Advanced Software Engineering Project

Battle Card Game Backend

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1 Introduction

This report presents the first prototype of the **Battle Card Game Backend**, developed as part of the *Advanced Software Engineering Laboratory* course (2025/26). The goal of this prototype is to define the project's architecture, implement core microservices, and provide a functional REST API running on a Dockerized environment.

2 Project Overview

The system follows a **microservices architecture**, where each module handles a specific responsibility:

- **Auth Service:** manages user registration, login, and JWT authentication.
- **Player Service:** stores player data, scores, and history.
- **Cards Service:** provides card details and attributes.
- **Match Service:** manages game logic and match results.

All services communicate via REST APIs and persist data in a shared MongoDB database.

3 Architecture Diagram

The following diagram illustrates the overall structure of the backend system:

4 Technology Stack

- **Language:** Python 3.12
- **Framework:** Flask

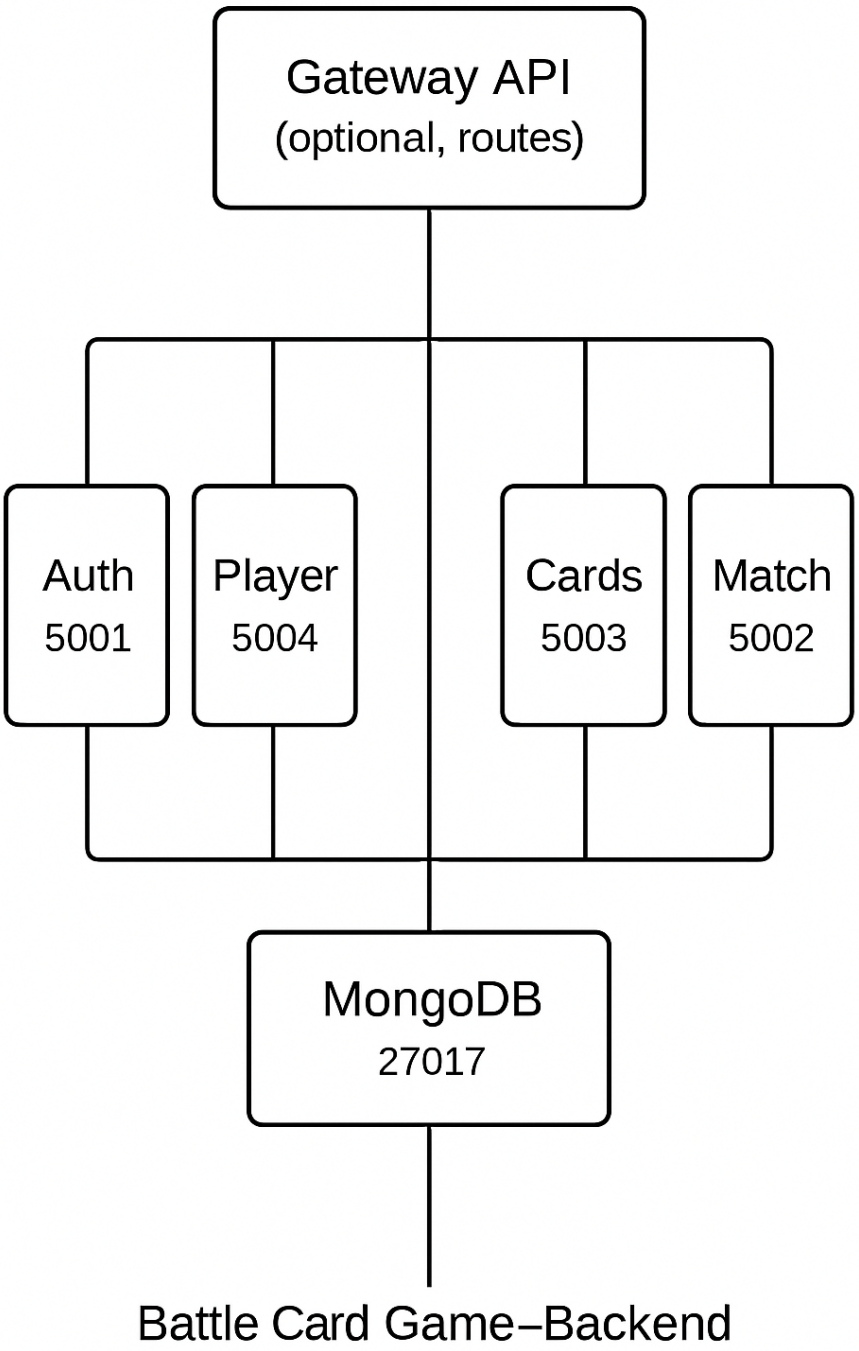

Figure 1: Battle Card Game Backend Architecture

- **Database:** MongoDB
- **Containerization:** Docker & Docker Compose
- **Testing:** Postman
- **CI/CD:** GitHub Actions

5 Deliverables

For this first prototype, the following artifacts are provided:

- Source code of the four microservices.
- Docker Compose configuration for system orchestration.
- Postman test collection.
- OpenAPI specification file.
- Continuous Integration pipeline via GitHub Actions.

6 Next Steps

In the next phase, the team will:

1. Implement user authentication security via OAuth2/JWT.
2. Add persistent match history and statistics.
3. Perform automated testing and performance evaluation.
4. Prepare the final project report according to the ASE template.