

Take-home assignment: Senior PHP Engineer

Context

Company X is building a new lightweight document search system for internal research purposes. The system needs to allow users to upload research documents, index their content, and provide fast search capabilities with result highlighting.

As a Senior PHP Engineer, you'll be tasked with creating a proof-of-concept that demonstrates your ability to build efficient, scalable solutions using core PHP principles and modern front-end technologies.

Requirements

Backend Requirements (PHP)

1. Document Management API

- Create a RESTful API using vanilla PHP
- Implement the following endpoints:
 - `POST /api/documents` - Upload a document (text/plain or PDF)
 - `GET /api/documents` - List all documents with pagination
 - `GET /api/documents/{id}` - Get a specific document
 - `DELETE /api/documents/{id}` - Delete a document
 - `GET /api/search?q={query}` - Search documents by content

2. Database Design

- Design and implement a MySQL database schema
- Include tables for documents and search index
- Implement proper indexing for performance

3. Search Functionality

- Implement full-text search across document content
- Return search results with relevance scoring
- Highlight matching terms in search results
- Implement basic caching for frequent searches

4. Performance Optimization

- Implement database query optimization
- Add a simple caching layer (file-based or in-memory)
- Handle large documents efficiently (streaming/chunking)

Frontend Requirements (Angular/TypeScript)

1. Document Management Interface

- Upload documents with drag-and-drop support

- Display document list with pagination
 - Delete documents with confirmation
 - Show document details
2. **Search Interface**
 - Search input with real-time suggestions (debounced)
 - Display search results with highlighted matches
 - Sort results by relevance or date
 - Show search performance metrics (time taken, result count)
 3. **UI/UX Requirements**
 - Responsive design
 - Loading states and error handling
 - Clean, modern interface using Angular Material or similar

Technical Constraints

- **PHP:** Must use PHP 8.0+ without major frameworks (composer packages for specific utilities are allowed)
- **Database:** MySQL or MariaDB
- **Frontend:** Angular 14+ with TypeScript

Deliverables

1. **GitHub repository** containing:
 - Complete source code for both backend and frontend
 - A **README.md** with instructions to build, test, and run locally.
 - A **SOLUTION.md** describing the design and trade-offs you made.
2. **Video Demo** (5-10 minutes using Loom or similar):
 - Demonstrate the working application
 - Walk through your code architecture
 - Explain key design decisions
 - Discuss any trade-offs made
 - Highlight interesting technical implementations

Time estimate

- This should take **±4 hours** to complete, but you can take as long as you need.