Test cases executed and their 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.

Performance Optimization Steps Taken:

- **Lazy Loading:** Implemented lazy loading for images and product details to improve page load speed.

- **Code Splitting:** Utilized Next.js's built-in support for code splitting to load only the required code for each page, reducing initial load times.

- **Image Compression:** Compressed images without compromising quality using an automated process to reduce image file sizes.

Security Measures Implemented

- **JWT Authentication:** Implemented JWT-based authentication for secure login and token handling to protect user data.

- **Input Validation:** All user inputs are validated on both the client-side and server-side to prevent injection attacks.

- **Password Hashing:** User passwords are hashed using bcrypt before storing them in the database for better security.

- **HTTPS:** Ensured that the website uses HTTPS for secure data transmission between the client and the server.

Challenges Faced and Resolutions Applied

- **Challenge 1: Slow page load times due to unoptimized images.**
  Resolution: Implemented image compression and lazy loading to improve load speeds.

- **Challenge 2: Handling large datasets in the product listing.**
  Resolution: Introduced filter functionalities to ensure the page loads efficiently even with a large number of products.

- **Challenge 3: Responsive design issues on certain mobile devices.**
  Resolution: Used Tailwind CSS utilities for responsiveness and tested on various mobile devices to ensure compatibility.