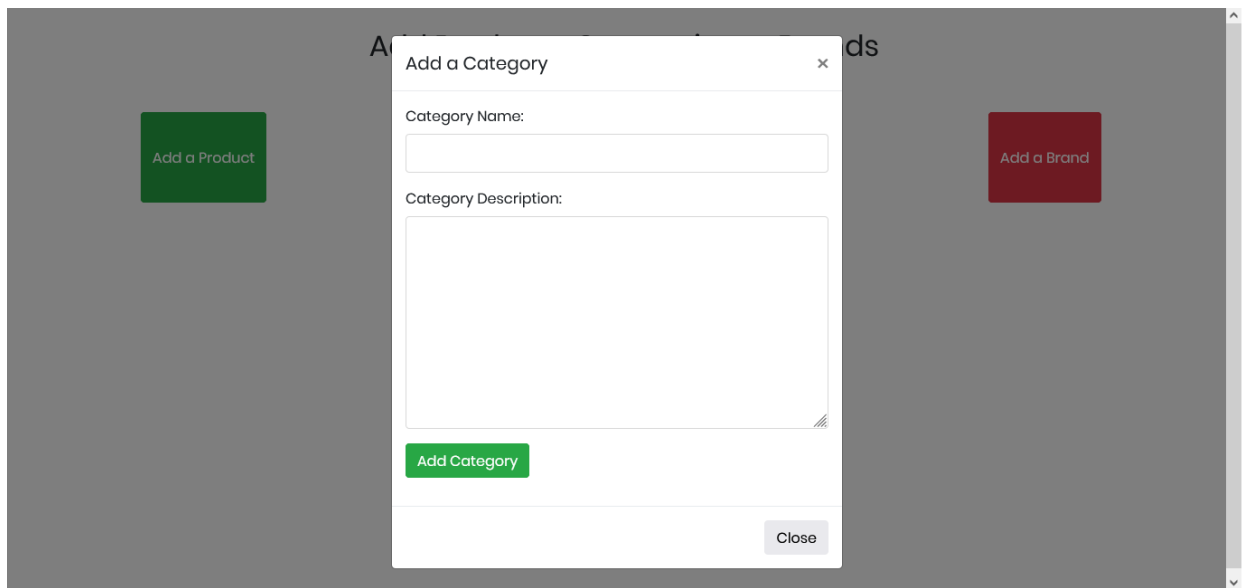


Fig 39. Addition Panel



The image shows a web application interface with a dark gray background. On the left, there is a green button labeled "Add a Product". On the right, there is a red button labeled "Add a Brand". In the center, a white pop-up form titled "Add a Product" is displayed. The form has a close button (X) in the top right corner. It contains the following fields: "Product Name:" with a text input field, "Product Description:" with a large text area, "Brand:" with a dropdown menu showing "Select a Brand", and "Category:" with a dropdown menu showing "Select a Category".

Fig 40. Add a product pop-up



The image shows the same web application interface as Fig 40. The "Add a Product" button is still visible on the left. The "Add a Brand" button is still visible on the right. In the center, a white pop-up form titled "Add a Category" is displayed. The form has a close button (X) in the top right corner. It contains the following fields: "Category Name:" with a text input field, "Category Description:" with a large text area, and a green "Add Category" button at the bottom left. A "Close" button is located at the bottom right of the form.

