

## .NET Core Microservices Home Assignment

### **Objective**

You are required to implement a small system consisting of two microservices:

**Auth Service** – Responsible for login, logout, and user authentication.

**API Gateway Service** – Serves as the entry point and protects internal endpoints by checking the user's authentication status via the Auth Service.

### **Functional Requirements**

#### 1. Auth Service

- Expose an endpoint for users to log in using username and password.
- Expose an endpoint to log out users.
- Maintain a mechanism to validate whether a user is currently authenticated.
- Persist and manage user data (in memory or using a database).
- Log login/logout activity.

#### 2. API Gateway

- Expose an endpoint that:
  - Accepts a request from the client.
  - Checks with the Auth service whether the user is authenticated.
  - If authenticated, returns the user's details.
  - If not authenticated, returns 401 Unauthorized.
- Log requests and responses.
- Support a clean way to **\*\*route traffic\*\*** and validate access control.

### **System Behavior**

Authentication should be session-based or token-based.

All data persistence, caching, and communication decisions are up to you.

A user must log in before accessing protected endpoints via the API Gateway.

After logging out, the user must not be able to access protected resources.

### **Additional Expectations**

The system should include basic logging.

Your services should demonstrate proper separation of concerns and maintainability.

Your implementation should support distribution: the services must be independently runnable.

## **Bonus (Optional)**

Use JWTs for authentication and implement token expiration/refresh.

Implement caching of login sessions or tokens.

Add support for user roles or permissions.

Include automated tests (unit or integration).

Add a simple container-based deployment (e.g., Docker Compose).

## **Submission Guidelines**

Push your project to a Git repository (GitHub, GitLab, etc.) or zip it and share a link to drive.

Include a `README.md` that:

- Describes your system's architecture and decisions.
- Explains how to run the solution.
- Lists any known limitations, assumptions, or shortcuts.
- Optionally documents any bonus features you've implemented.

## **Time Estimate**

Estimated time to complete the base requirements: 4–6 hours. Additional time may be needed for bonus features.

Questions?

Please document any assumptions you've made or reach out if clarification is needed.

Good luck!