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Topic Name: E-commerce Website

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PROBLEM STATEMENT

The e-commerce industry is growing rapidly, and businesses need to be able to quickly adapt to new technologies and trends. One way to do this is to use APIs to integrate with other applications and services. This can help businesses to improve efficiency, reduce costs, and reach new customers.

REQUIREMENTS/FEATURES

The following are some of the requirements and features of the e-commerce API:

- The API must be able to expose the following resources: products, orders, customers, and shopping carts.
    1. **Products:** Information about the products that the business sells, such as name, description, images, and price.
    2. **Orders:** Information about the orders that customers have placed, such as shipping address, billing information, and order status.
    3. **Customers:** Information about the business's customers, such as name, email address, and shipping address.
    4. **Shopping carts:** Information about the products that customers have added to their shopping carts.
- The API must be easy to use and integrate with other applications.
- The API must be secure and reliable.

TECHNOLOGIES

The following technologies will be used to develop the API:

- **Python:** A general-purpose programming language that is easy to learn and use.
- **Flask:** A lightweight and flexible web framework for Python.
- **MySQL:** A popular open-source relational database management system.

APIs TO BE DEVELOPED

The following APIs will be developed:

- **Get products:** This API will return a list of all products, or a subset of products based on filters such as category, price, and brand.
- **Get product details:** This API will return the details of a specific product, including its title, description, images, and price.
- **Add product to cart:** This API will add a product to the user's shopping cart.
- **Get shopping cart:** This API will return the contents of the user's shopping cart.
- **Checkout:** This API will allow the user to complete the checkout process and place an order.

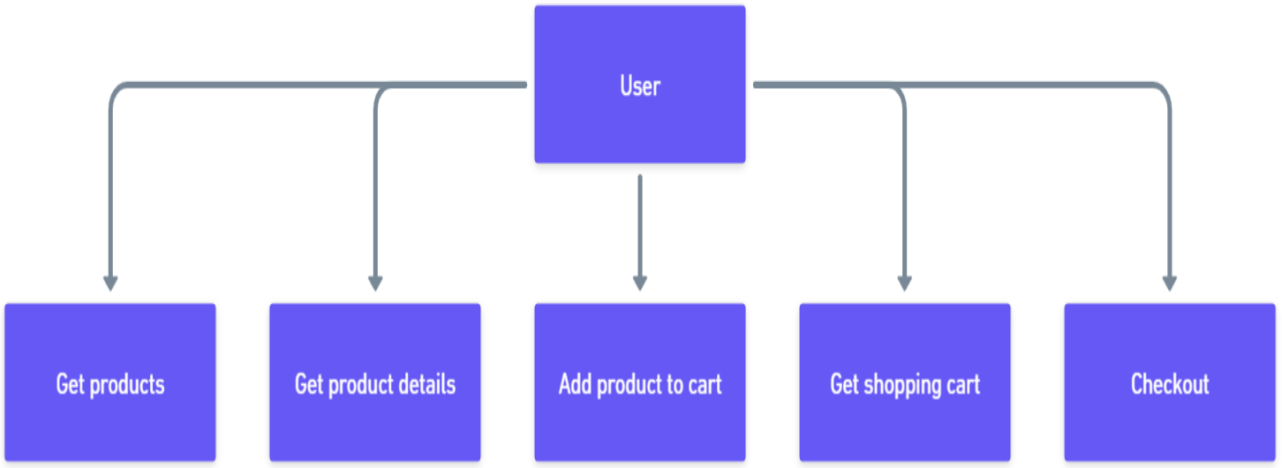
MODULES

The API will be divided into the following modules:

- **Products module:** This module will handle all requests related to products, such as getting a list of products, getting product details, and adding products to the cart.
- **Cart module:** This module will handle all requests related to the shopping cart, such as getting the contents of the cart and checking out.
- **Customers module:** This module will handle all requests related to customers, such as creating a new customer account, logging in to an existing customer account, and updating customer information.
- **Orders module:** This module will handle all requests related to orders, such as placing an order, getting order details, and tracking orders.