Fig 41. Add a category pop-up

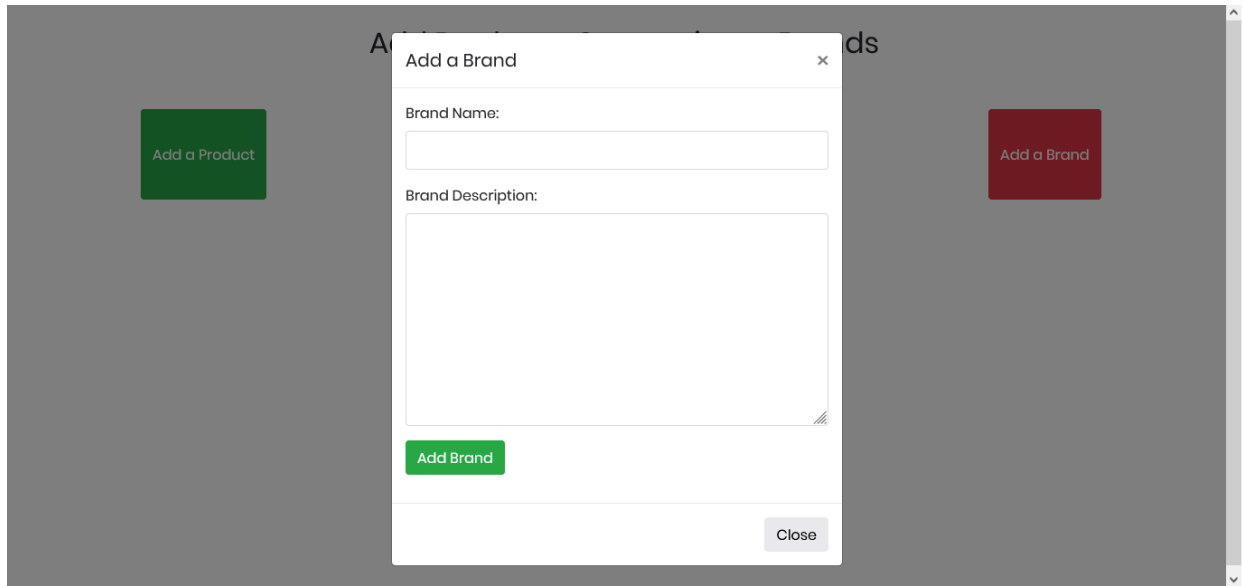


Fig 42. Add a brand pop-up

Update Products, Categories or Brands



Fig 43. Updating panel

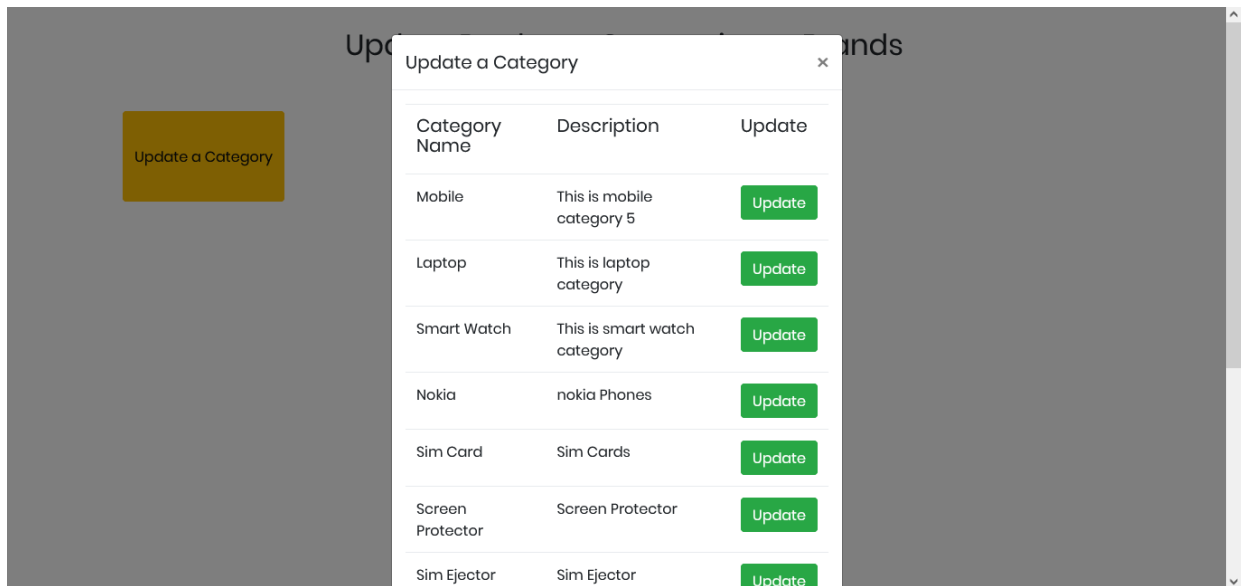


Fig 44. Update a category panel

Update Category

Category Name:

Category Description:

This is mobile category 5

Update Category

Fig 45. Update a category window

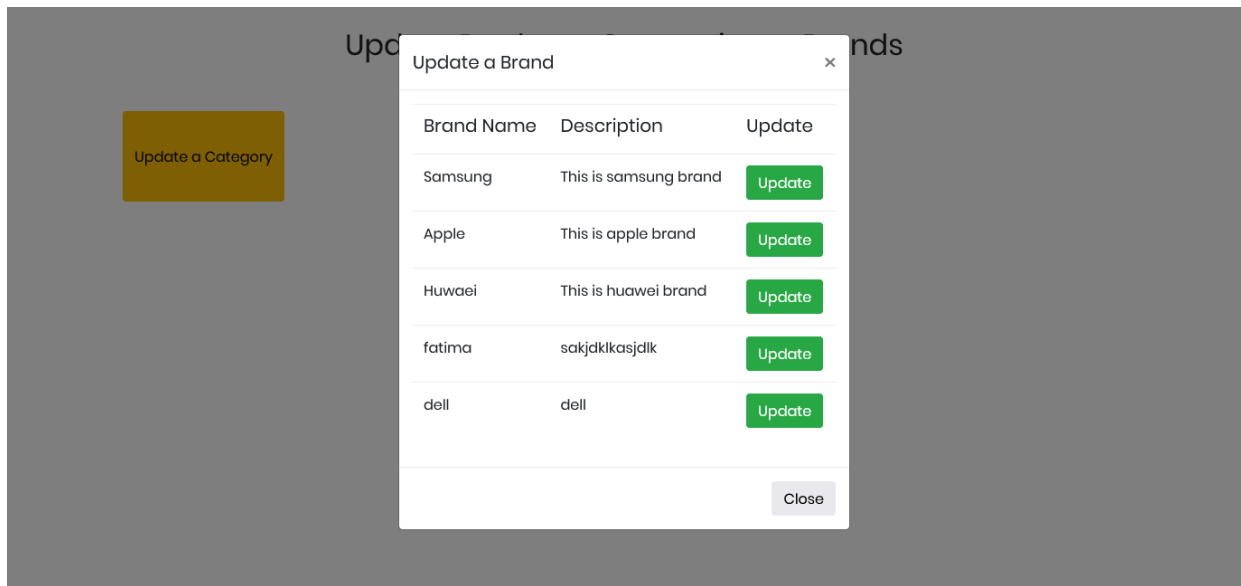


Fig 46. Update a brand pop-up

Update Brand

Brand Name:

Samsung

Brand Description:

