# Backend / DSA Mentor Challenge

This assignment is designed to evaluate **problem-solving ability, clarity of thought, and coding discipline**.

## 📌 Instructions

- Solve **all 4 problems**
- Use **any programming language**
- Write **clean, readable code**
- Add comments explaining your approach
- Do **not copy solutions**
- Time complexity and space complexity **must be considered**
- Partial solutions are acceptable, but logic clarity matters

---

## ✅ Problems to Solve

### 1️⃣ Edit Distance

**LeetCode #72**
🔗 https://leetcode.com/problems/edit-distance/description/?envType=problem-list-v2&envId=dynamic-programming

**Concepts tested**

- Dynamic Programming (2D DP)
- String manipulation
- Optimal substructure

---

### 2️⃣ House Robber

**LeetCode #198**
🔗 https://leetcode.com/problems/house-robber/description/?envType=problem-list-v2&envId=dynamic-programming

**Concepts tested**

- Dynamic Programming (1D DP)
- State optimization
- Edge case handling

---

## 3️⃣ Predict the Winner

**LeetCode #486**
🔗 https://leetcode.com/problems/predict-the-winner/description/?envType=problem-list-v2&envId=dynamic-programming

**Concepts tested**

- Game theory
- Dynamic Programming
- Minimax-style decision making

---

## 4️⃣ Task Scheduler

**LeetCode #621**
🔗 https://leetcode.com/problems/task-scheduler/description/?envType=problem-list-v2&envId=greedy

**Concepts tested**

- Greedy algorithms
- Frequency counting
- Scheduling optimization

---

# 📂 Submission Guidelines

- Create a **single GitHub repository**
- Each problem should be in a **separate file**
- Add a `README.md` explaining:
  - Your approach
  - Time & space complexity
- Share the **GitHub repository link**
- Also share the solution URL to the leetcode problem

---

## 🚫 Disallowed

- Copy-pasting from online solutions
- Using AI to generate final code
- Submitting without explanation

---

## 🎯 Evaluation Criteria

- Correctness
- Code readability
- Algorithmic thinking
- Handling edge cases
- Ability to explain the solution

---

**Deadline:** As communicated
**Good luck. Think before you code.**