

e-commerce class diagram:

▣ Key classes and their attributes:

1. User: Represent a customer or administrator interacting with the system.

• Attributes:

- * userID: Unique identifier for the user.
- * username: User's login name.
- * password: User's password.
- * email: User's email address.

• Methods:

- * register(): Allows a new user to create an account.
- * login(): Authenticates a user.
- * update Profile(): Updates user information.

2. Product: Represents an item available for purchase.

- Attributes:

- * ProductID: Unique identifier for the product.

- * name: Name of the product.

- * description: Detailed information about the product.

- * price: cost of the product.

- * stockQuantity: Number of item available.

- Methods:

- * updateStock(): Modify the stock quantity.

- * applyDiscount(): Applies a discount to the product price.

3. Category: Organizes products into groups.

- Attributes:

- * categoryID: Unique identifier for the category.

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- * name: Name of the category.

- * description: Description of the category.

- Methods:

- * addProduct(): Adds a product to the category.

- * removeProduct(): Removes a product from the category.

4. Shopping cart: Holds products a user intends to purchase.

- Attributes:

- * cartID: Unique identifier for the cart.

- * userID: Identifier linking the cart to a user.

- Methods:

- * addItem(): Adds a product to the cart.

- * removeItem(): Removes a product from the cart.

* calculateTotal(): compute the total cost of items in the cart.

5. Order: Records completed purchases.

• Attributes:

* orderId: Unique identifier for the order

* userId: Identifier linking the order to a user.

* orderDate: Date when the order was placed.

* status: Current status of the order (e.g, pending, shipped).

• Methods:

* placeOrder(): Finalizes the order.

* cancelOrder(): cancels the order.

6. Payment: Manages payment information for orders.

• Attributes:

* paymentID: Unique identifier for the payment.

* orderID: Identifier linking the payment to an order.

* amount: Total amount paid.

* paymentMethod: Method used for payment (e.g: credit card)

* paymentStatus: Status of the payment (e.g: completed, pending)

• Methods:

* ~~pro~~ processPayment(): Processes the payment for an order.

7. Shipping: Handles delivery details for orders.

• Attributes:

- * shippingID: Unique identifier for the shipping records.
- * orderID: Identifier linking the shipping to an order.
- * shippingAddress: Delivery address.
- * shippingStatus: Status of the shipment.

• Methods:

- * shipOrder(): Initiates the shipping process.

8. Admin: Manages the platform. Including the users and products.

• Attributes:

- * adminID: Unique identifier for the administrator.
- * username: Admin's login name.
- * password: Admin's password.

• Methods:

- * login(): Authenticates the admin.
- * manageUser(): Manages users accounts.
- * manageProduct(): Manages product listings.

Relationships:

- * User to ShoppingCart: A User has one ShoppingCart.
- * User to Order: A user can place multiple Orders.

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* Order to Product : An Order can include multiple Products. Products and a Product can be a part of multiple Orders (many-to-many relationship)

* Shopping Cart to Product : A shopping cart can contain multiple products, and a product can be in multiple shopping carts (many-to-many relationship)

* Order to Payment : An order has one payment.

* Order to Shipping : An order has one shipping record.

* Admin to user/Product/Order : An Admin can manage multiple Users, Products, or Orders.

UML class diagram:

