Elevate By SPENTACADEMY Backend Track Outline

Week 1: Introduction to Web & Backend Fundamentals

Core Concepts:

- Web architecture: client, server, database (how requests flow)
- Introduction to a chosen Backend Language/ Framework & environment setup
- Basic syntax: variables, data types, operators
- Integrating with basic HTML/frontend concepts

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Week 2: Control Flow & Input Handling

Core Concepts:	

- Conditional statements and loops
- Functions/methods in the chosen language
- Handling HTTP requests: GET and POST methods
- Accessing request data
  (query parameters, form data, headers)
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Week 3: Database Interaction (ORM/Driver)

Core Concepts:

- Introduction to Object-Relational Mappers (ORMs) or database drivers
- Connecting the backend application to a Relational Database (e.g., PostgreSQL, MySQL, SQLite)
- Performing basic CRUD (Create, Read, Update, Delete) operations using prepared statements/safe methods
- Basic error and exception handling for database operations

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Week 4: User Authentication & Session Management

Core Concepts:

- User registration: form validation, ensuring unique identifiers (e.g., email, username)
- Secure password hashing & verification techniques
- User login and session/token management
- Implementing logout functionality

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Week 5: File Handling & Storage

Core Concepts:

- Handling file uploads (e.g., images, documents)
- Implementing file size and type validation
- Storing file metadata in the database
- Serving/displaying uploaded files

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Week 6: Introduction to RESTful APIs

Core Concepts:

- What is an API? Understanding REST principles vs. other architectural styles
- HTTP Methods (GET, POST, PUT, DELETE) and their semantics
- Setting up basic API endpoints in the chosen framework
- Returning structured data (e.g., JSON responses)

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Week 7: Building a CRUD API

Core Concepts:

- Structuring a robust RESTful API (routing, controllers/handlers)
- Handling different HTTP verbs for a single resource
- Integrating the API with the database for full CRUD operations
- Implementing basic error handling and input validation for API requests

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Week 8: Secure API & Token Authentication

Core Concepts:

- Input sanitization and general API security best practices
- Implementing token-based authentication
  (e.g., JWT - JSON Web Tokens, or simple API keys)
- Protecting API endpoints based on user roles or authentication status
- Basics of API documentation (e.g., OpenAPI/Swagger overview)

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Week 9: Project Kickoff & Planning

Core Concepts:

- Overview of final project expectations and requirements
- Feature planning: integrating authentication, file upload, search, categorization into a larger application
- Creating a project skeleton structure (folders, basic routing, database schema design)
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Week 10: Project Practical

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Week 11: Project Practical

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Week 12: Project Practical