**Case Study: Managing Daily Operations for Rindra Delivery Service**

**Overview:** Rindra Delivery Service is a small company that needs a web application to manage daily operations such as tracking delivery orders, assigning drivers, and allowing clients to check their order statuses. The application is being developed using PHP, MySQL, Bootstrap, and Object-Oriented Programming (OOP) principles.

**Functionalities Required:**

1. **Object-Oriented Programming (OOP) Design:**
   * **Class Structure & Design:**
     + Design appropriate classes to represent core entities like Order, User, Driver, Client, etc.
     + Ensure the design follows OOP best practices, such as encapsulation, inheritance (if needed), and modularity.
   * **Use of Objects & Methods:**
     + Implement business logic such as creating orders, updating statuses, and assigning drivers using objects and methods.
   * **Reusability & Maintainability:**
     + Ensure the code is modular, reusable, and easy to maintain by adhering to OOP principles.
2. **Basic Order Management:**
   * **Create and Manage Orders:**
     + Admins can create delivery orders using forms that include client name, address, and contact information.
   * **Update Order Status:**
     + Admins and drivers can update order statuses (e.g., pending, picked up, delivered).
   * **Assign Orders to Drivers:**
     + Admins can assign delivery orders to available drivers, and drivers can view their assigned deliveries.
3. **Delivery Tracking:**
   * **Track Deliveries:**
     + Drivers can update the delivery status in real time, and admins can monitor the progress.
   * **Admin Dashboard for Order Overview:**
     + Admins have a dashboard that displays all orders along with their current statuses.
4. **Client Portal:**
   * **Client Login and Order Status Check:**
     + Clients can log in using their email and order number to view the current status of their delivery.
   * **Order History:**
     + Clients can view their past orders and statuses.
5. **Frontend Design using Bootstrap:**
   * **Responsive Design:**
     + Bootstrap will be used to create a responsive layout for admin, driver, and client interfaces, ensuring accessibility across different devices.
   * **User-Friendly UI:**
     + The interface will be designed to be intuitive and easy to navigate for all users.
6. **Data Validation and Error Handling:**
   * **Input Validation:**
     + Input fields such as order forms and client logins will be validated to ensure accurate data entry.
   * **Error Handling:**
     + Error messages will be implemented to catch and display form submission errors.
7. **Secure Authentication and Password Encryption:**
   * **Password Encryption:**
     + Passwords will be securely stored using password\_hash() and verified using password\_verify().
   * **User Authentication:**
     + Secure login functionality with session management will be implemented, and access to features will be restricted based on user roles (admin, driver, client).
8. **Use of PDO for Database Interaction:**
   * **Secure Database Queries:**
     + PDO and prepared statements will be used for secure interaction with the MySQL database, preventing SQL injection attacks.
9. **Testing and Submission:**
   * **Working Prototype:**
     + All features will be fully functional, and the application will undergo thorough testing to ensure it meets all requirements.
   * **Testing & Documentation:**
     + The code will be properly documented, and all functionalities will be tested to confirm that they work as intended.

**Milestones and Timeline:**

**Week 1:**

* Design the class structure and begin implementing the order management system using OOP.
* Set up the database and start building the basic frontend using Bootstrap.
* Validate forms and use PDO for secure database interactions.
* Test the initial functionalities and ensure OOP principles are followed.

**Week 2:**

* Complete the delivery tracking system, driver interface, and client portal.
* Implement secure authentication with password encryption.
* Enhance the user interface using Bootstrap and test it for responsiveness.
* Final testing and submission of the working prototype.