**Checkout Process – ShopEase Platform**

**Role**: Testing Engineer, QualitySolutions  
**Focus**: Internal code logic, usability issues, and user interaction flows

1. **Components of Checkout Module**

* Cart Review Page
* Shipping Address Selection / Entry
* Payment Method Selection
* Order Summary & Confirmation
* Order Placement & Feedback

**2. Internal Code and Usability Review**

| **Section** | **Code-Level Findings** | **Potential Usability Issues** |
| --- | --- | --- |
| Cart Review | Looping structure inefficient for large items | No option to edit quantity inline |
| Address Form | Missing regex validation for pincode | Lack of autofill for saved addresses |
| Payment Method | Payment gateway handler lacks timeout logic | No loader/spinner during gateway interaction |
| Order Summary | Taxes not updated dynamically on region change | Total amount not clearly highlighted |
| Order Submission | No null-check for optional fields (coupon) | No confirmation prompt before final submission |

**3. White Box Test Cases (Functional + Usability)**

| **Test Case ID** | **Description** | **Internal Focus** | **Expected Result** |
| --- | --- | --- | --- |
| TC01 | Multiple items in cart | Loop iteration and data binding | All items displayed correctly |
| TC02 | Change quantity | Real-time update logic | Total updates instantly |
| TC03 | Remove item | List update method | Item removed, cart total adjusted |

**Shipping Address Section**

| **Test Case ID** | **Description** | **Internal Focus** | **Expected Result** |
| --- | --- | --- | --- |
| TC04 | New address input | Field validation functions | Reject invalid pincode/email |
| TC05 | Select saved address | DB fetch logic and prefill | Autofill form correctly |
| TC06 | Missing required field | Null-check and error handler | Prompt user for missing info |

**Payment Section**

| **Test Case ID** | **Description** | **Internal Focus** | **Expected Result** |
| --- | --- | --- | --- |
| TC07 | Select payment method | Internal switch/case flow | Display correct form |
| TC08 | Payment timeout | Async handler and fallback | Show error and retry option |
| TC09 | Incorrect CVV | Regex check and API error handler | Show field-specific error |

**Order Summary and Confirmation**

| **Test Case ID** | | **Description** | **Internal Focus** | | **Expected Result** | |
| --- | --- | --- | --- | --- | --- | --- |
| TC10 | Apply valid coupon | | | Discount calculation logic | | Apply discount & update total |
| TC11 | Apply invalid coupon | | | Error handling | | Show "Invalid code" |
| TC12 | Dynamic tax based on region | | | Region selection handler | | Recalculate taxes in real-time |

**4.Final Order Placement**

| **Test Case ID** | **Description** | **Internal Focus** | **Expected Result** |
| --- | --- | --- | --- |
| TC13 | Submit order with all valid data | Session and order DB entry | Success page + confirmation email |
| TC14 | Submit without payment info | Null check and conditional flow | Block submission, show error |
| TC15 | Repeat click on "Place Order" | Duplicate order prevention logic | Disable button after first click |

**Recommendations**

**Code-Level:**

Add regex validation for all input fields (email, phone, ZIP).

Use debouncing/throttling for repeated button clicks.

Introduce loading indicators during async operations (payment).

Store sensitive payment data securely or delegate to trusted gateways.

**Usability Improvements:**

Add progress indicator (e.g., Step 1 → 4).

Improve error messages (field-specific and non-technical).

Use smart defaults for returning users (prefilled address/payment).

**5. Code Coverage Plan**

| **Metric** | **Goal** |
| --- | --- |
| Statement Coverage | 100% |
| Branch Coverage | 90%+ |
| User Path Coverage | All valid and invalid paths |
| Condition Coverage | All true/false logic combinations |