

1. Test Cases and Results

Test Case ID	Test Case Description	Expected Result	Actual Result	Status	Comments
TC001	Check Homepage Product Display	New ceramics and popular products are displayed.	New ceramics and popular products are displayed correctly.	Pass	Homepage displays new ceramics and popular products.
TC002	Check Product Listing Page	Product listing page shows available products.	Product listing page shows correct product details	Pass	Product listing page works correctly.
TC003	Check 'New Ceramics' Section on Homepage	New ceramics section displays relevant items.	Correct new ceramics are displayed.	Pass	New ceramics section is working fine.
TC004	Check 'Popular Products' Section on Homepage	Popular products are displayed correctly.	Correct popular products are displayed.	Pass	Popular products are showing as expected.
TC005	Check Navigation to Product Listing Page	Clicking category navigates to product listing page.	Clicking category navigates correctly to product listing.	Pass	Navigation works as expected.
TC006	Check Filter Functionality (Categories, Type, Price)	Filters show relevant products based on selections.	Filters apply correctly and products update as expected.	Pass	Filters update the product list properly.
TC007	Check Product Add/Remove in Cart	Products can be added or removed from the cart.	Products are added and removed from the cart successfully.	Pass	Add/remove functionality works fine.
TC008	Check Cart for Product Quantity and Price Update	Price updates when product quantity changes.	Cart total and product price are updated with quantity change.	Pass	Cart updates are correct when quantity changes.
TC009	Check Cart for Correct Pricing	Prices in cart match product prices.	Cart shows correct pricing.	Pass	Cart pricing is accurate.
TC010	Check Checkout Page	Checkout page shows correct items, quantities, and prices.	Checkout page displays correct products and pricing.	Pass	Checkout page is functioning as expected.
TC011	Check Responsive Design (Mobile View)	Page adjusts properly for mobile screen size.	Page is responsive on mobile devices.	Pass	Site is responsive on mobile.
TC012	Check Responsive Design (Desktop View)	Page adjusts properly for desktop screen size.	Page is responsive on desktop devices.	Pass	Site is responsive on desktop.
TC013	Check Product Detail Page for Correct Pricing	Product detail page displays correct price.	Correct price is shown on product detail page	Pass	Price on product detail page is correct.
TC014	Check Cart Functionality on Adding/Removing Items	Cart total updates when items are added or removed.	Cart total updates correctly.	Pass	Cart updates correctly when items are added/removed.
TC015	Check Cart and Checkout Page for Mobile Responsiveness	Cart and checkout pages are mobile-friendly.	Cart and checkout pages are mobile-responsive.	Pass	Cart and checkout pages are responsive on mobile.

2. Performance Improvements

- **Lazy Loading:** Images and product details now load only when they are needed, making the site load faster.
- **Code Splitting:** The app loads only the necessary code for each page, making it faster to open.
- **Image Compression:** Images are compressed without losing quality, so the site loads faster.

3. Security Features

- **JWT Authentication:** Used JSON Web Tokens to make sure the login process is secure and user data is protected.
- **Input Validation:** Checked all user inputs to make sure they are safe and avoid security risks like SQL injection.
- **Password Hashing:** User passwords are safely stored using hashing (bcrypt) instead of plain text.
- **HTTPS:** Ensured that the website uses HTTPS to encrypt data between the client and the server for security.

4. Challenges and Solutions

Problem 1: Slow Loading Due to Large Images

- **Solution:** Compressed the images and added lazy loading, so they only load when needed, speeding up the site.

Problem 2: Too Many Products Slowing Down the Page

- **Solution:** Added product filters to help users search quickly and load the page efficiently.

Problem 3: Site Not Responsive on Some Mobile Devices

- **Solution:** Used Tailwind CSS to ensure the website looks good on all screen sizes and tested it on different mobile devices.

5. Staging Environment Setup

- **Where It's Deployed:** Deployed on Vercel for testing.
- **GitHub Integration:** Connected the website to GitHub for automatic deployment and easy updates.
- **Environment Variables:** Sensitive data like API keys are safely stored.
- **Deployment Workflow:** Set up everything to deploy smoothly and test automatically.

Testing in Staging:

- **Functional Testing:** Checked if all features like product listing, cart, and checkout work.
- **Performance Testing:** Used tools like Lighthouse to check the app's speed.
- **Security Testing:** Tested for any security risks and ensured user data is safe.