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Testing and Validation

Project Title : Online Grocery Delivery Web App Blink-Shop-Now

1. Testing Methodology

To make sure the BlinkitCP system works correctly and smoothly, different types of testing were performed:

- **Unit Testing**: Each small feature (like login, product search, and cart update) was tested separately to check if it works on its own.
- **Integration Testing**: After unit testing, we checked how different parts (front-end, backend, and database) work together. For example, when a user adds an item to the cart, the front-end must update and also store the data correctly in the backend.
- **Manual and Automated Testing**: We used both manual checking (like clicking buttons, logging in, testing checkout flow) and automated testing tools for backend APIs.

2. Unit Tests

Test Case	Input	Expected Output	Actual Result	Status
User Login	Valid email & password	Redirect to homepage	Redirected successfully	Pass

Test Case	Input	Expected Output	Actual Result	Status
User Login	Invalid password	Show error message	Error displayed	Pass
Add to Cart	Click “Add to Cart” on product	Item added to cart	Item added successfully	Pass
Remove from Cart	Click remove on product	Item removed	Item removed successfully	Pass
Product Search	Search “Perfume”	Show matching perfumes	Displayed results	Pass

3. Integration Tests

Test Case	Components Tested	Expected Output	Actual Result	Status
User Login	Frontend + Backend + DB	User data fetched from DB, login success	Works correctly	Pass
Add to Cart	Frontend + Backend + DB	Item stored in DB and displayed on UI	Works correctly	Pass
Checkout	Cart + Payment + DB	Order saved and success message	Works correctly	Pass

4. Performance Metrics

Metric	Expected	Actual	Status
Page Load Time	< 3 sec	~2.1 sec	Pass
API Response Time	< 1 sec	~700 ms	Pass
Concurrent Users (Tested with 20 users)	Should not crash	Worked smoothly	Pass

5. Validation Against Objectives

The objectives of the BlinkitCP project were:

1. Provide a simple and user-friendly shopping experience.
2. Allow users to log in, search products, and manage their cart easily.
3. Ensure smooth communication between frontend and backend.

All these objectives were achieved as seen in the test results.

- Users could **log in and place orders successfully**.
- **Search and filter features** worked properly.
- **System performed well under normal load**.

6. Conclusion

The testing and validation proved that the BlinkitCP system is working as expected. The platform is stable, reliable, and meets the project objectives. Any small issues found (like slight delay during heavy search) can be optimized in the future.