This is samsung brand

Update Category

Fig 47. Update a brand window

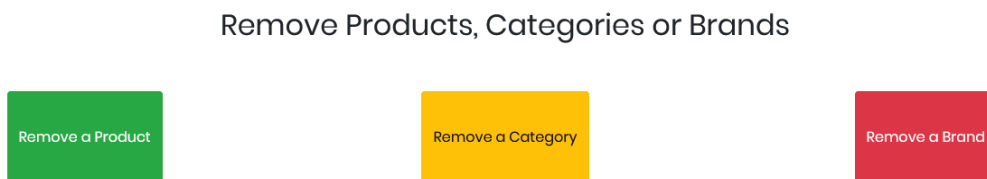


Fig 48. Removal panel

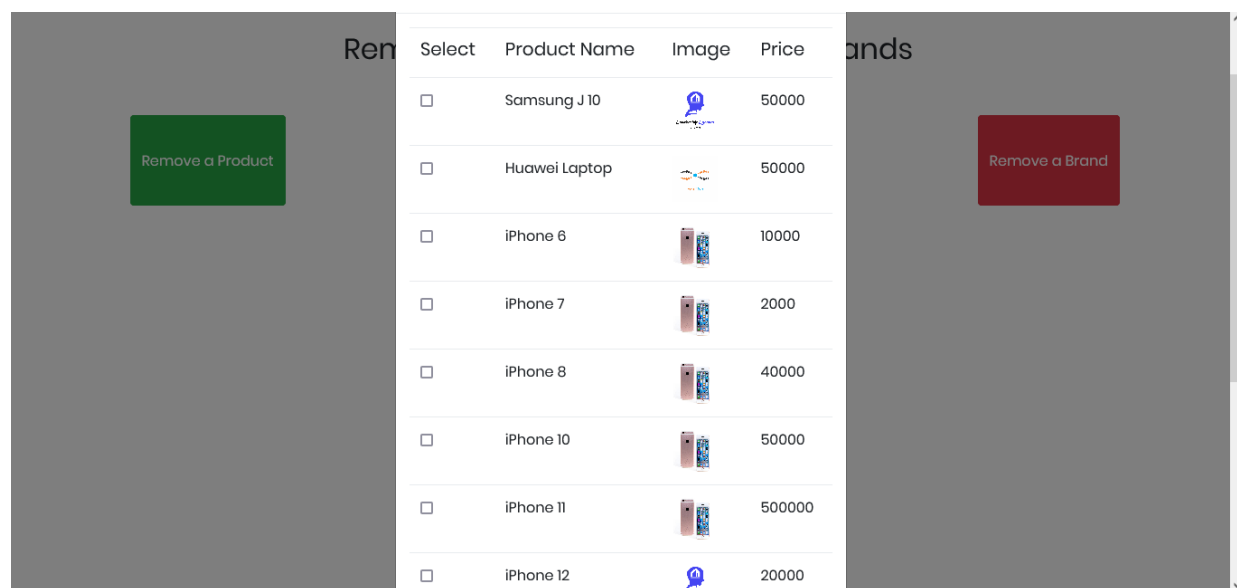


Fig 49. Remove a product pop-up

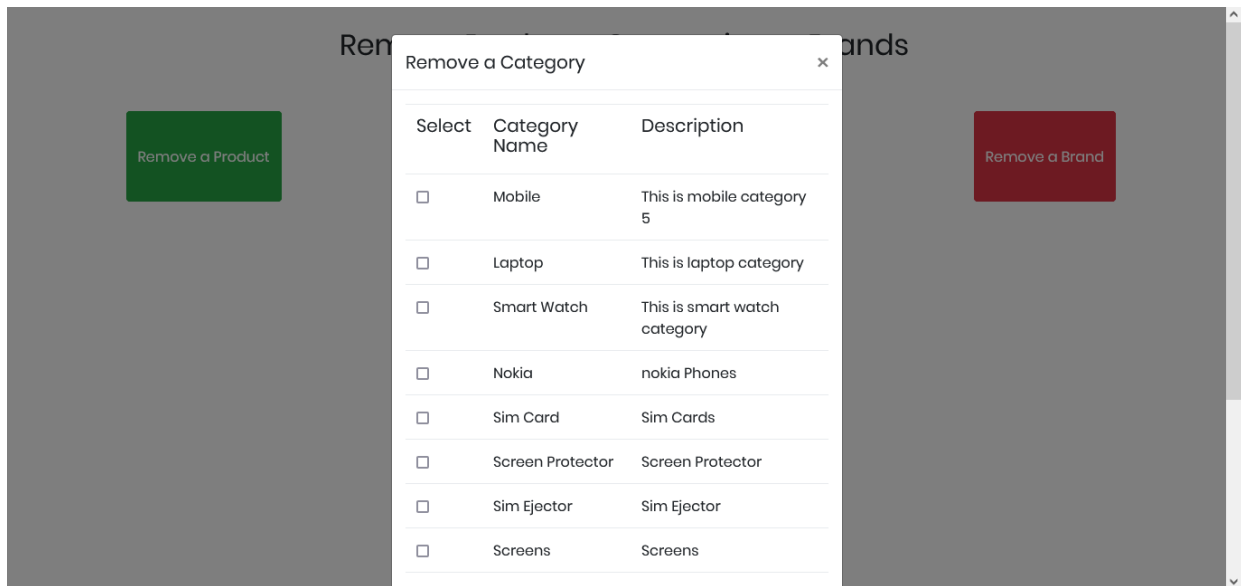


Fig 50. Remove a category pop-up

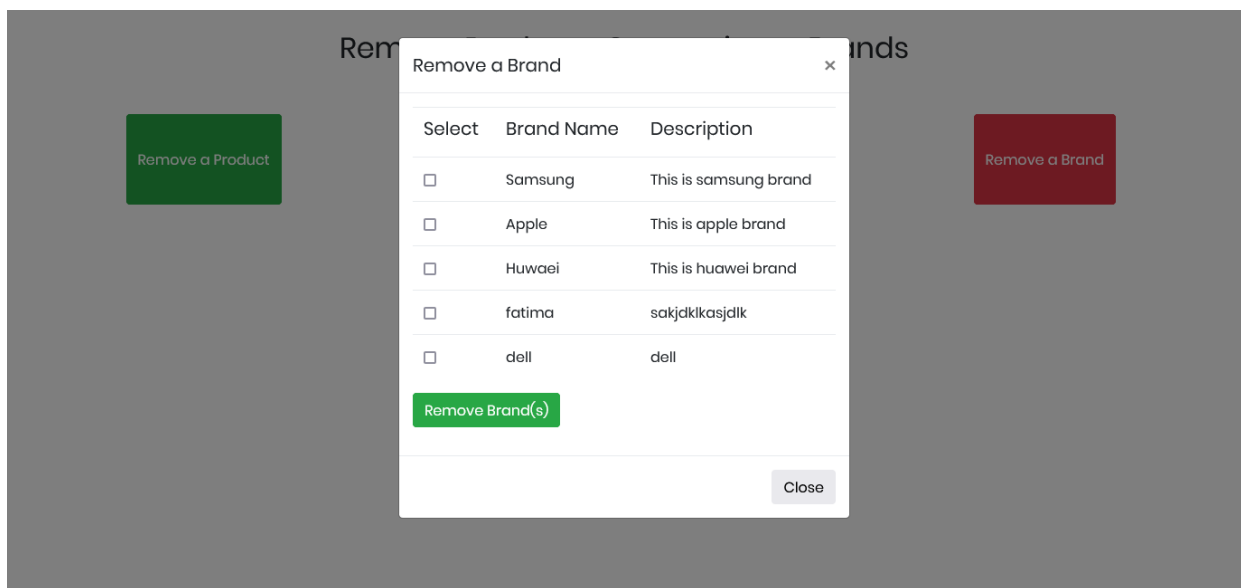


Fig 51. Remove a brand pop-up











Add/Remove Top Selling Products



Fig 52. Top selling panel

Add Top Selling Products

Go back




Select	Product Title	Product Image	Product Description
<input type="checkbox"/>	Samsung J 10		This is Samsung J 10
<input type="checkbox"/>	Huawei Laptop		This is a Huawei Laptop
<input type="checkbox"/>	iPhone 6		This is iphone
<input type="checkbox"/>	iPhone 7		this is iphone
<input type="checkbox"/>	iPhone 8		this is iphone
<input type="checkbox"/>	iPhone 10		this is iphone
<input type="checkbox"/>	iPhone 11		This is iphone
<input type="checkbox"/>	iPhone 12		This is iphone
<input type="checkbox"/>	samsung xyz		samsung xyz
<input type="checkbox"/>	Samsung		sad

Add to Top Selling

Fig 53. Add to top selling window

Remove Top Selling Products

Go back

Select	Product Title	Product Image	Product Description
<input type="checkbox"/>	iPhone 11		This is iphone
<input type="checkbox"/>	iPhone 12		This is iphone
<input type="checkbox"/>	Samsung J 10		This is Samsung J 10

Remove From Top Selling

Fig 54. Remove from top selling window

Manage/See Orders

See Pending Orders

See Dispatched Orders

See Delivered Orders

Go Back

Fig 55. Manage orders

Pending Orders

Go Back

Mark As Dispatch

Select	Order ID	Customer Name	Customer Phone Number	Total Amount	See Order
<input type="checkbox"/>	11		0323	400000	See Order
<input type="checkbox"/>	12		0323	400000	See Order
<input type="checkbox"/>	13		0323	400000	See Order
<input type="checkbox"/>	14		0323	400000	See Order
<input type="checkbox"/>	15		0323	400000	See Order
<input type="checkbox"/>	17		0313	400000	See Order
<input type="checkbox"/>	18		0313	70000	See Order
<input type="checkbox"/>	20		0300	500000	See Order
<input type="checkbox"/>	21		0300	500000	See Order
<input type="checkbox"/>	22		0300	100000	See Order
<input type="checkbox"/>	23		0300	100000	See Order
<input type="checkbox"/>	24		0313	100000	See Order
<input type="checkbox"/>	25		0300	50000	See Order
<input type="checkbox"/>	26		0300	50000	See Order
<input type="checkbox"/>	27		0313	542000	See Order

Fig 56. Pending orders window