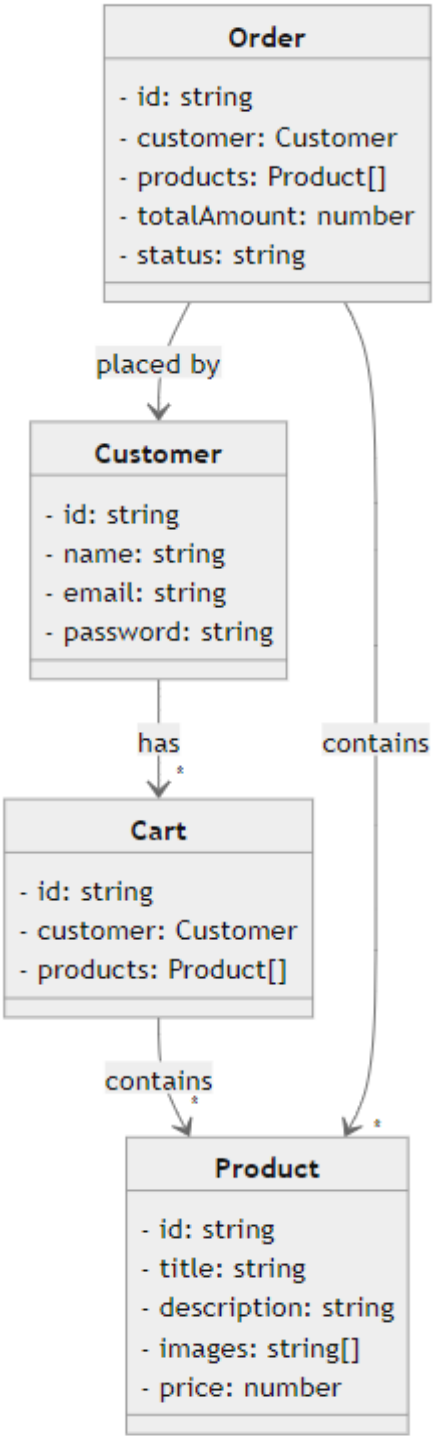
USER CASE DIAGRAM

The following user case diagram shows the main user cases for the e-commerce API:



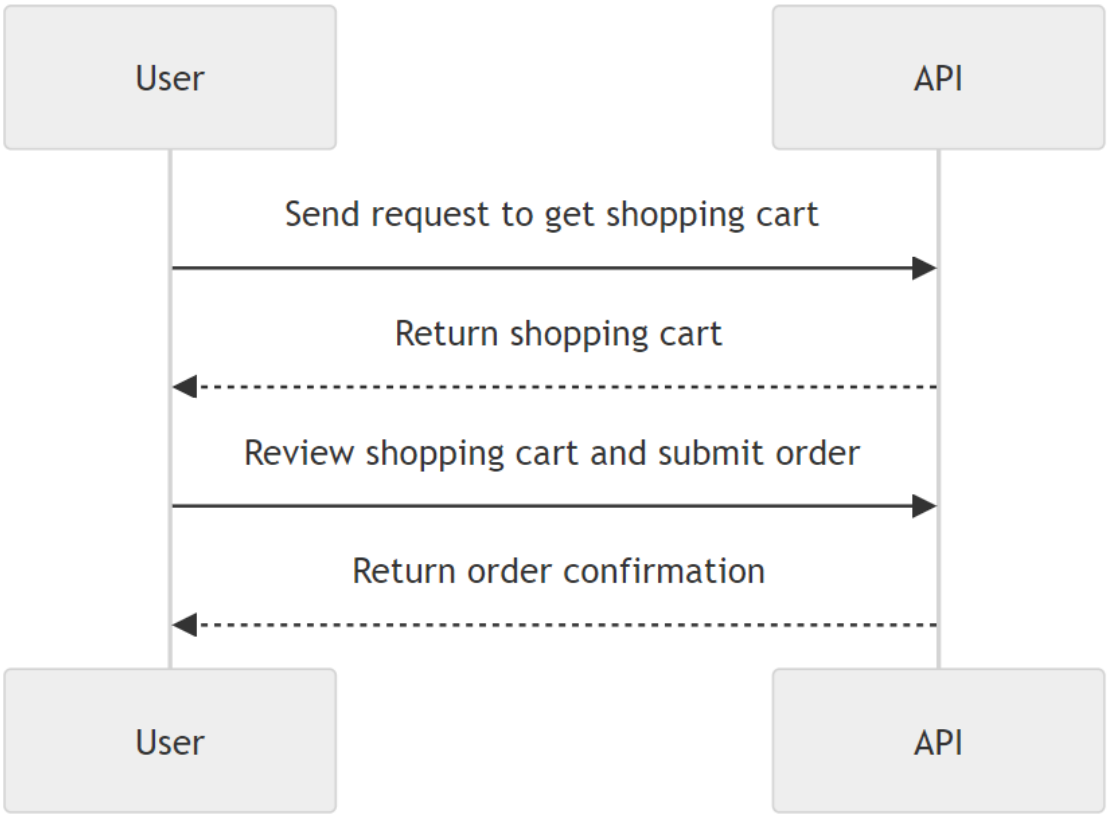
CLASS DIAGRAM

The following class diagram shows the main classes in the e-commerce API:



SEQUENCE DIAGRAM

The following sequence diagram shows the sequence of steps involved in the checkout process:



FUTURE SCOPE

The following are some ideas for future scope of the e-commerce API:

- Add support for more resources, such as reviews, ratings, and coupons.
- Add support for different payment methods.
- Add support for different shipping methods.
- Add support for internationalisation and localization.