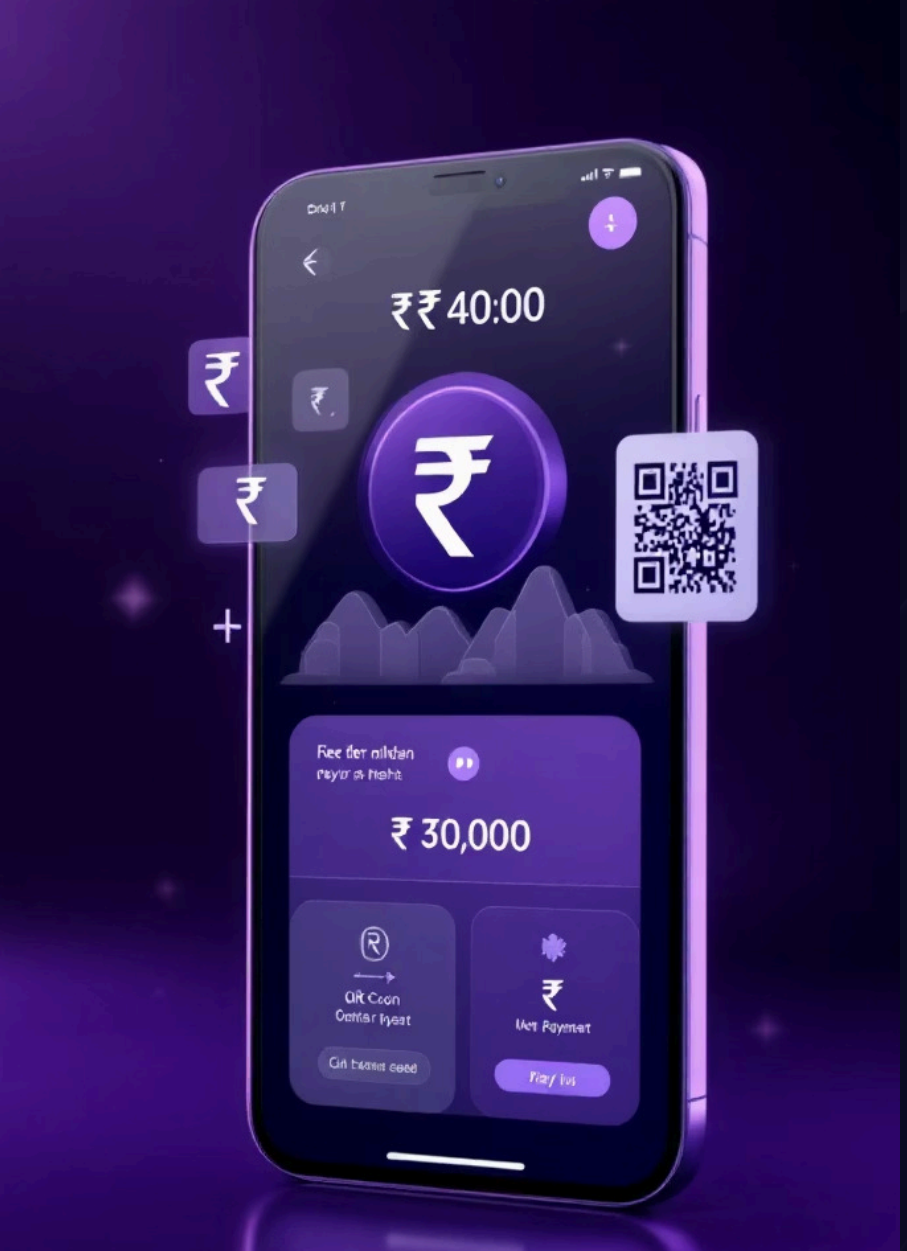