Dispatched Orders						Go Back
Select	Order ID	Customer Name	Customer Phone Number	Total Amount	See Order	Mark As Delivered
<input type="checkbox"/>	7		0324-	400000	See Order	
<input type="checkbox"/>	8		0323-	400000	See Order	
<input type="checkbox"/>	9		0323-	400000	See Order	

Fig 57. Dispatched orders window

Delivered Orders						Go Back
Order ID	Customer Name	Customer Phone Number	Total Amount	See Order		
1		0323-	300000	See Order		
2		0313-	400000	See Order		
3		0324-	400000	See Order		
4		0324-	400000	See Order		
5		0324-	400000	See Order		
6		0324-	400000	See Order		
10		0323-	400000	See Order		
16		0323-	400000	See Order		
19		0313-	100000	See Order		

Fig 58. Delivered orders window

Chapter 4. Results and Discussion

4.1 Test Cases

4.1.1 Functional Requirements Test Cases

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-1	Admin Login – Positive	To check if admin can successfully login	1) Open “localhost/ks/login” 2) Enter “hashir123” as username 3) Enter “hashir123” as password 4) Click “Login” button	The admin should login and the admin panel should be loaded	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-2	Admin Login – Negative	To check what happens if incorrect credentials are put in the login page	1) Open “localhost/ks/login” 2) Enter “asdasd” as username 3) Enter “asdasd” as password 4) Click “Login” button	The login page should display the message “Incorrect Credentials”	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-3	Addition to the website test	To load the “Add” panel for adding product, categories or brands	1) Click on the “Add (Products, Categories, Brands)” button	The addition panel should load	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-4	Add a product – Positive	To see if admin can add a product successfully	1) Click on “Add a product” button, an addition window will pop-up 2) Enter product name, description, select a brand, select a category, choose 3 images, and enter product price and quantity. Click on “Add product” button	The product is added to the database and a success message is displayed	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-5	Add a product – Negative	To see what happened if admin puts in incorrect data type in the fields	1) Click on “Add a product” button, an addition window will pop-up 2) Enter (with wrong data type) product name, description, select a brand, select a	Error message should pop-up under the text fields	Same as expected	Pass

