

# Backend Ascendant: A Developer's Path

NOVEMBER 2024-DECEMBER 2025

## Phase 1: Strengthening Foundations & TypeScript Mastery (November 2024 - February 2025)

**Objective:** Focus on mastering JavaScript, TypeScript, and implementing basic functionality in separate CRUD projects. **PostBook** will remain unchanged during this phase.

### 1. November 17 - December 31, 2024: TypeScript Basics & CRUD Project 1 (Learning Phase)

- a. **Daily:** 1 hour for **TypeScript** learning (types, variables, interfaces, classes).
- b. **Weekly:** Build the first **CRUD project** (e.g., user management) to learn TypeScript.
- c. **Goal:** Complete the first CRUD project with TypeScript.

### 2. January 2025: Advanced TypeScript & CRUD Project 2 (Implementation Phase)

- a. **Daily:** Learn **advanced TypeScript** features (generics, enums, and decorators).
- b. **Weekly:** Build a second **CRUD project** (e.g., post management) using advanced TypeScript features.
- c. **Goal:** Finalize the second CRUD project and master advanced TypeScript.

### 3. February 2025: Unit Testing with Jest & Logging with Winston/Morgan

- a. **Daily:** Learn **Jest** for unit testing, and **Winston/Morgan** for logging.
- b. **Weekly:** Implement **unit testing** and **logging** for both CRUD projects (Project 1 & 2).
- c. **Goal:** Ensure both CRUD projects are fully tested and have proper logging implemented.

## Phase 2: Real-Time Communication & Event-Driven Architecture (March - June 2025)

**Objective:** Implement real-time features with Socket.IO and explore Kafka for event-driven systems. **PostBook** remains unchanged during this phase.

1. **March 2025: Real-Time with Socket.IO & CRUD Project 3 (Learning Phase)**
  - a. **Daily:** Learn **Socket.IO** for real-time communication.
  - b. **Weekly:** Implement **Socket.IO** in a **CRUD project** (e.g., chat system).
  - c. **Goal:** Build a real-time CRUD project and understand Socket.IO.
2. **April 2025: Kafka for Event-Driven Systems & CRUD Project 4 (Implementation Phase)**
  - a. **Daily:** Learn **Kafka** for event-driven architecture.
  - b. **Weekly:** Implement **Kafka** in a **CRUD project** (e.g., notification system).
  - c. **Goal:** Complete Kafka integration in the CRUD project.
3. **May - June 2025: Optimizing Real-Time & Kafka & Scaling**
  - a. **Daily:** Learn about optimizing real-time applications and event-driven systems.
  - b. **Weekly:** Optimize **Socket.IO** and **Kafka** in both CRUD projects.
  - c. **Goal:** Ensure scalable and optimized real-time and event-driven systems.

## Phase 3: Redis, Docker, Nginx, and Kubernetes for Deployment & Scaling (July - October 2025)

**Objective:** Learn Redis, Docker, Nginx, and Kubernetes for deployment and scaling. You will not integrate these into **PostBook** until mastering them through CRUD projects.

1. **July 2025: Redis for Caching & CRUD Project 5 (Learning Phase)**
  - a. **Daily:** Learn **Redis** fundamentals (caching, sessions, Pub/Sub).
  - b. **Weekly:** Implement **Redis** in a **CRUD project** (e.g., caching frequently accessed data).
  - c. **Goal:** Integrate Redis caching in a CRUD project.
2. **August 2025: Docker Basics & CRUD Project 6 (Implementation Phase)**
  - a. **Daily:** Learn **Docker** fundamentals (containers, images, Compose).
  - b. **Weekly:** Containerize a CRUD project (e.g., blogging system) and manage Docker configurations.
  - c. **Goal:** Successfully containerize CRUD projects with Docker.
3. **September 2025: Nginx Reverse Proxy & CRUD Project 7 (Implementation Phase)**

- a. **Daily:** Learn **Nginx** for reverse proxy configuration.
  - b. **Weekly:** Implement **Nginx** as a reverse proxy in a CRUD project.
  - c. **Goal:** Set up SSL, load balancing, and reverse proxying in CRUD projects.
- 4. October 2025: Kubernetes for Orchestration**
- a. **Daily:** Learn **Kubernetes** for container orchestration.
  - b. **Weekly:** Deploy a CRUD project using Kubernetes for scaling and orchestration.
  - c. **Goal:** Deploy and scale CRUD projects using Kubernetes.

## Phase 4: Final Project & PostBook Transition (November - December 2025)

**Objective:** Transition **PostBook** to incorporate the new technologies. This will be done in parallel with the final project once all topics are mastered.

- 1. November 2025: Final CRUD Project with Advanced Technologies**
  - a. **Daily:** Finalize your **final CRUD project**, incorporating all the technologies learned (Node.js, TypeScript, Redis, Kafka, Socket.IO, Docker, Kubernetes, Nginx).
  - b. **Goal:** Complete the final CRUD project.
- 2. December 2025: PostBook Transition & Final Project Completion**
  - a. **Daily:** Transition **PostBook** to incorporate all the technologies you've mastered.
  - b. **Weekly:** Begin refactoring and converting **PostBook** with the new technologies, starting with the most critical ones.
  - c. **Goal:** Finalize your **final project** and completely transition **PostBook** to the new technologies.

## Additional Notes

- **Unit Testing & Logging:** Ensure that you are incorporating **Jest** for unit testing and **Winston/Morgan** for logging in every CRUD project as you move through the phases.
- **Two CRUD Projects per Technology:** For each technology you learn, you will work on two CRUD projects—one for learning and one for implementing.
- **PostBook Transition:** No new topics will be implemented in PostBook during the learning phase. You will refactor and transition PostBook to new technologies only after mastering them, alongside working on the final project.

This finalized plan includes Redis, Docker, Nginx, and Kubernetes in their respective phases, along with unit testing and logging in each phase. Let me know if this looks perfect now!