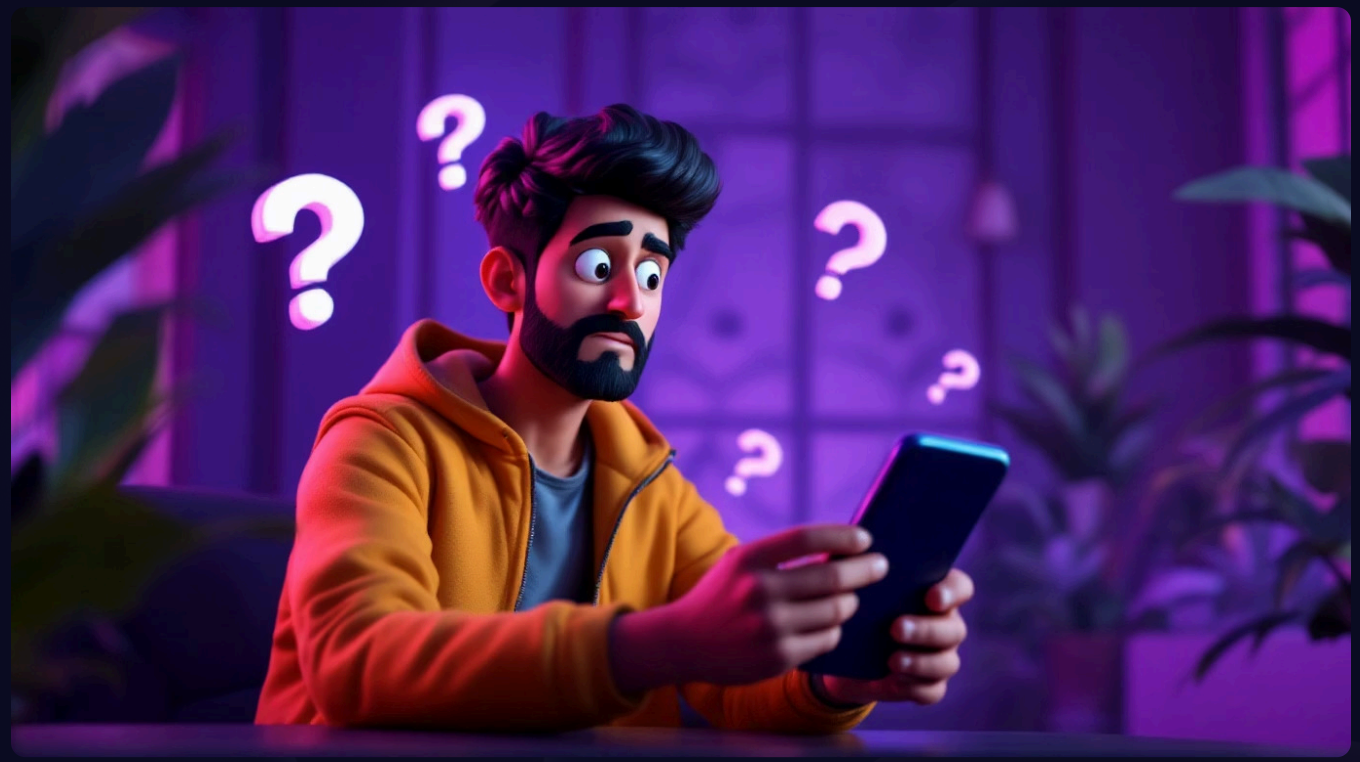


