B3209E – Algorithm Design

Assignment 01: Building a Certifier

Due date: 22 September 2025

In this assignment, you will work with one of the following fundamental algorithmic problems:

- Independent Set
- Interval Scheduling
- Bipartite Matching

Your tasks are as follows:

Task 1: Problem Selection: Choose one of the problems above to work on.

Task 2: Problem Description: Provide a short description of the chosen problem, including an illustrative example that clearly explains the input and the expected solution.

Task 3: Certifier Construction: Design (list logical steps) and build a certifier that takes as input:

- a problem instance, and
- a candidate solution,

and outputs `Yes` or `No`, specifying whether the candidate solution is a valid (feasible) solution to the problem.

Task 4: Submission: Prepare your submission in one of the following formats:

- A report (maximum 2 pages), or
- A set of slides (maximum 5 slides).

Your submission should include a brief description of your approach, part of the code for the certifier, and at least one example showing the certifier in action.