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COMPLETED THE PROJECT NAMED AS PHASE 3

TECHNOLOGY PROJECT NAME: E-COMMERCE PRODUCT PAGE

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## 1. Enhancements (Front-End & UX/UI)

### A. User Interface Improvements

High-quality product images with zoom-in, 360° view, and alternate views.

Product video demo (if applicable).

Clean, responsive layout (mobile-first design).

Consistent and attractive typography and color scheme.

### B. Product Information Optimization

Clear and concise product titles.

SEO-optimized descriptions with bullet points for features.

Availability status (In Stock, Limited Stock, Out of Stock).

Size charts, specifications, and care instructions.

### C. Customer Engagement

Product reviews and ratings with filters (e.g., “Most Helpful”).

Q&A section for customers to ask questions and see answers.

Wishlist or Save for Later functionality.

### D. Conversion Optimization

Prominent Call-to-Action (CTA): "Add to Cart", "Buy Now".

Trust signals: Secure payment icons, return policy, free shipping.

Urgency tactics: Low stock indicators, countdown timers, limited-time offers.

## E. Dynamic & Interactive Features:

Live inventory updates.

Real-time shipping/delivery estimation.

Cross-sell/Up-sell suggestions: “You may also like”, “Frequently bought together”.

## F. Accessibility & Performance:

ARIA roles for screen readers.

High contrast mode and keyboard navigation.

Lazy loading for images.

Minimized CSS/JS for faster loading.

## 2. Back-End Enhancements

### A. Scalability & Performance

API optimization (e.g., GraphQL for product data).

CDN usage for images and static assets.

Caching (Redis, Varnish).

Asynchronous loading (for reviews, related products, etc.)

### B. Security

HTTPS everywhere.

CSRF/XSS protection.

Input validation and sanitization.

### C. Database Optimization

Indexed product fields (e.g., SKU, category).

Use of caching layers (e.g., Redis) for frequently accessed data.

Product schema updates: structured data for SEO (JSON-LD, Schema.org).

### 3. Deployment Strategy:

#### A. Technology Stack

Front-end: React/Vue/Next.js/Nuxt.js

Back-end: Node.js / Django / Laravel / Ruby on Rails

Database: PostgreSQL / MongoDB / MySQL

Hosting: Vercel, Netlify (for frontend); AWS, Azure, Heroku, DigitalOcean (for backend)

#### B. CI/CD Pipeline

GitHub Actions / GitLab CI / Jenkins for testing and deployment.

Auto build & deploy on push to main/master branch.

Run unit, integration, and end-to-end tests before deployment.

#### C. Monitoring & Analytics

Use tools like Google Analytics, Hotjar, or Mixpanel.

Error monitoring: Sentry, LogRocket.

Performance monitoring: New Relic, Datadog, Lighthouse.

#### D. SEO & Indexing

Meta tags, Open Graph tags.

Sitemap.xml and robots.txt.

Canonical URLs and structured data.

#### 4. Sample Tech Stack (for Modern Jamstack E-commerce):

Layer	Technology
Front-End	Next.js (React)
Back-End	Node.js + Express or Headless CMS (e.g. Strapi)
Database	PostgreSQL / MongoDB
Authentication	Firebase Auth / Auth0
Hosting (FE)	Vercel / Netlify
Hosting (BE)	Heroku / AWS EC2
Image CDN	Cloudinary / Imgix
Payments	Stripe / PayPal

#### 5. Deployment Checklist:

Mobile responsiveness tested

SSL certificate active

Product data seeded

Payment gateway tested

Error logging in place

Analytics configured

SEO & structured data validated

Performance tested (Lighthouse score)

Uptime monitoring configured