

Abstract	
User	
Administrator, Shopper	
<ul style="list-style-type: none"> • Username • Password • Inventory • Register • Log in • Search products • Get a list of products sorted by availability • Get a list of products sorted by category • Get a list of products in price range 	

Shopper	
User	
<ul style="list-style-type: none"> • First name • Last name • Address • Email • Shopping Cart • Credit card number • Credit card expiry date • Phone number • List of shipping invoices • List of purchases • Get a shopping cart • Get shipping invoices 	<ul style="list-style-type: none"> • Shopping Cart

Administrator	
User	
<ul style="list-style-type: none"> • Manage three different managers • Maintain product categories <ul style="list-style-type: none"> ○ Add a new category ○ Generate a screen report of existing categories • Maintain products <ul style="list-style-type: none"> ○ Add a new product ○ Change the photograph, description, price or availability quantity of products 	<ul style="list-style-type: none"> • Product Manager • Shopper Manager • Invoice Manager

Inventory		Observable	
<ul style="list-style-type: none"> • Product Manager • Products • List of product categories • Sort a list of products by availability • Sort a list of products by product category • Get a list of items by product category • Get a list of items by availability • Get a list of items by price range 		<ul style="list-style-type: none"> • Product Manager • Observable 	

Product	
<ul style="list-style-type: none"> • Image • Product ID • Product description • Product category • Price in CAD • Availability • Compare a product with another 	<ul style="list-style-type: none"> • Inventory

ProductCategory	
<ul style="list-style-type: none"> • Category description • Category code • List of products 	<ul style="list-style-type: none"> • Product

ShoppingCart		Observer
<ul style="list-style-type: none"> • Shopper • Add products in various quantities if there is enough quantity • The contents of shopping cart generate a shipping invoice • Update inventory • Remove an item • Empty a shopping cart 		<ul style="list-style-type: none"> • Product • Shipping Invoice • Shopper • Observer

ShippingInvoice	
<ul style="list-style-type: none"> • Tracking number • Shopper • Total price • List of items that were in a shopping cart • Get total price • Calculate total price • Update the list of shoppers' shipping invoices 	<ul style="list-style-type: none"> • Inventory • Product

Interface	
Manager Product Manager, Shopper Manager, Invoice Manager	
<ul style="list-style-type: none"> • Read a file • Load a file • Save a file • Add to a file 	

ProductManager Manager	
<ul style="list-style-type: none"> • List of products • List of product categories • Load a product file • Save a product file • Read a product file • Add a product to a file • Edit product • Get a list of products 	<ul style="list-style-type: none"> • Product • Manager • Product Category

ShopperManager Manager	
<ul style="list-style-type: none"> • List of shoppers • Save a shopper file • Load a shopper file • Read a shopper file • Add a shopper to a file • Get a shopper • Edit a shopper 	<ul style="list-style-type: none"> • Shopper • Manager

InvoiceManager Manager	
<ul style="list-style-type: none"> • List of shipping invoices • Load a shipping invoice file • Save a shipping invoice file • Read a shipping invoice file • Add a shipping invoice to a file • Get a shipping invoice • Edit a shipping invoice 	<ul style="list-style-type: none"> • Shipping Invoice • Manager

Observer Shopping Cart	
<ul style="list-style-type: none"> Update available and backordered quantities 	

Observable Inventory	
<ul style="list-style-type: none"> Register an observer Remove an observer Notify an observer 	

Exception OutOfStockException	
<ul style="list-style-type: none"> Throw an exception if a product is out of stock 	

Exception CartFullException	
<ul style="list-style-type: none"> Throw an exception if a number of products is over a certain limit 	