			category, choose 3 images, and enter product price and quantity. Click on “Add product” button			
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Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-6	Add a category – Positive	To see if admin can add a category successfully	1) Click on “Add a category” button, an addition window will pop-up 2) Enter category name, description,	The category is added to the database and a success message is displayed	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-7	Add a category – Negative	To see what happens if incorrect data type is typed in the boxes	1) Click on “Add a category” button, an addition window will pop-up 2) Enter (with wrong datatype) category name, description,	Error messages are displayed under the text fields	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-8	Add a brand – Positive	To see if admin can add a brand successfully	1) Click on “Add a brand” button, an addition window will pop-up 2) Enter brand name, description	The brand is added to the database and a success message is displayed	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-9	Add a brand – Negative	To see what happens if incorrect data type is typed in the boxes	1) Click on “Add a brand” button, an addition window will pop-up 2) Enter (with wrong datatype) brand name, description	Error messages are displayed under the text fields	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-10	Update categories	To load the “Update” panel for updating product, categories or brands	1) Click on the “Update (Products, Categories, Brands)” button	The updating panel should load	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-11	Update a category - Positive	To see if the admin is able to update a category in the database	1) Click on “Update a category” button in the panel 2) Select a category to update from the pop-up and click the “Update” button 3) Update the information of a category in the opened window and click the “Update category” button	The category is updated and a success message is displayed	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-12	Update a category – Negative	To see what happens when wrong data type is given	1) Click on “Update a category” button in the panel 2) Select a category to update from the pop-up and click the “Update” button	Error message should display under the text fields	Same as expected	Pass

			3) Update the information (with wrong data type) of a category in the opened window and click the “Update category” button			
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Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-13	Update a brand – Positive	To see if the admin is able to update a brand in the database	1) Click on “Update a brand” button in the panel 2) Select a brand to update from the pop-up and click the “Update” button 3) Update the information of a brand in the opened window and click the “Update brand” button	The brand is updated and a success message is displayed	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-14	Update a brand - Negative	To see what happens when wrong data type is given	1) Click on “Update a brand” button in the panel	Error message should display under the text fields	Same as expected	Pass

			<p>2) Select a brand to update from the pop-up and click the “Update” button</p> <p>3) Update the information (with wrong data type) of the brand in the opened window and click the “Update brand” button</p>			
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Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-15	Remove (Products, Categories, Brands)	To be able to remove a product, category or brand from the database	1) Click on the “Remove (Products, Categories, Brands)” in the admin panel	The removal panel should get open	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-16	Remove products - Positive	To be able to remove products from the database	1) Click on the “Remove brands” button in the removal panel	The products shall be removed from the database and a success	Same as expected	Pass

			2) Select the products to be remove 3) Click on the “remove products” button	message is displayed		
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Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-17	Remove products – Negative	To see what happens when no product is selected for removal	1) Click on the “Remove products” button in the removal panel 2) Do not select any product 3) Click on the “remove products” button	Error message should be displayed saying “Please select a product”	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-18	Remove categories – Positive	To be able to remove categories from the database	1) Click on the “Remove categories” button in the removal panel 2) Select the categories to be remove 3) Click on the “remove categories” button	The categories shall be removed from the database and a success message is displayed	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-19	Remove categories - Negative	To see what happens when no category is selected for removal	1) Click on the “Remove category” button in the removal panel 2) Do not select any category 3) Click on the “remove categories” button	Error message should be displayed saying “Please select a category”	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-20	Remove brands – Positive	To be able to remove brands from the database	1) Click on the “Remove brands” button in the removal panel 2) Select the brands to be remove 3) Click on the “remove brands” button	The brands shall be removed from the database and a success message is displayed	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-21	Remove brands – Negative	To see what happens when no brand is selected for removal	1) Click on the “Remove brand” button in the removal panel 2) Do not select any brand	Error message should be displayed saying “Please	Same as expected	Pass

			3) Click on the “remove brands” button	select a brand”		
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Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-22	Top selling products	To be able to access the “top selling products” panel	1) Click on “Top Selling Products” button in the admin panel	The top selling panel should open	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-23	Add to top selling products - Positive	To add products to the top selling list	1) Click on the “Add to top selling” button in the top selling panel 2) Select products from the opened window and click on “Add to top selling” button	The products should be added to the top selling list and a success message should be displayed	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-24	Add to top selling products - Negative	To see what happens when no product is selected	1) Click on the “Add to top selling” button in the top selling panel	An error message should be displayed saying	Same as expected	Pass