PayEasy: Demystifying Digital Payments in India

An educational full-stack platform that simulates real-world UPI payment flows whilst teaching developers and merchants how digital transactions actually work

CHALLENGE

The Digital Payment Paradox



India's UPI revolution has transformed payments, with over 10 billion monthly transactions. Yet most users treat these systems as "black boxes" — they work, but how?

Developers lack hands-on learning resources. Small merchants struggle with complex payment interfaces. Students miss out on practical financial literacy integrated into everyday tools.

The gap between using payments and understanding payments continues to widen.

SOLUTION

PayEasy: Your Payment Learning Laboratory

Generate QR Codes

Create personalised payment QR codes instantly, just like PhonePe or Google Pay, ready to receive money

Scan & Pay

Simulate complete payment flows with PIN verification, limits, and real-time transaction recording

Learn Investing

Built-in investment opportunities promote financial literacy beyond basic transactions

Multi-Layer Security

Experience OTP verification, PIN authentication, and transaction limits mirroring real banking systems

Three-Tier Security Architecture

PayEasy implements enterprise-grade security patterns to protect users and demonstrate best practices for aspiring FinTech developers.

01

OTP Verification at Registration

First line of defence: validates user identity before account creation, preventing unauthorised access

02

4-Digit PIN Before Every Payment

Transaction authentication: ensures only account owners can authorise payments, just like ATM security

03

Smart Transaction Limits

Fraud prevention: ₹10,000 per transaction cap, ₹50,000 daily limit with real-time tracking across the dashboard

Frontend Technical Stack

React 18 + Vite

Lightning-fast development with modern functional components, hooks (useState, useEffect), and instant hot module replacement

QRCode.js Library

Generates UPI-compliant QR codes using Canvas API, encoding payment data in standard format: `upi://pay?pa=upiid&pn=name&cu=INR`

Local Storage

Browser-based persistence for user profiles, transaction history, and daily spending without backend dependency

Responsive CSS

Grid and Flexbox layouts with media queries ensure seamless mobile, tablet, and desktop experiences

Real-Time Preview

Card registration form with controlled components and CSS3 gradients provides instant visual feedback

Modal-Based Auth

OTP and PIN verification with auto-focus navigation between inputs for enhanced UX

Payment Flow: Behind the Scenes

Each payment passes through multiple validation checkpoints, simulating asynchronous processing with setTimeout to mirror real-world latency.

Transaction Validation

- Amount format and range check
- Daily limit verification (₹50,000 cap)
- Per-transaction limit (₹10,000 max)
- 4-digit PIN authentication
- Balance sufficiency confirmation
- Transaction recording and history update

Component Architecture

Built with modularity in mind, PayEasy follows React best practices with seven core components that work together seamlessly.

App (Root)

