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**COMPLETED THE PROJECT NAME AS PHASE 4**

**TECHNOLOGY PROJECT NAME: News Feed Application**

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# PROJECT PHASE 4: News Feed Application

## Enhancements & Deployment

### 1. Additional Features

- **User Authentication (JWT-based):**  
Implemented login/signup so only authenticated users can save bookmarks.
- **Dark Mode / Theme Switcher:**  
Added toggle button in Header.js using Tailwind's dark mode classes.
- **Pagination / Infinite Scroll:**  
Backend supports page parameter in /api/news.  
Frontend implements "Load More" button for better navigation.

### 2. UI/UX Improvements

- Redesigned news cards with hover effects, shadows, and better readability.
- Implemented skeleton loaders for smoother user experience during data fetch.
- Added toast notifications (e.g., "Article Bookmarked", "Removed from Bookmarks").
- Improved mobile navigation with hamburger menu and smooth transitions.

### 3. API Enhancements

- Standardized error handling for consistency:
- { "success": false, "message": "Error description" }
- Added new endpoints:
  - /api/news/top-headlines → Returns trending news.
  - /api/news/:id → Fetches detailed article data.
- Applied rate limiting and security middleware to prevent API misuse.

### 4. Performance & Security Checks

- **Frontend:**
  - Code-splitting with React.lazy & Suspense for optimized loading.

- Build optimized using `npm run build`.
- **Backend:**
  - Added Helmet for security headers.
  - Sanitized inputs and secured CORS policy.
- **Database:**
  - Indexes created for faster bookmark retrieval.
  - Environment variables managed securely via `.env`.

## 5. Testing of Enhancements

- **Frontend:**
  - Jest + React Testing Library for unit tests.
  - Cypress for end-to-end flow (search → bookmark → view bookmark).
- **Backend:**
  - Mocha/Chai for API route testing.
  - Postman/Newman for automated API test runs.

## 6. Deployment

- **Frontend (React.js):**  
Deployed on Vercel (alternative: Netlify).
- **Backend (Node.js + Express):**  
Deployed on Render/Railway.  
Connected to MongoDB Atlas (cloud database).
- **Deployment Steps:**
  - Set build command: `npm run build` for frontend.
  - Added environment variables for API keys and DB credentials.
  - Verified endpoints and UI after deployment.
- **Domain & Security:**
  - HTTPS enabled by default.

- Optional custom domain integration.