			2) Do not select products from the opened window and click on “Add to top selling” button	“Please select a product”		
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Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-25	Remove from top selling products – Positive	To remove products from the top selling list	1) Click on the “Remove from top selling” button in the top selling panel 2) Select products from the opened window and click on “Remove from top selling” button	The products should be removed from the top selling list and a success message should be displayed	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-26	Remove from top selling - Negative	To see what happens when no product is selected	1) Click on the “Remove from top selling” button in the top selling panel 2) Do not select products from the opened window and click on “Remove from top selling” button	An error message should be displayed saying “Please select a product”	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-27	See/Manage Orders	To check if the admin is able to manage orders from the admin panel	1) Click on the “See/Manage Orders” button in the admin panel	The manage orders panel should open	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-28	Pending orders - Positive	To check if the admin is able to see pending orders and mark them as dispatched	1) Click on the “See Pending Orders” button in the manage orders panel 2) Select orders and click the “Mark as dispatched” button	The orders should be marked as dispatched and removed from the pending orders panel	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-29	Pending orders – Negative	To see what happens if no order is selected and the “Mark as dispatched” button is clicked	1) Click on the “See Pending Orders” button in the manage orders panel 2) Do not select orders and click the “Mark as	Error message should be displayed saying “Please select orders”	Same as expected	Pass

			dispatched” button			
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Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-30	Dispatched orders – Positive	To check if the admin is able to see dispatched orders and mark them as delivered	1) Click on the “See Dispatched Orders” button in the manage orders panel 2) Select orders and click the “Mark as delivered” button	The orders should be marked as delivered and removed from the dispatched orders panel	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-31	Dispatched orders - Negative	To see what happens if no order is selected and the “Mark as delivered” button is clicked	1) Click on the “See Dispatched Orders” button in the manage orders panel 2) Do not select orders and click the “Mark as dispatched” button	Error message should be displayed saying “Please select orders”	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-32	Delivered orders	The admin should be able to see all the delivered orders	1) Click on the “Delivered Orders” button in the manage orders panel	All the delivered orders shall be displayed	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCAFR-33	Logout	The admin should be able to logout of the panel	1) Click the logout button in the panel	The admin session shall be ended and the login page shall be displayed	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCUFR-1	Search	The customer should be able to search products	1) Type a keyword in the search bar 2) Click the “magnifying glass” icon	If search results found, the products shall be displayed else “No search result found” message shall be displayed	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCUFR-2	Categories	The customer shall be able to see categories	1) Click the categories button on the navigation bar	All the categories shall display	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCUFR-3	Products in a category	The customer shall be able to see the products in a category	1) Click on a category in the categories window	All the products in that particular category shall display	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCUFR-4	Brands	The customer shall be able to see brands	1) Click the brands button on the navigation bar	All the brands shall display	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCUFR-5	Products in a brand	The customer shall be able to see the products in a brand	1) Click on a brand in the brand window	All the products in that particular brand shall display	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCUFR-6	Cart	The customer shall be able to add a product to the cart and then see his/her cart	1) Click on “Add to Cart” button on the product page or the carousel on the home page 2) Click on the “cart” icon to see cart	The product shall be added to the customer’s cart after clicking the “Add to Cart” button and the cart shall be displayed after clicking the “cart” icon	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCUFR-7	Proceed to Checkout – Positive	The customer shall be able to proceed to checkout when he/she is done shopping	1) Click on the “Proceed to Checkout” button	The checkout page shall be loaded.	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCUFR-8	Proceed to checkout – Negative	The customer shall not be able to proceed to	1) Remove products from the cart and	The “Proceed to Checkout” button	Same as expected	Pass

		checkout if the cart is empty	leave it empty	shall get disabled.		
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Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCUFR-9	Continue Shopping	The customer shall be able to continue shopping from the cart	1) Click on the continue shopping button on the cart page	The home page shall be loaded	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCUFR-10	Checkout - Positive	The customer shall be able to place order.	1) 1) Click on the “Proceed to Checkout” button 2) Fill in full name, house address, email address, and phone number to place the order. 3) Click on the “Place Order” button	A success message with order number shall be displayed	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCUFR-11	Checkout -Negative	The customer shall not be able to	1) 1) Click on the “Proceed to	Error messages shall display	Same as expected	Pass

