using System;

// Part 1: Abstraction

abstract class Product

{

public decimal Price { get; set; }

public Product(decimal price)

{

Price = price;

}

public abstract void DisplayInfo();

}

class ElectronicProduct : Product

{

public int WarrantyPeriod { get; set; } // Warranty period in months

public ElectronicProduct(decimal price, int warrantyPeriod)

: base(price)

{

WarrantyPeriod = warrantyPeriod;

}

public override void DisplayInfo()

{

Console.WriteLine($"Electronic Product: Price = ${Price}, Warranty Period = {WarrantyPeriod} months");

}

}

class GroceryProduct : Product

{

public DateTime ExpirationDate { get; set; } // Expiration date

public GroceryProduct(decimal price, DateTime expirationDate)

: base(price)

{

ExpirationDate = expirationDate;

}

public override void DisplayInfo()

{

Console.WriteLine($"Grocery Product: Price = ${Price}, Expiration Date = {ExpirationDate.ToShortDateString()}");

}

}

// Part 2: Inheritance

class ShoppingCart

{

private Product[] \_products = new Product[10];

private int \_count = 0;

public void AddProduct(Product product)

{

if (\_count < \_products.Length)

{

\_products[\_count] = product;

\_count++;

Console.WriteLine("Product added to the cart.");

}

else

{

Console.WriteLine("Cart is full. Cannot add more products.");

}

}

public void RemoveProduct(Product product)

{

int index = -1;

for (int i = 0; i < \_count; i++)

{

if (\_products[i] == product)

{

index = i;

break;

}

}

if (index != -1)

{

for (int i = index; i < \_count - 1; i++)

{

\_products[i] = \_products[i + 1];

}

\_products[\_count - 1] = null;

\_count--;

Console.WriteLine("Product removed from the cart.");

}

else

{

Console.WriteLine("Product not found in the cart.");

}

}

public decimal CalculateTotalPrice()

{

decimal total = 0;

for (int i = 0; i < \_count; i++)

{

total += \_products[i].Price;

}

return total;

}

public void DisplayCartContents()

{

Console.WriteLine("\nCart Contents:");

for (int i = 0; i < \_count; i++)

{

\_products[i].DisplayInfo();

}

}

}

class Program

{

static void Main(string[] args)

{

// Create products

ElectronicProduct laptop = new ElectronicProduct(1200.00m, 24);

GroceryProduct apple = new GroceryProduct(0.99m, DateTime.Now.AddDays(10));

GroceryProduct milk = new GroceryProduct(3.49m, DateTime.Now.AddDays(5));

// Create shopping cart

ShoppingCart cart = new ShoppingCart();

// Add products to the cart

cart.AddProduct(laptop);

cart.AddProduct(apple);

cart.AddProduct(milk);

// Display cart contents

cart.DisplayCartContents();

// Calculate and display total price

decimal totalPrice = cart.CalculateTotalPrice();

Console.WriteLine($"\nTotal Price: ${totalPrice}");

// Remove a product and display updated cart

cart.RemoveProduct(apple);

cart.DisplayCartContents();

totalPrice = cart.CalculateTotalPrice();

Console.WriteLine($"\nUpdated Total Price: ${totalPrice}");

}

}