Main orchestrator managing routing and global state across the application

CardForm

User registration with real-time card preview and controlled input components

Dashboard

Central hub displaying balance, transaction history, and daily spending limits

Payment Scanner

Handles QR code scanning, amount input, and payment processing workflow

Advertisements

Promotes financial literacy through integrated investment opportunities

OTP Verification

Modal-based one-time password entry with auto-focus navigation

PIN Verification

4-digit PIN authentication before every payment transaction

IMPACT

Serving Multiple Audiences

1.5K+

Lines of Code

Comprehensive implementation with detailed documentation for learning

7

Core Components

Modular architecture demonstrating React best practices

3

Security Layers

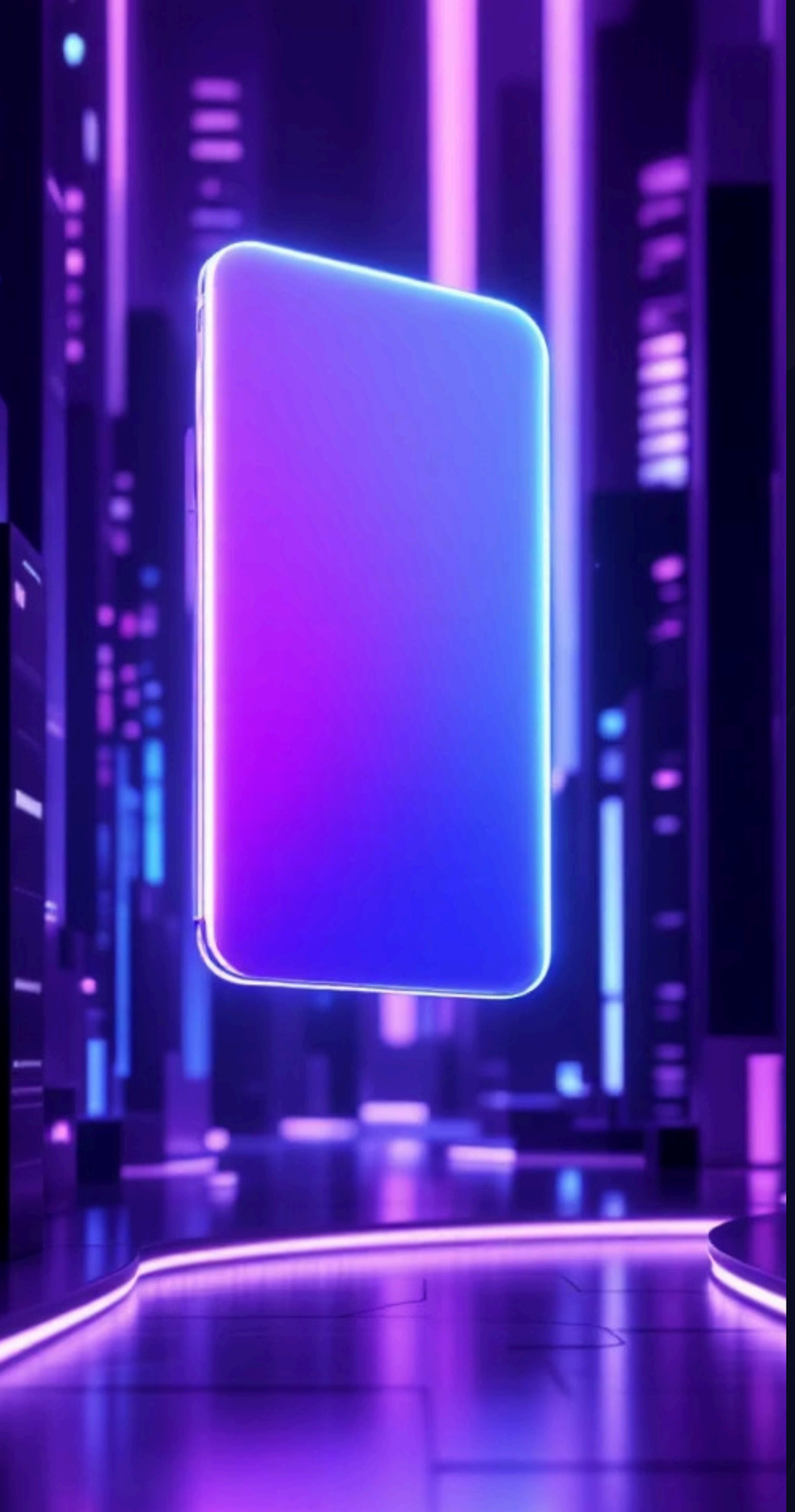
OTP, PIN, and limit checks mirror real banking systems

Educational Value

- Students learn payment system concepts hands-on
- Developers build portfolios with real-world projects
- Merchants understand QR code generation mechanics

Technical Demonstrations

- Component-based architecture patterns
- State management with React hooks
- API integration concepts and workflows
- Security awareness in FinTech applications



Future Roadmap: Beyond Simulation

Backend Integration

Node.js with PostgreSQL for production-ready data persistence

Payment Gateways

Razorpay integration for actual transaction processing

SMS OTP

Twilio API for real authentication via mobile verification

React Native Mobile Apps

Native iOS and Android versions for on-the-go payments

AI-Powered Analytics

Machine learning for expense categorisation and spending insights

Ready to Explore PayEasy?

Project Highlights

- Full-stack React 18 + Vite application
- UPI-compliant QR code generation
- Multi-layer security architecture
- Real-time transaction tracking
- Educational + practical utility

Who Benefits?

Students: Learn payment systems through hands-on coding and practical implementation of security concepts.

Developers: Build portfolio projects demonstrating modern React, state management, and FinTech domain knowledge.

Merchants: Understand QR code generation, transaction flows, and digital payment mechanics for business growth.

> "Bridging the gap between theoretical knowledge and practical implementation in India's FinTech revolution."