		place order if the information given in the textbox in of wrong data type	Checkout” button 2) Fill in (with wrong data type) full name, house address, email address, and phone number to place the order. 3) Click on the “Place Order” button	under each input field		
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Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCUFR-12	Latest Products	The customer shall be able to see latest products	1) Go to the home page of the website and see the “Latest Product” carousel	The carousel shall show 10 of the most recent products pushed to the database	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCUFR-13	Top selling products	The customer shall be able to see top selling products	1) Go to the home page of the website and see the “Top Selling Product” carousel	The carousel shall show all the products from the “top_selling” table of the database	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCUFR-14	Recommended Products	The customer shall be recommended products based on his/her previous searches	1) Go to the home page of the website and see the “Recommended Product” carousel	The carousel shall show top 3 products from the “recommended” table of the database based on which brand has he/she searched the most	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCUFR-15	View Product	The customer shall be able to see all the details of a product	1) Click on a product from the latest products carousel, recommended products carousel, top-selling products carousel or the search results from the search bar, the category search, or the brand search	The product page shall open. It shall contain 3 images of the product, information about the product, payment details, and shipping and return policy. It will also contain the “add to cart” button	Same as expected	Pass

4.1.2 Non-Functional Requirements Test Cases

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCNFR-1	System availability	To check mean time to failure	1) Observe the website for 100 hours	The website should not crash for more than 1 hour and must remain live for 99 hours	The website for live for 100 hours	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCNFR-2	Search reliability	The system shall give correct search results	1) Make 100 searches on the website	The website shall must return 98 correct/accurate search results	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCNFR-3	Order reliability	The system shall take correct order from the users	1) Place 10 orders	The cart should contain only the products added by the customer and shall show correct prices and total amount for all the 10 orders	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCNFR-4	Extendibility	The code must be modular so as to increase cohesion and make the system extendible.	1) The code of the website shall be checked by the project head for modularity	The code should be in modules with as much more cohesion as possible	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCNFR-5	Customer usable	The system shall be usable by the customer after 1 hour of training	1) Train a non-technical person on the system for 1 hour	The person shall be able to use the system without any hindrance and help	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCNFR-6	Admin usable	The system shall be usable by the admin after 2 hour of training	1) Train a non-technical person on the system for 2 hours	The person shall be able to use the system without any hindrance and help	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCNFR-7	Search result time	Observing the time of the return of the search results against a 5 Mbps internet connection	1) Make 100 searches and observe the return time	95 searches must return results within 2 seconds	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCNFR-8	Add to cart time	Observing the time of add to cart functionality against a 5 Mbps internet connection	1) Make 100 additions to the cart and observe the time taken by each addition	95 additions shall be done within 2 seconds	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCNFR-9	Page load time	Observing the loading time of every page of the website	1) Load every page the website.	95% pages must load within 2 seconds or less	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCNFR-10	Recommended products	The system shall show accurate recommended products based on search history	1) Search 20 products 2) Check the recommended products carousel	95% of the products shall be relevant to the searches made	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCNFR-11	Admin adding functionalities	Observe the time taken by adding functionalities	1) Make 100 additions from the admin panel	95% shall be done within 2 seconds	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCNFR-12	Admin removing functionalities	Observe the time taken by removing functionalities	1) Make 100 removals from the admin panel	95% shall be done within 2 seconds	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCNFR-13	Admin updating functionalities	Observe the time taken by updating functionalities	1) Make 100 updating from the admin panel	95% shall be done within 2 seconds	Same as expected	Pass

Test ID	Name	Description	Steps	Expected Results	Actual Results	Status
TCNFR-14	Admin managing the inventory functionalities.	Observing the admin managerial functionalities	1) Perform 100 operations of marking pending orders as dispatched, and dispatched as delivered	The pop-up window for managing the orders i.e. the window for pending orders, for dispatched orders, and delivered orders shall pop-up in no more than 2 seconds, and the operations of marking pending orders as dispatched and dispatched orders as delivered shall take no more than 2 seconds.	Same as expected	Pass

4.2 Discussion

The system has passed all the admin and customer functional requirements tests and all the non-functional requirements test. Thus, it is ready to be delivered.

Chapter 5. Conclusion

The e-commerce industry has grown significantly over the years. It showed a growth from \$200 billion in 2007 to \$500 billion in 2014. E-Commerce does not only run small scale businesses, but also is an indispensable part of a country's economy e.g. Alibaba for China and Amazon for USA. Combining the enormous feature of recommender systems with e-commerce, it makes the customer journey a lot easier. Many of the e-commerce platforms use a recommender system e.g. Amazon, eBay, Levis etc.

The e-commerce platform (website) that we have developed is a B2C application. As mentioned above, we have combined recommender system with an e-commerce website. This will track the visitor's/customer's journey through the website and will recommend products to the visitor's'/customer's upon the tracking results.