Class and Object Practice Question

1) You work for a car rental company and need to create a C++ class called "Car" to manage their fleet. The Car class should have attributes for make, model, year, and mileage. Implement member functions to:

1. Get the car's information as a formatted string.
2. Update the car's mileage.
3. Check if the car is a luxury car.

Create an instance of the Car class with make="Toyota", model="Camry", year=2021, and mileage=10000. Call the information function and print the result. Then, update the mileage by 500 and call the information function again. Finally, check if the car is a luxury car and print the result.

Your implementation should demonstrate the use of classes, member functions, and object instantiation in C++.

2) You are building a banking application and need to create a class called "Account" in C++. The Account class should have attributes for account number, account holder name, and balance. Implement member functions to:

1. Deposit funds into the account.
2. Withdraw funds from the account.
3. Get the current balance of the account.

Create an instance of the Account class with account number="123456", account holder name="John Doe", and initial balance=1000. Perform a deposit of 500, followed by a withdrawal of 200. Finally, retrieve the current balance and print the result.

3) You are designing a game and need to create a class called "Player" in C++. The Player class should have attributes for player name, level, and score. Implement member functions to:

1. Increase the player's score by a given amount.
2. Level up the player.

Create an instance of the Player class with name="Alice", level=1, and score=100. Increase the score by 50 and level up the player. Print the updated player details.

4) You are developing a restaurant ordering system and need to create a class called "MenuItem" in C++. The MenuItem class should have attributes for item name, price, and description. Implement a member function to:

1. Display the details of the menu item.

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Create an instance of the MenuItem class with name="Cheeseburger", price=10.99, and description="Juicy beef patty with melted cheese." Call the display function to print the menu item details.

5) You are building a social media platform and need to create a class called "Post" in C++. The Post class should have attributes for post ID, author name, and content. Implement member functions to:

1. Edit the content of the post.
2. Display the post details.

Create an instance of the Post class with ID=1, author name="Jane", and content="Hello, world!" Edit the post content to "Welcome to my profile!" and display the updated post details.

6) You are working on a student management system and need to create a class called "Student" in C++. The Student class should have attributes for student ID, name, and grades. Implement member functions to:

1. Add a grade to the student's record.
2. Calculate the average grade for the student.

Create an instance of the Student class with ID="S001", name="John Smith", and grades=[85, 90, 78]. Add a grade of 95 to the student's record and calculate the average grade. Print the average grade.

7) You are developing a music player application and need to create a class called "Song" in C++. The Song class should have attributes for song title, artist name, and duration. Implement a member function to:

1. Display the details of the song.

Create an instance of the Song class with title="Bohemian Rhapsody", artist name="Queen", and duration="5:55". Call the display function to print the song details.

8) You are building an online shopping system and need to create a class called "Product" in C++. The Product class should have attributes for product ID, name, price, and quantity. Implement member functions to:

1. Update the quantity of the product.
2. Display the product details.

Create an instance of the Product class with ID="P001", name="Smartphone", price=499.99, and quantity=10. Update the quantity to 5 and display the product details.

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9) You are developing a calendar application and need to create a class called "Event" in C++. The Event class should have attributes for event name, date, and location. Implement a member function to:

1. Display the details of the event.

Create an instance of the Event class with name="Birthday Party", date="2023-08-15", and location="Park Plaza". Call the display function to print the event details.

10) You are working on a library management system and need to create a class called "Book" in C++. The Book class should have attributes for book ID, title, author, and availability status. Implement member functions to:

1. Check out the book.
2. Return the book.
3. Display the book details.

Create an instance of the Book class with ID="B001", title="To Kill a Mockingbird", author="Harper Lee", and availability status="available". Check out the book, return it, and display the updated book details.