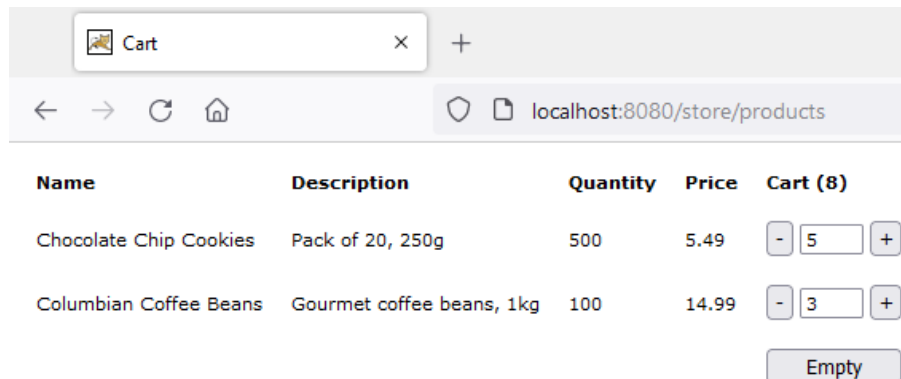# Store

Design and develop a web application with a simple list of products that allows the user to add items to their cart, remove items from their cart, and empty their cart.

Appearance

User experience requirements

- The user can see a list of available products, including each product's name, description, quantity in stock, price, and quantity in the cart
- The user can see the total number of units of all products in their cart
- The user can add 1 product unit to their cart by pressing the corresponding + button
- The user can remove 1 product unit from their cart by pressing the corresponding – button
- The user can set the quantity of a product in their cart by entering the quantity into the corresponding text box and pressing Enter
- The user can empty their cart by pressing the Empty button

Functional requirements

- Shopping carts must be modeled as a hash map
- A user's shopping cart must be stored in the user's session
- Carts must be empty initially
- Carts should never contain duplicate items (multiple items with the same product id)
- The quantity in stock of a product must never be less than 0
- The quantity of a product in the cart must never be less than 1 or greater than the quantity in stock

Product model class

- A product in inventory, including product id, product details, and quantity in stock

CartItem model class

- A product in a cart, including product id and quantity in cart

ProductService class

- Internally contains a static hash map of products, and initializes in the static initializer to contain to simulate a repository and database
- Provides public methods for getting a sorted list of all products and getting a product by id

CartService class

- Internally contains a HttpSession (passed in through constructor)
- Manages access to the cart in the user's session
- Provides public methods for:
    - Adding an item unit
    - Removing an item unit
    - Setting an item quantity
    - Emptying the cart
    - Getting the number of items
    - Getting the total unit count (sum of all item quantities)