Document for a **Unlox-like educational platform** (e.g., *Learnify*), considering:

- 💡 Feature completeness
- 📱 Responsiveness across devices (desktop, tablet, mobile)
- 🐛 Common bug edge cases & resolutions
- 🚀 Scalability & performance
- 🔒 Security & accessibility

🧾 Product Specification Document

✅ Product Name: Learnify — Learning Made Easy

📆 Version: 1.0

🏗️ Prepared by: Franx Studios

📅 Date: July 24, 2025

🔍 Product Overview

Learnify is a modern, mobile-first e-learning platform that transforms education through outcome-based learning. The platform provides mentor-led programs, real-world skill development, and an intuitive digital experience — ensuring accessibility, responsiveness, and engagement across devices and user types.

🎯 Core Objectives

- Deliver **mentor-led, structured programs** with measurable outcomes.
- Build an interface that is **mobile-first** but scales elegantly to desktop.
- Avoid layout-breaking issues across **browsers, screen sizes, and devices**.

- Handle edge cases in user interaction (bad internet, slow devices, etc.).
- Ensure a **fully responsive**, **accessible**, and **bug-free UI/UX**.

🧩 Major Modules & Feature Breakdown

1. 👋 Hero Section

Feature	Description
Headline	“Learning Made Easy”
CTA	“Explore Programs” — scroll or navigate to `/programs`
Responsive Layout	Flex/grid structure adapts to mobile/tablet/desktop
Edge Case Fixes	Prevents `vh`/`vw` based overflow issues on iOS Safari and Android Chrome using `calc()` and Tailwind's responsive utilities

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2. 📚 Program Explorer

Feature	Description
Grid/List View	Dynamically renders cards with program info
Lazy Loading	Use `React.lazy()` and `IntersectionObserver` for performance
Program Detail	Expandable modal OR routed pages (e.g. `/programs/web-dev`)
Edge Cases	Handles broken images (fallback thumbnail), empty data sets, API delay skeletons
SEO Friendly	Program name in page title and meta tags

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3. 🧠 Mentor Showcase

Feature	Description
Bio Cards	Avatar, name, role, and program badges
Responsive	Auto-collapsing grid on small screens

Error Handling	Missing LinkedIn URL gracefully hidden
ARIA Labels	Improves screen reader support and accessibility

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4. ✅ Why Choose Us Section

Card Elements	Icons (Lucide), animated text, hover effects
Animation	Use `Framer Motion` for `scale-in`, `fade-up`
Responsiveness	Uses Tailwind grid with `sm:`, `md:`, `lg:` utilities
Bug Fixes	Removed all `overflow-visible` issues, optimized `absolute` elements
Accessibility	`tabIndex`, `aria-describedby`, semantic headings included

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5. 💬 Testimonials

Layout	Carousel with swipe (mobile) and arrows (desktop)
Lazy Load	Loads only visible testimonials
Authenticated Submission	Only logged-in users can post reviews
Edge Case Handling	Handles profanity with filtering, prevents duplicate submission, saves on error

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6. 🧾 Contact & Inquiry Forms

Fields	Name, Email, Message, Program Interest (dropdown)
Backend	EmailJS / Formspree / custom Node API
Validation	Regex, `react-hook-form` with visual feedback
Edge Cases	Shows friendly errors for bad connections, disables repeat submissions
Spam Protection	Google reCAPTCHA or honeypot field hidden from bots

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7. 🧑‍🎓 User Authentication & Dashboard

Auth	OAuth (Google) and Email/Password (JWT-based)
Dashboard	Enrolled courses, mentor notes, certificate download
Security	Uses HTTP-only cookies, bcrypt for hashing
Responsiveness	Adapts sidebar nav into a bottom drawer for mobile
Edge Cases	Auto-refresh on token expiry, fallback loading states

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📱 Responsiveness & Device Compatibility

Device/Platform	Supported
iOS (iPhone SE → Pro Max)	✅
Android (320px+ width)	✅
Tablets (iPad, Galaxy Tab)	✅
Desktops (HD/FHD/4K)	✅
Browsers (Chrome, Safari, Edge, Firefox)	✅
Touch + Keyboard Navigation	✅
Orientation Change (Portrait/Landscape)	✅

Responsive testing via:

- Chrome DevTools
- BrowserStack
- Manual QA on devices

🔐 Security & Accessibility

- **Forms**: All forms have validation, backend sanitization, and spam protection
- **Accessibility**: WCAG 2.1 compliant using:
    - ARIA tags
    - Keyboard navigation
    - Focus rings
- **Privacy**: GDPR-compliant privacy policy and cookie banners
- **Data Handling**: Only stores essential data; all inputs sanitized

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⚙️ Technical Stack

Layer	Tech Stack
Frontend	React + TailwindCSS + Framer Motion
Backend	Node.js + Express
Database	MongoDB (Cloud)
Hosting	Netlify (Frontend) + Render (API)
Analytics	Plausible / Google Analytics
CI/CD	GitHub Actions
Monitoring	Sentry or LogRocket (optional)

⚠️ Common Bugs + Resolutions

Bug	Solution
Horizontal Scroll on Mobile	Remove all `overflow-visible`, avoid `100vw`, use `max-w-full`
Sticky Menu Glitching	Avoid `position: fixed` on mobile if not paired with `top-0 left-0 w-full`
Font Resize Issue on Safari	Use `rem` instead of `vh/vw` for headers
Layout Shift on Image Load	Use `width`/`height` or Tailwind `aspect-[x/y]` utilities
Button double-click submits	Add `disabled={isSubmitting}`

⏱ Deployment Plan & Timeline

Phase	Duration
UI/UX Design	5 Days
Component Development	7 Days
Backend API & Auth	5 Days

Testing & Debugging	3 Days
Deployment + Final QA	2 Days
Total	**22 Days**

✅ MVP Feature List

Feature	Status
Hero Banner with CTA	✅ Complete
Program Explorer with Detail Pages	✅ Complete
Mentor Bio Grid	✅ Complete
Testimonials Carousel	✅ Complete
Responsive Contact Form	✅ Complete
Mobile-first layout & testing	✅ Complete
Auth & User Dashboard	🟡 Post-MVP
Live Program Booking	🟡 Optional

🧠 Final Notes

- Follow **Atomic Component Design** for reusability
- Use **global error boundary** in React for crash recovery
- Tailwind `container` + `max-w-screen-xl` for consistent spacing
- Strict `z-index` stacking contexts to prevent modals overlapping wrongly
- **All assets optimized** for web (WebP images, font subsets, gzip compression)